

Pedagogy and Architecture in Action: the Power of a Common Language.

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Abstract

Il saggio riassume alcuni risultati di un progetto di ricerca svolto presso la Facoltà di Scienze della Formazione della Libera Università di Bolzano dal 2012 al 2015. La ricerca ha analizzato 10 casi di scuole di scuole costruite negli ultimi dieci anni nella regione dell'Alto Adige (scuole, scuole materne e scuole elementari) inserendosi nel contesto del dibattito contemporaneo sul rapporto tra architettura e pedagogia. Il focus della ricerca risiede nei processi che portano alla progettazione e costruzione di una scuola nuova o rinnovata, analizzando le traiettorie che ogni progetto prende in relazione con i risultati finali. Il saggio esprime la necessità di una lingua comune tra i campi pedagogici e architettonici per meglio guidare il difficile percorso che porta alla costruzione di una nuova scuola e sottolinea i vantaggi di coinvolgere i vari soggetti interessati nella pianificazione della scuola per aiutare l'istituzione a lavorare sul proprio potenziale e per permetterle di appropriarsi degli spazi di nuova concezione con maggiore competenza e soddisfazione. Uno degli importanti risultati della ricerca è la difficoltà apparente del corpo scolastico di comunicare i bisogni in modo coerente. Le esigenze didattiche e di apprendimento vanno comunicate in maniera incisiva, per evitare le successive falle che possono verificarsi da un punto di vista amministrativo e architettonico e per affrontare efficacemente la progettazione della scuola. In molti casi, i rappresentanti scolastici e gli architetti incaricati di progettare la nuova scuola si trovano agli antipodi per quanto riguarda il modo di vivere e considerare le tempistiche e i budget. Ma conoscere il punto di vista di ciascuno degli attori principali del processo può aiutare a sviluppare nuove sinergie.

The essay summaries some findings from a research project carried out by the Department of Education of the Free University of Bolzano from 2012 to 2015. The research frames 10 case studies of schools built in the past decade (pre-schools, kindergartens and elementary schools) in the context of the contemporary debate surrounding the relationship between architecture and pedagogy in the

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South Tyrol region of Italy. The focus of the research resides in the processes that lead up to the design and construction of a new or renovated school, analyzing the trajectories that each project takes in relationship to the projects' final outcomes. The essay posits a need for a shared language between the pedagogical and architectural fields to better navigate the arduous path towards the building of a new school, and underscores the benefits of involving the various stakeholders in the planning of the school to help the institution work to its fullest potential upon resuming the scholastic activities in the newly designed spaces.

One of the important findings of the research is the school body's apparent difficulty in cohesively communicating their teaching and learning needs and the subsequent missteps that can occur from an administrative and architectural standpoint in addressing the programming of the school. In many cases, the school representatives and the architects commissioned to design the new school found themselves working with little common ground and at different paces that were often difficult to reconcile under tight budgets and timeframes. But knowing the point of view of each of the key players in the process can help develop new synergies.

Parole chiave: pedagogia, architettura, spazio, bellezza, linguaggio comune

Keywords: pedagogy, architecture, space, beauty, common language

This essay provides an introduction to a research project conducted in Alto Adige on the relationship between pedagogy and architecture as part of the process that leads to the construction or renovation of a school building. The research project, "Between Pedagogy and Architecture", financed by the Free University of Bolzano's Faculty of Education, was carried out from 2010 to 2014 in collaboration with Sandy Attia and Matteo Scagnol, of ModusArchitects-Brixen.

There is a process at work in the world of education that seeks to renew educational spaces and didactics. The aim is to create a new culture of learning and pedagogical quality to school architecture, new interdisciplinary skills and well-being within educational facilities. Thinking about a school's "software" is beginning to be complemented by explorations on the "hardware" that shapes it.

This research is based on the premise that the process of innovation in schools cannot be generalized, but, rather, is the result of very concrete ideas and actions in which both pedagogy and architecture play an equally essential role.

A school is a physical structure in which a community transmits and develops its cultural heritage. As such, it is a text written by both the head teacher and teachers together with the architect, aided by the local administration, which makes it possible.

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The factors that play a role in this writing process correspond to the ideas that have led to this research project.

The essay aims to trace the main concepts that underscored the whole research work. identify a common vocabulary between pedagogy and architecture within the process of building a school. It is important to define a language that avoids the technical jargon used in planning procedures and contracts, as well as impermeable pedagogical discourse. Reflecting on the etymology of simple words, those most commonly used when speaking of schools and planning, allows us to overcome preconceived notions and to single out terms that are more accessible and merge the specific languages of architecture and pedagogy. Amongst all of the relevant concepts, some terms emerge that may be used to bridge both worlds: formation, space, flexibility, beauty and innovation. We attempt to trace the basis for a common vocabulary by starting with words used by architects, teachers, parents and interested observers interviewed during research. This allows us to describe the different points of view between educationalists and architects and highlighting those issues that should not be underestimated in the planning phases. Particular focus will be placed on: first, the issue of time lag as a source of tension and a challenge between pedagogy and architecture in the process of transforming a school; second, on the issue of *well-being* as closely linked to the concept of the *beauty* of a school as a way to reinvent a connection between technique and lifestyle; and third, on the aspects of *conscience* and *responsibility* as pedagogical instruments to revolutionise education.

