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Space and Learning Lessons in Architecture 3

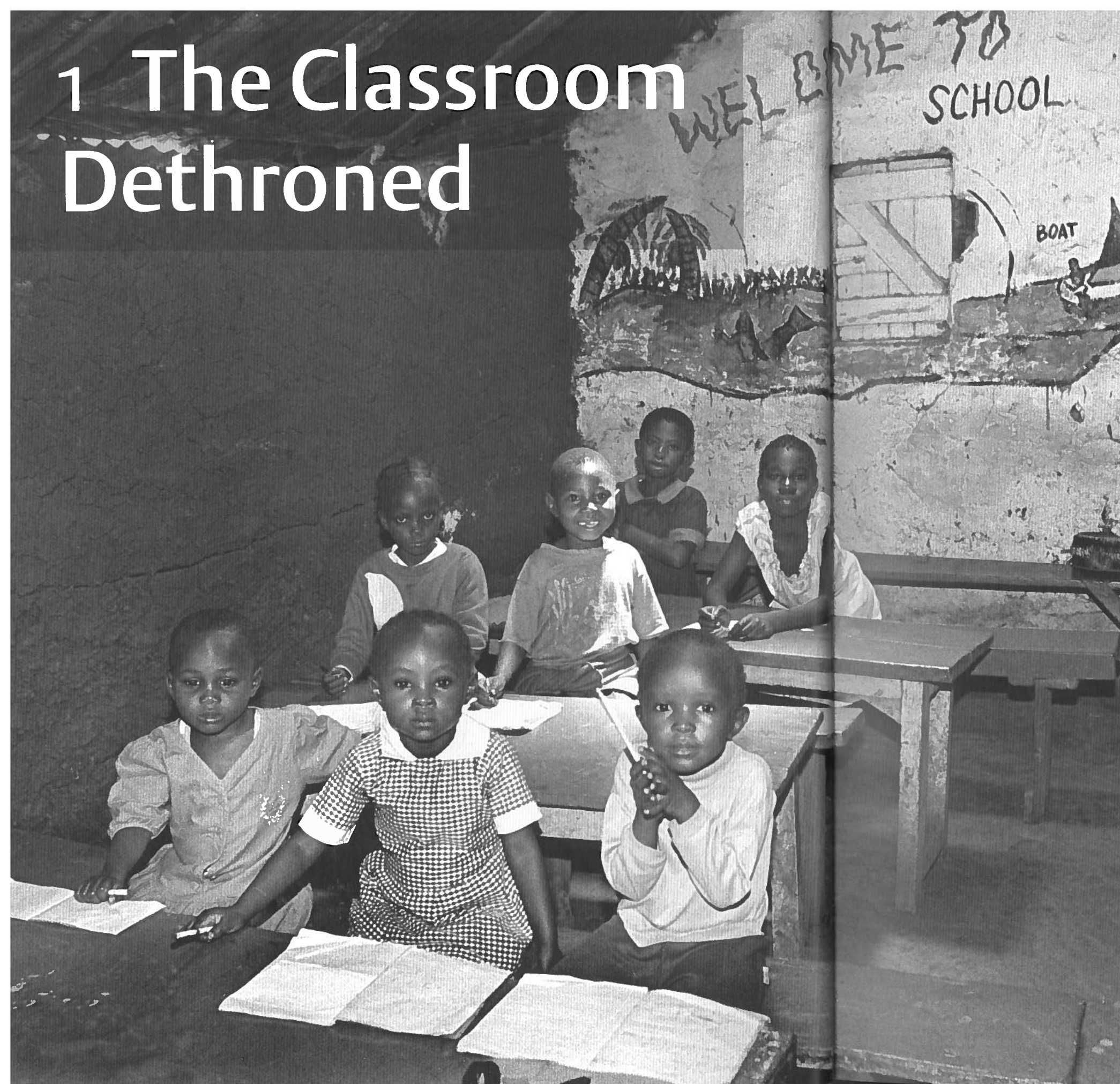
Herman Hertzberger



010 Publishers, Rotterdam 2008

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1 The Classroom Dethroned



The classroom as private domain

Classrooms have traditionally been the principal building stones of schools. All over the world, children have been brought together in classrooms since the earliest times. The teacher at the blackboard passes on knowledge. So the spatial conditions of the classrooms should mainly serve to aid the pupils' concentration, which should be distracted as little as possible, while the teacher should have the best possible overview. Indeed, classrooms have always been the explicit domain of the teacher, and pupils are either lucky or unlucky with the one they get.

The basic principle behind the physical make-up of schools was and still is a series of autonomous spaces separated from each other and reached from often long corridors through doors set without exception at the side of the teacher and blackboard and usually with a window so high up that only the teachers are in a position to look in and out through it.

It was only in the second half of the 20th century that this archetype of the classroom as basic pedagogical space unit was opened up bit by bit, influenced by innovative ideas on education. So the time-honoured methods of teaching have had to relinquish their exclusive rights.



[2] *Information scolaire*, 1956 (photo Robert Doisneau)

← [1] Nairobi, 1990 (photo Eddy Posthuma de Boer)

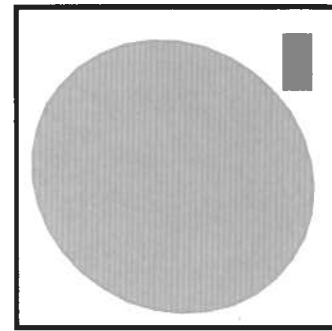
The articulated classroom

Wherever traditional classroom-based education is not given exclusively and so the teacher is not the constant focus of attention, the need exists for nooks and niches to work in, more or less screened-off or shielded places where one or more pupils can concentrate on their own work. This was mainly the case in schools with alternative pedagogy with their exclusive ideas about education, where children were encouraged to work independently. These schools had trouble working with rectangular, unarticulated classrooms. They often began life out of necessity in large former houses where they were happy to find the bays, nooks and corners they encountered there. This satisfied the need for more particularized spaces. These spaces not originally designed for teaching purposes often proved to provide the ideal spatial conditions for individual-oriented education and for pupils to find a place where they could work on their own. These places were more suited to uncustomary uses and you felt less under scrutiny by teachers than in an excessively surveyable unarticulated space. The more articulated or modelled a space is, the more possibilities for more differentiated learning it has to offer.

An unarticulated rectangular classroom lends itself best to instruction, the unidirectional transfer of knowledge that forms the basis of teacher-fronted lessons. This primitive paradigm gives teachers the ideal overview of their pupils. An articulated space by contrast is less easily surveyable and provides more places for different groups or individuals to engage in different activities simultaneously in a room without being unduly distracted by each other. So the number of options are greater here, there being several centres of attention rather than just the one.

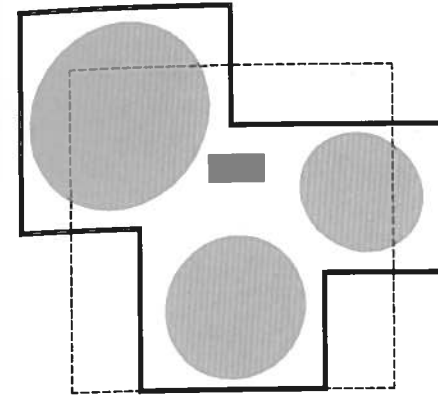
A condition of learning in which children work on different subjects alone or in groups parallels the need for more workplaces of different sizes and spatial quality. This requires not just that the classroom be articulated but also encourages colonizing what was once the corridor and domesticating it as an 'outside area' of the learning territory. This form of decentralization compromises the hegemony of the classroom as an autonomous bastion, so that children leave it to collect what they need 'outside'. In time, this need to also work beyond the classrooms became greater. It increasingly

Basic classroom



[1]

Articulated classroom



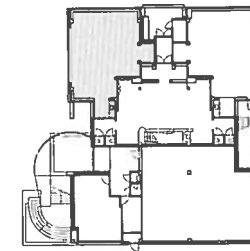
[2]

gave rise to a situation at primary schools comparable to that at secondary schools, where pupils move through the school, visiting a different subject room for each period. So the classroom as the sole, permanent teaching space is a thing of the past. Slowly but surely the corridors are being enlisted so that the teaching-learning territory is coming to occupy the entire school. The primary school classroom has therefore evolved into a home base; a familiar environment to fall back on.

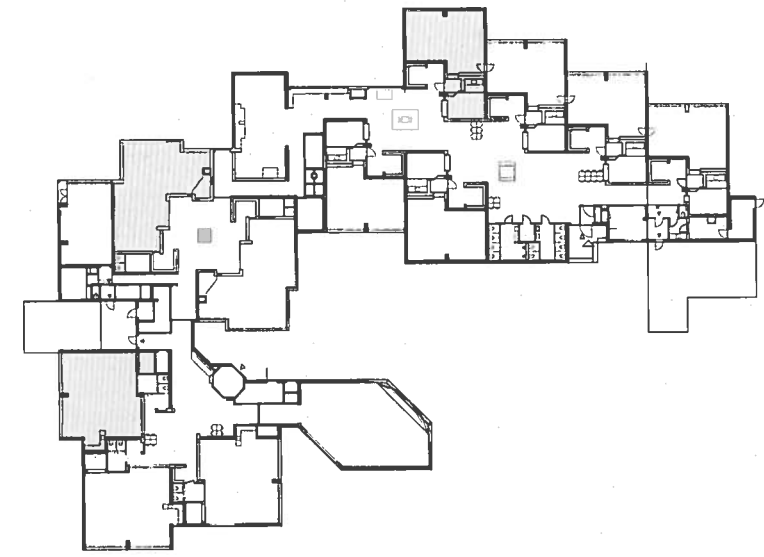
[1, 2] Articulation leads to multiple centres

[3, 5, 6] Classroom, Apollo schools, Amsterdam

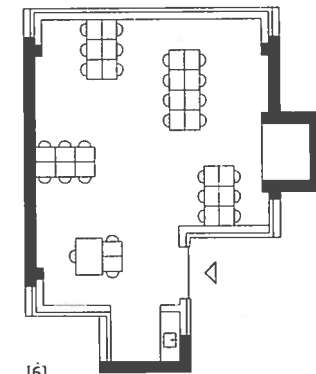
[4, 7-10] Classroom, Montessori school, Delft



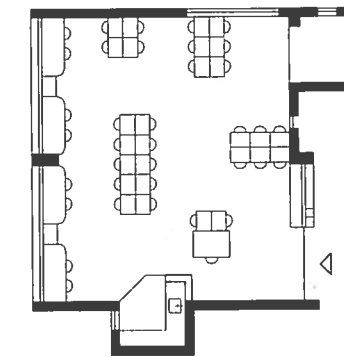
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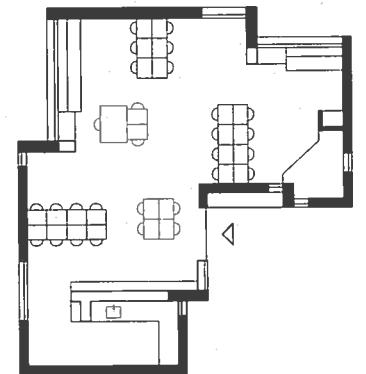
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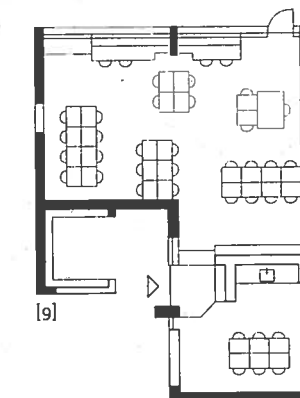
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[8]



[10]



[9]

0 1 2m



[3]



[4]

1st Montessori School, Corellistraat, Amsterdam, 1927

A.R. Hulshoff

Amsterdam's Public Montessori schools were built from 1923 on, at the instigation of the city's Alderman for Education, Eduard Polak. Polak had more than 200 schools erected in this capacity. As he was an advocate of innovation in pedagogy, several of these were for the Montessori and Dalton systems. The only difference between the Montessori schools and the others, built with great care by Public Works, lay in the two extra spaces added to each classroom. Each of the classrooms was given a tiled 'kitchen space' where water could be splashed around and watering cans filled to water the many plants in the classroom – each child has at least one plant to look after. The large low-lying sink unit means that the children are free to go about painting and modelling in clay independently. In addition, every classroom was provided with a 'resting room', a side area much like a sitting room. This addition to the main classroom space is separated from it by a passage lined on both sides by fixed cupboards with glass doors. Fixed benches with cushions where you can read or lie down stand round about. This is where you can withdraw to from the bustle of the class so as to concentrate on your work. Every child, we should recall, has their own work to do. A sheet can be hung in the passage so that behind it plays and sketches can be prepared unseen by others. When these are enacted for the class, the sheet becomes the stage curtain. There are no fixed workplaces for pupils in this general-use side/sitting room; it is extra space!

