



POLITECNICO
MILANO 1863

ARCHITECTURAL DESIGN AND HISTORY

POST - GRADUATE THESIS

PROF. LUIGI MARIO SPINELLI

Make - a - Mess IN THE PALACE

HOUSING A CHILDREN'S MUSEUM IN PALAZZO DUCALE

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ABSTRACT

“PRUDENCE TO NURTURE KNOWLEDGE, UNFOLDS WISDOM”

Ritika Athwani

Museums, in general, are large, imposing places containing a myriad of works and objects, often presented in ways which do not allow, the kind of exploration, characteristic of children. These institutions can send unconscious messages that children are not welcome - conveyed by ever-present security guards, overwhelming architecture, large open spaces, stillness, quiet, and works displayed at either monumental or adult scale. However, when welcomed and empowered in this environment, children ‘actively connect’ with the museum and its contents, providing imaginative insights and new perspectives about the same works. Unlike inexperienced adult visitors, children do not feel they have to be experts to respond to the exhibits. They are open-minded and spontaneous in their responses and interpretations.

Children bring a wide repertoire of visitor behaviors to traditional museums, using their minds, senses, and bodies to respond to and interpret the exhibits displayed. When given opportunities for self-expression, choice, and control during a museum visit, children feel empowered in this environment. Allowing children to take a leading role as tour guides is one way to engender such empowerment. This kind of experience shows them, that they have a valuable contribution to make, and allows them to learn actively from artworks, through self-directed inquiry.

Designing a children’s museum is an extremely exciting and dynamic task, requiring rigorous efforts and profound knowledge and understanding of a child’s

perception, imagination, needs, desires, and most importantly well-being and growth.

This architectural design and research project outlines our idea of a children’s museum housed in the unused area of Santa Croce and Refractory in Palazzo Ducale in Mantova. The project is based on extensive research work on the interpretation of children’s psychology and perception of a space and discusses/displays possible solutions and benefits for both the children and the existing museum, along with the city on the whole.

Make - A - Mess Children’s Museum is designed in a way so as to acknowledge, indeed, exploit! - the inherent dichotomy of a museum’s requirements for flexible exhibition areas and permanent, memorable spaces evoking an institution’s special character.

The project deals with such complexity, introducing as few alterations as possible in the existing areas of the building. The aim of the intervention is to maintain the original “structure/fabric”, while at the same time create the flexibility in space so as to make it adaptable to the ever-changing needs of a children’s museum.

The identity of the museum is reflected with the “Blue Ribbon” - an item of recognisability, suggesting - the next door to walk through, the next threshold to be crossed over, the next story to be unfolded, winding through the room like veins, pumping fresh information in the young minds. Imagining the museum as a theatre - “the stage” where the users meet the magic of the time lost in the past and get the chance to interact, and be a part of these stories and bring the characters to life.

Being helpful in user orientation and adhering to the cognitive mapping that children impose their brains to when introduced to new surroundings, M.A.M Museum is a compilation of ideas and ideologies to make an exploration space in a safeguarded environment, nurturing the minds of tomorrow.

Make - a - Mess IN THE PALACE:

Children's Museum in Palazzo Ducale

Proposal for a project of a new Children's Museum in the Palazzo Ducale:

Mantova, Italy
2017

INTRODUCTION:

Children are discoverers. They conquer their world with all their senses, with their entire bodies, with logic and illogicality, and with feeling and imagination.

One of the prerequisites for children's play is a place to play. In many communities, children's options for safe, accessible, stimulating, parent-approved play spaces seem to have become more limited in recent years. An exception to this has been the growth of children's museums.

ABOUT MAKE-A-MESS MUSEUM:

Make - a - mess Children's Museum aims to enrich children's lives, broaden their cultural experiences and provide them with a creative space in which to learn about the world. It is committed to the promotion of intercultural understanding among children and improving cultural, social, and educational opportunities for children where they live, learn, work and play. The Museum specifically serves children up to age 16 and their families, schools and community groups.

It is designed in a way so as to acknowledge, indeed, exploit! - the inherent dichotomy of a museum's requirements for flexible exhibition areas and permanent, memorable spaces evoking an institution's special character.

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The approach that we are adapting in our project was inferred by Brandi by studying his former practitioner's work.

In Brandi's words,

"The restoration must aim at restoring the potential work of art units, provided this is possible without committing a false art or false history, and without erasing all traces of the work of art passage in time.

From the definition of a work of art it is that time and space are the formal and "conditions are found in tightly fused rhythm establishing the form." In addition, the time is the phenomenological aspect of the work of art, divided into three specific phases which form its historical time:

1. The duration of externalization of art as it is being formulated by the artist;
2. the intervening interval between the end of the creative process and the moment in which our consciousness itself actualized in the work of art;
3. The moment of shock the conscience of the artwork in the present."

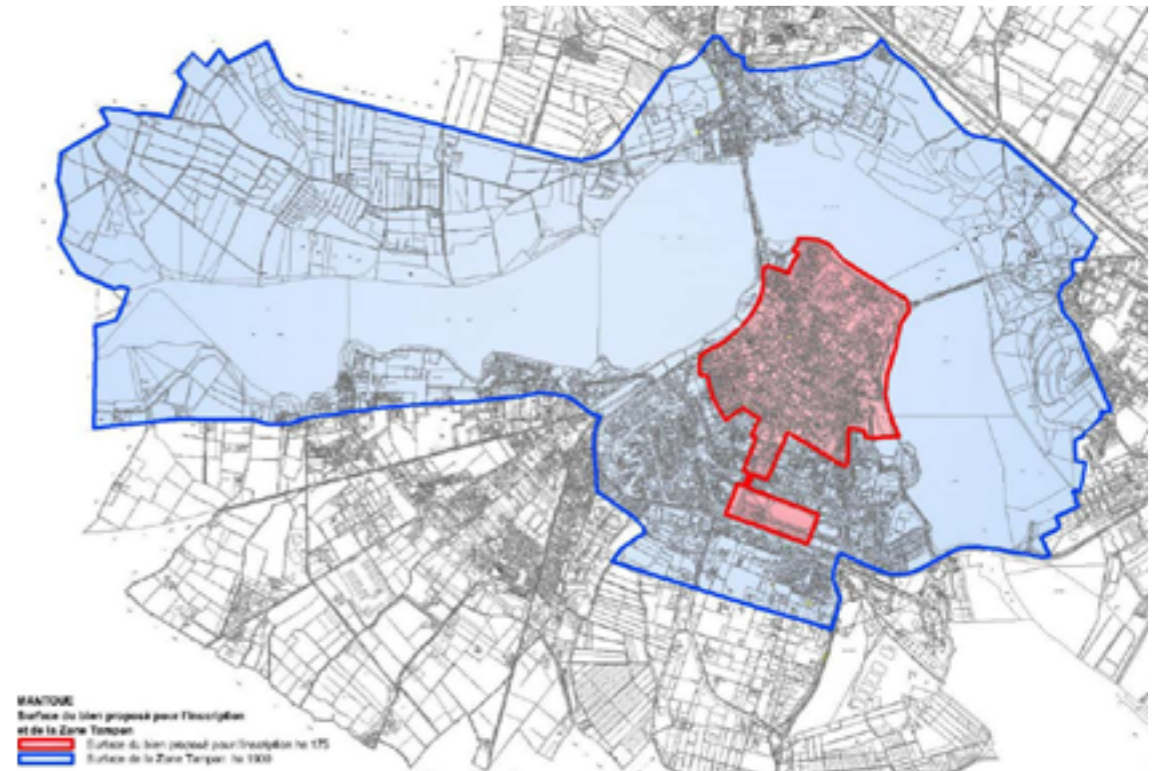
Thus in our project, we try to maintain all the layers of interventions carried out during the historical course of Palazzo Ducale. Which brings us to our course of intervening actions, which is mainly negligible subtraction and soft additions which are minimal and reversible.

- Theory of Restoration
- Cesare Brandi (1906 - 1988)

ABOUT MANTOVA:

Mantua is a jewel of the Renaissance, famous throughout the world for its history, priceless art treasures and natural beauty. It has been awarded the title of Italian Capital of Culture for the year 2016. It is the homeland of Virgil and the Gonzaga court, who attracted art and architecture geniuses - Leon Battista Alberti, Andrea Mantegna, Giulio Romano - and literary and musical geniuses - Torquato Tasso and Claudio Monteverdi. Together with Sabbioneta, it is considered a UNESCO World Heritage Site.

However, the city has so much more to offer: its current



multifaceted identity is the result of cultural stratification that occurred over the centuries. For its natural and historical characteristics and small size, Mantua is already a city with a human dimension. As the Italian Capital of Culture, it will be a workshop and an open laboratory for sustainable innovation where citizens and visitors can get involved.

A timeline of the development of Mantova would clearly demonstrate the importance of Palazzo Ducale in the city.

6th sec. B.C. - Etruscan settlements

End 3rd cent. B.C.- Roman foundation of Parva Mantua

476 - Fallen of Roman Empire
 1116 - Birth of the first circle wall's city
 1190 - Hydraulic arrangement of the city by Pitentino

1272 - Bonacolsi lordship; second circle wall's city
 1328-1707 - Gonzaga lordship
 1410 - Third circle walls
 1519-31 - Construction of southern walls (below Grada-ro convent)

From 1531 - Construction of Cittadella
 1605 - Resized of Ancona di Sant'Agnese by Giovan Bat-tista Bertazzolo

1708 - Annexation of Mantua to the Habsburg Empire

From 18th cent - Demoli-tions of many private medieval buildings and conversion of some churches and convents for military purposes

1780 - Construction of Pietole dike
 1797-1801 - Ancona di Sant'Agnese is definitively filled
 1797-1814 - French govern-ment

From 1802 - Construction of Pietole fort

1805 - Napoleone ordered the construction of the en-trenched camp
 1810 - Drainage of Paiolo Lake
 1814 - French fallen; Mantua becomes again Habsburg
 1900-11 - Modernization of Porto Catena quay
 1922 - New S. Giorgio bridge made of reinforced con-crete

First and Second World War - Interruption of works
 1946 - Birth of Repubblica Italiana
 2008 - Mantua has been inscribed in the Unesco World Heritage list.

2016 - Mantua became Italian Cultural Capital.

ABOUT PALAZZO DUCALE:

Palazzo Ducale is a vast variegated composition of diverse buildings - palazzos, churches, internal courtyards, theatres, gardens, galleries and porticoed corridors - located in the north-eastern part of the city stretching between the shore of Lower Lake and Piazza Sordello, in the historic centre of Man-tova. It was built for the lords of Mantova - home to the Gon-zaga family, from 1328 to 1707, when the last duke, Ferdinand Carlo, was forced to exile.

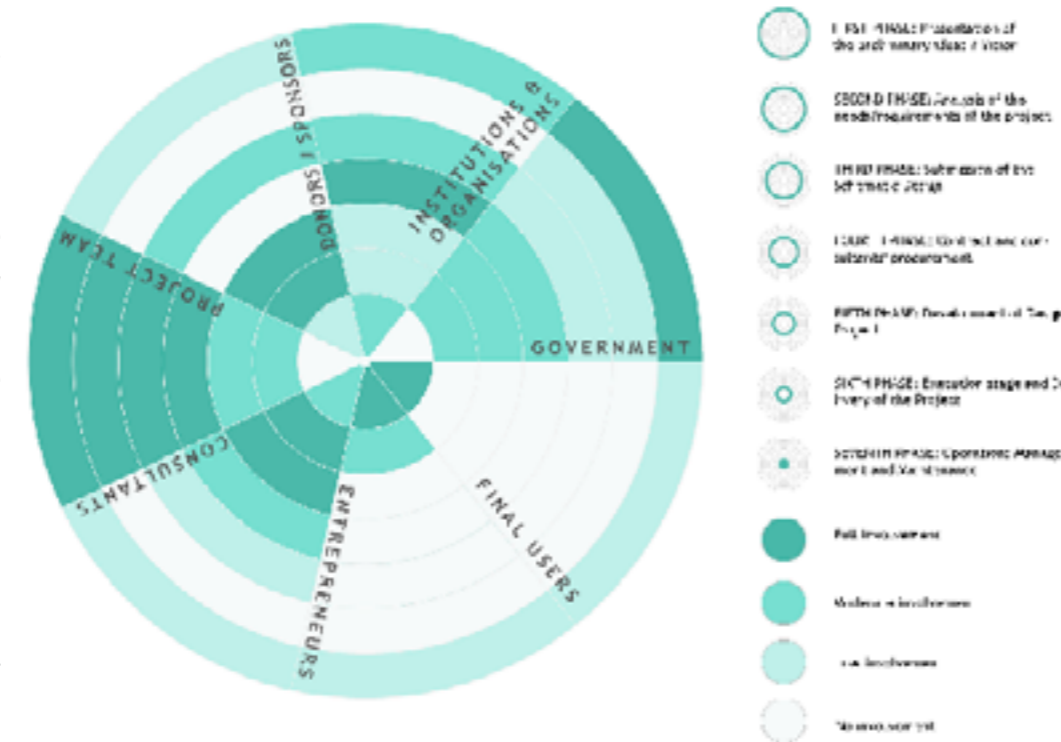
Palazzo Ducale, originally composed of factory buildings of different ages, finds an organic shape in the second half of the 16th century when it becomes a single impressive architectur-al complex extending over 35,000 meters. It seems endless, a small city of salons and galleries, of chapels and themed apart-ments. It holds more than 500 rooms, numerous buildings con-nected by corridors and galleries, courtyards and gardens, and resembles a sort of city-palace. Thus, the palace was found-ed upon a conglomeration of disjoint buildings, among which the buildings of Corte Vecchia, Castel SanGiorgio, Domus Nova and some military fortifications. Some medieval constructions, built in the middle of Piazza Sordello, were demolished during the works in order to free the fronting space and hence giving more importance to the "Citadel" of the Prince.

The actual construction of the Palace was made in the two phases that came under the domain of Guglielmo earlier,

and later under his son Vincenzo Gonzaga. During the first stage that ended in 1576, particularly dealt with the con-struction of an accommodation space for Guglielmo in Corte Nuova, the Mostra Courtyard, Church of Santa Barbara and Prato di Castello in its original shape. The second phase lasted in tfrom the VIII and the IX decades of XVI century. This phase comprised the restoration of the buildings facing Corte Vecchia, the hanging garden, Cortile delle Otto Facce - the exedra that once linked the palace to the cathedral (doesn't exists anymore), the renewal of Prato di Castello and the Santa Barbara square. While, the first phase didn't seem to be coherent in its planning, the second phase was better in terms of well-co-ordinated spaces.

Another phase of construction took place during the period of Vincenzo Gonzaga due to several disagreements between him and his father. This included closure of Santa Barbara site, reducing it into a modest structure.

Following this, began the Habsburgic dominion by an Austrian Family. This was marked in the second half of the XVIII century, when the palace was restored and renewed with late baroque and neoclassical features. Other exten-sive restorations were made between the end of XIX centu-ry and during the XX century, when it was given the Gothic connotations to Castel San Giorgio and Palazzo del Capitano that still there today. Today, the palace can be reached eas-ily from the streets that crossed the lakes around the city. Part of the palace is still facing Piazza Sordello, the historic Foro Romano. From the beginning of the last century, the palace is mainly used as a museum. The visits consist of a path along the buildings, this permits to admire the art-



works and collections, as well as the buildings themselves.

The ducal palace of Mantua is therefore, a reference point for art history with the arrival at Mantua del Pisanello already in the first fifteenth century, and later with the presence of Andrea Mantegna. After the nineteenth century abandonment, the Palazzo Ducale has been the object of restoration since the beginning of the twentieth century and became a state museum.

In addition to the painting gallery, the archaeology and sculpture sections, the apartments and the Castello di San Giorgio are of great importance, where the famous "Camera dei Sposi", frescoed by Mantegna, is housed in Gonzaga's life scenes.

WHY A CHILDREN'S MUSEUM?

We wondered Why a children's museum will be appropriate for this space. Why can we not propose some other function. To answer this, we did some analysis of Palazzo Ducale and c Mantova, the services offered, etc. Following subsections will give a brief report of the same.

CHILDREN STATISTICS IN MANTOVA & SURROUNDING AREAS

The demographic data of the province of Mantova, we see that 16.33% of the total population is constituted of minors, i.e., of people under 18 years of age. Out of this, the age group of six years to eleven years and twelve years

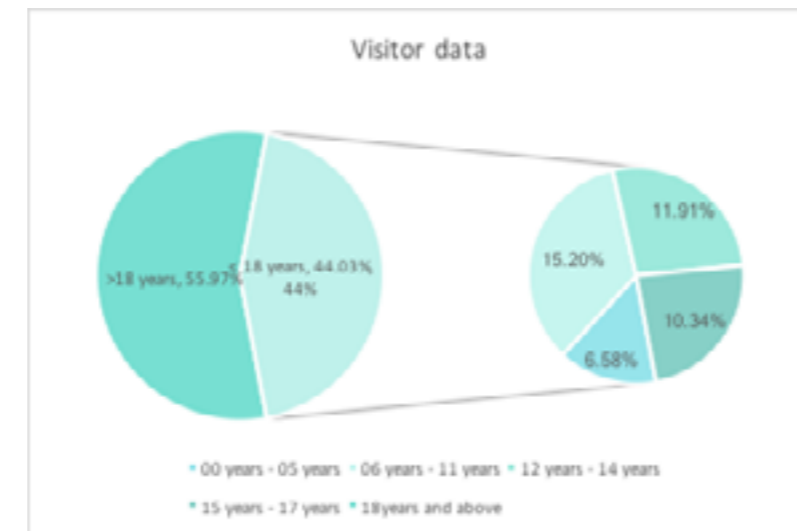
to fourteen years comprise the highest percentage, i.e., 5.70% and 5.32% respectively.

