

Manipulating to Mend

Restructuring memory by synthesizing order & physical manifestation

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The Stigma of Alzheimer's Disease

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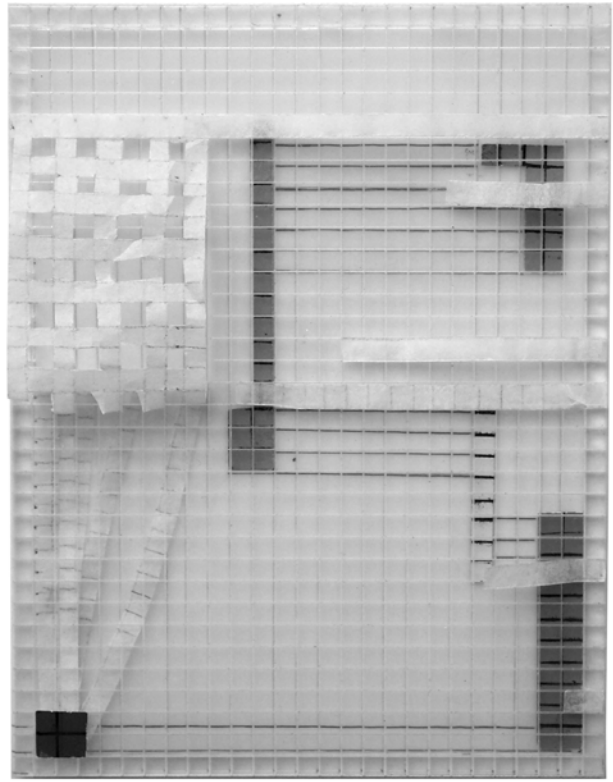
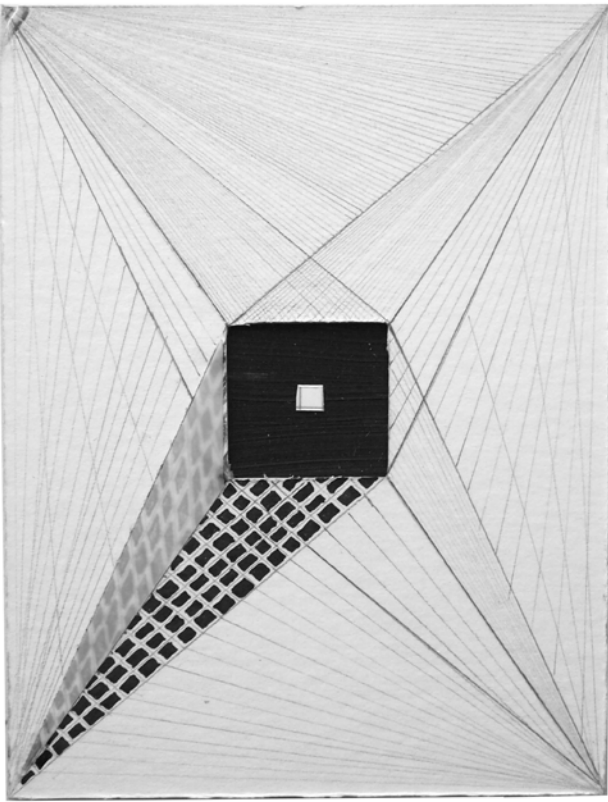
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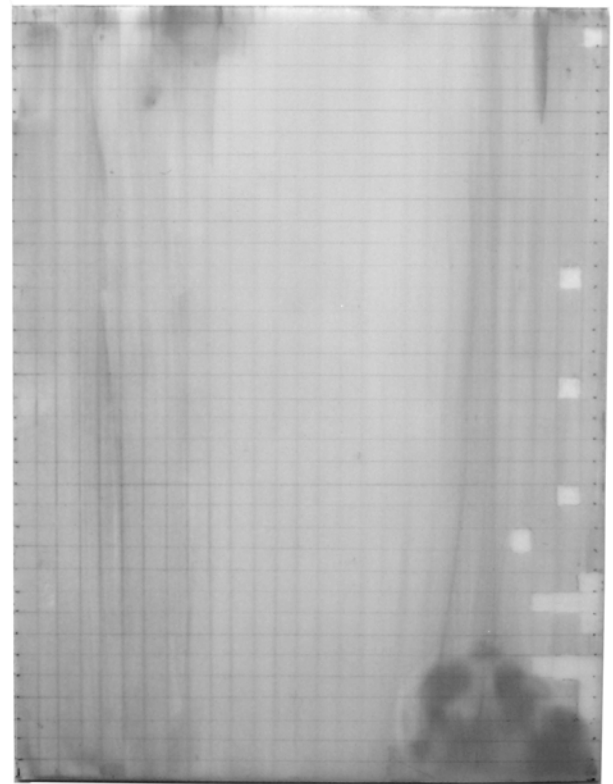
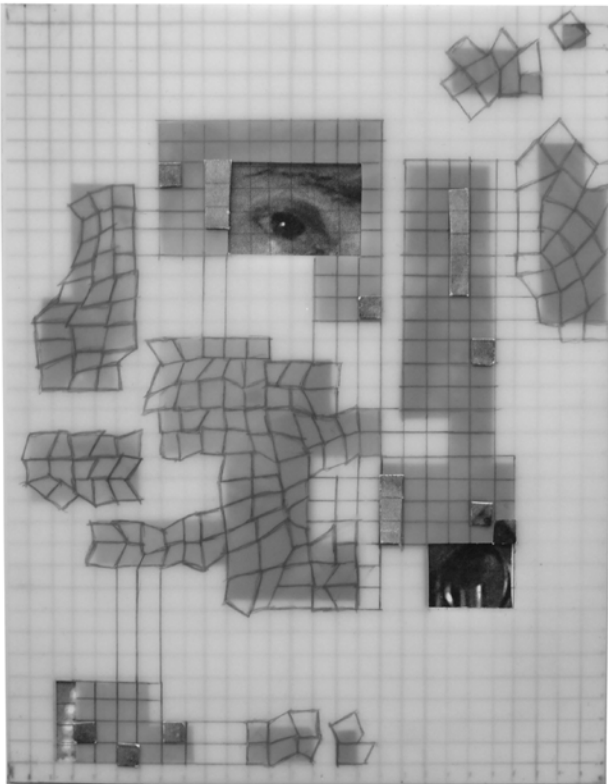
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Thesis Overview



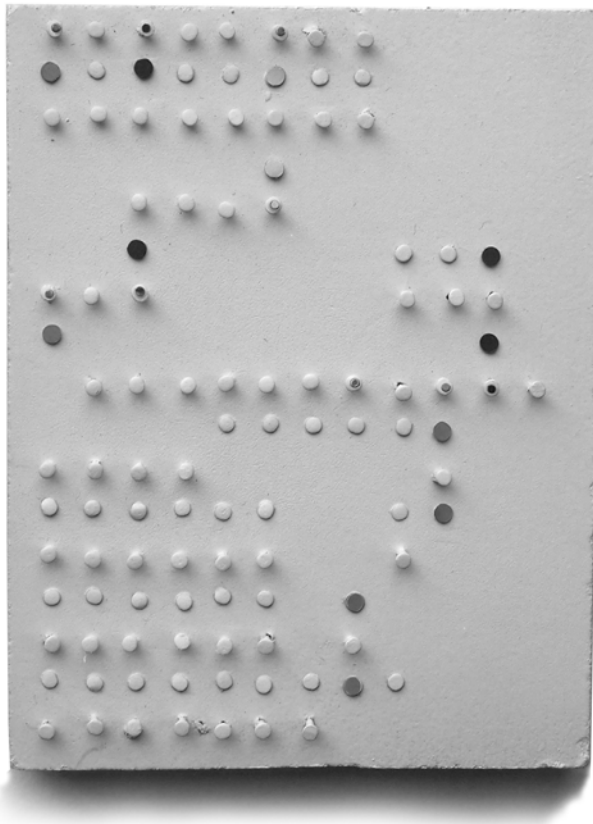


FIG. 1-5 Portraits By Author 2016. Individuals Observed with Alzheimer's Disease: Coping Methods.

Alzheimer's Disease Statistics

65+ Years of age increase in 10 Years **40%**

Increase of low income aging population **239%**

131.5 Million

People affected with Alzheimer's Disease by 2050

Number of affected traveling abroad for treatment **900,000**

Alzheimer's Association. 2015 Alzheimer's Disease Facts and Figures. N.p.: Alz.org, 2015. Print.

Alzheimer's Disease International. "World Alzheimer's Report 2015." Executive Summary (n.d.); n. pag. Alz.co.uk. 2015. Web.

"Leaving the US for Alzheimer's Care." Alzheimers.net. N.p., 16 Jan. 2014. Web. Fall 2015.

“Architecture is used space formed for psychological and symbolic reasons. Architectural space overrides all it’s integrating elements and concepts by consciously forming enclosed void to accommodate human beings in the totality of their psychic and physical life”

Alvar Aalto

“The issue is how society, including human services, has chosen to define older people as post-adults living in institutions”

Bruce C Blaney

Identity

[ahy-den-ti-tee, ih-den-]

Noun: the sense of self, providing sameness and continuity in personality over time

Thesis Statement

A biologically inspired civic facility within Houston, Texas that relies on exploitation of the existing spatial memories of community with additional stimuli to mend the estranged body and mind. The built reforms the brain. Manipulated visual pattern rebuilds diminished neural connections fragmented by Alzheimer's disease, restoring both memory and identity.

Abstract

Societal detachment, irrational reality, disoriented identity: side effects of Alzheimer's disease. In normative circumstances, the mind and body intimately consociate to form the selfhood of a human being. Uncontrollably, Alzheimer's disease fractures this harmonious connection. Understanding the inner workings of the brain, the connection between spatial navigation and memory, is crucial to reforming space for those with disconnected neural networks. It is through the layers of order and connected stimulants that memory sparks. Visual perception and stimulating arts spaces bond community members, students and memory loss patients. This systemization relinks memory from a biological basis, reminding each lost identity of innate spatial movements, societal relations, and a sense of self.

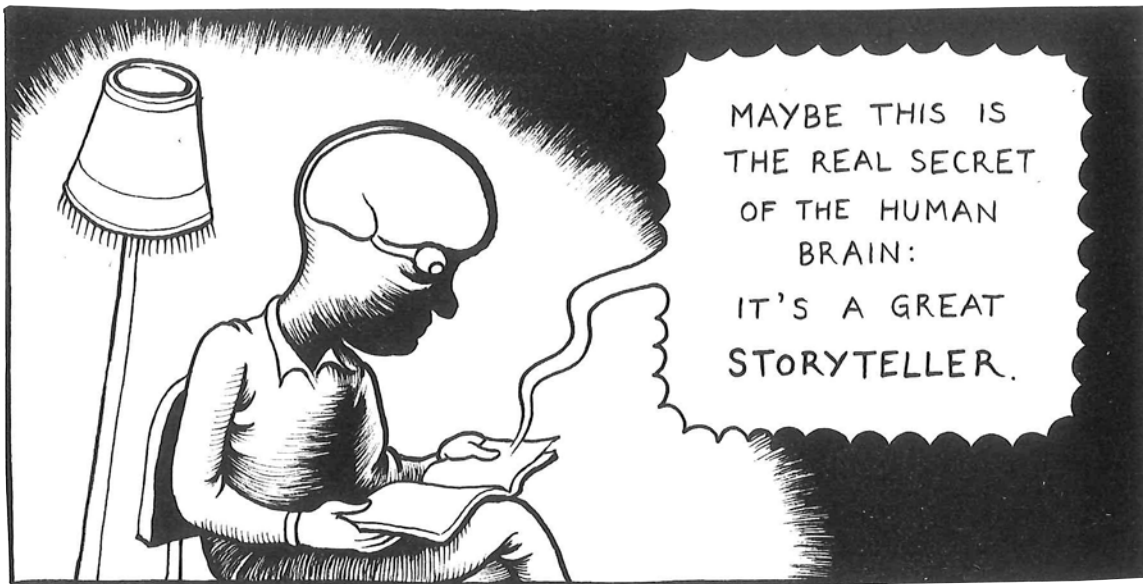


FIG.1

FIG.1 Farinella, Matteo, and Hana Roš. *Neurocomic*. London: Nobrow, 2013. Print. Page 125.

FIG.2 Farinella, Matteo, and Hana Roš. *Neurocomic*. London: Nobrow, 2013. Print. Page 90.

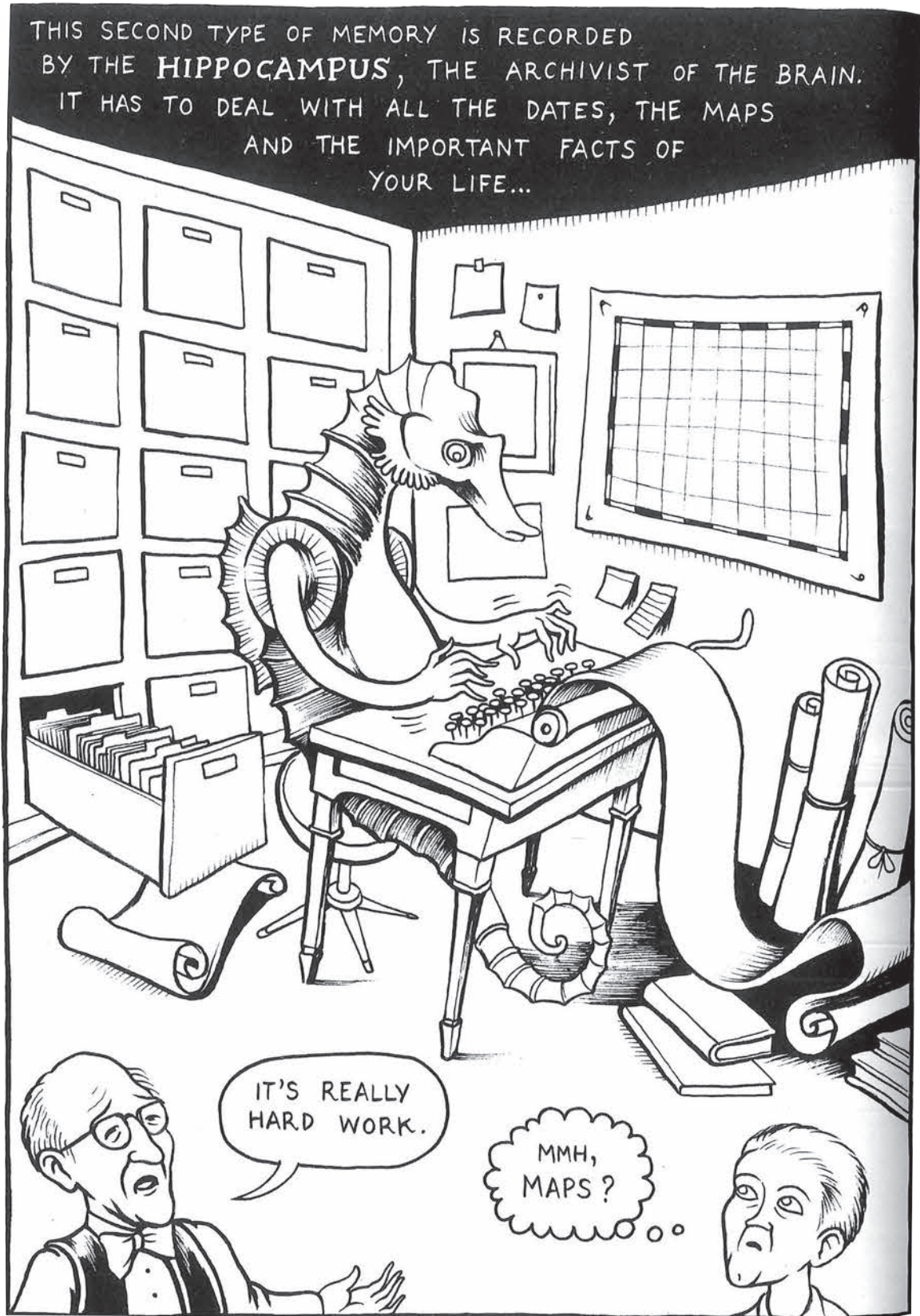


FIG.2

“Changes in the environment changes the brain, and therefore, changes our behavior”

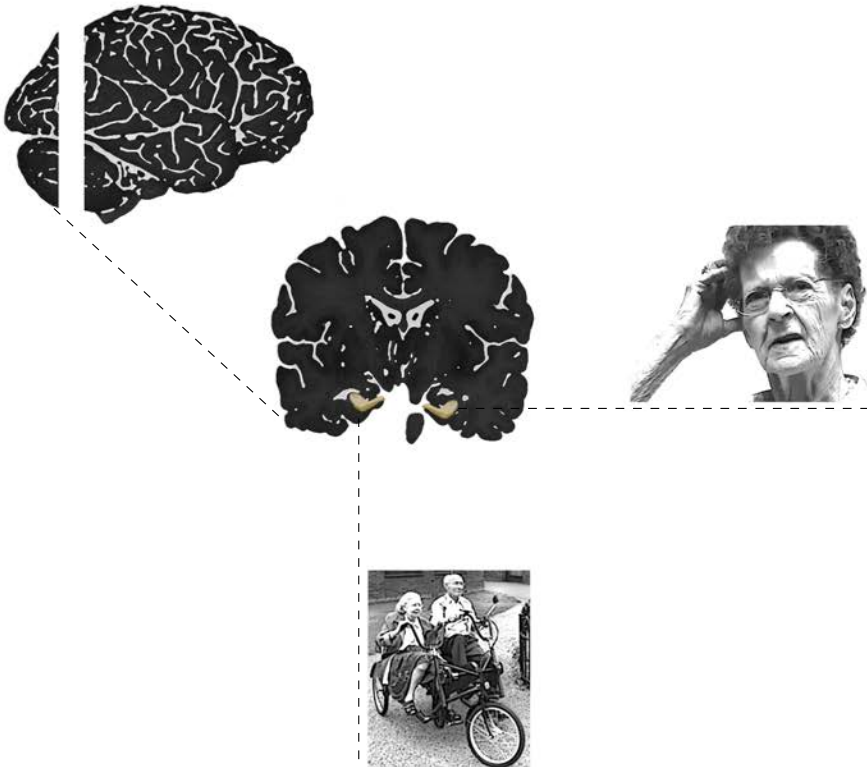
Fred Gage AIA 2003

The Brain and the Built

The Hippocampus, the network center of emotion, memory and autonomic nervous system, disintegrates with onset Alzheimer’s disease. Sense of self is lost from disconnected brain neuron networks; order becomes disorder. The mind disorients without a means of regaining the biological structure, normally innately founded. The health of the individual declines, deprived of a physical solution to reshape the networks of the mind. No solution prevails: this is what society has accepted for Alzheimer’s disease. Fear grips the population, blindly ignoring the proven potential of a built manifestation to reverse mental disorders. The neurological system that controls the human body is a powerful tool, but not one isolated from the physical, sensory environment. The environment influences the mind and the mind influences the perception of the environment; the path is cyclical.