The classroom with annexes had a surface area of about 95 m², a size quite unattainable by today's skimping standards, though it was exceptional even in those days.

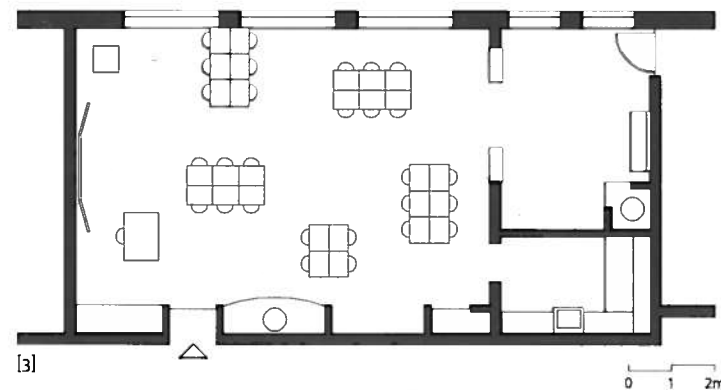
These annexes made the classroom even more of an autonomous entity of several rooms, as if a dwelling-house. The completeness of the equipment in these class-



[1]



[2]



[3]

0 1 2m

rooms did nothing to advance contact with the rest of the school, at least physically. You were allowed a fleeting visit to other classes only in privileged situations, for instance when you 'did the rounds' to give tea to the other teachers or took round sweets or cakes on your birthday, or were chosen by a special friend to help them do this on theirs. Then it was the older classes, where everything was bigger, that impressed you the most.

Of all the schools you visit during your life,

it's always the first one you attended that leaves the biggest impression on you, and for an architect it must have a considerable bearing on their practice later on.

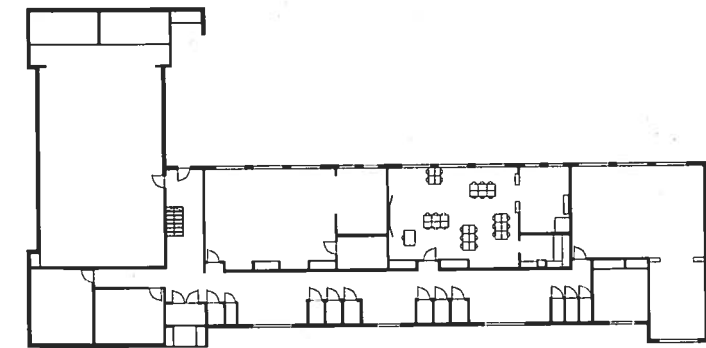
In my own memory, Christmas was the only occasion that school life spilled out beyond the bastions of the classrooms. Then all the pupils performed and watched short plays in the gymnasium, the only space large enough for this purpose. This stage event was the high point of the year. Once all classes had entered in succession and taken their place, no-one was allowed to move.

So you did see each other, but it was hardly what you would call a social event.

A visit I paid in May 2005, more than 60 years on, revealed that little had changed in all that time and that everything still worked according to the original philosophy. In those days schools were built to last, with solid walls and sustainable materials. Not just that, the Montessori method of education, revolutionary though it had been in the beginning, has remained remarkably consistent in its ideas and their



[4]



[5] Ground floor

0 2 4 10m

application in day-to-day practice. Only the original round iron stoves, hidden behind attractive metal railings, had been replaced by secret workplaces. The corridors, cold and stony in my memory, were now being used by children at work. But what was really eye-opening was seeing the dimensions of the teaching spaces

again. The difference between 95 m² then and the 50 m² we get today illustrates in shocking terms how we, though immeasurably richer than we were in 1927, are saddled with a sorry pack of tightwads – a far cry from the idealism of the Amsterdam aldermen of those days.



[1]



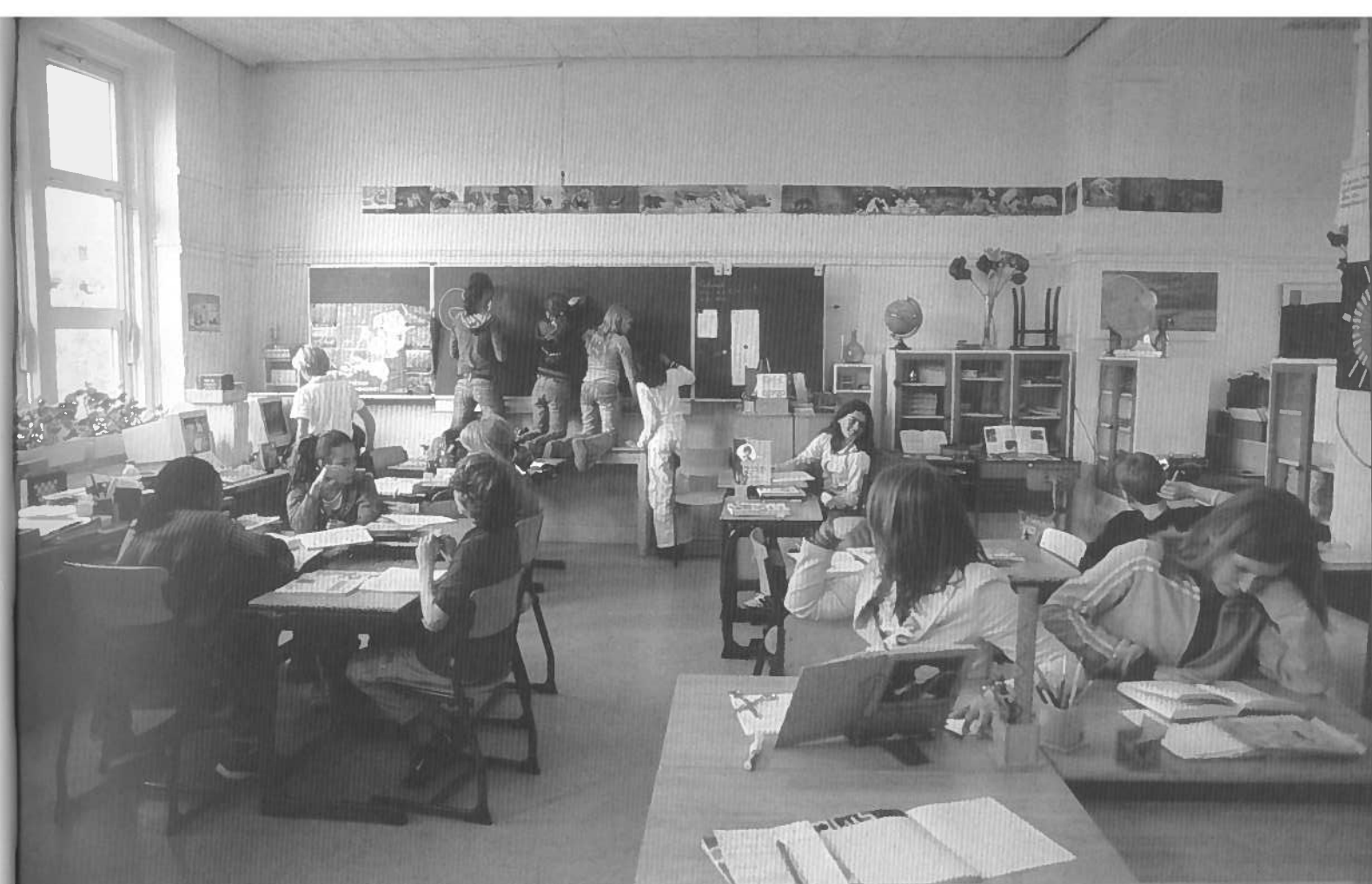
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[3]



[4]



Montessori School, Valkeveen, 1926
Brinkman & Van der Vlugt

It can not be generally known that the architects of the Van Nelle factory and other pellucid 'functionalist' buildings had once designed a tiny Montessori School. This restrained and almost entirely inward-looking building of traditional construction, the very opposite of their later work, has just one classroom but this is so strongly

modelled as to give the impression of being several unmediated rooms. Identical bay-window-like additions to the taller central space, separated from it by arches and extending symmetrically to four sides, suggest a Villa Rotonda in miniature. This space, being articulated, is scarcely suited to traditional teacher-fronted lessons

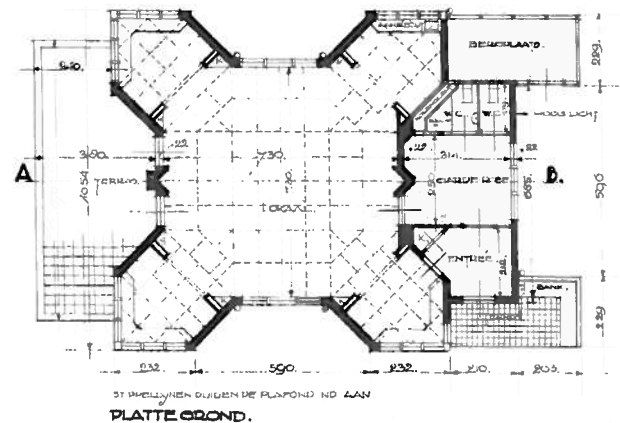
but lends itself all the more to decentralized use as in the Montessori system where many different activities take place simultaneously. It comes as quite a surprise, then, to come across this exceptionally early example of an articulated teaching space.



