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**“THE MNEMONIC FUNCTION OF PHYSICS WALL”**

## The Mnemonic Function of Physics Wall

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The ornaments for a new atrium at the center of the Physics Campus, at the University of Oregon, were proposed in a national competition of designs to be incorporated in that space. I was awarded the commission to design and build a scheme for a wall to memorialize the purpose of a central academic gathering place inspired by John Moseley. Dr. Moseley, a physicist and Vice President of Research at the university, believed that an excessive academic specialization within the sciences was harmful to the investigation of basic questions. He wished that the physicists who studied the microcosm would spend more active time in the company of those who studied the stars. As a principal administrator in the construction of this new physics complex, he conceived the possibility of an architectural expression in which four levels of offices would house, from the bottom up, solid-state physicists, molecular physicists, biophysicists, and astrophysicists. By entangling the occupants and visitors to those offices within a traffic system of balconies, stairs, elevators, and courtyard, he hoped to stir up some exciting academic encounters. The architects of the building included Moore, Ruble, and Yudell of Los Angeles, The Ratcliff Associates of Berkeley, and Brockmeyer McDonnell of Eugene. Performing a traditional service that for thousands of years has contributed to the language of architecture, I chose to function as an "ornamenter."

In the course of my studies in theories of memory I became, along with so many others, fascinated with Francis Yates' extraordinary book entitled *The Art of Memory* published in 1966 which is an historical account of the art of memory devised by the Greeks and sustained barely into the seventeenth century, prior to the advent of the printed page. For over two thousand years an art of recalling thousands of 'facts' (things and words) was practiced by individuals who were trained to perform extraordinary mental exercises. At the very core of this mnemonic exercise was the requirement that the memorizer imagine a building as the location for the things to be remembered. For example, one might imagine an ordinary house with an entrance hall, two public rooms, a staircase, and other spaces, into which one would carefully locate specific images (simulacra) such as frightful figures on either side of the door, a dove on the ceiling, or a burning candle located precisely above a path of circulation.

The images were selected to represent the key 'players' in the evocation of larger clusters of images. An allegorical figure might catalyze events that took place within an allegorical narrative, and a candle could represent fire, smoke, movement, and certain valences. The location of an image above a door in the proximity of another image (which might be facing a tree outside a window) could constitute a specific constellation of images which, in unison, serve to collect an even greater number of facts. The means of

recollecting the images and all of their constituent 'facts' required both the imaginary construction of a building and the planning of a precise path of mental circulation through the building so that the inventory of images could be mentally orchestrated into a supreme narrative.

The building employed in the ancient art of memory could be simply a room, columnar space, or a house, or it could be expanded into a city of a thousand buildings. Whatever the plan, it was to be proportioned and articulated in an ordinary and coherent way, employing moderate dimensions, amply-spaced parts, and normal light. Within the building the images and actions, i.e. the 'simulacra,' were to be extraordinary, marvelous, beautiful, hideous, obscene, or comical. They were not to be banal or too comfortable, yet should seem appropriate and naturally located. The significance of that ancient art to this study of memory is that 'ordinary' spaces and forms in buildings are unusually easy to grasp and to fix in our minds. Harmonious and coherent buildings can provide the idea mental matrix for the insertion and storage of many thousands of memory units."<sup>1</sup>

The notion that a harmonious and coherent building might provide an ideal matrix for remembering is intriguing. Because the memory-artists to whom Francis Yates referred belonged to the Greco-Roman tradition, it is probably safe to assume that the "ordinary" architecture they had in mind was more or

less "classical" or at least somewhat platonic in spirit. By platonic I mean to suggest that the buildings were likely to have been metaphorically "cubic," stabile, and thus characteristic of the universal and memorable forms that we associate with well-proportioned traditional buildings and rooms. But how does the presence of *universal* forms help us to recollect *specific* memories or places? Does not universality presume a sort of free-floating detachment from any specific place? But of course the buildings were not what the memory-artists were attempting to remember. To the contrary they were attempting to remember the significance of the curious objects that the buildings contained, i.e. the extraordinary, marvelous and even comical elements of "simulacra." The buildings were the tablets of memory.

