

Water in architecture and water spaces: look, touch, feel

[Design](#), [Architecture](#)



The paper focuses on how the presence of H₂O & A ; # 8211 ; either as a characteristic or a map & A ; # 8211 ; enriches the design of public edifices, and how this relationship is perceived through centripetal human experience. Four instance surveies are used. Case analyze one is the Roman bath composite at Bath, Avon ; instance survey two is an early Modernist design of a glass marquee by Bruno Taut ; instance survey three is an illustration of a Post Modernist plaza in New Orleans designed by Charles. W. Moore ; and instance analyze four is the modern-day design of a thermic baths in Vals, Switzerland by Peter Zumthor. In each instance there will be an analysis of the architectural design including facets such as symmetricalness and balance, coloring material, texture, stuffs, signifier, and graduated table. Findings will include how H₂O is used in the design infinite and its consequence upon the human senses.

The survey expects to see a strong relationship between the presence of H₂O and the enviroing design of the edifice. Furthermore, the survey hopes to set up a difference in the relationship between the centripetal experience of the two instance surveies where H₂O is used as an aesthetic characteristic and has no practical map compared to the two baths where H₂O is used to bathe in. The surveies are ordered chronologically to enable clear designation of the germinating architectural differences between the ancient bath edifice, and the two 20th century illustrations. Probe aims to research the potency of H₂O as an instrument to help the designer 's efforts at making semblance. Aspects such as coloring material, and representation of signifier will be analysed in the two 20th century illustrations.

The survey will climax with the modern-day invention and dynamism so supremely represented in the work of Peter Zumthor. In this 4th and most of import chapter the work aims to place how modern-day developments in architectural design & A ; # 8211 ; in comparing with the older instance surveies & A ; # 8211 ; expands and enriches the relationship between H₂O and the human senses.

Methodology

The information for this survey was collected through documental research. Chapter one draws from Barry Cunliffe 's Roman Bath Discovered as a primary beginning and archeological context. The baths went through several phases of development before they were abandoned: this survey will utilize the simple program of the first phase as an illustration to avoid any confusion. Because of the age of the instance survey it is non possible to retroflex with certainty the exact nature of the centripetal experience of utilizing the baths. Therefore some guessss had to be conjectural based on the archeological and architectural grounds used. Throughout the thesis I will pull on Veronica Strang 's book The Meaning of Water (2003) which provides a utile penetration into the nature of the component in treatment. In the survey of Bruno Taut 's glass marquee the centripetal experience will besides hold to incorporate a conjectural component based on documental research as the marquee itself no longer stands. For chapter four, cyberspace beginnings were used in concurrence with diaries and books to turn up a firsthand history of the centripetal experience of Peter Zumthor 's baths. As a reasonably recent design of a comparatively unwritten about

designer it was hard to turn up a diverseness of beginnings for the baths so the chapter will pull chiefly from articles both from cyberspace beginnings and from publications.

Introduction

The first chapter will look at the Roman Baths in Bath, Avon. It will research the relationship between the architectural design, the stuffs used, and the human senses, concentrating on the original program of the baths in their first stage as depicted by Cunliffe (1971). This chapter will introductory to the survey as it will convey into treatment facets such as the relationship between the inside and outside of the edifice as perceived through human centripetal experience, and the atmospheric effects created by thermic Waterss which will be explored more exhaustively in the concluding chapter. It will measure facets of the Roman design such as symmetricalness, coloring material, and ornament and how these might hold enriched the bathing experience.

Chapter two uses the instance survey of a glass marquee, imagined by the poet Paul Scheerbart, and designed by Bruno Taut in 1914. The cosmetic construction was designed to be exhibited at the Werkbund exhibition and was demolished shortly after. The H₂O characteristic is centrally placed, designed to reflect the changing visible radiation through the motley glass panels of the environment. Its vision of a Utopian signifier of architecture utilizing glass prisms provides a alone contrast to the functionally aesthetic Roman baths. It will be used to develop the thought of architecture proving the boundaries between the perceptual experience of interior and exterior

and between public and private infinite. The presence of the H₂O and its interaction with the visible radiation from the marquee 's colored glass means that these constructs are explored through centripetal experience. Using relevant beginning stuff this chapter constructs an independent reading of Bruno Taut 's design, concentrating on its interior round signifier and tiered infinite.

