HtwoOExpo
Freshwater Pavillion: NOX
1994-1997, Neeltje Jans Island, Netherlands
The form of the H2O Pavilion is intrinsically connected with a consistent logic that defines the entire project. It was intended to be a space in which visitors are allowed to flow freely, like water molecules. The exposition pavilion forms a typology that can be traced back at least as far as Paxton’s Crystal Palace. In some ways, the Water Pavilion shares some common interests with Paxton, in that it is a space intended for interaction with exhibits for the purpose of education and entertainment. Like the Crystal Palace, its loose program allows for a variety of circulation patterns and activities. However, unlike the Crystal Palace and other pavilion buildings, where visitors move from one exhibit to the next, observing, and then continuing on, the H2O Pavilion compresses moving and seeing into one fluid act through the implementation of interactive electronic technology involving sensors, projections, light and sound. The H2O pavilion employs a strategy of topological vagueness to generate movement without needing to actually move. This strategy uses a “language of movement,” which comprises of terms including “splitting, merging, bending, and twisting.” This vagueness does not mean that the form is completely undefined. Edges emerge from a field of vagueness (Spuybroek 39).
Spuybroek notes that the pavilion’s “geometrical continuity” leads to the emergence of unexpected social effects. The flowing topology creates tension and “intensifies sensations within the body.” This intensity generates a greater potential for spontaneous, unpredictable movement. Events within the space “emerge from the interaction between a less determined architecture and the body.” The development of the Water Pavilion led Spuybroek to believe that posture, perception and activity are intrinsic to architecture. This relationship between the “transformative geometry” of the building and the movement of visitors is what Spuybroek refers to as “motor geometry” (36). According to Spuybroek, “The water pavilion is a special building for many reasons: it is the first fully topological structure where curvature is not only in the roof and walls, but also in the floors. No section is horizontal. It is the first fully interactive building in which visitors can transform light and sound in the interior through a wide range of sensors” (18).
The building’s form provides an envelope for the interactions which accentuates their changing, unpredictable nature. The movement of visitors and the resulting images and sound form a closed loop of interactivity. This loop is a manifestation of the principals outlined in Sanford Kwinter’s Landscapes of Change; “…the continual feeding and siphoning of energy or information to and from a system keeps the system dynamic – simultaneously in continual transformation locally and in dynamic equilibrium globally… Every real system is made up of other systems, and they are continually leaking information to one another in such a way as to link them across a single “continuum of influence.” All the forms in the universe are produced as by-products or maps of particular evolutionary segments of one or another dynamical system” (Kwinter, 59) The projections used within the building have their own form, reinforcing the overall intent of the project. They appear as ripples, blobs and waves, creating fluid, interactive surfaces overlaid on the undulating, static surfaces of the physical form. This results in a complex layering of experience and information.
Spuybroek’s idea of vagueness seems to link the Water Pavilion to Jeffrey Kipnis’ new architectural category of “DeFormation,” outlined in his essay Towards a New Architecture. “Borrowing from Deleuze, DeFormation refers to… tentative links with contingent influences as affiliations, and engendering affiliations is the foremost mechanism by which DeFormation attempts to Point. Affiliations are distinct from traditional site relations in that they are not predetermined relationships that are built into the design, but effects that flow from the intrinsic formal, topological or spatial character of the design” (108). The Water Pavilion avoids the pitfalls of allowing contingent influences to dominate the design, and of falling into expressionistic gesture by employing non-representational abstraction manifested through complex, morphing topological surface geometries, hallmarks of Kipnis’ New Architecture (112). Elizabeth Grosz argues that “…architecture must negotiate between, on one hand, cognizance and reshaping of the site, the reshaping and reorganizing of materials, the development of a design that acknowledges or poses questions for these “resources”… and on the other hand the cultural and economic exigencies that commission and inhabit architectural constructions” (159). The form of the water pavilion represents a negotiation between the influences of site conditions, the deployment of materials, and its function within culture. NOX began with a series of lofted ellipses, which were subsequently deformed by forces influencing the site including wind direction, sand dunes, and flows of incoming visitors. The ellipses twist from the vertical to the horizontal plane and grow in size as they move from the entrance to the rear of the building.
The fabrication presented challenges due to the fact that the structure had to be designed using CAD programs that required radii from circles rather than ellipse curves, but breaking the ellipses into component radii assisted in sending the design to the machines used to roll the I-beams of the primary structure. The secondary beams’ inherent weakness and flexibility allowed them to be torqued into position along the ruled surface contours formed by adjacent ellipses using the pressure of the connecting bolts. This essentially divides the building into a series of connected strips of variable width.

