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Preface

For a Contemporary School

Tullio Zini

To me, the “world of school” has always seemed to be one so complex as to remind me of Mandelbrot’s “fractals” in which, at any scale we move in, we find the same complicated structure and the same, often thorny contours; this has always triggered my fear that we can easily get caught up in the endless series of problems that the “world of school” brings with it. When I began studying architecture in Florence in the 1960s, there was a climate of great hope arising from the thaw in the Cold War and the encounter between Italy’s two cultures – social and Catholic: a period of great effervescence, it looked as if the world was to be entirely reinvented, and that everything could be designed.

The Ministerial Decree of 1975 on school construction can also be connected to that climate: an optimistic, high-quality work that anticipated more thoughtfully designed schools, with new spatial fluidity and with sensible requirements on size and the placement of school buildings in urban design. Then, since the world did not take a great interest in the plans of young Florentine architects, the 1975 Ministerial Decree was often disregarded, and quality schools in Italy are a minority.

After these hopes, generous or naive as they may be, a “great amnesia” swept through Italy and much of the Western world, cutting these dreams – along with the hopes of a new culture, the world of school, and an urban planning that relates the school to the city – down to size.

It seems that events of enormous importance, like the fall of the Berlin Wall, the rise of new players like India and China on international markets, globalization, and the digital revolution, have gone by without being promptly perceived, and almost without leaving a trace in the world of school, culture, and politics. Confirmation of this “amnesia” can also be seen in the condition of buildings, schools, some universities, and our cities’ peripheries, too.

After I graduated university, I found myself in an intense relationship with the world of pre-primary schools in Reggio Emilia, and in that collaboration I realized that not only can a strong, child-centred pedagogy, one that had introduced an atelier into every school, powerfully influence the school’s organization and its relations with the parents and city; it also prompts a substantial transformation of teaching spaces and furnishings. This experience then expanded to the relationship between pre-primary and primary school. This was the occasion for my involvement, alongside the architect Michele Zini, in the development of new Guidelines for school construction.

When in late 2012 I found myself working with Indire researchers in Florence, there was immediately a relationship of attention, a dialogue that sought to utilize the boundary spaces that allowed us to operate without interfering in other areas of responsibility. Just as it was challenging for me to follow what pedagogists with different experiences were saying, I don’t think it was easy for them to find their bearings in the complex world of school construction and its relationships with architecture, design, building size, cost assessment, and a relationship with the city.

Indire had already actually initiated a highly substantial documentation work on the most interesting offerings of global architecture; however, for those who are not architects, it is hard to properly assess examples originating from different cultures in order to test their applicability to our country, due to inevitable differences of social structure, lifestyles, climate, use of light and shadow, environmental culture, aesthetic sensibilities, the different value assigned to having lunch together, and so on.

I think that, 37 years after 1975, dealing with so delicate a problem was an act of awareness, but also of courage, because upgrading and reinventing school buildings introduces an enormous set of social, cultural, pedagogical, and trade-union-related problems, and can become a rather explosive subject.

Regulations end up being the mirror of a situation – practically the snapshot of a cultural

and economic period; just as the 1975 Ministerial Decree placed confidence in planning, the new regulations ought to provide guidance on how to act in the current, continuously and often unpredictably evolving situation.

The new regulations should also give rise to the awareness that the school is a living organism that, over time, is enriched and changes following the pulse of life and its transformations, while the existing school building stock consists to a large degree of anonymous or unsightly buildings that are poorly cared for, non-places in many aspects, unable to motivate students or involve them on an emotional level. This is the opposite of what Edgar Morin suggests: that schools ought to be “beautiful” because students must feel welcomed and loved.

The cornerstone of the new Guidelines is the end of the classroom as the central place of teaching, and the end of the idea that other spaces are substantially complementary to education based on frontal communication.

Considering the classroom not as an immutable container but as a space of basic reference to start from, and to which, when necessary, to return, a space that is transformed while connecting with other places or laboratories within a complex system of spaces for socializing, for quiet reflection, and for group assembly, creates an expanded school environment. With new visuals and spatial depths, it is a new and engaging organism that corresponds to a varied, non-linear, stratified culture, a three-dimensional matrix that changes and pulses in accordance with the needs that will develop in the school's life over time.

Having become part of a more complex organism, classrooms dissolve, so to speak, into the environmental and school fabric, just as learning must dissolve into life.

In the new buildings, it will be highly important to make careful use of certain intangible aspects of architecture, like light, colour, and sound, which contribute decisively to the spaces' quality of use. In addition to attenuating natural light, the quality and variability of artificial light will also have to be controlled. And not just primary colours: chromatic scales more attentive to tone and saturation will be needed, in keeping with the great Mediterranean chromatic tradition. Moreover, the spaces' acoustic quality, which may be distressed by changes in size, needs to be controlled.

These new building types, which have to be adapted to our environmental culture, require informed, measured behaviour by the students. This can be achieved only with the student's independent activity, which has its purpose and makes sense within a group activity, while learning to collaborate with a teaching effort managed on a daily basis, that continuously evolves but must not be disturbed by this variability.

The students' autonomy and awareness are the only guarantees that, in permeable, flexible environments, can enable a school activity compatible with the silence needed for teaching activities – a behaviour that already exists in some Italian schools and is quite widespread in the schools of northern Europe.

The new teaching leads to buildings constructed on the basis of a three-dimensional matrix of relationships. Inevitably, this set of connections will be modified over time, as it was in the history of Italian walled cities, where functions intertwined and overlapped as they changed down through the years. This school no longer makes reference to zoning, as was the case for post-War urban planning provisions, but uses a matrix in which the various specialized spaces, like the agora, the auditorium, the *ateliers*, and settings for

music and sporting activities, dialogue with one another in changing, elastic relationships.

These new buildings will have to become “civic centres” that can weave together the threads of the neighbourhoods’ life and promote the use of facilities like libraries, the auditorium, and gymnasiums for extracurricular activities, while expanding the time for using them – all towards nurturing community life.

For the new school, design quality will be highly important, as will the attention given to trying to establish compatibility with this extremely quick and chaotic “inflation” (so to speak) of inventions, evolutions, and new events.

These complex buildings can become more or less effective only if the design’s capacity for synthesis is used to its full extent in order to harmonize often contradictory needs and make them compatible – and to create order among the multitude of data: aesthetic, quantitative, technological, economic, management-related, structural, and so on.

The new schools will have to be more flexible not only in everyday life, but also over time, and it must be taken into account that this necessary flexibility requires plant that is technologically more sophisticated than the present – and that, even with more careful design, cannot be more inexpensive than it currently is.

The new plant will have to aim to reduce operating costs for electricity, heat management, and ventilation for the years to come, while acoustics will have to be more careful. It will be necessary to conceive buildings that are rigorous and essential, and with no excessively specialized spaces, in order to leave users the possibility of intervening and transforming the buildings in parallel with future cultural and social changes.

“Basic landscapes” need to be established, for being inhabited and then modified day by day, with awareness that a school is like a living organism – one that, over time, is enriched and modified in accordance with the pulse of life and its transformations.

While also working carefully on the buildings’ size, the flexibility and permeability of individual, group, and general spaces will also impact the total cost, due to flexible compartmentalization, acoustic control, and the modularity of plant; it must be ensured that management and maintenance costs are not increased.

To develop new school models and make them realizable, we must broaden our gaze and make reference to the skills originating from industrial construction that is in some cases highly sophisticated, or to the recent experiences of building labs/offices, and hybrid spaces. This will require using a more modern and mature prefabrication, streamlining and simplifying construction, creating an effective flexibility through the design of modular plant, and studying buildings with reduced or no energy consumption, and with low management and maintenance costs.