[1]



[2]



[3]

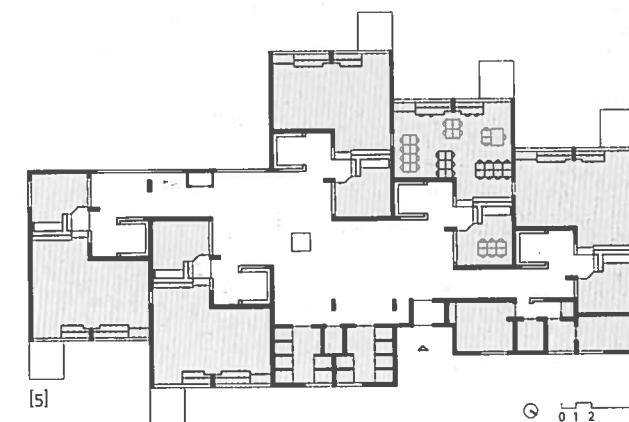
Montessori School, Delft, 1960-1966



[4]

In the early 1960s the administrative board of the Delft Montessori School, mainly consisting of progressive-minded professor's wives, commissioned us to design new premises. We gladly seized the opportunity to finally design a classroom form better tailored to Montessori ideas, in view of the little that had evolved in this field since the 1930s.

According to the Montessori method, children generally work individually on self-chosen activities. The necessary concentration differs with the type of work; not only that, the capacity for concentration in one pupil is not the same as that in another. One child doing their sums can be distracted by others who are, say, rehearsing a play or experimenting with magnets. This is often seen as a disadvantage of individual training, not entirely without justification. The space should be organized in such a way as to prevent pupils from distracting each other unduly. As a theoretical model for the



[5]

0 1 2 5m

Montessori classroom, we chose the snail's shell with its increasing protection inwards and increasing openness outwards. Translate this spatially into a school and you get a sequence of zoning running from seclusion and privacy to successively more 'public' and social space. Classrooms, secluded but without an explicit barrier, spill over into the common zone of a central space. Ulti-

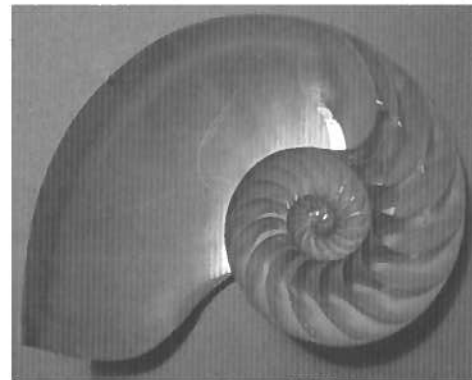
mately, this configuration of an unbroken articulated space opening outwards from an enclosed core was rendered as an L-shaped classroom, articulated in zones from introverted to extroverted. These zones are shielded from each other spatially so that those engaged in more intellectual work are least distracted by the more active painters and clay modellers. To

this end, the floor of the less visually busy portion of the classroom is set several treads higher so that the 'creative' part is even less conspicuous from the 'intellectual' part.

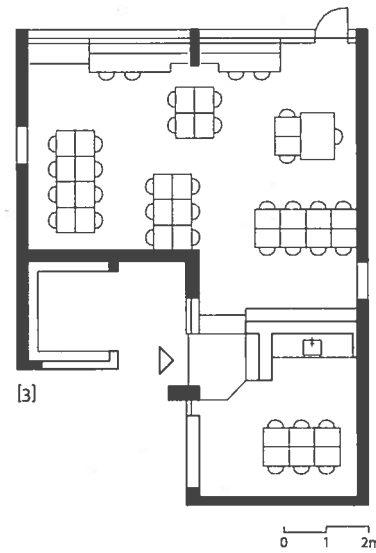


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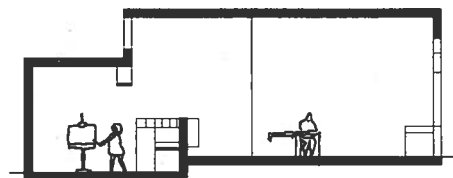
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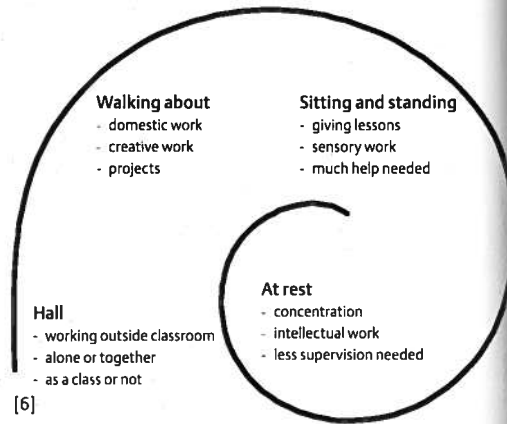
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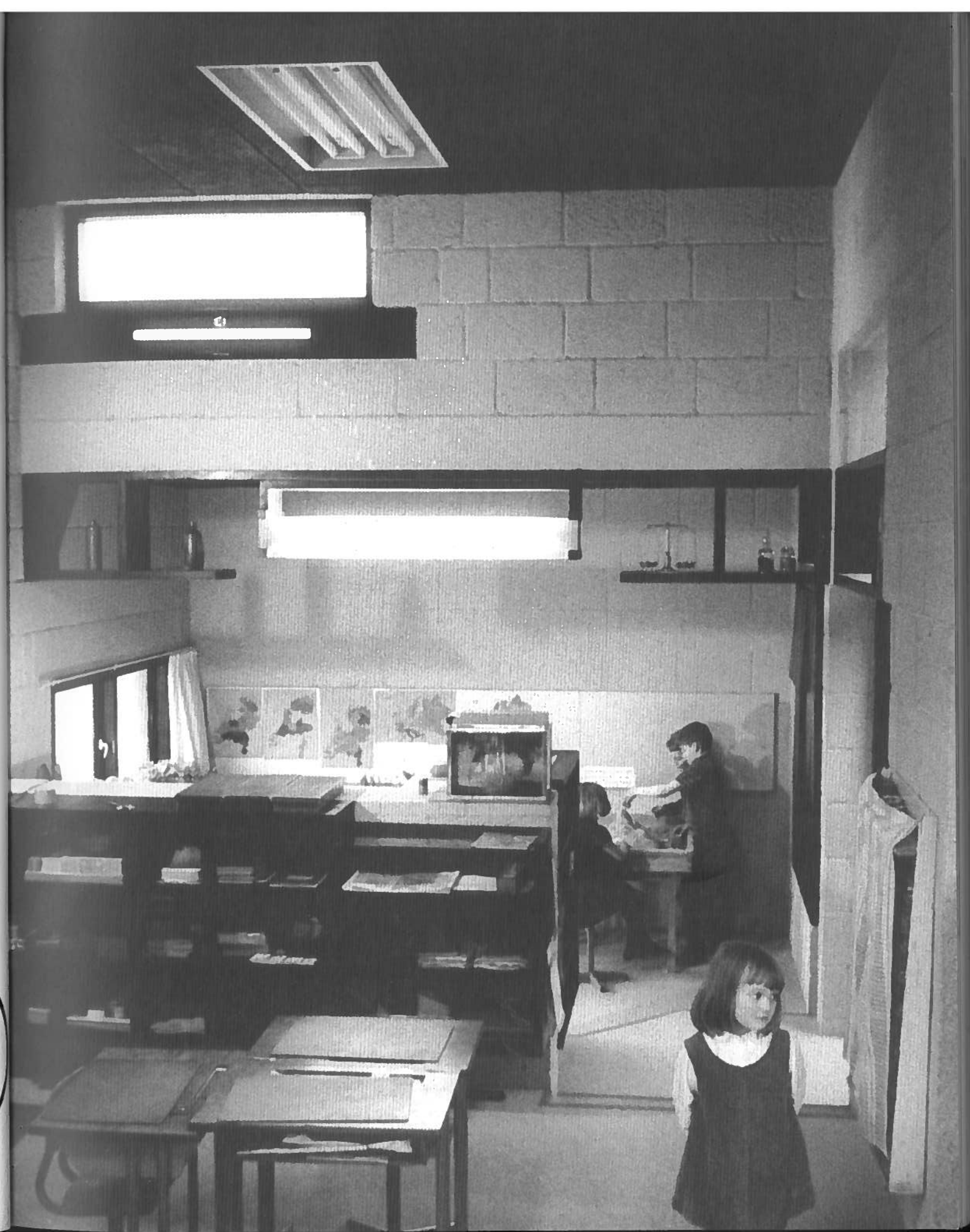


[4]



[6]

[7] ▶





The classroom as home base

Classrooms of schools for secondary education have changed from group rooms to subject rooms. They used to be entirely the domain of the teachers while the pupils, without a place of their own, wandered through the school like nomads along a route dictated by the sequence of lessons.

In a traditional primary school, each group does have its own classroom but here the teacher calls the tune. The feeling of safety and homecoming depends on the nature and at times the mood of that teacher. Classrooms in fact belong to the teachers and the pupils are visitors. Although they know that is where they belong, it is debatable whether the pupils really feel at home there. For this, their own influence and responsibility should extend further than, say, a few pictures on the wall. They should be able to have a say in where they sit in the classroom and how that space is fitted out. And it goes without saying that this calls into question the presence in the classroom of a class teacher.

Whenever children spill out of the classroom to enlarge their field of attention, as is the new trend at primary schools, whether to seek out a place to work independently or take part in special lessons, there is the likelihood of disengagement. This is often the case in secondary school education but at least at that age it is compensated for to a degree by the pupils' keen interest in and attraction to each other. At the primary school, by contrast, pupils have a greater need for something permanent to fall back on, not exclusively a teacher but most of all a readily identifiable and familiar environment. This place should be something of a 'nest' from which you take off and to which you keep returning; a place to leave your things, to fall back on and to meet up again. A floor plan where everything spills into everything else, like a spatial continuum, with no thresholds and therefore no territorial divisions, may well be the ultimate consequence of a school where children find their own way around, armed with a personal laptop and mobile phones. And yet a "safe nest" – familiar surroundings where you know that your things are safe and where you can concentrate without being disturbed by others – is something each individual needs as much as each group. Without this there can be no collaboration with others. If you don't have a place that you can call your own you don't know where you stand! There can be no adventure without a home-base to return to: everyone needs some kind of nest to fall back on."¹ Could this established principle of biological origin simply be switched off? And that brings us straight to the avian duality of nest and flight.² Birds fly through space with a clear view of their food and return to the nest, the place that gives them protection.

So schools must provide 'nests', places with sufficient shelter, tending towards a centre and with dimensions that permit individuals but also groups of varying size to immerse themselves in their work. And then there is the surrounding space which arouses your curiosity and incites confrontation. Yet even in the physical safety of the nest you can enter the most exciting and dangerous virtual worlds, engrossed in a book or computer screen.

As a basic facility, the classroom is an age-old example of space for learning, in the sense of instruction. It provides the safety and security children generally feel they need when away from home and in a group situation not of their choosing.

The 'class' can take you under its wing, you can face the teacher from a common posi-

tion, support one another and together present a social front as the group to which you belong. And where classrooms are becoming increasingly open as in modern schools, relinquishing their autonomy in the process, pupils tend to mingle more during work hours with those from other classes. The situation is getting more complex and it's up to the architect to spatially support these new potentials and keep it all clearly organized so that children have enough to go on in order to find their way about.