The appeal of intersection

Pedagogy and architecture come together in schools through action, with the urgency to build and the necessity to provide adequate pedagogic-didactic programs. And action implies choices, opinions, and agreements.

The architecture of pedagogy

This work aims to illustrate architecture's relationship with the broad field of pedagogy, understood as education science, that is, the analysis and reflection that has historically determined the critical practice of reason over reality in education (Scurati, 1997). Who, what, how and why we educate are the subject of pedagogy; a field in which schooling occupies a privileged position as it is the protagonist of modern day pedagogy and major approaches in contemporary educational thought typically focus on it (Ibid., 1997, p. 5).

The broad discipline of educational science comprises four areas: general pedagogy, which deals with developing concepts and proposals; history of pedagogy, which provides a basis for understanding the evolution of educational thought and current issues; didactics and special pedagogy, which gather, validate and test instruments and models for the practice of teaching; and experimental pedagogy, which concentrates on research methods. According to Paolo Calidoni (2000), the area of general pedagogy deals with the why and the needs of those who are to be formed by education; didactics with the how and what is possible. Experimental and methodological pedagogy deal with evaluating, on the basis of evidence, the effects of pedagogy's propositions, which didactics implements.

Although it mainly concerns the area of didactics, the relationship between pedagogy and architecture cannot neglect the other three, which prove fundamental in the planning process: Pedagogy offers the vision and a sense of the school's profile, providing a frame of reference made of principles, values, ideals and propositions. It inspires the school's mission, taking into account past examples and reference models. Pedagogic thought is informed, confirmed and implemented by didactics, which uses the former when, how and with the means it considers more apt. Research methods help to validate and generalize experience, so that it can become a new aspect in the cultural evolution of educational thought.

Pedagogy and didactics both aim to improve the development of education (Avanzini, 2006) and when they address the institutional setting where it takes place, they speak to and complement architecture. While pedagogic knowledge is concerned with the reason for being of a school, didactic knowledge mediates between goals and the means to achieve them. Didactics describes how schools operate on a daily basis, the choices that were made, methods and the instruments needed to complete a pedagogic project.

The pedagogy of architecture

Architecture, including that for schools, plans and builds environments for human beings to live in. John Ruskin (1854) captured its aims and features in saying: "Architecture is the art of displaying and decorating buildings raised by humans for whatever purpose so that their presence contributes to the health, strength and fulfillment of the human spirit" (p.97). Architecture first and foremost provides an answer to the human primordial need at birth for protection and security, such as when Adam upon being cast out of the Garden of Eden and even before he used language, felt the need to cover himself and find shelter from the elements. In responding to the needs of every historical age, architecture is thus strongly influenced by the cultural, economic and social changes that are part of the human condition (Morris, 1881).

Architecture, like pedagogy, is a way of understanding and intervening upon reality. In this sense, it is subject to the ideas, research and actions that historically have dealt with the way spaces for education are to be conceived. If architecture is communication, that is, a written text, one that people (often unconsciously) read, discuss, criticize, and praise (Eco, 1968), then it also communicates the values interpreted by architects through experiencing, listening and understanding society, history, and human problems. The architecture of schools thus provides an interesting key for understanding modern-day discourse on the relationship between teaching and learning, as well as how thought on the sites of education have evolved. Like pedagogy, architecture does not provide a simple solution to problems, because it would otherwise become simply construction. It proposes a vision that goes beyond specific needs and requests; it interprets the spirit of a certain age with an approach that has eye to the future.

The elements of a dual strategy

The combination of pedagogy and architecture provides added value to the planning of a school and opens interesting perspectives for the following reasons.

Firstly, it provides a more comprehensive understanding of social, historical and cultural complexity by focusing more closely on the role of memory and the past. School is traditionally the place where the keys to culture are passed on, guaranteeing access to everything human beings have understood, discovered, and invented in the past. In school we find the elements of our past, which is the foundation of what we intend to create in the future. In architecture, the reference to the past is a given, an unavoidable act: “*an act of memory projected in the future*” (Frediani, 2011, p. 21). The challenge in this sense is to build on the past with the aim of putting forward innovative, sustainable proposals for today.