Works Cited
Grosz, Elizabeth. The Natural in Architecture and Culture. Architecture from the Outside: essays on real and virtual space.
Kipnis, Jeffrey. Towards A New Architecture.
Kwinter, Sanford. Landscapes of Change: Boccioni’s Stati d’animo as a general theory of models.
H2O Expo is a building which functions as a body, and which encourages individuals, groups and crowds to think about what it means to inhabit their own bodies. It is a building that bends, twists and splits systems of motor habit to allow the acts of moving and seeing to begin to converge. H2O Expo is concerned with issues of phenomenology, and as a public space intended to move large quantities of people through its internal spaces, it provides an appropriate and suitable venue to test the effects of non-orthogonal geometry and multi-sensory interactivity on the acts of moving and seeing. H2O Expo generates movement without moving, and creates new ways of seeing by “looking-back”.

According to Eisenman, “The idea of “looking-back” begins to displace the anthropocentric subject. Looking back does not require the object to become a subject, that is, to anthropomorphize the object. Looking back concerns the possibility of detaching the subject from the rationalization of space. In other words to allow the subject to have a vision of space that no longer can be put together in the normalizing, classicizing or traditional construct of vision; an other space, where in fact the space “looks back” at the subject. A possible first step in conceptualizing this “other space” would be to detach what one sees from what one knows – the eye from the mind.” Eisenman 559.

Topology as a means of displacement

axis of movement

axis of balance

axis of vertigo
H2O Expo, then can be seen as a laboratory in which to test the affects of topological vagueness. Spuybroek’s thinking mirrors that of Eisenman, when he writes; “When all architectural elements are connected through geometrical continuity, a number of unexpected social effects emerge. For instance, an elderly man stood in front of the larger bumps, paused a moment, and suddenly ran up the slope. This slope was meant for projection, not for walking, demonstrating that the abstract movement of topology intensifies sensations within the body. There is more tension. It creates a larger potential of movement without prescribing specific action. Events are no longer functions or mechanical actions; they now emerge from the interaction between a less determined architecture and the body.”

