

# Tables of Weights and Measures: Architecture and the *Synchronous Objects* Project

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Writing about a topic outside one's own discipline forces at the most basic level a resituating of standard disciplinary assumptions so that they can be positioned in a meaningful way to the broadest of audiences. This is all the more true in a case such as what I write about today which concerns my work for the *Synchronous Objects* project. This project was a multidisciplinary research effort centered at the Ohio State University which focused on the implications of the complex organizational strategies and conceptual systems found within William Forsythe's celebrated choreographic work *One Flat Thing, reproduced* (2000). The intention of the project was to bring together a group of scholars from various disciplines to explore the possible ramifications of this compelling work for their specific fields; to see whether certain concepts relative to choreographic thinking might cross between disciplinary boundaries. To begin a discussion of the architectural contribution to the project, I would like to briefly revisit certain fundamental aspects of the relationship between the human figure and frame within architecture as a way of situating the architectural component of the *Synchronous Objects* project. The idea of measurement implicit within Forsythe's work and what we saw as an architectural affinity with the issue of frame to body within the dance were central features of the project that I and a pair of student assistants developed. Our project therefore drew upon both our analysis of Forsythe's choreography and the multidisciplinary effort of *Synchronous Objects* project itself.

Architecture has over the last couple of decades rediscovered its connection to the immediate, temporal, and material world of behaviors and effects. So too has it sought to make its own logics of organization and assembly performative. That is, to make systems that behave not so much as abstract linguistic objects but rather responsive organisms which react to the forces of the world. In this sense there is some parallel movement between what is happening in architecture and the goals of the *Synchronous Objects* project, albeit perhaps in different planes of understanding. Architecture has moved from an obsession with the notion of the describable architectural object as a discrete and knowable thing to the environmental notion of architecture as a result of an extended field of forces and flows; a condition where 'architecture' loses itself first in the landscape and then in a generalized array of the global ecological, economic, logistical and informational forces in the world. Architecture is therefore, to paraphrase the architectural theorist Bernard Tschumi, not so much an event of construction but is the construction of events.

## FURNISHING INTERVAL AND POSITIONING GROUND

From a layman's point of view *One Flat Thing, reproduced* seems an unconventional piece of choreography. This judgment emerges for many reasons but perhaps central among these is the fact that its staging is dominated by the creation of an artificial 'ground' upon, under and around which the dance is performed. Forsythe's furnishing of the performance space with an array of tables unbalances the conventional understanding of ground by providing a new surface datum which acts perceptually on the figure of the dancers as their bodies are effectively bisected, sectioned and measured by the plane of the tables. The dancers no longer gracefully spring from the surface of a stable earth in this work but rather must negotiate the shifting planes of a newly mobile and fluid set of surfaces, an artificial and somewhat uncanny horizon. They are in a sense partially buried or floating in an unstable world. These playful and surprising juxtapositions between pieces of furniture and performers are perhaps not so surprising when one considers the historical relationship between the words furnishing and performance.

Linguistically these words are nearly identical having at their core the Latin root *fournir*, which means to furnish, to provide, or supply in full. Performance is simply the compound meaning through, during, or by the agency of which something is provided. Performers supply or furnish something; they are a kind of agent or vector of logistics. In this sense Forsythe's dance is furnished by this

table array, as it provides the field for a new expressive world to unfold. To the architectural interpreter, the spatial, organizational, structural and tactile armature provided by the array of tables plays a central role in the conceptual and symbolic understanding of the meaning of the dance. Their presence remind us of the intimate and archaic connection between architecture and dance by reiterating fundamental conditions in all architectural phenomena, the most central on which is the relationship of the mobile occupant to an envelope or enclosure.

The tables provide us with a perceptual field through which to understand interval, distance, unit and number, the conditions that join the temporal art of dance to the spatial art of architecture. So too can the work be read as an allegorical exploration of the relationship between the human figure and the frames established by society; frames which whether registered through the regulating grid of cities, or the systems of demarcation in mathematics and science, are the cultural legacy of ideas of measurement.

## THE CHORA AND THE EMERGENCE OF THE FIGURE

To understand the relationship between architectural notions of spatiality, ideas of measure and choreography that I am developing here, it might be useful to briefly review the classical relationship between the Greek *chora* (situated space, place, position in order) and *choros* (round dance, open dancing ground, enclosure). Both are related to the Indo-European roots *gher-* (to grasp, to bind, to enclose) and *ghe-* (to release, to go, to abandon). *Chora* is quite simply: the place that is made through the going.