In more conventional architectural language they were attempting to remember the narrative provided by the presence of mercurial and animated *ornaments* deposited within the stable boundaries of the universal and familiar forms of architecture. An ornament, after all, may be defined as an adventitious figure descending upon the particular object or space being ornamented for the purpose of representing an action coming from outside, yet dependent upon the space for its existence and capacity to ornament. In other words, an ornament bonds with the material expression of an architectural space in order to identify, locate and empower a particular narrative that is being played out in space. It is the

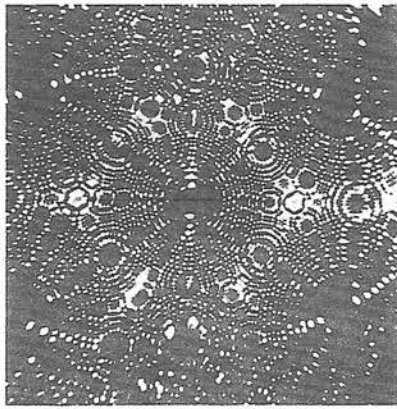


Figure 1

narrative that is to be remembered in the *Art of Memory*. The mnemonic function of the buildings incorporated within that art is to provide the bedrock of an imaginary material place upon which the articles of memory are deposited. The geometry of the building prevents the articles of memory from dispersing in the many directions implied by the energy of adventitious figures.

#### Physics Wall

The procedure in designing Physics Wall was to super-add ornaments to the familiar and stable architectural elements constituting the four-story elevation of balconies which also serves as an interior facade within the new Atrium. I interviewed some of the physicists from the four disciplines to determine what particular figures might symbolize and memorialize their unique sciences. The solid-state physicists housed on the ground floor spoke of the orderly constellation of atomic particles such as those recorded on the ion-field photograph (figure 1); the molecular physicists spoke of simple clusters of molecules such as intersecting icosehedra (figure 2); the biophysicists referred to drawings from an article in the English journal *Nature* by their colleague Jane Richardson who is interested in providing visual descriptions of DNA. She actually used examples of Greek and Anasazi pottery ornament (figure 3) to illustrate the double spiral and perimetal zig-zags that typify principal actions characteristic of DNA. Her cartoon of Lactate Dehydrogenase domain 1 il-

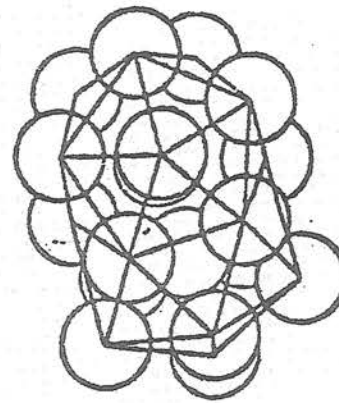


Figure 2

lustrates ribbon-like forms (figure 4) that coil from the ends of the double-helix elements that we popularly associate with Watson's model of DNA. The astrophysicists spoke of the Crab Nebula which is an immense cloud of celestial gas (figure 5).

The cosmic metaphors to be found in that hierarchy of physical figures from the tiny terrestrial particles to the vast ethereal clouds are abundant. In some respects all the forms are somewhat similar in shape despite their transformation from solid at the bottom through the liquid of the life-forms to the gases up top although it appears that the figures representing the microcosm are more rigidly symmetrical than the animated forms of life or the chaotic turbulence of the galaxies. In the popular vision of the material world, solids, liquids, and gases are separate entities which become systematically united in spatial bodies. These figures representing the levels of physics and a body-image in which they are connected provide the mnemonic simulacra for Physics Wall.

To unite the ornaments in the stable and familiar vessel of architecture, I chose to adopt and transform elements from the classical language of medieval Gothic. Neither the general fabric of the building nor the concrete castings of the four-balconied stories suggested the trabeated grammar of Greco-Roman classicism and it must be obvious that the architectural elements, i.e. the concrete columns and slabs, that are typical of the most recent expressions of modernism do not con-