VISITOR ANALYSIS IN PALAZZO DUCALE

Along with the demographic analysis, we also cumulated the data about the people visiting Palazzo Ducale on a daily basis. We couldn't consider the 1500 tickets accounted for Camera Degli Sposi as they were on a fixed rate basis.

Based on the data we got from the ticketing office, for an average school day in the month of May, an average amount of around 44% of the total visitors was comprised of children or minors under 18 years of age. Within this 44% again, the age group from six years to eleven years and from twelve years to fourteen years constituted the major percentages amounting to 15.20% and 11.91% respectively.

Therefore, a clear idea could be drawn based on these



statistics and we found the target group which needed to be catered the most. Thus, our children museum was dedicated to the age groups of six to eleven and twelve to fourteen which constitutes the primary school age and first grade secondary school age. These age groups were apparently the most substantial number of visitors, and thus could be benefited immensely with our proposal.

OTHER MUSEUMS DEDICATED TO CHILDREN IN ITALY:

We tried finding out some more museums dedicated to children in the country. This could proof beneficial for our project by collaborating with them and expanding on a mutual basis. However, to name a few, being completely dedicated to such research based didactical activities for children, in Rome, Milan, Sienna, Florence, namely MUBA, EXPLORA, BAMBINUS and MUSEO RAGAZZI, respectively.

POSSIBLE CONTRIBUTING ACTORS & STAKEHOLDERS:

This section of the proposal deals with how the project can be "built" by the economical point of view. Of course each project of this type has to be financed, so the stakeholder diagram is useful to define who are the subjects and the people involved. We identified some main stakeholders that goes from the private companies to the public institutions.

Of course we are talking about the national, the regional

and the local government, but also about private companies that are willing to invest in a project that can give them back knowledge, innovation and workers, but also an economic return for the future.

We also considered the idea of having as partners the University of Politecnico Di Milano, Polo Territoriale Di Mantova. In this way it will be possible to create a network, capable to bring talents into the school, and work to improve the teaching and the research, but also give a place to those students who want to stay there to do researches and work. It is going to be like a "platform" of exchanging knowledge and services.

Only investment bring improvement. This is our basic concept to define the stakeholders and sponsors. The last thing to mention is that, by working in this direction we must keep in mind that everything we do is for the people. This is not intended to be trivial and rhetoric, but it is exactly what is usually forgotten during a design phase or planning. People are not only the final users but are those who make it worth enough the economical, the technical and social effort. If they are satisfied and use or take advantage of our "project" it means that it is functional and in some way is useful and correct.

The diagram shown below clearly demonstrates the different phases in which each stakeholder or sponsor is involved, taking into consideration, the different type and the time in which they are required to intervene.

BENEFITS AND IMPACT BY THIS PROPOSAL:

Make-a-Mess Museum will make a significant contribution to the richness of local community and to the quality of life in Mantova, Lombardy, or Italy for that matter. The Museum's relationship with the community will be strong and meaningful. The facility would be a widely used community resource that would promote awareness of Mantova's history, cultural diversity, and the incredible potential of the city's rich heritage. Community involvement, response and partnership are considered essential ingredients in the development of public and school programs, activities and events, exhibitions, research projects, and planetarium show productions.

Children's Museum can vastly impact the economic, educational, social, cultural aspect of a town or a province or a region to say.

Some of the few possible projected benefits due to this proposal could be listed as follows:

1. Economic Activity:

As it would encourage local residents to spend in the local area, stimulate non-local visitor spending in the community and increases the overall attractiveness of the city to new businesses and economic development. The huge economic impact caused by this museum could thus be summarised as follows:

- An annual increase in visitor spending

- An annual increase tourists' visits to the city
- Substantial increase in new local ventures & businesses

- An annual increase in local payroll
- Additional jobs (direct and indirect)
- An annual increase in local taxes
- An annual increase in state taxes

2. Educational Impact:

The Museum would act as a cornerstone of Mantova's education system. Each year, nearly several school children would visit this facility and participate in a wide range of unique learning programs. Focusing on experiences that cannot be reproduced in the classroom. A tie up with different education foundations and organisations like Reggio Emilia, etc would broaden the horizon of the city's education structure, on a whole new level.

3. Cultural - Preserving our Past:

The maintenance and conservation of Palazzo Ducale is most crucial for the future of Mantova. This structure of immense grandeur, represent our rich history, enabling us to continue to learn about our past. M-A-M museum would help the children in understanding themselves in the present, and provide guidance for the future. Areas inaccessible by the public today will be welcomed with awe and amusement by

them tomorrow. The museum would contribute in every way to the careful and dutiful maintenance needed to ensure its preservation for the future generations.

3. Social Impact:

The presence of a children museum would increase the attractiveness of the local community and would encourage new start-ups and/or relocation of other businesses in the city. In addition to its educational programs, more programmes like traveling exhibitions, field trips, outreach programs, summer camps and birthday parties could contribute in better revenue generation and more recognition - a place to be enjoyed by children, adults and families where learning and fun would be wrapped up into one envelop. Importantly, M-A-M museum would become an integral element of Mantova's portfolio of tourist attractions.

Thus, creating a children's museum would not only have positive economic aspect but also result in benefiting Mantova at various communal and cultural levels, by moulding and helping the young minds of today to grow in a better shaped environment. It may not be Mantova's claim to fame, but it would still help in bring Mantova some extra limelight and add to its richness.

HOW DOES A CHILDREN'S MUSEUM FUNCTION?

Children's museums do not fit the traditional definition

of museums as 'a collection of collections'. Traditionally, museums 'are, first of all, collections of objects and specimens ... The basic function of a museum is to collect and preserve these objects and specimens'. Whether or not children's museums can be considered to have collections and specimens or not, this is not their basic function. Rather, children's museums 'provide rich physical environments where children and families learn and play together ... [and] where childhood is respected, nurtured and celebrated' (ACM, 2001).

DECRYPTING CHILDREN'S MUSEUM

A children's museum is user friendly, interactive, hands-on, attractive, non-threatening and stimulating place designed and developed for children. It follows an experience-based learning model. Touching, trying out, participating, and thinking along are expressly desired.

The overall wellbeing of a child is dependent on making connections between his/her cognitive, social, physical and developmental needs. Thus a children museum has to considers not only the social needs of children in its planning and implementation, but also to ensure that all areas function together to fully support the shifting cognitive and developmental needs of a growing child. It has to philosophically embrace a set of values mirroring those of its target audience, and provide a framework for the programs and services it provides.

In a children's Museum, all exhibits, programs, services and products stand for the following values, designed to support the rights of children while also helping children in learning to control their destinies.

The underlying philosophies, support the rationale for children's museums, emphasize hands-on learning, interaction with real materials and intergenerational participation in a community context.

The following key words can explain better the concept of a children's museum.

- Learning (to enrich children's lives, broaden their cultural experience and provide them with a creative space in which to learn about the world).
- Interactive/hands-on (to teach children more about themselves and the world around them within an interactive learning environment).
- Fun/enjoyment/joy (where fun meets learning).
- Play (learning through play [and] a place for families to learn and play together).
- Creativity/imagination (to foster creative behavior in people—especially children).
- Discovery (children are offered the opportunity to discover the mystery of how things function).
- Children/families/intergenerational (to engage children and families in a partnership of learning through interactive exhibits and educational programs).
- Multi cultural/intercultural (children play and delight

in diverse cultural expressions and celebrations of life).

THE MUSEUM CYCLE:

A museum cycle basically means the order in which a visit to the museum for children is conducted. Ideally it comprises of three stages, namely

1. Pre-museum Activities:

Pre-museum activities are designed to help prepare the children for a guided or self-directed tour. Like any lesson or activity, children haven cleared this stage, will be better able to participate and learn in the museum environment. These activities and suggestions are intended to help the kids to have the best visit possible. These activities included knowing about museum manners, vocabulary and terminology to be used during the visit, along with a briefing of the exhibits and a backstory about the content.

2. Museum Visit:

Once the pre-museum activities are done with, the next step is to make the visit to the museum. Having gone through the previous age - the children have an easy grasp of the situation. This makes them to not lose interest during the long visits, plus keeps them alert for the following post museum

fun activities.

3. Post Museum Activities:

Post-Museum Activities help the children to continue to explore and have a more in-depth understanding in what they saw during their museum visit. After a visit to the museum, the follow-up activities are vital. These activities and suggestions are intended to help students reflect on what they saw, what they learned, and how it relates both to their school lessons and to their community.

UNDERSTANDING CHILD PSYCHOLOGY:

Children in museums display a range of characteristics that make them eager and responsive learners. They are as we know energetic and active, curious, inquisitive and exploratory, capable and knowledgeable, multi-sensory, playful, creative and full of ideas, communicative, independent and theory builders.

1. Learning Process:

Iteration: The repetition of a process or utterance.

Learning is a step-by-step process which requires iteration but through different medium or modes. The twelve principle steps involved in this process are listed below:

a) Active involvement - Research findings - Learning requires children to pay attention, to observe, to memorize, to understand, to set goals and to assume responsibility for their own learning. These cognitive activities are not possible without the active involvement and engagement of the learner. Children need guidance and assistance to become active and goal-oriented by building on their natural desire to explore, and to understand new things and to master them. They need to be able to decide for themselves their area of interest and indulge in the pleasures of being allowed to be drawn to towards it and learn from it.

It is a challenge, to create interesting and challenging learning environments that encourage the active involvement of children. The following are some ways as to how this can be done:

- Avoid situations where the children are passive listeners for long periods of time.
- Provide them with hands-on activities, such as experiments, observations, projects, etc.
- Encourage participation in discussions and other collaborative activities.
- Allow them to take some control over their own learning. Taking control over one's learning means allowing them to make some decisions about what to learn and how.
- Assist them in creating learning goals that are consistent with their interests.

b) Social participation - Research findings - Social par-

ticipation is the main activity through which learning occurs. Social activity and participation begin early on. Parents interact with their children and through these interactions children acquire the behaviours that enable them to become effective members of society. According to the psychologist Lev Vygotsky, the way children learn is by internalizing the activities, habits, vocabulary and ideas of the members of the community in which they grow up. Research has shown that social collaboration can boost achievement, provided that the kinds of interactions that are encouraged contribute to learning. Finally, social activities are interesting in their own right and help to keep students involved in their academic work. Children work harder to improve the quality of their products (essays, projects, artwork, etc.) when they know that they will be shared with other children.

One can do many things to encourage social participation in ways that facilitate learning:

- Assign work in groups and provide guidance and support to the groups.
- Create an environment that includes group workspaces where resources are shared.
- Coach them on how to co-operate with each other.
- Create circumstances for the children to interact with each other, to express their opinions and to evaluate each other's arguments.

c) Meaningful activities - Research findings - Activities are not meaningful unless children understand, why they are doing them or what their purpose and usefulness is. Some-

times activities are not meaningful because they are not culturally appropriate. Many a times, systematic cultural differences in practices, in habits, in social roles, etc., influence learning. Sometimes meaningful activities for children coming from one cultural group are not meaningful to children who are coming from another cultural group.

One of the ways of resolving these issues is to make the activities more meaningful by situating them in an authentic context. An example of an authentic context is one in which the activity is typically used in real life. For example, in our project children can improve their historical facts by participating in dedicated activities. They can improve their oral skills by participating quizzes or debates or trivia, writing skills by being involved in the preparation of article writing or essay writing for monthly museum planners. They can improve their imaginative and graphics/art skills by getting to take part in several didactic activities done in this museum related to this field, etc. It is also important to be aware of the cultural differences of the children, and to respect these differences. They must see them as strengths to build on, rather than as defects. Children will feel differently if their culture is reflected in the common activities, and will be more welcoming towards the new knowledge.

d) Relating new information to prior knowledge - Research findings - The idea that people's ability to learn something new follows from what they already know is not new, but more recent research findings have shown that the ability to relate new information to prior knowledge is critical for learning. It is not possible for someone to understand,

remember or learn something that is completely unfamiliar. Some prior knowledge is necessary to understand the task at hand. But having the prerequisite prior knowledge is still not sufficient to ensure adequate results. People must activate their prior knowledge in order to be able to use it for understanding and for learning. Research shows that children do not consistently see the relationships between new material that they read and what they already know. Research also shows that learning is enhanced when close attention is paid to the prior knowledge of the learner and the same knowledge is used as the starting point for instruction.

This can be done in a number of ways.

- Discuss the content of an activity or a lesson before starting in order to ensure that the learners have the necessary prior knowledge in order to activate the new knowledge.
- Often the prior knowledge is incomplete or there are false beliefs and critical misconceptions. This needs to be investigated in detail so that false beliefs and misconceptions can be identified.
- If needed, a recap of important prerequisite material, or some preparatory work should be done in advance.
- Helping children to grasp relationships and make connections, by providing a model
or a scaffold that they can use as support in their efforts to improve their performance.

e) Being strategic - Research findings - Children develop strategies to help themselves solve problems from an early age. For example, when pre-school children are told to go

to the supermarket to buy a list of food items, they often repeat the items on their way to remember them better. These children have discovered rehearsal as a strategy to improve their memory without anybody telling them to do so.

Research shows that when systematic attempts are made to teach learning strategies to children, substantial gains can result. Strategies can improve learning and make it faster. Strategies may differ in their accuracy, in their difficulty of execution, in their processing demands and in the range of problems to which they apply. The broader the range of strategies that children can use appropriately, the more successful they can be in problem solving and in memorizing.

Giving students a task and provide a model of the inquiry process or ask key questions, and helping them in this process by participating in the discussion and by asking critical questions. It is therefore, important to ensure that children learn to use these strategies on their own and do not always rely on for support.

f) Engaging in self-regulation and being reflective - Research findings - The term 'self-regulation' is used here to indicate children's ability to monitor their own learning, to understand when they are making errors, and to know how to correct them. Self-regulation is not the same as being strategic. People can use strategies for learning mechanically without being fully aware of what they are doing. Self-regulation involves the development of specific

strategies that help learners evaluate their learning, check their understanding and correct errors when appropriate.

Self-regulation requires reflection in the sense of being aware of one's own beliefs and strategies. An important aspect of reflection is being able to distinguish appearance from reality, common beliefs from scientific knowledge, etc.

A few ways of doing that are as follows:

- To plan how to solve problems, design experiments and read;
- To evaluate the statements, arguments, solutions to problems of others, as well as of one's self;
- To set their own learning goals;
- To know what are the most effective strategies to use and when to use them; etc.

g) Restructuring prior knowledge - Research findings - Sometimes existing knowledge can stand in the way of understanding new information. It happens because our current understanding of the physical and social world, of history, of theorizing about numbers, etc., is the product of thousands of years of cultural activity that has radically changed intuitive ways of explaining phenomena. For example, the idea that the Earth is round like a pancake or like a sphere flattened on the top happens because it reconciles the scientific information that the Earth is round, with the intuitive belief that it is flat and that people live upon its top. Such misconceptions do not apply only in young children. They are common in high school and college students

as well.

- Students have prior beliefs and incomplete understandings that can conflict with the new information that is being imparted to them. It's important to build on the existing ideas of students and slowly lead them to more mature understandings. Ignoring prior beliefs can lead to the formation of misconceptions.

- It is important to create the circumstances where alternative beliefs and explanations can be externalized and expressed.

- Children must be given enough time to restructure their prior conceptions, by designing a curriculum, that focuses on fewer topics in greater depth than attempting to cover a great deal of topics in a superficial manner.

h) Aiming towards understanding rather than memorization - Research findings - Research shows that when information is superficially memorized, it is easily forgotten. On the contrary, when something is understood, it is not forgotten easily and it can be transferred to other situations (see also the next principle on transfer). In order to understand and process the information imparted to them, children must be given the opportunity to think about what they are doing, to talk about it with other children and with teachers, to clarify it and to understand how it applies in many situations.

How does one teach for understanding? The following are some tasks that can be carried out in order to promote understanding of the information that has been imparted.

- Show children how to provide examples that illustrate

how a principle applies or how a law works.

- When children understand the material, they can see similarities and differences, they can compare and contrast, and they can understand and generate analogies.

- Help children understand as to how to abstract general principles from specific cases and generalize from specific examples.

i) Helping students learn to transfer - Research findings - Students often cannot apply what they have learned to solve real-world problems. Transfer is very important.

The ability to transfer what has been learnt can be by:

- Insisting on mastery of subject matter. Without an adequate degree of understanding, transfer cannot take place.

- Helping students see the transfer implications of the information they have learned.

- Applying what has been learned in one subject-matter area to other areas to which it may be related.

- Teaching them how to abstract general principles from concrete examples.

j) Taking time to practice - Research findings - Research shows that people must carry out a great deal of practice to acquire expertise in an area. Even small differences in the amount of time during which people are exposed to information can result in large differences in the information they have acquired. Research shows that children from disadvan-

tagged environments who have less opportunities to learn and who miss school because of work or illness will not be expected to do as well as compared to children who had more time to practice and acquire information.

