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### **Healing Children through "Spatial Experience" Architecture**

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#### **Abstract**

The research discusses architecture that produces spatial experience with which children are able to interact, giving them a great sense of positive energy that translates into actual healing. This type of architecture is few in number but can create a transition towards sustainable childhood.

Spatial experience was evident in the architectural practice of the ancient world. Back then architects considered what moods should they give to spaces that best suit their functions. They believed good practice is the one that has a pleasing vibe with its users.

In our contemporary world this trail of thinking is pushed aside to give more space for modern technology and standard production. Spatial experience, more often than not, is replaced by forms that do not connect with the user's psychology. Program of the building is reduced to mere functions that are technically performed without considering the mood of the space.

Yet there is a growing interest among architects today who believe in such ideas and are willing to exert an effort in providing the right moods for their buildings with a sustainable vibe. The paper will discuss this point by taking four examples of architecture specialized in healing children. Before doing so I will trace the theoretical background behind spatial experience in architecture by focusing on 4 moments in history that will have inspired generations to come.

By presenting such genre of the ancients, spatial experience producers of today will have followed the same approach. The research will present theoretical design of four centers for healing children. The first is a center that treats children experiencing trauma due to physical violence and death incident, the second treats children with physical disabilities especially movement disorder due to neurological conditions, the third deals with children suffering from speech disorder or language delay and the forth handles active and passive children who experience autism.

The four projects are designed by young architects who imagined a better world for children. They placed their projects in the midst of a large public garden with the intention to introduce landscape as an added healing power for children. The research will go into details of every project capturing the mood of therapeutic spaces indoor and outdoor with the intention to show the value of this trail of thinking in producing a very special architecture for children.

#### **Keywrods**

Spatial experience, rehab centers, PTSD, autism, speech disorder, Böhme, Blondel.

## **Introduction:**

The research discusses “spatial experience architecture” and how it improves patients’ lives. What I mean by this is an architecture that produces spatial experience with which patients are able to interact, giving them a great sense of positive energy that translates into actual healing. This type of architecture is few in number but can create a transition towards sustainable livelihood.

Spatial experience was evident in the architectural practice of the ancient world. Back then architects considered what moods should they give to spaces that best suit their functions. They believed good practice is the one that has a pleasing vibe with its users, and for this to happen they experimented with proportions, light, texture, solid and void, form, structure, along with other aspects of space-making.

In our contemporary world this trail of thinking is pushed aside to give more space for modern technology and standard production. Spatial experience, more often than not, is replaced by forms that do not connect with the user's psychology. Program of the building is reduced to mere functions that are technically performed without considering the mood of the space. Mechanical organization of spaces led to spiritless design that does not touch the soul of humans.

Yet there is a growing interest among architects today who believe in such ideas and are willing to exert an effort in providing the right moods for their buildings with a sustainable vibe. The paper will discuss this point by taking one renown example actually built and three others of theoretical design. But before doing so it is important to trace how the ancients considered “spatial experience architecture”, by focusing on 4 moments in history in which such ideas were clearly presented. The first moment is Vitruvius' insights on the Greek temple and house, the second is the 18th century writings of Boffrand and Blondel, the third is the theory of Quatremère de Quincy, the staunch teacher of the 19th century Beaux-Arts school and the forth is *Experiencing Architecture* of Steen Rasmussen that evolved during the mid 20th century.

By presenting such genre of the ancients, it will become clear how some architects of our times considered such genre as a tradition to be revoked in their modern building design with the aim of creating “spatial experience architecture” that vibrates favorably with its users.

