

ImAGE and ToxiCITY

Ars Memoria at an EPA Superfund Site

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This paper reports a surprising alliance between architectural knowledge and epidemiology. It is a story of time and place in which architectural knowledge proves itself to be transdisciplinary.¹ As in the myth of Simonides which tells the origin of the classical art of memory, architectural imagery is assisting in the reconstruction of events with deadly consequences at the Fernald Feed Materials Production Center in southwest Ohio. Fernald was a rural farming community which has been transformed through governmental necessity and duplicity into a *toxicity* by nuclear technology and its environmental fallout. Its population comprises two primary groups, those who lived and farmed the areas surrounding the uranium processing plant and those who worked at the plant. Dramatic failures of this particular kind of technology, such as those at Chernobyl and Three Mile Island, begin to demonstrate to the society the circumstances of a new kind of human settlement, one in which global necessities (whether military security or assurance of a power source) are forcefully condensed and reflected as local devastation. Less dramatic but equally alarming are the accumulated failures of nuclear production and waste at numerous other sites in this country. The National Institute for Occupational Safety and Health and the Center for Disease Control have just issued a study which shows mortality among the former employees at Fernald to be 26% higher than the population at large. Sacrificed are the security of home and health of citizens of the *toxicity*.

IMAGE

As has been said before in my treatise *On the Soul* about imagination, it is impossible even to think without a mental picture.

- Aristotle
De memoria et reminiscencia

What I did however was quit architecture school and write a book. It took me five years. The book is called *Amnesia*. ... It is my first architectural novel.

- Douglas Cooper
"Hallucination is not a Defect"

TOXICITY

The different kinds of events which people experience and find significant all provide a questioning of our understanding of the city... The strange becomes familiar and the familiar becomes strange.

- *Strangely Familiar:*
Narratives of Architecture in the City

The basis of an epidemic is not pestilence or catarrh: it is Marseilles in 1721, or Bicêtre in 1780; it is Rouen in 1769...

- Michel Foucault
The Birth of the Clinic

1. The classical art of memory is important for architects because it links memory and building. While the "art of memory" is a tool for artificial memory, for committing certain knowledge to memory on purpose, it is based on enhancing the processes of natural memory, or the recollection of events and circumstances distant in time. The definitive study of the art of memory by Frances Yates recounts continuous interest and development in the mechanics of memory from before the classical treatises of Cicero and Quintillian to the mysticism of medieval and Renaissance scholars.² Key to the connection with architecture are association and order, usually referred to in the primary texts as names and places. It is chiefly in providing a structured order for things that architecture is useful for memory. Architectural settings provide a fixed sequence, and, mnemonics depend upon a sequenced form independent of content. It is the combined necessity for order and association which opens the connection between architecture and memory to a poetic dimension. While the general process is easy to understand and makes sense, its particular course is not necessarily obvious. This liminal position with regard to rational thought is beautifully demonstrated by Aristotle's own example of how memory works:

For this reason some use places for the purposes of recollecting. The reason for this is that men pass

rapidly from one step to the next; for instance from milk to white, from white to air, from air to damp; after which one recollects autumn, supposing that one is trying to recollect that season.³

While it appears to be direct and clear, getting from milk to autumn is actually an oneiric journey.

In the early 1950s, the trip from downtown Cincinnati to the small rural community of Fernald was a significant seventeen miles. Today it is both closer and farther. At that time, farmers whose livelihood was dependent on the rich soils adjacent to the Little Miami River were no doubt curious when construction began on a large manufacturing facility. Many were probably satisfied when the plant's water towers were painted red and white checkerboard and a sign was posted on the road at the entrance to the facility announcing that it was a "feed materials" plant. This camouflage helped to conceal the development of a major production center for uranium metal products in the United States, products necessary for nuclear weapons and power plants, to mushroom virtually unnoticed and certainly unchallenged. The plant's administrative and production facilities eventually occupied 136 acres; thousands of workers were employed in over thirty-five years of active production. Since the plant was closed in 1990, two successful class-action suits have represented the people whose farmland and agricultural products were contaminated by the plant, and the workers who were exposed without knowledge or consent, at least in early years, to reckless handling of radioactive materials.

2. The significant image is the catalyst for association. Yates tells us that "Giordano Bruno ... treats of the principle of using images in the art of memory [along with] the theory of *ut pictura poesis*."⁴ The images, to have the greatest effect on memory, need to be striking and unusual, either through terrific beauty or a hideous opposite.⁵ Modern scientific research is corroborating these rules, finding that an emotional reaction to an image or event will actually cause more neurons to fire in the brain, which therefore fixes that experience in memory to a greater degree.

The bleak, alien industrial cityscape of Fernald strikes a blow on the senses at a first encounter. The machinery overpowers the buildings in the cityscape of Fernald. Bicycles were provided for workers to get around a gridwork of streets which in one direction are lettered, in the other are numbered. These vestiges of a normal cityscape, based on a logic of humane order and comprehensible pattern, are overwhelmed by pipe runs on elevated raceways which follow a machine logic too complex to recognize. These pipes, coded and labeled, suggest that the visible world of Fernald, although beyond the mind's ability to synthesize into a familiar scheme, is yet a regime of purpose and control. The invisible presence of a threat to health and to life is masked by the authority of science and the machine.

3. The Renaissance "Theater of Memory" of Giulio Camillo, a step-child of the classical art with one foot in the occult, was a system of knowledge based on the image as a significant "doorway" between conscience and sub-conscience, the repository of things known or experienced but no longer remembered. Camillo's theater contained seven doors on each of seven levels. Images on these doors represented the various stages of seven main categories of knowledge. Each category was presided over by one of the planets, and contained subjects which were associated with each as a mythological figure. The seven stages led from abstract, celestial knowledge to the artifacts of man.