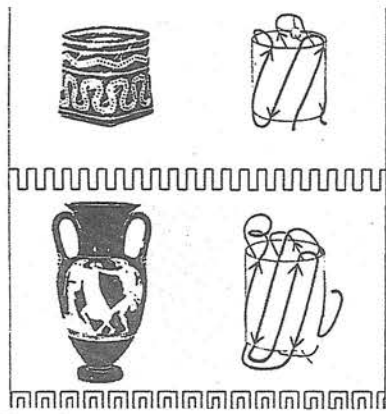
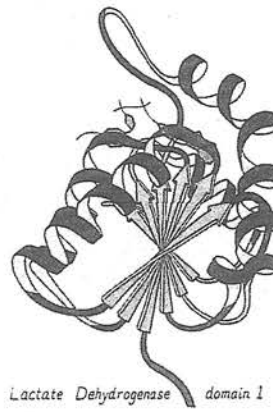


Figure 3

stitute a particularly sophisticated architectural grammar that has matured to the capacity of inviting a strong repertoire of ornament.

The elements that form the basic language of pointed Gothic are the shafts and ribs that are situated on top of piers. The linear shafts and ribs of Gothic articulate the sacred geometry and the mythic ideas of an ideal building superimposed upon the shell of a practical or mundane building. The principal structure that holds up the walls of the atrium is that of a reticulated steel frame



Lactate Dehydrogenase domain 1

Figure 4

over which the minimum two inches of concrete is cast to meet the fire code. When we look at a "concrete" building in today's technology we are usually looking at fire-proofing rather than the essential bones of structure. To super-add metal shafts on top of the concrete piers is an attempt to poetically reiterate and idealize the basic medium and slenderness of the construction. The shafts also transform the practical structure into a traditionally linguistic form of architecture which has the grammatic capacity to invite the adventitious language of ornament into an articulated body.