## **“Spatial Experiencing Architecture” from the Ancient till the Early Modern**

Vitruvius in his *10 Books* saw Greek temples communicating well with its audience. He praised the Greeks for adding rows of columns around their temples' perimeter interpreting them as an instant message of “*dignity*” since the arrangement of columns in rows “*gives the imposing effect*” and sets to dominate the viewer with air of respect and reverence (Vitruvius, 15BC/1914, p. 82). He further explained that the distance between the columns, referred to as “intercolumniation”, with respect to the proportions of the column is crucial to achieve the mood of “dignity” required for the temple. If the distance between the columns was 4 modules, with each module representing the width of a column, then the height of the column was 8 modules. If the distance was 1.5 modules then the height of the column was 10 modules. With such inverse relation between the intercolumniation and the height of the column, the Greeks wanted to keep the walking around the cella a consistent experience that did not lose the repetitive effect of solid and void. It was this repetition that gave the mood of “dignity”. Closer intercolumniation with shorter columns would give more solid effect to the waling experience and wider intercolumniation with tall columns would give more void thus losing the effect of dignity all together. Vitruvius concluded that the best proportions were the 2.25 intercolumniation with 9.5 modules for column height. He called the temple with this proportions Euostyle and confirmed that it was the one that best invokes the mood of “dignity” while walking around the *cella* (p.80).

Walking experience that captured the mood of dignity was not exclusive to the peristyle of the temple but also to houses belonging to "men of rank". For these houses to achieve the appropriate mood of "dignity" they should have "lofty entrance courts..., and most spacious atriums and peristyles, with plantations and walks of some extent in them.." (p. 182). Thus walking through a sequence of gardens, colonnades and courtyards, would give the right effect. Palladio later in his *Four Books* added that for men of lesser ranks, shorter walking experience would exist (Palladio, 1570/1965, p.1). With these observations, Vitruvius was the first intellectual in history to set the tone for what I call "spatial experience architecture". From this we learn ancient architecture is not just about decoration, orders and styles but more important how the space affects the spirit of the user while walking through it.

The second moment in history that showed progress in this trail of thinking was during the Age of Enlightenment, the 18th century, in which subtle observations of the ancients became theoretical frameworks. Germain Boffrand in 1745 defined architecture as an art of persuasion that had the ability to speak to viewers. It could express its purpose to them by affecting their emotions, it casted a *mood* using the *universal nonverbal language of the passions* (Palma, 2002, p. 50). Jacques-François Blondel in 1771 further elaborated on the matter by emphasizing that architecture should have the power to "sweep the spectator off his feet, ..., lift up his soul to a state of contemplative admiration." (p.50) This is done by granting buildings a particular mood. He suggested specific abstract nouns to verify building types: decency for temples, magnificence for palaces, elegance for promenades, and robustness for defense structures (p.50). These nouns expressing moods, by which the building should be perceived, were the starting point for any design. They were simple words that held the key to understanding "spatial experience architecture".

Such understanding was no longer just exclusive debate among theoreticians but became the formal education of architecture in the 19th century Beaux-Arts School of Paris. Thanks to Quatremère de Quincy, the staunch theoretician of the school, who stressed that there must be a high level of transparency in architectural communication between the architect and the public. The architect would transform intellectual and moral ideas into physical forms and spatial experiences that would be readily understood by the public (p.52). Students of Beaux-Arts school by then had systematic learning on how to establish this communicative transparency in their design. They were given the right mood for the building and they competed among themselves trying to prove it in their design (Levine, 1984, pp. 83-99).

Throughout the 19th century good quality architecture with a Beaux-Arts stamp must include this trail of thinking. Even during early and mid 20th century there were writings that echoed this tradition. Steen Rasmussen in his book *Experiencing Architecture* published in 1959, stated that "it is not enough to see architecture; you must experience it. You must observe how it was designed for a special purpose and how it was attuned to the entire concept ... You must dwell in the rooms, feel how they close about you.." He called for buildings "to be created in a special spirit and they convey this spirit to others" and to have features that "become a means of communicating feelings and moods from one person to another." (Rasmussen, 1959, pp.32-33) Throughout his book he explained the features to be light and shade, solid and void, textures, scale and proportions, rhythm and color.