Educational programmes can be designed to increase one's exposure to learning situations preferably at an early age. Here are some recommendations that can help children spend more time on learning tasks.

- Increase the amount of time spend on learning activities.

- Giving learning tasks that are consistent with what they already know.

- Focusing on a limited amount information at one time.

- Help to engage in 'deliberate practice' that includes active thinking and monitoring of their own learning.

- Give them access to books so that they can practice reading at home.

k) Developmental and individual differences - Research findings - Research shows that there are major developmental differences in learning. As children develop, they form new ways of representing the world and they also change the processes and strategies they use to manipulate these representations. In addition, there are important individual differences in learning. Developmental psychologist Howard Gardner has argued that there are many dimensions of human intelligence other than the logical and linguistic skills that are usually valued mostly. Some

children are gifted in music, others have exceptional spatial skills (required, for example, by architects and artists), or bodily/kinaesthetic abilities (required by athletes), or abilities to relate to other people, etc. The environment for the development of children must take into consideration such individual differences.

Following are the recommendations for creating the best environment for the development of children, while recognizing their individual differences:

- Assess children's knowledge, strategies and modes of learning adequately.
- Introduce children to a wide range of materials, activities and learning tasks that include language, mathematics, natural sciences, social sciences, art, music, movement, social understanding, etc.
- Identify their areas of strength, paying particular attention to the interest, persistence and confidence they demonstrate in different kinds of activities.
- Support their areas of strength and utilize these areas to improve overall academic performance.
- Guide and challenge children's thinking and learning.
- Create connections to the real world by introducing problems and materials drawn from everyday situations.
- Show children how they can use their unique profiles of intelligence to solve real-world problems.
- Create circumstances for students to interact with people in the community, and particularly with adults who are knowledgeable and enthusiastic about the kinds of things

that are of interest to the students.

l) Creating motivated learners - Research findings - Motivated learners are easy to recognize because they have a passion for achieving their goals and are ready to expend a great deal of effort. They also show considerable determination and persistence. This influences the amount and quality of what is learned. Psychologists distinguish between two kinds of motivation: extrinsic motivation and intrinsic motivation. Extrinsic motivation results when positive rewards are used to increase the frequency of a target behaviour. Praise, high grades, awards, money and food can be used for that effect. Intrinsic motivation is when learners actively participate in activities without having to be rewarded for it. The child who likes to put together puzzles for the fun of it is intrinsically motivated.

An important characteristic of intrinsically motivated learners is their belief that effort is important for success.

Ways to do so are as follows:

- Recognize and appreciate their accomplishments.
- Help students believe in themselves.
- Provide feedback to children about the strategies they use and instruction as to how to improve them.
- Help learners set realistic goals.

It is also important to:

- Refrain from grouping children according to their ability. Ability grouping gives the message that ability is valued more than effort.

- Promote co-operation rather than competition. Research suggests that competitive arrangements that encourage students to work alone to achieve high grades and rewards tend to give the message that what is valued is ability and diminish intrinsic motivation.

- Provide novel and interesting tasks that challenge learners' curiosity and higher-order thinking skills at the appropriate level of difficulty.

2. Spatial Simulation

The spaces meant for children need to be simulated in certain particular ways. Some of these principles should be considered while designing such places.

a) Hybrid Environment - Creation of a hybrid environment is formed by relationships between spaces. Being inquisitive by nature, Children tend to get bored and lose focus and their mind tends to wander quickly if some external factor is not compelling them to be attentive. Thus, strategic planning is required in terms of gaining their attention and making them focus. This requires flexible spaces where, multiple dimensions co-exist (even opposing ones).

b) Overall Softness - Spaces need to have an overall softness, by incorporating, rhythmic stimulating space with the desired number of pauses. When it comes to children, going beyond the formal codes of design becomes kind of essential in order to cater to the powerful imagination, that these children

possess. It only makes sense to link that imagination with the field of knowledge, and so the spaces designed are to be rational, fluid and adaptable as per the many required activities, with as many cultural filters as needed.

c) Osmosis - The Relation between these kind of spaces are rich in information without adhering to any formal rules. The quality here depends on the links and the dynamism of the space, the ability to transform or to blend into another space. This phenomenon can be termed as or related to Osmosis, which is defined as a physical phenomenon that involves spontaneous passage of fluid solvents through a semi-permeable membrane, where the two fluids are at different temperatures and the differences had to level each other out spontaneously.

In the real world, when it comes to the children - we need to transfer knowledge (here, as fluid one), to their brains (here, as fluid two), through a semi-permeable membrane (here, it is education), which itself needs to be transformed in a fabric encompassing the whole area but not by being rigid or harsh. Instead, by being soft and flexible, and at the same time, guiding and protecting the children.

Any space dealing with children should be capable of adapting itself into being that kind of semi-permeable membrane, into being that interface through which children can absorb the filtered knowledge - the filter being that of culture and wisdom. They should be both responsible and easily transformable, at the same time. Therefore, these spaces should be unlike the usual city places which

are dense, rigid and contaminated. It is important for these spaces to not only be rich in stimuli but also having different sensory values, in order to be fine-tuned by each individual.

d) Multisensoriality - Children possess immense genetic capacity, that enables them to explore, discriminate and interpret reality through their senses. An unstimulating environment tends to dull and deafen their perspective. Thus, sensory perceptions (Shape of spaces, Functional organisation, Perception tools such as light, colour, material/texture, scale and subdued guidance, etc.) are all the more necessary to enhance the learning and exploring experience. The environment must therefore be conceived as a multisensory place, not so much in the sense of being simply rich in stimuli but having different sensory values so as each individual can tune in to his or her own personal reception characteristics. Thus it is not advisable to have standard univocal solutions for different groups of users.

e) Epigenesis - Children construct spaces within the places that they are situated in. Therefore, an environment for them should be considerate about their desires and abilities to construct places, and offer elements and instruments to satisfy their desires and help their abilities to grow.

Spaces for children should be

- responsive and transformable,
- capable of different ways of inhabitation and use,
- personalizable,

- soft
- open to receiving imprints

Learning, as we know is a free choice (if, when, what, where, whom, how, etc.) made by the individual learner. The context, defined and determined by the relationships and interactions with others, and thus also with the environment - spaces, furnishings, colours, lights, and sounds - determines the possibilities and qualities of learning processes that each individual chooses to produce within that context and thanks to that context. The environment should thus, be able to adapt and develop one's own evolutionary processes. Evolution, therefore, is a basic operative and cultural condition of the space.

f) Community - Children, like adults, need to belong to a social group, to compare ideas and share experiences with others. It creates a sense of empathy, a sense of closeness, that enables each group member to recognise him/herself in the other. It enables them to share common values and shared meanings.

The sense of community also generates the spatial characteristics of the space, such as the horizontality of the overall distributive layout, etc.

g) Constructiveness - the adventure that characterizes the process of cognitive and cultural development. The construction of knowledge doesn't take place in a linear way but a very progressive dynamic network of interconnected and inter-weaving elements.

Perception, action, and reflection become the funda-

mental strategies for individual cognition, and the space for children should be a place for alchemic composition of knowledge and desires, for perceiving and constructing reality, for the development of its "ecology of the artificial".

h) Narration - The capacity of each space to narrate all the choices and references that generate a self-representing informative environment, much like a hologram - (which here can be compared to the continuous thread of memory and imagination, considering that these elements do not reside in a specific place of the cerebral cortex, but throughout the cortical mass, as if it were a single holographic plate; similar to a holographic technique, which involves recording figure on a photo-sensitive film, and provide a volumetric image that is visible from different perspectives and thus extremely congruent with 3-dimensional reality).

i) Communication - It becomes a structure that is superimposed on the architecture. The resulting environment must leave space to connections of meaning made by those who are "listening", without excessive application as the aesthetic or linguistic level. The environment dealing with children should document not only the results but also the processes of learning and knowledge-building, that narrates the didactic paths and states the values of reference. It's like generating a "secondary skin" made of writings, images, materials, objects, and colours, which reveals the presence of the children even in their absence.

j) Rich Normality - A wholesome ambience made up of different parts in harmony, and balance. Interaction of different elements (objects, situations, iconography, materials) that produce a tranquil result, a symphony of the individual parts, well balanced, with amalgamated "flavours" - not a situation of cacophony. The environment is calm and tranquil. The perceptual result is simple but not careless, in the range of medium tones. This effect of intense and interesting normality is not generated by a singular-logic environment, but by the balanced combination of many different elements, just as the white light of the sum of all the colours of the spectrum.

3.3.3 Relational Form

In order to construct a strong environment and physically organise a space, from a pedagogical point of view, a series of understandings and precise guidelines can be followed with a few ideal connotations.

a) Recognisability - Recognisability means creating an architectural language and an environmental atmosphere with a precise identity. It is important for a pedagogical space to maintain flexibility, but at the same time to maintain its own specific identity, with recognisable elements which makes it distinguishable from other buildings in the vicinity.

b) Horizontality - A horizontal layout highlights a con-

scious choice of not creating hierarchies among the various spaces. It is thus, the physical manifestation of a democracy of functions, equal dignity, and sociality.

c) Centrality - Another important feature is the presence of an idea of centrality, which means creating a central collecting space, meant for meeting, etc. - a sort of a piazza (like a main town square). The pedagogical connotation here, deals with fostering encounters, group interaction, stories, orientation, an idea of a community containment, and children's assumption of a public identity. Parallely, it also reduces the circulation or the need of corridors.

d) Transformability and Flexibility - Short term and long term transformations should be taken into consideration while designing pedagogical spaces.

Short term transformability can be achieved by using:

- Partitions
- Furnishing elements that can contain other equipment and materials
- Movable wall panels
- Screens for shadow play and projection

Long term transformability involves:

- The potential for physical modification of the spaces; i.e. technical systems (electrical, heating, plumbing, etc.) and structures that enable changes over time;

- Expandability, which means the possibility to enlarge the functional spaces by some refinements and adjust-

ments;

- Varied use of spaces - the spaces can have characteristics specifically dedicated to the different ages of the children.

e) Atelier / Activity Space - A complimentary space, used for research, experimenting, exploration, etc. to support the children's learning and creative processes. The space serves as a little hands-on workshop space and as a centre of observation and documentation.

f) Inside-Outside Relationship - A relationship between the inside and the outside is a very important element. Sensing what is happening in the outer world - from the time of day to the weather changes, to the rhythm of the town is essential to expand the horizons of the spatial simulation. Elements that foster such relationships are

- "filter" spaces like porches, verandahs, etc.
- entrance spaces providing on information about the information on the various activities and programmes taking place inside.
- Installations for making visible the behaviour of physical forces (wind, water, etc.)
- Spaces and courtyards with natural elements like plants, etc.

g) Transparency - The transparency can be connected to a number of aspects ranging from

- Visibility of building elements and technologies,
- Succession of visible spaces in terms of spatial levels, i.e., the possibility of looking through, from one space to another;
- Focusing on ensuring a sense of depth of field and the perception of space, rather than excluding opacity.

h) Communication - Communication is a fundamental base for any activity that involves research, exchange of ideas, and discussion, and is thus an important element of any educational project. The pedagogy of projects, listening, subjectivity and collaboration is based on the relationship between the subjects and the surrounding environment.

Some considerations during the creation of such an environment are as follows:

- The walls should permit extensive displays of different types (2D and 3D), so as to make an interactive domain.
- Certain areas, such as the orientation room, entrance, etc. should have specific types of communication, which are modifiable according to the need.
- Filter zones are also needed, situated between casual zones and chronological path.

3.4 ANSWER - PRINCIPLES

Thus, the museum for children needs to hold certain principles, in order to provide optimal learning experience.

- a) Purpose - To give to the children a sense of purpose - reward based events and activities.

b) Inclusion - The will to participate in the museum programmes and relate to the exhibits and the information being imparted to them in the main museum.

c) Choice: To be able to choose and control, what to learn, based on personal interest and motivation.

d) Ownership: A sense of leadership / ownership - by developing interest and confidence over their own learning. e.g. - self touring.

e) Engagement: Children engage in experiences with both people and objects in the museum.

f) Team work: Enforce team building exercise, team problem solving and team decision making.

g) Time: Time to go deeper into areas of individual interest, for reflection, and for self-expression, (thinking, talking, moving, drawing).

h) Use of multiple senses: Opportunities exists for hands-on/minds-on involvement in learning experiences, and for fully busy engagement.

i) Fun!

1. Architecture

a) Cognitive Mapping: Children often start their museum visit with a period of rushing around and orienting

themselves to the space. Following the orientation phase is a period of settling down. During the cycle of activity, children slowdown and explain more selectively, purposefully and quietly.

Children do not always interact with exhibits the way, in which they were intended when designed by museum staff, but rather follow their own interests and agendas.

b) Physical Design: Appropriate physical design of a museum venue ensures an environment that is conducive to the learning, and comfort of the visitors. A range of factors are to be considered while designing a physical environment, including spatial organisation and provision of basic facilities, as well as exhibit characteristics.

2. Physical Environment:

1. The entrance to the museum is usually welcoming, able to accommodate large groups and clearly signposted to assist visitors in finding their way.
2. The environment provides a balance between organised, predictable spaces and areas of exploration and discovery.
3. Different exhibition areas are clearly defined and adequately separated in order to minimise distractions.
4. The space is arranged to enable individual, small, and large group discussions.
5. The space is arranged to avoid safety hazard.

6. The environment should be non-threatening.
7. Facilities are provided to cater for children's physical needs (nourishment, toileting, rests, etc.).

3. Exhibits:

1. A balance to be provided between interactive exhibits and static exhibits.
2. Exhibits to cater a variety of interests, ages, degrees of knowledge, learning styles, experience and skills.
3. Exhibits and interpretation are multi-sensory. They are to promote discussions and provide opportunities for group problem solving.
4. Exhibits allow for vigorous play and stimulate visitor's natural curiosity and spark their motivation to explore.
5. Exhibits provide a range of learning opportunities through various modes.
6. Exhibits encourage repetition of activities and application of skills or concepts presented.
7. Exhibits present information in a manner that is comprehensible to the visitors.
8. Visitors are given opportunities so as to make choices and control their experiences.
9. The goals of exhibits are to be clear and manageable - so as to allow self-directed behaviour.
10. Exhibits are to be durable, well maintained, safe and regularly evaluated.

DESIGN TOOLS

4.1 COLOUR

Children have a natural love for colour and respond to it spontaneously. It requires a precise response that is differentiated for each group of users. Thus, it is always better for a space to be polychromatic, so that the user can tune in to his or her own personal colour preferences. From the spatial point of view, colour plays an important role in defining the perspective and layout of the environment.

There are two semantic components that should be carefully considered in terms of colour.

a) The first is distinction between "intrinsic colour" and "applied colour"

Intrinsic colour belongs to the nature of the object, which is ascribed to its constitution. Applied colour on the other hand, is the superimposed colour e.g., by means of painting. The result of painting can transmit happiness but could also tend to be unpleasant at times due to an artificial appearance.

b) The second in terms of environment, is the distinction being between "existing colour" and "introduced colour".

Existing colour is the colour of the given environment in which we are working; while the introduced colour is the colour that we introduce more or less consciously through our actions.

Like light, the identity of colour is a product of the existing cultural context. As regards of a children environment, the identity and the use of colour are strongly influenced by the contemporary cultural image of children. The chromascape for such an environment should be rich, covering all the variants of identity of colour without however, creating an effect of "cacophony", rather, a well-balanced result creating harmony.

The aim is to give children a sufficient chromatic variety and complexity, an overall perceptive richness that is stimulating for the formation of the knowledge and identity-building processes.

Use of primary colours at low saturation (like a powdery or textured effect), and tertiary colours in a purer more volumetric way. An overall balance between the "warm" hues (reds, pinks, yellows) and the "cold" hues (blues and greens).

The chromascape should include both, surface colours (syntactic, volumetric, superimposed, like thick paint) and iconic colours (volumetric, "natural", like that of wood, glass, stone, etc.), which means both "painted" materials and those with their own colours.

It is better for the colour of the overall environment to be predominantly delicate and unobtrusive, the object landscape can be more colourful, however not saturating the environment, which is best left to be completed when inhabited by people and things (furniture, display, etc.).

Thus,

- The floor should have a neutral base.
- The ceilings more for fixing screens or lights.
- The walls, as a background, and should be chromatically hospitable - acts as a subtle base.
 - Support materials attached on the wall - like a second skin - on which materials are hung, also doors and windows.
 - Basic shelving can be more prominent in character - but with low saturation.
 - Didactic or other connotative furniture acting as accent features - playing a starring role in the chromascape.

Though subject to variations, the choice of colours to be used in the scholastic environment should give priority to certain constants such as harmony, serenity, attractiveness, cheerfulness, etc. The primary colours (red, blue and yellow), should be present, but in suitable ranges of saturation and brightness. The richness of the chromascape enables children to develop certain sensitivities and understandings. So, the colours are not only intrinsic and applied, opaque and transparent, warm and cold, but also have varying tactile qualities - silky, shiny, or rough - offering a more complex sensory identity and enabling more varied explorations and sensations. Colour should be used to create atmospheres, scenarios and settings in harmony with the contemporary aesthetics and sensibilities.