Buildings need to be designed with highly specialized exterior walls, layered like space-suits, in order to regulate – with respect to the exterior – light, temperature, heat emission, and the materials’ duration over time: in these times, true economy of real estate investment translates into savings on consumption and management, and energy-self-sufficient buildings may be realistically conceived.

To believe that schools are positive investments for a society and to envisage them as well sized, well equipped, and well built, may appear beyond current economic pos-

sibilities; however it is only a matter of setting priorities: investing in education is the best way to deal with the current crisis which, more than being an economic one, has cultural and ethical roots.

Drowned out by the background noise of daily life, great and ineluctable transformations are taking place, such as digital technology's impact in society and the employment-related problems that will inevitably be caused by the applications of artificial intelligence to the world of production; perhaps only a general development of the new generations' cultural capabilities and of their independent judgment will allow all these new realities to be dealt with and managed.

A major problem is the condition of the Italian building stock, because these structures, obsolete in addition to being technologically and statically inadequate, cannot be transformed or replaced in the short term. Instead, a whole series of interventions, even small ones, that can gradually adjust the buildings to the needs of the new school, must be planned.

In the case of buildings of fair quality, generally the older ones, intervention is possible with small, coherent and ongoing variations, somewhat as was the case for Japanese cameras in the 1980s which, on the strength of small changes, had in fact become something else.

Once rigid, these buildings can be adjusted by reducing the central focus on the class, partially opening their walls, intervening on connective spaces, and working with the furnishings or with adequate spatial systems: small environments within large ones that can end up effectively transforming their entire building. This operation can succeed only by making the school's rhythms, schedules, and use more fluid, all at the same time. To confirm this mode of action, a great many interventions for the reconversion of production buildings have yielded excellent results, and their success derives from very clear design settings and rigorous construction; the quality of the transformations in labs, lofts, residence and work, community services, and so on comes thanks to this rigorous and essential nature.

I keep returning to the schools' relationship with the city, because in most urban plans, the areas designated for schools are leftover land – the least desirable plots, the ones least valued.

A school does not easily come into being as the centre of a neighbourhood, but rises where open space still remains: space left open because it is unattractive or poorly served. If the school is unfortunately situated in the city, no construction design, no matter how careful it is, can on its own overcome the limits of the urban planning choice and guarantee its effective qualities as a “civic centre,” as an effective place of social gathering. Too often, poorly designed urban planning prevents children from walking or cycling to school on dedicated paths as required by the 1975 Ministerial Decree, and this contributes to a commute that we have grown used to in spite of its being economically and ecologically unacceptable. This increased vehicular circulation cannot be eliminated without intervention involving a change of urban planning policy, and this is one of the legacies of the failure to apply the recommendations of the 1975 Ministerial Decree and of the failed urban planning reform of the 1970s.

There is one word that any work to frame regulations almost inevitably lacks: “beauty,” because it is a subject impossible to approach without referring to a certain cultural homogeneity and a shared artistic sensitivity. Although stubborn problems may arise, the topic must not be neglected on that account.

The search for beauty can be an effective working method for more than artistic activities; it is also adopted as a criterion of choice by the most clear-headed scientists, like the Nobel prizewinning physicist Paul Dirac, who spoke of “beauty as a method” for his work – an attitude towards which today’s society is not very sensitive.

The filter for seeking beauty may in the end turn out to be more effective than what one may think. In private life, the search for beauty, for those who are enchanted by the astounding beauty of the world, is a way to try not to betray it and, to the extent possible, to attempt to find it in what it does.

“Beauty” is the value to which we most easily refer when evoking the great historical eras. The works of great artists – the likes of Phidias, Giotto, Piero della Francesca, Brunelleschi, Donatello, Leonardo da Vinci, Michelangelo, Le Corbusier, Mies van der Rohe, Henry Moore, and Kapoor – are the most effective and representative summary expressions of their times; designers of new architectures are also duty-bound to relate with our own great architectural tradition, with the culture and languages of the local architecture, and with the most recent great Italian architecture.

Behind the need to quickly construct new spaces, building is quite frequently confused with architecture. This produces buildings without quality, and neglects the fact that the adults of tomorrow will necessarily have to be formed in those settings.

Reducing the design process to a mere question of costs and of respect for the endless number of existing regulations would result in a new, “great amnesia” and, in Hillman’s words, a “cultural anaesthesia” as relates to public spaces that would certainly have a negative impact on the relationships between people and the school environment.

One of the purposes of the Guidelines we wrote is to contribute, in this era of great and unforeseeable changes, towards the ability of new generations to take charge of their future so difficult to imagine today, to dream that future, and to undertake to achieve it. When asked about the future, Giulia, a chubby-cheeked 5-year-old girl from the Emilia region, said: “The future is a beautiful day.” I think that, for the future of the Italian school, we have to strive to turn Giulia’s wise and poetic definition into reality.

Introduction

Giovanni Biondi

This book is part of a research work initiated in 2012 when, with the then Minister Francesco Profumo, ANSAS was tasked with developing a study on reorganizing spaces in relation to the transformations that school systems were undergoing around the world. That research arose during the period at the start of the *National Plan for Digital Education (Piano Nazionale Scuola Digitale – PNSD)*, a point of departure as relates to the need for school change. The first result of that research was presented to the Ministry of Education, University and Research at the international conference *Quando lo spazio insegna* (“When Space Teaches”) that discussed some of the schools presented in this book and illustrated in *Rassegna fotografica di luoghi e spazi nella scuola contemporanea* (“A Photography Review of Places and Spaces in the Contemporary School”), edited by Giuseppe Moscato.

New buildings, born from the need to transform the educational model: interior design and furnishings that guide the organization of teaching towards new scenarios. Concrete examples of real, future-oriented change. When, instead, buildings remain the ones we know, derived from 19th-century choices, a negative relationship between educational practice and school environments is inevitably generated, which encourages immobility and works against change. Indeed, if Italian teachers were to find themselves in one of the school situations presented in this book, they would be stimulated, nearly obligated, to change their way of teaching. The school space's design is a powerful element capable of triggering the innovation of educational models that can no longer remain confined to the blueprints, all identical, of Italian schools: school buildings of hallways and classrooms; normal classrooms and classrooms barely more 'special,' often adapted ones – what we call laboratories. Then, desks, chairs, blackboards. Spaces furnished in a uniform, sad, and often shabby fashion. These environments come to us from far away and have a long history, one born with Italian Unification. Re-counting the events that have brought us to the present today is an essential passage for understanding the reasons why the more than 40,000 schools in Italy (most of which are at least a half-century old) have come down to us with these architectural features and with these furnishings.

All the great educational systems in the Western countries arose more or less during the same period, with the objective of “transmitting” knowledge to a generally illiterate population that came from the countryside and had to enter a society that was becoming industrialized. The minimum condition for exercising citizenship rights, and in general for exercising rights in the new society that was taking shape, was, first and foremost, that of overcoming illiteracy. Illiteracy has always meant isolation and the impossibility of climbing the social ladder – issues that, while of little or no interest in an agricultural society, acquired a new light in industrial society. The skills needed to work in the fields were orally transmitted by elders, and one learned how to prune an olive tree or grapevine by watching it be done. Bad pruning can result in less product: a simple concept that is easy to verify and assimilate. To a certain degree, agricultural society still maintained the practice of “workshop learning” imparted by a master, so widespread throughout the Renaissance. The rise of industrial society quickly necessitated overcoming this model, with the demand for specialization, for different skill levels (and the related possibility of being able to climb up the hierarchy), and for specific training. However, industrial society, which replaces animal with motor-driven power, still trusts humans with “information control.” Workers at large factories control individual segments of production and the machinery's operation: they are the ones who manage the information necessary for the work. Large educational systems are designed like “businesses” with the gigantic aim of making a whole nation literate. In this context, the lesson – that is, the transmission of knowledge by a teacher and textbook study – is the solution that is least expensive and most functional for achieving a goal with impressive numbers. Nor should one underestimate the need to create, through school, a new generation of consumers who were supposed to feed the growth of a rapidly developing domestic market. While the rural world continued to make great use of an exchange economy and the market was reduced to just a few consumption products, industrial society required an expanding domestic market. Throughout central Italy, where sharecropping was widespread (limit-

