

SPATIALITY IN MEMBRANE STRUCTURES

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Abstract

This work outlines results of an ongoing investigation on aesthetics, using membrane structures as physical support and point of departure spatial reflections. Practical results transit on the borderline between fine arts, architecture and structural engineering. In this context, several design and artistic installations have been performed, in order to explore the intrinsic relationships between the technology of the membrane structural systems and the aesthetic possibilities open by their characteristic forms, interacting with light, color, textures, movement and environment.

A theoretical basis has already been presented in [TIT03], where Gestalt, semiotics and other analytical concepts of visual expression have been applied to membrane morphology and structural behavior, and how that can bring out symbolisms and interpretations. Now, the research proceeds to evaluate how the spatial and aesthetic properties of experimental membrane installations are able to provoke sensations, feelings and poetic experience on observers and bystanders.

Some contemporary art concepts are embodied in the objects produced within the research, such as environmental questioning as part of the design *repertoire*, adequateness to contemporary culture and full sensorial interaction between *oeuvre* and observers, besides balanced and harmonic broadening of sensitive and sensible knowledge. All design objects and installations presented will be discussed separately and in context relationships, with reference to the works of the architecture critic Rudolf Arheim, the philosopher Luigi Pareyson, the scenographer Flavio Império and the contemporary artist Ernesto Neto, among others. It is hoped that this research can provide an insight to a number of relevant questions, contributing to bring together technological art and structures.

Key words: membrane structures, aesthetics, spatiality, installations

1. Introduction

Installation art may be a kind of vivid experience; part physical poetry, part intellectual enigma, something that may transform empty space into a vigorous place of encounter and thought, according to the art writer and critic Suvan Geer.

The installations, performances and sculptures discussed in this paper work along biological identities, creating aesthetic constructions that, at first sight, seek seducing with their organic character. The creations intend to involve viewer's senses: sight, touch, and on occasion, smell and hearing.

The installations experimented are aimed not just to occupy their sites but to use them to generate meaning [PAR83]. It is proposed a continued exercise of perception [ARN83], creating corporeal formations that work as puzzles, that our perception will put together to find various references, restating the notion that, in abstract art works, the artist uses media to play with "association tendencies" in the observer's mind.

In the discussed works, a fundamental role is played by the anticlastic membrane surfaces, creating relationships and oppositions—weight v. lightness; inside v. outside; transparency v. opacity. Besides this, the body reference appears in those works as a challenge; working with the corporeal nature of emotional states, of psychological processes and sensations.

It is also found a Gestalt meaning related to fundamental structures in the corporeal character of the conceived shapes [ARN77], especially when the overall design means more than the addition of all the separate parts of the structure. The best shape in a visual perception context was aimed as well.

Yet there is another significant element to be understood in relation to philosophical and scientific interests concerning membrane installations, according to the art critic Lisbeth Rebollo. It is the element of time.

The historian Arnold Hauser noted that in art, time is also the way for us to get in touch with our own memories, with our spiritual life. A work of art exists in time and is caused by time, as much from the point of view of the artist who creates it as from that of the viewer who watches and experiences it. In modern philosophy, time is an intuited movement, the starting point of the ego, the true consciousness, according to Hegel.

As things happen in time, time is mobility. Lived time is a fluid current on which every instant moves into the next, in an uninterrupted continuity. For Bergson, time is absolutely new at every point; it is a continued process, but also the conservation of accumulated experiences. Then Husserl believes that every lived experience is, by necessity, lasting, and it is inserted in a “continuum of plenitude”.

All the works discussed in this paper had a short limited time to be performed or exhibited. Even when they stay longer in a site, as time goes on, the fabric tends to acquire another spatial configuration, due to internal forces and visitors interaction, which occasionally end up destroying the installations.

In all installations the materials (Lycra tulle, Suplex, Spandex, among others) were clearly more in danger of being harmed by the viewer than the reverse, supporting point for the arts writer Caroline Abels’ theory that “art today is so high maintenance”.

The central concern of these works has been the exploration of the weight and resistance of materials, their elastic capacity stretched to the limit. All the sculptures produced served as bodies in a constant flow of transformation.