Secondly, the pedagogy-architecture binomial allows us to reflect on the concrete, material aspect of schools. In architecture, to build means to use what is available, employing the manifold languages of matter. Attention is especially focused on the quality of the materials, on their intrinsic meaning, on how they are perceived and experienced. In education, the relationship with words dealing with materials have, in contrast, almost an abstract value. To build pedagogies means to work with the raw material of knowledge; to practice didactics means to speak the languages of the various subjects of study and to be aware of their different qualities. School, intended as a collection of physical objects and of concrete materials, is not the centre of attention. The quality of this combination is revealed in the dialogue between visible and invisible materials and in the attempt to reach an understanding of the reasons that lead, for example, the architect to enthusiastically

employ exposed reinforced concrete and the teacher to cover it with children's drawings.

A third fundamental aspect of this intersection is the focus on the relationship between objects and people. In architecture, to build means forcing materials into a mutual relationship across varying distances, moving materials in space to give form to the void between elements. In pedagogy, and especially with regard to schools, the correlation consists in the different nuances in which teacher, student and knowledge interconnect. The construction of a school generates a system of relationships in which the triad teacher-student-knowledge transforms into a framework composed of discourses and resonances that lead to the inclusion of space in the definition and organization of the educational relationship.

A further element that characterizes the relationship between pedagogy and architecture is the courage to choose. Architecture's task is to trace the boundaries between the various elements, to define limits and consequences, to divide space between interiors and exteriors, between the space you first encounter and that which follows. Didactics also works with knowledge by carefully selecting, analyzing and categorizing knowledge in specific learning units with corresponding learning materials in order to give form to knowledge. Each of these actions implies a choice and is determined by a specific planning pattern, both in architecture and didactics. Gianluca Frediani tells his students that, "Planning is a strenuous act of renouncing all that is superfluous. Renunciation is always painful. But this pain gives value to choice. To be means to exclude." (2011, p. 16). Today's task for schools is for each to choose its own pedagogic blueprint and be able to justify and support it in the educational and didactic process. This will inevitably be reflected in school spaces. In our discussion, to exclude means to acquire identity within spaces that are to be seen, felt and touched.

To plan a school, and not just build one, is never an easy challenge. It is a never-ending game, with an infinite succession of acts. It is a project for a time that will come. In this sense it is a constantly open and unfinished project, based on trust in the extraordinary potential of consciousness and responsibility as an expression of the efforts of head teachers, teachers, architects and authorities to create new cultural spaces for the community.

A number of issues form the discussion about the relationship between pedagogy and architecture: defining the relationship between space and didactics; finding solutions with a broad cultural perspective useful to the school's mission; meeting the challenge of illusion and of the continuous metamorphosis of perspectives on things and to aim at clear and well-defined choices that exclude all that "is not"; planning bright, multi-perspective, modern and sustainable environments, which respect the memory of things and people and are based on the silent and open interrogation of traces of the past, while imagining the future.

On the trail of words for a common language

In 2004, Adrian Forty sought to define some key words for modern architecture. The impetus of this study is to synthesize contributions from the worlds of architecture and pedagogy by identifying points of affinity and of difference. This research draws on the humanistic and non-formalist thought of the educator Cesare Scurati whose pedagogical paradigm provides a key reference point. His topics of study are predominantly about innovation-related training processes, especially in reference to customized learning in schools. The words of architects, teachers, students, and experts from both worlds provided the further elements needed to trace the thread of a common vocabulary with the most significant words for designing schools. Form, space, flexibility, beauty, – these are frequently used terms in both pedagogy and in architecture, especially when dealing with the design of schools. But what meaning do they have for the world of school and for architects? Starting from straightforward etymological facts for each key word, we have contextualised their valences for our specific disciplines, compared these to their everyday usages, and looked them up in the research data and in the dialogues between the various agents who gravitate around schools. In the end, we have managed to build a bridge between pedagogy and architecture through a comparison of the similarities and differences that accrue around key terms, thus arriving at a common meaning. In this essay we'll concentrate on three of this words: form, space and beauty

Form-action

The first common word that we found was “form”. There is an intimate synchronicity between formation as one of the pedagogical-didactic objectives of schools and the desire to give form to schools as one of the aims of architecture. The Treccani dictionary defines the term as “the exterior aspect that gives shape to an imagined or physical object”. In more figurative terms, form refers to an idea or project that develops consistency and concreteness. Form can also mean the outline or the contour of an object. The word, then, is intrinsically ambiguous, referring to “lineaments”, on the one hand, and to “idea” or “essence” on the other: the first describes the properties of things as they are presented to the senses, whilst the second as they are presented to the mind. Reflecting on this ambiguity, German has a slight advantage over English, as the latter has only one word, “form”, while the former has two, *Gestalt* and *Form*. The first German term refers to objects as they are perceived through the senses, while the second implies a degree of abstraction of concrete objects (Forty, 2004, p.152).