FIG 3. spatial navigation and memory connection network. by author

Thesis Essay



The Stigma of Alzheimer’s Disease

1. & 2. “The Stigma Associated With Alzheimer’s Disease.” *The Purple Elephant*. N.p., 1 Jan. 2015. Web. Fall 2015.

3. Cros, Susanna, and Manuel Gausa. *OPOPI: Operative Optimism in Architecture*. Barcelona: Actar, 2005. Print.

Isolation from one’s own past memories through the deterioration of the mind, disconnects one from a communal identity of society. One can no longer identify with the general population, a population with brains that contain ordered rules of perception. Identity fades as connection to the human race recedes. The loss of memory control instills fear in sufferers of the disease and in their caregivers, further detaching the disease from population confrontation. A controlled mind, a controlled life no longer exists. This notion paralyzes the world from activating assists in all societal departments to alleviate the terrors of the disease. Two thirds of caregivers and three quarters of those diagnosed with dementia perceive it as negative¹. Because of this negative implication of the disease, 40% affected withdraw from everyday activities and thus hide the problematic lack of social integration². Institutions coldly house those affected by the disease through the current built environment in the United States, fully demonstrating the lack of thought put into treatment. This lack of attention to potential solutions baffles considering Alzheimer’s and Dementia lead cancer as the most feared within the nation. Analysis of the connection between neuroscience and architecture provides the power to reshape the fearful stigma of a loss of mind and sense of self. Utilization of architecture mends the missing neural connection. Builders for thousands of years have noted the healthful effects of sequential sensory elements on the body and mind, yet a concrete connection in physical form hardly persists within society. The disconnected, diseased brain network parallels the disconnected, failing organization of healthcare facilities with the public. A new restructuring of the healthcare system, specifically for Alzheimer’s patients, spawns from a basis in neuroscience. After all, “architecture is one of the disciplines that has the most direct physical repercussion on reality”³. It is through this biological makeup of the mind and its networks that the physical layout of spaces are informed.

“Aesthetic experience has three components: one biological [the order], one individual [the stimulation], and one cultural [the transition]”

Aesthetics, Well-being and Health, 25

The Order

Cognitive mapping: the brain’s ability to form a spitting image of the navigable world. The connection between Architecture and Neuroscience is undeniable. The environment alters neural networks in the brain in relation to the experienced physical realm. Mice were studied through monitored electrodes within the brain. The mice were placed into a plus sign maze. Astonishingly, the map of the electrodes within the brain, as each mouse moved through space, formed the plus sign of the physical maze itself⁴. To reiterate, the brain structure mimicked the physical. With this knowledge, the connection of the physical and mental realm can be used to enhance healing of patients with mental disorders. The hippocampus, the network of memory, emotions and navigational components, can be altered or reshaped. This is possible because of neurogenesis, the constant, lifelong regeneration of neurons⁵. These neurons make up the network that connects cognitive maps. Patients with the disintegration of the mind, like those with Alzheimer’s or Dementia have the potential to reform these missing connections within the early stages. Regeneration delays the detrimental, complete disintegration of the hippocampus, the key to memory. It is through the manipulation of physical space that regeneration therapy can occur.

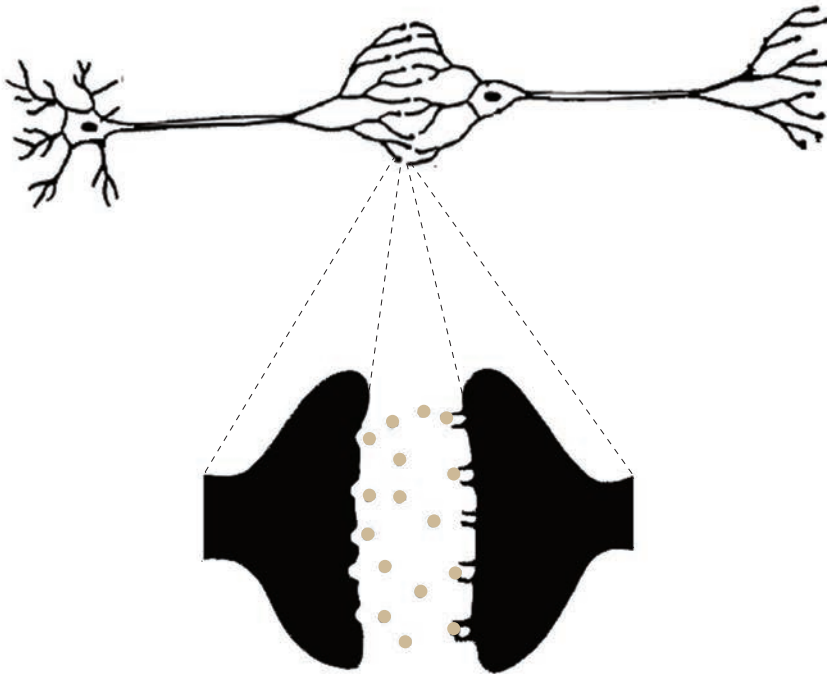


FIG.3

FIG.4 diagram of synapse connection: part of the cognitive network. by author

4. Sternberg, Esther M. *Healing Spaces: The Science of Place and Well-being*. Cambridge, MA: Belknap of Harvard UP, 2009. Print.

5. Badger, Emily. “Corridors of the Mind.” *Pacific Standard*. N.p., 5 Nov. 2012. Web. Fall 2015. Page 2.

FIG.5 grid cell and place cell network. by author

6. Costandi, Moheb. "Emotional Renovations Issue 8." *Nautilus*. N.p., 19 Dec. 2013. Web. Fall 2015. Page 1.

7 & 8. "A Primer on Alzheimer's Disease and the Brain." NIA National Institute on Aging. N.p., n.d. Web.

Manipulated designs promote reactions, but the strategic patterning of space seeps deeper than temporary emotional moments. Physically navigating space alters the patterning of the brain; mapped connections form. These connections formulate from three types of cells: Place cells, grid cells, and head direction cells⁶. The three work together to activate the hippocampus, which as previously mentioned, forms memory. Topographic memory, for specificity, forms when the brain recalls spatial routes, like the floor plan of a house or the route to school. The connections made within a physical route translates to a mental connection, which imprints the route as memory. As new connections form within the hippocampus, memory triggers occur. The triggers either formulate new or recall existing memories. In Alzheimer's patients, the hippocampus and the entorhinal cortex disintegrates over time from the destruction of connections⁷. This destruction of cranial elements negatively affects "language, reasoning, and social behavior"⁸. Physically manipulated, ordered space substitutes the deconstructed layout within the Alzheimer patient's mind. The substitute stimulates the production of memories and prevents further loss of motor, cognitive, and social skills. Designed space is the missing link within the mind. The physical mends the mental.

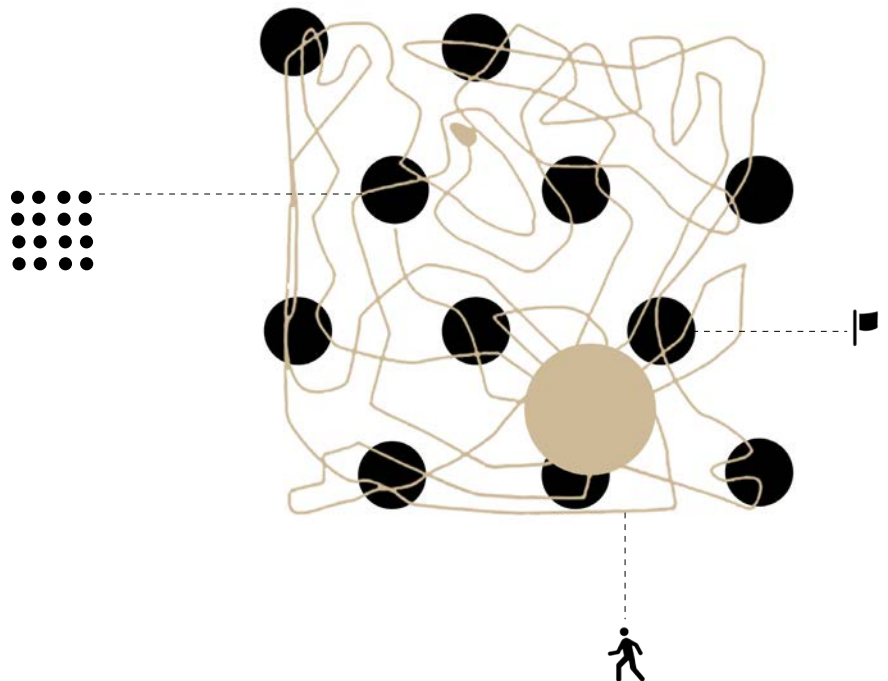


FIG.4-6

Fractals, self-similar patterns that repetitively occur within nature, are the backbone to the nerve cells needed for memory connection. Fractals pattern at varying sizes, forming a hierarchy network. These rhythmic, ordered patterns, found within the cranial structure within living beings as well as within nature, please the eye and body. The neurological connections in the brain are fractal (FIG 8) as well as other parts of the body including the lungs, with branches of vessels. Pattern and biology are linked. In fact, the tested synchronization of a healthy heart rate with fractal music proves the ability of the mind and body to be deeply akin. Patterning affects the body internally and externally. A study by Goldberger tested the relationship between physically written notes of music with the patterns of the heart. By writing music notes to the biological heart rhythm, both when stressed and calm, Goldberger noticed a parallel to types of music. The calm heart rate produced soothing tones of music, while the fast, irregular heart rate produced disconnected, jumbled musical notes⁹. On a similar note, blood flow of a subject, when introduced to a pure piano scale, mimicked the reverberated pattern. Blood flow physically manifested the scaled pattern in sync with the firing nerve cells within brain¹⁰. Patterned tones affected nerve structure and general biological structure. A distinct connection between body, mind, and their physical representation suggests the need for the material environment to realize its impact. Health facilities produce the outcome of patients, but fail to treat for long term health. Healthful design is as integral to life as the designed human body and mind. The human mind and body interprets surroundings by personal, primal comparison. Fundamental science manifests itself into the built; the biological makeup of human beings is the structure.

The mind craves a fractal, repetitive order, a biological familiarity. With this familiarity comes a sense of calm and connection, reverberating what is internally known. Examples of biologically based architecture first appeared thousands of years ago during the archaic period. Though, without stepping too irrelevantly into the past, Gothic architecture, as an established example, is fractal with its repetitive shapes at varying scales. The shift is scales, through alike patterns controls the movement of the eye and therefore, the perception of the space. This references the head direction cells that fire within the neural network. Minds missing primal perception skills while devoid of physically manifested order, lack a connection to an evolutionary sense of self. Man-made fractal network designs bind the mind gap found within Alzheimer's disease patients. Patterning of various scales further redefines the physical manifestation of the cognitive map. Disorder becomes ordered in a physical network of spaces, for neurons in the brain simultaneously associate and mimic the designed organization.

FIG. 7-9 Fractal Cathedral Glass, Fractal Neural connection, Fractal nature. Cited in Bibliography

9. Sternberg, Esther M. *Healing Spaces: The Science of Place and Well-being*. Cambridge, MA: Belknap of Harvard UP, 2009. Print. Page 71.

10. Sternberg, Esther M. *Healing Spaces: The Science of Place and Well-being*. Cambridge, MA: Belknap of Harvard UP, 2009. Print. Page 56.

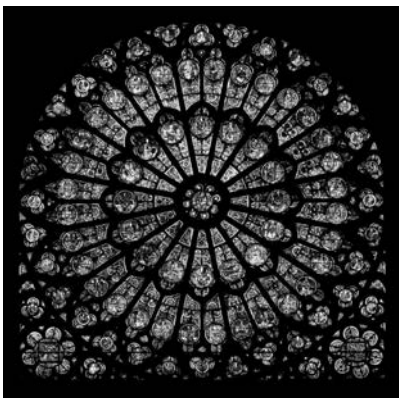


FIG. 7-9

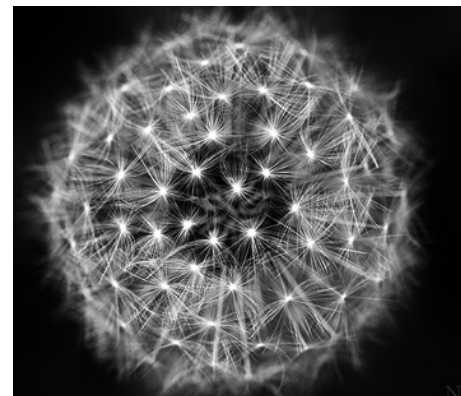
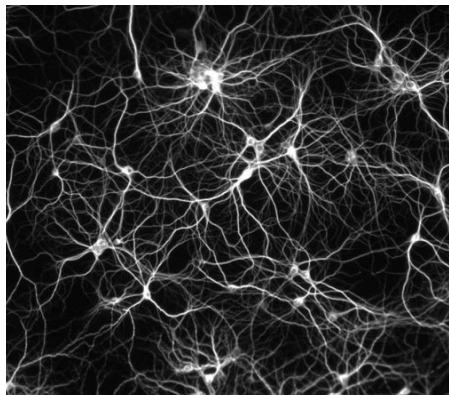


FIG.10-12 Bilateral symmetry depicted in man, human brain, and architecture. Bilateral proportions are pleasing to the eye because they are innate. Cited in Bibliography

11. Sternberg, Esther M. *Healing Spaces: The Science of Place and Well-being*. Cambridge, MA: Belknap of Harvard UP, 2009. Print. Page 132.

12. Sussman, Ann, and Justin B. Hollander. *Cognitive Architecture: Designing for How We Respond to the Built Environment*. New York: Routledge, 2015. Print. Page 25.

13. Costandi, Moheb. "Emotional Renovations Issue 8." *Nautilus*. N.p., 19 Dec. 2013. Web. Fall 2015. Page 1.

14. Botton, Alain De. *The Architecture of Happiness*. New York: Pantheon, 2006. Print. Page 243.

15. Sussman, Ann, and Justin B. Hollander. *Cognitive Architecture: Designing for How We Respond to the Built Environment*. New York: Routledge, 2015. Print. Page 113.

16. Lavin, Sylvia. *Form Follows Libido: Architecture and Richard Neutra in a Psychoanalytic Culture*. Cambridge, MA: MIT, 2004. Print. Page 36.

17. Sussman, Ann, and Justin B. Hollander. *Cognitive Architecture: Designing for How We Respond to the Built Environment*. New York: Routledge, 2015. Print. Page 116.

18. Gopnik, Adam. "Why We Walk." *The New Yorker*. N.p., 1 Sept. 2014. Web. Fall 2015.

The drafted network, with various scalar hierarchies, further develops with biological knowledge. More specifically, Darwinist human movement. Products of evolution support sequential, navigable design. Wayfinding tactics in turn contribute to the basic idea of designed networks for neural stimulation. Neuroscientists stress that "we look for logical patterns and connections..." through the visual stimulus of our surroundings¹¹, but do so with a reliance upon periphery guidance. Thigmotaxis, or wall hugging in simplest terms, "has several functions; initially it is a preparatory strategy to help a person sense the borders of a space and its escape routes", but it also "helps us gather necessary data to locate ourselves in a specific place and from that home base"¹². Thigmotaxis is what drives users to walk along a structure with a sense of security rather than directly through open space¹³. That sense of security is needed within the design of sequential space, especially for those who have lost innate cognitive orientation, for "we appreciate buildings, which form continuous lines around us and make us feel as safe in the open air"¹⁴. Alzheimer's patients wander because this neural connection to evolutionary navigation no longer remains They are unable to direct their path with a cognitive map or with primal movement. Why not capitalize this fact and design to reinforce the network structures and biological tendencies already present within the brain? Designed impact upon a brain that has lost the primal understanding of spatial movement is substantial and key to revitalization of self. The movement through networks of space, guided by the understanding of fractals and thigmotaxis, artificially recreates lost connections. This in turn provides a new sense of security and understanding within the patient, for the architectural structure itself does the "thinking".

Constructed law: bodily proportions manifested into the built world. Ancient Greek columns were modeled after the human body's alignment in accordance to Vitruvius who stated that "the architect's work should reflect the body's proportions and its symmetry"¹⁵. The reasoning for anthropomorphic architecture prevails throughout time because the mind finds known patterns soothing for "the viewer's feelings enter the object as a projection of bodily identification"¹⁶. Positive examples, like Greek columns, prove that patterns and proportions help identification and relation to space. Specifically regarding bodily proportion, without bilateral symmetry, the possibility of our existence as human beings would diminish for symmetry and proportion help us navigate the world" and thus survive¹⁷. People themselves are bipedal meaning that they use two feet and two eyes to navigate¹⁸. There is a fundamental need for bilateral order to interpret and to design. To apply this concept to Alzheimer's disease therapy, the neuroscientific evidence, the bilateral nature, fractal patterning, and network mapping strategy of the brain, should be manifested as physical reality. It has been proven throughout the ages within architecture that this projection of internal proportion and order is pleasurable to those experiencing designed spaces. With evidence of secure human connection, cranial patterns with built patterns, why not directly target the alteration of the brain through a mimicry of its structure?