This oppositional pairing, to bind and to release, points to a fundamental set of beliefs in classical Greece concerning the possibility of rhythmic interval as the prior condition to the establishment of space. The very possibility of movement is the necessary property for the emergence of measurable and occupiable dimensions. *Chora* is the vessel or receptacle of enclosure, a mold through which this emergence is made possible. The *chora* is quite literally a matrix, a mothering structure, which gives rise to being by providing room for the performance of movement, the interval for becoming in time. In this sense the space of the *chora* precedes and underlies the process of figuration.

Forsythe's *One Flat Thing, reproduced* literalizes this process in the sense that the array of tables is positioned in a grid-like matrix; a coordinate set, a 'table' of intervals and positions, or weights and measures, which both engenders space and sponsors the becoming of a new kind of figure, a cloud-like field of subjectivity. The *Noise Void Tool* from the *Synchronous Objects* project neatly

encapsulates this idea, where the statistical sampling of movement variation is captured through the device of what might be called visual absence or in architectural terms *the figural void*. The void presented by this tool is the registration of the differences and accelerations of movement; it is in a very real sense a digital registration of the ancient idea of *chora*.

## TABULATING MEASURE

Forsythe's *One Flat Thing, reproduced* can be read as exploring contemporary notions of ideas of measure in an era when measurement is understood to be probabilistic and statistical rather than fixed and ideal. The work can also be seen as mobilizing a Deleuzian concept of 'duration'; an interest in temporal and qualitative conditions in opposition to a transcendental and absolute notion of quantitative analysis. In a somewhat Duchampian sense in which scientific principles are mobilized to describe ironic or non-scientific qualities, Forsythe's *Synchronous Objects* project is actively pursuing the problems of mapping and measuring of distributed flows within a contemporary scientific framework. Certain illustrations from the sciences such as the statistical mapping of *Brownian motion* (the small and apparently random movements of particles suspended in fluids) metaphorically echo the entire graphic ambitions of the *Synchronous Objects* project. The emphasis here seems to be less about mapping in the transcendental sense but rather is in my view an attempt to situate the embodied knowledge of dance as a mediator between the now dispersed disciplinary fields of contemporary aesthetic and scientific cultures.

Forsythe, through *One Flat Thing, reproduced*, might be said to be situating these ideas as a central feature of a post-humanist system of knowledge whose salient figure of study is the manifestation of a new type of statistical or probabilistic identity. This is an identity that is not an ideal humanist centered singularity (a self in the classic sense) but rather one that is conditioned by and constituted out of the flows of modern society; a society in which individual identity is increasingly distributed across electronic networks and broad ecologies. The 'table' in this system is not the physical object but the conceptual representation, a system of 'tabulation', the matrix of columns and rows of a database chart or a cross-reference of associations. This is embodied most closely perhaps in those foundational charts entitled 'Tables of Weights and Measures', the charts which outline the units of measure that underlie experimental technique. This idea was at a certain point in history embodied in actual objects. Tables of weights and measure were literally quite common in the ancient world.

The *mensa ponderaria*, the weigh table from the forum market of Pompeii is a salient example. To ponder in Latin is to weigh; to metaphorically measure and evaluate the burden of various possibilities and it is interesting to note the importance of the table as the site of this action.

Mensuration in contemporary physics is as is well known subject to the limitations of the uncertainty principle. This is an acknowledgement of the effects produced by the act of observation and measurement itself on the state of any particle. The quantum reality of objects exists in a kind of state of superimposition or probabilistic potentiality. From this point of view, Forsythe's piece can be seen as an allegorical elaboration of the problems and dilemmas of contemporary notions of physical reality relative to human perception and subjectivity. The work can be seen as a rumination on the fact that culture in the West has long since moved past the centrality of the body as a measure of reality, a state which was classically evoked by the dual inverted poles of dance and architecture; mirror disciplines which have acted as cultural embodiments of ideas of measure.