Spuybroek writes that the construction of H2O Expo led him to an interest in neuropsychology, an area of study pioneered by Marleau-Ponty. In “The Synthesis of One’s Own Body,” Marleau-Ponty writes about “motor-habit as an extension of existence.” He suggests that as we come to synthesize our own bodies, we come to intensified levels of perception. These moments of singularity result in a sort of change of state in our intrinsically linked motor and perceptual habits. This is why moving and seeing are, for Spuybroek, inseparable manifestations of our body, and for Marleau-Ponty, “Whether a system of motor or perceptual powers, our body is not an object for an “I think”, it is a grouping of lived through meanings which moves towards its equilibrium.” (Marleau-Ponty 153). Spuybroek suggests that “posture, perception and activity” are by their nature architectural. The building, as an abstracted body, translates its abstracted movement “directly to real movement of the body.” (36)
H2O Expo attempts to “detach the eye from the mind” by using “topological vagueness,” a strategy Spuybroek believes can generate movement. Both Spuybroek and Eisenman have shown that their works are preoccupied with the idea of separating the physical experience of the body from the classically constructed, orthogonal, perspectival sense of vision. Topological vagueness is the opposite of rational, Cartesian space, and is related to the folded architecture which Eisenman has pursued. Eisenman’s idea of folded architecture involves “dislocating the hierarchy of interior and exterior that pre-empts vision.” (560). This hierarchy is reinforced by classical architectural tools and forms, such as the Cartesian grid, the orthogonal plan, and the traditional vertical and horizontal structure of walls and roof. Eisenman’s goal was to create a heightened state of “present-ness” by creating space which more fully inhabits three dimensions. According to Eisenman, “architecture will continue to stand up, to deal with gravity, to have “four walls.” But these four walls need no longer be expressive of the mechanical paradigm. Rather they could deal with the possibility of these other discussions, the other affective senses of sound, touch, and of that light lying within the darkness.” (Eisenman 561).
Vertigo is one specific force Spuybroek uses to generate movement. In H2O Expo, Spuybroek suggests that the well, near the center of the building, functions as an internal “axis of vertigo” (20). The sense of vertigo it produces is accentuated by images projected into its depths, and by a low frequency interactive sound program. H2O Expo, and other NOX projects, are concerned with the concept of proprioception: “the unconscious perception of movement and spatial orientation arising from stimuli within the body itself. In humans, these stimuli are detected by nerves within the body itself, as well as by the semicircular canals of the inner ear,” (the American Heritage Science Dictionary) or as Spuybroek describes it– “posture as an emergent property produced by an interaction of architecture and body” (132).

The relationship between the body and architecture, so vital to practices like Spuybroek’s and Eisenman’s, will no doubt continue to be a key concern of architecture in the future. H2O Expo serves as a case study of the potential for topological vagueness to affect proprioception, and to generate unexpected social outcomes. The questions it raises provide ground for future experiments, as notions of space and inhabitation advance. Benjamin Bratton raises one of those questions near the end of his essay “The Premise of Recombinant Architecture.” “It is an open question as whether amplifying already present interrogations of body-as-structure into structure-as-body – a delicate intra-dependence between building and inhabitant – will bring therapeutic transformative re-integrations of self and space, or further anomie, or somehow both. We may find ourselves in recombinant habitats simultaneously more similar and responsive to our sensate bodies, more intimately incorporated with our biological presence, and also entirely unrecognizable to us as architecture, let alone homes. Instructively, the same goes for our bodies.” (108)