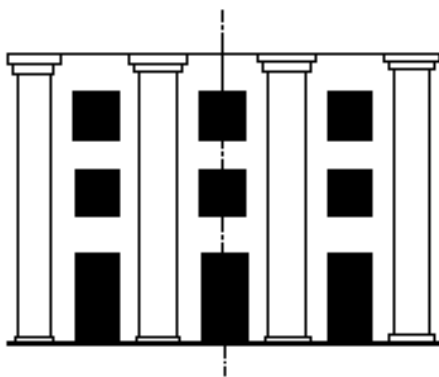
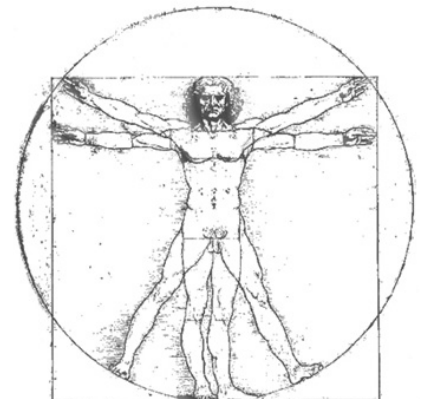
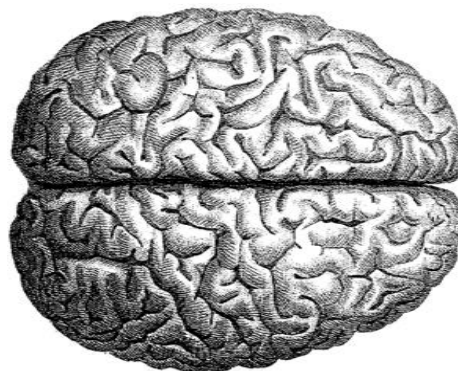


FIG.10-12



The Stimulation

To create a healing environment, it must contain rich stimuli when man is at his weakest. It should be an aid in orientation, movement, and use of space. All this while producing a feeling of security, comfort, familiarity and meaning¹⁹. For an effective design for healing, an interpretation of topographic memory, must be cemented from physical reality into the neural. To reinforce fading neural connections, movement through space must be repeated with sporadic sensory stimulus. It takes weeks for the nerve cells to produce the proteins needed to connect together. A system of daily routines through the spaces positively edits the connections within a patient's mind. This repetitious ritual movement appears within labyrinths, specifically the Chartres Cathedral located in France (FIG 14). The character of a labyrinth gives insight into calming characteristics of designed, repetitive paths. A labyrinth "calms because it has one path and a single vision"²⁰. It eliminates choices, uncertainty and novelty, which produce stress factors. This environmental stress is a specific issue with Alzheimer's patients who cannot locate their body within space. Frustration and disfunction occur when given too many unknown options of navigation. Too much stress causes neurological connection damage, further promoting the loss of networks and memory within patients. However, repetition of a task promotes the growth of nerve cell connections that branch out to touch one another across synaptic space²¹. The Labyrinth path typology calms the mind by "slowing breathing, allowing for meditation and exercise"²². The cathedral's ancient labyrinth has been replicated onto portable canvases. These canvases are currently in use within healing facilities to reproduce the calming effect of selective paths²³.

FIG.13-15 Images depicting the single path, maze focus that utilizes thigmotaxis

19. Cold, Birgit. *Aesthetics, Well-being, and Health: Essays within Architecture and Environmental Aesthetics*. Aldershot, Hants, England: Ashgate, 2001. Print. Page 26.

20. Sternberg, Esther M. *Healing Spaces: The Science of Place and Well-being*. Cambridge, MA: Belknap of Harvard UP, 2009. Print. Page 103.

21. Sternberg, Esther M. *Healing Spaces: The Science of Place and Well-being*. Cambridge, MA: Belknap of Harvard UP, 2009. Print. Page 164.

22. Sternberg, Esther M. *Healing Spaces: The Science of Place and Well-being*. Cambridge, MA: Belknap of Harvard UP, 2009. Print. Page 114.

23. Sternberg, Esther M. *Healing Spaces: The Science of Place and Well-being*. Cambridge, MA: Belknap of Harvard UP, 2009. Print. Page 121.



FIG.13-15

24. Sussman, Ann, and Justin B. Hollander. *Cognitive Architecture: Designing for How We Respond to the Built Environment*. New York: Routledge, 2015. Print. Page 19.

25. Sternberg, Esther M. *Healing Spaces: The Science of Place and Well-being*. Cambridge, MA: Belknap of Harvard UP, 2009. Print. Page 115.

As Hippocrates stated, “Walking is a man’s best friend” and designed paths let the mind revert to a natural, calm state ²⁴. Indeed regular exercise strengthens nerve connections, consequently boosting mood and decreasing harmful stress responses²⁵. Literal physical movement through space aids in the therapy of mind and body. As an example of designed motivator of physical movement, the Chartres Cathedral labyrinth has stood the test of time. Currently, portable labyrinths, reprints of the Chartres design, address the role of designed space for mind therapy within the healthcare system. Though the facilities themselves take a backseat in the healing process. Strategically designed intimate medical facilities can produce the desired calming, healing affect that the portable mats do. Why not skip the add ons? Then the building, with the biological guidelines and patterning of the human brain, becomes the medicine.

Within a repetitive path, the brain must still have stimulus to continually activate neural connections²⁶. A shift in environment marks the moment within a neural network within the brain, thus strengthening a fractal bond. Additionally, a designed space for healing must be “more than a machine for living in. An environment not decent but stimulating, active, changing, flexible, surprising and expressive”²⁷. A health facility must be more than a waiting space for treatment. As a general example of engaging, installation architecture, the NAS architecture firm’s Breath Box connects the users to their surroundings. The shifting mirrored panels empower the mind and body to connect to the reflected water through the use of sight, smell and touch²⁸. It is through the combined sensory stimulus, which occurs along a beach front pathway, that an understanding of the location’s identity is founded. A sense of place and connection is established through the sensory nature of the installation. As a direct example of sensory stimulus for Alzheimer’s disease patients, Dutch student Sandy Bruns created the Music Bank²⁹. She desired a furniture installation piece to stimulate multiple senses simultaneously while increasing contact between clients, caregivers, and visitors³⁰. The element allows for independent sensorial stimulation with the option of social stimulation. This holistic approach to the senses “serves to orientate the human body, to monitor and support human conduct and guide people in daily life”³¹.

Scholars agree that “enriched environments enhance the performance of the brain and growth of new cells” by way of “lighting, color and layout”, emphasizing the use of spatial design as a form of healing³². Stimulating senses has been seen in architectural trends including in works by masters of architecture like Louis Kahn and his predominance of light integration. Works like the Unitarian church by Kahn and the smaller scale approach by Burns provide sensory elements placed on a structural basis to impact the user at moments of greatest perception.

Field of vision adds a rule to the design of sensory moments. Three major measures control various scales of perception. At 100 meters, the boundary of a social field of vision occurs³³. Within this section of space, a wide connection and integration with others has formed. A sense of community configures and enhances the procession of space. At 35 meters, emotions can be interpreted³⁴. A new level of detail is integrated into the potentially designed path. This is the threshold for immediate connection with individuals or surroundings. At 7 meters and under, the bodily senses focus the mind³⁵. Sensory scale is defined at 7 meters, so within an organized sequential design, the manipulation of brain stimulants must be within this parameter. These basic three levels of cognitive spatial understanding provide a solid foundation for a metered layout of sensory stimulus. The field of vision is an element of the cognitive map: the fractal, biological patterning of structured movement, which connects the body to the mind.

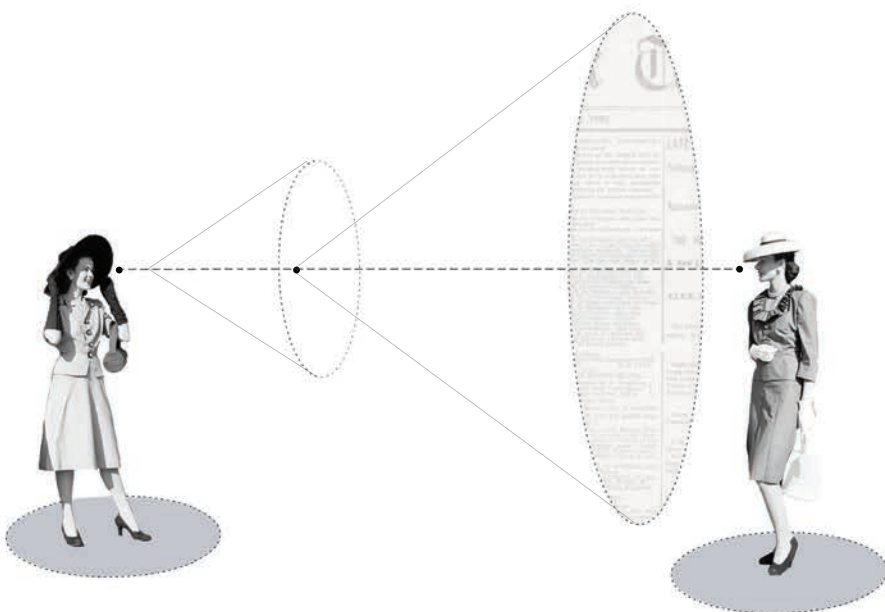


FIG.16. diagram by author

26. Sternberg, Esther M. *Healing Spaces: The Science of Place and Well-being*. Cambridge, MA: Belknap of Harvard UP, 2009. Print.

27. Cros, Susanna, and Manuel Gausa. *OPOP! Operative Optimism in Architecture*. Barcelona: Actar, 2005. Print. Page 30.

28. “NAS Architecture Pavilion Activates Senses along Shoreline of France.” *Designboom Architecture Design Magazine* NAS Architecture Pavilion Activates Senses along Shoreline of France Comments. N.p., 23 July 2014. Web. Fall 2015.

29 & 30. “Arkitektur Med Patienten I Fokus.” *Arkitektur | Vidarkliniken*. N.p., n.d. Web. Fall 2015.

“Muziekbank Van Sandy Bruns Voor Mensen Met Dementie.” *Alzheimer Architecture*. N.p., 21 May 2015. Web. Fall 2015.

31. Cold, Birgit. *Aesthetics, Well-being, and Health: Essays within Architecture and Environmental Aesthetics*. Aldershot, Hants, England: Ashgate, 2001. Print. Page 152.

32. Badger, Emily. “Corridors of the Mind.” *Pacific Standard*. N.p., 5 Nov. 2012. Web. Fall 2015. Page 3.

33. Sussman, Ann, and Justin B. Hollander. *Cognitive Architecture: Designing for How We Respond to the Built Environment*. New York: Routledge, 2015. Print. Page 86.

34. Sussman, Ann, and Justin B. Hollander. *Cognitive Architecture: Designing for How We Respond to the Built Environment*. New York: Routledge, 2015. Print. Page 89.

35. Sussman, Ann, and Justin B. Hollander. *Cognitive Architecture: Designing for How We Respond to the Built Environment*. New York: Routledge, 2015. Print. Page 90.

The Transition

Patients are “healed” through traditional medicinal methods from traditional healthcare facilities, but what happens to the patients after the series of chemotherapy infusions, psychological counseling, or life-altering surgeries? No transitory, accessible reintegration, after the jolt of manicured life in a hospital, exists. The healing process does not end after the pills have been prescribed or the stiches have been sewed. Interactions of daily life change for the majority of those who enter the sliding doors of an institution, so why isn’t there an element of the healthcare system to assist in this transitory period of life? As discussed through research of designed order and interaction with sensory stimulus, the mind and body are affected by the physical manifestation of biological patterning. As design of space more intimately parallels the mind, architecture becomes the new form of biological healing.

When designing to heal, the issue of stressful disconnection is a critical component to address. As mentioned on page 25 of *Imperfect Health*, “those who become sick most easily fall into a high risk category when subjected to high levels of stress and are in some way out of connection. The lack meaningful social and natural connectedness” and thus need assistance for reintegration. For Alzheimer’s patients, the distortion of the mind to the body is remedied through the order of the real, the physical environment. Patients with Alzheimer’s Disease begin to lose a grip on physical reality. Distinct separation from society, as demonstrated by current medical facilities, assists in removing previously known memories and connections to the outside world. Lack of contact with the known speeds up mind deterioration. The typology of architecture as healer in the specific case for Alzheimer’s disease provides the missing connection of primal identity. It artificially mimics neural connections, though it must do so at a known scale, fully emersed into the grit of a neighborhood. Prestine, removed health facilities ignore the crucial aspect needed for assisting those with a loss of memory, contact with memory triggers of daily life. Because the brain is adaptive to the physical environment, the contact with what is already familiar to each patient, sparks memories. Memories form a part of human identity. With the relation to past identity, the Alzheimer’s patient reintegrates with society. This social aspect of reintegration along with mental connective repair, transitions patients back to a norm.

Though the science drives the design, the social aspect remains vital. A balance of collective integration and individual contemplation must be considered. Unified identity satisfies the “need for social networks, for a sense of mutual caring and protection”, but isolation regenerates mental focus, “solitude for self-reflection, and personal relationships”³⁶. Without the collective, “withdrawal, depression, and illness” occur within isolated individuals³⁷. A web of social interaction ties individuals to a greater sense of self and thus lessens damaging, emotional side effects associated with the loss of the known³⁸. Unification breaks the fearful stigma of lost human characteristics; patients are not alone in the struggle. The design of patients to the outside world, in the case of Alzheimer’s patients, to their caregivers and families, balances between integration and isolation.

36 & 37. Cold, Birgit. *Aesthetics, Well-being, and Health: Essays within Architecture and Environmental Aesthetics*. Aldershot, Hants, England: Ashgate, 2001. Print.

38. Seeman, Teresa E. “Social Ties and Health: The Benefits of Social Integration.” *Annals of Epidemiology* 6.5 (1996): 442-51. Web.

FIG.17-19 "Maja Daniels." Maja Daniels Main Comments. N.p., n.d. Web. Fall 2015.

Daniels, Maja. "Photographer Maja Daniels Spent Three Years Documenting the Residents of an Alzheimer's Ward in France." *Alzheimer Architecture*. N.p., 14 Aug. 2105. Web. Fall 2015.

39. Cros, Susanna, and Manuel Gausa. *OPOP!: Operative Optimism in Architecture*. Barcelona: Actar, 2005. Print. Page 30.

40. Sussman, Ann, and Justin B. Hollander. *Cognitive Architecture: Designing for How We Respond to the Built Environment*. New York: Routledge, 2015. Print. Page 5.

41. "MAGGIE'S CENTRE BY OMA." *A As Architecture*. N.p., 11 Nov. 2012. Web. Winter 2015.

"Maggie's Gartnavel by OMA." *Dezeen Magazine*. N.p., 05 Oct. 2011. Web.

42. Sternberg, Esther M. *Healing Spaces: The Science of Place and Well-being*. Cambridge, MA: Belknap of Harvard UP, 2009. Print. Page 132.

Architecture as healer, via biological tactics discussed, structures the missing elements of each individual lost mind. Architecture unites, informs, reinforces. Simultaneous habitation of individual and collective spaces, where family and caregivers interact and further spark brain stimulation³⁹ invokes current facility ideas, though isolated. As a patient walks the halls of a healthcare facility, he or she perceives objects in sequence and forms internal mapped memories. If stimulating to the senses, the field objects produce the network of movement. This network, manifest within the brain as a cognitive map, acts as a storyboard within the mind. "Storytelling is a key component" for through this narrative ability people form "identity and a sense of meaning"⁴⁰. Further, when physical movement couples with a memorable sensory stimulus, the neurons in the brain solidify the marker within a cognitive map. The elements combined produces the map; it fails without the collaboration. Stimulus become integral with landmarks. Along a biologically driven pattern, sequential stimulating elements of programmatic pieces would assist in driving an Alzheimer's patient's healing. Isolation merges with communicative space systematically, programmed into the metered paths of the patient. Inspiration for communal ideas are present in the design of Maggie's centers, where familial programs are integrated into the design of the spaces⁴¹. This spark a new idea: the use of people as memory landmarks. The linking of individual to collective spaces allows "the brain to search and identifies landmarks" of familial people⁴². Photographer, Maja Daniels studied interactions of individuals with Alzheimer's within a typical medical facility, where she noted the interest in portals. The people with the disease congregated at a set of double doors with two porthole windows, looking out onto another wing of the hospital. Interest in social connection beyond the doors remained a priority (FIG 17-19). Patients gravitated towards the people on the other side of the door, wondering at their isolation. Face to face interaction with those affected by Alzheimer's or dementia is reinforced as necessary by Daniel's images.



FIG.17-19

The Past

Two examples of note, one positive and one negative, begin to explore the idea of design as a means of controlling mentally impaired patients. However, each approach counters the other. Paul Rudolph's Boston Mental Health Facility⁴³, though striving for the same mental to physical connection, produces a negative effect. Rudolph boldly stated that an insanely designed space for the insane made perfect sense, creating balance. Perhaps he thought that the disorders canceled each other out. Regardless of original basis of thought, the building was a massive failure where patients lost their sense of selves. In fact, the colossal rough concrete, surrounding all sides caused claustrophobia. The lack of light as well as direction lost patients, literally. This was indeed a manifestation of internal mental states, however, it did not provide the neurological order needed. It merely added to the confusion. Nurses and visitors alike mocked the building, stating that it created even more mental and physical problems within those it was intended to treat. Psychologists pointedly remarked that the place put demands on the users in a way that they could not meet. Unlike the idea of revisiting biological patterns to refresh a sense of order within the mind, the curving walls and stairs that led nowhere confused everyone to the point that they could not orient themselves. The intentions of this project were noble, but handled incorrectly. Instead of reproducing the structure of a broken mind, the design of space as a realignment of a textbook cognitive map would have provided the order needed by those who could not structure themselves naturally.