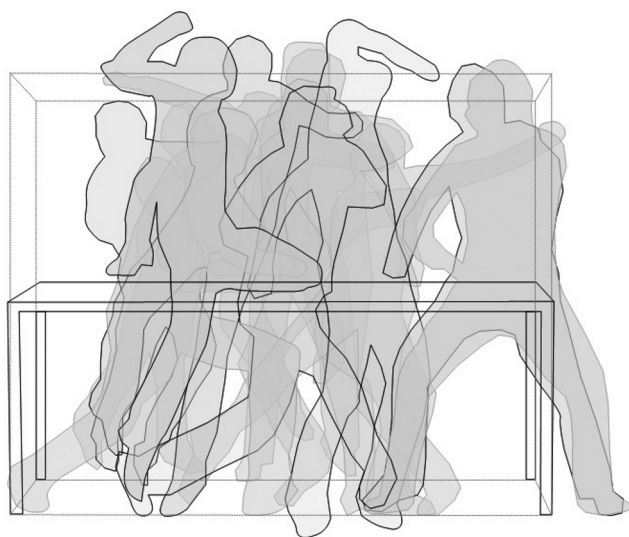
Dance and architecture were those arts in the past that ancient man used to symbolically demarcate his space in the universe, to position and circumscribe a sacred precinct. For the ancients these two arts were symbolic models of how the universe was structured, they were maps of reality based upon both the relative scale of the singular body (building, temple, house, dance) and the collective scale of the people (the theater, processional, city). One might look to the idea of pediment sculpture to see this played out in the most direct sense in ancient architecture. Allegorical sculptures of gods and heroes were traditionally positioned on the entablature of temples as were anthropometric figures used in the codification of ancient measuring systems.

The word entablature is of course referring to an idea of a kind of visual table; a ground for a scene to unfold. These groupings were essentially didactic tableaux enacting various foundation and cosmological events. What is remarkable is that the figures within the triangular frames of the pediment are themselves engaged in a figurative dance which is responsive to the frame of the temple roof. The gods are in a very real sense dancing; a fact that harkens back to an earlier archaic period when the temple activities literally happened in the natural landscape and were centered on ritualistic movement. Pediment with its roots *ped*, or foot and *ment*, mind, is thought to imply the idea of the rituals of pacing out a sacred *temenos*, the precinct or perimeter which is actually the temple proper in ancient Greece. The roots might be said to imply something akin to that which is made in the mind through the action of the foot. The act of demarcating *temenos* is a cutting off from the everyday in a ritualistic act of ma-

king sacred. The movement implicit in this idea is echoed by the related word *tempo*, the rate, rhythm or pace of a dance or musical performance.

These are ideas that for me immediately struck me upon with my first viewing of Forsythe's piece. My own work and research is not typically antiquarian but there was something in Forsythe's dance which brought these very ancient and primal relationships forward in my mind. It seemed that Forsythe's piece was simultaneously evoking these early visual associations of body and frame to revisit their implications in the contemporary world.

*Figure 1: Figure superimposition*



Graphics: Stephen Turk

## ENTANGLEMENT

Indeed, Forsythe's work is in my view an attempt to grapple with these issues and present an updated model for the ways in which the knowledge of dance, conventionally understood and associated with a presumed authentic and 'real' nature of bodily reality, can instead be seen as part of a world subject to the probabilistic nature of quantum reality and postmodern theories of the body. Forsythe's choreography and his interest in exploring these ambiguities with the *Synchronous Objects* project might from this point of view be seen as revisiting dance's ancient role as 'physics'.

Given the complexities of the associations outlined here, the idea of entanglement drawn from scientific theories of quantum reality has in our analysis and design project served as a central trope for understanding the implications of the dance. Forsythe's work seems to have a strong scientific and mathematical interest. Visually in the organization of the piece we saw a strong connection to contemporary graphic representations of scientific principles. Scientific illustrations of entangled particles for instance have a curious affinity and resonance with both Forsythe's dance in plan and indeed have strong echoes in the graphic research produced by the *Synchronous Objects* team overall.

So too did it have strong affinities to the ancient precedents we were invoking in our work. The perceptual and conceptual notion of entanglement can be said to occur at many levels in *One Flat Thing, reproduced*. These would include affects produced by the perceptual field of the dance both at the scale of figure to figure as well as figure to frame relationships. In developing our project we began our understanding of entanglement visually and spatially by mobilizing a series of these historical figural precedents that we believed both related to and echoed these ideas.

For instance, Michelangelo's incomplete sculptures known as the prisoners, particularly the example of the figure known as the *Bearded Slave* from the early 1520s, served as a model of the body caught and measured in a defined volume; a body entangled in a material substrate, struggling to escape from these bounds. For us the implied energy and tension embodied in these works and their echo of classical notions of the idealization of the body as the foundation of measurement now uncomfortably bound and entangled in a volume serves as a resonant framework in our study of Forsythe's choreographic work.

Within *One Flat Thing, reproduced*, the visual interconnections between dancers, their apparent and actual physical intertwining, can be said to be a function of kinds of entanglement. These are general motifs which establish mutual dependencies and produce larger chains of contrapuntal effects within the 'field' produced by the work. We metaphorically transferred this idea to one of volumetric enclosure and registration to capture the dynamic unfolding of these relationships. Our project diagrams demonstrate the process of abstraction and interpretation of the figuration implied by composites of individual dancers relative to the frame of the tables within the dance; a process dependent upon our figure/volume metaphor. These diagrams were then used as a kind of tracery which implied a dynamic force relationship acting on the bounds of a material substrate.