In essence Rasmussen did not differ much from his pre-modern theoreticians. The difference between both is in the architectural detailing, forms and rules governing the arrangement of spaces. What remained is architecture that is "produced by ordinary people for ordinary people; therefore it should be easily comprehensible to all. It is based on a number of human instincts, on discoveries, on experiences common to all.." (p.15) ) It is architecture that talks to the senses similar to music or better say, it is a "frozen music." (p.105)

Few architects today understood the idea of "spatial experience architecture". The decision to achieve such moods in design usually does not exist in the project briefing. The architects step outside the basic program of the project and try

to positively connect the users to their spaces. They do not bring technical aspects of this building type in the foreground of their decisions but rather the spirit of the place. For them to do so they have to question the typical design approach of the building type before they embark on creating a special vibe between their building and its users. Notable architects, such as Norman Foster, Rem Koolhaas and Peter Zumthor, maintain this approach, however there are not many of them today.

Contemporary theoreticians in Europe, such as Gernot Böhme and Juhani Pallasmaa, who advocate this design thinking, calling it “atmospheric architecture”, also believe in the scarcity of architects practicing this approach (Pallasmaa, 2014, p.233). The same scarcity is found in the Arab world, particularly in Egypt. By visiting hospital architecture in this part of the world one experiences a design devoid of any sensation. Architects just focus on how to fulfill the technical aspects of each space assuming the patient as an “object” to be handled accordingly. In the midst of this unfortunate practice there are few architects who proposed theoretical design for healing children with the assumption that these young patients are not just “objects” on a drawing board but human beings living with emotions. The following is a presentation of their works.

### **Healing Post Traumatic Stress Disorder**

**Mennatallah Elbana** and **Shaimaa Jabr** decided to design a rehab center that deals with post-traumatic stress disorder experienced by children. This is a mental health condition that is triggered when a child witnesses psychological traumatic events such as natural disasters, war, physical abuse, and death of friends. In these situations children feel helplessness, depression and intense fear. As a result, these children don't trust people easily and more often than not avoid social interaction even with family members. The two architects decided to place this project in the middle of a public garden in Cairo for healing children.

One approach for treating children is Trauma Focused therapy. The architects created the rehab center around this type of therapy since it encourages the children to talk about their memory of the trauma (Hamblen, 2016). The therapist help children to rethink their thoughts about the trauma at their own pace and in a very peaceful way. The general **mood** of the design is **relaxation** and **tranquility**.



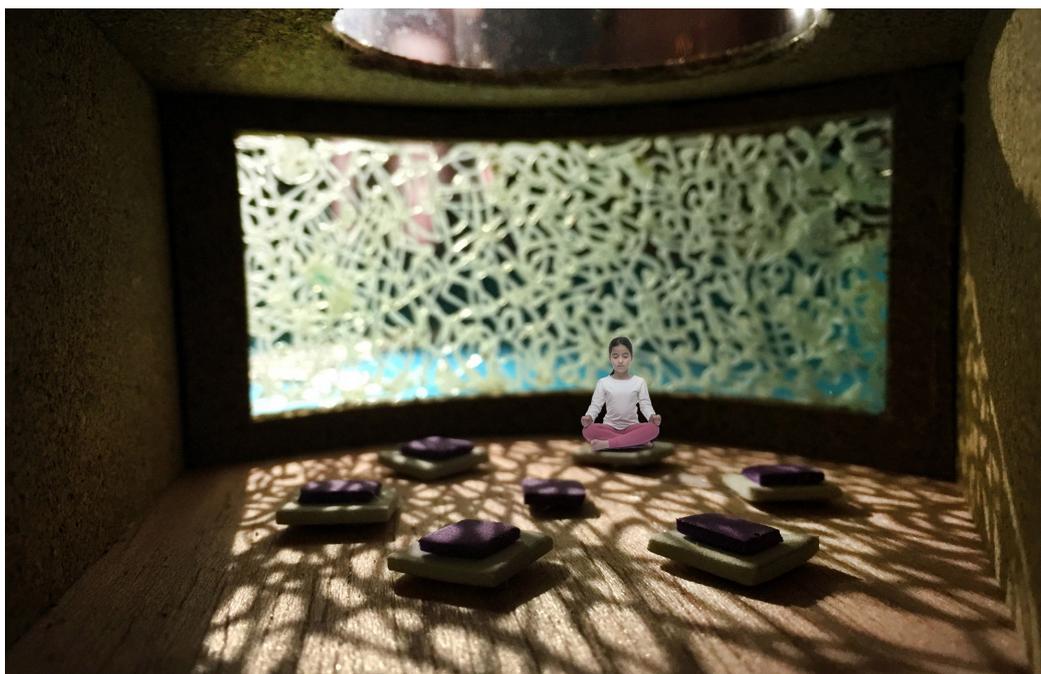
*Fig. 1 Diagnostic room in PTSD rehab showing screens with subdued light for soothing effect*