There is much to be said for having doors to link adjoining classrooms. By connecting intervening partitions to the outer wall with a glazed section with a door in it, classrooms can be linked when necessary without forfeiting their autonomy. Incredibly, not a few teachers are dead set against this strategy. At one time it was in the regulations that teachers were to keep an eye on classrooms adjoining their own whenever a class was briefly left to its own devices. It is also a way to conduct joint projects: you can enter the neighbouring classroom directly, much like adjacent gardens with a gap in the fence. It also helps you to become more aware of the presence of others and increases the view out from the classroom, visually but also psychologically; it enlarges your perspective. The evolution of the traditional classroom as a bastion for instruction to the classroom as home base, from where the children spill out more and more frequently and which they can always fall back on, is the result of a successive increase in the number of individual activities among more and more groups and individuals. Where once it was only groups of 30 to 45 pupils who concentrated collectively on a single point, now the group focuses increasingly on different centres of attention. Spatially, this gives an ever greater need for places, spatial entities, not sealed off but open and inviting, places where you still can concentrate and feel at home.

We can distinguish successive stages of spatial development:

- 1 an increase in the number of places by differentiating the rectangular classroom with nooks, ancillary spaces, bays etc;
- 2 the addition of a zone between classroom and corridor (the threshold) which can be used as and when necessary to enlarge the learning area;
- 3 the change in the classroom's duty from place of instruction to home base. The group is more often incomplete or absent as more and more learning activities are being held elsewhere in the school;
- 4 the emergence of a learning landscape where classrooms shrink or disappear altogether.

With classrooms disappearing entirely to be taken up in an open learning landscape, the need for a home base is felt all the more, for a place for the children to fall back on, a place they feel responsible for and where they can leave their belongings. It is not enough to have lockers in anonymous surroundings so that pupils wander daily through the building like nomads. There has to be a space where they can engage socially with others of their group or year.

Not everyone is equipped to stand alone in a world rife with opportunities, challenges and surprises without having a recognizable and familiar smaller unit where they have a sense of belonging. To satisfy this spatial condition is a new challenge for architects, one that may give entirely different shape to the idea of a home base if the classroom were indeed to disappear completely.

¹ *Lessons for Students in Architecture*, p. 28

² See *Lessons for Students in Architecture*, p. 28 and *Lessons 2*, p. 25



Class display case, De Eilanden Montessori primary school, Amsterdam

Montessori School, Delft, 1960-1966

"The classrooms of the Delft Montessori School can be regarded as autonomous units, little homes in themselves, all situated along the school hall, as a communal street. The teacher or 'mother' of each home decides together with the children what the place will look like, and therefore what kind of atmosphere it will have. Each classroom has its own small cloakroom, instead of the usual shared excessive number of pegs on almost every wall so that they can't be used for anything else. And if each classroom were to have its own toilet this too would contribute to improving the children's sense of responsibility. You can imagine the children in each class keeping their own 'home' clean, as birds do with their nest. At that time, though, the educational authorities turned down this proposal on the grounds that boys and girls should have separate toilets – as if they have them at home! – which would mean twice as many. "Montessori education does include so-called housekeeping duties as part of the daily programme. So much emphasis is placed on having the children look after their environment, thereby strengthening their emotional affinity with it. Each child, too, has their own plant which they have to look after.

"A further step towards a more personal approach to the children's daily surroundings would be to make it possible to regulate heating per classroom. This would heighten the children's awareness of the phenomenon of warmth as well as making them more energy-conscious. Now, forty years on, these aspects are relevant as never before and there is all the more reason to take them into account when designing a school.

"The domain of a particular group should be respected as much as possible by 'outsiders'. That is why there are certain risks attached

to so-called multifunctional use. If a schoolroom is used for local activities in the evening, everything gets shifted and perhaps not returned to its original place. Clay models of animals left out to dry can be accidentally damaged, or the smallest weight from the classroom scales goes missing.

"It is important for children to be able to display the things they have made in, say, the handwork lesson without fear of them being damaged, and to leave out whatever still needs finishing without it being moved or 'tidied away' by 'strangers'. Even a thorough sprucing-up by the cleaning lady is enough to leave you feeling quite lost in your own space the next morning.

"A schoolroom, conceived as the domain of a group, can show its own identity to the rest of the school by displaying the projects and other work done by this group. This can be done informally by using the partition between hall and classroom for pinning things on and making windows with generous cills in the partition.

"A small display case, preferably with its own lighting, is a challenge to the group to present its offerings in a more formal way. Classroom exteriors can then function as 'shop windows' for the group to display its 'wares'.³

In this way each class can present a signature that others can relate to, and which marks the transition between a classroom and the communal area.

When designing a school you can create the conditions for a greater sense of responsibility and thus a greater feeling for tending and fitting out a space, which in turn creates a greater feeling for tending and fitting out an area in general. This is how users become inhabitants.

³ Adapted from *Lessons for Students in Architecture*, pp. 28-30



► [1] Entrance to classroom, Montessori school, Delft

From corridor to learning street

As the emphasis in modern education on classroom-based methods dropped steadily and more individual education and group-based work rose, the traditional classroom came to be considered 'too small'. Before this need became general, many schools of alternative pedagogy had already gained experience in this field but invariably it meant a greater surface area. In the fullness of time the need grew not just for more square metres but most of all for more places for the greatest number of children to be able to concentrate, undisturbed by others.

Because this development ran parallel to what was a systematic reduction of the surface area due to cutbacks in expenditure on education, it was a logical next step to look at ways of making the corridor area double as a work zone.

Add to that the influx then still getting under way of immigrants whose varying backgrounds and especially the language barrier gave cause to radically revise the way education was traditionally organized. Another cause of differences in standards in class was the trend of closing down specialized schools for children with behavioral and learning difficulties so that these ended up at regular schools. So on top of the division into years there was now a division into standards requiring the provision of much smaller places for teaching and learning.

As a result, the partition walls between classrooms and corridors became more open, raising the claim made by each class on a portion of corridor, which gradually came to be regarded as part of their domain. In time, the centre of classroom teaching and learning activity shifted to the entrails of the building.

So classrooms no longer acted as bastions with just windows to the outside world and turning away from the corridors, but instead opened up to them and even encroached

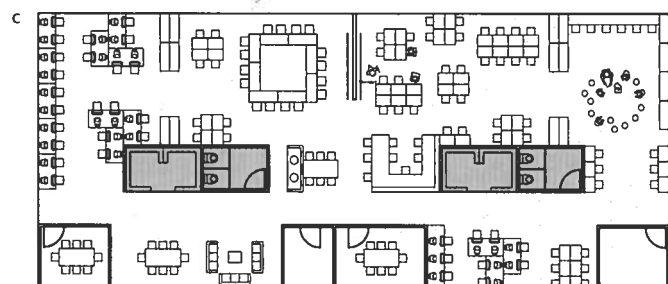
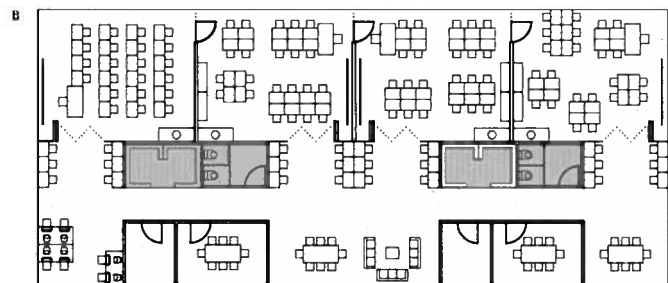
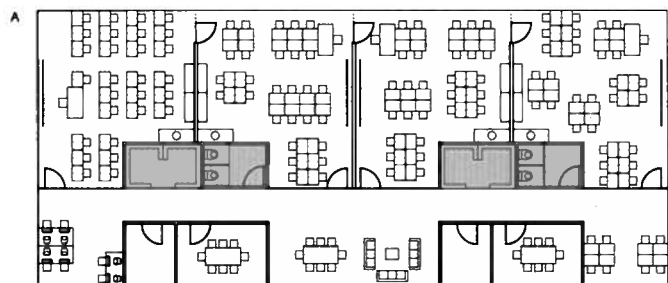


[2] Space for the smallest children, giving onto rooftop play terrace. De Vogels primary school, Oegstgeest

◀ [1] Built-in worktop along window, Montessori school, Delft

on them. This changed the nature of these cavernous, chilly ancillary spaces, which were usually too long and too tall and often dimly lit, into living and working space theoretically equal in quality to the classrooms themselves and deserving of daylight and sun. How long ago was it that children who didn't pay attention were sent out of the classroom into the corridor, banished into empty space, beyond the territory of the group? There you were at the mercy of the cold, the loneliness and most of all the boredom that led you to take a look in the pockets of all those hundreds of coats just hanging there. And then there was the humiliation when someone walked past.

If corridors are to be made 'inhabitable' as true extensions of the classrooms, they will require a complete change in both look and lighting. All coats and the other attributes that invariably turn corridors into endless cloakrooms would have to be moved from the walls and out of sight and replaced by tables and equipment that evoke a working atmosphere and focus the attention. Only then will associations with the old paradigm vanish and the necessary wall space be freed for the workplaces that brought this all on. The main thing is to make the greatest imaginable number of workplaces and make them as differentiated as possible. That will give you a building equipped throughout for education, that is, in the wider sense of learning.



[3]

[1]

0 1 2 5m

[1]

- A Regular classrooms
- B Classrooms with fold-away partitions between them and additional workplaces for collective use
- C Free plan

A, B and C have the same surface area and contain the same number of pupils

[2] Working outside the classroom, Apollo schools, Amsterdam

[3] Working outside the classroom, Montessori school, Delft

[4] Workplaces outside the classroom, De Salamander, Arnhem

[5, 6] Workplaces outside the classroom, De Spil, Arnhem

It begins with workplaces outside the classroom where children can work individually or in groups, curriculum permitting. The more this proves to work better, the greater the claim every classroom will make on space beyond it. To consistently give up the corridor's role as an ancillary space is to embrace another paradigm which, although gaining ever more ground in the world of education, still clashes utterly with sociopolitical standards, suffocated as these are by the Dutch or otherwise European mania for regulating everything. There is also the persistent fear that serious education will suffer from the greater freedom and responsibility with which the children are entrusted, that it will cause them to fail examinations, depriving them of the certificate they need to score well in the employment stakes. The increasing focus in society on results means that 'safe' traditional patterns in education persist. One of these is that lessons are given inside classrooms rather than outside them.

In their barest, most stripped-down form, corridors serve as circulation space for accessing and connecting the rooms on either side of them. This is the notion we encounter in old traditional school buildings but also in hospitals and office buildings, indeed wherever the network of corridors is merely dimensioned to suit the expected flow of people. So the corridor is regarded as 'clearance' or intervening space: admit-



[4]



[5]



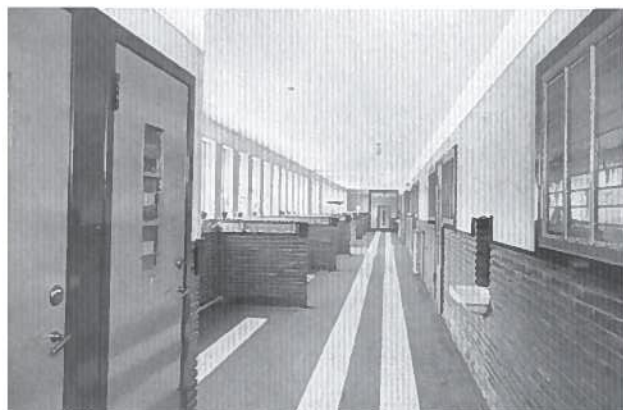
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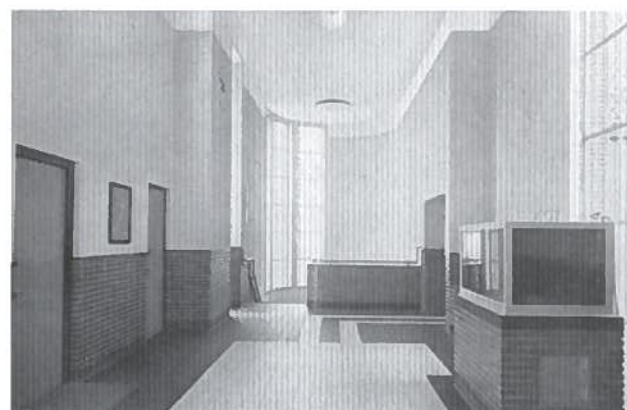
[1]



[2]



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[4]

[1] Learning square beyond the classroom, Titaan, Hoorn

[2] Harmonica partitions to classroom, Titaan, Hoorn

[3, 4] Corridors, J. van Biesen, school, Arnhem, 1932

tedly necessary but unproductive and so of no use. Of course, it can be used to get rid of some of the energy of overactive youngsters by letting them run it off there.

