Surface: Boundary Conditions and Spatial Interaction

Introduction

If space is a 'social construct' as denoted by LeFebvre, then a spatial boundary can also be defined as both a physical and a social construct which is determined by our use of the space and our social interactions within it.[1] Our bodily movements through space form the foundation for our spatial perception and notion of boundaries. Furthermore, Pallasmaa defined existential space as the space of the lived body, which encompasses both the material and the mental, including the experienced, remembered and imagined, all fused into one.[2] In this fused space, physical objects, elements and other bodies infer both phenomenological and physical boundaries through the interaction with the lived body. In the lexicon of Interior Design, surfaces are critical elements in the implication of boundaries, enclosures, and territory definitions. As designers, we engage with surfaces or generate an understanding of their meaning only through their materiality. However, there is a wider possible interpretation of surfaces. For instance, we can look at their function and performance capability; it could be protective, or it could be to generate energy, light or information. [3] With advances in material technology and production, surfaces have become arenas of performance. [4]

Surfaces are creating new platforms wherein the modernist conception of surface transparency, articulation and stability are reconsidered. We no longer look at transparency as an aesthetic and an ethical foundation to advance the rationality and well being of the masses. Interactive architecture and interiors go beyond functional objectives, towards addressing subjective desires. The focus has been shifted from the architecture itself as an object to a communicative process which embraces a wider set of personalized functions with which to respond to subjective desires and experiences. The agenda of interactive architecture and design is not only about creating metaphors but also spatial tactics that create new space-time relations and, more importantly, have an impact on our pervasively homogenized social landscapes with their localized strategies.[5] Surfaces are becoming the primary medium to implement these strategies. Surfaces are the new arenas of information exchange which are directly connected to the burgeoning relationship between the contemporary processes of making, visioning and fabricating.

1. LeFebvre, Henri. 1991. *The Production of Space*. Trns. D. Nicholson-Smith. 68. Malden, MA: Blackwell Publishing.

2. Pallasmaa Juhani and Peter MacKeith, Ed. 2005. *Encounters: Architectural Essays*. 129. Helsinki: Rakennustieto Publishing.

3. Klooster, Thorsten. 2009. *Smart Surfaces*. 6. Besel, Boston, Berlin: Birkhauser.

4. Ibid, 7-8, 67.

5. Bullivant, Lucy.2005. 'Introduction'. In *4dspace: Interactive Architecture,* Guest ed. Lucy Bullivant, AD. 75(1): 5-7 January /February issue.

Technology-reinforced surfaces are now quite pervasive and play a critical role as socio-cultural indicators and spatial determinants. These new surfaces of sound, smell, light and tactility engage the human body in such a manner that they can actively participate in the human-environment dialectic and play an effective role in the production of existential space. The graduate level interior design studio explores the manner in which our place making, sense of space and engagement with the physical environment are redefined and daily narratives rewritten when a technology-reinforced third skin challenges our understanding of the world around us. In the current context, the term 'skin' implies protection and enclosure on an architectural scale which, in combination with the interior layers of human skin and clothing, forms a sequence of three enclosures. Undoubtedly, digital environments are raising our haptic and mental perception and are quite successful in creating local strategies that contribute to our individual and collective consciousness. However, design approach and purpose have not adapted to the technology-infused information age. In order to provide a unified design foundation, a renewed design purpose and evaluation criteria in the production of these new spaces, it is necessary to alter our design thinking as well.

Science, technology and art are the three pillars of our design model for both education and praxis. However, Alain Findeli invites us to consider a new theoretical framework for design in order to address the changing needs of the technology-driven information age. The new framework is inspired by system logic, complexity theories, and practical philosophy. [6] In Findeli's vision, visual intelligence and technology as a moral act replace the science and technology components of the model. Finally, he modifies the art component with a phenomenology based aesthetic intuition. [7] Findeli defines visual intelligence as an ability to see the world in its complexity and interrelatedness. He defines the interrelated subsystems which operate on different logic as the man-made world, the natural world, the social world and the symbolic world. [8] He argues that design operates within the complex assembly of these worlds. Therefore the visual intelligence of the designer and also the design approach must be capable of delving into these different realms with dexterity. The designer, as a synthesizer of the emerging realities, along with the design objective must reflect our socio-cultural and ecological responsibilities with renewed visual intelligence.