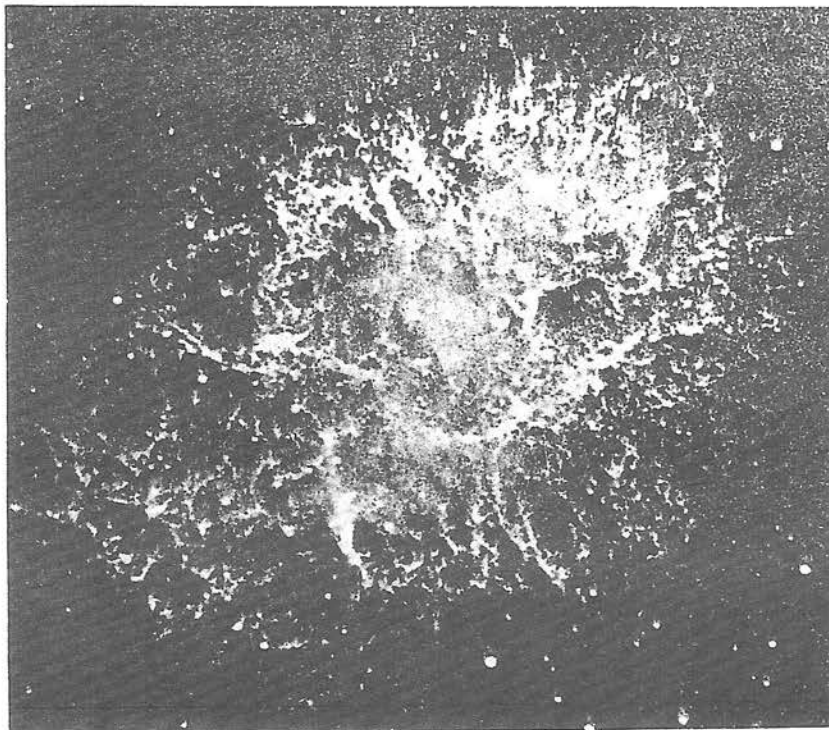


Figure 5

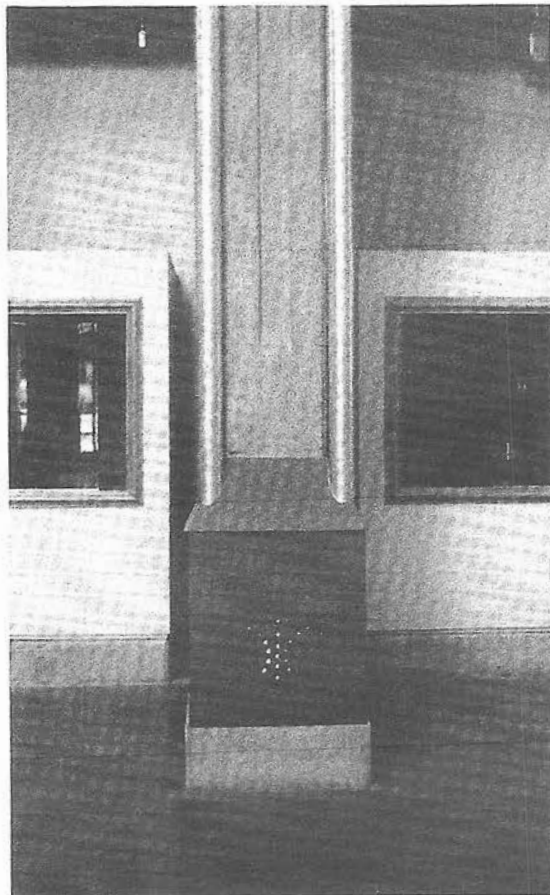


Figure 6

The spatial structure of the narrative imitates and emphasizes with the plan of nature in which the greatest quantity of earthly particles are located on a platform beneath the stars above. The column bases therefore contain lights which illuminate a figure representing an atomic geometry (figure 6). Projecting from the bases are pairs of shafts which produce "molecular" capitals as lightheaded slightly above the second floor (figure 7). Between the molecules and the stars and upon the stringers of the staircase is a polychrome fret derived from the Anasazi to celebrate the motion and presence of life forms (figure 8). The fret includes the interlocking spiral and zig-zags characteristic of flat-pattern ornaments belonging to the greater pre-Columbian culture ranging from Central America to Canada (figure 9). The American Indian fret is as unique to the Western hemisphere as the Greek Key is to Greece and the repeating Yin-Yang patterns are to an-

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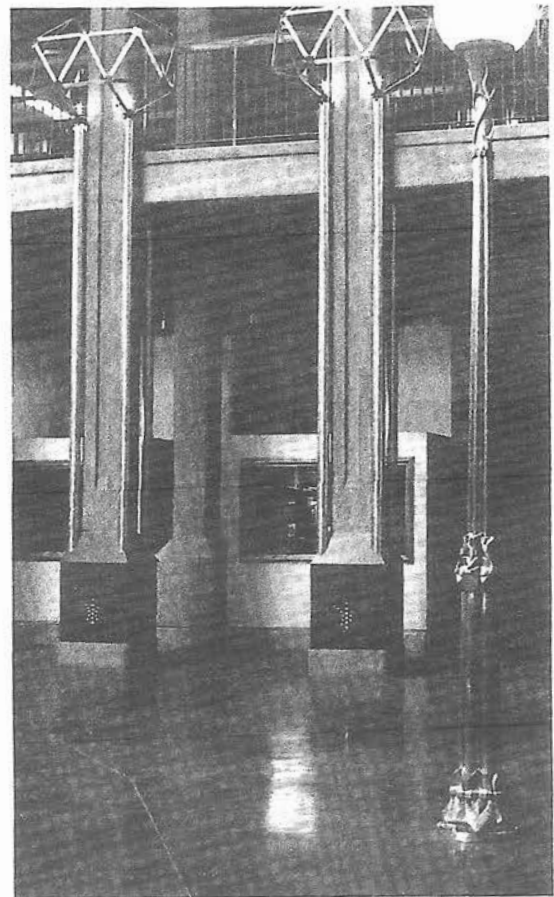


Figure 7

cient China. The galaxy above is constituted by one thousand eight hundred laser-cut stainless steel stars suspended from the ceiling and barely touched by long intermediate shafts turning into the shapes of tuning forks (figures 10 and 11).