43. "The Dream behind Boston's Forbidding Government Service Center - The Boston Globe." *BostonGlobe.com*. N.p., n.d. Web. Fall 2015.

44. "Architecture." Hogeweyk. N.p., n.d. Web. Fall 2015.

FIG. 20-22 "Dementia Village 'De Hogeweyk' in Weesp." Detail. N.p., n.d. Web. Fall 2015.

"'Dementia Village' Inspires New Care - CNN.com." CNN. Cable News Network, 27 Dec. 2013. Web. Fall 2015.

"Architecture." Hogeweyk. N.p., n.d. Web. Fall 2015.

The Hogeweyk village in Weesp, the Netherlands, stands as model of architecture as a response to those impaired by dementia. The village consists of twenty three units, separated into lifestyles: crafts, culture, religion, and urban. As an isolated entity, this village provides a safe haven with the dormitories acting as a perimeter wall. With wandering as a major issue, this layout accommodates. Here the idea of structured order as a guiding tool is used. The plan begun as a solid and void exploration: solid as boundary building and void as free path. An illusion of normative freedom persists. Public spaces provide a complete experience including social interaction through shopping centers, physical therapy rooms, and a local theater. Programmatically, Holland's outside world demonstrates itself within the secure confines of this dementia village. The units remind inhabitants of the ideas fundamental to Dutch life and group members according to shared interests and backgrounds. The complex challenges individuals "by recognizable incentives to remain active in daily life"⁴⁴. Hogeweyk positively houses people with Alzheimer's and dementia, however, it does not venture to utilize architecture as a form of treatment. Additionally, in Holland, taxes are paid into the healthcare system so that large complexes like Hogeweyk can exist. In the United States, the system deters production of centralized, expensive institutions. This system in Holland is not feasible within the United States; an economically accessible model must be made.

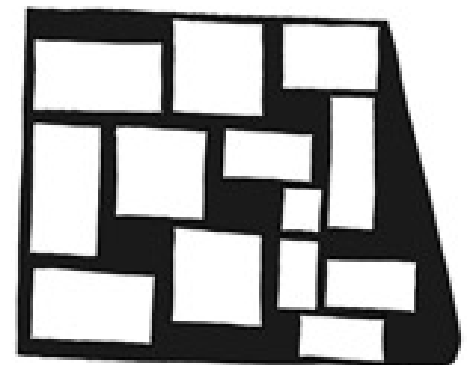
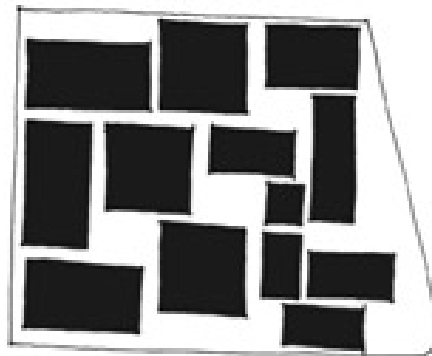
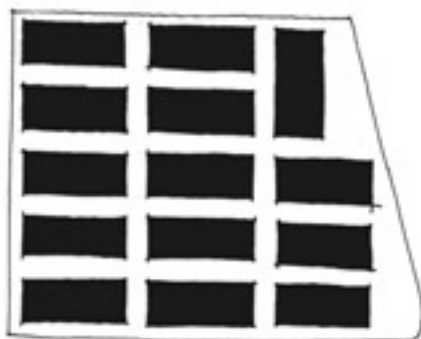


FIG.20-22

The Future

Architectural design has the ability to alter the human body's mental and physical health. This fundamental notion is crucial to the treatment of the growing population of the United States. Alzheimer's disease treatment lacks structure and organization; it is limited despite the statistical numbers urging it to become a priority⁴⁵. Between 2015 and 2050, the aging population of the United States will increase at least 56% in the high income category, but more importantly, the low income portion of the population will have an increase of 239%. This means that treating these populations at a lowered cost must be designed. In terms of Dementia, an outcome of Alzheimer's disease, there are 46.8 Million people currently affected in 2015. By 2050, it is expected that 131.5 million will be faced with this loss of identity through deterioration of the brain⁴⁶. A new stimulating form of attainable therapy is imperative for this influx. The increased target population for a new typological form of treatment couples with the the sky high cost to care for Alzheimer's patients, forcing treatment outside the states. In fact, the program, Patients without Borders, formulated that 900,000 Americans traveled abroad for treatment in 2013⁴⁷. This process, known as medical tourism, prevails as the primary method to receive aid. After all, why would you pay thousands extra within the United States when you could go elsewhere for half the cost? The danger with traveling abroad for therapy brings up the topic of great debate: whether quality of care or familiar surroundings play the most important role. Other countries excel in quality of care for they have a more established elderly population and healthcare to support thorough treatment. However, interaction with loved ones and familiarities in cultural surroundings spark the most cognitive memory. The need for in house, affordable, and easily accessible cognitive treatment remains within the United States. In just ten years, the population of the United States over age 65 will increase by 40%; a solution within the country urges establishment⁴⁸.

45. Alzheimer's Association. 2015 Alzheimer's Disease Facts and Figures. N.p.: Alz.org, 2015.

46. Alzheimer's Association. 2015 Alzheimer's Disease Facts and Figures. N.p.: Alz.org, 2015.

47 & 48. Wergner, Jennifer. "Leaving the US for Alzheimer's Care." Alzheimers.net. N.p., 16 Jan. 2014. Web. Fall 2015.

The human senses influence perception of the built environment. Within Cold's "Aesthetics, Well-Being and Health, essays from various authors explore reconnecting the senses by understanding the workings of the mind. The debate of beauty preference arises within the essays. How can design positively affect the mind, if beings have individual criteria? Emotions evoked from sensory perception trigger the positive or negative responses. Cold categorizes sensory perception into three: one biological, one cultural, and one individual. The individual component involves personal preference, but the cultural and biological elements are controlled and further manipulated to enhance spatial experience. Roderick Lawrence's essay "Housing, Health, and Aesthetics: reconnecting the senses" explores the memory component of emotional reactions to spaces. Lawrence argues that interrelations between housing and health originates from both the built and human environments. The five human senses are the key to manipulating space; the senses in total control the perception. Spatial experience surges past the observable into the sensorial, cultural and metaphysical world. In addition to Lawrence's study of Maslow's hierarchy of needs, he believes "people have a need for social networks, mutual caring and protection. Individuals need solitude for self-reflection and intimate conversations to create and maintain personal relationships. When these needs are frustrated, intrapersonal costs may result: withdrawal, depression, illness" (154). The inclusion of senses is a start in the true manipulation of spatial experience, but the understanding of personal needs in regards to interaction must be approached. In order to heal within manipulated sensory space, relations of each singular being within the unity of a community require a balance.

Cros, Susanna, and Manuel Gausa. *OPOP!: Operative Optimism in Architecture*. Barcelona: Actar, 2005. Print.

Operative Optimism, a new freedom within design, praises the integration of network, open logic, dualism, and dynamism. Realities of quality space is subjective according to Gausa and Cros; Individual interpretation is inevitable from differences in education and experience. This Optimism within an operative, physical field, promotes a positive, open reaction to culture, consumerism, globalization and regionalization. The idea is to offer society what it actually needs, psychological and physical, rather than mere aesthetics. Simultaneous actions and reactions form a complex system of interpreted spaces both real and virtual. This new form of architecture is layered and involves revitalization through spaces of colour, light, sound, movement, energy, and technology.

Adams, Annmarie. "Architecture That Breathes." Harvard Design Magazine No. 40 2015: 16-19. Print.

As a collection of articles, Harvard Design Magazine, volume 40 presents an array of visualizing architecture as a form of healthcare. Through the architectural subjects, the relevancy of medicine's impact on social structures, architectural conceptual ideas, and psychoanalytical ideas forms.

Colomina, Beatriz. "X-Ray Architecture: The Tuberculosis Effect." Harvard Design Magazine No. 40 2015: 72-91. Print.

"Architecture that Breathes" focuses attention on spatial design during the 1800's. As a primary example, the Royal Victoria Hospital in Montreal developed extraction towers in response to fowl diseased air. Architectural drawings from this precedent provide an understanding of the thought of healing and care within the design of architectural space. This moment in time resounds as a study of spatial effects on health and the healing process.

Edwards, David. "Delivering Scent, Designing Memory." Harvard Design Magazine No. 40 2015: 100-01. Print.

"X-Ray Architecture: The Tuberculosis Effect" examines the mindset of architects during the 20th century. Modernist spacial design evokes images of x-rays and the medical technologies of the age. During this time, integration of sun, light, ventilation, exercise, roof terraces, and hygiene emerge as a component within design. Adolf Loos, Le Corbusier, Mies Van Der Rohe, Richard Neutra, and Alvar Aalto, to name a few, begin the design process through a conceptualization of either medical devices or health enhancing sensory experience.

Pasnik, Mark. "Concrete Therapy: Paul Rudolph's Architecture of Mental Health." Harvard Design Magazine No. 40 2015: 158-61. Print.

"Delivering Scent, Designing Memory" narrows the senses within a healing environment to the specific effects of memory via scent. Olfaction is a memory stimulant: ideas, thoughts, emotions emerge from familiar smells. The article discusses the idea of presenting scents to memory loss sufferers, thus linking the sense to the world of healing.

"Concrete Therapy: Paul Rudolph's Architecture of Mental health" approaches the physicality of architectural space in relation to healing. Rudolph's use of continual concrete in "sinuous forms, curvilinear walls and emotive spaces, carry psychological and therapeutic benefits for patients" (160). Curved walls evoke interaction among individuals, to promote a sense of unity and community within the healthcare environment. Psychological and physical support stem from these monolithic structures.

Richard Neutra applies psychoanalysis into the built realm of the field of Architecture. During the modernist architectural era, psychology began to be identified as an integral component to design. Before Neutra's design time frame, "spatial organization and formal articulation as therapy" was established through 18th century concepts (25). The shift within the field towards a holistic view of spatial experience increased as Neutra experimented through his housing studies, the Lovell Health House as an example. Light and air were exploited to fully experiment with the pathological effects on personality. He believed, as this thesis agrees, that "design is a form of therapy" (32). In addition to the elements and their effect through design on the psyche, shapes and movements within design were considered within Neutra's works. As the epiphany of the work, empathy, was the link of body through space into the psyche: a projection of the body into an object (or in this case, space).

Lecture Series- Integrative Medicine Program. Adapt. Lorenzo Cohen and Richard T. Lee. Lecture Series Integrative Medicine Program- March 17, 2015- MD Anderson Cancer Center Video. MdAnderson Cancer Center, 16 Sept. 2014 Web. Sept. 2015.

Lecture series emerge from Houston's MDAnderson Cancer Center, primarily with a focus on integrative medicine. This particular video discussion pinpoints the integrative medicine program and its focus within the healthcare field. Two main foci, access of healthcare to patients and patient engagement, fuel the scientific studies performed to understand the mind and body connection of health. This alternative or complimentary approach to treatment centers is argued to be the new standard of care and thus, an important area of research. Five domains of care, including stress management, metabolics, and social support, when directed into the pre-treatment or post-treatment of patients, positively impact the function of the brain and therefore, the body. This holistic system, as a continuum, effectively balances the jarring effects of standard medical care.

Zardini, Mirko, Giovanna Borasi, and Margaret Campbell. *Imperfect Health: The Medicalization of Architecture*. Montréal: Canadian Centre for Architecture, 2012 Print.

Health, once singularly identified with medicinal practices, now encompasses biological, physical, social and cultural functions within society as a whole. *Imperfect Health*, highlights contradictions and the unknown within the health of society and care. Architecture is an active part of a cure rather than medical practice alone. The environment, from which architecture derives, in terms of both landscape and society contribute to the care of inhabitants. Specifically within *Imperfect Health*, the demedicalization of architecture and the view of architecture as infrastructure for interactivity pose a connection between body and structure. Demedicalization views a city as a sick body as well as a cure. A city's structure, density and critical mass, alters societal movements. For example, walking as a mode of transportation, rather than individually driving promotes both physical and mental improvements. The design of a city manipulates well being. Architecture viewed as infrastructure for interactivity suggests a similar strain of healing: interactions between individuals. Design is "capable of delivering individual and collective well-being" (30), meaning that the healing process extends beyond specific instances towards a greater cure. Healing requires interactions not only with nature in solidarity, but also as a collective of fellow beings.

Project: **Municipal Healthcare Center**

Architect: **Estudio Entresitio**

Location: **Madrid, Spain**

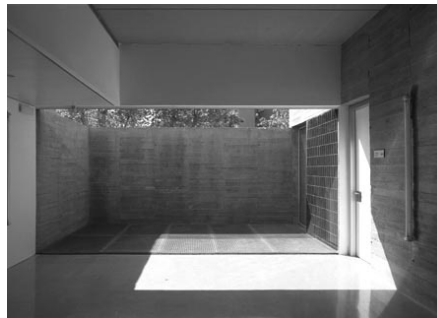
Estudio Entresitio worked with the idea of a placeless building to achieve an idea that could be implemented as a universal healthcare facility. This idea of created a typology with the ability to be replicated regardless of site is intriguing considering patients are specifically affected by their immediate environment. Though the project seems to be a success due to the acceptance of fundamental human needs: social interaction and exposure to natural elements, like light.

The Corbusian idea of 'reconciliation of opposites' drives the project layout. the heavy depiction of the exterior through solid materiality juxtaposes the interior moments of light and expansion. The sequential layout derives from an orthogonal grid. this grid shifts, allowing continuous movement, surpassing the rigidity of a static form. shift alternates the public and private sectors of the single story program. Public and private spaces merge visually allowing communal actions and reactions in addition to the conscious efforts to connect program through shifts. Space enlargement results from the pattern of program cubes. This enlargement rids the project of constraint and a feeling of confinement, which is common in therapeutic healthcare settings.

FIG. 1-4 "San Blas, Usera and Villaverde by Estudio Entresitio - Dezeen." Dezeen San Blas Usera and Villaverde by Estudio Entresitio Comments. N.p., 12 Sept. 2010. Web. Fall 2015.



FIG.1-3



WFIG. 5 Diagram By Author, 2015

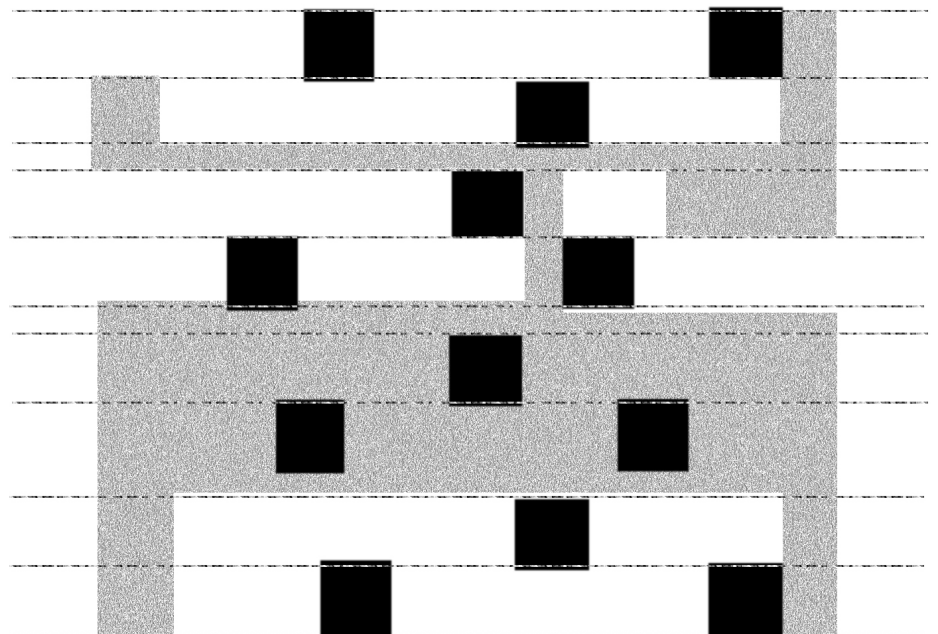
In terms of materiality, the solid versus void attitude is further emphasized by the continuous facade. Voids are not present in the sides, but rather, only on the ceiling plane in a connection with the sky.

A new idea of sequence emerges from the deleted corridor. Now, connections occur in both the X and Y coordinates through the alternating, shifting program (x) and the voids of extrusion into the sky (Y).

This project shows a variance of the term sequence. The void, sky space is used as a programmatic element that shifts and derives all others. As one story, the focus is on the horizontal movement of program in order to move patients and promote exposure to the light as a form of healing.



FIG.4-5



Project: Maggie's Cancer Center Gartnavel

Architect: OMA

Location: Glasgow, Scotland

The approach to the programmatic setup presents a fresh vision for holistic healthcare. The maggie's centers, which are found across Europe, are known for providing practical and emotional support not only to recovering cancer patients, but also those associated. OMA created a one story structure centered around a single courtyard. Unlike most maggie's centers, which house the kitchen within the center, this project revolves around exposure to nature.

The rectangular program elements overlap in a linear, circular sequence. Pieces shift in and out depending on the level of public or private association. The walls are transparent for light infiltration, thus strengthening the argument for integration with nature, or at least the nature of being human. Additionally, the use of timber, textured concrete ceilings and floor to ceiling glass created a composition of both openness and security. Shifts in topography inform shifts in height, creating moments of relief and comfort through the use of solid and void. These vertical shifts create open spacious zones where individuals gather and communicate, providing the sense of support within a healing population. This is important to note, for isolation is associated with those recovering from trauma. When in reality, a reintegration with the public is crucial to regaining sense of normalcy. This open, shifting, circular path promotes exploration and walking. Both notably positively affect the healing process within patients.