ing the market's growth because the sharecropper consumed the farm's products and sold low quantities of them), schooling struggled greatly to expand, and until the middle of the 20th century, students left after the second or third grade. More than anything, the school remained the symbol of a unified state that required it. Only the development of cities and factories determined change and a need for education. School thus acquired its own function within the country's progress. In other areas of Italy, where the industrial model was advancing more quickly, school was also quicker to spread. Likewise, in the south of the country, the lack of adequate growth slowed the spread of schools. In this context, the design of furnishings was decidedly limited: desks, chairs, and blackboards became the very symbols of school. In the chapter "From Discipline to Design: the Evolution of the School Desk in Italy (19th-20th Centuries)" Juri Meda deals with this topic and traces its history. Meanwhile, Marco Canazza's chapter "The Contemporary Italian Landscape of School Furniture" illustrates the future prospects of the school furnishings sector in Italy.

In choosing furnishings, few precautions were adopted: three-person desks were supposed to "restrain" the most exuberant youths who, sitting in the middle seat, were to a certain degree kept in check by the classmates sitting beside them. All was under the supervision of the teacher who had a complete visibility of the classroom thanks to the platform on which the desk was placed. Luigi Berlinguer, in his *Foreword* to the book, cites the fresco *The Allegory of Good Government* in Siena's Palazzo Pubblico, «a lord, a member of the clergy, addresses from the pulpit the people below as they listen intently to his words. This is how schools were born: from the pulpit, *ex auctoritate*. The pulpit then became the teacher's desk, a step lower because the voice was not God's, but a teacher's». And so, for so long a time and down to our days, this is what our school has been: a mechanism to transmit knowledge. In the young, unified Italy of the late 19th century, a little bit of everything was done in all settings. Francesco Bergamini (the 19th-century Italian painter) in fact painted these improvised classrooms with large braziers at the centre, and mostly elderly teachers keeping warm near the fire: blackboards were ever-present, as were benches and improvised desks for the students. Giuseppe Constantini, another painter of interiors from the second half of the 19th century, rendered schools from that time in order to depict contemporary society and denounce its poverty: large rooms with a fireplace where the "poor" teacher, holding a long rod in his hand, taught barefoot youths. It is clear from those paintings that the students, habituated to life in the fields, had little tolerance for discipline. On the other hand, the classroom was a truly unalluring place – one that certainly did not encourage learning-related activity. A normal room could easily be used as and transformed into a classroom, and any building into a school. To be sure, given the need to accommodate a rapidly growing school population and to establish schools even in remote places, any reflection about spaces died on the vine: any rectangular room furnished with the bare minimum was enough. In the 1860 Regulation, the Ministry specified that:

«every school shall have: 1 – desks with chairs in a sufficient number for all pupils; 2 – table with a locking drawer and a seat for the teacher; 3 – a locking cabinet for books, written work, etc.; 4 – a stove to heat the room [...]; 5 – an inkwell for the teacher and built-in inkwells for the pupils [...]; 6 – a chart showing the basic units and measurements of the metric system; 7 – a crucifix; 8 – a portrait of the King».

Some more precise rules were laid down in 1923: classrooms would have to be rectangular in layout, ranging from 3.5 to 4.5 metres in height; the walls and ceilings had to be painted in bright colours, while a baseboard around the classroom, 1.80 m high, had to be painted grey. How many primary school classrooms have come down to the present day with this grey baseboard that was intended to prevent graffiti and facilitate cleaning, but also to offer the possibility of hanging posters without ruining the plaster? When looking today at these large systems that appear increasingly obsolete, we have to remember that they acquitted themselves quite admirably in their tasks, ushering entire generations out of widespread illiteracy. Nor are we talking about a whole geologic era ago, considering that *Non è mai troppo tardi*, the Italian television show targeted to illiterate viewers, dates back only a little over fifty years.

The first cracks in the system already began to be felt in the 1920s, in primary schools, where the system and the disciplinary fragmentation were less accentuated. Although the criticisms at that time had to do with methodologies, they almost immediately ended up involving spaces and furnishings as well. What was questioned was the rigidity of the system that demanded from the student an unnatural adaptation to space and time. As early as the 1920s, Freinet, Montessori, Lombardo Radice, and other figures of that ilk, along with the entire activism movement, had stressed that the centrality of the textbook and lesson clashed with the needs of children, as did the spaces connected to this kind of organization. What was stressed at that time was, above all, the fact that young students were being asked to adapt to an environment based on immobility and attention, with desks, benches, chairs, and furnishings that compelled unnatural, forced actions. This story is well described in this book's own chapter by Pamela Giorgi: "Development of School Construction in Italy (19th-20th Centuries)". Teachers who became famous, like Bruno Ciari or Mario Lodi, then overturned the paradigms of what was then a full-blown educational ritualism: lessons, study, tests. By questioning these key elements, the physical environment and the furnishings inevitably became cramped and inadequate. The classroom doors were thus opened, and all possible space was used. Desks were moved, the teacher's desk disappeared, and the environment was populated with "places of direct observation"; this was the method we now call "learning by doing." By collecting data from small weather stations, statistics and trends tracking temperature and the seasons were constructed; observing fish in an aquarium and carrying out small experiments with plants built a knowledge rooted in experience. Writing also had its own lab and unconventional tools: the print shop and the limograph (later supplanted by the mimeograph) to print the results of research, or for the class newspaper. Since that time, the experimental method has been at the centre of the innovation activity of a great many primary school teachers who strove for the school to adapt its languages, methods, and spaces to the children.

«What is done today to provide the notion of the weight of various liquids? After telling them that liquids have different weights, we have the pupils study a list in which the various liquids are ranked by weight, and the pupil with the best memory knows the most. On the other hand, the experimental method leads the youth to observe that if he or she is putting a certain quantity of water into a glass, and then a certain quantity of alcohol, the alcohol floats, and this happens if oil is added to water, but it does not take place if alcohol is added to oil [...] The customary school tells children that the necessary

conditions for plants to develop are light and warmth. The experimental method has the child place many seeds in water and others out of water, in order to see for him or herself how plant life needs water [...].»

This was written by a teacher, Giuseppina Pizzigoni, in the 1920s, with the aim of founding her pupils' learning upon reflection, direct observation, and reasoning: that is, upon an experimental method. The "new schools" – those schools and, in the end, those teachers – for which the didactic exhibition led by Giuseppe Lombardo Radice in 1925 came into being, and upon which Indire was born, are designed as student-centred. These are teachers who transform rote study and textbook parroting into an experience of building and experimentation, of direct observation, of manipulation and construction of critical thinking. The classroom, initially conceived for focusing on lessons, also became inadequate, as did the furnishings adapted to a new teaching model. This conception of the school as a "learning environment" focusing on the student's activity has reappeared a number of times since 1925 and to the present day. However, attempts to transform teaching and the educational environment have always clashed with a world forced constantly to use paper, the written text, and "objects." To our own day, this materiality has imposed precise boundaries on the possibility of basing learning upon direct experience. And this has also been the reason why these pedagogical ideas have given rise to movements, methods, and initiatives almost exclusively in primary school. The environments, the schools' interior architectures, born in a manner that serves the needs of a transmission model, are adapted to become diffuse labs, with at times modest results. Indeed, the increased school population gradually reduces the spaces available in the school building, and everything therefore ends up being concentrated in the classroom – a space that, in the best of cases, is organized in "corners" dedicated to this or that activity, to group work, and to hosting the technologies needed to transform the educational model, at least in part. But these are compromises. In the end, any transformation is limited by the rigidity of the layouts, conceived and designed in a context and with different objectives.