At one time, the corridors and stairwells in schools were made relatively large to accommodate cloakrooms and take up the expected crush at such places. There was also the spectre of a mass of overactive children who have had to remain still for too long and whose frustrated energy, on being released, would explode in an inexorable surge of pulling and shoving, all at a time when classes were emptying simultaneously. Staircases could never be wide enough, for this reason. All the same, they would remain the major bottleneck where all corridors converged, where the sound seemed to pile up in the reverberating stone or brick cavity and where pushing could lead to accidents. And yet it was the stern and imposing entrance and grand staircase that gave the building its serious air and status. And, only the central staircase made you realize that the upper and lower floors, which were barely connected spatially, were meant to act as an entity. Yet their separation gave the upper storey a greater status: this was where the older classes were, where you had to work hard.

In the Netherlands, school-building is subsidized by the government and consequently forever bound by strict standards in programme and surface area, not least to divide up the budgets fairly. During the past twenty years, it has been systematically subjected to cuts in expenditure.⁴ This has focused attention unduly on the number and size of classrooms to the extent that these quantities have become virtually inviolable. Inadvertently, quantity scores higher than quality in the building programmes, as these are more a product of bureaucracy than of pedagogical instruction. This is a difficult construct to dismantle. Add to this an accepted percentage of overhead costs (for wall partitions, maintenance and plant and all other necessary if scarcely tolerated aspects) in square metres, though this surface area is constantly being gnawed at in a move to keep costs down. In the government's perspective, a good architect is one who is able to organize their plan as rationally as possible; the 'ideal architect' makes the seemingly inviolable 'teaching space' as big as possible and keeps the rest, including the corridors, to a minimum. The more conservative teachers, who feel safest within the walls of their own classroom, are all too keen to go along with this. The paradox is that it is only by breaking through this institutionalized economy-driven system of standards that a more efficient use of space, one more responsive to today's challenges, can be achieved.

Nor is it just a more efficient use of what space is available (or made available) that takes us to the concept of a school without bare circulation corridors where every corner is a potential corner of learning; such a differentiated place capacity is equally desirable from a pedagogical point of view. An explosive increase in the number of different-aptitude groups, particularly due to the lack of Dutch language skills among immigrants but also to the rising use of computers at school, continues to fuel the need for places for discrete learning situations. Increasingly, pupils are working individually or in small groups. Another factor is the ever dwindling supply of teachers, so that the idea of pupils working independently is a logical possible solution, be it more for pragmatic than for didactic motives.

Meanwhile architects should concern themselves less with pedagogical aspects and more with the spatial conditions that could be supportive of these. It is in just this area

that architecture is the ideal means of providing fundamental steps towards a spatial order with the school building's accessible spaces articulated in such a way that the place capacity is raised to the maximum.

Outside the classroom you come into contact with others engaged in school activities you yourself are not perhaps ready for yet, which is precisely why they have a magical, galvanizing effect on you. You acquire insight into what there is on offer. This way, you get a taste of what you are going to be confronted with later.

This broader perspective on teaching and learning is not to be found in a building brief, this being set quantitatively. The extent to which this image does in fact materialize depends largely on the spatial conditions the architect is able to bring to bear in his design.

It's all about finding the right balance between places with the greatest diversity in dimensions and such qualities as lighting and 'cover'. The physical cohesion between them should present an overview of it all, so that everything has its own recognizable place within the dynamic of a whole that is constantly changing. Over and again, places are appropriated by others and appropriated differently. In more precise terms, these have to be potential places where an individual or group can settle temporarily.

We must always design in such a way that both components and totality are always open to be appropriated and so incite activity. And if that holds true anywhere, it is in schools.

If architecture holds serious significance anywhere by providing the conditions that invite a richer world of experience, it is here where the riches of the learning environment are so dependent on the space they occupy.

At the end of the day, education, besides being about reading, writing and arithmetic, is about exploring the world. It is not just obtaining insight that is important but, increasingly, accumulating interest and love for the riches our world has to offer. This happens in interactive situations that could be stimulated more by the physical environment than designers are prepared to concede.

4 Education the Dutch way: all school types measured against the same financial yardstick; educational cock-and-bull stories launched as a pretext for cutbacks in expenditure; classroom surface area continually being reduced (student-teacher ratio); State-allotted Council subsidies based on the number of pupils and classes; risk run by councillors through demographic uncertainty; managers instead of inspectors...



◀ Work corner outside the classroom. The doors which consist of a lower and upper panel retain contact with the classroom. Apollo schools, Amsterdam

Threshold space between classroom and corridor

The claim on space outside your territory automatically changes the nature of what it is that separates classrooms from corridors. With corridors changing from circulation area to work area comes an ever greater need for openness; there needs to be visual contact from the classes with those working outside, so that these remain under the watchful eye of the teacher and retain a sense of belonging despite their physical detachment. In time, though, they will come to move independently throughout the entire building as the classroom continues to relinquish its status as sole study area. This working outside the classroom, though close by, brings with it the need for a transitional area that belongs to both corridor and classroom and can be interpreted in terms of its context.

In principle this is a threshold area: it "provides the key to the transition and connection between areas with divergent territorial claims and, as a place in its own right, it constitutes, essentially, the spatial condition for the meeting and dialogue between areas of different orders."⁵

In the bureaucratic culture of accountancy they cling to in the Netherlands mainly in an attempt on the part of teachers not to lose ground, the surface area of the classroom is sacrosanct. You can read from it not merely the history of the authorities' attitude to teaching and learning over the years; the dimensions of the classrooms have attained the status of a right to be defended by the schools at any price. If we go on to consider that the corridors alongside them are regarded exclusively as circulation space and their dimensions consequently kept to a minimum, it becomes clear that there is no place for a zone between classroom and corridor area, at least in accounting terms. It would require considerable persuasive powers to organize such a zone. After all, if you consider this threshold area to be part of the classroom – and there is in fact no other option – the classroom surface area remaining for teacher-fronted lessons would be correspondingly smaller, which is not likely to appeal to teachers.

When the threshold zone is shaped correctly and with the appropriate spatial means, it can give a smooth transition between corridor area and classroom that is more an articulation than a closure. This will leave the whole larger instead of smaller, even though this zone is arguably at the cost of the classroom surface area. With the classroom opened up and the pupils spilling out, the space for education, or rather the learning space as a whole, has become bigger.

⁵ *Lessons for Students in Architecture*, p. 32

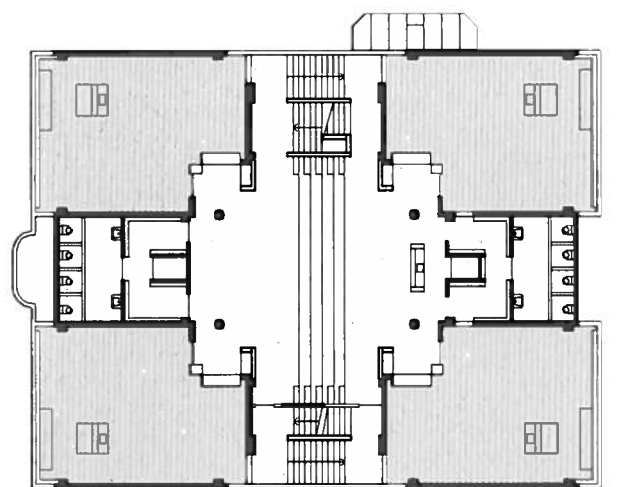
Apollo Schools, Amsterdam, 1980-1983

"If the space between classrooms has been used to create porchlike areas, as in the Amsterdam Montessori school, these areas can serve as proper workplaces where you can study on your own, i.e. not in the classroom but not shut out either. These places consist of a work-surface with its own lighting and a bench enclosed by a low wall. In order to regulate the contact between classroom and hall as subtly as possible

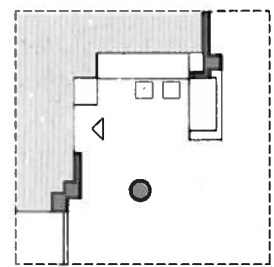
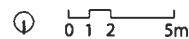
half-doors have been installed here, whose ambiguity can generate the right degree of openness towards the hall while offering the required seclusion from it, both at the same time, in each situation."⁶ As a pupil, you feel the trust you were given to work beyond the immediate supervision of the teacher. As a teacher, you are not entirely screened off from what happens 'out there'. Since computers were intro-

duced at primary schools these places are regularly used as computer work stations. Here as in Delft there is a display case next to the door, a tiny museum and shop window for each class.

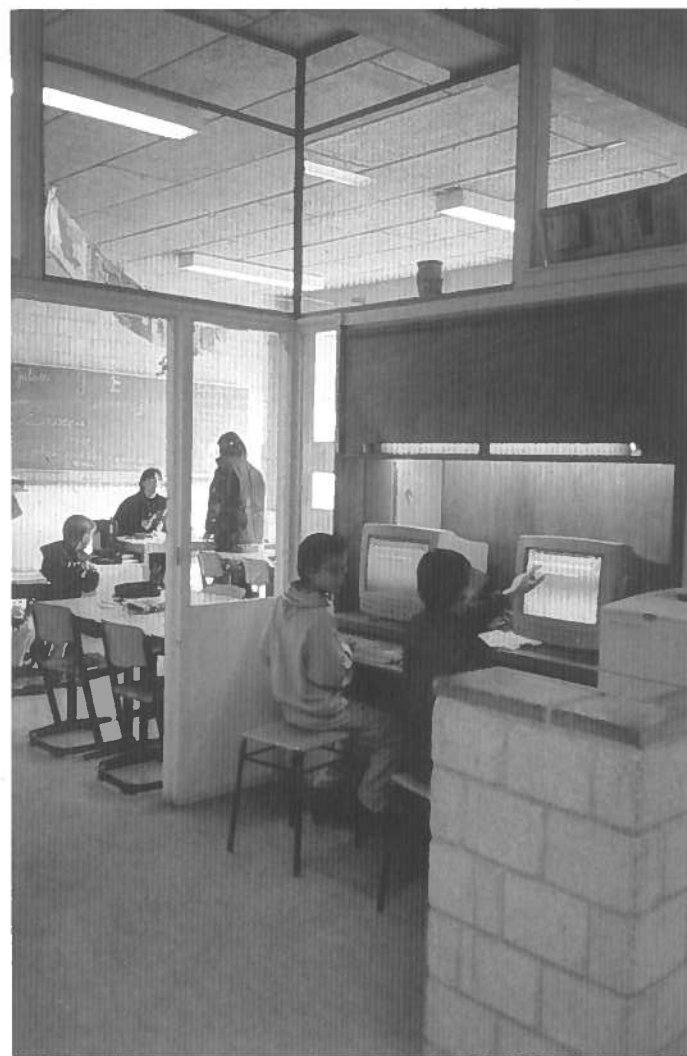
6 *Lessons for Students in Architecture*, p. 31