Physics Wall shown under construction (figure 12) seeks to replace the practical four stories with a classical tripart registration of vertical space in which the motion of life ascends halfway between terrestrial and celestial places. The stabile container geometrically composed by the gridded geometry of the piers and balconies symmetrically located under a skylight is carefully disturbed by the more active and asymmetric crescendor of an artificial galaxy which not only aspires to be an abstract-expressionist rendition of tracery but hopefully recalls as well the action of the lightning machines created by the engineer Nikola Tesla at the beginning of the twentieth century. Tesla built his



Figure 8

machines in order to dramatize his unheralded invention of machines that could provide alternating current. The images of his fabulous machines are already part of the American popular memory for having been the inspiration for the props created in the Hollywood workshops for the laboratory of Dr. Frankenstein. In that respect the memory system governing the design of Physics Wall may be understood as a compilation of images that are already memorable and familiar but slightly inflected by the energies of very specific ornaments that represent ideas that are the property of a new setting. The reason for attempting a memory-system in the Atrium at the University of Oregon is principally to create a reminder of the specific academic purpose of the Atrium that was proclaimed by Dr. Moseley, i.e. to embody the integration of the physical sciences. It is precisely the function of ornaments to transcend the most basic architectural ideas that originate in the

realm of practicality and to delivery to the building ideas about the world that originate in places other than buildings. A building may indeed be the subject to something to be remembered, especially if it is a free-standing object representing a publically identifiable institution such as a church or statehouse. But unless the building is the principal content of a memorial, the architecture should admit into its language the adventitious language of ornaments which, although empowered by the space and material of the building, may not essentially be about the building itself.