The undisputed role of the creative elements has been acknowledged by current design approaches; however, our age demands to see everything in relationship and demands adroitness to scale-link from product to urban design. Although the system of science can be perceived quantitatively, other systems such as human and social systems are best understood from a qualitative, phenomenological point of view. The phenomenology of human and social systems demands an existential point of view and must respect the intuitive process of aesthetic development. Consequently, the design approach to surface studies presented here was developed to reflect the modified tri-polar approach to design of visual intelligence, technological ethics and phenomenological aesthetics which, in turn, were used as the foundational approach for the spatial evaluation of interiors engendered by the new surfaces. Introduction of the renewed design model at the level of conception also allowed us to embed sustainability thinking as a primary design purpose and to extrapolate seamless evaluation criteria. This paper first discusses the integration of Alain Findeli's design model and then quantifies and evaluates the validity of these new spaces within the framework of this renewed design thinking.

Surfaces also remain central to an oppositional binary discourse which centers on determining primacy between structure and cladding. Adolf Loos differentiates structure and cladding, and defines the first and second tasks

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6. Findeli, Alain. 2001. 'Rethinking Design Education for the 21st Century: Theoretical, Methodological, and Ethical Discussion', *Design Issues*. 17(1): 5-17.

7. Ibid, 16.

8. Ibid, 11.

of architecture as follows: to hang tapestry to form a warm and livable space and to provide a structure behind it for support. From this, one can infer that cladding declares primacy over structure.[9] While structure and cladding previously remained independent entities attached with connections, new advances in materials science and technology have collapsed the distance between structure and cladding. The skin now has new added properties and can house structure. Alternatively, the new skin and structure express themselves as one unified system without one declaring primacy over the other, which may also be extrapolated to the discussion of primacy between the professions of interior design and architecture.

Avrum Stroll defined surfaces as both physical and abstract entities without privileging one over the other.[10] He considers cladding and structure as parts of a heterogeneous entity. In his study of surfaces, Stroll defines and categorizes surfaces into four main parts. Abstract surfaces ware labeled Leonardo (LS) and Delineated (DS). Both are seen as an abstract entity which denotes the theoretical distinction between two things with no divisible bulk. Similarly, the physical properties of objects with depth and divisible bulk can be labeled as ordinary surfaces (OS) and scientifically expressed Somorjai surfaces (SS). All of Stroll's surface conceptions treat surfaces as boundaries and require consideration relative to the articulations added to them, such as painting. Mark Taylor in 'Surface Talk' summarizes Stroll's work and establishes parallels with surfaces created by technology based visualization and material production techniques.[11] In the digital techniques of architectural visualization, surfaces are employed to conceive form without any depth or internal structure, as abstractions. By contrast, surface is conceived as a physical object in the construction and material experimentation-based approach to architectural surfaces. Subsequently, Taylor connects the surface, in both abstract and physical conceptions, to Alberti's and Semper's surfaces both of which reference textiles.[12] Interactive surfaces with their multi-layers have the potential to display textile-like qualities.

The studio was invited to produce a self supporting 'SURFACE', which continually responds to its environment with motion, light, sound or any other sensory means. The project 'SURFACE' investigated the relationship between the body and its third skin by using materials and digital technologies as the mediators. The proposed lightweight third skin questions and examines the role of a surface as an interpretative, mediating agent that bridges the architectural shell and interiors, details and totalities, culture and space, the physical and the temporal, user and structure. It challenges surface depth with opacity and transparency. The projects Polyp and Emotive Surface (ES) are the results of this study. The spaces enclosed by these surfaces created a new kind of spatial template with the potential to provide the conditions for a creative social practice. Furthermore, they have the capacity to perform synchronously with the user and consequently become an event space which is marked by openness and change.