Among current definitions, “architecture” is primarily seen as “the art of giving form and creating accessible spaces for humans” (Treccani dictionary). Fèlix Candela, an architect known for both his acrobatic structures, made with reinforced concrete as thin as egg-shells but highly durable, and for the expressive force of his sculptures, provides a significant deepening of this rather simple definition. In *Filosofia delle strutture come forme (The Philosophy of Structures as Form)* (Savorra, 2014), Candela responds to the century-long debate among philosophers between form and function, which has divided them into pro- and anti-formalism camps, and helps find a common meaning for pedagogy and architecture. For him, form, as the result of a thought and of an action, is much more than the outcome of a mathematical equation. A subconscious, synthetic, intellectual process is necessary to create a form, which belongs to the world of art. The artistic dimension of architecture claimed by Candela highlights the productive element that results from a gestational period in which the architect listens, gathers, elaborates, thinks, asks, and reflects in order to find an appropriate construction procedure to provide a simple shell for accessible spaces. Giving form to something through architecture could also mean, then, shaping pedagogy and making it concrete. It means giving to didactics that something extra to create stimulating, coherent and honest spaces.

Reflecting upon the word “formation” also helps illustrate the harmony between pedagogy and architecture during the construction of a school building. When this term refers to the process of being formed, then it has an active quality linked to the genesis of physical structures and materials (e.g., the formation of minerals, the formation of clouds, etc.). When it is used figuratively, it refers to intellectual and psychophysical development or, in an active sense, to a person’s civic, spiritual and moral education. Drawing again upon the Treccani dictionary, formation is used in absolute terms to refer to a result: that is, the knowledge and set of concepts acquired in a specific sector (for example, ‘one has a good formation in...’). In common usage, the term refers to that which constitutes an effect, the result of being formed; therefore, ‘formation’ generally refers to a structure that is roughly a uniform and compact union of basic materials.

In pedagogy, ‘formation’ refers to the particular object of study of the discipline. More specifically, the science of formation aims to identify the discourses, the appropriate analyses, the methods, the periods and the qualities of the processes that lead individuals to learn and reach higher levels of intellectual, cultural and spiritual development at different stages in their lives. This definition is linked to the much older and widely discussed notion of *paideia*, synonymous with ‘culture’, which alludes to formation as the ethical and cognitive growth of the subject, and can be related to the modern aesthetic and anthropological concepts grown during the Romanticism of Goethe, Schiller and von Humboldt.

In pedagogy, it is hard not to link the term to the much richer and more comprehensive concept of *Bildung*. The German word is difficult to translate, but

means the process of formation for the person that comes into contact with culture and approaches it actively, not passively, gathering all that tradition has bequeathed and thereby becoming a creator of culture. In the *Bildung* paradigm, subjects gradually give themselves a form in a process that is always in the making because formation is a life-long activity. Through the intermediation of culture, an individual creates a personal form (hence self-formation or self-realisation) in which ethics play a role (the acquisition of values and behaviours) but also cognition and affect (Givone, 1996). In Goethe's writings we find a very clear synthesis of this concept:

“The German language frequently and fittingly makes use of the word *Bildung* to describe the end product and what is in process of production as well. Thus in setting forth a morphology we should not speak of *Gestalt*, or if we use the term we should at least do so in reference to the idea, the concept, or to an empirical element held fast for a moment in time. When something has acquired a form it metamorphoses immediately to a new one. If we wish to arrive at some living perception of Nature, we ourselves must remain as quick and flexible as Nature and follow the example she gives us.” (1790, trans. 1983, p.43).

Numerous Italian pedagogists prefer to use the terms ‘formation’ and ‘formative processes’ over ‘education’ not only because the former are more practically useful but also because the word “educational” has increasingly acquired a managerial and evaluative connotation. “Formative”, on the other hand, refers to the process that allows a human being to pass through stages of self-realization that become progressively more complex. While the Latin word “*educere*” implies an extraction as well as conformity, linked in some sense to an authority, ‘formation’ highlights organic development, the gaining of “form”. Formative, then, also suggests a process that is dynamic, open, organic, evolutionary but also strained (Cambi-Orefice, 1996).

In practical terms, the German concept of *Bildung* is not captured entirely by the word ‘formation’ which needs, perhaps, to be combined with ‘education’ to approximate it. Riccardo Massa (1992) points out how the term formation is often seen as the poor cousin to education, synonymous with ‘instruction’. Pedagogists, on the other hand, see formation as a personal narrative involving change, as an educational adventure profoundly marked by far-reaching socialisation and acculturation processes. Massa speaks of “formation clinics”, evoking its meaning as closely related to works of art, philosophy, literature, and cinematic productions, rather than its association to psychoanalysis or the social sciences.

Form and formation are, then, two key words in the dialogue between pedagogy and architecture. They provide us, on the one hand, with elements of concreteness and consistency, and on the other hand, with productive, heuristic, ethical and aesthetic dimensions. Both spheres are concerned with giving form to content, of carrying out a formative activity that is intimately entwined with the broad

concept of “learning”. However, in English this term is all-encompassing, whereas in Italian the word “*apprendere*” is not. Formation, like *Bildung* or learning, is best seen not as a transitive verb – to learn one thing instead of another – but as a way of experiencing a condition of continuous growth, expansion, cultural enrichment, dialogue with research and respect for what humans can become in every educational activity (Bombardelli, 1985). Formation is also a process of gradual and continuous introduction to the *polis* (Baur, 2008, p. 84), providing a cultural foundation that serves social and political relations between individuals in the construction of civic belonging.