Division into sections, each with a teacher (or two, in the case of full-time primary school) also means automatically assigning a more or less large classroom based on the number of students. Thus, the teacher who seeks innovative models is also forced to make do with the space and furnishings of the classroom, an inflexible environment with little toleration for transformations. But primary school boasts a long tradition of didactic innovation and of transformation of the transmission model. It comes as no surprise that the most incisive transformations of the school environment, arising in the schools of Reggio Children and described in Giuseppina Cannella's chapter "Reinventing Learning Environments. Pedagogical Planning and Participatory Design," came into being in fact in preschool and were then extended to the primary level. Reggio Children is an Italian model that is little known in our country but widely studied and emulated abroad. In 1991, *Newsweek* bestowed upon Diana, the pre-primary school that resulted from this model, the title of "the world's most advanced school." One of the architects, Tullio Zini, wrote the Introduction to this book, in which he recounts his experience. He was the one responsible for designing new environments to give substance to a "revolutionary" vision of school – the vision of a great master: Loris Malaguzzi.

Malaguzzi, too, began his career as a primary schoolteacher, and decided in 1945 to build and manage a school for children near Reggio Emilia with the idea that, to change the school, new ones had to be built, and they had to be administered outside the bureaucratic confines of the state. Malaguzzi recounted that once a week, he took the children to the city and «we held classes and organized open-air exhibitions, in public parks or beneath the portico of the municipal theatre. The children were happy. People watched in surprise and asked questions». The path is similar to the one laid out by Maria Montessori, who herself had little following in Italy but was quite well-known abroad: a school for children, tailored to their needs; a school that was often taught outdoors. This element is also found in the case of Pestalozzi *Scuola-Città*, as recounted in the contribution by Matteo Bianchini, “Inhabiting the School: Pestalozzi *Scuola-Città*”. However, as we leave primary school behind, the need to change teaching models gradually is reduced and virtually disappears – and, consequently, so does the impetus to transform the school environment: lessons and homework followed by tests and quizzes have remained the most widespread model of reference. Upon abandoning the possibility of having a direct experience, and of founding a knowledge-building process upon this, everything becomes more difficult and abstract, and it was not the few physics or chemistry labs in secondary schools that shortened this distance. Among other things, many labs, especially in secondary schools, were built for students to witness the experiment conducted by the teacher, in classrooms designed like an amphitheatre with a table at the centre to show everyone what was going on: essentially, another way to hold a frontal lesson. Only in professional institutes was the lab conceived in a manner “alternative” to the classroom. The core subjects, that is those that characterize the curriculum of studies, are carried out in the lab. In hospitality schools, as in mechanical, chemistry, and agricultural schools, the youths work directly in kitchens, in the fields, and with machinery. But the subjects that “count” stay in the classroom, waiting for the students with their tools that they have always used. This opposition between normal classrooms and labs also leads students to behave differently depending on whether they are in a lab or seated at their desk looking at the blackboard. Quite often, one struggles to recognize the same student due to the behaviour he or she maintains in the two situations. The environment, then, teaches. It is a decisive element in creating the climate and the social setting, in guiding the students’ behaviour, and in determining their educational success. In his “Foreword”, Luigi Berlinguer underscores this aspect:

«Above all, in our secondary schools, the morning’s classroom time is articulated in a sequence of 45-60-minute segments broken up by a mid-morning “recess.” The rest of the schoolwork is delegated to individual study and homework: to a solitary dimension that remains strongly conditioned by the individual’s economic and social conditions».

The need to break out of this loop (lessons, study, testing) is at the centre of the activities in numerous schools around the world. Breaking this circle, however, requires a real revolution that touches all dimensions and tools for teaching school.

Bergmann and Sams, the two teachers who launched the idea of the *Flipped Classroom*, started precisely from this: «Unfortunately, somewhere in human history, the frontal lesson crept into our educational toolkit: today’s school is now being called

upon to escape its oppression” (Jonathan Bergmann, Aaron Sams, *Flip your classroom*, Giunti, Firenze, 2016). The issue is not the demonization of the lesson, which still has its value and that they themselves use (albeit online); the issue is in fact the breaking of this loop. Nor is it a matter of applying one model rather than another, so much as raising a fundamental question that all teachers should be asking themselves: “What’s best for the children? Go do that”. With this exhortation, the two chemistry teachers that launched the *Flipped Classroom* emphasize the need, today, to try to transform this educational model and not to be carried away by the repetitiveness of teaching school the same way, following a ritual that is also becoming increasingly bureaucratic. One might think that this transformation is centred on technologies, and that *Flipped Classrooms*, for example, have their added value in online lessons uploaded to the school’s cloud. However, in actuality, the main goal is to dedicate all available time to the students. Bringing the lessons onto the cloud in fact frees up time to be dedicated to “workshop” activities and to learning: “All the remaining time is dedicated to problem solving”. And all this takes place in secondary school, in one of the traditionally toughest subjects for our students: chemistry. But if we transform “time,” then space, too, can no longer remain the same. If the students come to school not to listen to the lesson but after having followed it, sitting in front of a blackboard clearly no longer has meaning, and the furnishings, tools, and spaces must change as well. The revolution cannot be limited to the dimension of, say, the “organization of teaching”; it must also, inevitably, touch the curriculum. Skills are not developed if this issue, and the related issue of methodologies, are not dealt with. Problem solving, which as we have seen is not absolutely new in the Italian school tradition, contributes towards developing skills; simple knowledge transmission and rote study of dates and events probably contribute far less. All this has to do with what teachers continue to call curricula and what the textbook then makes visible and concrete. Finland, which is held up as an example of a high-level school system, has itself radically overhauled its curriculum recently.

«Methods of study based on exploration, experimentation, and problem solving promote learning to learn and develop critical and creative thinking. Students are guided to plan their studies, evaluate their skills to take action and work as well as to take responsibility for their learning. They are also guided to use information and communication technology diversely» (*National core curriculum for general upper secondary schools*, 2015).

By no means can this approach be considered a new one for our country’s educational history. As may be seen, it is not a matter of inventing a “digital school” that does not exist; rather, it is proposed that these precious opportunities be used to transform the entire school model. Italy lacks neither the tradition nor the educational sensitivity for initiating this path which, in transforming environments, can find a concrete exemplification of the school of the future.

Elena Mosa, in her contribution “Space and Time in the School of Competences,” speaks of environment as an implicit curriculum, and emphasizes that

«The central focus on the student had already been a priority for the founding fathers of pedagogical activism that had blurred the role of teacher/lecturer into teacher/consult-

ant to the point that he/she becomes a nearly transparent figure, like the one we see in Montessori schools ("Help me to do it myself").

Symbols of distance and hierarchies, like the raised teacher's desk, had been quickly dismantled by innovators like Freinet, who emphasized the need to transition from the auditorium to the *laboratorium*»."

We therefore find ourselves dealing with two school architectures – one designed for primary and middle school, and one for secondary school: the former being containers for pupils, "classrooms" whether normal or "special," intended to accommodate labs without undergoing modifications; and the latter conceived to combine normal classrooms with "specialized" labs. Given the age of our 42,000 buildings, these classrooms were adapted to accommodate labs as they grew increasingly equipped, but with no possibility for the basic structures to be modified. At any rate, the lesson-focused didactic model prevailing in secondary school has never been questioned. This model has remained the same, self-centred and rendered "indispensable" by the fragmentation of time resulting from a strong system of disciplines. Indeed, school is taught in class, where the teacher, especially in secondary school, closes the door and "teaches" the subject – the one for which he or she has been qualified, has ascended the rankings, has served in substitute positions, and has at last gained tenure. The functional relationship between teaching-pedagogical model, time organization, and architectural design of the school environment emerges in all its clarity in secondary school.