[1] ground floor



[2] part of plan



[3]

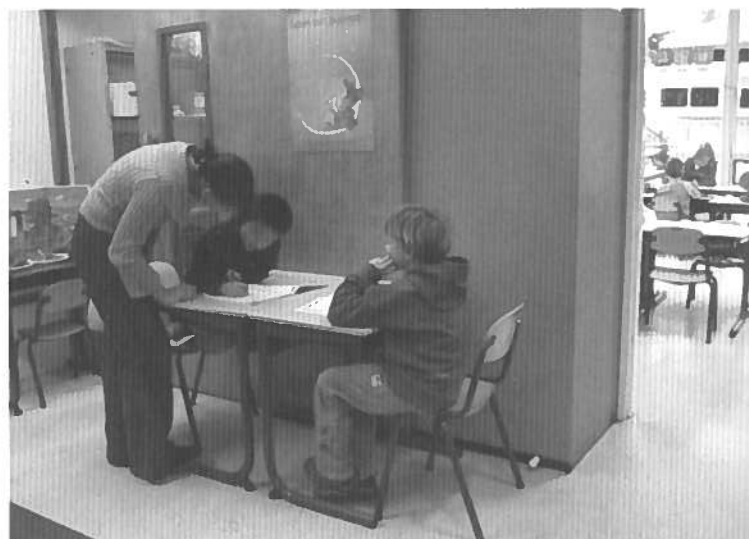


[4.5] ▶

De Vogels Primary School, Oegstgeest, 1998-2000

The transitional area between classroom and corridor, here shaped between the cloakroom and the toilet units, is opened to the classroom through a regular door as well as a sliding door. It invites tables to be placed against the side walls of the adjoining cloakroom and toilet units and against the rear wall of the wet services block in the middle of the space, as workplaces belonging to the classroom but located in the corridor. So it is important to have roof lights above this particular zone as good lighting, especially daylight, lends quality and centrality to a place as a magnet for activity.

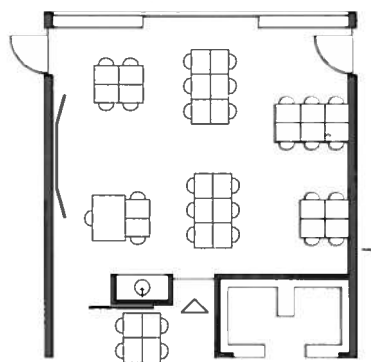
The spatial conditions of the in-between zone, created with marginal dimensions, not only hold out the opportunity to work outside the classroom but actually stimulate such activity. The corridor area is part of the classrooms in places and thus is more than just circulation space.



[1]

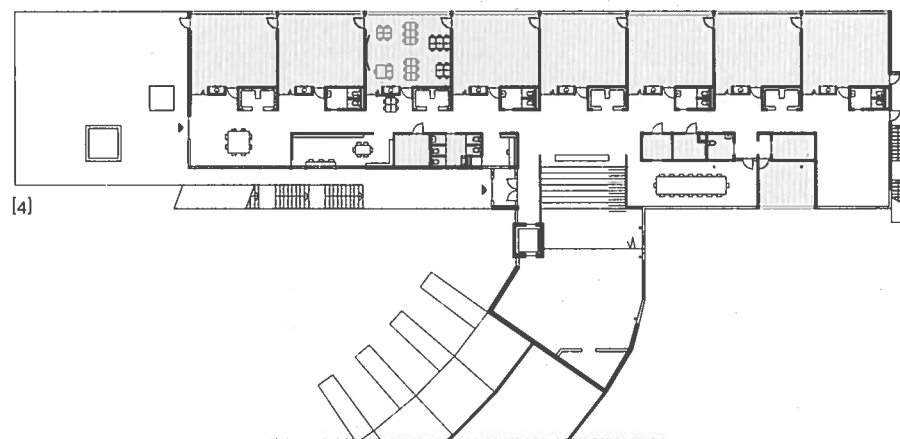


[2]



[3]

0 1 2m



[4]

0 1 2 5 10m

De Eilanden Montessori Primary School, Amsterdam, 1996-2002

Although this school in fact has only 'regular' classrooms, these always function in open mode. Pupil activity takes place all over. There is almost no difference between the classrooms and what you might call the corridor area.

This comes close to a situation in which the distinction between corridors and rooms is

entirely erased. This is certainly due to the pedagogical ideas of this Montessori school and it is difficult to assess what contribution the spatial arrangement makes to it. But, when you see that pupils are at work in every corner and that the space is articulated so as to soften almost all divisions between places, it then seems clear that the

work ambience felt everywhere is largely due to the designed spatial conditions. Articulating the space so as to create a multitude of places contributes to an ambience in which as many children as possible, alone or in groups, can work without disturbing each other, though they continually feel each other's presence.



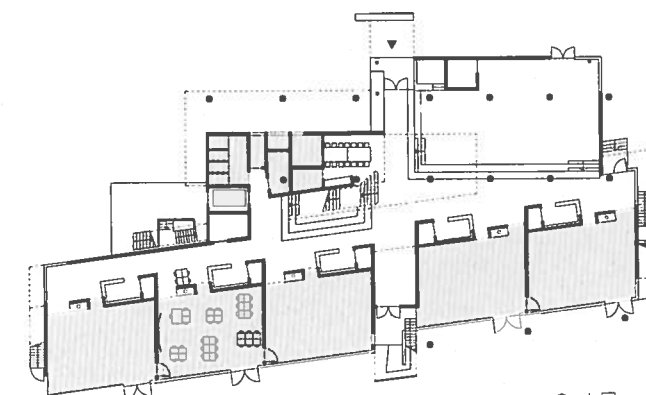
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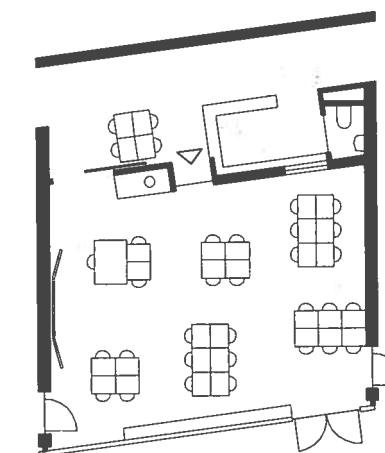


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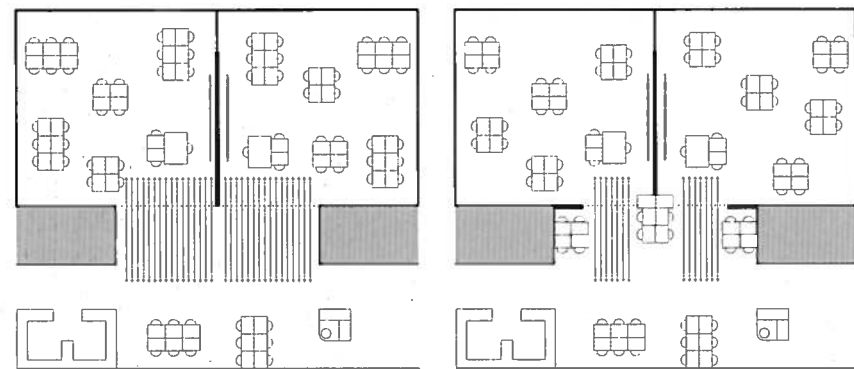
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Extended Schools, Arnhem, 2004-2007

For the five schools in Arnhem, assembled in three so-called Extended Schools, we deliberately chose a configuration whereby the classrooms are no longer closed-off bastions but can be opened up fully to the corridor areas using glass accordion partitions. These corridor areas are nothing like the circulation zones so regularly resorted to; they are shared prefatory spaces

fully fitted out as additional work areas. Here the fear teachers harbour about losing ground is quite unfounded. The ongoing discourse on education has unquestionably brought a greater openness towards new possibilities. So an open learning area was accepted without compromise. Even so, having the largest possible sliding or folding walls is not enough in itself. It does allow

much coming and going but there can only be workplaces if you make corners for them. Besides this openness of classrooms, it is about creating as closely as possible to the classrooms the greatest number of low-profile spots where tables can be placed and places made, so that the work area is continuous.



[1]



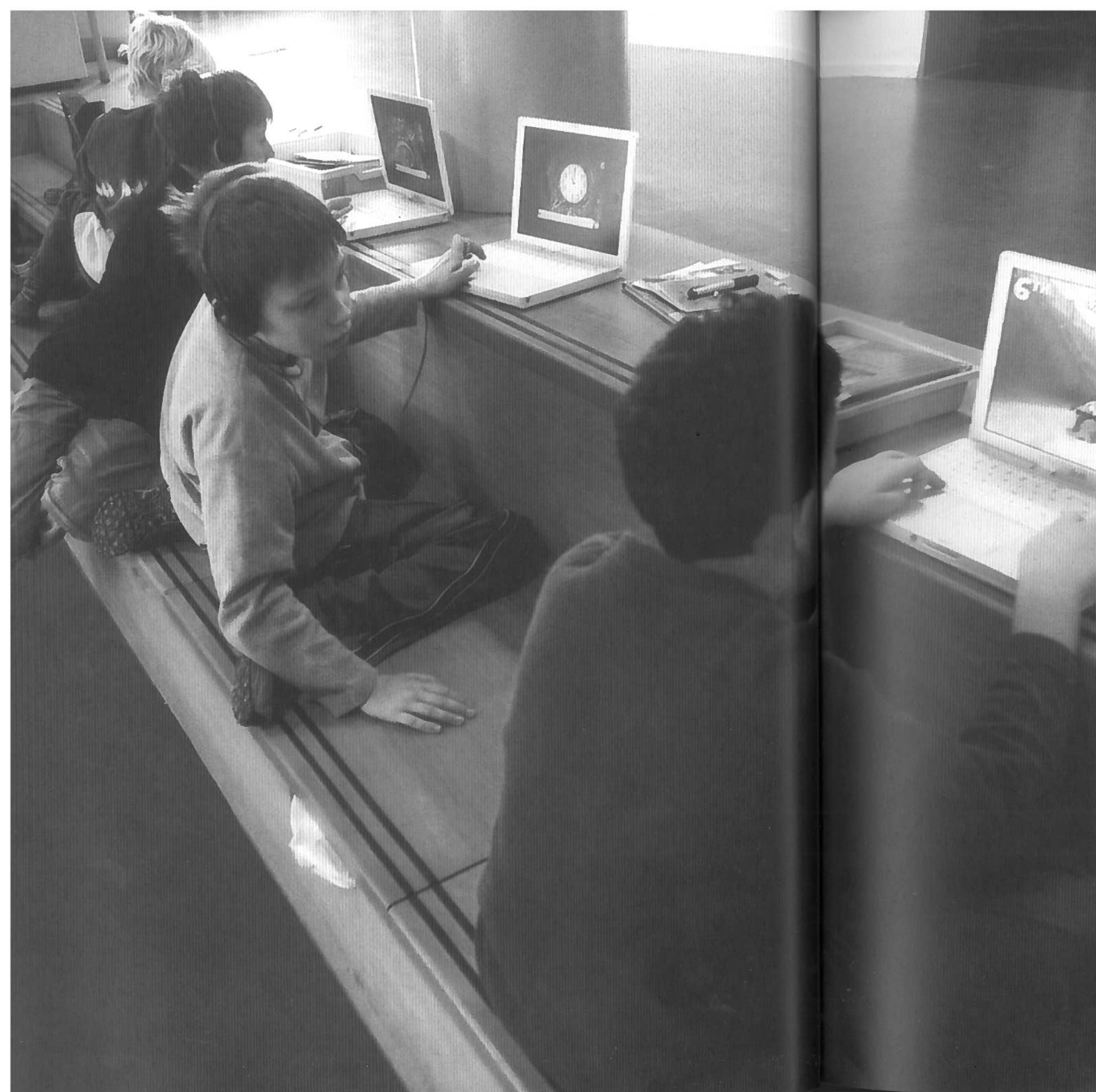
[2]



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[4.5] ▶



Learning landscape

How should architects respond to the countless initial steps being taken here, there and everywhere to change or renew education? Until now, the classroom has been an implacable spatial entity erected round the unambiguous relationship between teacher and pupil and an unequivocal pedagogical paradigm. Once it is abandoned to make way for other forms of learning, it is up to architects to find new, more stimulating spatial conditions and forms.