4.2 LIGHT

Light is responsible for three distinct perceptive dimensions:

- Visibility
- The aesthetic image
- The sensation of the passage of time

Light is one of the greatest emotive components of our aesthetic perception. Feelings of euphoria or lethargy, panic or cheerfulness, etc. are closely linked to the quality and quantity of lights.

The few distinctions in the light forms can be explained as below:

1. Natural Light

It informs us about the meteorological conditions of the day and enables us to perceive the progression and the passing of the time.

- Variation - Natural light can be easily modulated, filtered, screened or textured using simple means. It's important for children to have the opportunity to regulate and manipulate the natural light autonomously.
- Quantity - The quantity of natural light is one of the most important characteristics of indoor illumination.
- Distribution - a well-balanced architectural distribution of the natural light, i.e., coming from inside the building as well as from outside, offers a number of advantages and multiplies the interesting contexts.

2. Artificial light

Artificial light should be uniform and monotonous. The lightscape for children should be lively and highly differentiated in intensity, in colour (cold and warm), and in filters.

- Mixed lighting - mixed light, which seems indirect, with almost invisible sources, should be accentuated
- Manipulability - it should be possible and easy to obtain different gradations and intensities of light and screening, up to total darkness. As much as possible, these variations should be accessible to children to manage and explore autonomously.

3. Shadow

Another important element, shadows can also be in different variants like delicate, dense, ordered or chaotic, fragmented or compact, etc. it is beneficial in creating entertaining subjects for producing autonomous environmental choreographies. The three variables at play are - nature of source, the environment and the arrangement of objects present. They can be

- Real shadows - homogenous or heterogeneous
- Ordered or disordered

4. Composition

The idea is to focus the adequate amount of light to the areas where it is needed for carrying out certain functions in a given environment. It also depends on the number and type

of light sources, their position with respect to the observer and location in the environment, and the individual lighting effects.

5. Geometry

Light enters interior environments in three basic directions:

- Laterally - Lateral entrance of light is from the horizontal openings - i.e. windows or doors.
- From above - Light from above also termed as “zenithal” light, can give the environment an underground connotation, dark and gloomy which recalls the archetype of a cave or trench, and strongly affects our ability to inhabit the space.

- From below - Space illuminated from below, is usually for didactic purposes and can be termed as “lagoonal”, as such light naturally occurs by reflections in vast expanses of water, giving a sense of weightlessness and floating in an unnatural dimension.

6. Colour

The composition of artificial lightscape can be polychromatic or monochromatic. The former reinforcing the complexity of its spatial articulation; and the latter creating an equally interesting environment with perception conditioning. The cold and warm hues of light can modify vastly the perception of a place. Using plexiglass, glass or plastics or a tissue paper, etc. on a window or around the light source can create varied semantic lightscapes.

7. *Texture*

Light can be broken up to create a consistent and harmonious pattern, to design a whole that is rich in luminous microelements, creating what we could call “textured” light.

4.3 TACTILITY - MATERIAL / TEXTURE

The tactile nature of space is expressed in perceptive as well as physical terms; i.e., by synaesthesia that involve the individual’s processes of orientation and spatial judgement. Textures can be defined with respect to their shape, temperature, parameters of pressure, moisture content, and the type of movement, such as rough, wet, cold, hot, dry, soft, etc.

A complex material scenario including different families of materials (wood, leather, textiles, glass), materials of varying duration (paper walls, ceramics), materials with a different grain and so on.

Tactility is a key feature in a pedagogical environment. Through the touch of their skin, children explore the world with an extremely sensitive and intelligent “radar”. Children sense materials, light, and temperature, and establish relationships of sympathy, antipathy and indifference.

Children use many methods and strategies for touching and feeling things: touch, stroke, embrace, squeeze, weigh, and explore. The richness and variety of the material setting

is thus an indispensable characteristic for an environment for young children, and it is essential that the design project consider the balance of this artificial system. In any case, a number of general characteristics of the material environment can be outlined.

1. *Harmonious complexity*

Multiplicity of different tactile stimuli - must be strategic from an aesthetic -cultural point of reference, that filters and guides each choice. The orchestration of the whole produces the richness (not chaos) of a balanced co-existence of different materials.

2. *Manipulability*

Within this tactile multiplicity, we should consider providing materials that lend themselves to different tactile effects and sensations, including more “natural” materials (wood, rubber, etc.) and more “artificial” ones (metal, laminates, etc.), organised to encourage sensory exploration.

3. *Local simplicity, global complexity*

The multisensory and poly-material concept should not, give rise to the use of single objects, furnishings, or contexts that encompass all the possible tactile stimuli and effects. It is the overall environment itself, rather than each single part, that should offer a wide variety of sensory perceptions. Tactility, like other senses, needs plenty of space as well as pauses for “listening”. The aim is to construct an environment in which the single parts may have elementary characteristics

but which produces a global “emerging state” that is rich and expressive.

4. *Aging and the dimension of time*

The behaviour of materials with passage of time is an important consideration to be kept in mind. All the materials need not be durable and unchangeable.

5. *Places*

There are no privileged places, indeed all spaces offer opportunities from this point of view. The floor for example is a highly interesting world to be explored which can offer multiple points of interest when appropriately considered in the design phase. It is the one element which is the most widely used surfaces by children of all ages and is a true centre of attention and inhabitation. The walls to at a child’s height can offer varied and interesting tactile experiences.

4.4 SCALE

Architectural volume and colour are among the most defining elements of space for children. The use of architectural volume to create interest and define activity is ancient. Architectural interplay of volume, scale, texture, fenestration, structure, and architectural decoration - when creatively and carefully considered - add little, if any, cost to the design of the children’s space. These are the elements to celebrate, the creation of a truly timeless space - one that will be great and

enduring for children of various ages.

Children perceive scale and proportion from their evolving perspective, and no two children perceive or understand a space in exactly the same way. Designing space for young people demands consideration and accommodation of many factors. It is essential for adults to consider their own childhood experience, not necessarily for application but for awareness.

Think of visiting a place as a child and then returning only years later as an adult. The place seems smaller, different. Buildings that once seemed to loom and foreshadow us as children are often either quaint or modest. A theatre that seemed to swallow us up in its vast arena, is in fact, humble and small. The school doorway that made us feel, that we are entering a giant castle is just ordinary. Design can forge the union of programmatic intention and its accommodation through architectural and interior space.

For generations, architects followed time-honoured principles in the development of building designs related to scale. From the *De architectura*, from Vitruvio to the rigors of the Ecole de Beaux Arts, scale and proportion have had their place in formal thinking about architecture. Only in recent generations has the execution of proportion and scale in design become democratized, eliminating formal expectations or guides as to the aesthetic harmony or discord created by scale.

Much of the perception of architecture comes from its vertical scale, since human beings walk upright. Likewise, much of the perception of scale for children is horizontal,

since children crawl or walk on the floor and sit close to it. Children like small nooks or portals that are in scale with their own size. The interior design of children's space can include two or three small intimate spaces that children crawl into or through. Accordingly, the horizontal scale is a component of the library's design that can make the space inviting to children or confusing. Patterns that define direction and identity of specialised spaces for children reinforce the mission of the library and can add depth and definition to the space.

An unusual juxtaposition of architectural elements in children's area can create fun features that are timeless and enchanting. The three dimensional elements of design can also be the basic form and shape of the architecture and interior, creating the most magnificent of children's spaces.

Form and Void: - the creation of space using form and void is something that almost every small child experiments with, through building blocks. Structure, balance, interest, form, and void, are components and resultants of this early part of child play and development. What then, could be more appropriate or more intriguing to children than form and void in architectural space? form and void may be rooms or shapes within a space for special features. These can be manifested in changes of walls, ceilings, or unique form into a space.

4.5 GUIDANCE

The heart and pivotal point of a space dealing with children is the guiding factor which communicates with the visitors in the background, yet allowing them to liberate themselves time and again from the rigidity of a path. The key is to maintain the necessary breaking intervals in between by creating a physically communicative structure that twists and winds its way through the space, breaking through the boundaries or limits, winding its way and acting as a presence of mind for the young visitor. Sometimes a counter, sometimes a table, sometimes a section of shelves, the structure points, guides and tempts the visitors to explore the area. Whether this guiding element integrates itself into something aesthetic, or simply as an active guidance tool for the museum visitors, is completely at the disposal of the designer.

It is essential to create an emotional connection between the different areas that children can explore. The focus of this continuous guidance has to result in a deliberate yet subtle path to be followed along the museum, but at the same time, creating a sliding and balanced transition from one functional space to another. An important aspect of maintaining this guidance is to have stops for various different taste and interests, shared as well as individual. It is a place which meets these young visitors' needs for inspiration, experiences and personal development.

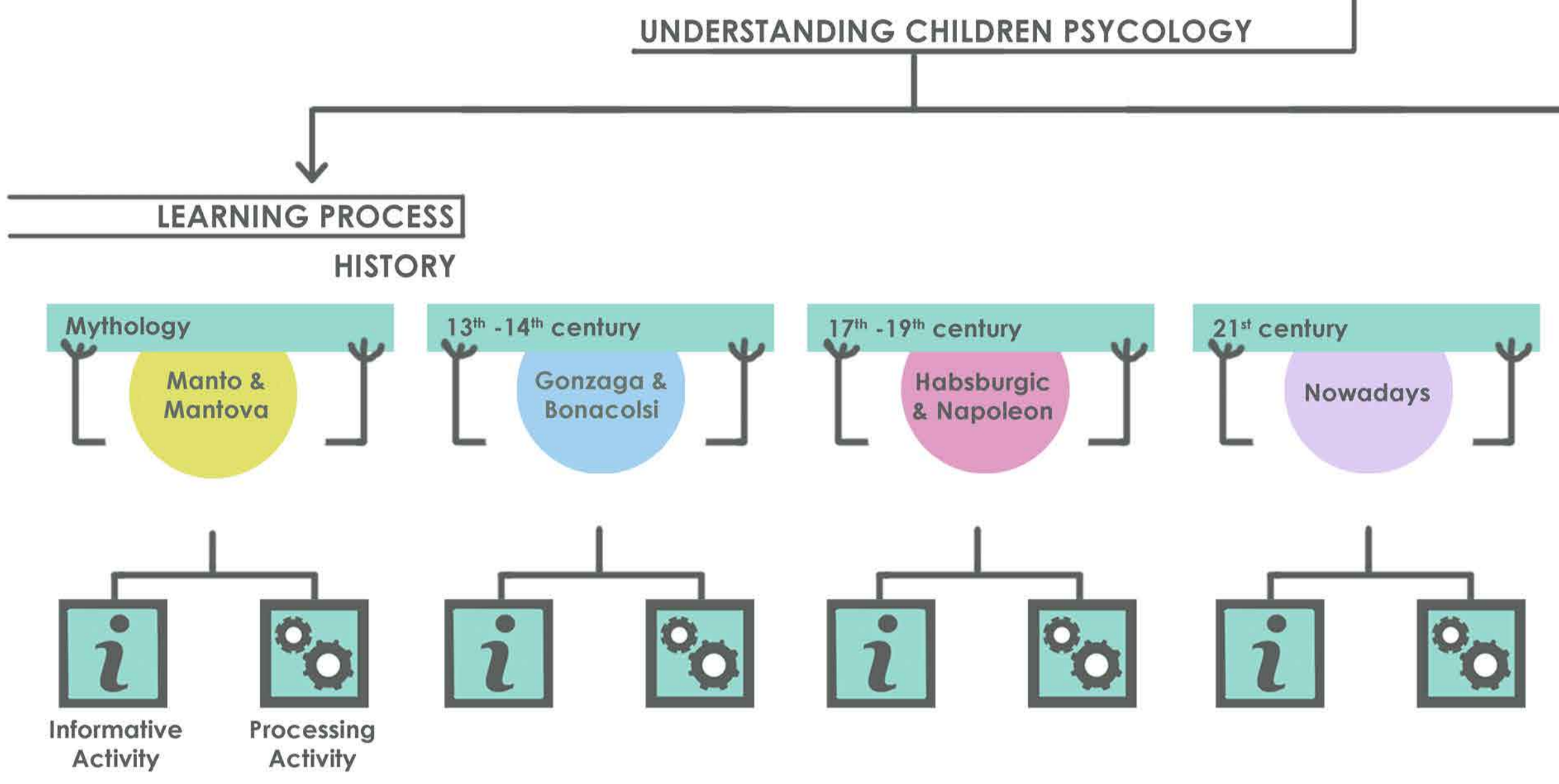
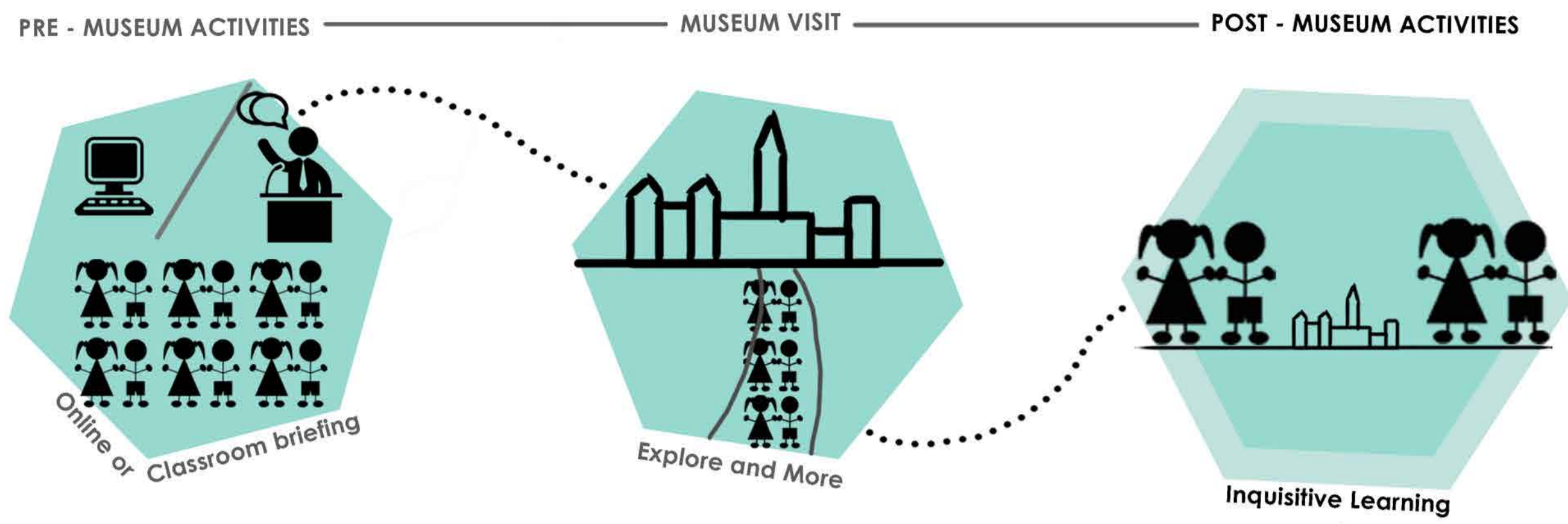
The identity of the place is reflected with these guiding elements - an item of recognisability, suggesting the next door to walk through, the next threshold to be crossed over, the next story to be unfolded, winding through the room like veins, pumping fresh information in the young minds. Imagining the museum as a theatre - "the stage" where the users

meet the magic of the time lost in the past and get the chance to interact, and be a part of these stories and bring the characters to life.