School buildings, hospitals, barracks, and city halls have always been the state's visible presence on the territory, and, in different times, have performed this function through appropriate architectural design. Today, the more than 40,000 Italian school buildings bear witness to our country's various historic phases. About 1,500 of them were built before the 20th century, and are therefore often housed in "historic" buildings in many cases wholly unsuited for accommodating a school. The same holds true for rented buildings, constructed perhaps as apartment buildings, housing a school today, where class 1A occupies what was designed as a living room, and 2B the bedroom. This is the case at "Majorana" in Brindisi, one of the schools that is instead seeking to initiate innovation processes more radically. Schools, then, are housed in environments built to be storehouses or, worse, old monasteries. But if, in the end, a school building consists of classrooms that are rectangular spaces, the problem, then, is if anything their capacity and nothing else. The debate, then, focuses on "chicken coop classrooms" and on the number of children, on square metres per pupil: once the standards are met, the problem is solved. It comes as no surprise that the debate in Italy has focused on school construction and not on architecture, and never on furnishings.

So what is new here? Why ought we to concern ourselves today with redesigning the schools' interior architecture, with rethinking furniture? Certainly not to make room for technologies. Outside of a comprehensive transformation design, even technologies become furnishings: computers are placed on desks, and multimedia boards beside slate ones. The environment by no means changes due to the introduction of some new tools; it instead heightens its traits and the IWB reinforces the frontal lesson just as the computer becomes a tool for drills and exercises, dedicated to "special tasks" in dedicated classrooms, alongside the physics lab that "has always been there". So why redesign the buildings?

Because schools are “breaking”: sizable cracks are appearing on the walls of the school model we know, and the ongoing earthquake caused by the growing rift between two ‘fault lines,’ school and society, has been triggered by the students. This is a structural crisis, not a temporary phenomenon. School is disconnecting from society in increasingly profound ways; the society for which the major Western school systems were created no longer exists. That working world, those environments, those ways of doing things, and the jobs themselves, no longer exist. Evidence of this disconnection is found above all in students and in the mismatch between the skills coming out of school and the skills required by the working world.

Each of us, when imagining a place suited for communication, for presentation, for illustration of the characteristics of a new product, thinks of a room with a platform, more or less equipped, with chairs facing it, for the public. A place for listening. However, when having to conceive a place for learning, one would probably think of a lab: a place built and furnished for exploring, experimenting, and creating, where technologies are not furnishings, but are the focus of activity. If, then, we have to transform the school from a teaching environment to a learning environment, we have to completely rethink the spaces; however, in order to do so, it is essential that there be a precise vision of the future, of a new organizational teaching model, that guides the design. Without this strong connection between transformation of the school in its fundamentals and architectural design, we will risk only constructing buildings to code, perhaps earthquake-proof and with strong energy savings, but designed to accommodate “school as usual.” Building a new school today means looking to the future and thinking that it will house students destined for a world we have yet to know, but that we know will be different from ours. Do we truly believe that the school will continue being the one we know, presented yet again with its division into classes, its lessons, with teaching the same for all, asking everyone to adjust to the school, to become pupils? And how will the students react to this “paralysis”? Do we believe that students coming to school already holding a tablet or smartphone in their hands will behave like their peers from a couple of generations earlier when faced with a blackboard, repetitive lessons, rows of desks, organization of time and space, and a classroom focus? I think that what a third-year middle-school student wrote in a blog some time ago paints a clear picture of what will happen: “if boredom were a fossil, school would be a museum.” And perhaps our school buildings would be more suited to housing a museum than to being transformed into learning environments.

Indire’s proposals are clearly described in the chapters by Leonardo Tosi (“Flexible Educational Spaces and Differentiated Environments”), Giuseppina Cannella (“Reinventing Learning Environments. Pedagogical Planning and Participatory Design”), and Samuele Borri (“Learning Spaces for a New Generation of Schools in Italy. A *Manifesto*”).

«What we propose is an environment capable of accommodating qualitatively different activities able to convey and support interactions, and to valorize the emotional, motivational, and relational aspects of learning». (“Flexible Educational Spaces and Differentiated Environments”, by Leonardo Tosi).

But the nature of school buildings – and, with it, their use – must also change. The

“civic centre” school, the place of reference for an entire territory, becomes a concrete perspective.

«A democratic process – already a reality in some countries in the world (Australia, the United States) and, in some European countries (Finland and the UK), more than an experiment – starts from the assumption that involving educators, teachers, students, and parents in the design process implies being able to best respond to the needs expressed by the users of that space. However, it is equally true that participation in a school space's design process is far more than the expression of professional architects' creativity. It is an assumption of responsibility for the individual members of the working group to share intents and commitments. It is necessary, then, to transition from a participatory design to a process of shared design» (“Reinventing Learning Environments. Pedagogical Planning and Participatory Design,” by Giuseppina Cannella).

On its own, shared design is not enough: it must be backed by a precise vision of change. The new schools, as Raffaella Carro states in her contribution “Pedagogical Innovation in School Construction”, enter into a generative perspective, and must not founder in what Zini, in the Preface, calls the «great amnesia» that reduces the design process to a mere question of costs and compliance with the endless number of existing regulations.

Indire's proposal – design that binds interior architecture and furnishings to a new paradigm for teaching school – is at the centre of the *Educational Avant-garde* movement that now counts hundreds of schools throughout Italy and is illustrated in depth at the end of this book by Samuele Borri (“Learning Spaces for a New Generation of Schools in Italy. A *Manifesto*”). After the 2012 Conference, this model was carried out in Genoa on the occasion of the ABCD event, and led to the construction of real environments – separated by transparent walls so as to be able to see what was going on from the outside – where school activities were carried out with youths from several Italian schools. The illustrative value of environments built and furnished following a different conception was also the focus of the *Future Classroom Lab* carried out in Brussels by *European Schoolnet* and that, albeit in highly limited spaces, was visited by ministers, members of Parliament, teachers, and executives from all over Europe. In Italy, these experiences also gave rise to “classi 2.0”. But the dimension of change cannot be the class, it has to be the entire school. We are committed to creating some in Italy, precisely because “space teaches” and it has to be allowed to teach. And the only way to understand what we are talking about is to see, touch, and experience it, even if for one day, like students in a different school environment. Space cannot be recounted in words.

1 | Space and Time in the School of Competences

Elena Mosa

If we teach today's students
as we taught yesterday's
we rob them of tomorrow.
John Dewey

The 20th century was marked by a perfect balance between educational system, production system, and the cultural and mass systems industry. In this idyllic moment, tasks and responsibilities were shouldered equally: as two-income households became an increasingly pressing need, the educational system came to the rescue to liberate the workforce and therefore to discharge its main function: looking after children [1]. In this scenario, the cultural environment did not interfere – and did not enter into opposition – with the educational system.

2 Flexible Educational Spaces and Differentiated Environments

Leonardo Tosi

In life and work, one learns more and best by interacting with others, cooperating, and seeking to bring what we have learned into effect. This is not the case at school. The idea of the classroom being transformed into a workshop, a place of active, cooperative learning, of the teacher providing not formulas to be repeated, but advice and assistance on the autonomous path of learning, is an unsettling one. Where the idea takes off, the need for homework is felt less and less.

Tullio De Mauro

The knowledge we have today on human learning is infinitely more evolved than the knowledge that accompanied the construction and arrangement of many of the buildings currently used for teaching school. Pedagogical research and the cognitive sciences offer numerous elements that help us to define the characteristics that an effective learning environment ought to have today, and to frame all the intentional aspects that bring it to life and that we can attribute to the field of teaching.

schools [19]. In this regard, Kenn Fisher identifies a set of pedagogical principles and correlated teaching activities, deriving guidelines from them for designing school settings and environments [20] (table 2.1).