Polyp

Polyp is an interactive surface that responds to the user with light and motion. Polyp was positioned at the circulation corridor connecting the main studio space at ceiling level, with an extension to the building courtyard

9. Loos, Adolf . 2011. 'The Principle of Cladding'. In *Toward a New Interior: An Anthology of Interior Design Theory,* ed. Lois Weinthal, 241. New York: Princeton Architectural Press.

10. Stroll, Avrum. 1988. *Surfaces*. 39. Minneapolis, MN: University of Minnesota Press.

11. Taylor, Mark. 2003. 'Surface Talk'. In *Surface Consciousness*, Guest ed. Mark Taylor, AD. 73(2): 30-35 March /April issue.

12. Ibid, 35.

glazing system. The structure of Polyp consists of an exoskeleton comprised of 1494 tessellated paper units, 300 soft polyps formed from heat sealed plastic bags, and a header (spine) which is powered by a gas compressor (CO_2) and a shop vacuum. The spine is connected to the system of soft polyps via clear tubing. Light emitting diodes (LED), and motion and proximity sensors are connected to a solenoid valve and shop vacuum which regulates air intake and release from the soft polyps. The timing of the air compressor and the sensors is sequenced by a microchip which is specifically programmed to control the various user responses to the system. In order to emulate the development of a coral, the final form of the polyp was developed organically on site rather than following the precise mathematical repetition rules of tessellation. The expansion and contraction of soft polyps (breathing) and the lighting sequence are initiated by the movement of the user through space. In addition the sequence of LED lights traces the body's movement. In order to optimize system sensing and actuating, including PV panels, photocells, and resistors, LEDs were soldered in parallel to protect the system, and also soldered to each wire to prevent lateral contact without adding additional insulation. Figure 1.

Figure 1: The structure of Polyp consists of an exoskeleton comprised of 1494 tessellated paper units, 300 soft polyps formed from heat sealed plastic bags, and a header (spine) which is powered by a gas compressor (CO_2) and a shop vacuum. (Right image) The spine is connected to the system of soft polyps via clear tubing. Photography by TSL8, 2011.

The project was defined by the group TSL8 as follows:

> 'This project will attempt to emulate coral and the way it physically expresses itself through its surface. The coral is a direct expression of its inhabitants, location, and construction method. Along with many health and environmental implications, we consider the psychological and therapeutic benefits of breathing. We aim to bring awareness to user behavior and interaction through an advanced dialogue between the installation and the user. Sick building syndrome (SBS) and the 1970's notion of a tightly sealed building envelope became an area of concern for our group. Various plants and animals have the ability to use their skin as a means of absorbing nutrients, moisture and air. The idea of surface as skin and an opportunity for mediation was encompassed by the idea of coral. Our investigation of coral revealed that coral uses its dead and unwanted debris to create hard polyps, which inspired our group to consider the construction of an exoskeleton. Essentially, we created a third skin to an existing building, similar to a parasite with the ability to improve the health of its host. Our intent was to show that a surface can be responsive to its environment and have the ability to alter the conditions of its surrounding environment. With future development of Polyp, we hope to create living polyps with the

ability to clean and filter air. Our installation, at this stage, is a social commentary on indoor air quality and SBS.' [13]

Polyp is fragmented and its discontinuous surface was comprised of several layers. The components are simultaneously performative and unresponsive, live and static, soft and hard. It is a precursor, a form of manifestation of morphogenesis where the unit form and Cartesian rules of geometry are adopted and developed organically on site. Polyp doesn't privilege one component over the other, but rather aligns itself hierarchically, like organic matter. Polyp merges with the complex exterior cladding layer, establishing its own presence and language. It declares permanency through its depth and attains qualities of an artifact, rendering interiors as symbolic, active sites. Polyp does not enclose a physical space per se but its presence implies and even encloses a phenomenal space, a new type of abstract interior. Figure 2.

Figure 2: Polyp in context. Photography by TSL8, 2011.