Therefore, the only captions of the exhibition moments are in photography or video. In short, time in the presented works is transitory, in-process time; it is an accumulative kind of time, one that remains in permanent transformation, one of substantive re-signification.

2. Installations, performances and sculptures

2.1. Le Corbusier



Figure 1. Performances in urban spaces, by Titti Titotto¹ and Rafael Suriani, 2002

The idea came out from a proposal to translate city planning concepts of the famous architect Le Corbusier. It was decided to criticize him by showing that when people are inside his proposed Cartesian urban plans, they don't work, they fail, because humans deform it, they cannot be adjusted to simple regular geometric plans.

¹ The author's name Silvia L. M. C. Titotto is replaced by Titti Titotto, her nickname.

Lycra fabric was used to build an abstract reticular plan to be deformed and it was first performed at “Museu da America Latina” (Latin American Art Museum), a building conceived by Oscar Niemeyer where many of Le Corbusier ideas are followed.

The same worries in limits, contours, and borders, and the same interest in the malleability and permeability of materials, spaces, and bodies, are reflected in the artists’ decision to exhibit this *oeuvre* in other urban spaces, such as the University of Sao Paulo and degraded downtown areas.

With this gesture, the contact surface between the museum and other institutions is expanded, between performance and ritual, between the imaginary and the real, stretching to its limits the membrane that separates the work of art from daily life.

2.2. Lamps



Figure 2. Spotlights designed by Titti Titotto and Luciana Muller, 2003

The idea was to insert rings in pantyhose fabric in order to create relevant shapes. These first experiments in object design are embased on the Italian designer Bruno Munari, “Falkland lamp” (1964).

The left one was inspired in a gas lamp, vernacular lantern in the Brazilian countryside and Luciana is co-author in its design. The red one has a tangent point with Chinese traditional lamps. The right one was an experiment in ripping the fabric to generate light effects.

2.3. Invasion



Figure 3. Invasion at Casa Z (House Z). Bathroom installation, by Titti Titotto, 2003

This installation is part of an event occurred at Casa Z (House Z) with artists chosen by the curator Carlos Zibel. Each of them was supposed to “invade” a room of the cultural center (also, Zibel’s house).

To enter it, one basically crawls through a small aperture, due to a rip on a blue spandex fabric. The visitors are supposed to walk through this narrow passage, using hands to open up the space in order to advance. This narrow passage leads us to a point where there is only a toilet flush/bowl, from where people can be partially seen in an intimate moment.

It intended to be a true interactive *oeuvre*, because nobody knew for sure what the visitors' reaction would be. There was no other toilet on ground floor, which was the "public area" of the house. They might look for another toilet upstairs, invading the house "private/intimate area" or they might use the room normally and be able to be observed.

Thus, what might be akin to exploring a cave, assumes the sensation of being observed and invaded by curious eyes from outside. This adds to the potential discomfort of the experience.

It is a space where the body of a standing/sit person could fit. The perforation suggests the body's natural orifices—they resemble vaginal or anal cavities.

There might be an erotic charge in this installation, but it is tended to be highlighted the role of desire and sexuality as the forces that drive the artist's creative gesture.

What played a major role in this work was discussing how far artists may interfere in visitors intimacy in an art exhibition, provoking bystanders' reactions.