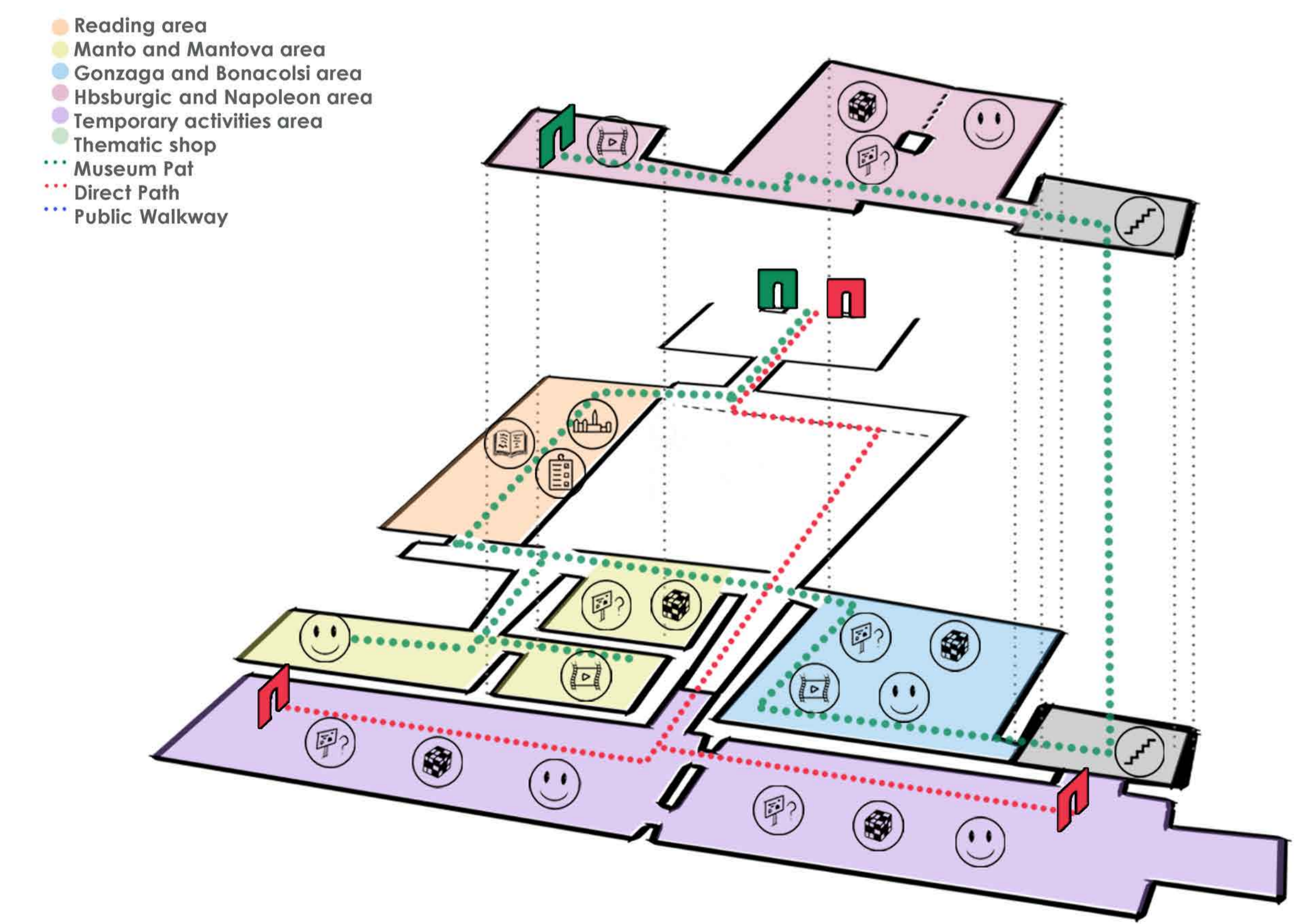
The same is the case with the ICON - the landmark point of the visit, on reaching which, the listener/visitor is confronted to their amusement, with an iconic instalment or exhibit, denoting the beginning or the end or an impactful phase in the chronology. This is indeed helpful in user orientation and adhering to the cognitive mapping that children impose their brains to, when introduced to new surroundings.

Conceptual Approach

VISITING PHASES IN AN IDEAL CHILDREN MUSEUM



FUNCTIONAL PROGRAM AND SCHEMATIC PATHS



SPATIAL STIMULANTS

COLOUR
 Children have a natural love for colour and respond to it spontaneously. A harmony of existing and applied colour is very stimulant and attractive to children.



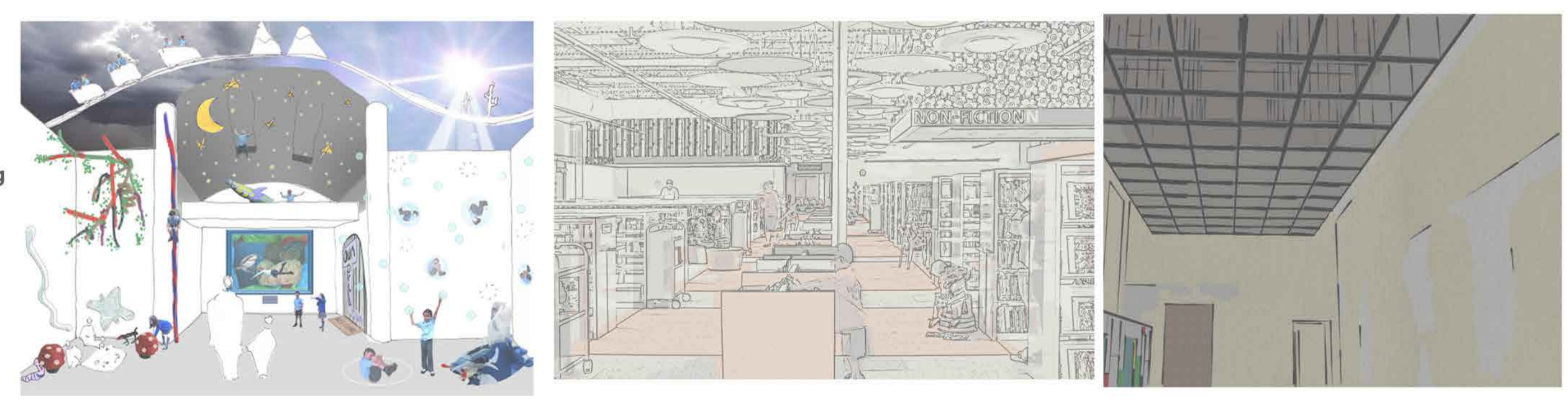
LIGHT
 To obtain a sharper sense of perception of the space by contrasting flatering environment - light source (both natural and artificial) act as a stimuli. Zones of light within corners of shadow is very attractive to children.



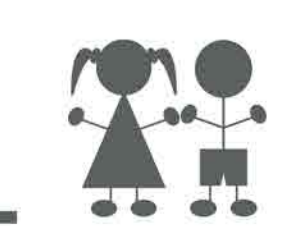
MATERIAL
 Text



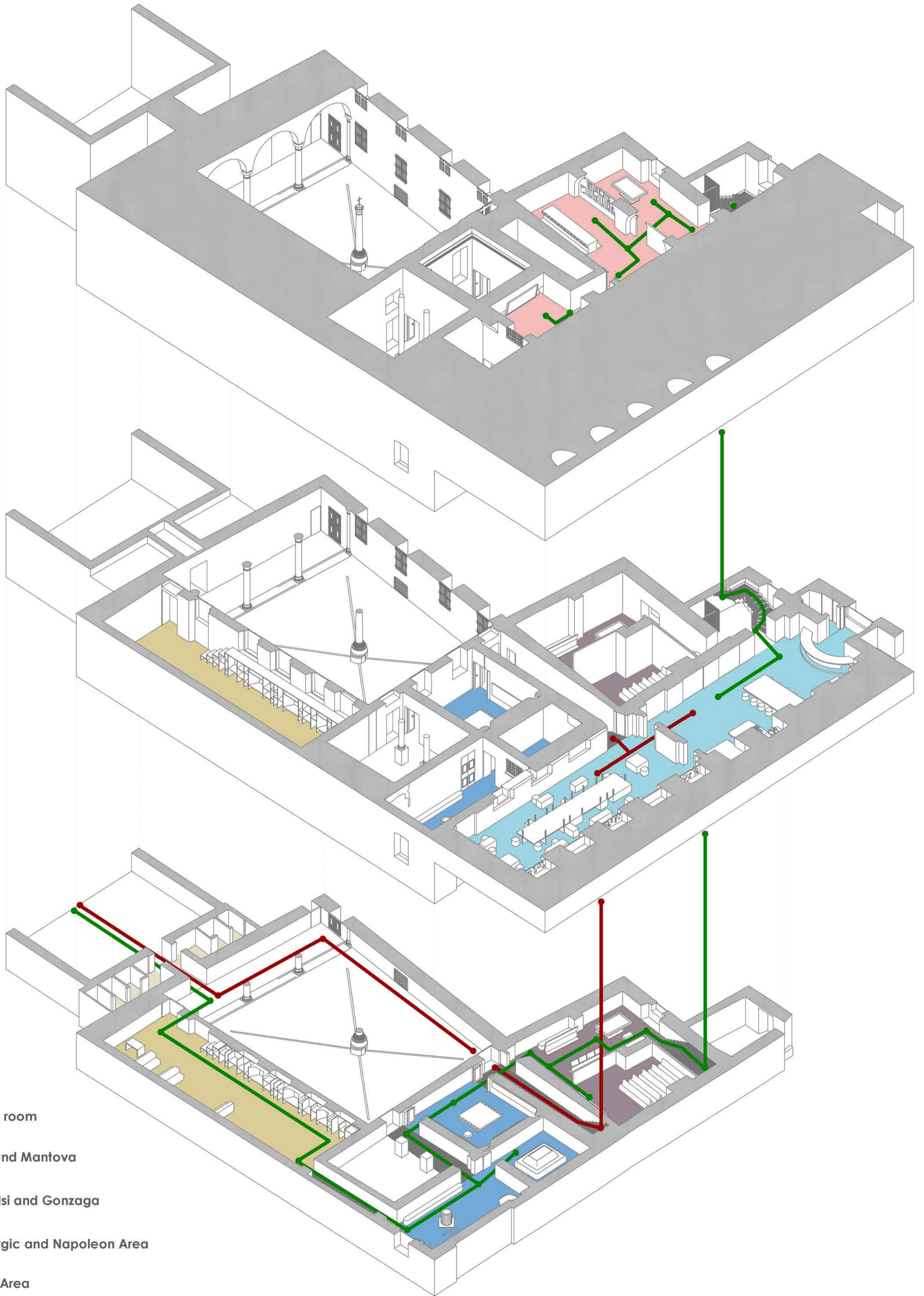
SCALE
 In order to avoid the feeling of discomfort among children working with scale is important. It reduces the monumentality of the space making the children more comfortable.



GUIDANCE
 Text

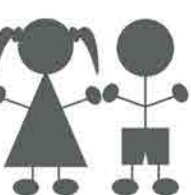


Axonometric



Legend

-  Reading room
-  Manto and Mantova
-  Bonacolsi and Gonzaga
-  Habsburgic and Napoleon Area
-  Activity Area
-  Circulation
-  Services



Ground Floor Plan



reading room as starting point of the museum with more private or group areas for reading and libraries



activities room for further understanding of Mantova city deformation and development



corridor leading to the first area of the museum lightened by blue thin strips for guidance



activities room for further understanding Bonacolsi and Gonzaga era in Mantova



small courtyard acting as a waiting space for the first video room in case of high number of visitors



informative video room for the Bonacolsi and Gonzaga era in Mantova



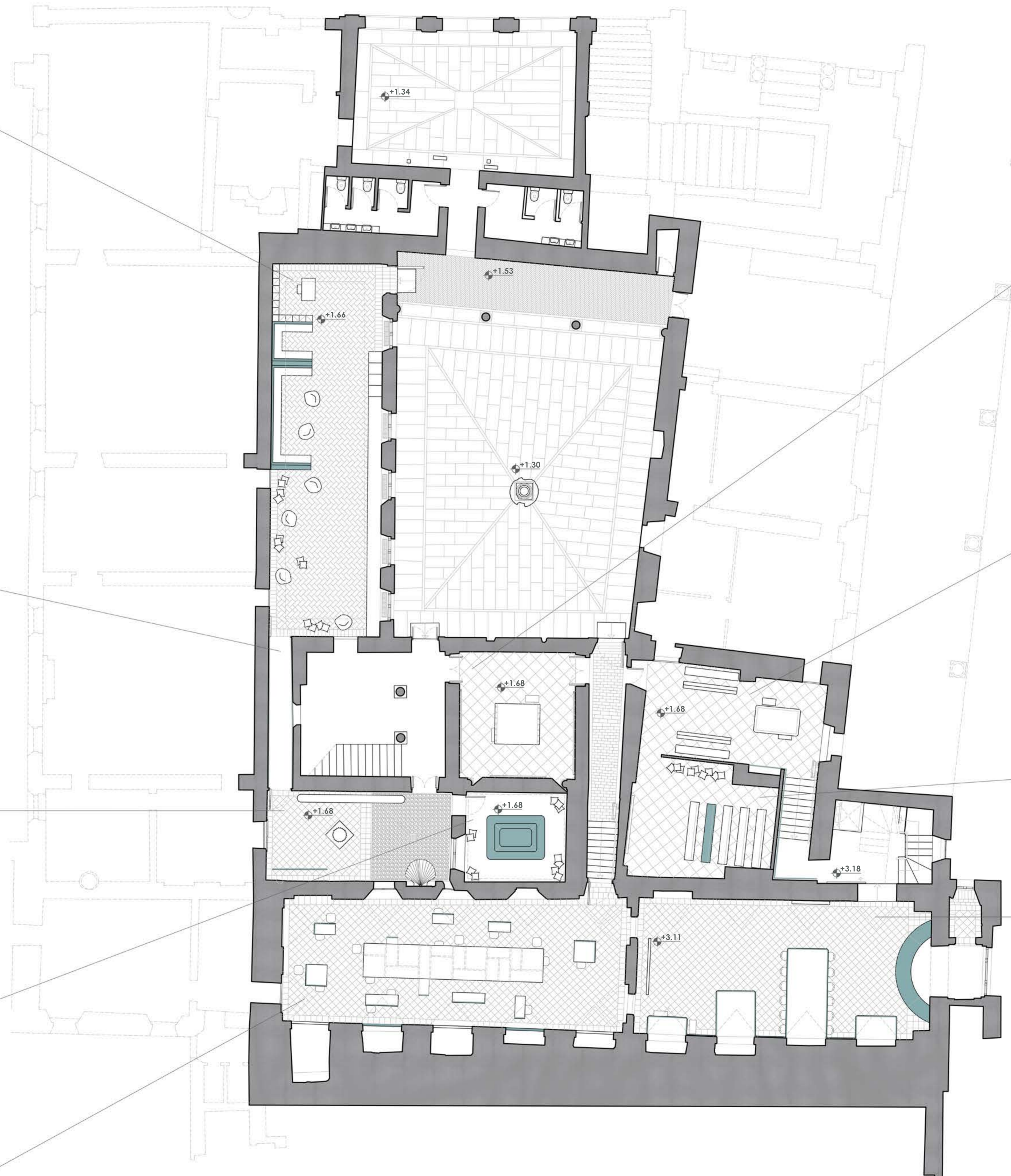
informative video room for the myth of Manto and the creation of Mantova city



part of the temporary activities room designed to follow the character of the specific room and guiding to a more particolare way of using the space but still having the possibilities to be adjusted to each activity



part of the temporary activities room with a flexible character for more possibilities to be adjusted to each activity



Scale_1:100

First Floor Plan




activities room for
further understanding
for the Habsburgic
and Napoleon era in
Mantova