Starting with the diagnostic zone, rooms are in deep blue color with daylight passing through organic mesh of screens inspired by nature to give a subdued atmosphere of calmness. The mood of this space help the therapist to transform the negative thoughts of children into positive ones. (Fig. 1 & 2)



*Fig. 2 Diagnostic room in PTSD rehab showing screens with subdued light for soothing effect*

The meditation zone help children to unwind their fears and worries. These spaces are covered by natural materials such as wooden floor and clay walls in addition to organic screens as a source of light, all in an attempt to get the child into spiritual contact with nature in a gradual and gentle way. The child sitting inside the meditation space can see the blue

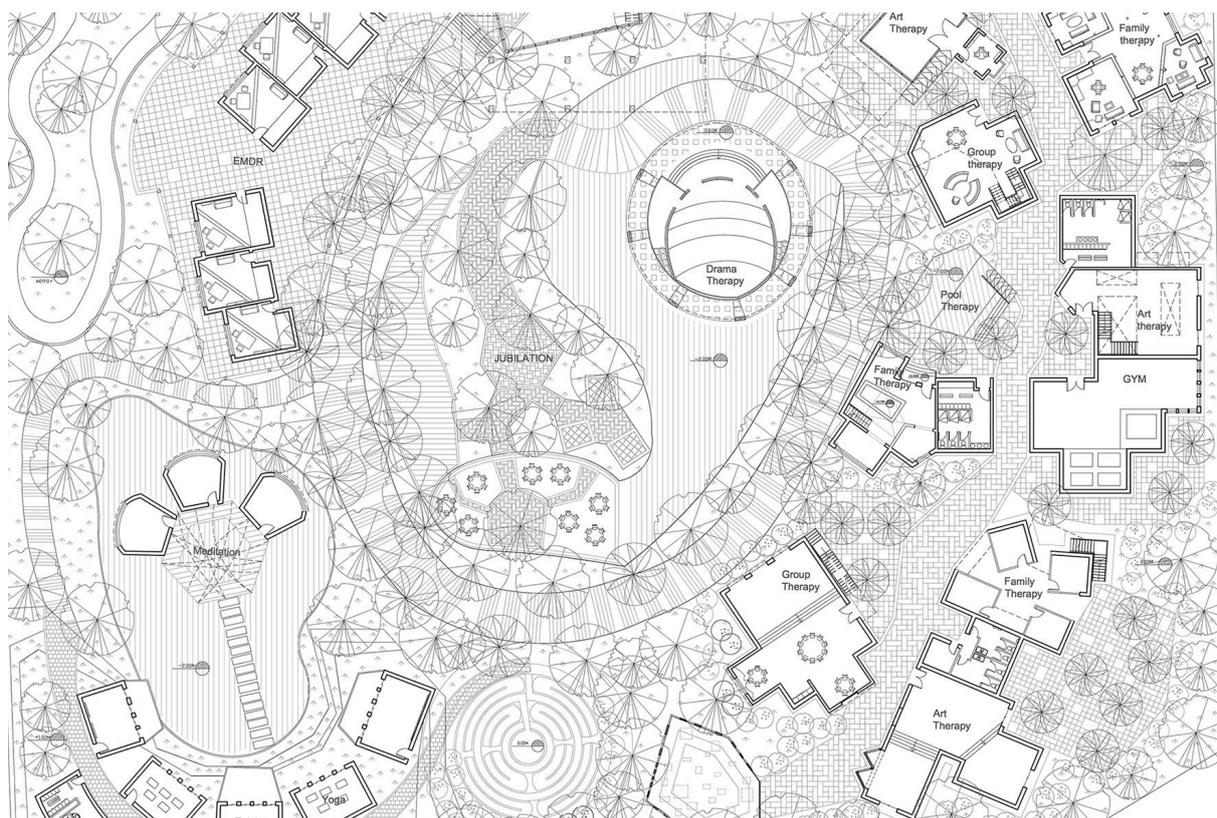


*Fig 3: Meditation zone for relaxing and get focused.*

surface of a nearby small pond through the moderately spaced opening of the organic screens. The light and shade coming from the wall screens is balanced out by indirect light coming from the roof (El-Banna & Gabr, 2016). This overall spatial ambiance gives the child the chance to reevaluate the trauma experience while feeling **protected relaxed and focused**. (Fig. 3)

The active therapy zone offers the core treatment. This includes many types of spaces such as art therapy, family therapy, and group therapy, each has a specific mood to be bestowed on the child. The Family therapy has a "**feel at home**" mood with **cozy** domestic spaces such as a dining room, a living room and a reception all painted in orange and yellow colors to give the sensation of warmth and cheerfulness.

Passing through all of these spaces is a meandering spine that is called the "**spine of hope**". Children, while moving from one therapy space to another, capture along the way a glimpse of an iconic building round in shape and is floating on a large central pool that punctuates the project. Children know that they pass through all the therapy rooms with success they are admitted to this iconic building for final celebration. The rehab center in this way is about a small settlement of buildings arranged along a single spine that ultimately leads to a successful ending, a final destination, called psychodrama theatre. (Fig. 4)



*Fig. 4 Partial plan of PTSD rehab showing spine of hope and the drama theatre*