The ultimate environment for changes in learning where pupils are expected to be more independent, is an entirely open floor plan which can be divided up freely with lightweight partitions that can be moved around to suit every new occasion and change in needs. Teachers should then be willing and able to make those organizational changes themselves. Indeed, up to a point they are better equipped to do this than the architect, especially when it comes to their own programmatic requirements, though it does require an understanding of spatial order to make the most efficient and practical use of the available surface area. So a joint effort should do the trick.

The notion of the classroom-less school has reappeared. This school type had been fairly popular in the USA in the 1950s and '60s but failed to establish itself.

In the meantime, the 'learning landscape' with the office landscape as forerunner (at least in the Netherlands) looks like it's here to stay as a spatial form for schools, though the spatial repercussions are considerable. The teachers are expected to suffer most, whether the architect intervenes or not, as it will be hard not having a classroom, their traditional bastion, to fall back on.

A learning landscape bears some resemblance to a Montessori classroom but is very much bigger. In it, pupils in different age groups work individually on a variety of subjects under the supervision of several teachers. Criticism, justified or otherwise, persistently levelled at this method of working invariably concludes that 'not all children are suited to this type of education'. It is a mild form of criticism of unorthodox education, which is said to make excessive demands on pupils and teachers alike.

What architects can learn from all this is that they should not be beguiled into deploying a minimalism of entirely free plans; these can be fitted out 'flexibly', it is true, but completely lack the permanence and protection pupils can withdraw to if they are to be able to concentrate. There is a reciprocity of educational objectives on one hand and physical possibilities on the other, where what is desired, whether or not driven by social challenges, is simply not possible at present, certainly when you consider the tight budgets that lead to a lack of space instead of the extra surface area essential to every context involving change. A paradoxical situation then.

The shadow of the walls between classrooms will persist to begin with. For the moment, the emphasis will be on the possibilities of combining classrooms, preferably with handy sliding and accordion partitions. Teachers expect miracles of these, but practice has proved that these partitions are scarcely used and merely get in the way. As traditional orthodox forms of education fall away, new spatial conditions will come into play, being basically a multitude of workplaces for smaller groups simultaneously occupied with as many activities.

Not that this necessarily excludes classroom-type spaces. There will always be a call for rooms for instruction. Partitions that model the space at room scale will not rule out a free plan providing they are open to the side where the corridor used to be. An entirely unarticulated space which teachers theoretically can fit out and divide up at their discretion, say with cupboards and other movables, tends to degenerate into an illegible mess. The greater the emphasis on the component parts, the less visible the overall picture and the greater the danger that the parts will come to obscure the whole from view entirely and consequently get lost.

The big picture has to be clear and well-organized, and give a broad impression of what is on offer and the challenges involved. This requires built spatial unity and cohesion, a collective structure, and for that alone you need an architect.

The learning landscape is continually in a state of flux because of the succession of teachers, subjects, resources and ideas. Its major quality is being able to absorb and adapt to these changes, at the same time patently showing up the disadvantages of the rigid system of classrooms.

The idea of a landscape makes its entrance wherever individual freedom is suggested and structure is felt to be unduly imposed from above. Situations and processes that seem to evolve unaided, as if naturally, tend to appeal more and appear more democratic than those that are orchestrated and controlled.

In a landscape setting, then, emphasis seems to be on individual expression. Everyone needs a degree of control over their immediate surroundings and needs to know where they stand there. This does however jeopardize the common interest which is regarded with distrust, although the communal with its wealth of individual acts of expression needs keeping in balance and so should certainly not be neglected. A landscape is a structure too, of course, kept up by an often subtle balance of forces. Because this structure seems less coercive and is often invisible, when used to organize a school it clashes with the strong-arm tactics wielded by the classroom walls. The preference is to mark off compartments with freestanding components, cupboards for instance, to preserve an element of uncertainty. Flexibility is the spatial equivalent of freedom; the freedom not to have to fix anything remains an irresistible illusion and gives the impression of having conquered time. Spatial cohesion is an absolute must.

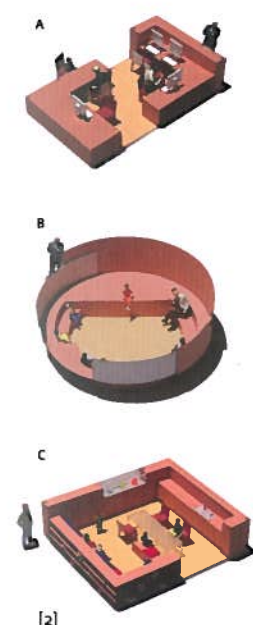
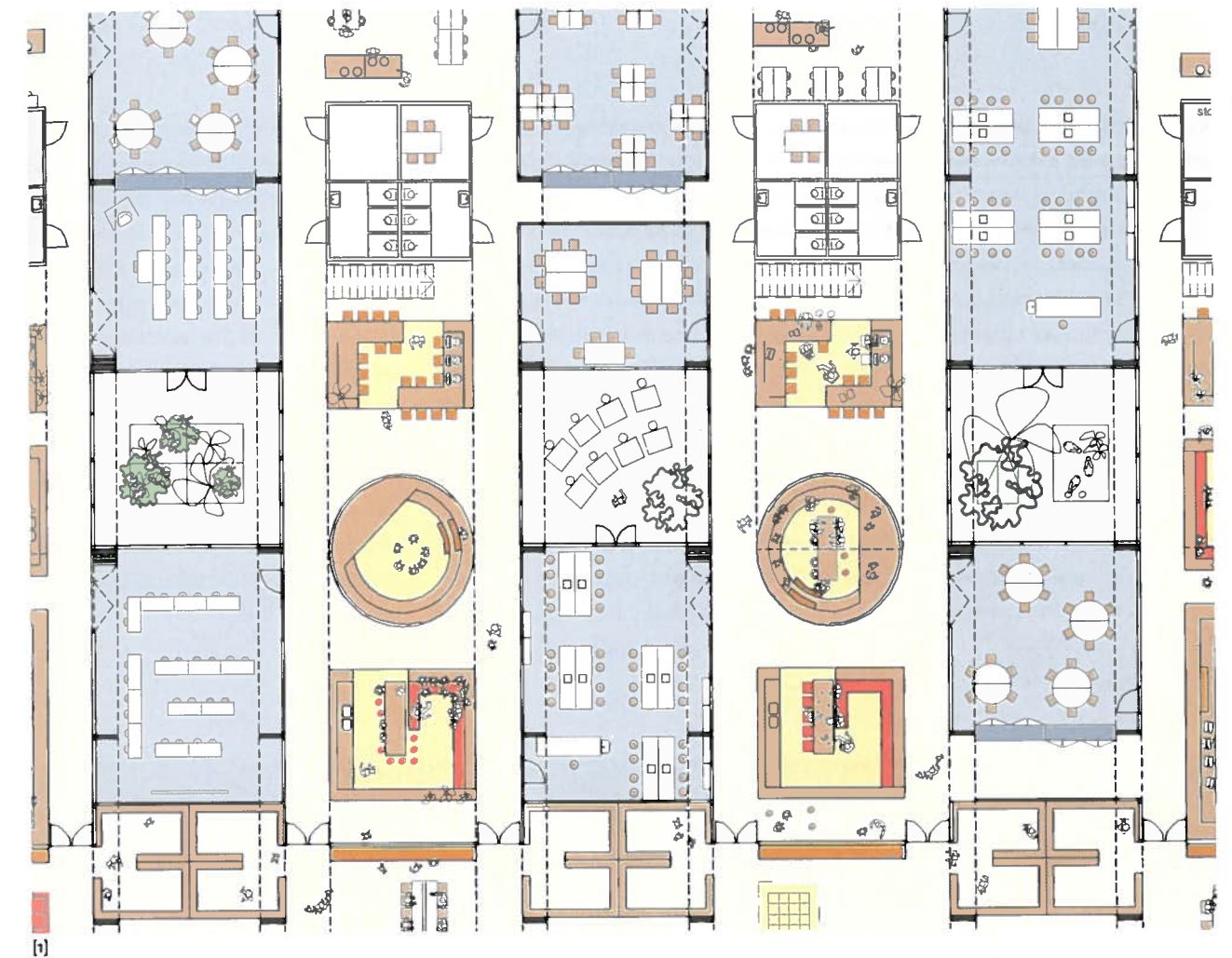
Complete freedom, then, is a myth that mostly prevails in the minds of those who are not free. Freedom ultimately takes account of nothing and no-one; freedom is boundless, like a river bursting its banks, unbridled, unrestrained and all-engulfing. Space must be a bedding that gives direction to all individual forces, bundling them as it were into a common flow.

It is the architect who each time has to guarantee the collective order and express it spatially as the most permanent possible framework in which to house the more specific but also the more changeable of interests; a place where everything has its niche and everyone can feel comfortable, even when the situation, unpredictable as this is, can alter at any time. The correct structural theme, rather than limiting freedom, incites it instead.

Spatial articulation is all about finding an unchanging framework that can adapt to different situations without having to change itself. In that sense it is polyvalent and as a spatial ordering principle, able to adapt to ever new situations.