informative video room
for the Habsburgic and
Napoleon era in
Mantova

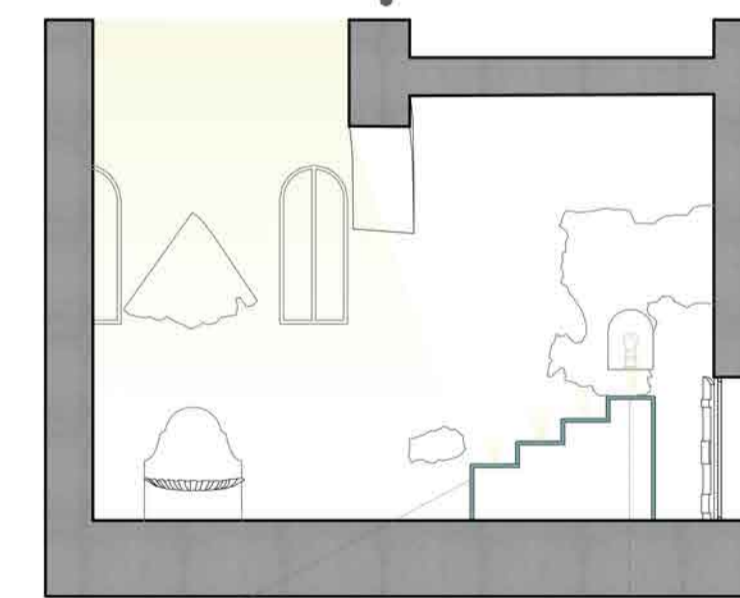
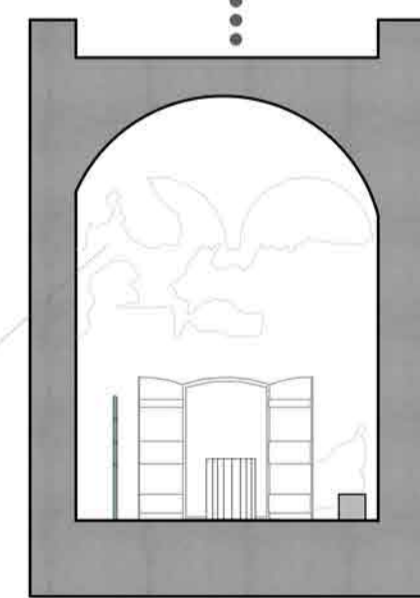
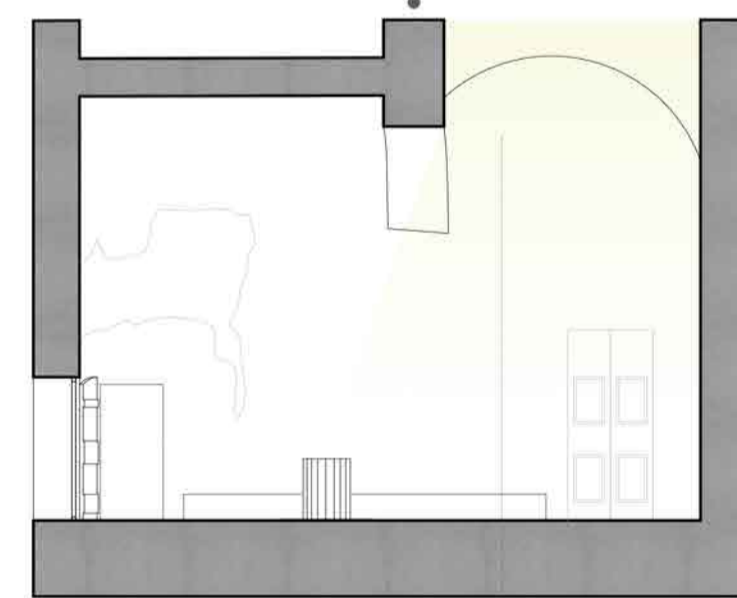
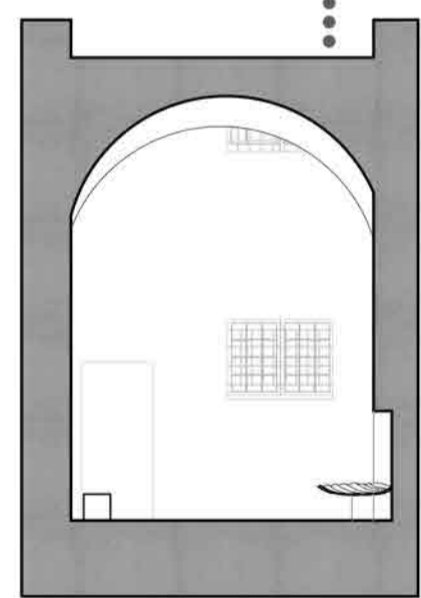
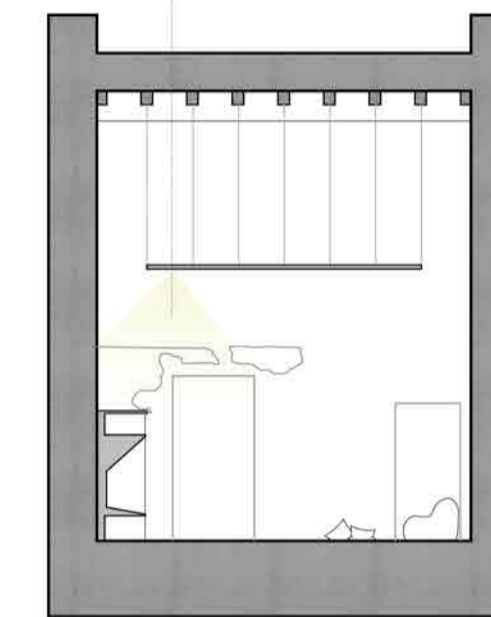
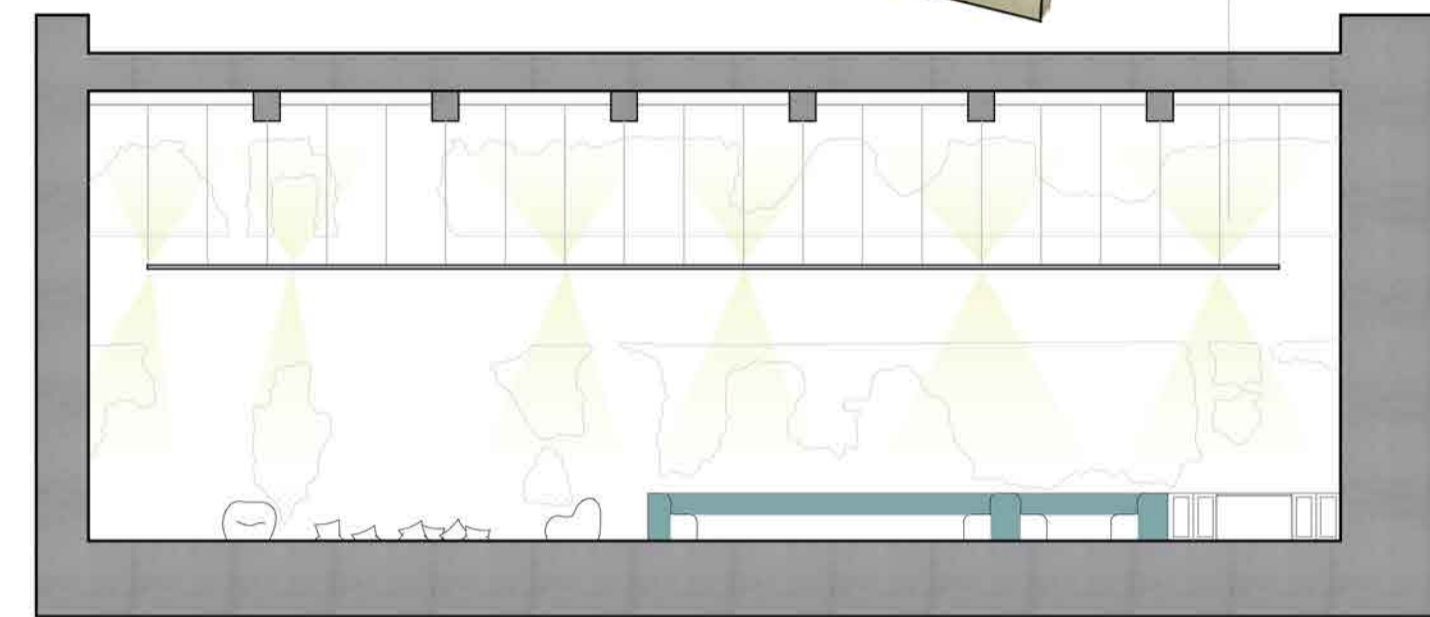
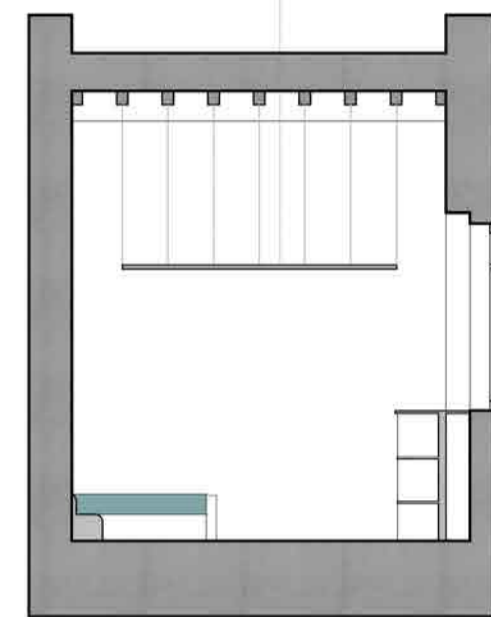
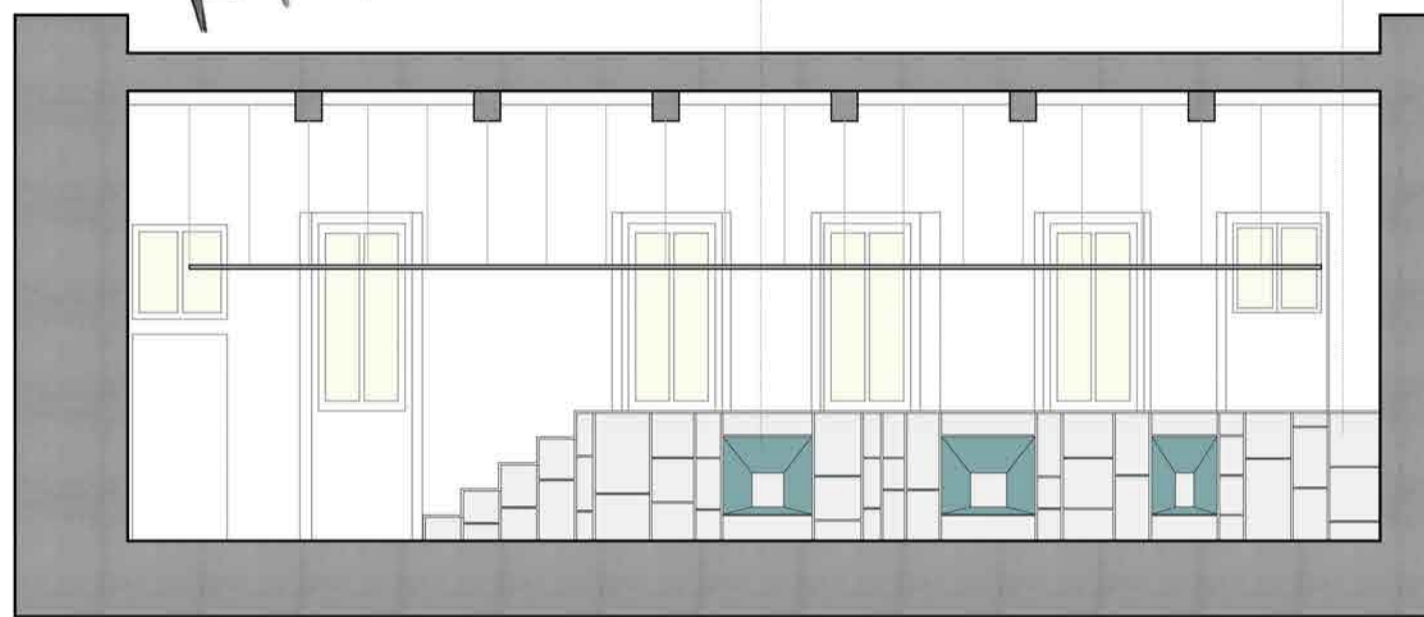
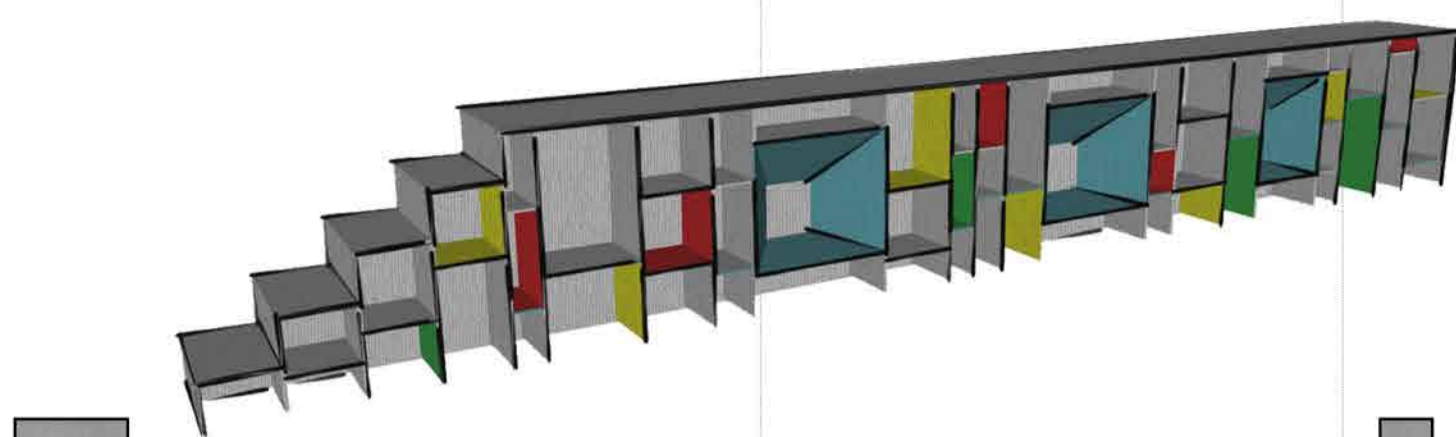
Conceptual Sections

→ In this room the children are guided by the studying in a metaphorical way. In a literal way the children are guided by the blue ribbon - blue highlighted strips that are located linear on the library's shelves as well as to other furnitures in the room.

🎨 The front wall is all decorated with colored frescos. This gave the inspiration of using the same colours and in some point reflecting the fresco onto the long library of the readig room.

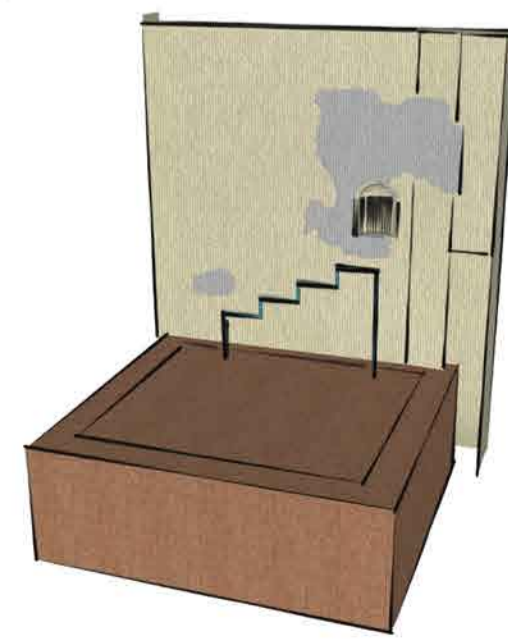
👤 The wood ceiling of this room should be allways exposed. But since its high it can be teryfing for the children, the solution came by locating a new suspended ceiling made of glass. In this way neather the ceiling nor the frescos are hidden and the scale of the room become user friendly.

💡 There is a graet amount of natural light flowing in this room. However, is imposible to ignore the length of the colored frescos in this room and the shape are forming the remaining parts as a puzzle ready to be completed. Artificial lights that are foccusing on those frescos giving them the importanse they deserve.



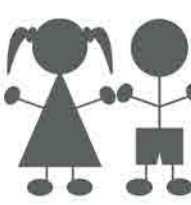
💡 This room acts as waiting space before entering to the thematic rooms of the museum and starting the exploration. The natural light flowing from above into the semi covered courtyard gives a different mysterious impression from the ordinary, preparing the children for what are going to face in the following rooms.

🎨 Its higher level is aligned with a bust, part of the palace decoration. This suggest to the children to pay to the surroundings as the decoration and the frescos of the side walls.



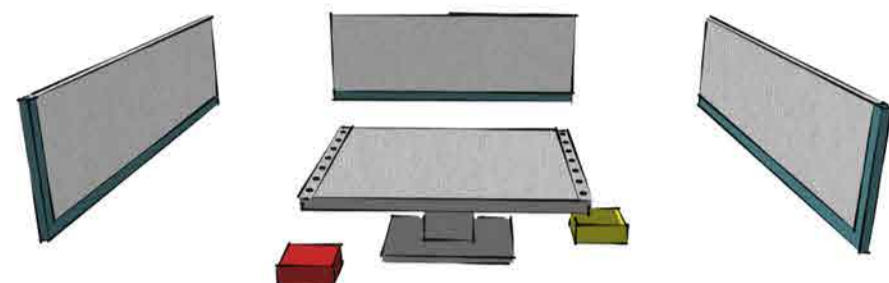
👤 The frame is an element the children can interact with. Its different levels -starting with the bust referring to the palace scale and arriving to the children scale- gives the freedom for children of different ages to act with it as they prefer.

→ Arriving to this courtyard, children are facing a blue frame with shape of stairs. Subconsciously, they already recognize these blue elements as guidance. Following the frame's shape, children are leded to the next door.





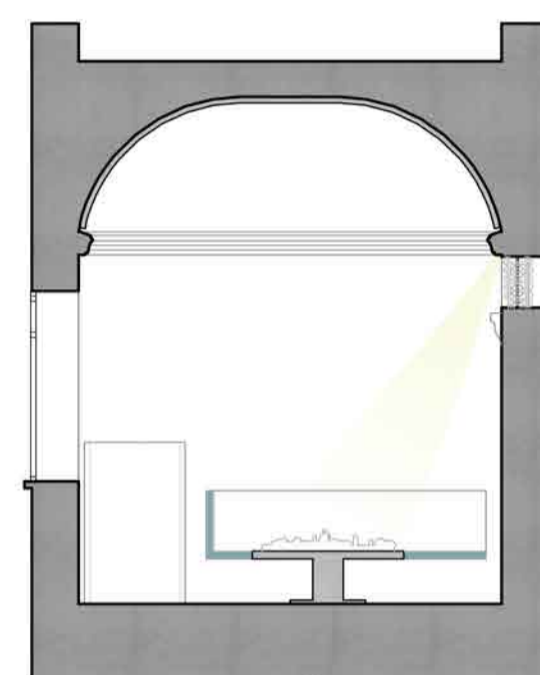
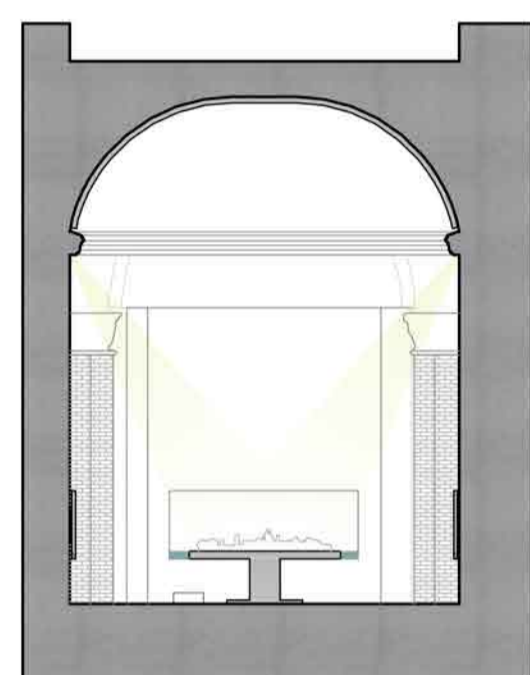
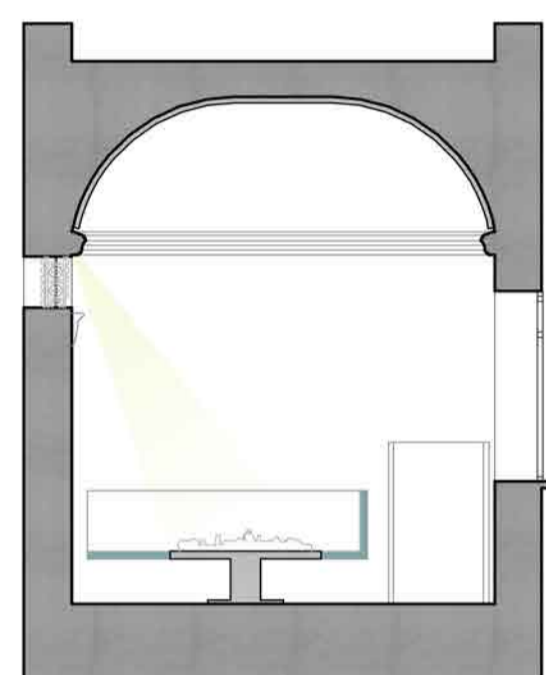
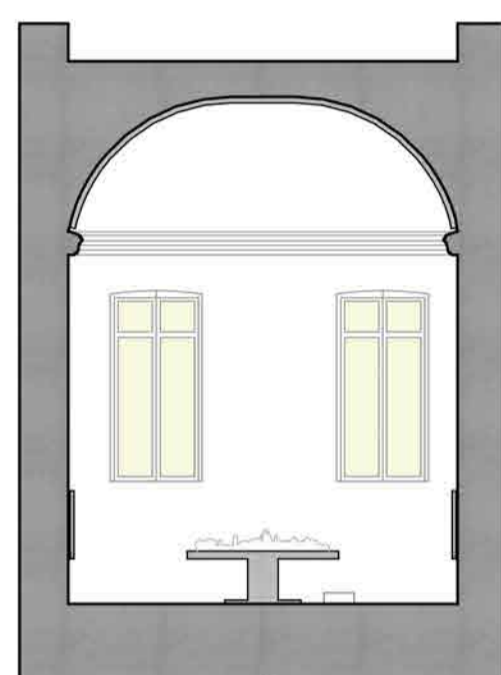
This room is considered as the landmark of the museum with a big model of Mantova in the middle of the room. With natural and artificial light focusing on the model, suggesting immediately the importance of Mantova and Palazzo Ducale to the children.