The theatre is the space that acknowledges the final phase of treatment with which each child gets reintegrated with his or her normal self-being, along with family members and community at large. There the child is the star of the show, standing on the stage flooded with special natural light coming from above, addressing large number of people. The child now has the courage to speak out, with great courage, recalling the trauma and how he or she is able to transform the painful memory into a **positive energy** and a strong feeling of **hope**. The walls this time are of

transparent glass with widely spaced screens showing fully fledged trees and shrubs carrying plenty of colorful flowers all around. (Fig. 5)



*Fig. 5: Model showing PTSD rehab with drama theatre in the middle*

### **Healing Speech Disorder**

Another two architects **Rana Shaiba** and **Omar Gamal** designed a rehab center for children with speech and language delay. Usually the children with such disability are less attentive, shy most of the time and can't socialize with other children or adults. So, therapists depend on activities that get them involved and excited to help them overcome their disability and improve their wellness (McLaughlin, 2011, p1183). The general mood of the center is fun and curiosity. They thought that the best way to make them feel at **ease** and get them interested in what they are doing is to place them in a house environment that is centered around their scale.

To design a space with such aim the designers conducted a field research asking hundreds of school children to draw their dream houses. Over 90% ended up drawing a gabled roof house (Shaiba & Gamal, 2016) despite the fact that in Egypt this is not the standard image of a house nowadays. It is worthy to note that the first person to bestow this image on the psyche of people across many cultures and centuries was Palladio. The temple front house was an attempt by Palladio to upgrade the status of residential architecture to impress the viewer with moods of honor and prestige. The type started to promulgate among the Italian aristocrats of the 16th century as a leisure house sitting in the middle of a large agriculture estate along the countryside. Four decades later, up till the beginning of the 20th century, honor and prestige continued to be represented by the Palladian villa across Europe and beyond, but this time it became part of the city life in the form of a small urban dwelling dominating the street view of many new towns. Egypt was no exception for it continued to practice this form of dwelling from 1840s till the 1940s (Asfour, 2011).