FIG. 1-2 "MAGGIE'S CENTRE BY OMA." A As Architecture. N.p., 11 Nov. 2012. Web. Winter 2015.

"Maggie's Gartnavel by OMA." Dezeen Magazine. N.p., 05 Oct. 2011. Web.

FIG. 3 Diagram By Author, 2015

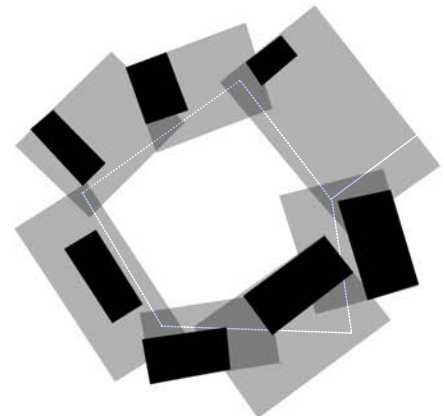
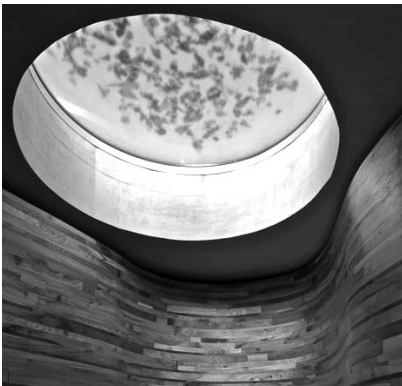


FIG.1-3

FIG. 4 Diagram By Author, 2015

The site situation within the Gartnavel Center is important to note. There is a distinct separation from the adjacent hospital and cancer treatment complex. Both lie to the right of the Maggie's Center, though hidden through trees. the temple like center sinks itself into it's necessary context yet remains it's own entity. It keeps a solitary station while remaining a part of the whole complex. This idea of individuality versus collectivity can be addressed within the interior program in addition to the exterior as mentioned before, the program elements shift into each other, providing spaces for communal interaction, while still retaining individual elements of privacy.

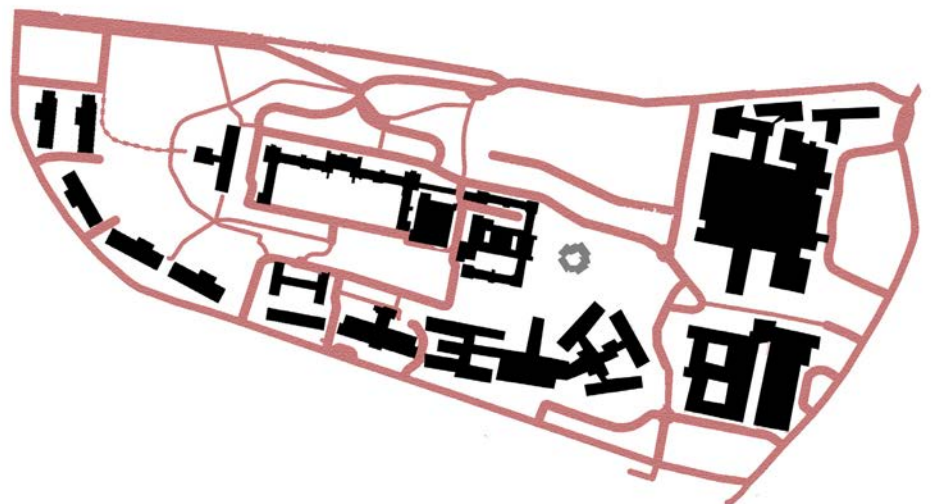


FIG.4

Project: **Boston Government Center**

Architect: **Paul Rudolph**

Location: **Boston, Massachusetts**

Rudolph's Boston government center, specifically the mental health compound, began as an idea that architecture can directly alter the psychology of it's inhabitants. While this remains true, the desired, positive effect did not occur. The opposite, tragic negative impact of the building caused it to become a crumbling eyesore within the landscape. The project was never completed, partially due to it's problems and so the civic design of the 1960's faded from existence.

The complex consisted of two buildings, connected into a continuous sequence: the unemployed assistant and offices of state government juxtaposed with Erich Lindemann's mental health center. this puzzling coupling started the demise of the project.

the site situation centered around the pedestrian and defining the adjacent street. The architectural landscape, as pictured in the curvilinear benches, attempted to create spaces of meditation and relaxation. The reality of the matter became that they were hard concrete and uninviting. This is a lesson in materiality. Though simplistic elements may appear to be a primal solution for distilling the mind, they often lead to a sad solice or worse, a suicidal space.

FIG. 1-4 "The Dream behind Boston's Forbidding Government Service Center - The Boston Globe." BostonGlobe.com. N.p., n.d. Web. Fall 2015.



FIG.1-3

FIG. 5 Diagram By Author, 2015

The bold idea to create an insane space to relate the disordered mental patients with their environment did not have the desired calming, familiar effect that Rudolph proposed. Patients reacted in the dark, meditative spaces in a negative manner. The exposed concrete caused claustrophobia and the never-ending corridors caused patients to be lost. The reflection of internal mental states did not help those within the spaces; they disoriented them even further than before.

As noted by a psychologist, the place put demands on the users in a way that they could not meet. They could not orient themselves (problem with sequence) and the spaces disabled behavior (material treatment).

The Boston health center serves as a failed example of architecture informed by psychology. The setup as a continuous, confusing path lacked clarity or a fundamental base. The design focused solely on the disorder of the mind rather than an order to redirect thought and biological functions.

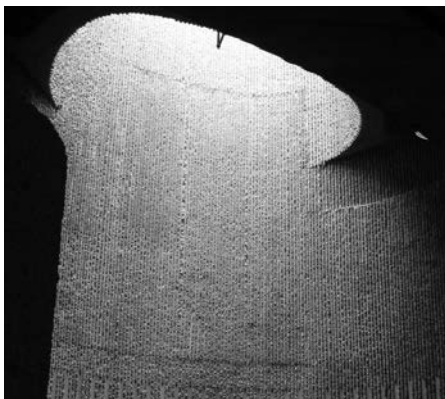
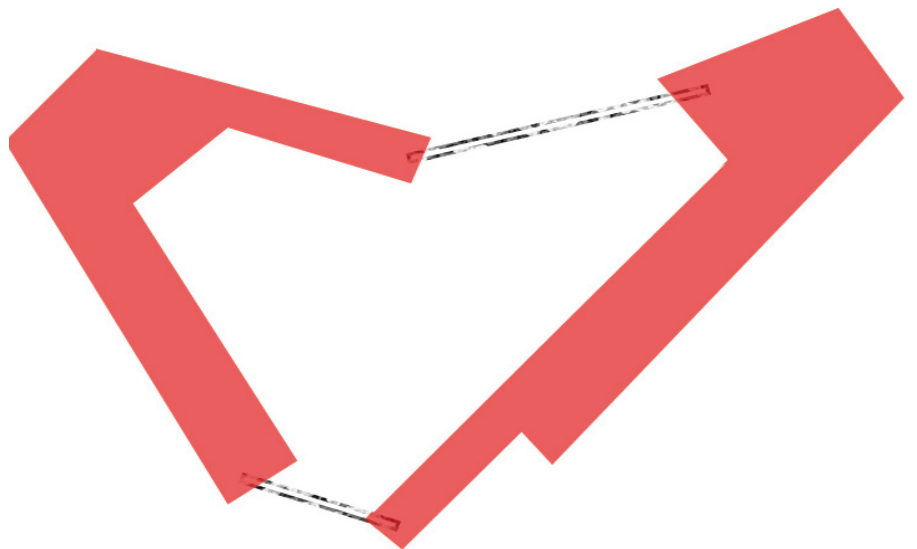


FIG.4-5



Project: **Breath Box**

Architect: **NAS Architecture**

Location: **La Grande Motte, France**

NAS Architecture created a duality between the visual and reflection of self, the senses are confronted within this installation along the coast through expression of light and smell. The image of the sea is projected through this piece of architecture; it's identity is reflected within the design. The active components of the materials express the active waves, wind and light cycle associated with the personality of the sea.

The procession is the key within the experience. As a point along the water, the box acts as a stimulant. You are able to see the physical manifestation of the sea: You see the wind through the rotation mirrors, you smell the burnt wood flowing from the structure of the space, and you see the life cycle of the sun cast upon both the sea and the structure throughout the day. The Breath Box was designed to invigorate a connection to the sea.

FIG. 1-3 "NAS Architecture Pavilion Activates Senses along Shoreline of France." *Designboom Architecture Design Magazine* NAS Architecture Pavilion Activates Senses along Shoreline of France Comments. N.p., 23 July 2014. Web. Fall 2015.

Case Studies

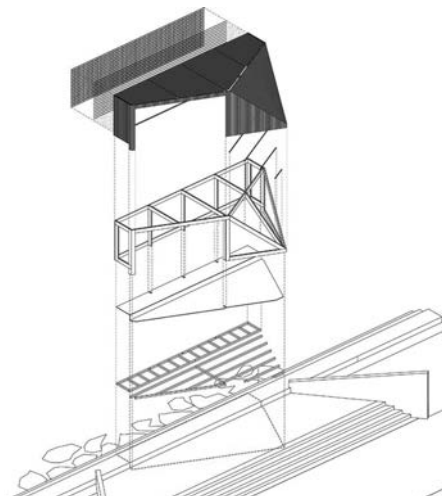


FIG.1-3

FIG. 4-6 "Maja Daniels." Maja Daniels Main Comments. N.p., n.d. Web. Fall 2015.

Daniels, Maja. "Photographer Maja Daniels Spent Three Years Documenting the Residents of an Alzheimer's Ward in France." *Alzheimer Architecture*. N.p., 14 Aug. 2105. Web. Fall 2015.

The London based photographer, Maja Daniels spent years documenting alzheimer's patients within a french hospital. This particular collection, from 2007, portrays both the epitome of daily struggle and negligence of patients with memory loss. her images are a stance for proper care and attention to the treatment of this disease. She photographed patients at the porthole door, a door locked to prevent the escape of the curious. she noted that "sometimes a resident can remain by the door, trying to get it open", suggesting a lack of understanding and loss of routine. The locked door, the only form of communication beyond the confines of "safe" space, became the center of attention for the residents and thus the focus of Maja's striking images.



FIG.4-6



Project: Geometrical Psychology

Artist: B.W Bett

Location: N/A

B.W Bett's Geometric Psychology focuses on the representation of the metaphysical. He represents the psyche in a measured, logical way to suggest that there is an order to the mind, an order to logical thought.

These prints inspire architecture to become a physical manifestation of psychoanalysis. the brain has a physical sequence and therefore, logic of the mind has a predictable order. There is an ability to utilize these graphical measurements into a physical form that capitilizes on primal networks of the mind.

FIG. 1-3 "B. W. Betts' Geometrical Psychology." The Public Domain Review. N.p., n.d. Web. Fall 2015.

Case Studies

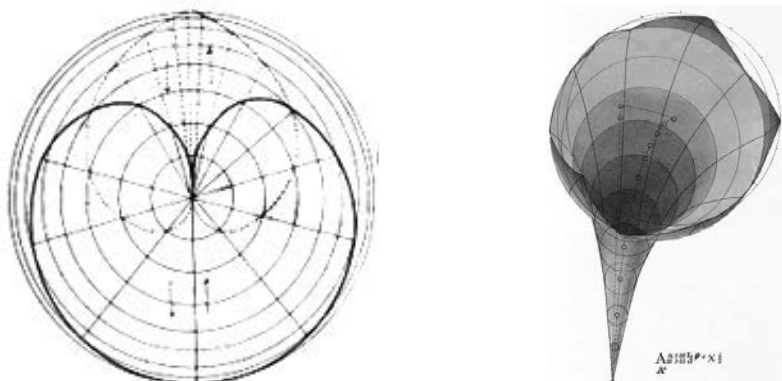
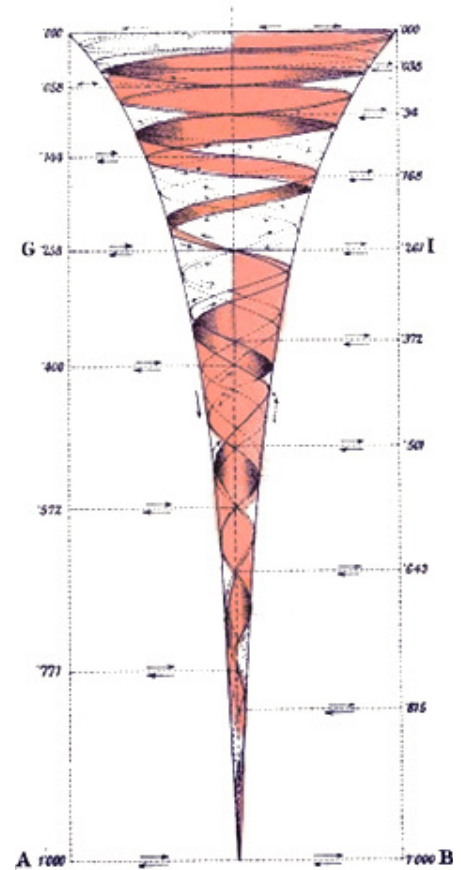


FIG.1-3



Champalimaud Centre for the Unknown :Project

Charles Correa Associates :Architect

Lisbon :Location

Case Studies

FIG. 4-6 "Champalimaud Centre for the Unknown by Charles Correa Associates - Dezeen." Dezeen Champalimaud Centre for the Unknown by Charles Correa Associates Comments. N.p., 13 June 2011. Web. Fall 2015.

"More Photographs of Champalimaud Centre for the Unknown / Charles Correa Associates." ArchDaily. N.p., 06 July 2011. Web. Fall 2015.

This research and diagnostic center focuses on one genius loci: to utilize nature as therapy. Integration of water, exposure of the sky and an integration into a rainforest were the driving factors of the complex.

The site has a historical complex and from the history, symbolic meaning forms. Henry the Navigator, among other explorers of the unknown sparked a parallel to this center of unknown, undiscovered science.

Charles Correa associates created a space that produces architecture as sculpture, beauty and consequently, therapy. It aspires to confront health issues as "it uses the highest levels of contemporary science and medicine to help people grappling with real problems: cancer, brain damage and blindness. Here, architecture becomes a component of the healing process.



FIG.4-6



Project: Paimio Sanatorium

Architect: Alvar Aalto

Location: Paimio, Finland

Aalto's response to the tuberculosis following warfare, was to create a sensory hospital that utilized natural elements to heal. In his usual style, the natural landscape became the center of attention. The structures are layered with the topmost plan containing a balcony for sun exposure. This neo-classical response included a homeliness within the aesthetics. Pigeonholes for patient slippers are within the foyer remain an example of the attempt to create a recognizable, comfortable space for the sick.

This attempt, though valiant in idea, was a failure in outcome. Patients did not heal, but rather, hurled themselves off of the sun bathing top deck. This proposes that the layered effect in height does not necessarily regain the connection to the wilderness, to pure biological form and identity. The layout itself is in sequential form, though little movement between all objects along the axis would have been taken by patients. Perhaps the experience could have been heightened by a single story space, manipulated through the horizontal, present connection of spaces rather than the vertical connection.

FIG. 1-3 "Archiprix 2009 / Paimio Hospital Landscape." Archiprix 2009 / Paimio Hospital Landscape. N.p., n.d. Web. Fall 2015.



FIG. 1-3

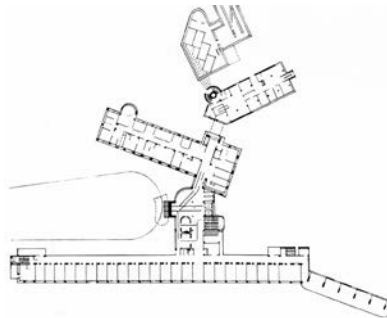


FIG. 4-6 "Arkitektur Med Patienten I Fokus." Arkitektur | Vidarkliniken. N.p., n.d. Web. Fall 2015.

"Muziekbank Van Sandy Bruns Voor Mensen Met Dementie." Alzheimer Architecture. N.p., 21 May 2015. Web. Fall 2015.

Dutch Student, Sandy Bruns, motivated by her own grandmother's Demetia diagnosis, shadowed the group, Bretano. She kept a diary, noting what was needed when memory loss occurred. Upon observation, the clients of the space depending solely on their caregivers and often spent long periods of time in the same spot without brain stimulus. So, Bruns created an object that could stimulate multiple senses while increasing social contact with one another. This gave the inhabitants an opportunity to be independent of their caregivers. The guitar stings stimulate the hand and the body through reverberation. The furniture piece resounds the vibrations from the plucked strings, activating the seemingly static object.

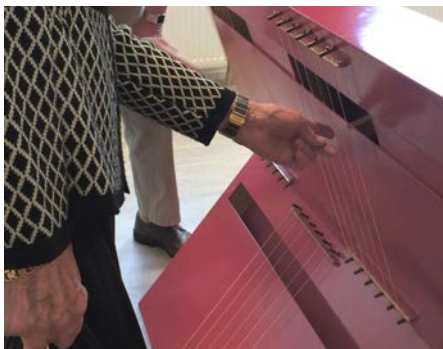


FIG.4-6



Project: Vidar Kliniken

Artist: Erik Asmussen

Location: Jarna

This 74 bed hospital focuses on anthroposophic medicine, holistic healing as individuals through the arts. It utilizes curative eurythmy and artistic therapies to treat clients of various illnesses. The layout is sympathetic to the patient's situations and is formulated into the various stages of healing including: calming initial area for rest, integration with landscape, tactile rehabilitation, and promotion of wandering. Painting, sculpture and architecture as one therapeutic environment drives the design. In terms of colors, each type of illness is associated with a color opposing the sickness' temperature. For example, fever patients are placed within blue cast rooms, while cooler diseases like cancer are placed in pink spaces.