1. Kent Bloomer. *Memory and the Poetics of Architectural Time*. Crit 18. Spring 1987. pp. 23-24.

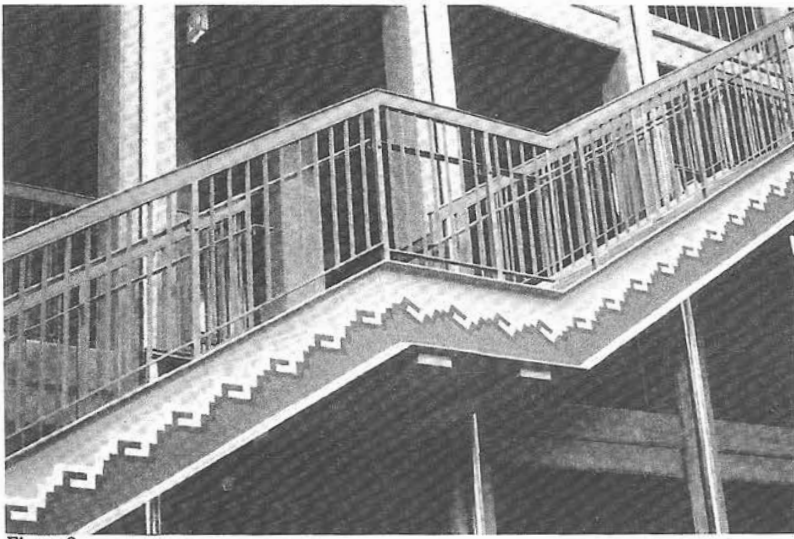


Figure 9

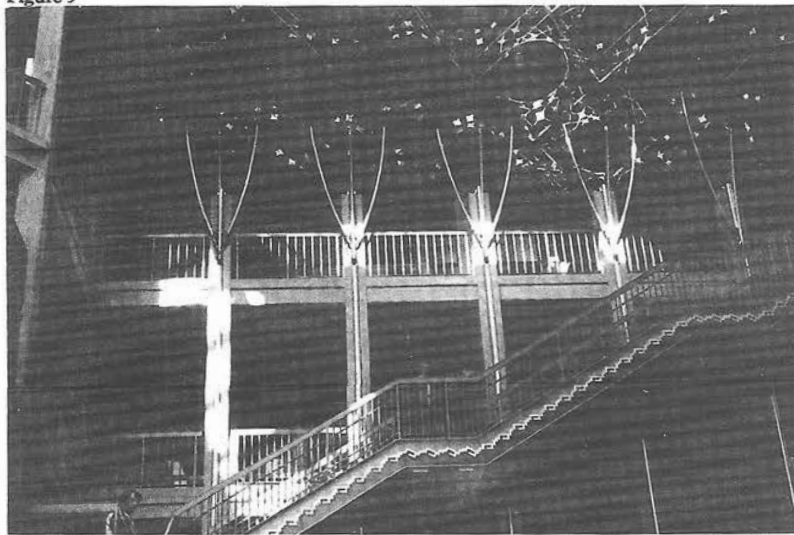


Figure 10

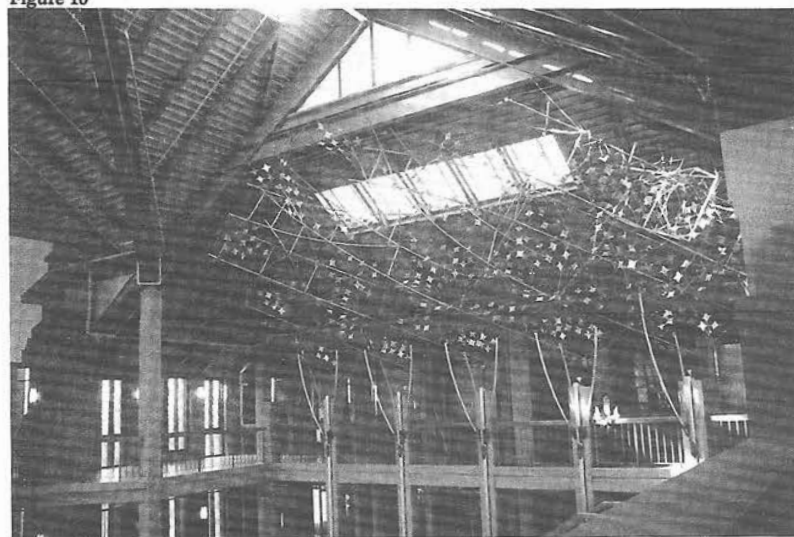


Figure 11

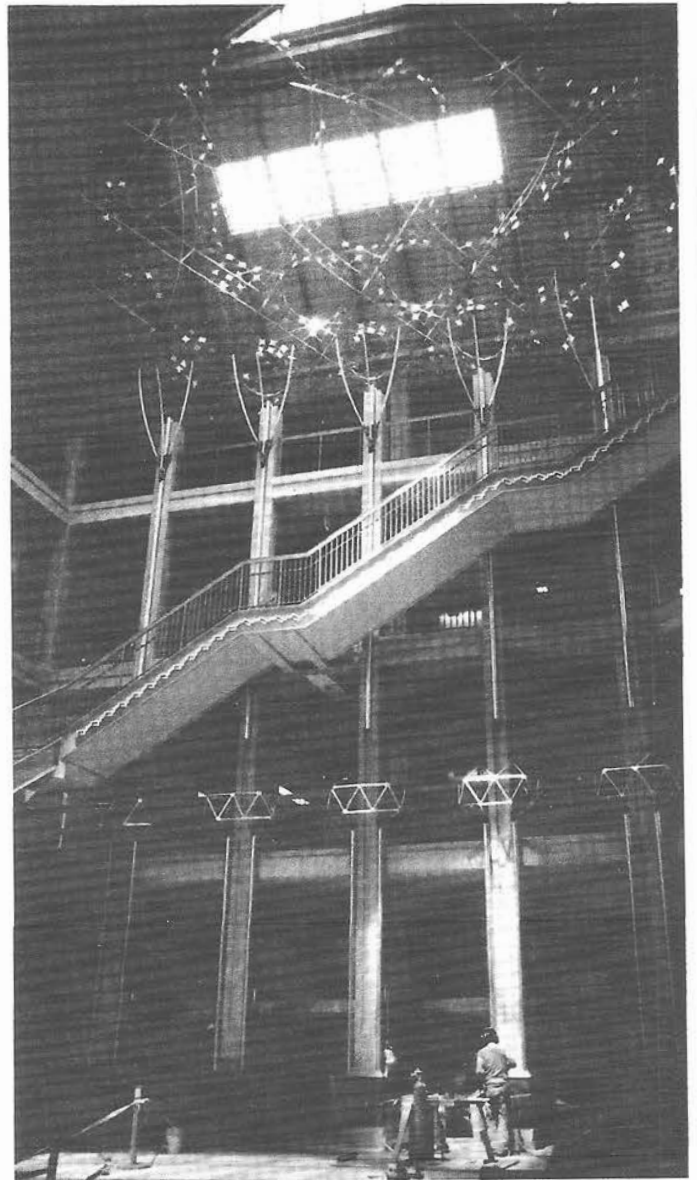


Figure 12