Most workers presumably did not realize the potential dangers of inhabiting this poisonous environment, however the other-worldliness can not have failed to have made an impression. That impression was certainly bound up with a certain personal emotional association from a decision to work here, and was therefore likely to have planted itself in the memory. However, entry into the world of Fernald would have soon become habit, part of a daily routine that was strangely familiar, no longer merely strange. Habit seeks to establish patterns in time and space that structure our everyday lives. The daily habits of the workers at Fernald are a bridge between image and place in the making of memory.⁶ Patterns are the poetic dimension of the ordinary; a pattern is an image and can also have a sequential structure that is tied to a place.

4. Camillo's art of memory surpassed previous formulations of the art in its expectations. Not only could the theater help one access knowledge that had been stored in an individual's memory, but one could gain access to all knowledge. Camillo based this expectation on Plato's conception of universal ideas which existed outside of any sensory experience of particular objects or places. If the objects and places encountered in the world each participate in those universals, then the visible is saturated with a hidden, invisible presence with implications of a unity and harmony of all things. Camillo constructed his theater with idea that memory was the bridge to the invisible presence in the visible image.

The Fernald II Workers Settlement Fund was established as a result of the class action suit by workers. The Fund includes \$5 million for a Workers' Medical Monitoring Program. The primary objective is to provide all eligible claimants with annual physical examinations for the rest of their lives. The worker population of the Fernald toxicity served by this suit is over 4000. A secondary purpose of the WMMP is to establish potential Workers Compensation claims. To do this, accurate occupational histories need to be correlated to illnesses. An Expert Panel will judge the relationship of the illness to the job history in order to establish the validity of a claim. A detailed and accurate history of individual exposures is vital to the process.

5. When John Ruskin makes one of his seven lamps of architecture memory, he is of course referring to the monu-

ment as both a maker and a repository of cultural memory. Camillo surpasses the well-established connection of architecture and memory in the theory of places by making a theater the analogy for the memory. An architectural construct provides the structure or framework not only for sequential remembering, but for ordering and retrieving knowledge. The theater provides a perfect geometry for looking. Camillo reversed the position of view from cavea to orchestra, however, theater made perfect sense for a place for looking at images. Soon after Camillo, a treatise on any subject was called a theater.

In order to document the medical effects of the radiation exposure, and in order to eventually write the collective biography of the workers at Fernald, researchers must invent new ways to reconstruct detailed job histories. Such records as exist have proven to contain many inaccuracies; the records were not a standard procedure in the early years. Researchers must rely on memory. Older men whose involvement at Fernald may have been lengthy, but may have taken place in the 50's and 60's, no longer remember precisely which plant (and therefore which part of the manufacturing process) they worked in. Workers who were employed by one of the numerous sub-contractors used at Fernald are even less likely to remember the specific location to which they were assigned.

6. The Workers Medical Monitoring Program brings the anatomical theater into alignment with the theater of memory. At Fernald, we are experimenting with the use of architectural image as a means to recall detailed personal histories in a particular (and peculiar) place. Workers are interviewed in a room which has images from nine of the primary plants on the walls. The images are photo montages which concentrate on particular details which may be vivid in an otherwise monotonous assembly of materials and form. Springing from current theories of perception, the boards present an "a-centered ensemble of variable elements which act and react on each other"⁷ in the hope of activating memory. Interviewers report that the images contribute significantly to the workers' ability to reconstruct their job history. We are currently conducting an experiment on an isolated sample in order to quantify their effect.

The use of architectural images to trigger the memory of Fernald workers is in some senses a pilot program for a

larger task of a similar nature at Oak Ridge National Laboratories in Tennessee. Fernald is in fact just one of a whole new class of cityscape, or twentieth-century toxicity. While the metaphor of the city is limited in its application—these places are not the diverse sets of population, economy, production, exchange, and culture that a true city infers, yet they are a space of human habitation and production at a scale on a par with a city. Fernald would be comparable in size and scope to some classical cities, or even to towns in 19th-century America. The newspapers offer a steady account of the problem and our inability thus far to come to terms with it: Fernald ceased production in 1990, but abandonment of the site will take incalculable time and resources. Fernald, Oak Ridge, and other cities of nuclear production remain a part of the American landscape.

7. The workers of Fernald were subsumed in the productive landscape of the early atomic age. They participated in a risky experiment driven by national defense strategies of a post-war era. They took pride in the fact that their work had national importance. However, they were not given a fair assessment of its dangers, nor the chance to weigh those dangers against the common goals served by uranium production. An image of each worker's job history is inscribed on their body in the form of radiation exposure and its consequences; our task is to use a striking architectural image to access details of location and duration of experiences stored in memory.

NOTES

¹ Jean-Claude Guédon, "Architecture as Transdisciplinary Knowledge" *Anyplace*, ed. by Cynthia C. Davidson (Cambridge, MA: MIT Press, 1995): pp. 88-95.

² Frances Yates, *The Art of Memory* (Chicago: Chicago University Press, 1966).

³ Aristotle, *De memoria et reminiscencia*, as quoted by Yates, *Art of Memory*, p. 34.

⁴ Yates, *Art of Memory*, p. 28.

⁵ Yates, *Art of Memory*, p. 10.

⁶ The role of habit is attributable to Marco Frascari, "A Secret Semiotic Skiagraphy: The Corporeal Theatre of Meanings in Vincenzo Scamozzi's Idea of Architecture" *VIA* 11 (1990): 32-51.

⁷ Jonathan Crary, unpublished paper delivered at the *Other Geometries* symposium, University of Cincinnati, Oct. 10, 1996.