Space

The concept of “space” also belongs to a category of ambiguous terms, that is, those that have multiple meanings in different disciplines. ‘Environment’ and ‘place’, often taken as synonyms, are similarly ambiguous. In the course on “Learning Environments”, held by the author, Beate Weyland, in the Faculty of Education at the Free University of Bolzano in 2013-14, this ambiguity was examined by asking students to observe images related to learning and informal spaces and to indicate what meaning they would give to the concept. ‘Space’ was often taken to mean freedom and openness: “It is wide-open, vast, with few objects or furniture, allowing the child to learn and play freely, to learn something”; “an open space where children can express themselves freely, self-learn and see how they match up with others”; “it is generic, undefined, it is for anyone, for self-learning in either open or closed environments”; “it is open and in continuous evolution”; “it is a place for interaction between child and teacher, designed for a specific activity, where a class environment can be created and implicit and explicit aspects of learning are taken into consideration, where an educational-instructional relationship can be developed.”

An unequivocal definition does not emerge but it is abundantly clear that the term “space” relates to an existential dimension of human experience. It is the result of agents acting on the material world; therefore it also mirrors an approach to education. If “space” is combined with the word “place”, it describes a *lived space*, where experience and action shape thought and memories. If, on the other hand, it is linked to the term “environment”, as is often the case in pedagogy, it has an abstract meaning aimed at describing the relationship between teacher, student and content; however, in architecture, the combination becomes much more concrete. Space is certainly a constitutive and conditioning dimension of the human experience: “there is no space to breath in this room”, “give me some space”, are just two examples of how we extend figuratively into places occupied by empty spaces or human bodies. “My feet are firmly planted on the ground”, “I feel I can

touch the sky”, “I feel close to you”, suggest that even spatial features can shape our feelings. Space is seen as an existential and lived dimension, in which we talk about linearity, distance, measures and proportion in an attempt to enhance relations between individuals (Iori, 1999). It is only after having lived in a defined space, by autonomously constructing paths and activities, that it assumes meaning and becomes a reference point and a source of self-identity or “spiritual space” (Hillmann, 2004).

The term “space”, then, assumes different meanings depending on the disciplinary areas in which it is used. Phenomenological pedagogy refers to a “lived space”, re-assessing its subjectivity: “*In this sense, not only is there a space, but many spaces, each of which depends on the different forms of human existence, on human behavior, on emotions, life stories, who people have met, who they will meet, etc*”. (Bertolini, 1996, p. 611).

This brings us to the notion of an “educational and educator space” understood as “space where an educational relationship, a cultural transmission, and an existential transformation stimulated by an educational project is developed” (Bertolini, 1996, p.611; Gennari, 1988, p.27). It is not only possible, but it is also desirable to work towards a real pedagogy of space that confronts and clarifies the subjective value of space because space – whether the home, the classroom, streets, or surroundings – will expand or shrink, become bright or gloomy, deserted or lived in. In his 1957 essay, “The Poetics of Space”, Gaston Bachelard provides a phenomenological description of how space influences the poetic imagination and how emotions are evoked by different spaces, starting with the structure of the house all the way to its interior furnishings. We speak of space in daily life: reflecting upon the house as a “concentrated being”, referring to a “centralised consciousness” or as a “vertical being”, from the basement to the attic, with the rationality of a roof that shelters and the irrationality of the basement, the dark side of the house. These all suggest that the human-space relationship is one entity, transformed into words through metaphors.

You must love space to describe it in minute detail, as if it were the molecules of the world. (Bachelard, 1957)

To understand space, with its dynamic and tactile essence, we cannot speak of it without having lived and measured it with our body; its environment is what remains embedded in our memory and which gives to these spaces their properties. Along these lines, the work of Peter Zumthor, known as the “master of atmosphere” in architecture, suggests thinking about space as the privileged place of perception that is present even before form.

This is my preferred method of working: to first think of the building as a shadowy mass and then as an excavation site... consciously arrange materials and surfaces in a certain light [...] look at how materials reflect and at that point you choose, to create a coherent whole (Zumthor, 2007).

Space for the Swiss architect is a rebellion of form, offering the chance to feel how it resonates in the perception of light and material, modulating moods and emotions.