In Chapter Three the instance survey used will be the Piazza d'Italia built by Charles W. Moore between 1974 and 1978 for the Italian community of New Orleans. The Post-Modernist design is characterised by Moore 's dry reading of historical signifiers of architecture placed around a fountain in the form of Italy. The survey provides a utile contrast to the old illustrations & A ; # 8211 ; it raises inquiries of how symmetricalness in architectural design affects the centripetal perceptual experiences. The focal point of the construction is the H₂O characteristic which serves as a self-contradictory unifier and centrifuge of the experience. Furthermore, this illustration brings into treatment the construct of a more complex relationship between the human senses and H₂O in architecture which will climax in the concluding chapter.

Chapter four concerns the thermic baths at Vals, Switzerland, designed by Peter Zumthor in 1996. This last and most of import chapter purposes to convey together facets of the three old illustrations through analysis of a modern-day design. The focal point will be on Zumthor 's inventive reading of the usage of H₂O in a natural environment. Research into his combination of proficient invention and sensitive perceptual experience hopes to set up how H₂O can be used in modern-day architectural design to enrich the

centripetal human experience. Study will besides concentrate on facets of the design such as the careful attending paid to accomplishing balance and integrity & A ; # 8211 ; through characteristics such as the combination of different stuffs used. Features of the earlier instance surveies & A ; # 8211 ; such as the ambiguity of signifier in Moore 's plaza are discussed in visible radiation of Zumthor 's design of the baths ' inside. Finally, the survey will measure how successful Zumthor 's illustration is in unifying traditional constructs in a modern-day infinite.

The Roman Bath Buildings at Avon, Bath.

During the first century AD the Temple of Minerva and the baths were built at Bath over a thermic spring. As portion of the edifice procedure an enclosed reservoir was constructed with the point at which the H₂O poured into the drain being unfastened with a flight of big stairss from a platform above, leting visitants to acquire near to the beginning of the H₂O. The gap through which the H₂O was accessed boasted an impressive archway 'creating the feeling of the steamy H₂O fluxing through the oral cavity of a cave from the Centre of the Earth. ' (Cunliffe 1971, p. 26) .

The original entryway hall boasted three monolithic Windowss through which could be seen the sacred spring and the communion table beyond. The Great Bath would originally hold been covered by a masonry vaulted ceiling besides with big Windowss in its 2nd grade home base xxiv cunliffe. Roman glass was translucent so the baths would non hold been lit every bit good as an unfastened air pool. This means that there would hold been no positions from the Windowss and small Sun, ensuing in minimum interaction between

the experience of being inside the edifice and the conditions outside. It appears that the lighting of the constitution took 2nd topographic point to the administration of infinite within the inside. Aside from the Great Bath the block contained two smaller Chamberss & A ; # 8211 ; the calidarium (hot room) , and tepidarium (a warm acclimatising room) (Rook 1992, p. 23-4) , and another smaller swimming bath now known as the Lucas bath. (Cunliffe 1971, p. 45) .

High vaulted infinities covered the thermic Waterss of the Great Bath to let the steam to rise. As Macdonald says of this manner of Roman roof, 'the main key to the sort of centripetal reaction or emotional response evoked by these edifices was the capacity of their concave forms to bring on an feeling of spread outing or lifting hollowness. ' (1982, p. 176) The perceptual experience of infinite inside the baths would so hold been altered as the swimmer left the little heated altering suites and entered the country of the Great Bath. The warm bubbling H₂O, with the ice chest tranquil infinite above would hold created two contrasting, yet complementary, centripetal experiences. This design meant that the activity of the H₂O environment could be enjoyed while the oculus followed the way of lifting blues, going upwards to the still repose of the vaulted roof. Leting the oculus to go, while bodily staying in the same topographic point would hold been an built-in portion of the relaxation procedure. The tallness of the ceiling would hold besides added to the atmosphere by doing sounds to repeat. White limestone surrounded the bath which would hold been smooth to the touch, and excavated grounds suggests that statues and other shrine-like images

decorated the inside, with a fountain in the Centre. It is possible to conceive of how the continually altering province of the Waters would hold played upon the enviroing surfaces of the ornament, looking to bring forth fluctuations in coloring material and texture.