FIG. 1-4 "Arkitektur Med Patienten I Fokus." Arkitektur | Vidarkliniken. N.p., n.d. Web. Fall 2015.



FIG.1-4

FIG. 5-7 "Dementia Village 'De Hogeweyk' in Weesp." Detail. N.p., n.d. Web. Fall 2015.

"Dementia Village' Inspires New Care - CNN.com." CNN. Cable News Network, 27 Dec. 2013. Web. Fall 2015.

"Architecture." Hogeweyk. N.p., n.d. Web. Fall 2015.

Also known as the Dementia Village, this complex is structured so that its inhabitants are unaware of its guarded nature. This space is considered a self-contained village rather than a massive building, broken up by public voids. The buildings act as the perimeter, allowing for people to freely wander as if integrated into the rest of society. All commodities are present including a theater and chain of stores. The routines of daily life are restored to challenge the minds of those who have lost their memory. It reactivates the mind and promotes a social atmosphere. Hogeweyk consists of 23 housing units, each based upon a section of Danish culture, including religion and culture. The solid void design is straightforward in organization, with clear entrance openings.

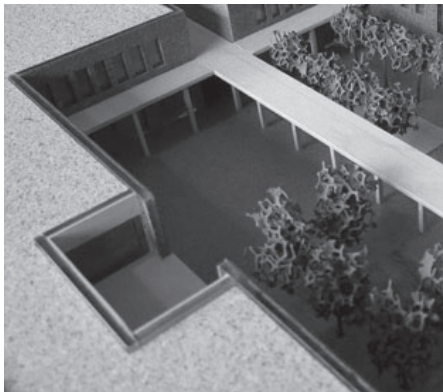
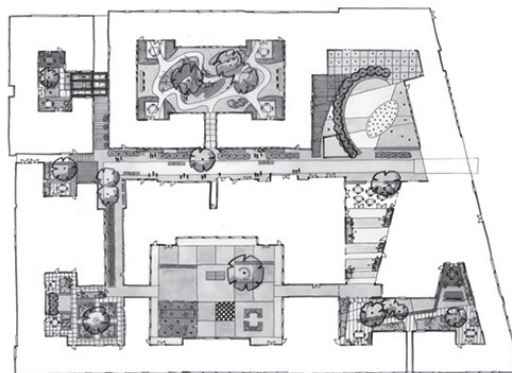
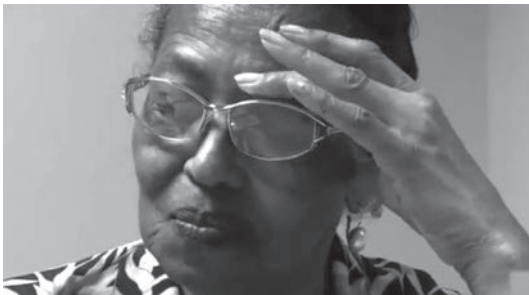
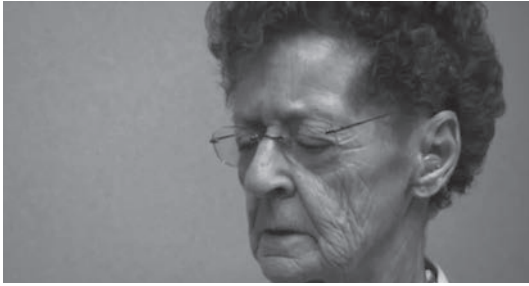


FIG. 5-7





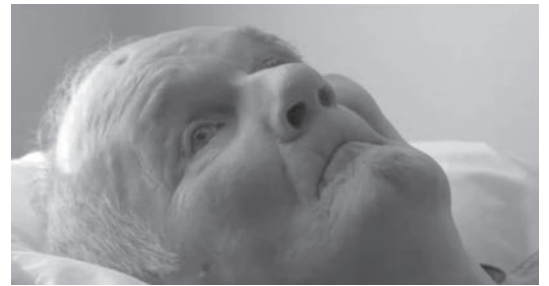


FIG. 1-20 "The Memory Loss Tapes." HBO: Documentaries: The Alzheimer's Project: Watch The Films: Landing Page. N.p., n.d. Web. Fall 2015.

Round peg [square hole]

Dante's hell was circular, yours a quad
rangle encompassing a courtyard garden.
You could help there, they suggested.
Get a bit of sun. Mingle.
Eff off, you thought.

Purpose-built it was, the quad, for restless wanderers
to shuffle, piss and grope their days away, all
colour-coded grab rails, photos of the past, and dolls.
Clockwise or anti, all roads led to home.

Trouble was, you turned out inconveniently to be
the wrong sort of bonkers.
True, you needed nappies and a bib,
were disinhibited or fanciful as you declined.
But stubbornly, disastrously, still marbles-rich and self-aware.

The trusty taxi twice a week into town set you down
to real people garnished with books and cappuccinos.
When you said oxymoron or hyperbole they understood
and asked for help with twenty three across.

The price you paid for this escape was high: two sides of quad
to go and come. Here, a silent Munch rictus,
there a sobbing baby-man looking for his mummy,
everywhere a vacant-eyed or terrified
nearly empty human husk.

In the end I managed to reach out from my
infernal home at Number One Circle Nine
to semi-rescue you, but not before you lost
your trust in me.

Catherine Lawson

Project: Friendship House

Artist: Guerin & mooney

Location: West Bend, WI

128 residents

Staff ratio 1:7

3388 sqft per unit

27104 sqft per Residential floor

49462 square feet total

Dementia units

Individual vs collective

Rational *Individual vs Collective*

Individual spaces designed as part of a greater whole, surround a major courtyard allowing interaction among each other. Each patient with dementia is considered a piece to a larger puzzle. The order here is clear, designed in a modular fashion. Family clusters associate sixteen residents into eight separate households. The major space is divided into two, with four units each. This symmetrical design is pleasing to the architect's eye as it is simple and easily navigated. However, it lacks the stimulating shift in environment, crucial to the dementia patients' use of the space. The monotony of the spaces lacks imagination and sensory experience. Those lost in the depths of their minds, wander aimlessly only to find corridors of identical spaces. The courtyard and the geometry design surrounding it, are to be noted for their success in a collective identity. The patients are moved through their individual cells into the expansive core, guarded by the cells themselves.

FIG. 1-2 Diagrams By Author, 2015

Program Precedents



FIG.1

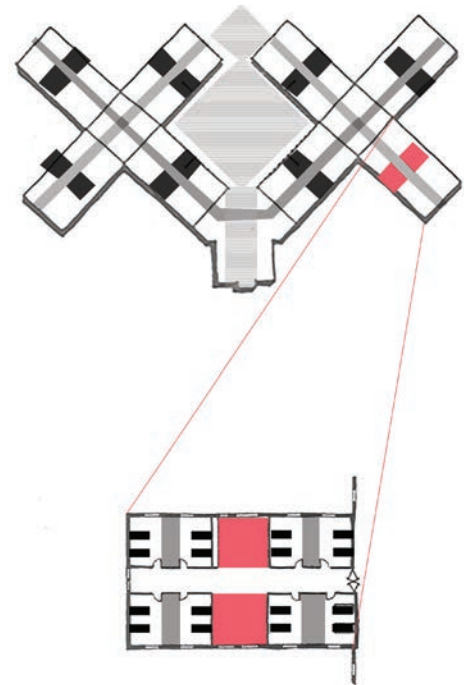


FIG.2

Living Unit 320M2
 Site Area 12,000m2
 Gate
 Theater
 Restaurant
 Lively Court
 Public Restroom
 Supermarket
 Grand Cafe
 Hardware Store
 Dozing Room
 Mozart Hall
 Activity Center
 Physical Therapy
 Hair Salon
 Outpatient Careunit

Hogewey :Project
 Molenaar&Bol&VanDillen architecten :Designer
 Weesp, Netherlands :Location

Program Precedents

FIG. 4 Diagram By Author

FIG. 5 "Architecture." Hogeweyk. N.p., n.d. Web. Fall 2015.

FIG. 6 Color Overlay By Author

Rational *Building as Boundary*

Hogewey Dementia village located in the Netherlands physically embodies building as boundary. The masses form the crust of the site, leaving interior resident unaware of their containment. Order is clear and present, but the project lacks interaction with the outside world. At Hogewey, the town is a false one with the missing link of interactions with familiar surroundings and loved ones. The ideas of order are to be noted. There are 23 houses fit within 16 units. Units theme the park of missing memories, each derived from a Dutch element of culture, including religion. The complex is self-sufficient. Iconic, typical elements found in the "outside world" appear within the confines to create a placebo affect on the residents.

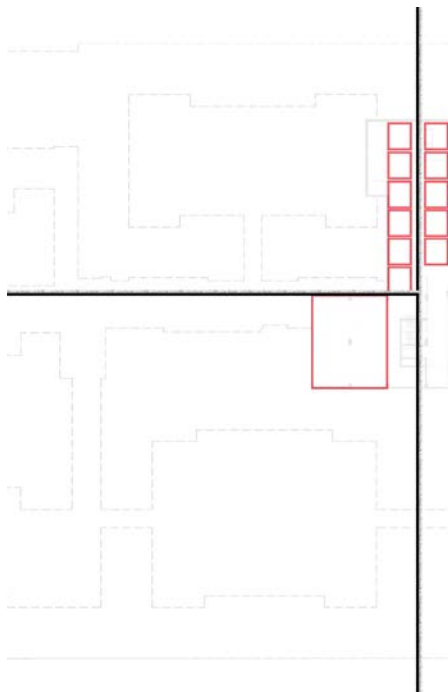
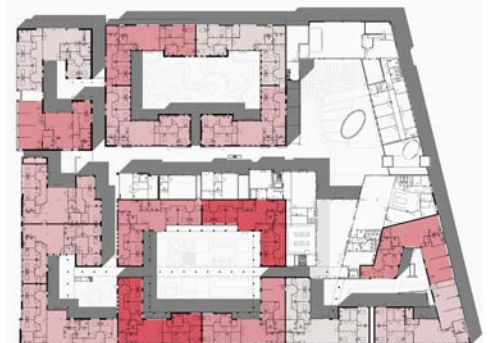
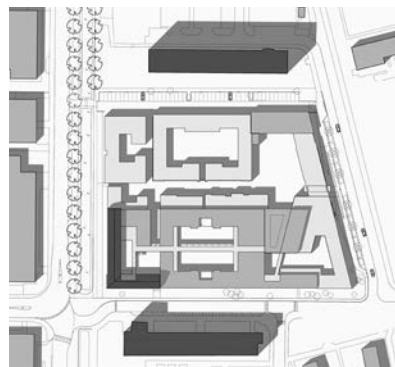


FIG.3-5



Project: Care Homes at Kellersvej

Architect: NORD Architects

Location: Søborg, Denmark

City within a city
Security with independence
Unit of 13 homes
2 neighborhood sectors
6-7 homes in each unit
Raised roof marks joint space
Outdoor terrace
Common kitchen
Social group choice
9700 square meters

Rational *A City Within a City*

The arrangement of this town of individual medical care units allows a freedom not shown in the previous two examples, which utilize the masses as boundaries. The freedom of the plan promotes individuality, the endless possibility of adding individual units, and an asymmetry. Asymmetrical design provides necessary changes that stimulate neural connections within the brain. Though biologically speaking, bilateral symmetry as demonstrated within the Friendship House is pleasing to both the eye and mind, however, it allows for the mind to shut down in routine. Order needs to guide the users, but pockets of change are equally as important for a successful brain stimulating design. In terms of components, there are residential units of thirteen homes. These are divided into two neighboring units of about six to seven homes each. This distribution creates a variety of communal gathering areas to converse in an otherwise independent setting.

FIG. 1-2 Diagrams By Author, 2015

Program Precedents

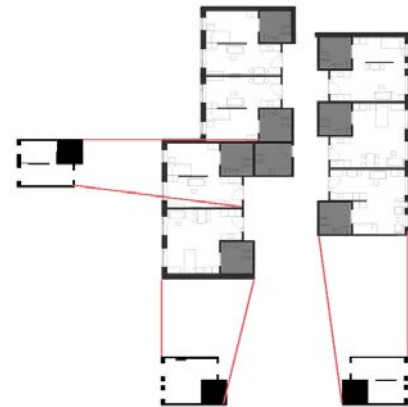


FIG. 2

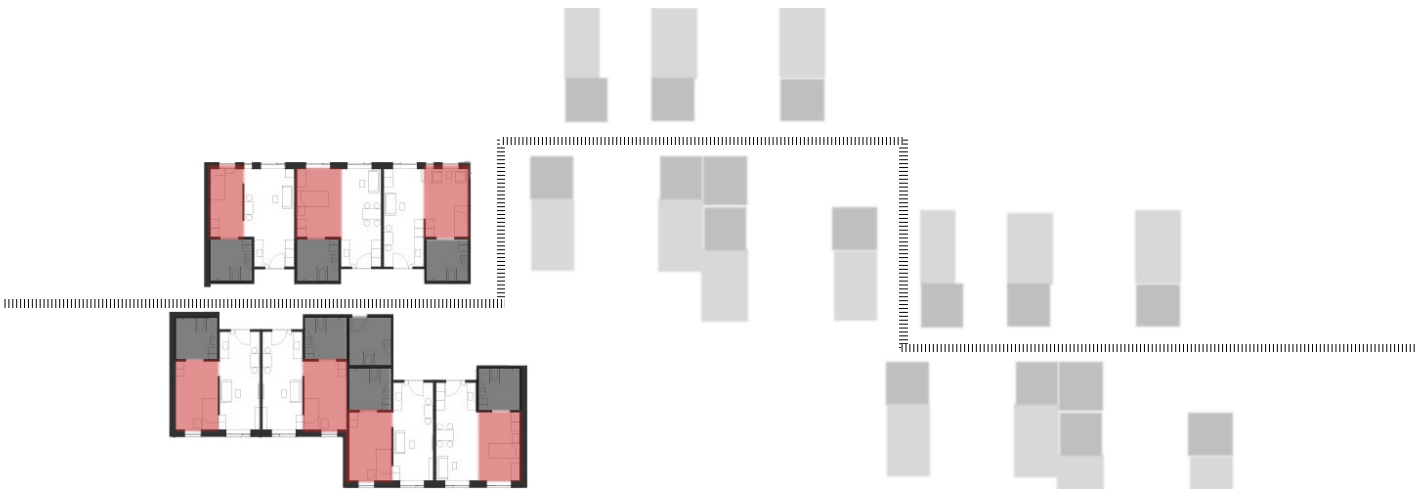


FIG. 1

FIG. 3 Diagram By Author, 2015

Delusive *Ordered Disorder*

Current complexes designed specifically for those suffering from diseases of the mind contain a basic order decisive for those lacking structured thoughts and associations. However, the reality of the general public varies greatly from the reality of those with advanced Alzheimer's Disease or Dementia. Perceptions change; reality is distorted. Ordinary objects are transformed into something more interactive. As an example, mirrors are often seen as other individuals. These created moments prove a need for more stimulation. In the case of the mirrors, a layer of social interaction, both real and imagined must be added.

Repetition of speech and movements are also common; memories fade within seconds. Changes in repeated order are necessary to shift the mind towards either fresh thoughts or fond memories. These shifts in routine spark new neurons, which produce memory markers, and thus form cognitive maps.

An understanding of the layers created by each individual journey through the spaces formulates the perception of the spaces. Each sufferer of Alzheimer's Disease varies in the stages of memory loss and reacts to stimulants in different ways. Some stick in a repetitive zone, some awaken to food or music stimulants, some live in an alternate world, a world of the past.

The program is arranged in ordered individual units, just as the successful complexes analyzed have shown, however, they allow for individual, safe exploration. This freedom, though still contained, permits each user to experience a series of brain stimulating spaces at their own pace and in their own way. Designed at the neighborhood level, easy accessibility from individual homes retains known environments while providing spaces of the invigoration and inspiration needed to remember.