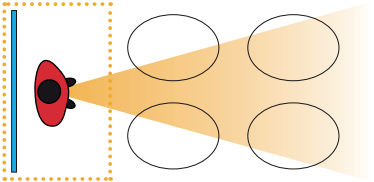
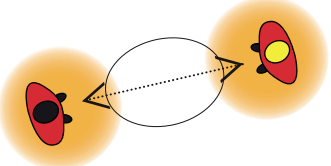
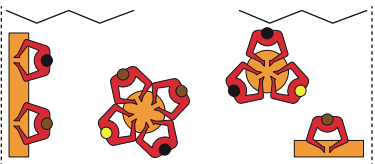
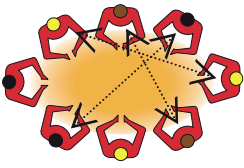
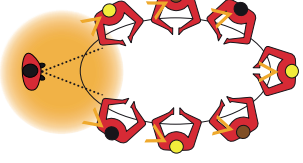
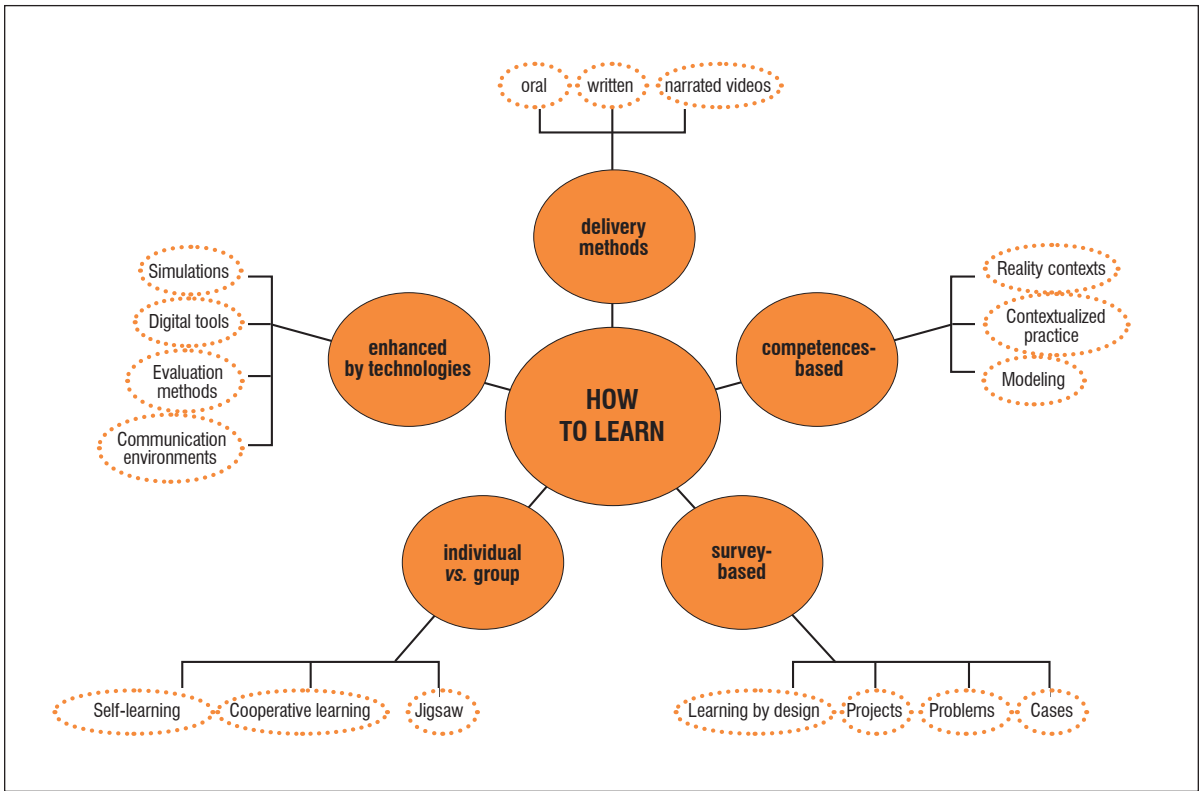
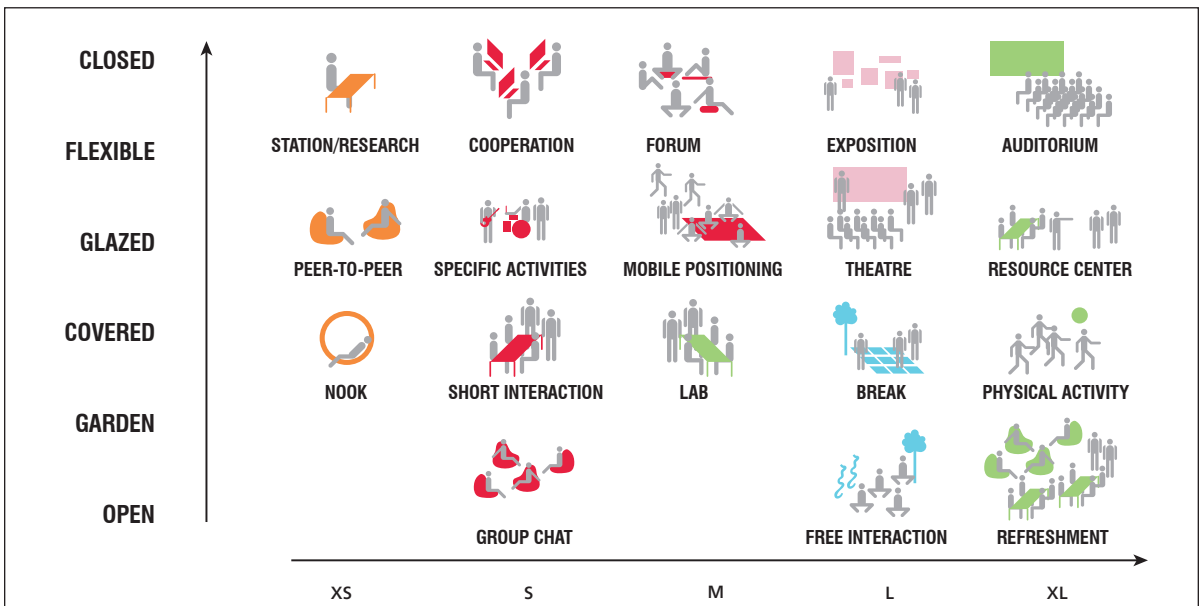
ACTIVITIES	DIDACTIC ATTRIBUTE	PROCESS STEPS	SPATIAL ICON
Delivering	Formal presentations Instructor controls Presentation Focus on presentation Passive learning	Preparation and generate presentation Deliver to an audience Assessment understanding	
Applying	Controlled observation One-to-one Master & Apprentice Alternative control Active learning Informal learning	Knowledge transferred via demonstration Practice by recipient Assessment understanding	
Creating	Multiple discipline Peer activity Distributed attention Privacy Casual Active learning	Research Recognising needs Divergent thinking Incubate Interpret into product / innovation	
Communicat- ing	Knowledge is dispersed Impromptu delivery Casual Active learning	Organize information Deliver Receive and Interpret Confirm	
Decision making	Knowledge is dispersed Information is shared Leader sets final direction Situation is protected Semi-formal to formal Passive/active learning	Review data Generate strategy Plan Implement one course of action	

Table 2.1 Source: Our elaboration by Fisher, K., Linking Pedagogy and Space, 2005



Graph 2.1 (above) Choice of activities, tools and teaching strategies based on targets and context (our elaboration from Brandsford and Brown, 2000) [23]

Graph 2.2 (below) Scenario matrix (our elaboration from a drawing by Imogen Fuller, in Learning Spaces: the Transformation of Educational Spaces in Australia for the 21st Century, edited journal, 2009, by Clare Newton, Academic Education Planner of The University of Melbourne and Kenn Fisher, Architect, Rubida Research)



3 Reinventing Learning Environments. Pedagogical Planning and Participatory Design

Giuseppina Cannella

Imagination is everything.
It is the preview of life's coming attractions.
Albert Einstein

The issue of the users' participation in defining spaces in the school is one that, in Italy, has begun to spread among experts in the sector, also from a cultural perspective. This is because spaces have a meaning and contribute towards providing indications relating to educational processes. The learning environment is an element in which to meet at a community level, and starting from which to build identity. With these prerequisites, the students' participation in designing school spaces becomes a useful tool for building the sense of belonging to the school and defining what attributes a space ought to have in order to respond to the students' educational needs.