As Veronica Strang says in her publication on H₂O: The hypnotic qualities of H₂O are of peculiar involvement in sing centripetal perceptual experience and the creative activity of significance. Schiffman (1996: 101) notes that the oculus is automatically drawn to wavering or traveling stimulations, and Gell (1992) and Morphy (1991, 1992, 1994) have shown that shimmering or visually exciting forms can excite affectional responses in many different cultural contexts. The play and glare of H₂O provide ocular stimulation that are rather different from those of most objects. The ocular involvement of inanimate objects is gleaned by the oculus actively following the signifier and coloring material and item. With H₂O (& # 8230 ;) the oculus is presented with a luminescent image it can non 'hold ' . Alternatively, it must merely absorb all of the beat of motion and the bantam displacements and alterations. (2003, p. 51) .

As in modern-day swimming baths it is likely that the Romans would hold enjoyed sitting beside the H₂O to watch the drama of visible radiation and absorb the ambiance. From the remains found at Bath it appears that the design included sing countries: the bath itself lay in the Centre of an aisled hall 109ft long by 67ft broad, divided into a nave and two side aisles, or ambulatories, by uninterrupted arcades framed with pilasters and entablature like those in the entryway hall. Each ambulatory was provided

with three exedrae, a cardinal rectangular deferral with semicircular 1s on either side, each framed by wharfs back uping arches in harmoniousness with the chief arcades. (Cunliffe 1976, p. 45) .

These deferrals, placed within a symmetric program, would hold provided topographic points for people to sit and see the baths, while the uninterrupted arcades would hold led the line of vision around the inside, with the consequence of there being no beginning or terminal. This continuity of signifier in the chief country reflects its map as a consolidative infinite in two ways: one, architecturally associating the four different countries of the edifice, and two, supplying a public infinite befitting of the societal map of bathing itself which brought people together.

To help the construct of bathing as a societal and a sacred experience certain characteristics were designed to appeal to the human senses. The floors and walls were decorated with mosaic forms in different colorss ; contrasts of coloring material being common in Roman architecture (Macdonald 1982, p. 176) , and as portion of the roof structures there stood tall columns in the cosmetic Corinthian manner. As a sacred topographic point, dedicated to Minerva, the therapist, visitants were tempted to throw offerings into the sacred H2O of the spring in hope of their wants being granted. The act of separating with money or something beloved is a ritual made possible by the spring being situated beneath the chief entryway hall. Excavations in 1878 by Mann discovered valuable offerings including pewter decorations, a gold earring, and a pin with a pearl attached. (Cunliffe 1976, p. 28) . The presence of the H2O beginning provides an temptation to the

baths within, and moreover the gesture of the spring beneath would hold created a rich bubbling pool easy transforming the solid masonry and concrete walls into an aesthetically delighting yet functional infinite.

The architecture of the baths edifice appears to hold been wholly devoted to the rite of bathing itself which occurred indoors. As Michael Wheeler says in Roman Art and Architecture (2001) :

you went to the baths in great Numberss to speak to and about your friends and to work off the night-before. But one thing you surely did non make ; you ne'er glanced at the untidy composite of domes and gables outdoors as you entered. It was the interior of the edifice that mattered, with its looming wall-spaces that stretched the heads of designer and sculpturer and gave a sense of wellbeing to patron or client. (p. 16) .

The experience of bathing was completed in a series of phases. The swimmers foremost entered the dressing room to alter, so after being anointed with oil proceeded to the series of chief bathing suites that varied in temperature (net ref. 1) . In the calidarium swimmers had their organic structures scraped of oil and sweat, before come ining the frigidarium (cold room) , where there was a little cold pool. The swimmer so entered the Great Bath. The Romans had no quantitative measurings for temperature, (Rook 1992, p. 13) and despite the usage of the walls as warming in concurrence with under floor warming at that place would hold been comparatively small control over humidness compared to modern-day bath composites. Walls would hold been damp from capillary wet oozing up through the porous edifice stuffs and from condensation when heater humid

air came into contact with colder surfaces. This meant that the visible radiation and heat of the bath might hold varied harmonizing to how many other people were utilizing it at the clip. Surely, these baths were designed to look their best when full of people & A ; # 8211 ; when the Waterss were traveling and the steam rise and breakage in the infinite above.