This profound relationship with physical space has not yet assumed a central place in pedagogic-didactic research in Italy. The word space in the educational sphere is primarily used as an abstract and metaphoric term: “the educational space”, “space for culture”, “the learning space” – these are concepts that refer to ways of conceiving the process of formation, not a concrete place. Along with its quasi-synonymous “setting”, we refer to a “didactic setting” or “learning setting”, understood strictly as ways of working closely with the concept of flexibility of formative communication processes. The teacher is the designer of “rich and diverse sites of possible experiences and working materials, characterized by strong structures that are, at the same time, open and indefinite where students can help each other with a range of instruments and resources in guided activities” (Carletti, 2013). This definition has become increasingly important with the spread of constructivist didactics and with the ever-present use of technology, especially virtual technology and the Internet, by which “the learning setting” is seen as open and without physical boundaries. It creates, therefore, a virtual space for reflection, for sharing and for the construction of knowledge (Weyland, 2013).

The only schools that have focused on the physical dimensions of educational spaces have been those in Reggio Emilia since the 1960s. Drawing on Loris Malaguzzi who reflects upon space as a “third educator” (Malaguzzi, 1995), Reggio Children offers an example of global significance of how space can be conceived as a pedagogical device, a cardinal element in the decisions that lead to an educational project. Widely diffused in nurseries and pre-schools in Reggio Emilia is the notion that space “becomes an active interlocutor and a metaphor for knowledge that is constructed and defined not through simplified solutions but the fusion of polarities – inside-outside, formal and flexible, material-immaterial – that can generate rich, complex outcomes” (Cavazzoni 2009, p. 14). The lesson from Reggio Children is that space should be understood as “a research project, able to assess itself daily, through its success, with the effectiveness of its own language, with its ability to dialogue with potential that characterizes education. As space is itself ‘a metaphor for knowledge’, it gives evidence to and suggests possible changes and action” (Ibid. p.14).

Conceived as such, space is truly a mirror of the dominant educational approach in a school and can be used as an analytical tool for pedagogical practices in specific contexts: these may not always be evident or may, in practice, contradict the learning aims and objectives set out. Reflecting upon the organisation of space and materials can influence the behaviour of educators and the meanings they give to their activities. In some cases, it may become evident that the meaning

of certain teaching practices needs to be rendered more clearly through a comparison of teachers (Gariboldi, 2011, Weyland, 2013).

Some of the advances in proxemics, the discipline that looks at the psychological relationship between space and the individual, have sought to understand how space shapes human behaviour. Personal space has been identified as the “bubble around us in which our psychological influence expands and influences others” (Costa, 2009, p.33). This is to be taken into consideration when organising space in schools so as not to create cognitive and sensorial hyper-stimulation. It has been proven that light affects the awareness of the presence of others: the brighter the setting, the greater the demand for inter-personal distance; by contrast, the dimming of light might lead to introspection, meditation and a general lowering of one’s guard, resulting in a more relaxed state. Psychological elements connected to territoriality, such as motivation and the need to occupy an area, have also been proven: establishing control over space, personalizing it, having thoughts and emotional beliefs based on it, and being motivated to defend it. This research in proxemics allows us to consider the possibility of redesigning the geometry of relations between ways of knowing and agents of knowing (student and teacher), considering space as an important physical element. However, in architecture, these findings do not necessarily provide a ready design tool since they do not offer solutions but, at best, *post facto* justifications for choices made. A building will never be just the sum of its parts nor can it respond to the full range of demands emerging from research on different ways of conceptualising the human relationship with space.

The element that conjoins pedagogy and architecture in these terms is the relationship between space and project. Space becomes accessible through a project, an idea. As we have seen, it is not just the architect who designs a space; the teacher, in a fashion, is also a designer by planning teaching practices and organising learning projects in classroom space. Space, then, is designed by both architects and teachers. This leads to a terrain that favours shared work, where the words space and environment are tied to very concrete elements: natural environment and anthropogenic environment, where environment understood as a geographic, historic, physical and cultural context in constant transformation (Rossi, 2008). A learning environment for an architect is, in fact, an architectural space that respects the idea or mission statement that governs the school’s project and that responds to the demands that emerge from the pedagogical universe. Learning necessarily interfaces with its human, cultural and social contexts; it sets in motion all the infrastructures that surround it, including internal and external decision-makers (politicians, stakeholders) and beneficiaries, again both internal and external (citizen-users).

Alain de Botton (2006) provides interesting categories for defining beautiful architecture – simplicity, coherence, order, balance, elegance and research – when

referring to the concept of a project; these qualities can be easily transferred to the world of educational formation. They are elements of good design that we generally attribute to architectural projects but they are also part of any good pedagogical-didactic project.

Beauty

There is a general lack of consensus on how to define the concept of beauty. According to the classical canon, beauty corresponds to the perfection, harmony and symmetry of things; that which is without defects is beautiful. At the same time, there is an old adage that says, “beauty is in the eye of the beholder”, reminding us that subjective judgment plays a role in defining what is beautiful and fundamentally linking it to experiences of attraction, affection, pleasure and health. The German word *schön* derives from *schauen*, highlighting that beauty is something related to point of view; it is something that can be watched, the “watchable” (Croce, 1969, p.259). The act of watching expresses the internal participation of the soul in what is outside of it. In this way, that which is beautiful is more than so in and of itself, but is made beautiful by whoever believes, describes and enjoys it as such.