The entanglement of the figure emerging from this process was allowed to register on a pair of implied cubic volumes. We saw the tables as demarcating

spaces both above and below the tabletop, producing volumes which for us were analogous to a rotated and reduplicated version of the *Prisoner* sculpture. This visually establishes the core spatial translation we undertook. I should stress that this was an interpretive exercise which was in no way understood as a deterministic translation. But rather was seen as echoing certain visual and spatial qualities we were interested in capturing within a newly emergent spatial volume. These visual and tactile motifs however point to a deeper understanding of the implications of the 'collapsed' nature of the figure and frame dichotomy in the work as suggested by the argument of the *chora*. It is my belief that the complex combinatorial relationships between dancers and their mutual dependencies, pairings, alignments and cues are extended out from this figure/ frame system and that the choice of the motif of an array of figures and tables is best reflected in the notion of entanglement.

Entanglement in the sciences is used to describe the quantum states of particles which have become interdependent upon one another to the point that the observation of one causes an instantaneous transformation in the state of the other regardless of the distance of their physical separation. This seemed an apt metaphor for the structure of the dance in our mind. It is important to stress that for us our collection of furniture blocks was intended to be performative and through their use to evoke this entangled interdependency. We thus settled on a process which stressed this conceptual framework by systematically translating thematic components of the dance through a series of what we called block entanglement methods.

The constellation of interdependencies in the piece is structured around a complex set of themes which are triggered by an internal set of cues and signals. The performers are constantly measuring and judging the temporal and spatial behaviors of all other performers in their local area as well as those at a distance who may provide signal 'data' for the initiation of particular sequences. We therefore used the thematic diagram produced by the *Synchronous Objects* team as an essential guide in our investigation.

Given the arguments developed above we explored the potential imaginary collapse between these terms into a third in-between condition. We searched for a way to make a non-literal translation of the table dance by taking into account the effects of the piece and finding parallel architectural phenomena in which they could be re-inscribed. Our goal was not to produce a simple one to one transposition between the notational and contrapuntal analyses and an architectural object but rather to produce a space that was performative and combinatorial in a resonant way with *One Flat Thing, reproduced*.



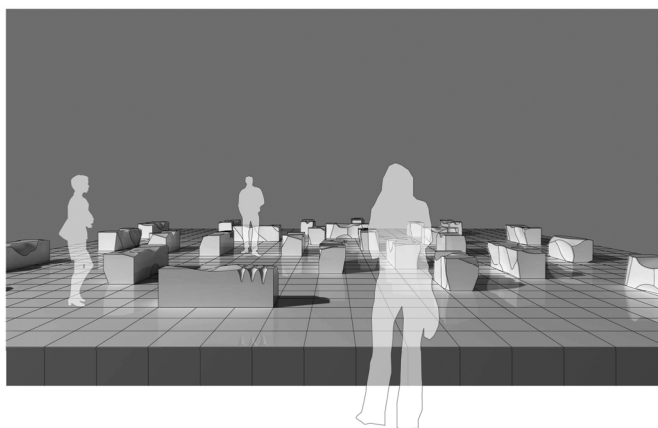
Our project drawings demonstrate the technique of thematic trace that we used to inscribe discrete themes from the dance into unique volumetric structures; drawings which though produced by the measured rigor of contemporary digital modeling techniques point to the ambiguity inherent in all such processes. In our view Forsythe, by multiplying and extending the focal relationship between body and table foils the idea of simple legibility in acts of measuring. By arraying and making mobile a grid of tables and allowing them to be occupied by a fluid set of occupants he shifts the focus from a possible deterministic reading of measure to one of statistical and probabilistic performance.

## **FURNISHING PERFORMANCE**

Playing upon the close association of the words performance and furnishing the project revisits the question of furniture's secondary relationship to the architectural envelope. The complex contrapuntal structure of Forsythe's work and its field-like distributed phenomena were used as templates to reconsider the possibility of a set of abstract 'entangled' elements which were capable of acting both as furniture-like objects and as architectural frames.