The formal geometry in tandem with the organic component captures and mediates the ephemeral and imprecise movements and events which occur in a space. The continuing dialogue with the occupant resists the greater fixed space that it occupies. It sculpts the built form from inside out. Ordinary movements and events of the occupants are traced and mirrored in the surface of Polyp through the landscapes of sound and light. The surface of Polyp identifies with the complex array of conditions imposed by both the physical and abstract levels of boundaries. Its function mutates and transforms space from static expression into a performing event space. The inhaling of polyps transfixes space and acts as an interpretive agent between the organic and the inorganic.

The interactive surface of Polyp, with its multi-layers, displays textile-like qualities. Polyp insinuates itself into the existing structure, thickening and texturing the surface. It shifts the dialogue from the oppositional dualism of surface and structure to the perception of surface as texture.

Emotive Surface

Emotive Surface (ES) is a self supporting, woven enclosure within which the surface is reinforced with technology to respond to users with sound and light. Both light and soundscapes are initiated by the user's body movements. Emotive Surface is located in a heavily used lounge area with exposure to daylight. Emotive Surface was formed by the threading of household cotton twine through a series of four undulating clear acrylic frames. The resultant woven surface is semi–permeable and more of an implied boundary, which allows for the filtration of light, sound, shades and shadow. Simultaneously, it projects a level of opacity that allows the user to comfortably feel as though they are in a private space. Figure 3.

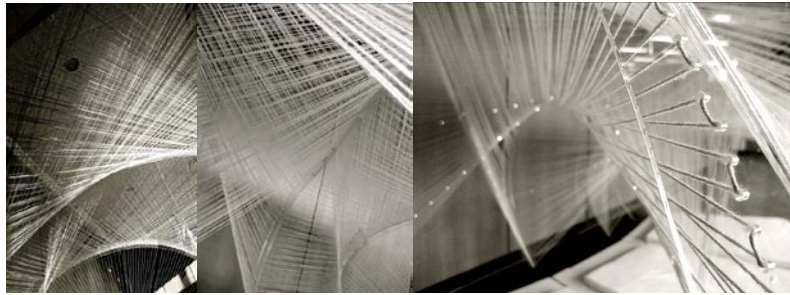13. TSL8. 2011. *Polyp*. Blurb Publication. http://www.blurb.com/books/2143222

Figure 3. The project Emotive Surface was formed by the threading of household cotton twine through a series of four undulating clear acrylic frames. Photography by Tanya Peters, 2011.

The original form was conceived as a whole and its surface was sectioned into four subdivisions. Then, the subdivisions were connected with string which was threaded through the acrylic sections in overlapping linear patterns. Figure 4.
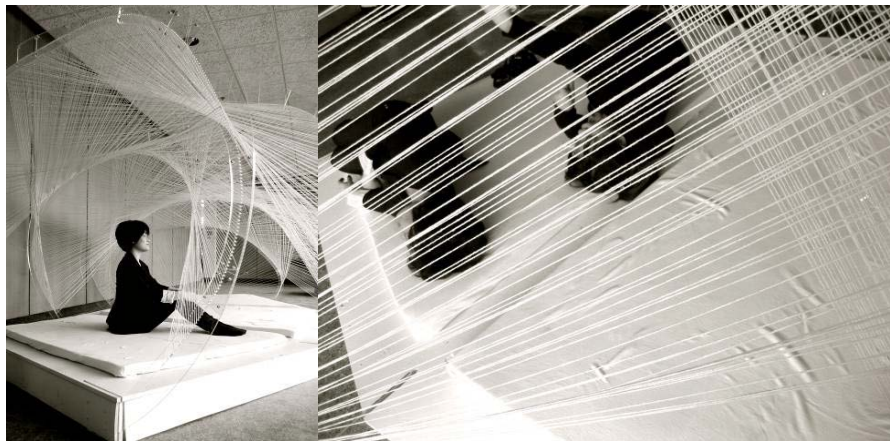

Figure 4: Emotive Surface connects with its larger context through its porous, technology-enhanced boundary which is equipped with sensors, a micro-sound system and multicoloured LED lights. It acts as a thin layer of interaction initiated by the user. Photography by Tanya Peters, 2011.

