Santiago Calatrava

Lyon Saint Exupéry Railway Station
(formerly Satolas)

Lyon
France
1989-1994

Formal Strategies in Architecture
EVDA 621
Paper 2: Body
Courtney Clark
2- Body

Intro to Body

Body in architecture is conceived of in this analysis as the perception and experience of bodies, including physical phenomenon, information exchange and perception. Calatrava contains strengths in his reference to anthropomorphic forms in his architecture, however, the TGV Station contains a limiting capacity of internal dynamism or animation associated with the live-body in architecture.

On Architecture as Body:

Architecture as body contains skin, orifices, interior and exteriorization. Though Calatrava’s structure is more metaphorical in relating the physical body to form, it eludes to a future use of material that could become bodily matter at the building scale (Bratton, 104). Further integration of its elements into a complete and responsive system would be required for this structure to be considered a living organism. Anthropomorphism in Calatrava’s project is inspired by the measurements and proportions of the human body. His reference to the changing shape of organisms to grow and move through tension of muscle responses is reflected in the wings of the Concourse and the appearance of the repetitive concrete arches that form the train platforms, appearing to lift instead of fall against the weight of the roof (Shahshahani, 2004; 33).

The exposed skeletal structure contains the skin—glass and aluminum. This outer shell, if a truly animated being, could flex and move at its joints in response to its skeletal moving, however it remains stationary as if about to take action. According to Marleau-Ponty (1993) the human body is center to the experiential world—through our bodies’ perception our understanding and engagement with the world takes place. Marleau-Ponty (1993) sees a world of structures of consciousness where everyday experience is important to understand significance, complexity and everyday patterning. To fully engage in a space requires more than vision, but body, space, movement and environment working continually through each other; a removal of the strict primacy of vision in determining architectural form (Parlarc lecture, 26/10/2011).

On Transgressing the Female and the Architect’s Conception:

Pulling from Agrest’s (1993) argument on the replacement of woman’s body in architecture, Calatrava’s methods mirror anthropomorphic sources through symmetry and individual structural members similar to that of the Vitruvian Man (Diagram 1). The physical body he uses is anthropocentric, the male body being an unconscious configuration associated with the following:

Man and nature associated with natural harmony and perfection through attributes and proportion, and symmetry, with relation to members of a well-shaped man (Agrest, 1993).

Calatrava’s reference to the symmetry and proportion of the male body arguably suggests he views this form as idealic, even if strictly for structural purposes. Correspondence of members to the entire work can be seen through the use of structural supports along the station platforms. Calatrava’s original inspiration came from the shape of the human eye. In the interior, two cantilevers overhanging the ticket booths in the main concourse were made to appear as if they were upturned, outstretched palms (Arch Video Series 09). The Concourse itself moves beyond the purely physical metaphor of man by addressing the animism of a bird in flight; however the direct abstraction of a symmetrical Man occurs in the concrete structural members of the extended walkway and train platforms. Whether intentionally or not, Calatrava is reverting to the traditional practice of idealizing the male figure, conceiving his architecture and thus transgressing the role of the female figure in his built form (Agrest, 1993; 182).
The exposed skeletal structure or shell of the outer wings are a repeated motif, symmetrical on either side. Diagramming a section of the wing demonstrates the joints, skin and skeleton of the body’s outer shell. Movement could only occur through rotation of the joints, preventing excessive stretching of the skin or buckling of the skeleton. The repeated skeleton keeps this entire body rigid.

Abstacting the shape of the body for use as a structural support system: Calatrava’s drawings of the human man, eluding to the Vitruvian man, acts as a main constructional component of the concrete casing for the station platforms, emphasizing an importance of symmetry, proportion, and repetition.

Form inspiration from the human body

Working backwards, muscle is abstracted and applied to the structural section of the station as if it represented an animated mammal. The wings and main body form a structural casing for its internal body where habitation of users (external bodies) become engulfed by it.

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On the Phenomenological Body. Beyond the Physical Metaphor:

A phenomenological body is particular, animate (or active) and situated in the world. It is the study of structures, experience, or consciousness: appearance, perception, and their meanings to our experience (Parrac lecture, 26/10/11).

Physical animism is not the only method of considering a lively body in architecture. With the advent of what Eisenman (1994) calls the electronic paradigm, traditional primacy of site is removed and blurred, challenging the idea of conceiving space. Folding becomes an ‘unbroken continuity between interior and exterior’ (559). Calatrava begins to evoke this through the strict use of the skeletal structure in the design of the main Concourse: Removing Site boundaries and providing repetitive pieces, there is a removal of one particular vanishing point traditionally held in Cartesian perspective; instead, an ‘other space’ is formed that blends interior with exterior, caused perception for those within the Concourse to extend and become affected by an exterior reality. Calatrava only begins this process, because it is only achieved through sight.

Wiener’s view of cybernetics demonstrates an extension of the self into the ‘realm of the machine’ (86), an emphasis being placed on movement away from Newtonian predictability to the transgression of boundaries to formulate patterns and similarities (Hayles, 1999). Instead of becoming lost in the details, environments form feedback loops that can inform or produce relationships between objects - the key to communication in a cybernetic environment (Hayles, 199, 91). This World-as-analogy view bridges between boundaries and creates new information between machine and living organism; in this case the machine is applied to the entire operating structure and its elements. This analysis only begins to consider flows of energy, information, train and air travel, and the flow of individual organisms through the space. These individual factors, when considered together with the structure, produce a dynamic and responsive understanding of the space as coordinated effort of flows and circulation. Thus the experience of the space becomes one emphasizing movement. Calatrava’s station is animated by physical movement and interaction with its elements; without these added layers the architecture would arguably not be nearly as dynamic, only replicating movement through metaphor. How a given form comes to occupy a certain position is a dynamic process of mutation of code through innovative variation; these convergences being where the logic of architecture exists (Bratton, 98). The genetic body contains multiple, incongruous and animate forms (96). To conceive of Calatrava’s TGV station as a genetic body is to consider its structural elements, but more importantly the influx of dynamic forms: living-bodies. A truly dynamic environment exists when the form engages and blends with the human body, becoming an extension of it in space.
Information Exchange of the main concourse: mapping the flow of Body through technological exchange of arrival and departures, overlaid with the blurring of physical boundary caused by penetration of light (inwards) and access of sight (outwards). Both indicate a transgression past the strictly physical construct of the building, though it is defined by its physical program and structural members. Spaces of sensoral perception stretch beyond the shell.

Sensoral disorientation through repetition on the platforms: Non-stop TGV trains travel through the middle two tracks producing amplified sound, while horizontal arches along continuous hallways produce a visual never-ending appearance to the walkway.
Concluding Body:

Body is both a concept of those experiencing architecture and architecture itself. Understanding physicality as one aspect of body is moving beyond rigid boundaries that no longer suffice in our digital world. Architecture as body responds to and overlays with the dynamic properties of system flows, and the Saint-Exupéry Station is a prime example of a physical form made up of a series of parts; a body in itself that also animates in response to architecture and produces new relationships with these processes. It is this dynamism that is key to the body as architecture being alive, not an arbitrary object. Calatrava’s form begins to allude to or attempt to formulate a humanistic response and produce animism through metaphor and physical form; however it has yet to reach the point of the structure itself becoming a live body.