2.4. INTERFAU party

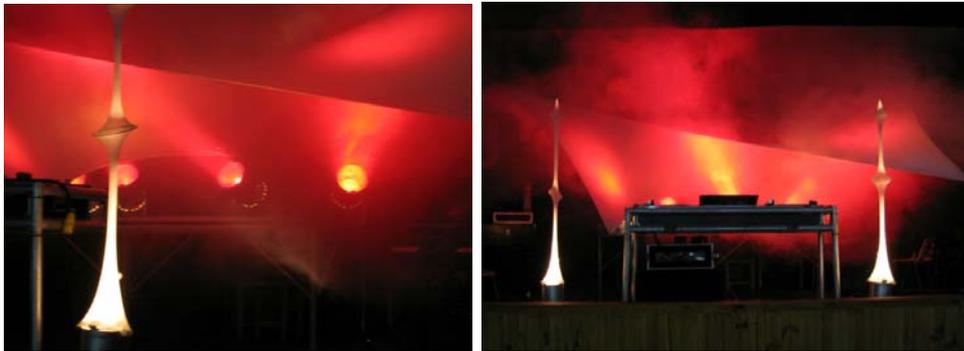


Figure 4. Installation in event and light spots by Titti Titotto, 2003

It was aimed to produce a cozier environment for parties to take place during the INTERFAU 2003, an event where architecture students of the state of Sao Paulo meet due to games competition and celebrations. It was improvised using spandex fabric behind two pantyhose lamps.

2.5. Ghosts in Sharewood



Figure 5. 'Ghosts in Sharewood' by Titti Titotto, 2003

Three sculptural works which flow together as one complete installation that transforms the space as a whole. It was aimed to be established as an environmental sculpture made of Lycra tulle.

This installation extends the notion of reality to bodies and sensations intermingling, which invites the observers to the interactivity, facing the possibility that visitors enter the *oeuvre* and explore its passageways.

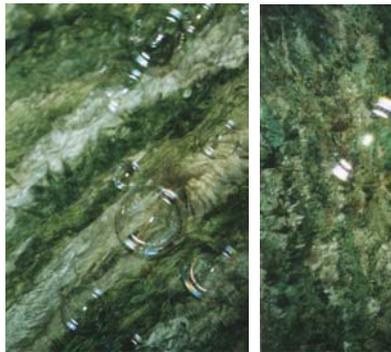
2.6. Animal



Figure 6. Membrane application to pantographic structures by Titti Titotto, 2003

In each of these pieces, sculpture-installations to be seen and be also physically occupied and inhabited, when produced with wide dimensions, it is reaffirmed the interest in interstices, contact zones, deformations that result from the encounter of two bodies or two surfaces.

2.7. Bubbles



7. Bubbles experiment by Titti Titotto, 2003

This work intended to puzzle the observer to imagine what was behind the bubbles which could compose a Gestalt configuration associated to them. It was fun to show architecture students those images and listen to them saying that it was an aerial image of a rain forest under soap film, for instance.

2.8. Cosmos



Figure 8. Work with children from poor community by Titti Titotto, 2003

This experience resulted from a workshop in a poor community in Carapicuíba. Children were taught the basic principles of tensile structures and then, they wanted to conceive a shape to be installed as a shelter of the communitarian center's entrance gate.

This stretched and translucent Lycra structure, traversed by light, which is torn in some places, and from which large light spots are designed on the floor under sunshine generate organic spaces, put us in mind of another space filled with fundamental energies: the cosmos, a universe of sidereal forces and counterforces.

2.9. Monument to the Futile Form II



Figure 9. 'Monument to the Futile Form II', sculpture by R.M.O. Pauletti, S. Titotto and T.E.C. Deifeld, 2003

The membrane fills the tensegrity simplex structure, nevertheless a distinct structure, with perceivable, finite dimensions. It is spatially engaging but plays on the sense of confinement.

This sculpture is an example of not only attempting to sculpt organic forms, but to establish a process that possesses organic relationship. It would seem that the oeuvre seeks the plasmatic reason that permeates life in the realm of science.

The colors were not chosen by chance either. For the architect Rietveld, the primary colors contribute, as signs, evidently to the communication of stability of the structure.

All the colors of this sculpture obey the dogma of DE STIJL, as dictated by its founder, Theo van Doesburg and members like Piet Mondriaan, Bart van der Leek and others, that is the exclusive colors to be used should be red, blue, yellow or black, gray and white.

In abstract real painting primary colors imply color in its most basic aspect, as it was for the painter Mondrian. Primary color thus appears very relative - the principal thing is for color to be free of individuality and individual sensations, and to give expression only to the serene emotion of the universal.

According to semiotic principles, colors also have meanings. In this sculpture the three sticks are yellow, indicating the truncation of their virtual extension on the three space axes into an endlessness. The membrane inside it is red, a color indicating verticality, aggressiveness and the masculine and the missing primary color is blue, a color associated with horizontally, passivity and the feminine.