By contrast, psychological analysis suggests that beauty is much less subjective than is commonly thought. For example, aesthetic value is attributed to uncontaminated natural landscapes where there is no trace of humans and their constructions. The less a landscape is marked by an anthropogenic presence, the greater is its appreciation (Kaplan and Kaplan, 1989).

In an attempt to define “beauty” as objectively as possible, two main perspectives are considered: that of landscape and that of the pedagogical object. These provide interesting vantage points offering distinct perspectives through which elements of beauty can find common ground. Even schools can be seen as landscape, though they are more commonly associated with objects since they have to deal with the details of interior furnishings on a daily basis.

Rachel and Stephen Kaplan, in ordering the aesthetics of landscape, identified the following features: consistency as the degree to which the various aspects of the environment are coordinated with each other and find their unity; readability as the degree to which a landscape offers distinctive features relating to their functions; complexity to counter predictability consists in detecting a changing number of elements that makeup a setting. A landscape is prized as attractive when it provides changes and surprises, the simplicity of its symmetry matched by elements characterized by variety and irregularity; mystery rests in the amount of hidden information that may be in a setting; therefore, the hilltop landscape will attract more attention than the plains, as our vision does not prefer the horizon as there

remains an element of mystery over what may be on the other side of the hill. Other important characteristics include: the clear preference to have a broader visual perspective on the surrounding environment and at the same time not to be seen in order to avoid being the target of attacks; the familiarity of settings that have been an integral part of our development. It is a phenomenon that cuts across the psychology of all aesthetic domains. Just as in the case of ethnicity, we are able to describe in fine detail what is similar and different in what is familiar to us, while “exotic” settings all seem the same and we do not know how to tell them apart.

Inspired by Mies van der Rohe’s aphorism, “less is more”, the well-known designer Dieter Rams identified ten categories that characterize a design product: innovation, utility, aesthetics, understandability, discretion, honesty, durability, attention to detail, sustainability, and minimalism (Ueki-Polet, Klemp, 2011). A more detailed discussion of the characteristics of these categories (<https://www.vitsoe.com/rw/about/good-design>) leads to conclusions similar to those discussed above. The polarity between the discourse of beauty regarding landscape and regarding the aesthetic qualities of an object reverts back to similar themes. In architecture, the perception that beauty is the absence of defects does not always hold since the word “beauty” is not automatically associated with “perfection”; furthermore, while it is difficult to see in imperfection something to be embraced, it is possible to find in that which is imperfect a synthesis that gives meaning to a project.

Our bodies are a prime example, especially our faces, of such a lack of precision, or to use a geometric term, of asymmetry; it is what gives them character, expressiveness and, above all, beauty related to individual essence. An experiment in symmetry would transform our face into an unsettling image, an ugly copy. This ugliness is synonymous with and derives from the lack of harmony and the disproportionate features of a face, but not from its deformities. Conversely, the small discrepancies that exist from one eye or eyebrow to the other constitute an ensemble of (de-formed) characteristics that distinguish a face. Without these ‘deformities’, a face is reduced to something unrecognisable, something without a soul, utterly lacking in human expression. In fact, it is the human element that can guide the architectural thinking of a designer and that resonates, not coincidentally, with the good design of schools.

Taking into account the innovative tendencies in pedagogy, it is increasingly evident that a school is not just a house for learning, but also for living: living is understood here in its various senses with the human element and the charm of the incomplete at the centre. While Le Corbusier, in his famous book *Vers une architecture* (1929), captures the spirit of modernism with the iconic slogan, “the house is a machine for living in”, in today’s world the perfect functionality of constructed objects is not sufficient to respond to the multiplicity and multi-functionality of

schools. The architect gives body and shape to a school through an expressive language that is anything but functional. The rationality and the dimensions of a school building are forced to bend, to be deformed and re-present themselves in new shapes in order to meet the requirements of a fulfilling learning experience. An architecture that melds into the life of the school, therefore, creates a building that breathes and confers beauty even if it does not conform to objective criteria of beauty. Saying that a building is beautiful reveals more than just a pure and simple aesthetic passion; it also implies an attraction to a particular lifestyle that the building conjures. If we see beauty in the design, it is because the building evokes some of our ideas about life.

We ask of each building that it not only carry out a specific function, but that it have a particular look and contributes to creating a clearly defined atmosphere: religious or cultural, simple or modern, for work or family. Maybe we want it to emit security or enthusiasm, harmony or moderation; maybe we want to link it with the past or represent the future; and we will complain, as we would if a toilet did not work properly, if this second aesthetic or expressive function was ignored (De Botton, 2006, p.60).