To see the image existing in the psyche of school children is not a surprise in the context of 100 years of practicing the same type, but instead of honor and prestige, for children the mood is **fun** and **excitement**. Based on this research the

designers offered therapeutic spaces that is dominated by gabled roof form that is downscaled to fit the size of children. The wellness center becomes a small village composed of rooms acting as little houses for healing children (Shaiba & Gamal, 2016). (Fig. 6)



*Fig 6: Model showing interior layout of Speech Therapy Rehab Center with a “feel at home” mood*



*Fig 7: Model showing mini houses inside speech therapy rooms with a “feel at home” mood*

With pastel colors covering the walls and grounds and sunlight taking shapes of screens, flooding play areas that are multi-leveled, therapists became visitors who will have to bend to get inside this fantasy world that belongs to the children. With a recovery plan in mind, they guide children on how to make the best use of their dream houses in order to improve their speech disability. (Fig. 7)

Stepping outside these houses children engage in planting and cooking activities then are encouraged to sell their products to their parents in a market yard designed especially for this purpose. The floor of the market is made of geometric colorful mosaics. An additional layer of geometric patterns is casted on the floor composed of light and shade coming from a perforated shed on top. The final mood is **joyful** and **dynamic** existing children to speak out their minds in an attempt to sell their products. In the process they learn to overcome their speech disability.

Surrounding the market place and the houses is a landscape that is designed to become a cottage garden. Originally associated with rural farmers, now with children, the cottage garden is an intimate garden with dense color and sent. Plenty of flowering shrubs with a rich pallet of colors and textures are stacked along pathways to give the outdoor atmosphere a compelling **delightful** mood that significantly contribute in healing children from their speech disabilities. (Fig. 8)



*Fig 8: Model showing cottage garden in Speech Therapy Rehab Center*

### **Healing Autism Disorder**

The third healing center is for children experiencing autism disorder and is designed by **Mohamed Hosny** and **Abdel Rahman Hussien**. The disorder affects child's ability to communicate with others because of symptoms that include tendency to repeat routine activities in a specific manner, difficulty in establishing eye contact, fixation on parts of objects, inability to interpret facial expression and tendency for self-harm behavior (Pope, 2014). To improve the basic social skills of an autistic child the designers invoke "**segmental focus**" as a mood for their design. This is because children with autism are easily distracted thus making it harder for any treatment plan to succeed. They expect their

surrounding to be highly ordered with the idea that there is "a place for everything and everything in its place." (Wing, 2006, p.15).

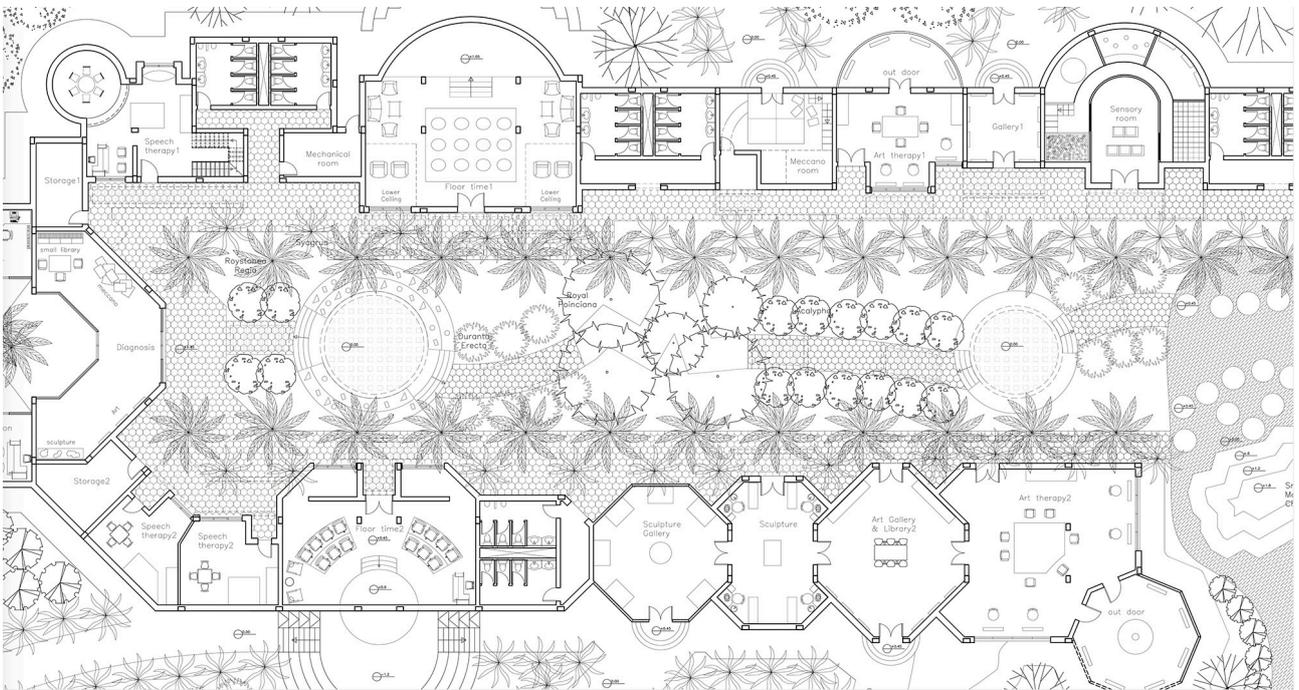
By looking into one of the art works done by some autistic children we can understand their spatial preferences. "The Scheherazade Dream", is an artwork, drawn by **Ziyad Sharkas** and a team of 9 kids, is inspired by the notorious stories of "One Thousand and One Nights" (Helali, 2017). The dreamlike artwork has the striking technique of drawing similar details on Scheherazade's hair, the domes, the minarets and the dunes. This repeated routine is also seen in the partitioning of the Scheherazade's dress into four parts then repeating the same design pattern by tessellation technique. This fixation with curvy lines within well defined forms, suggests a **segmented focus** mindset with a tendency to repeat the same action many times. This is further highlighted by the overall structure of the canvas theme that has no over-layering of figures, and no real sense of perspective. The final impression is easily comprehensible for there is no confusion over forms that could have been partially hidden behind one another. (Fig. 9)