Through immaterial architectural elements such as sound, air, motion, colour and light, ES provokes, challenges and ultimately provides the user with a positive mood-altering experience. The team investigated the theory of Emotion, as well as the theories of Biophilia and colour-emotion associations, and combined these into a surface which is infused with sparkling lights and the sounds of nature through the integration of a complex array of LED lights and a sound system, both triggered by proximity and motion sensors. Further investigation of natural systems and precedent analysis lead the team to the human spine as a main influence on the form development. The strategies employed to achieve a starry night effect are summarized as follows:

> 'The LED lights are programmed at separately-timed intervals and attached to the control board at their corresponding output. Each output is then programmed using a sine wave where the light fades in, becomes brightest at the top of the wave and then fades out. The three outputs are offset from each other to ensure that at any given time at least one string of lights will be fully operational. The outputs are connected to a control board that regulates both their timing and level of emission. The sound system is selected so as to stage a forest walk, bird songs, wind in the leaves, sounds of a running

stream and a crackling fire. A compact disc player is then connected to the control board and synchronized with the LED circuits and triggered by the proximity sensors.' [14]

Emotive Surface connects with its larger context through its porous, technology-enhanced boundary which is equipped with sensors, a micro-sound system and multicoloured LED lights. It acts as a thin layer of interaction initiated by the user. The surface of ES becomes the flux of performance which solicits a sense of intrigue, and deciphers and exposes performance space. It operates at the boundaries of the private and public arenas. It is self-indulgent, performative and addictive. When it is not activated, it disassociates itself from its larger context, remaining static and elusive. In action it is voyeuristic, participatory and defaults to its cultural context. The porous surface separates the serene from the loud, nature from urban, private from public. A thin transparent veil creates an unbreakable phenomenological envelope. ES provides us with an irrefutable escape pod within which we can connect with nature.

The outside images, when viewed from inside, are fragmented by the array of strings. Consequently, the distorted perception of the viewer renders the larger context immaterial and imposes a sense of isolation. The surface of ES is diagrammatic; it represents nothing, and reveals or hides nothing. Rather it creates a phenomenological surface which opens up and liberates us from the solidity of interior partitioning. The surface is pursued not as a boundary condition but as a mediating, interpretive agent that connects disparate elements of object, space-time and context. Furthermore, the passage of time is registered as the shadows cast by the filaments move on the horizontal surfaces. The surface becomes a temporal registry, perpetually informing the user of the passage of time. The interior of the pod can be seen through the fragmented, patterned, illusory veil, with voyeuristic implications. Both sides of the surface engage in an improvisational dialog through which they actively participate in the creation of space. Emotive Surface is constructed by a series of interwoven gestural lines where the boundaries challenge the definition of a surface. Similar to Semper's woven surface, Emotive Surface separates and simultaneously merges the inner life and the outer life on a phenomenological level and once more establishes surface as texture.

Surface

There is a fluid relationship between the events and the physical space that contains them. Jeffery Day and Brian Rex observed the quotidian traces, and their investigations of the surfaces of quotidian life posit two types of primary boundaries. [15] The first type, denoted as Bonafide boundaries, is constructed from actual, physical and static contextual elements. The second type, labelled Fiat boundaries, is a construct of abstract, indexical, ephemeral, dynamic quotidian activities in space. There is a thick boundary, a flowing changeable liquid interstitial space, between the bonafide bounds of the context and the fiat bounds of the activities. In the case of ES, the surface has been defined around the activities it contains and becomes a representation, an expression in the interstitial space between the fiat and bonafide boundaries. This gossamer-like surface is an indexical expression of the relationship between the physical form and temporal events. It has a textile-like flexibility to respond to changing activities. It considers the physical form of space not as a concrete end-result but as a possibility of continuous evolution based on and defined by habitation.