4 | Pedagogical Innovation in School Construction

Raffaella Carro

In recent years, the debate on educational innovation has increasingly focused on rethinking school spaces, recognizing that the physical environment can support and foster innovation. However, for spatial change to influence school organization and professional practice, it is essential to align the technical and design solutions adopted in school buildings with the pedagogical and educational uses envisioned for those spaces. It is equally important to allow sufficient time for the school community to transform spaces of intention and possibility into spaces of actual practice and action.

4.1. Preface

Although there is a correlation between physical spaces and school activities, the environment's impact on school life is complex. This relationship has often been simplified in the belief that an innovative school building could automatically improve the quality of instruction or promote innovative didactics. However, it is demonstrated that changing the space's organization does not always result in changes in teaching practices.

School construction design often focuses attention more on the building's features than on the complexity of the process of transforming the educational space and the way in which the school community experiences it. The involvement of the school community during the design phase is an essential prerequisite for the effective pedagogical design of learning spaces. However, the active role of end users and all stakeholders involved in a school building project should not be confined to the initial design stage. Rather, it should continue through post-occupancy interventions and evaluations, as part of an ongoing and cyclical process[1]. Since the space takes on a variety of forms based on the dynamics and ways in which it is inhabited, the time dimension is fundamental for understanding how the organization, teachers, and students relate to a new physical learning environment as they adapt and transform it.

Once delivered, the space is only a potential that becomes effective when the users inhabit and appropriate it [2]. Bronfenbrenner [3] introduces the time factor into the phases of educational transition, considering the environment as dynamic and subject to transformations. The quality of the interactions among the involved parties (customers, designers, users, and other stakeholders) influences the configuration of the space, which continues to change over time. In the case of school buildings, the active participation of the school community in the phases of design, occupancy, and re-design of the learning environment, and adequate support for using innovative environments, lay the foundations for investment in new schools to enjoy lasting success.

The programme of interventions established by the *"Italia Domani"* NRRP, for the part under the purview of the Ministry of Education, also works towards assisting teachers in introducing innovation. Within the framework called *"Futura – La scuola per l'Italia di domani,"* [4] the programme aims to develop an innovative, sustainable, safe, and inclusive school. The plan is articulated in two main settings: school construction and innovation of the didactic tools and environments. These measures, which aim to transform the school spaces in order to innovate teaching methods and develop transversal and digital skills, are joined by measures to assist innovation. These foster the change of teaching and learning methods and the development of skills that help the school and teachers make the most of the opportunities offered by the innovative learning environments, in the awareness that organizational and methodological innovation cannot originate merely from change in a physical space, but matures over time and includes several phases and moments of assistance.

This attention to the process of assisting the school community in using the new environments, in synergy with the various stakeholders, is a subject of meaningful analysis for those dealing with the issue of school architectures.

The international institutions that fund school construction in European countries have also begun to study protocols and instruments to guarantee that the investments will improve not only school construction from the technological, seismic, and energy standpoint, but also the quality of learning through environments and practices that foster innovative teaching methods.

The Council of Europe Development Bank (CEB), for example, has in recent years conducted studies on investments in educational infrastructure in some European cities (Paris and Malmö) for which the *Indire 1+4 Manifesto* [5] was also used. These studies had the purpose of examining the connections between school design, school construction, and the pedagogical use of new spaces. A later experiment cofinanced by the European Investment Bank (EIB) and the CEB verified, from 2021 to 2024, the feasibility of a new approach [6] to funding educational infrastructures, which conceives the measures for assisting the school community as actions indispensable to the investment project's successful outcome, and to be considered as part of the process right from the beginning.

In the process of building a new school, the school community often does not take on an active and proactive role, but only passively submits to an initiative guided by other actors, perceiving it mainly as an opportunity to obtain a more modern and functional building. In some cases, this marginal role is partially overcome thanks to participation in the initial design phase – which, however, is often translated into a formal consultation or an involvement with little depth. Instead, to carry out a school architecture project that introduces authentic organizational and pedagogical innovations, all the components of a complex system must be integrated, by initiating a shared path from the very start. This goal requires an interdisciplinary approach capable of connecting a variety of settings, cultures, and perspectives, becoming a sort of dynamic workshop [7].

Carro and Tosi [8] propose the idea that the design of an innovative school building is guided by a cyclical time dynamic, and focus on the process that involves the school community in the various moments of development of its own pedagogical vision. This process is configured as a research/action path characterized by the cyclical repetition of phases like design, implementation, observation, and reflection. The authors use the concept of chronotope [9] as an interpretation key for understanding how the dimensions of space and time are intrinsically interconnected, and how aspects of values and relationships are not just essential elements of the configuration of learning environments, but act as genuine drivers of change. Space is conceived in its indissoluble relationship with the time that determines its occupancy. Adopting a chronotopic perspective allows a fragmented, linear approach to be overcome, while instead prompting an integrated and dynamic vision of space. In this way, a school community's experience can be interpreted as a unity of space, time, and values, in which the pedagogical perspective evolves, passing from a theoretical, abstract level to a dimension of concrete experience.

The concept of *pedagogical occupational cycle* [10] offers the school community a chance to develop an awareness and knowledge suitable for grasping these opportunities for change. While the pedagogical design of the spaces originates from an intervention in school construction, it continues and is articulated with interventions