Fig 9: "The Scheherazade Dream" painting showing autistic mind in action

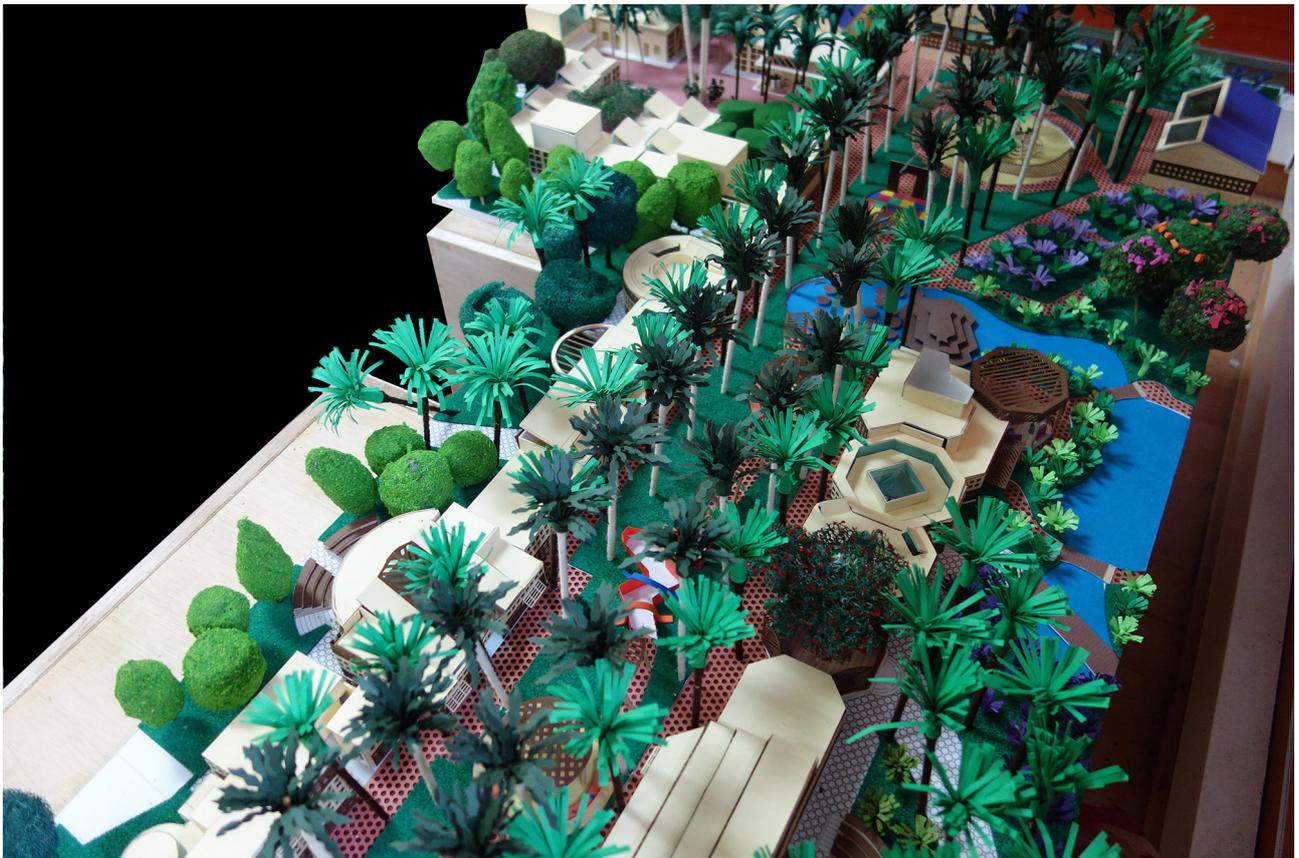
Accordingly, the basic layout is composed of therapy spaces grouped around a central garden that is regular in shape, almost symmetric in arrangement and linear in direction. The therapy spaces are slightly differentiated in forms when seen in sequence so as to appear compartmentalized and have direct access from the central garden. This arrangement encourages the child to use the garden and the therapy spaces alternatively without losing the sense of orientation (Hosny & Hussien, 2016). (Fig.10)