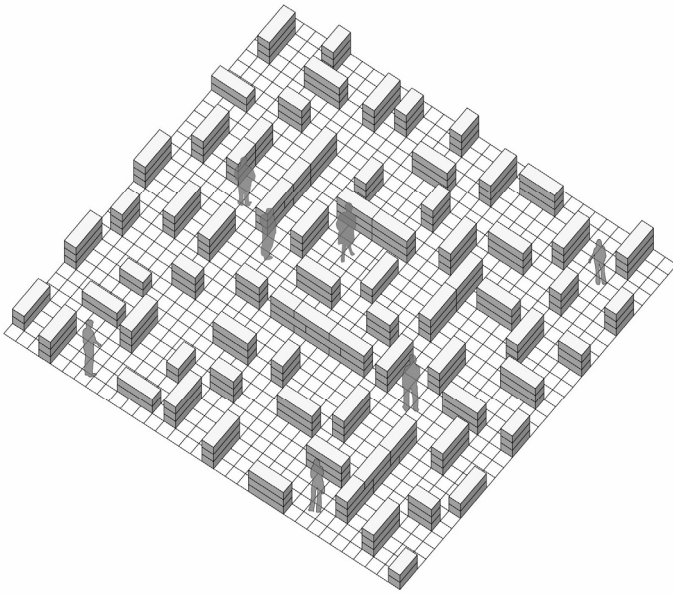
The blocks were produced by computer modeling 18x18x54 and 36 inch cubic 'bench-like' modules. Individual blocks in the system are formed by studying the relationship between different dance themes and finding qualitative aspects of these which are registered in the formal, material and textural qualities of the fabrication cutting process. The blocks thus become resonant 'containers' of thematic variation which can be arrayed and positioned in space interactively over time by the occupants of the installation.

*Figure 2: Vray perspective*



They were imagined as being the result of the entangled forces of the dancers; the implied volumes both above and below the table surfaces acting as the receptacle of these forces. An entire installation was imagined as a kind of *chora* space in which the thematic combinatorial translations of Forsythe's work could be choreographed by the 'audience' itself. This performative space in our view would provide the same kind of self reflexivity and awareness between viewers and occupants that occur in the original work and play upon notions of dance and architecture's historical roles as symbolic modes of measuring the world. The visitors to this architectural installation could perform the piece themselves by picking up and moving the block furniture elements. The lightness of the material, in this case high density foam, would permit individuals to position or stack blocks into complex ensembles and combinatorial assemblies. The blocks which would exist in a state of constant rearrangement and assembly and would effectively play upon the nature of conventional furniture typology; reconfiguring the ways in which furniture users interact with an architectural envelope to form zones of spatial occupation.

Figure 3: Block diagram 12



*One Flat Thing, reproduced* can be seen as ultimately ‘environmental’ in the sense that it produces an atmospheric perceptual effect through a give and take of dynamic forces in a spatial field and it is this quality which we were most interested in capturing in our installation proposal. The idea of entanglement which served as our operable metaphor can be seen in connection to a greater problematic of ‘locality’ in contemporary thought which through the interplay of space and temporality reinitiates the archaic link between architecture and dance. So in conclusion our object for the *Synchronous Objects* project was less about the creation of a fixed condition or ideal translated map or thing but rather our goal was to produce an analogous dynamic evolving system responsive to spatial and temporal frames of perception and occupation within an animated local condition.

## REFERENCES

- David, A.P. (2006): *The Dance of the Muses: Choral Theory and Ancient Greek Poetics*, Oxford, NY: Oxford University Press.
- Grosz, Elizabeth (1995): *Space, Time and Perversion: Essays on the Politics of Bodies*, New York: Routledge.
- \_\_\_\_\_ (2008): *Chaos, Territory, Art: Deleuze and the Framing of the Earth*, New York: Columbia University Press.
- Hersey, George (1988): *The Lost Meaning of Classical Architecture: Speculations on Ornament from Vitruvius to Venturi*, Cambridge, Mass.: MIT Press.
- Ley, Graham (2007): *The Theatricality of Greek Tragedy: Playing Space and Chorus*, Chicago: University Of Chicago Press.
- Lonsdale, Steven (1993): *Dance and Ritual Play in Greek Religion*, Baltimore, Md.: Johns Hopkins University Press.
- Manning, Erin (2009): *Relationscapes: Movement, Art, Philosophy*, Cambridge, Mass.: MIT Press.
- Mau, August: (1973): *Pompeii; its life and art*, trans. by Francis W. Kelsey, Washington: McGrath.
- Rehm, Rush (2002): *The Play of Space: Spatial Transformation in Greek Tragedy*, Princeton, NJ: Princeton University Press.
- Ulmer, Gregory (1994): *Heuretics: The Logic of Invention*, Baltimore: John Hopkins University Press.