Buildings, therefore, speak. They speak of democracy and aristocracy, of openness and arrogance, of welcome and menace, of shaping the future and nostalgia for the past. Essentially, the products of architecture speak to us about the lifestyle that is best suited inside and around them and of visions of happiness. Alain de Botton, recalling Stendhal's aphorism "beauty is a promise of happiness", highlights this intimate link between the two terms.

In the interviews with public officials of the present research, the Ladin school superintendent, Roland Verra, emphasised that, "The aesthetic and functional aspects travel together. If the school is not a work of art, we will not stimulate the aesthetic and cultural growth of our students." It is a lone voice that calls for some reflection on the gap between saying and doing.

In fact, in designing schools and in the architectural call for tenders, there is generally a noticeable void with respect to "beauty". The lack of consensus on the concept of beauty is surely a reason for this, but beneath the surface lies a hidden belief that it is not essential to think about beauty when designing schools. It is difficult, to try imagining "beauty" in schools amidst regular calls for improved security in school buildings when news of the collapse of ceilings in some leads to demands for interventions of a non-aesthetic kind. The apparent frivolity of beauty as a design criterion for a school building is only accentuated when set against the backdrop of school officials buried in bureaucracy, overwhelmed by emergency meetings with teachers and alarmed parents, and oppressed by pressing responsibilities. These pressures make it difficult for them to find the mental space to dream of a beautiful school and to think of its aesthetic qualities. In reality, the is-

sue of beauty is not presented here as a luxury, but as an important foundation that all have the responsibility to imagine.

Typically, the construction of schools, even those subject to design competitions, does not have an aesthetic criterion amongst its requirements. In fact, when there is a call for a school building, it most certainly does not include “beauty” in the essential features described, but architects try to include it nonetheless. There have been signs that this significant gap between demand and supply has been narrowing with some official attempts aimed at mapping a high-quality architecture. The “livable and beautiful” competition issued in the summer of 2014 by the Ministries of Cultural Heritage and of Education, coordinated by INARCH, identified 12 schools on the basis of beauty and practicality (<http://www.inarch.it/default.aspx?pag=0.1.1&lang=it&NewsId=455>). Italian Prime Minister Renzi’s plan for school construction in 2014, “Beautiful Schools, Safe Schools, New Schools”, issued at the beginning of his mandate, included beauty amongst its quality considerations. If we dig deeper, we find that to make “beautiful schools”, the plan refers to the minor maintenance needed to restore and decorate school buildings, without a clear reference to predefined canons or standards (<http://www.governo.it/Presidenza/Comunicati/dettaglio.asp?d=76134>). It is, nonetheless, a positive process for creating awareness and promoting innovation at the institutional level, as it resurrects the concept of beauty in conjunction with schools, thus drawing attention and reflection to this combination.

School time and architectural time

“The economy has accelerated innovation processes, technology is pressing ahead, and it is hard to keep pace with the ways that information is produced and communicated. The school has a hard time in all this and it is constantly looking to get a running start”. (C. Scurati)

Having completed the conceptual analysis of words that are differently working in both words of pedagogy and architecture, it is useful now to make some general observations.

The pedagogue, Cesare Scurati, highlights a recurring argument that was made explicitly by this research, namely that schools have a hard time keeping pace with the current times. This disconnect leads us to reflect on various aspects of the concept of time, not the least of which is architectural time: the extended time of the educational process and the accelerated time of the economy and information, which greatly affects the tight timeframes of architectural planning.

Often teachers and school heads were overwhelmed by structures that seemed like foreign objects dropped from the sky. Despite being involved in the process,

they did not have time to understand the links that could be established between space and learning.

The architect works according to clearly defined timelines, following a roadmap ordered by administrative requirements and their political-economic infrastructure. The communication triangle of architect-client-head often finds itself in difficulty, especially with the school that would like to adapt its pace to the needs of the triangle.

Another aspect where the problem of time is present regards the appropriation of spaces. The time that the school needs to appropriate for itself the structure clashes with the immediate need to carry out teaching activities in new environments that have not yet metabolized.

The first months of the occupation of a new school are when the architects still feel closely attached to their work and when the users feel equally distant from the structure. It is a delicate moment when the different conceptions of time are even more accentuated: the architects want an immediate feedback on their work, while teachers and parents are not able to give it, unloading onto them all the anxiety of the new and overshadowing all the potential of the building.

The educational infrastructure can greatly contribute to generate a process that leads to an acceptance and ownership of the new structure.

All told, this disjuncture of time highlights that a change is underway. The restructuring or construction of a school is an opportunity for change to lead to innovation. The relationship with the new can be a way to regain the spontaneity that Erich Fromm (1972) described as a child's encounter with the world. If we were to describe the general feelings encountered in our cases, the words 'confusion', 'uncertainty' and 'disorientation' would describe recurring emotions. We can say, citing Fromm again, that these are the ingredients for a spontaneous and curious exploration of the new.

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