14. TTTYMMMSurface. 2011. *Emotive Surface*. Blurb Publication. http://www.blurb.com/bookstore/detail/2155550

15. Day, J., Rex. B.2003. 'Everyday Geometries: Synthetic Facts and Superficial Qualities'. Journal of Architectural Education. 57(2): 29-35

The form of Polyp was directly related to the aggregation of its original unit parts, in contrast to ES which was conceived as a whole and then segmented. Polyp was developed organically and engages the body at the detail scale. The details and the tectonic assembly are the determining factors of form and, as a perceptual field, they play a primary role in the creation of space. Polyp is a multivalent, layered, complex surface with thickness. It also raises the question of when the ratio of surface thickness to depth begins to challenge tectonics and becomes a space unto itself. By adding thickness to the structural frame from inside, Polyp not only challenges the normative sequential order of conception of interior and building shell, but also the notion of surface depth. Polyp as an entity is beyond a mere surface which claims its own status as space, synchronically activated by the daily movements and interactions of the body. Polyp with its own thickness occupies the interstitial space between the fiat and bonafide bounds. Its own deterministic mobility animates and orders the liquid space between the contextual and fiat bounds.

Through the application of interactive surfaces, traditionally rigid interior walls are endowed with kinetic qualities. [16] These new flexible systems are also judged by their performance capabilities and by their role in mass cultural transformations. In the case of Polyp, which employed biology as a generative agent, the ecology of coral was used as a model and the resultant surface was exploited as a social platform to raise awareness of the issue of indoor air quality. Furthermore, besides creating an ongoing dialog between technology and culture, these animated surfaces also collapsed the distance between body and interiors. In the case of ES, the focus was shifted away from the structure and back to the body. The surface of ES humanizes interiors and keeps the human body at the center of all things.

Hans Frei proposes that 'emplacement of an object in the world is seamlessly related to the emplacement of a world into an object'.[17] He rearticulates that surface is the site of exchange between architectural body and context which is beyond representation and self-presentation and beyond the game of reveal/conceal. These qualities of surface infer diagrammatic properties. Frei refers to a diagrammatic surface which is not representational, which reveals or conceals nothing and enables the continuing flow of space. [18] The emplacement of ES within a larger context allows the continuous flow of space through its thin transparent gossamer surface. The outside world seeps into the inner space. There is always a coherent predictable passage between the overlapping diagonal orders of the dividing surfaces of ES. This non-representational diagrammatic surface abrogates spatial differences between the two sides and emplaces ES seamlessly into the world.

Space

As discussed by Ben Highmore, Simmel studies everyday life in modernity through a sociological microscope. Like an impressionist painter, he posits that the fragments of everyday life lead to a synthesis of understanding of life experience. [19] One can consider interiors as montages, made up of various fragments. The evaluation of these new types of interior fragments is based on their qualitative and quantitative role in the socio-cultural context beyond their capability to respond to programmatic requirements. Polyp as a synthetically organic fragment plays a part, a spike in the everyday life of modernity, along with the other elements of the social matrix. It has a

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16. Weinthal, Lois ,ed. 2011. *Toward a New Interior: An Anthology of Interior Design Theory,* 283. New York: Princeton Architectural Press.

17. Ibid, 49.

18. Ibid,XX

19. Highmore, Ben. 2002. *Everyday Life and Cultural Theory*, 33. London, New York:Routledge.

significant role in developing an understanding of society at large because it heralds the acceleration, transition, activity, mobility and erosion of norms under the social forces of technology. The everyday aesthetics of this fragment become the manifestation of social forces which are based on technology, materiality and synthetic organicism. Both Polyp and ES create a new type of social space and a platform for investigation. They disclose their own secret by revealing the complex relationships between the body and object, technology, movement and information with glimpses of developmental changes in society in both qualitative and quantitative terms.