The baths were alone in that they provided a extremely esteemed environment (baths were frequently owned by emperors) where personal rite could be conducted in a public infinite & A ; # 8211 ; which merely the presence of the H2O would let. The baths were 'people 's castles, supplying a cultural focal point where everyone could bask luxury on a imperial graduated table every twenty-four hours. ' (Rook 1992, p. 20) . It is non hard to conceive of the many different odors & A ; # 8211 ; of different scented oils, steam, and hot organic structures. The baths composite was a wealth of money, leisure and animal experience, and the different stuffs used in the design reflect this. In the hall of the Great Bath lead lined the pool which met with the limestone beside it. This contrast of stuff was continued throughout in the broken signifiers of mosaic form interspersed with bronzy objects such as a bronze penstock in the north-east corner of the chief bath. (Cunliffe 1976, p. 45) .

As expected there appears to be a close relationship between the design of the baths at Avon and the centripetal experience of the spring H2O which was both a functional and an aesthetic feature. These two facets appear to hold been built-in to one another and it will be interesting to see how the relationship between architectural design and the human senses alters in the

following instance survey where H₂O within the glass marquee is present strictly for aesthetic grounds.

The Glass Pavilion designed by Bruno Taut for the Werkbund Exhibition, 1914.

This instance analyze expressions at the interplay between H₂O, visible radiation, and the senses in the early Modern Expressionist design of Bruno Taut 's glass marquee. The building was commissioned by poet Peter Scheerbart who dreamed of a 'soaring glass architecture ' as a liberating up of architectural design. (Crasemann Collins 1962, p. 12) . It was a fourteen-sided prism roofed by a dome with bluish, green, and gold glass panels which reflected the sky. (Ward 2001, p. 65) . Inside was a seven-tiered chamber whose walls were made of glass panels lined with glass mosaic, and a round stairway & A ; # 8211 ; an 'unreal, spiritual flight of steps that one descends as if through scintillating H₂O ' (Pehnt 1973, p. 76) . On the lower degree there was a rotunda with a pool and H₂O cascading down superimposed stairss so that the going sound of H₂O would hold echoed up to the highest grade. Taut claimed that the construction had been designed in the spirit of a Gothic cathedral. As Kenneth Frampton (1994) says, 'In consequence a 'city Crown ' , that pyramidic signifier postulated by Taut as the cosmopolitan paradigm of all spiritual edifice, which together with the religion it would animate was an indispensable urban component for the restructuring of society. ' (p. 116) .

This remark is reflected in the usage of H₂O as a symbolic unifier in two ways. First as a physical presence that mirrors the refracted visible radiation

from the glass panels, making a harmonic balance between floor and ceiling and a sense of integrity within the construction, and secondly as something that all living things and people need and understand as an indispensable portion of life & A ; # 8211 ; an indispensable ingredient if you like of Taut 's Utopian ideal. When standing at the top of the H₂O cascade it was possible to see upwards through the round infinite in the center to the curving infinite of the upper grades beyond. This provided a ocular contrast between the fluid downward motion of H₂O and the curving pyramidic signifier of the roof above. Further ocular delectations were to be found in the wealth of colorss used in the design. The cascade of H₂O travelled over pale xanthous glass, 'terminating in a deferral of deep violet in which images were projected from a kaleidoscope. ' (Pehnt 1973, p. 76.) The presence of the H₂O served to unite people 's experience of the visible radiation into one ocular constituent.

Because this building was non designed to be a lasting construction it did non necessitate to run into the heavy physical demands of wear and tear. Thus it is more aesthetically delighting than the Roman bath edifice, which in many ways was more functional. The aisled hall of the baths had a basic rectangular signifier surrounded by solid rock masonry which gave the edifice a sense of permanency. In contrast, the round signifier of Taut 's skeletal construction would non hold stood by itself: the upper hall was domed with different colored glass panels set into strengthened concrete ribs and relied on the stiffening consequence of the panels for stableness. The aesthetic map of the arched roof has non changed since the clip of the Roman baths at Avon ; in both structures the opening out of the roof

provides infinite in which the head is set free to see the animal delectations of the inside. Yet what differs in Taut 's marquee is the temporality of the construction. The tallness creates a self-contradictory feeling of impermanent permanency & A ; # 8211 ; a brief feeling that one is about liberated from the confines of earthly constructions into the kingdom of the sky & A ; # 8211 ; while the presence of the running H₂O beneath reminds the spectator that they are still on Earth.