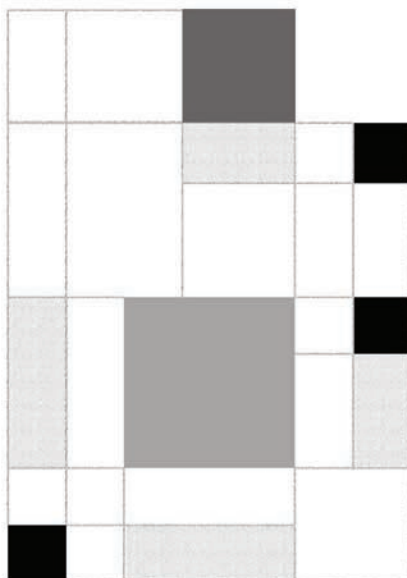


FIG. 3

Repetition: continued compliments and comments

Joanne

Coping: Constant mouth noises and body movement, non verbal

Kathy

Response: asleep until food hour

Darwin

Storyteller: early stage of disease, constant memory sparks

Bettie

Disconnect: non sensible jokes, interaction to nursery through window

Jim

Unaware: surprised reactions, artist, songs from memory

Joan

Physical Elements

Stretches
Movement between Spaces
Walking
Gardening
Dance

Creative Elements

Music with Song, Bells, Drums
Entertainment vs Engagement
Art Projects
Poetry
Talking
Advice, Questions, Inquiries, Various Languages

Other Elements

Meditation
Interaction with Nurse
Viewed Interaction vs Interactive Activities
Picture Memory Storytime
Food Preparation
Daily Tasks

Considerations

Color Perception
Security
Delusion vs Reality

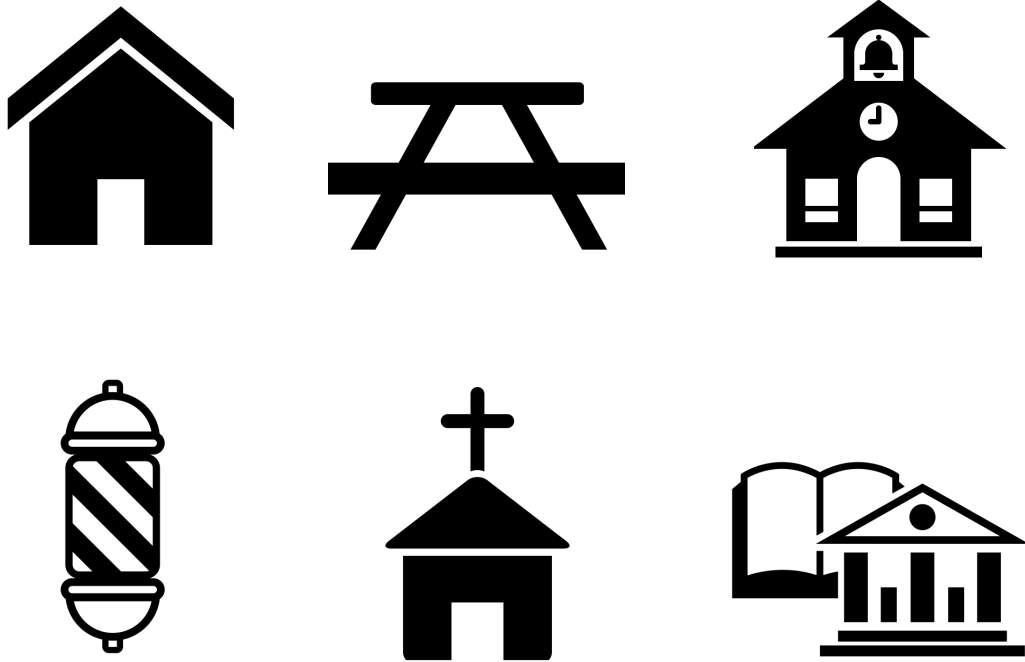


FIG.1

Existing Program

- Neighborhood Public Library
- Pleasantville Elementary School
- Port Houston Ementary school
- Holland Middle School
- United Methodist
- Pleasanton Manor Park
- Barber Shop

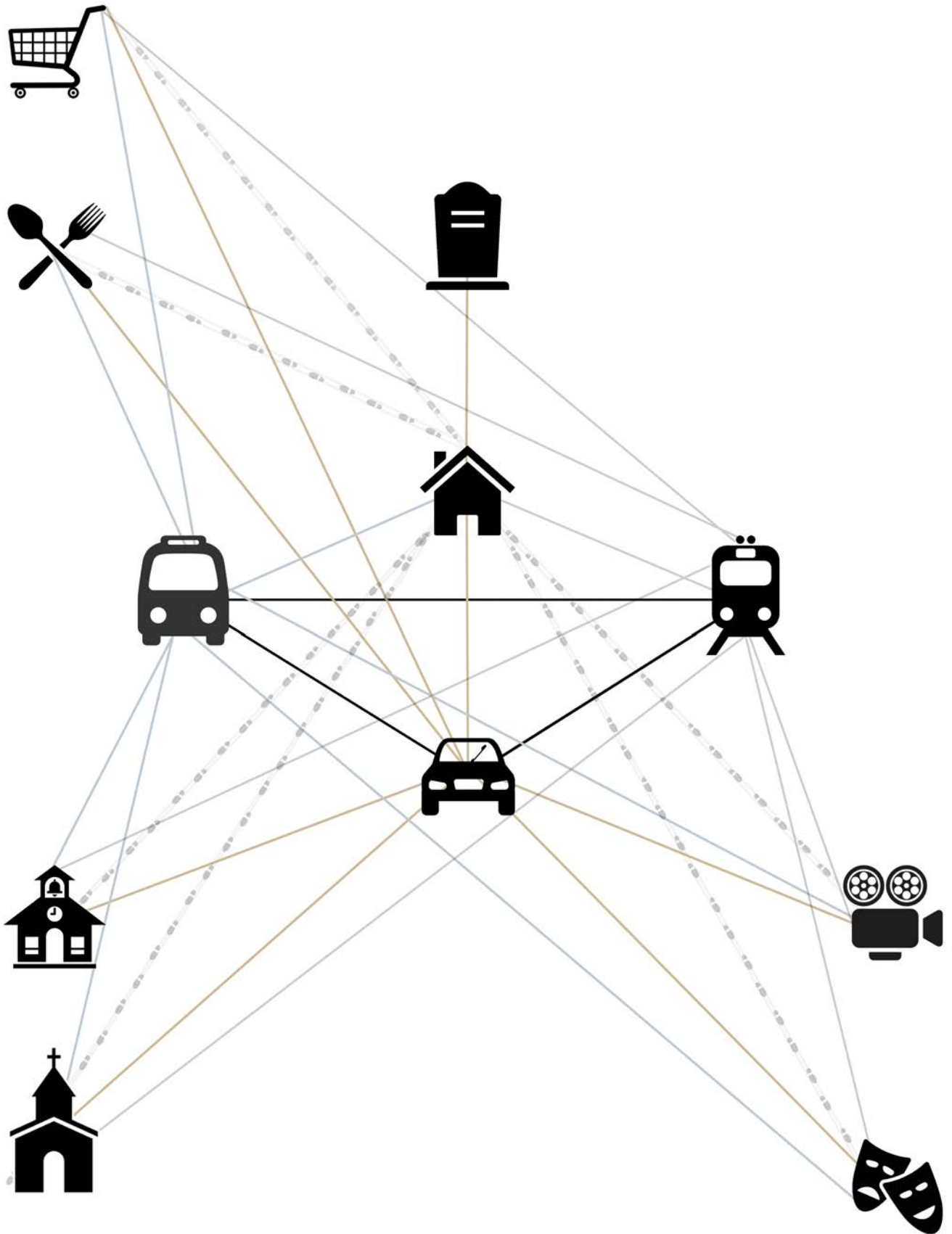


FIG.2

FIG. 1-4 Digital image. Glassdoor. N.p., n.d. Web.

Digital image. Houston. A Voyage to Houston, Texas, United States of America. N.p., July 2012. Web.

FIG. 5 Diagram By Author, 2015

Site Criteria

- Low income
- Disconnection from medical network
- Regulated housing typology
- Proximity to a school population
- Proximity to major transportation lines

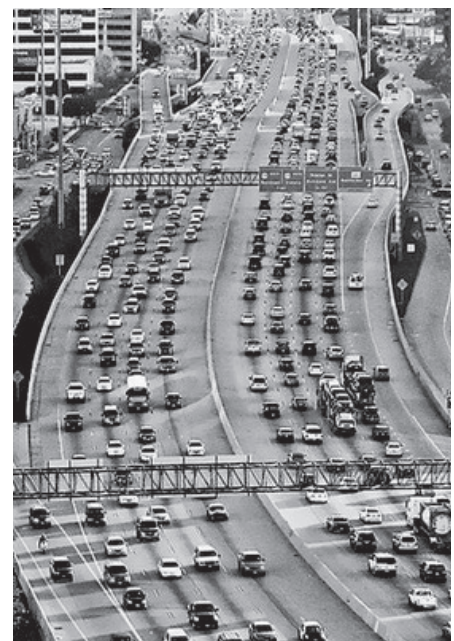


FIG.1-4

The Site

Houston Texas contains a vast array of income levels, with the lowest concentration of income to the NorthEast parts of town. This is due to the overlooked original ports, now overshadowed by booming commercial businesses. The three sites selected from the pockets of suitable age ranges for the alzheimer's intervention demonstrate middle to lower end income levels in need of localized, inexpensive communal care.

The Site

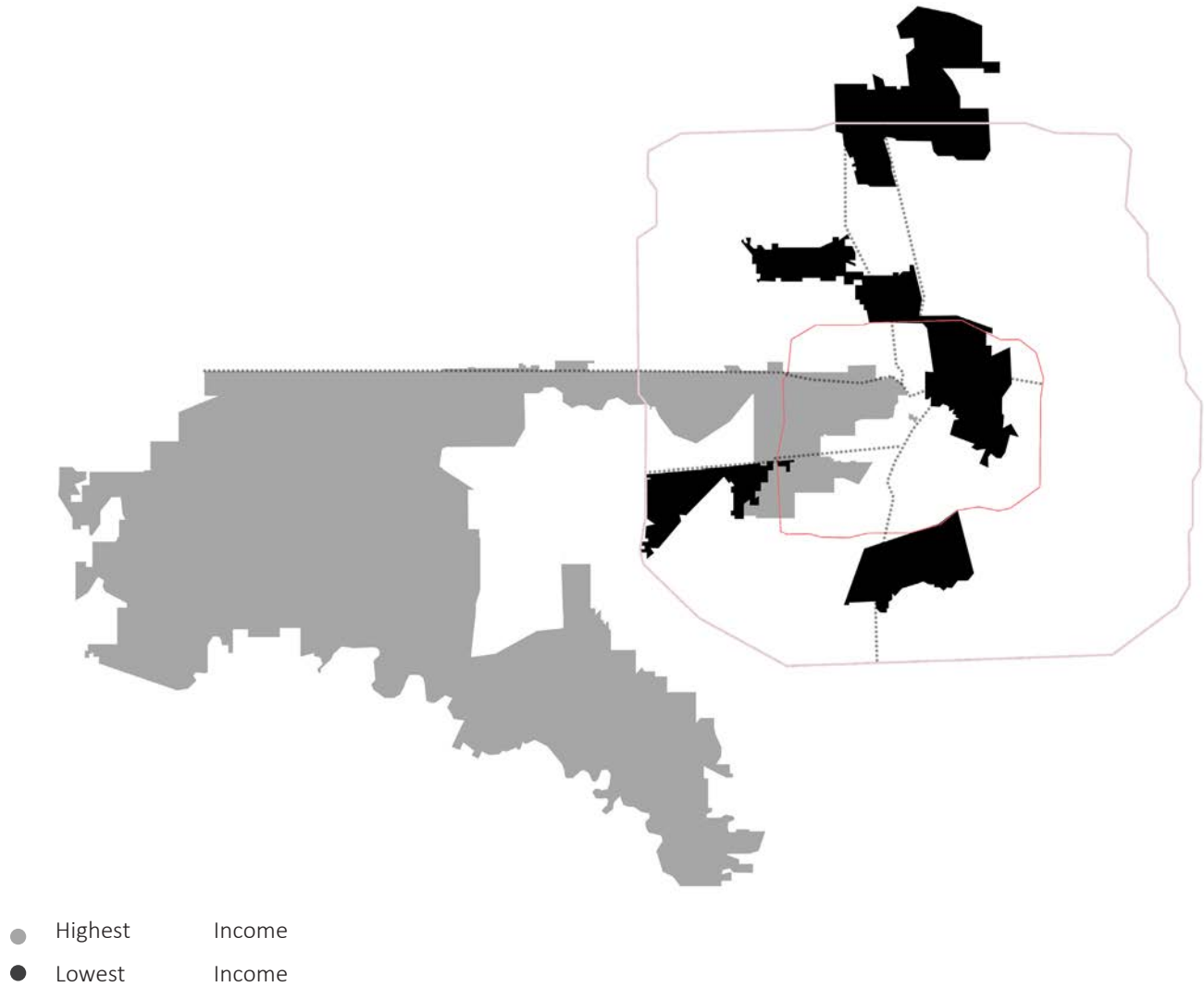


FIG.5 by author

As an example of an expansive, medically minded city, Houston, Texas provides the setting for an innovative Alzheimer's Disease intervention. Though a medical hub, known internationally, access is limited. Patients connect to medical help though lengthy transportation connects, far away from known environments. Facilities are disconnected to the memory identities of patients, their communities and therefore, the make-up of the city itself.