Malcolm McCullough allies technology with design and asserts that the key to technological success lies in an appropriateness of use which surpasses the need for performance. He further articulates his thought by emphasizing the contextual dependency of appropriateness. [20] Undoubtedly, technology is a part of our social infrastructure, and the integration of design and technology yields a new state of being in spatial terms. The evaluation of these spaces must have social, psychological, aesthetic and functional components. Furthermore, they should contain properties that contribute to human, cultural, and natural capital. Therefore it is prudent to base the evaluation of these new states of being on the functional, social, psychological and aesthetic aspect within the context of cultural and environmental sustainability. If we return to our original design approach, which was framed by visual intelligence, technological ethics and aesthetics, we find that both spaces have elements to fulfill the parameters of the original framework of design.

Each space is conceived as an incubator of symbolic, social, natural and manmade worlds. The design questions originated from a social world. Surfaces were used as a narrative of contemporary culture. In the case of Polyp, the surface is a commentary on the politics and economy of interior air quality and pollution. Meanwhile, ES engages with human biophilic tendencies to combat emotional fatigue. The design approach was then connected to both symbolic and manmade worlds by using nature as a model. Coral and the human body are represented both symbolically and conceptually, and both studies consider the human body as the center of all things and as the ultimate expression of the natural world. Technology is then utilized as a tool to ameliorate the man-made. Hand production was balanced by the technological, such as hand and laser cutting processes. Even though these diverse worlds have different operational logic, biomimicry was used at all levels as a common thread to connect the disparate worlds. As a result, the designer's visual intelligence, which perceives and connects the complex relationships between the different worlds, is reflected in spatial templates which are socially, economically, symbolically and practically viable.

Technological ethics as a moral act also resulted in the use of nature as a mentor in the conception of spaces. The life span of structures was intentionally chosen to be limited in order to simulate natural systems. The aesthetics of the design approach was informed by nature as well as by the production process. An experiential, intuitive approach to aesthetics was developed phenomenologically during the making process and adjusted further during the installation. Aesthetic intelligence shifted the design thinking and process from design as engineering to design as arts and crafts. The students used the reverse side of their past projects for the paper component of Polyp. Therefore their memories and experiences were weaved into the space, creating an attachment and personal connection. Both spaces engendered intellectual, sensual and emotional experiences at equal levels.

The studio also looked at the coupling of design and technology and the ways in which technology can be used in a discreet and effective manner. There were three main factors which determined the approach to technological integration. The first factor is the life span of technology; technology ages very rapidly and considering the

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20. McCullough, Malcolm .2004. *Digital Ground: Architecture, Pervasive Computing and Environmental Knowing*. London,England: The MIT Press

machine aesthetics as a design determinant has provisionary implications. The second factor is maintenance and upgrading; technology requires constant monitoring and maintenance and should be controlled by an independent operating system which is easily accessible. The final factor is the consideration of technology as a tool, and not a means to create short-lived fascination. Long term environmental impact was carefully considered in both projects. Recyclable materials, including recycled technology parts, and an intermixing of handmade and mass-produced materials, constituted the material pallet.

Conclusion

Surfaces are not considered as a limiting condition but mediating, interpretative agents that connect bodies to objects and buildings, to context and to culture, thereby establishing the physical and phenomenological boundaries of existential space. Surfaces are considered not as passive indicators but as dynamic fields of experience and flow of information. Both the ES and Polyp surfaces enclose and herald a new type of interior space within which multiple possibilities, scenarios and options are created in response to the world of indeterminacy and contingencies. These spatial templates are the new realities of interactive interiors. They are viable spatial expressions of the transformation of our previously understood spatiotemporal relationship. In closing, ES is an abstract surface which encloses a physical space. It is simultaneously soothing and voyeuristic. On the other hand Polyp is a physical surface which encloses an abstract space. It is stimulating and didactic. Both created social platforms and initiated different kinds of social interaction without interrupting the 'Spaces of Flow', which is one of the dominant notions of our information age.[21] Based on our evaluation framework, they are also shown to be effective at harnessing emotion rather than technology, and creating localized strategies to interrupt our pervasive homogeneity in social space. The creation of interactive spaces therefore requires a new design purpose which is based on environmental sustainability, incorporating considerations of visual intelligence, technology as a moral act and a phenomenology based aesthetic intuition to endow them with meaning and value.

Notes

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