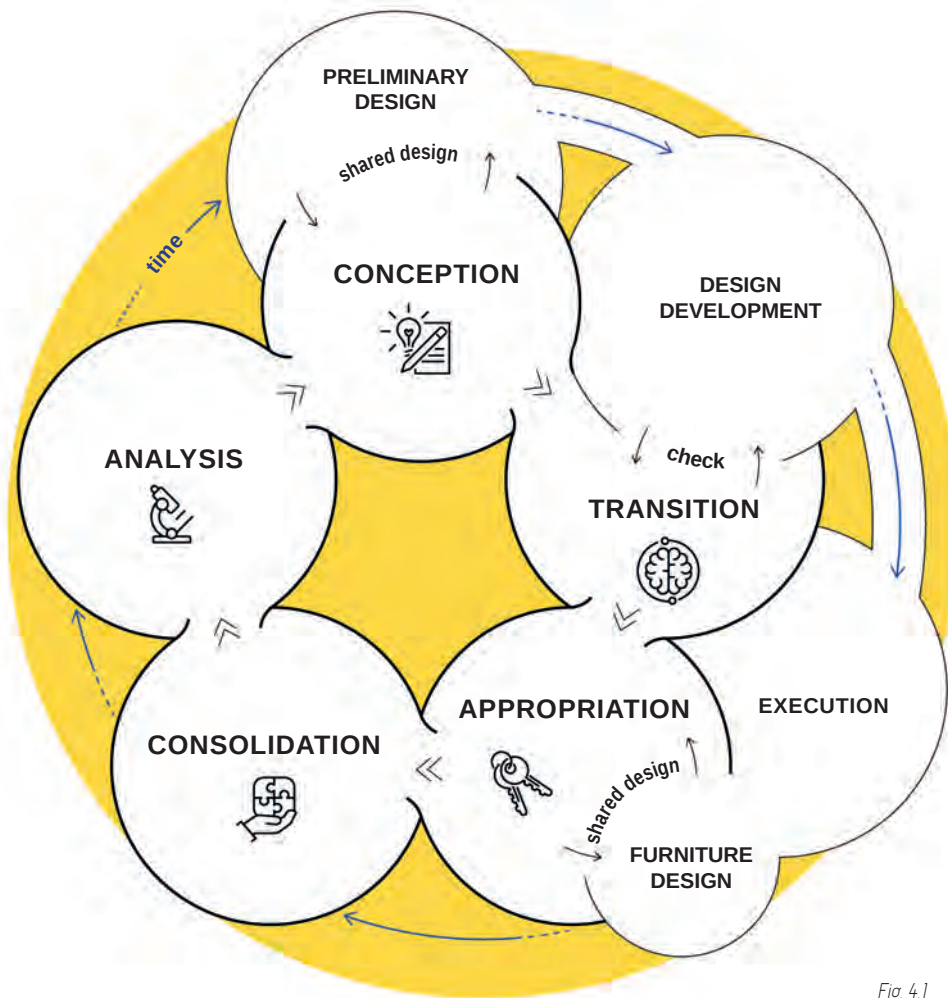


Fig. 4.1 The pedagogical occupational cycle

after the school's occupancy, in a continuous, cyclical process that pays attention to five evolutionary moments that relate to culture, structure, and the individual action of the teachers: Conception, Transition, Appropriation, Consolidation, and Analysis [11]. The actions that characterize these five moments frame the experience of a school community in a unitary perspective that seeks to overcome the linear vision of the occupancy process (which runs from the school's design to its delivery) in favour of an interconnected and evolutionary vision stretched over a broader time frame, in accordance with the chronotopic approach [12].

5 Development of School Construction in Italy

(19th-20th Centuries)

Pamela Giorgi

We are suspicious of housing blocks with a lot of floor space, where many people are shut away, or shut themselves away. Prisons, churches, hospitals, parliaments barracks, mental institutions, ministries, convents, schools.

These works of public architecture are bad omens – irrefutable signs of general illness [...]

But the kids, adolescents, young people: what have they done that makes you lock them up from when they turn six until they are ten, fifteen, twenty, and even twenty-four years of age, for so many hours a day, in your white prisons, so as to make their bodies suffer, and rot their brains? [...]

Rhythms marked by classrooms and dormitories, by halls and bathrooms! [...] In schools, we see daily confinement in dusty rooms filled with breathing bodies, in the most anti-natural physical immobility– the immobility of the spirit obligated to repeat instead of seek: the disastrous effort of using imbecilic methods to learn so many useless things [...]

Giovanni Papini, *Chiudiamo le scuole*, 1914

We will now attempt an admittedly brief description of the history of school construction in Italy, which means investigating the relationship that exists between the form – that is, the structural types – of buildings, the pedagogical reasoning that informs the design, and the regulatory framework of reference.

6 From Discipline to Design: the Evolution of the School Desk in Italy

(19th-20th Centuries)

Juri Meda

In his brief note on the evolution of the school desk included in the catalogue of the documentary exhibition *Tra banchi e quaderni*, edited by Paolo Ricca at Università Cattolica del Sacro Cuore in Brescia in 2005, Fulvio De Giorgi lucidly emphasized how the 19th-century public school was born with the desk: on the one hand, it streamlined spaces and optimized organization, thus reducing expenses; and, on the other, it met disciplining needs for teachers who were faced with having to govern crowded, noisy classes composed mostly of children from the working classes who had little tolerance for having to remain cooped up in the same room for hours on end, sitting still, listening to the lesson, and doing the exercises assigned to them.



Fig. 6.4 Two-seater wooden school desk with a footrest, backrest, and fixed sloping writing surface; equipped with a book shelf but lacking a front opening for inspection. "Paolo and Ornella Ricca" School Museum, Macerata; early 20th century (photo by Giuseppe Moscato)



Fig. 6.5 Two-seater wooden school desk with a footrest, backrest, and hinged sloping writing surfaces; equipped with a book shelf but lacking a front opening for inspection. "Paolo and Ornella Ricca" School Museum, Macerata; early 20th century (photo by Giuseppe Moscato)

back as well as a compartment for stowing books that had a metal mesh in front to keep books from falling out or items from being stolen by the classmates in front, and to permit supervision by the teacher [19] (figures 6.4 and 6.5). The model with fixed parts (known as the "German" model) therefore continued to prevail over the one with separate parts (known as the "American" model), favoured by Montessori, that would be systematically adopted in Italian schools only starting from the second post-War period. In spite of this, some people were immediately inspired by Montessori's innovations and manufactured some of the first desks with separate parts to be used in Italian schools – like the ones built in Città di Castello by Alice Hallgarten Franchetti for the La Montesca school between 1909 and 1911, or those designed in 1914 for the Colle di Fuori rural school by the educator Alessandro Marcucci and later adopted in other schools in the Roman countryside [20] (figures 6.6 and 6.7). However, these were admittedly isolated cases.

Figg. 6.6, 6.7 Wooden two-seater school desk and chair with separate components, designed by Alessandro Marcucci for the rural school in Colle di Fuori, 1914 (Marzadori private coll., Bologna, Italy)



INDIVIDUAL AREA

- 1 Individual insight area to concentrate, read, reflect.
- 2 Pods, caves, reserved zones with reading/writing tools.

EXPLORATION LAB

- 1 Exploration and discovery zone.
- 2 Dedicated tools and resources to observe, experience, explore, observe, experiment.

GROUP LEARNING SPACE

- 1 Place where students build and maintain their identity.
- 2 Group area that enables multiple flexible settings and solutions to meet the needs of different types of learning activities.

AGORÀ

- 1 Space for the whole school community.
- 2 Seats and facilities to participate in plenary events.

LEARNING SPACES ¹⁺⁴

1+4 LEARNING SPACES FOR A NEW GENERATION OF SCHOOLS IN ITALY

'What is the most effective learning environment for the students of the new millennium?'

The findings of INDIRE's research on that topic can be expressed with the formula 1+4 learning spaces for schools of the new millennium.

'1' stands for the former classroom, now a modern learning environment that is open to the rest of the school and to the world. '4' stands for the four school's main types of spaces: Agorà, Individual area, Informal area, Exploration Lab.

The **learning space model** is based on multiple theoretical levels which are focused on different nested strands of the learning context (Bronfenbrenner, 1989). The school is not regarded as the sum of classrooms (Airolti, 1978) but as a place that includes the teaching dimension, the social context and the social relationships (Leemans e von Ahlefeld, 2013; Lefebvre, 1991).

Four different lines of investigation

- 1 identification of case studies at European level;
- 2 analysis of educational policies that foster innovative learning spaces;
- 3 in depth study of technical guidelines in different countries in the school building sector;
- 4 review of literature in this field.

The **research methodology** includes: desk research, comparative analysis of the international technical specifications, observation visits to innovative European and Italian schools, semi-structured interviews.

INFORMAL AREA

- 1 Area for relax and informal meeting.
- 2 Soft seats and comfort zones for breaks.

Agora

assembly, representation, audience, comparison, exhibition



assembly, representation, audience, comparison, exhibition



Exploration space

, experimentation, operation, manual skill, activity, discipline





collaboration, group, sharing, flexibility, confrontation, te

Luca Pacioli upper secondary school in Crema, view of a classroom that can change shape in just a few minutes: from a group-work mode (by using the circular table shape), to a collective listening mode (aligning the individual stations sited on the table). The IWB acts as a surface for presenting and developing content, up to *debate* activities, furnishings allowing two teams to compare opposing opinions.

Individual space



n, study, remote communication, hall, corridor

Focus on space and pedagogy

Pestalozzi Scuola-Città ("School/City") | Florence