To further stabilize the scenery and reduce the sense of confusion architects added a layer of Syagrus palms behind the existing rows of Roystonea Regia. There is no surprise for the autistic mind since the Syagrus still maintains a very close character to the Roystonea. At the ground level shrubs take the character of a foliage garden in which gradation of green leaves dominate the surroundings, with no colorful flowers to reduce distraction. The foliage garden is also good for providing escape areas for children who are under stress because of intensive therapy programs they undergo.



*Fig 10: Drawing showing the central garden and symmetric arrangement of spaces in Autism*

Stepping outside the therapy spaces into the central garden does not only mean enjoying serene landscape but also experiencing strong **cooperative** mood since children have to help one another to handle difficult games that involve hill climbing, crossing a pond and reaching a tree house.



*Fig 11: Model showing Autism Rehab center with orthogonal layout for segmented focus*

Only towards the middle of the garden a cluster of poinciana trees are planted with their notorious red flowers blooming during summer to signalize the presence of the most important therapeutic space, the floortime in which children have the greatest fun playing with toys at their own developmental pace along with parents and therapists. (Fig. 11)

## Conclusion

To conclude the presentation, mood architecture is the only way to get people positively interacting with building program. To design projects with the intention of experiencing a spatial sensation or mood is not a new phenomenon but started with ancient architects and theoreticians.

Despite the similarities in the approach between past and present the difference between the two periods is obvious. In the first case the practice of the ancients was framed and packaged in the 18th century, then dispatched for universal practice in the 19th century, then became a tradition till early 20th century. In our current situation, architecture that talks to our emotions has been reintroduced by theoreticians such as Böhme (2013, pp.27, 29, 31), almost echoing Blondel and Boffrand of the 18th century but in more sophisticated language, nevertheless the approach is hardly realized in practice.

Healing architecture is perhaps the one type that begs for such approach and the research showed, through built and theoretical design, how this can be achieved. The three theoretical designs contained many details and ideas in a neighborhood environment that invoke healing moods of intimacy, friendliness, belonging and above all a strong sense of hope for recovery.

This is further augmented by introducing landscape as an added healing power for children. The architects of every project captured the spatial experience of each therapeutic space, indoor and outdoor, in order to show the value of this trail of thinking in producing a very vibrant architecture for children. Be they local or international projects mood architecture could be easily adopted because it invokes a universal language not just for human beings but for being human.

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