Works Cited
Eisenman, Peter. “Visions Unfolding; architecture in the age of electronic media.”
Bratton, Benjamin. “The Premise of Recombinant Architecture”
Marleau-Ponty, M. “The Synthesis of One’s Own Body”
The programmatic elements of H2OExpo blend together, forming a continuous experience in which the user and the space interact with one another. As the user moves through the space, they are exposed to a variety of stimuli, from the physical effects of the topological geometry of the space, to the phenomenological quality of walking across the flooded floor of the pavilion and through the falling rain and mist. As they continue through the space, they notice that the light and sound seems to be reacting to their movements and the movements of people around them, and they are provided with opportunities to interact with projections which engage them in a conversation with the space surrounding them.
The water pavilion is capable of generating multiple responses to different types of situations. The combination of infrared, touch and pull sensors are linked to a system of interactive projections, audio recordings and a spine of blue lights. As the user moves through the space, they gradually transition from a physical world in which they passively experience the phenomenological aspects of the space to a virtual world where they consciously and actively engage with the interactive media.
The sensors are configured to respond to individuals, groups and crowds, so that the experience of the space when a crowd of people is moving through it is different than when a single person is occupying it. Greater amounts of activity and movement spawn higher levels of activity from the interactive media, increasing the overall level of stimulus of both the user and the system. They system forms a feedback loop. The different types of sensors have varying levels of influence on different components of the system. For example, the touch sensors directly affect the wireframe projections, but also trigger pulses of light from the light spine.
The interacting elements of the space generate a complex chain of actions and reactions which is constantly changing in an unpredictable and unrepeatable way, a multiplicity of experiences as varied as the flow of water molecules across a landscape. The various programmatic elements can be understood as having a charge, which has an attractive or repulsive effect on the flow of information within the system. These charges generate force fields which are projected onto the undulating geometry of the space, forming a web of connected stimuli and potential activity.
Spuybroek’s project expresses a unique ideology, and projects a vision of a future in which society inhabits virtual and physical space simultaneously. Participants within this society are molecules within a greater flow. The world projected by the water pavilion creates a possible space in which humans are displaced from their anthropocentric position. This society recognizes what Berger describes as “… the unity of the impulse which passing through generations, links individuals with individuals, species with species, and makes the whole series of the living one single immense wave flowing over matter” (242). This space generates forms capable of interacting with and responding to the actions of members of this society. Spuybroek describes the interactivity of the water pavilion by suggesting that “Beyond the general technological understanding of "interactivity," here it does not mean merely that the building is an environment of transforming atmospheres through electronic intervention, but an architecture of transformation itself” (18). By projecting this ideology into a broader context, this transformation can be understood as a fluctuation and interaction between fluidity and solidification, between smooth and striated space. Deleuze and Guattari write; "...we must remind ourselves that the two spaces in fact exist only in mixture: smooth space is constantly being translated, transversed into striated space; striated space is constantly being reversed, returned to a smooth space" (474).
A society emerging from the ideology expressed by the HtwoO pavilion occupies a space where movement and seeing are compressed into fluid acts of creativity. In the midst of this fluid space, moments of intensity crystalize. As Dalanda notes, “Space is not a photocopy of society, it is society. Spatial forms and processes are formed by the dynamics of the overall structure..... Furthermore social processes influence space by acting on the built environment inherited from the previous socio spatial structures. Indeed, space is crystallized time.” These crystallized moments of intensity emerge from a field of vagueness. Spuybroek writes; “Topological vagueness is not a general, unarticulated free form... there are many internal edges to the landscape...the edges are determined objects taken up in the larger field of less determined morphology” (39). This less determined field is a smooth space;

“Smooth space is filled by events or haecceities far more than by formed and perceived things. It is a space of affects more than one of properties. It is haptic rather than optical perception. Whereas the striated forms organize a matter, in the smooth materials signal forces and and serve as symptoms of them. It is an intensive rather than extensive space, one of distances, not of measures and properties, intense spatium instead of Extensio. A body without organs instead of an organism and organization. Perception in it is based on symptoms and evaluations rather than measures and properties. That is why smooth space is occupied by intensities, wind and noise, forces and sonorous and tactile qualities, as in the desert, steppe or ice. The creaking of ice and the song of the sands. Striated space, on the contrary is canopied by the sky and by the measurable visual qualities derived from it” (D+G,479).
The smooth, topological space generated by NOX’s ideology produces sensations of vertigo, and reproduces those sensations through movement, which would be translated into new virtual spaces, generating a field of fluctuating intensities providing instances of creativity. As Berger notes: “Creation, so conceived, is not a mystery; we experience it in ourselves when we act freely.” (240) Berger continues: “In reality, life is a movement, materiality is the inverse movement, and each of these two movements is simple, the matter which forms a world being an undivided flux, and undivided also the life that runs through it, cutting out in living beings all along its track. Of these two currents the second runs counter to the first, but the first obtains, all the same, something from the second.” (242) The space expressed by the ideology of the water pavilion can be extrapolated to imagine a society in which haptic perception takes on a greater importance in day to day life. The combination of fluid, topological vagueness and crystalized, interactive, intense space could generate a greater potential for creative acts and free expression. Hierarchies characteristic of striated space would be leveled out, and culture would be produced and consumed in both physical and virtual space. As a product of culture, architecture within this society inhabits both these worlds, operating as an interactive, transformative force, and an expression of the ideologies of freedom and mobility.