According to curator Moacir dos Anjos, instead of looking for the establishment of compositive relationships among different materials –obtaining from them an “order” or rigid “constructive principle”, membrane sculptures deny the interior of the shape or the existence of an unique vector which organize them. Decentralizing their surfaces and volumes, they reach each other, through the minimalism concepts of sculptural composition without hierarchies.

2.10. Intervention



Figure 10. Intervention at Casa Z (House Z) by Titti Titotto, 2003

Intervention was intended to be seen as an organic continuation of the body. The work's aesthetic discourse seeks to generate a full body-and-soul experience in its receptor. It is intended that visitors feel sensuality of its form, the fragility and delicate nature of the membrane that envelops the space-organism, its biomorphism, leading to ponder human nature.

There is also the connotation of attempting to re-enter the womb, a physical impossibility for which we create substitutes like homes. It might have a link with the image of an underground cave, a uterus, an organ filled with life's pulses.

Intervention proposes a space that is both internal and external, not only because of its permeability and transparency. Both spatial realities intertwine in the curves that bring intimations of the external space to the structure's center, as parentheses allowing the insertion of the outside into the inside. An invisible film seems to define and limit this habitat as a membrane.

2.11. Selenitas



Figure 11. Selenitas 01/02, by Titti Titotto and Jung Y. Chi, 2004

This installation shows a departure from his earlier exploration of intricately interwoven, soft organic forms, culminating in large lamp shapes. Passing through the room one notices the ways its surface cast various tonal shadows on the neutral material; illumination from the lamp lights calls attention to the translucency of the material. The initial experience is as if passing through a cavernous space complete with stalactite formations.

There are two openings in each lamp; each one essentially leads to another part of the installation, it means a very subtle line between "above and below". This double opening makes for an unavoidable fallopian experience: to pass through the gate is more than moving through a tunnel, it is to be born into the artwork. This installation offers experiences that are similar, yet inverted. It may be installed up side down, creating very different effects. This question appears as mysterious spaces; unveiling their meaning was a major concern due to its meditation requirement.

In this installation, a variety of situations was aimed to be created for visitors to experience, as they move through it in many suggested directions, for instance, playing with their perception of time when get into the sculpture space.

While “Selenitas”, for instance, permit the visitor permanence in the work and the simultaneous sensitive contact between interior and exterior through the transparent tulle fabric, in other works as “Monument to Futile Form II” the visitor is isolated from what is inside the sculpture.

3. Discussion

The works presented continue the established dialogue between landscape and the body.

While each of exhibitions has changed sufficiently to keep momentum of an ongoing evolution in technique and ambition (in the beginning there were only academic aims in the experiments) there has been a thematic and visual logic throughout artistic permutations, in a concise repertoire.

The shapes are conceived with the purpose to immediately surround and impact the observers. Slowly, after an approximation to the shape’s corporeal character, one should be able to identify a situation that is new and at the same time familiar. A careful exploration of each piece might awake various memories as moving through the piece’s interior and engaging senses.

The visualization of shapes drives us to a labor of Gestalt structuring. The effect of the material used, of its translucency, is to activate our sense of touch. All of this might bring forth memories, influencing our physical and mental state.

Instead of adopting a prospective method of creation, as other sculptors do, in which the work passes from the sketch to the models as a routine, an undissociable element of the creative process is assumed, the lack of knowledge of the exact result surging in the space or standing on the ground. Even when the oeuvre is drawn before its construction, it is more due to have a clear intention than a projection to be exactly followed.

Those sculptures are a result of a negotiated construction, step by step, site specific, with each of the successive steps of building up and of observers’ expectations. It is assumed the permission of a gradual lost of the rigid control of the constructive aims, letting the materials negotiate among them to occupy the sight and accommodate to space, just like the artist Ernesto Neto does [NET00]. This way, the artist is less in a position of creator of definite shapes and more as an agent of different forces in conflict, from where hollows and shapes result.

4. Acknowledgments

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