On each side of this room are located information panels underlined with a blue strip. Following the blue ribbon from the entrance they seem to be puzzle pieces that children have to follow to be completed and in that way they are guided to the exit of the room. While looking separately to each side of the room, the blue ribbon becomes part of the central table highlighting its importance.



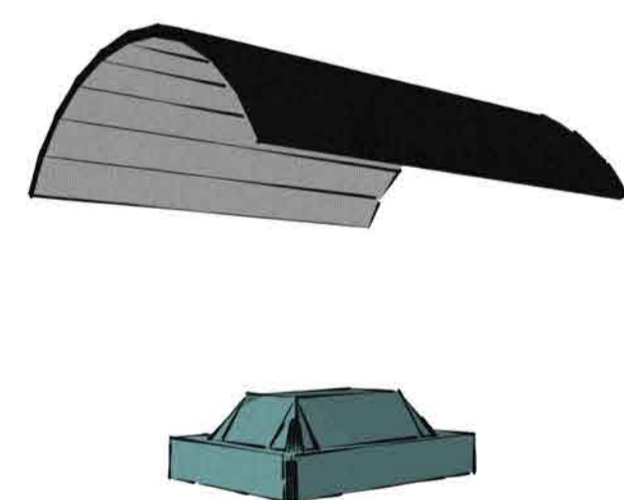
The ceiling is covered with a mirror shaped as the original ceiling of the room. This aim to make children look up without feeling uncomfortable by the high of the room. Looking their reflection and the big model of Mantova, they have the impression of interacting with the whole room.



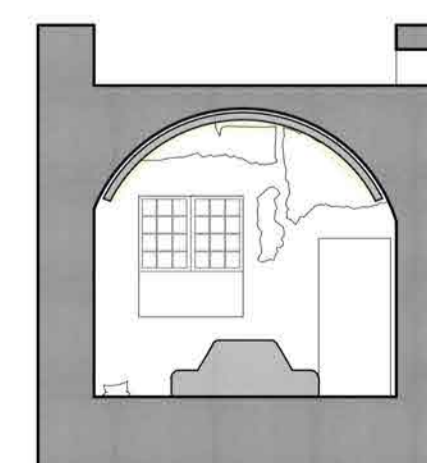
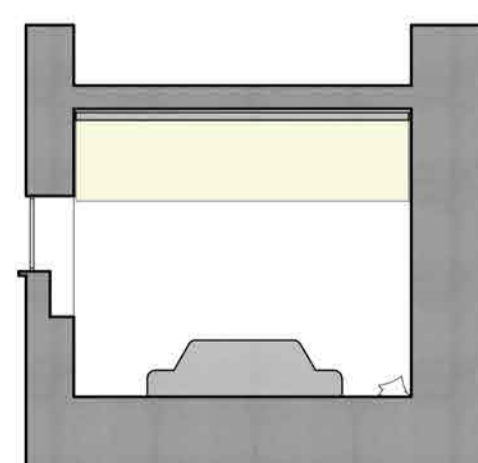
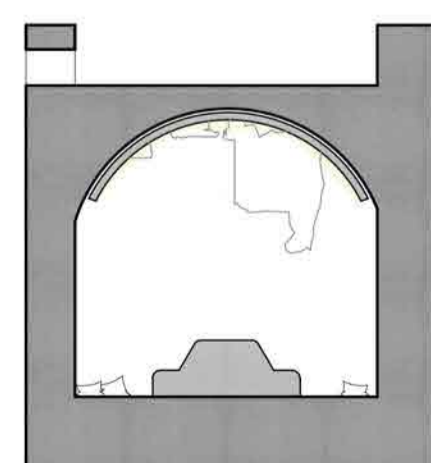
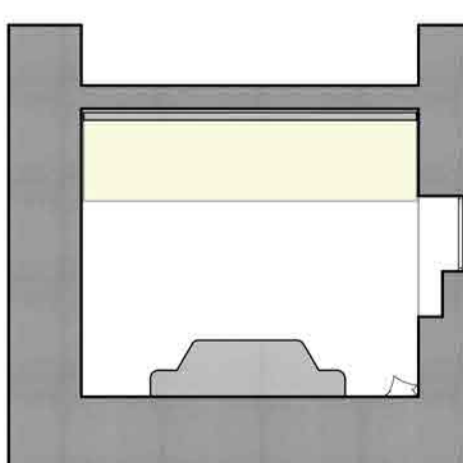
This is the first dark room that children are attending. Locating a curved screen on the ceiling, is respected and highlighted its importance and the same time, gives the message to the children that what are about to visit and attend is not an ordinary museum.



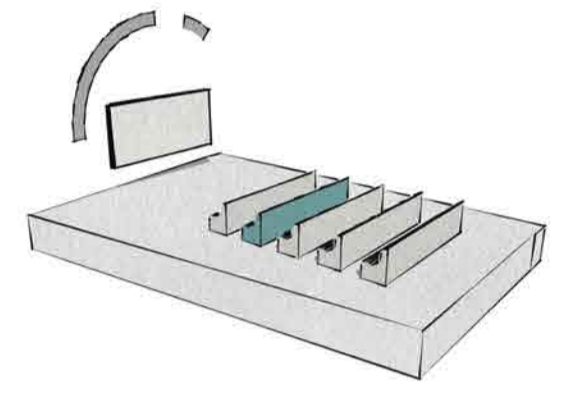
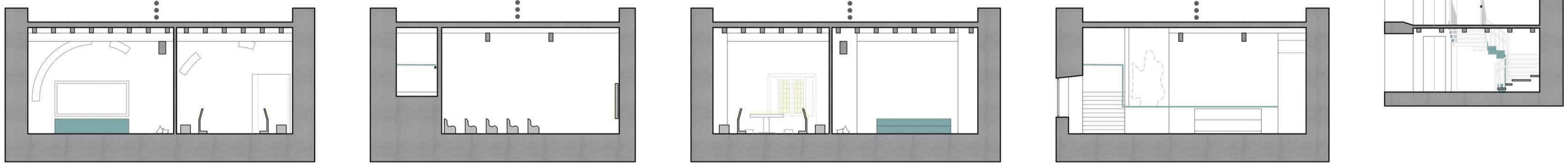
The blue inclined sofa as guidance, suggests children to sit and lie back giving them comfort while for watching the video.



As video room should be a dark space. So instead of closing the window with a strong element, was decided to fill the glass grid of the window with the basic colors used in the museum, creating a friendly and happy motive for the children.



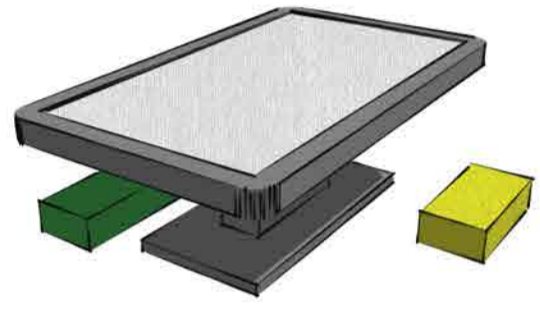
Conceptual Sections



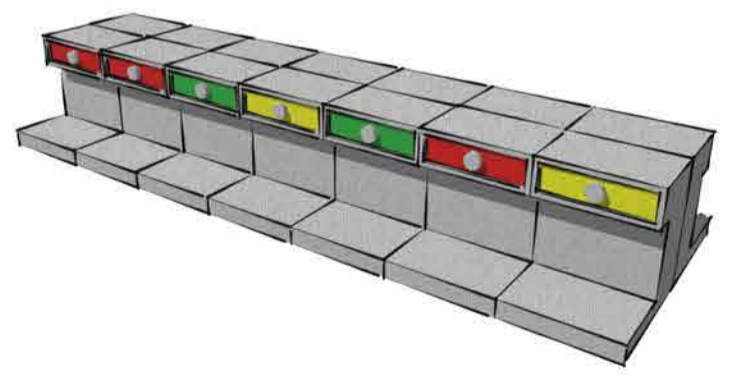
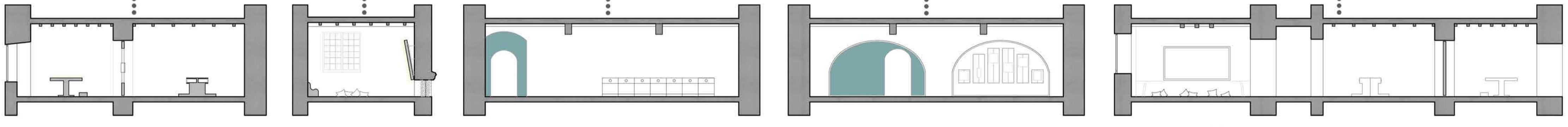
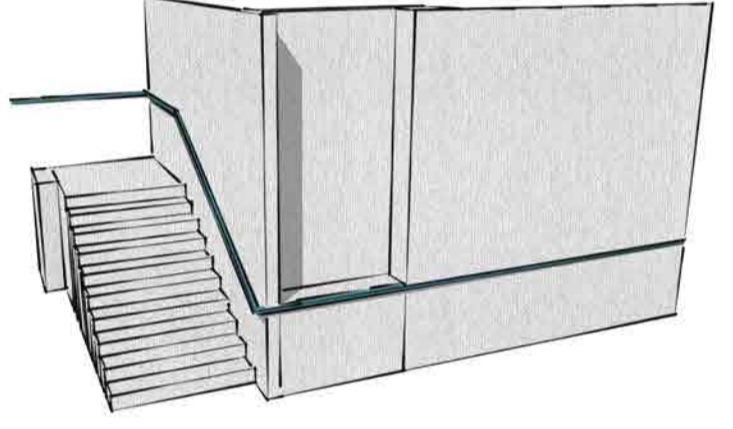
The video room of this thematic space is giving the impression of a small scale cinema dedicated for children.



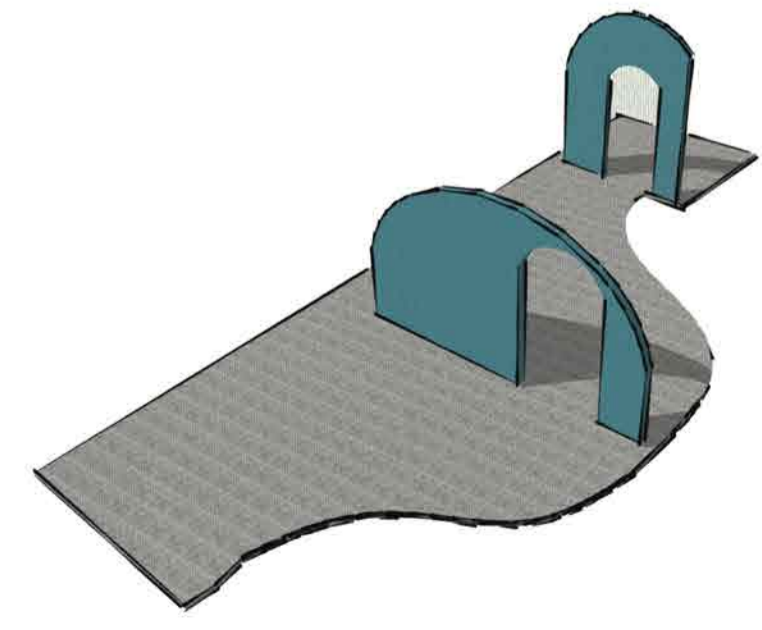
In this room children have to follow a sequence of activities. All of them on digital screens or illuminated tables which are located as a corridor leading to the natural light and the exit of this room.



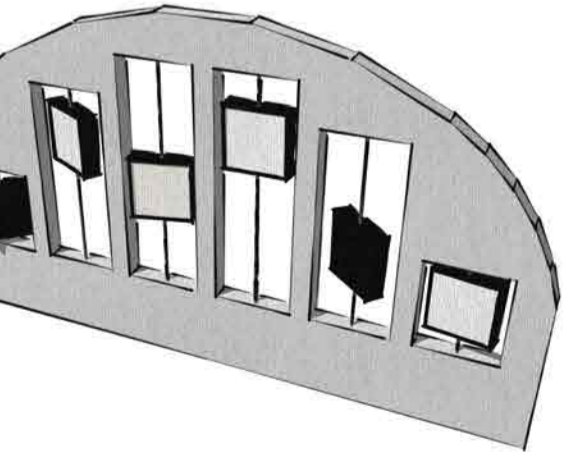
The basic colors are only applied to the seats of each working place since the blue ribbon guidance, is running in a higher level in order to be easily detectable by the children and leading from the beginning of the room to the stairs until the upper floor as railing.



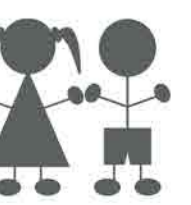
This floor is long and separated in three spaces with the video room almost hidden in the back part. Arriving to this floor, big blue gates with soft carpet flooring shaped as natural path is guiding children directly to the back video room. In this way, they don't have difficulties to identify the video room and are free to follow the rest of the activities on their way back.