[1] Typical plan of primary school with classrooms and patio zones alongside free-form zones with a variety of places

[2]
A Help desk / teaching staff base
B Mini-theatre
C Living room / home base



Open Schools, USA

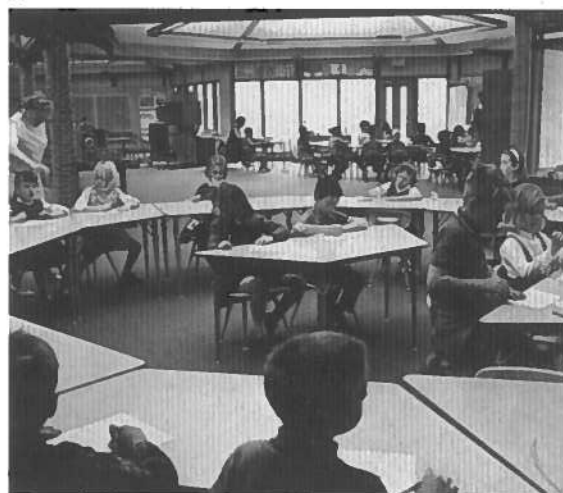
In the 1950s there were already experiments being done in the United States with schools without classrooms, where numbers of groups were brought together in vast indoor spaces, not that this ever produced anything like a distinct building type. Omitting the partitions between classrooms may impact on the social pattern but is not enough to create its own space. So spatially it failed to satisfy what was needed to give groups working alongside each other the privacy they require. In other words, spacious does not mean space. Photos of the 'open school' reveal an assertive position on teaching and learning, yet

surely the different groups, occupying a collective field of vision without the slightest spatial modelling, must have caused each other considerable inconvenience. We see here a striking similarity with the almost simultaneous rise of open plan offices, the office landscape. Here, too, many had difficulty concentrating and were continually inconvenienced by one another. Countermanding this is the greater sense of community and the galvanizing effect a view of each other and each other's work can have. These partitionless, spacious expanses mean freedom before anything else;

freedom from too many elements that are fixed and fixing, and the opening-up of possibilities for a new agenda. What it really boils down to in education – and here we must abandon the comparison with the office landscape – is giving and receiving guidance. The onerous task for teachers of keeping everyone quiet and occupied is not enough in the long run. We only make real progress when the work environment itself manages to bring about a good working atmosphere, without additionally burdening the teachers, so that these can give guidance to their pupils during lessons all the more intensively.



[1]



[2]

[1, 2] Granada Community School, California, USA

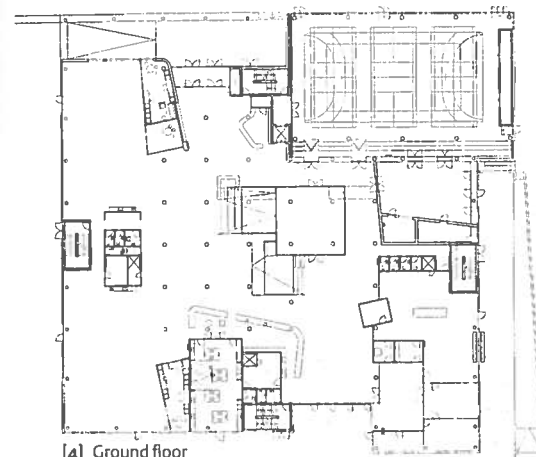
Hellerup Skole, Gentofte, Copenhagen, DK, 2002

Arkitema

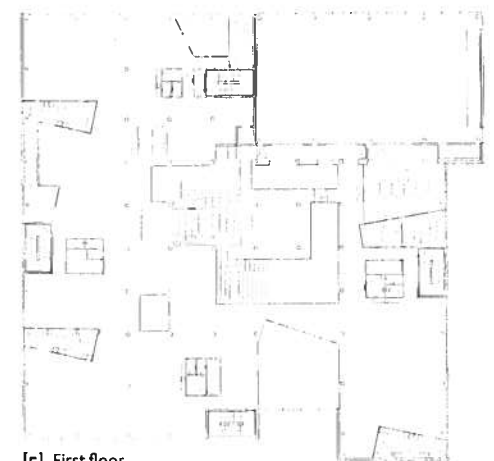
From outside, this internally remarkable building looks much like a regular industrial shed, revealing nothing of the true nature of its extraordinary contents. Even its entrance is relatively inconspicuous. It is only after entering it through an enlarged gateway where all the children leave their shoes, that the unusual set-up is made clear. The Hellerup Skole is entirely open save for some dedicated subject rooms. Half-height walls of lockers are all that separate the learning zones or 'home areas' from the main space, dominated by wide stairs doubling as seats, that draws the three storeys together. In the home areas are enclosed

hexagonal pavilion-like structures equipped with seating, around which group lessons can be given to 15 to 20 children. There are also places shaped by cupboards, benches and small platforms two steps high. If there is a learning landscape anywhere it is here, where a scarcely discernible division into home areas for 75 to 100 pupils takes the place of classrooms. The school can accept 550 pupils all told, with a good 9 m² per pupil. This is something like three times as much as the standard stipulated for Dutch schools. It is probably an exception in Denmark too, although it is patently obvious that that country holds education in the

highest esteem. This loose-fit approach to space does show what the possibilities are when there is no need to haggle over every square metre of ground. There is clearly a relaxed atmosphere because of this, making the learning space something of a workshop whose openness incites a degree of dedication. You see children occupied with all kinds of 'creative' subjects; there are enough teachers in Denmark for this work and no lack of equipment either. There is even a corner where you can catch your breath and perhaps read in peace for once.



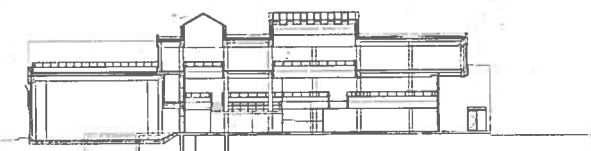
[4] Ground floor



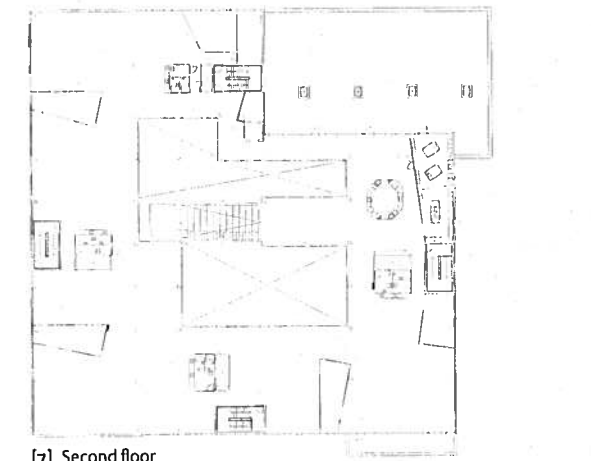
[5] First floor



[3]



[6] Section



[7] Second floor

This school unquestionably comes close to what we envisage as a space suited to teaching and learning today. It could be more clearly organized, though. You may be able to see and experience the periphery wherever you are, thanks in particular to the toplit central well reaching up all three

storeys, but a more structured space would provide the order and clarity that would give everything a more permanent place. As it stands, it might come across as an excessively large and complex world with no clear orientation points and a prevailing uniformity in which children could get lost.

What is certain, though, is that the Hellerup Skole is a three-dimensional rendition of a new life-feeling that is much talked about but all too rare in reality. That in itself gives this school a significance that cannot be overestimated.



[1]



[2]



[3]

Extension to De Jordaan 14th Montessori School, Amsterdam, 2004-2006

Existing buildings can also be adapted to suit education today, retaining the original main structure of classrooms on two sides of a corridor.

Here, what were at first isolated classrooms were assembled into one big space by making large openings in the walls of the old solid school building and inserting glass accordion partitions that can be folded

away. The remaining wall piers become screens between departments. This gave rise to a single articulated space in which multiple groups of children can work together independently of one another but still with a feeling of community. So while retaining the building's structure, this gives a cohesive learning area with no sign of a corridor or of traditional classrooms. The

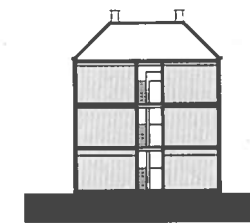
different parts can be shut off to function as individual classrooms should the need arise. The term 'learning landscape' immediately brings to mind a large undivided area of floor. This does give the greatest freedom, in theory at least, but it is the articulation, here created by the remaining walls, that holds out the greatest potentials for use.



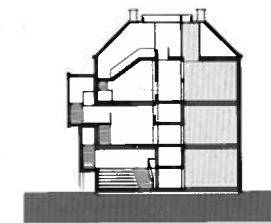
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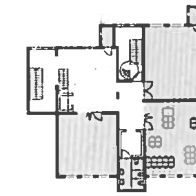
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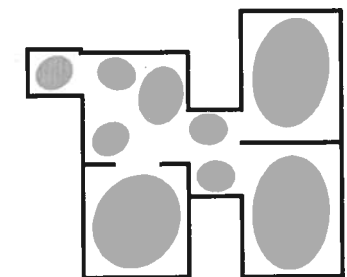
transformed



[6]



0 1 2 3m



[7]

De Monchy School, Arnhem, 2004-2007

In this school, part of De Spil Extended School in the Malburgen-West area of Arnhem, the classroom principle has been abandoned entirely. There are, however, glass accordion partitions that can be used to create classroom-like spaces should these be required.

The whole proceeds from a structural system that permits free floor spans of some 12 metres and therefore avoids such structural obstacles as supporting walls that could influence any potential subdivision of the space. The only fixed elements are the toilet blocks, cloakroom units and storage

units around which the space can be freely fitted out.

The school consists of 'zones' of 75 pupils with three teachers who can move from place to place or be consulted at a central help desk. If a learning landscape leads one to expect an entirely open space with

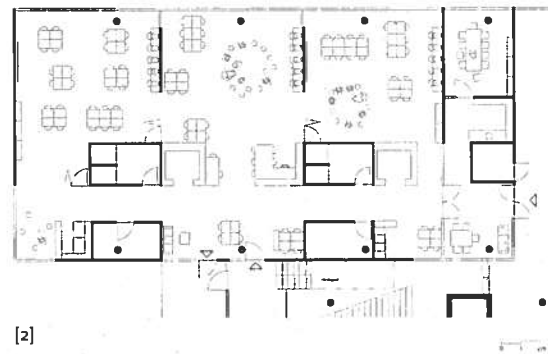
theoretically the greatest freedom, here the space is articulated by the fixed toilet blocks, storage units, cloakroom recesses and areas of partition wall resembling the remains of former classrooms. This opens up opportunities for place-making. All 'obstacles' are sited so as to encourage the

greatest number of places suited to smaller or larger groups of pupils, in such a way that the circulation space between them is not hampered. Ultimately, the learning landscape thus articulated will offer more opportunities for individual workplaces than the seemingly greater freedom of an

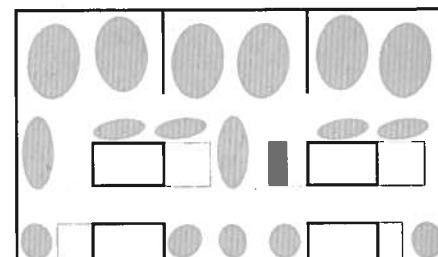
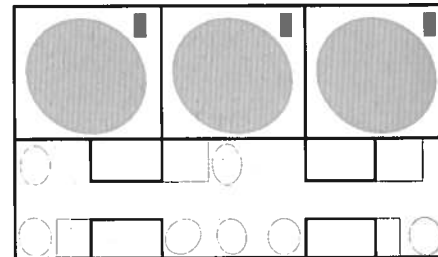
entirely open space. Besides, it is more difficult in the last-named instance to fall back at any time on a classroom-like subdivision.



[1]



[2]



[3] Potential working-places



[4]



[5]