In a 1928 essay on 'The Aestheticss of Architecture, ' Bruno Taut spoke of his 'love for clean smoothness ' (quoted from Ward 2001, p. 56.) This doctrine is echoed in design of the marquee where the visible radiation which is cast down through the glass surrounds hits the lower grade and is instantly washed off and diffused by the running H₂O. As Strang (2003, p. 50) says, 'the most changeless 'quality ' of H₂O is that it is non changeless, but is characterised by commutability and sensitiveness to alterations in the environment. ' Thus it is possible to visualize the experience of the marquee: the senses being continually stimulated by the changeableness and reverberation of the H₂O, the shifting visible radiation through the glass and its contemplation in the H₂O, even the odor of the humidness & A ; # 8211 ; all of which are at the same time and subtly altering harmonizing to the nature of the conditions outside. It is non difficult to conceive of how a flicker of Sun might all of a sudden hold transformed the marquee into a thousand inkling pieces. Furthermore, the seven grades allow the witness to command their centripetal experience by traveling as near and as far off from the altering visible radiation forms as they desire. Differing degrees which

induced different experiences was not a characteristic of the design in the Roman baths but a parallel can be drawn between this facet of the marquee and the galleried hallway of the baths where the populace could see the spring beneath.

In the comparing between the two instance surveys so far, the rite of bathing with its associated centripetal delectations becomes replaced by the rite of aesthetic and centripetal grasp entirely & # 8211 ; without the H₂O holding any practical map whatsoever. It provides an indispensable focal point, take away attending off from what would otherwise be a cold empty infinite. As Strang (2003) says of the belongings of H₂O: Physically, it is the ultimate 'fluid ' , make fulling any containing form and, every bit easy, shriveling and vanishing into the Earth or vaporizing into the quintessence. It has an extraordinary ability to transfigure quickly into substances with oppositional qualities, that is, the extremely seeable, concrete solidness of ice, and the fugitive dematerialisation of steam. Each province is infinitely reversible, so that this polymorphous scope is ever potentially present. (p. 49) .

It is this changeableness and potency of H₂O that enables the marquee to map as a dynamic public, yet personal, edifice. The tiered degrees above allow room for private contemplation in a public infinite. It is clear that the map of the H₂O differs to that of the Roman baths, nevertheless, the aesthetic experience in both fulfils a axiom quoted by Walter Gropius & A ; # 8211 ; that 'art is none other than the transmutation of supramundane ideas into objects of centripetal perceptual experience. ' (quoted from Pehnt 1973,

p. 35) . In footings of the baths at Avon and Taut 's marquee, what could hold been an ordinary 'mundane ' experience & A ; # 8211 ; the act of bathing, the observation of an cosmetic construction, & A ; # 8211 ; is transformed by the design of the edifice in concurrence with the presence of H₂O and its consequence on the senses into something extraordinary.

The round signifier of the interior creates a bubble where the witness becomes isolated from the outside universe ; the altering visible radiation and the motion of H₂O making a sense of eternity. As Simon Urwin (2003, pp. 125-6) says: every organic structure has around it what might be called a 'circle of presence ' that contributes to its ain designation of topographic point. When a organic structure is in relationship with others, their circles of presence affect each other. When a organic structure is put into an enclosure or cell its circle of presence is besides contained and possibly moulded.

If this is true so the centripetal experience of the person in the marquee would be shaped by the round presences of the grades and the H₂O below climaxing in a rich and permanent personal experience. In the Roman bath edifice we see a all right contrast to this experience & A ; # 8211 ; where the functional facet of the H₂O would hold caused Urwin 's 'circles of presence ' to be broken down so that public and private infinite become one. Indeed Taut himself stated that he demanded 'no differentiation between public and private edifices. ' (quoted from Jencks 1985, p. 61) .

As a concluding point for the instance of the marquee, it is deserving sing the really construction itself and the infinite it contains. Its map & A ; # 8211

; although non practical like the baths & A ; # 8211 ; is to supply an intermediary topographic point between the exposure of the out-of-doors and the confines of the indoors, a infinite out of clip. The usage of different colored glass creates a absorbing interplay between visible radiation and H₂O while making an enclosure without the feeling of being enclosed. This brings up interesting issues associating to the boundaries of interior and exterior which will be looked at in greater item when comparing these surveies to Zumthor 's work subsequently on. The following instance survey explores an unfastened air piazza the design of which provides a blunt contrast to Taut 's marquee. The chapter aims to place the germinating complexness of the relationship between architectural design, H₂O and the senses & A ; # 8211 ; traveling on now to an illustration built in 1974.