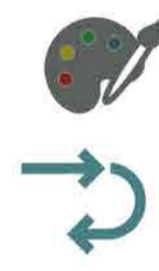
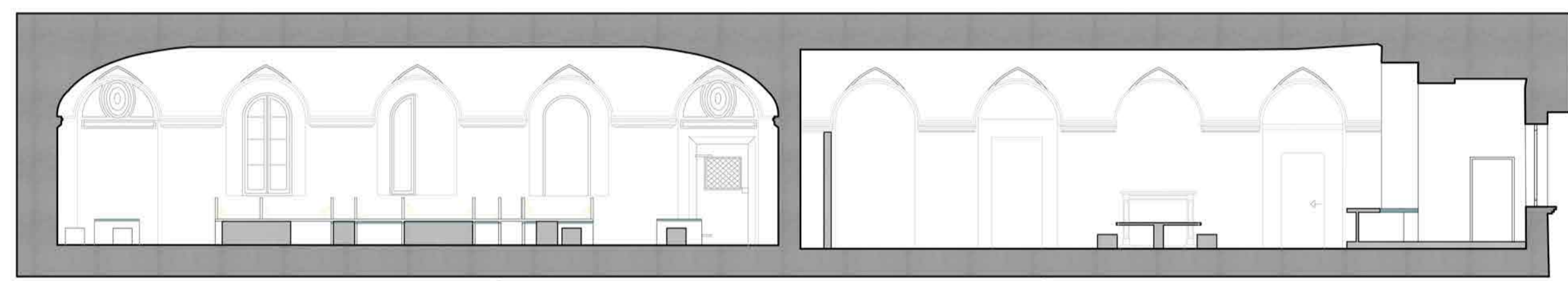
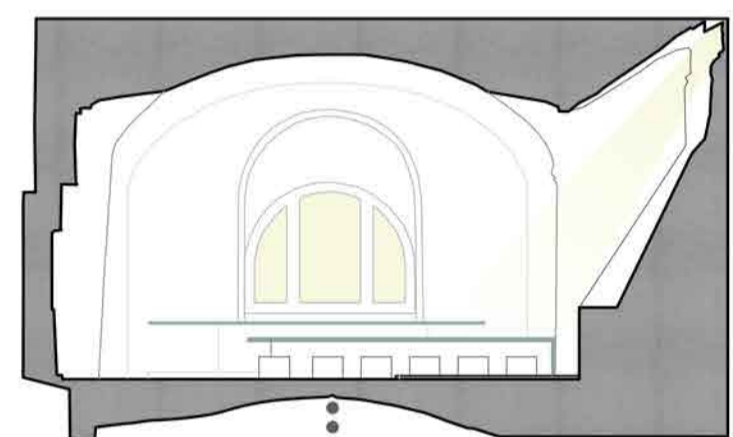
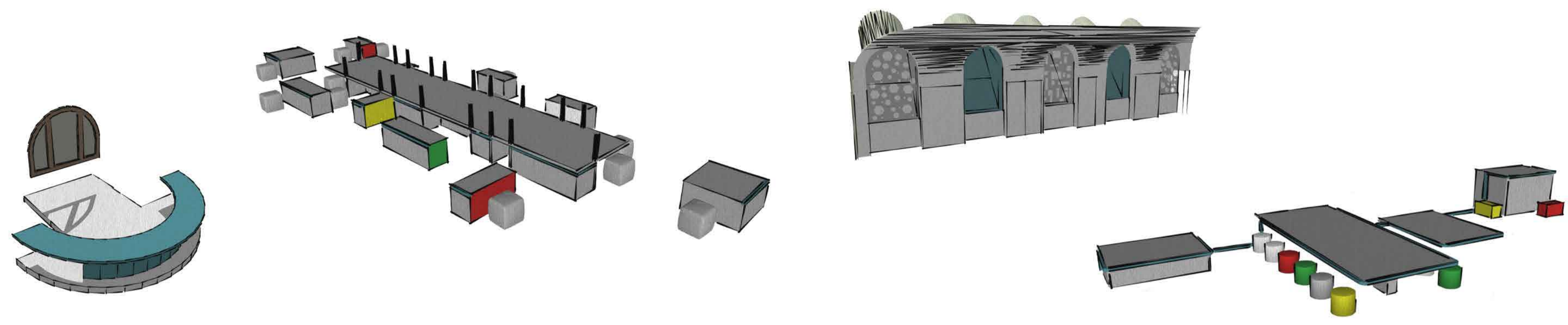


A big panel with multiple screens is located as separation wall of the space. However, respecting the children scale and need for freedom and interaction, the screens are adjustable giving children the possibility to change the high of the screens and even to rotate and use them in both sides of the wall.



Each working desk or place has its own importance and usage. So the basic material and color of each one is silver while the parts of the desk that are helping the children to use them correctly and interact are colored with the three basic colors as everywhere.





This space gives the possibility of multiple uses changing through time. So the long working table located in one part of the room is formed by many cubes of different sizes which are able to be moved anywhere needed or hide in the main frame of the table. While all cubes are placed in the main frame of the table, is just visible its silver material and the blue ribbon running continuously around it. In the other hand, when cubes are moved out of the frame, different colors are appeared on their sides. Moreover, the blue ribbon is now scattered in the space like a broken puzzle. Finally, tubes with adjustable spot lights are running around the main table frame.



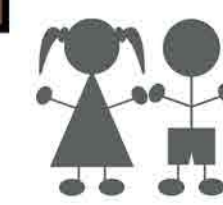
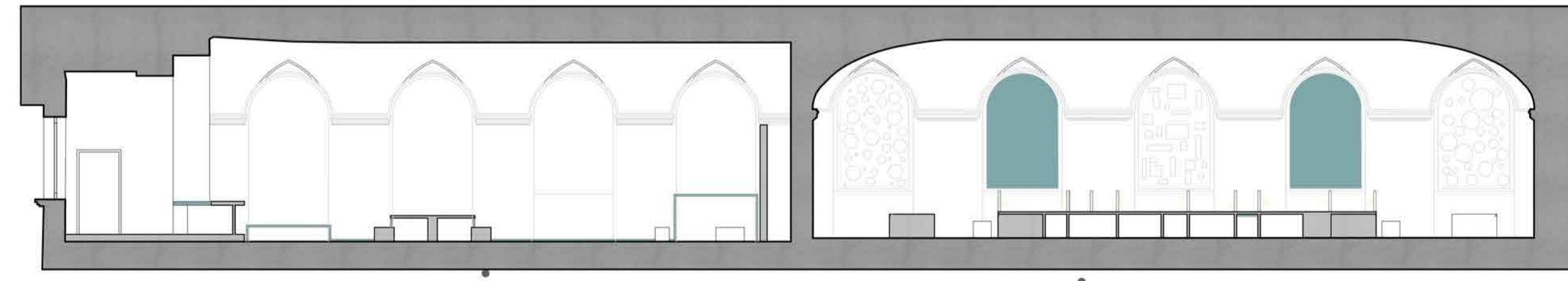
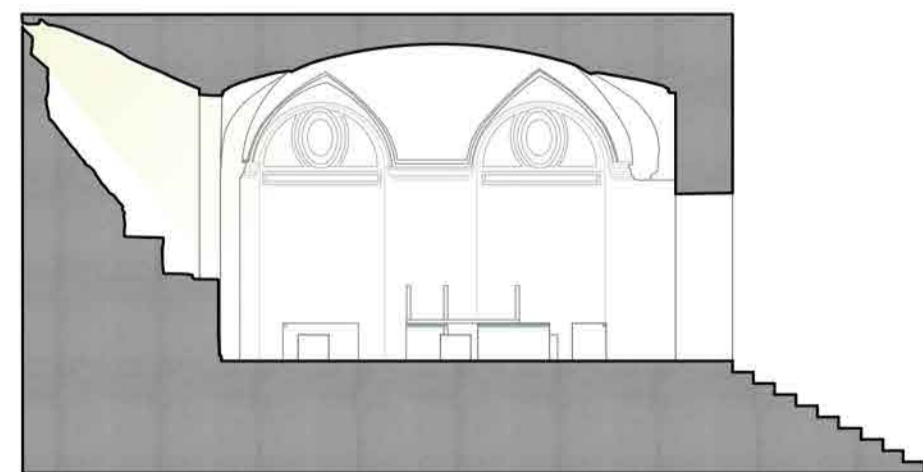
The semi circular window in the end of the room gives the impression of a special area. So a semi circular desk is located in front of it looking like it is its reflection.

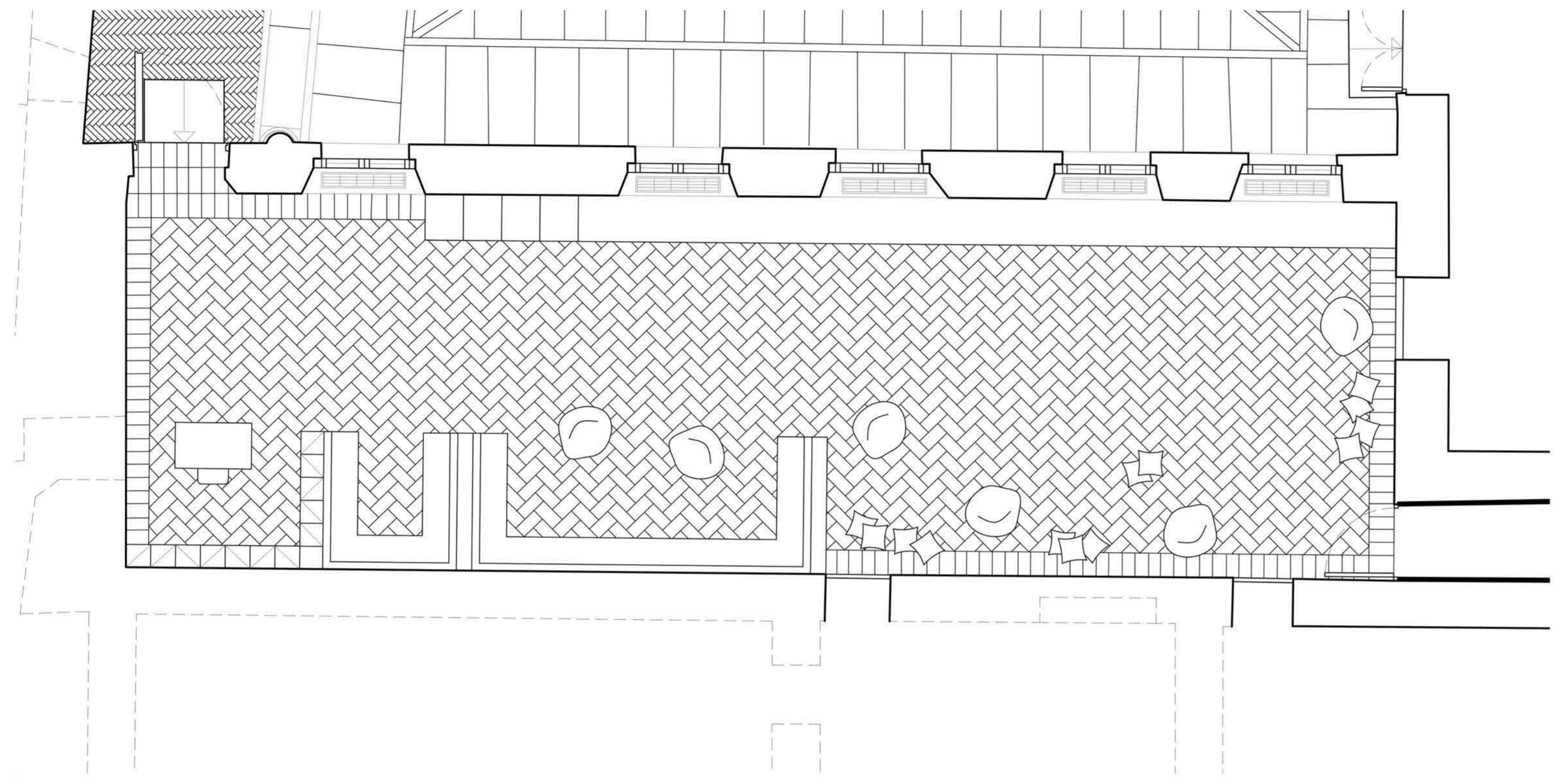
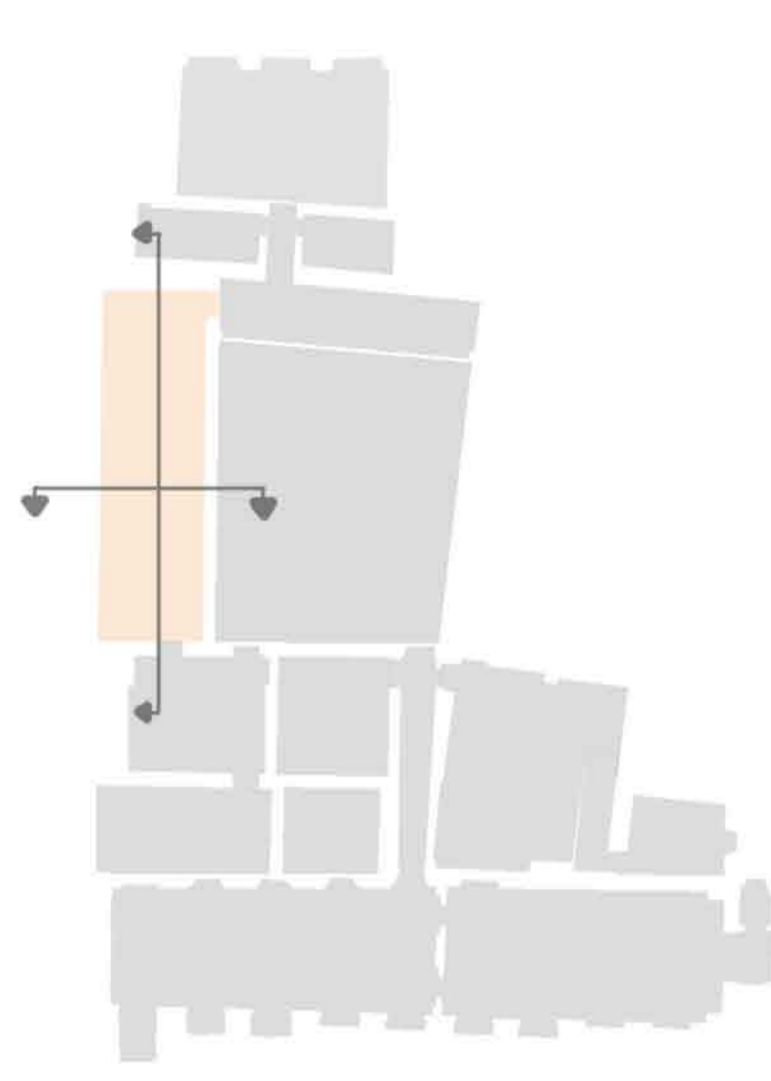


The other part of this room can be characterized as fixed but flexible at the same time. Taking advantage of the decorative arches, are located working desks of different heights and lengths giving the possibility to be used for different activities as might be needed. However, since they are part of the room, they are also connected between each other with the blue ribbon which is running around each working desk as well as following the room's shape.

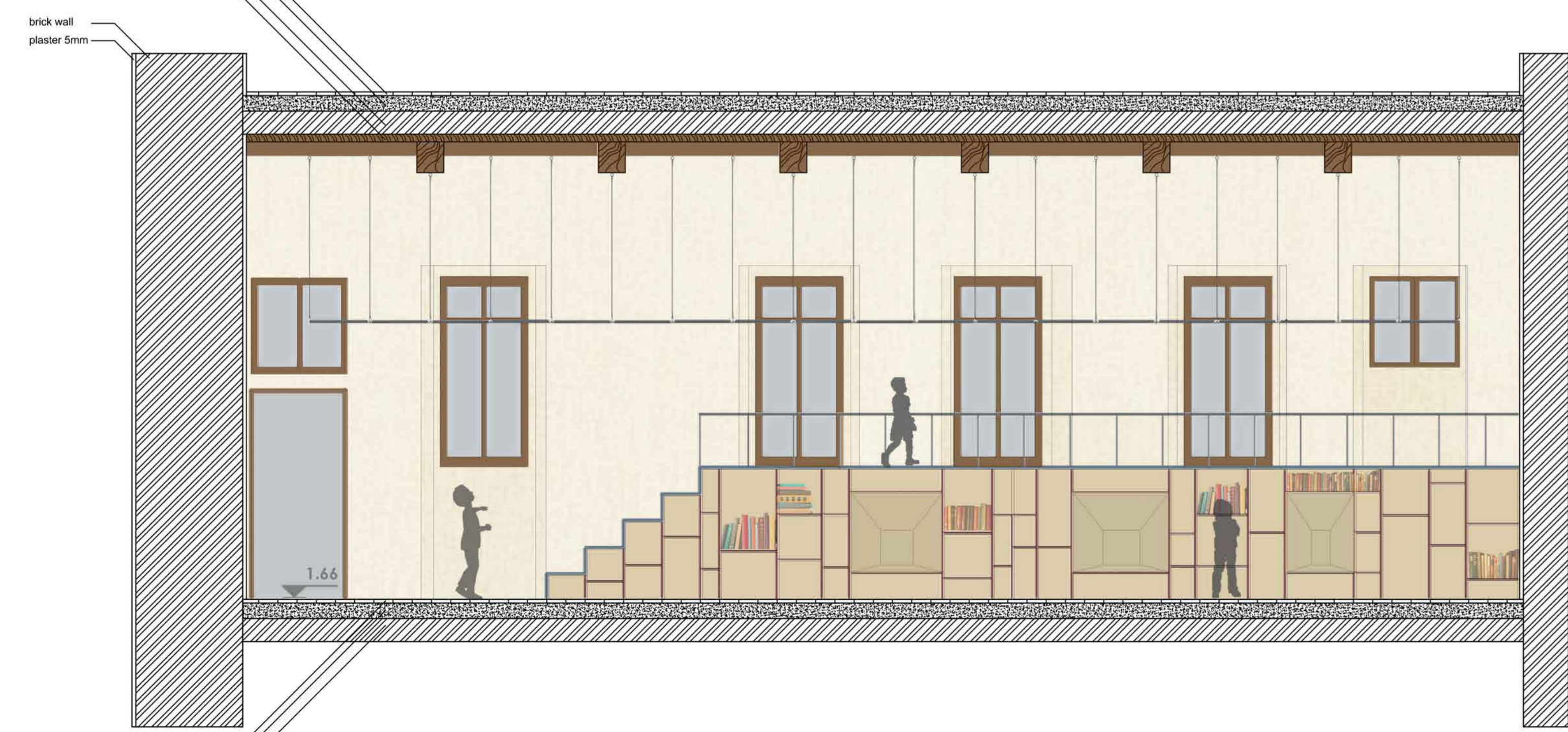


All room has diffused natural light entering from the high holes engraved in the arches. In order to increase the light but also to highlight the decoration of the space, are located artificial lights in the holes. In front of the lights different panels with cut motives and different colors are placed in order to create different shapes and colors in the space while the lights are on and in a point to subdivide the room.





tiles 30*30*5mm
concret 20mm
brick 30mm
wood 10mm



tiles 30*30*5mm
concret 20mm
brick 30mm