Network Location

The Site



FIG.1

FIG. 1-2 Diagrams By Author, 2015

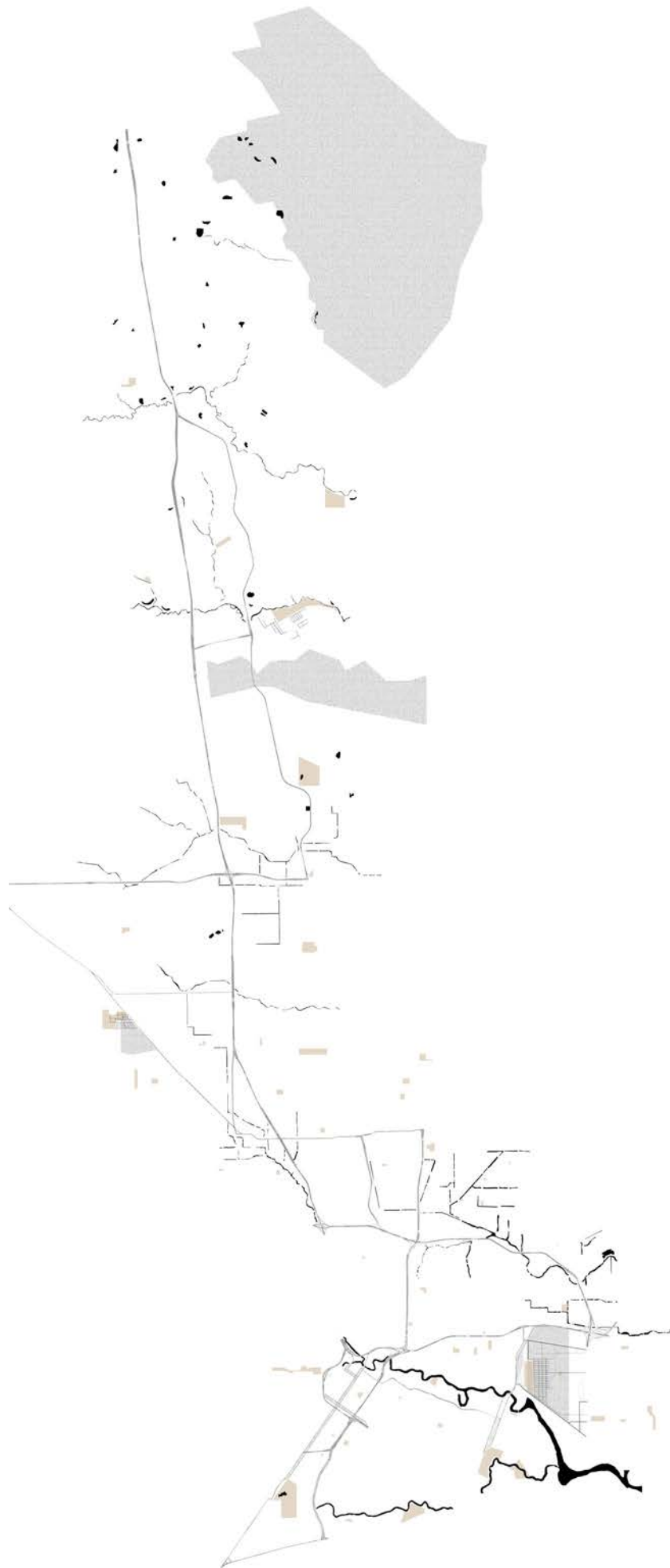


FIG.2

The Site

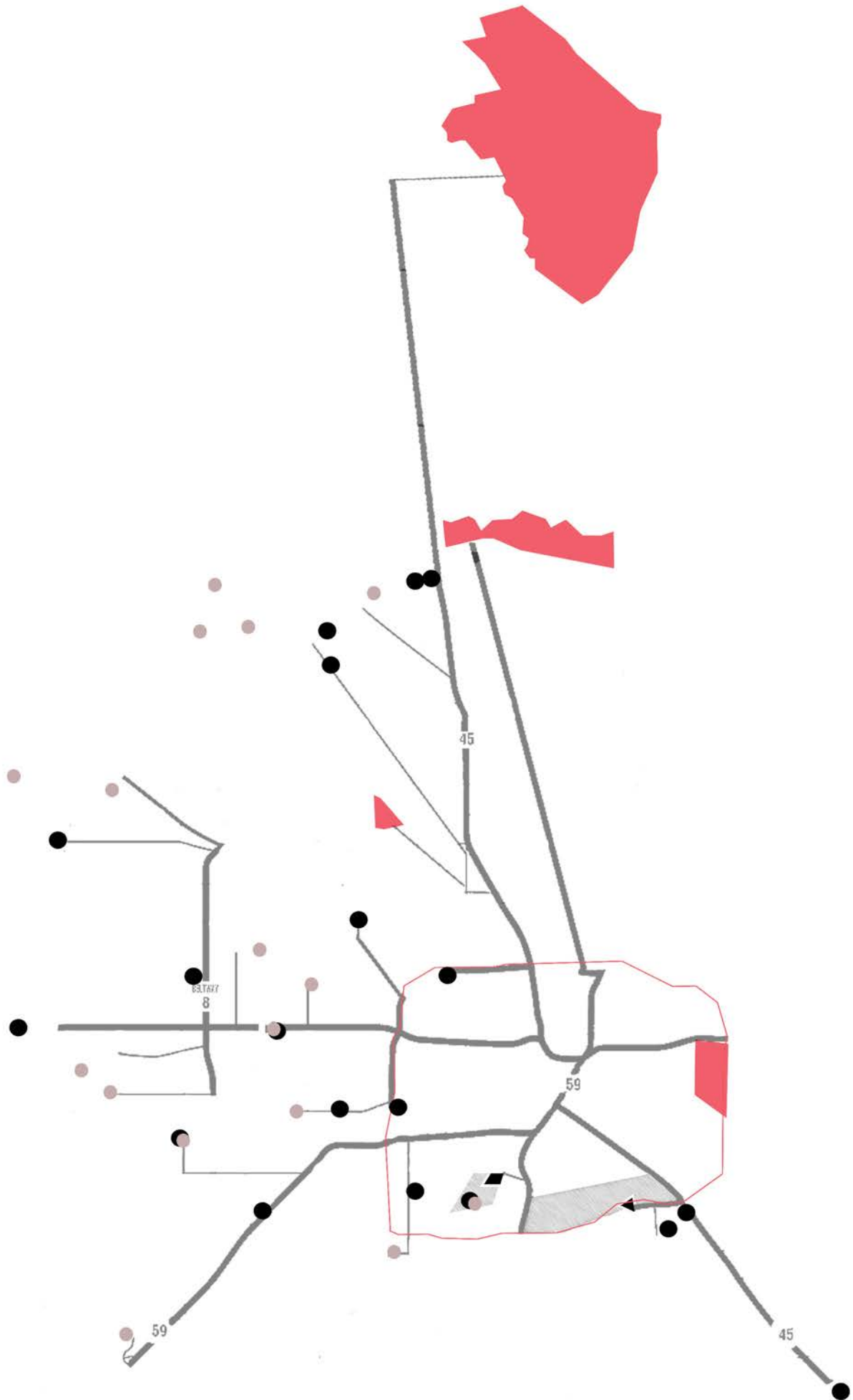
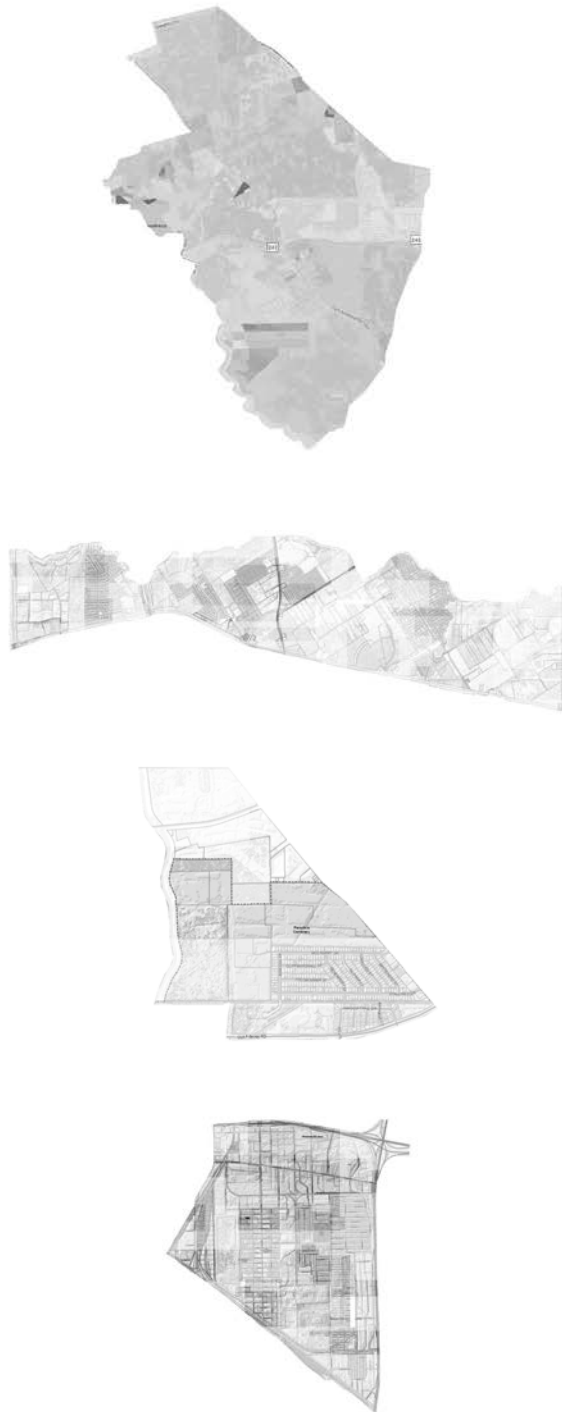


FIG.2



Woodloch

Rural Outskirts

50% 65+
247 population (woodloch)
.1 sq mile
71250 median income
FarmLand

Humble Area

Urban outskirts

50% 65+
15500 Population (all)
41057 median income
Adjacent to Arboretum
Communal Green Space

Acre Homes

Urban NorthEast

45% 65+
31804 Population (all)
3596 people per sq mile
8.844 sq miles
36636 Median Income
1 Cemetery
1 school

Pleasantville

Industrial Urban East

50% 65+
3425 Population
1000 people per sq mile
3.426 sq miles
\$37635 median income
3 schools
1 church

Selected Site

FIG.1-4

The Pleasantville Neighborhood is completely disconnected from the rest of the city of Houston. Within no zoning laws, the site contains a network of railroad lines, further disconnecting the residences from each other. A sense of community is lost, a notion picked up on by the Awakening, Inc church group. Within the disconnected medical identity of Houston Texas, the neighborhood identity and individual patient identity are lost. These three levels of disconnection site the need for a connective solution.

Pleasantville

Urban East disconnect from medical
 50% 65+
 3425 Population
 \$37635 Median Income
 High Crime Rate

As one of the oldest African American neighborhoods within Houston, Texas, the decaying Pleasantville offers rich history of identity and surrounding industrial site context. The site is adjacent to the port of Houston with residential modest homes mixed with an intensive industrial zone. Over time, this neighborhood lost it's sense of pride and identity as railroads and major highways cut the residents from the rest of the city. The Awakenings, Inc religious group saw this area of Houston as an opportunity to install an art installation titled "Amnesia Therapy". Similar to this Thesis' memory stimulation intervention for alzheimer's Disease, the temporary art installation was placed within the context of the neighborhood to spark pride of not only the neighborhood's past, but also the city of Houston's influential figures. The multi-sensory project included a writing aspect, digital barcode scanners for research, mixed media figural art by native artist Robert Hodge, and memory revitalization by photograph of resident's past. The city of Houston commised this project in 2013 with councilman Jerry Davis and the Houston Arts Alliance.



FIG.5-7

Selected Site

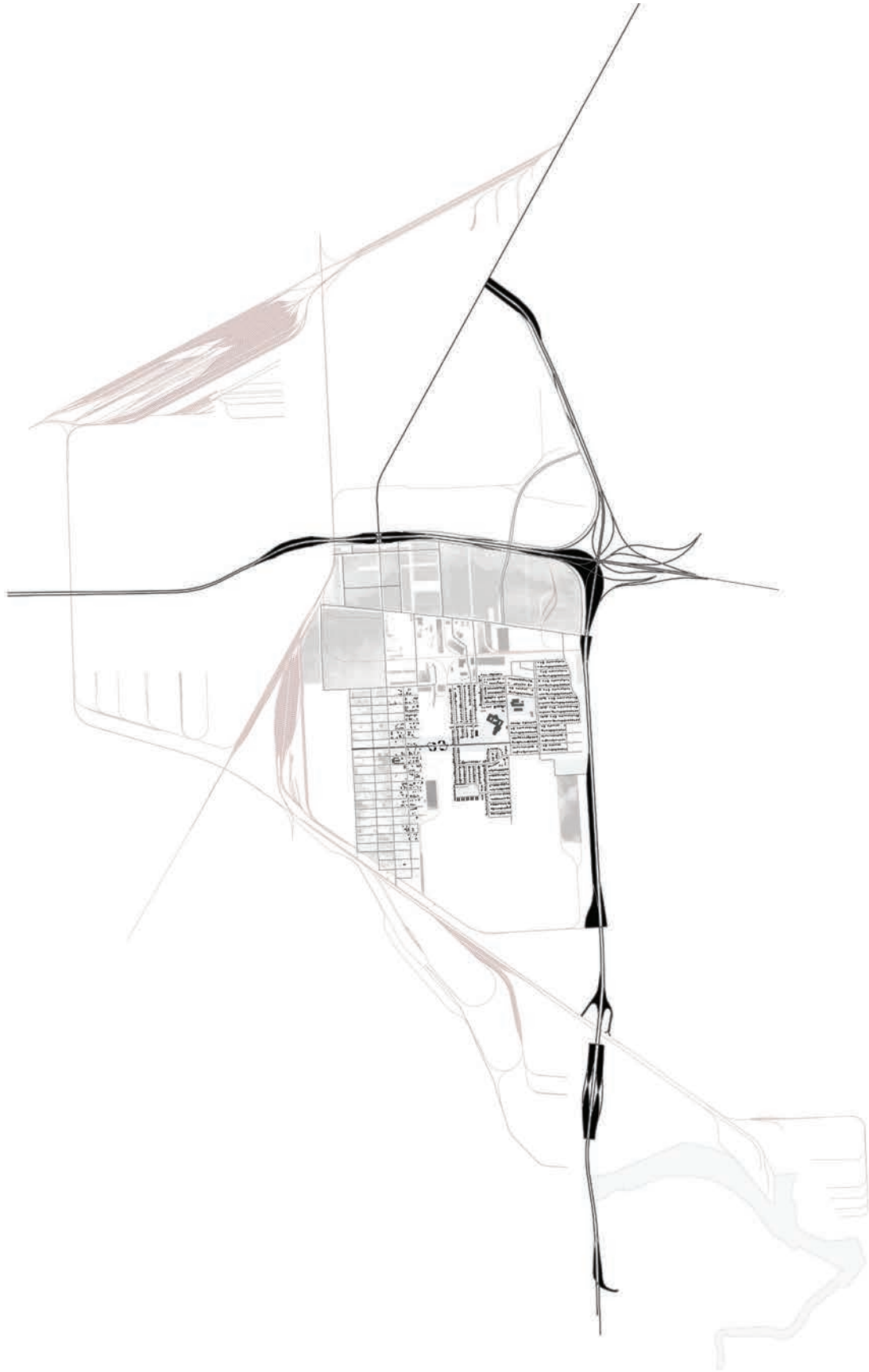


FIG.5



Residential Memory

The general housing within the three sites contain similar elements to one another. In order to maintain the known, memorable aspects to the integrated intervention, existing elements within each neighborhood must be analyzed. The project evolves from and merges with the existing pieces of the alzheimer's patients' lives.



Colonial Revival Ranch

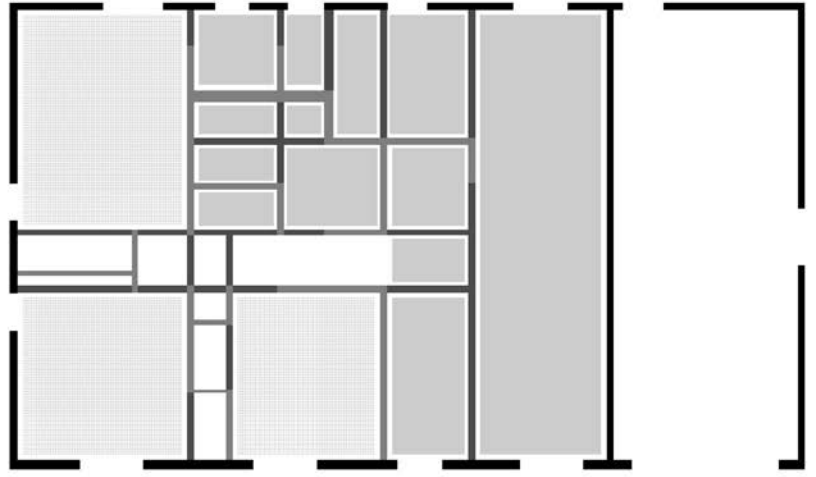
- Symmetrical façade
- Square or rectangular center-hall floor plan
- Gable, gambrel or hipped roof
- one storey
- Wood siding or brick construction
- Paneled entry doors
- Simple details
- Dormers
- Small porticos with pillars or columns
- Multipaned, double-hung windows
- Shutters



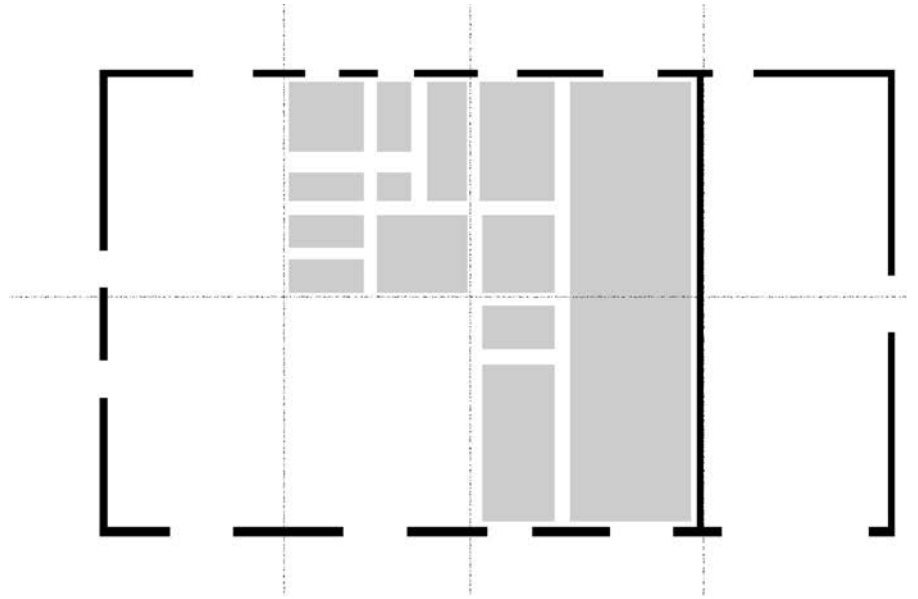
FIG. 1-3

Memory of Site

Structure Grid

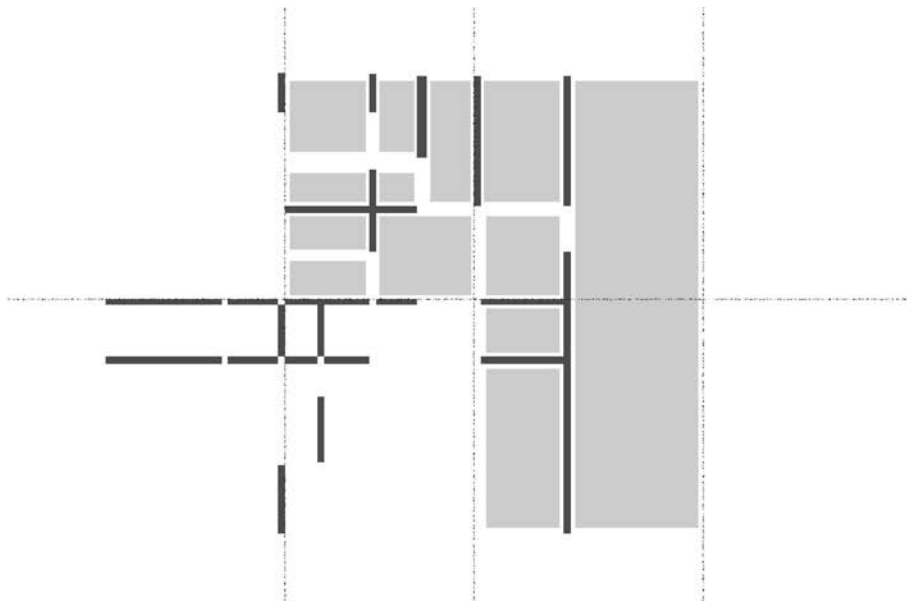


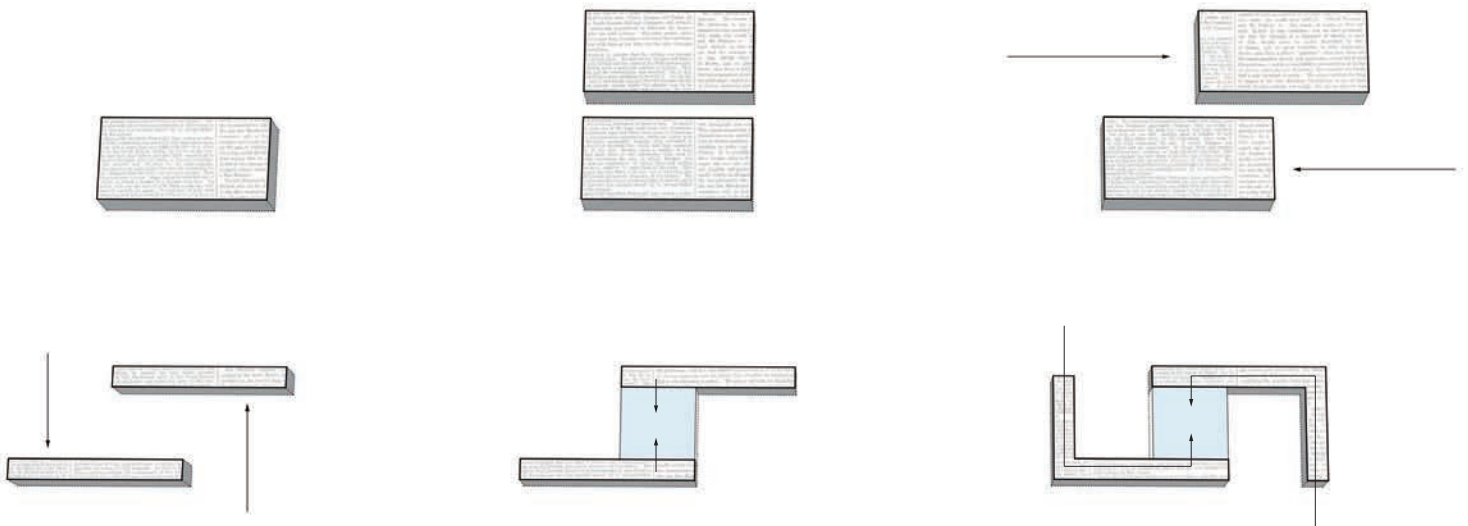
Public vs Private



Internal Movement

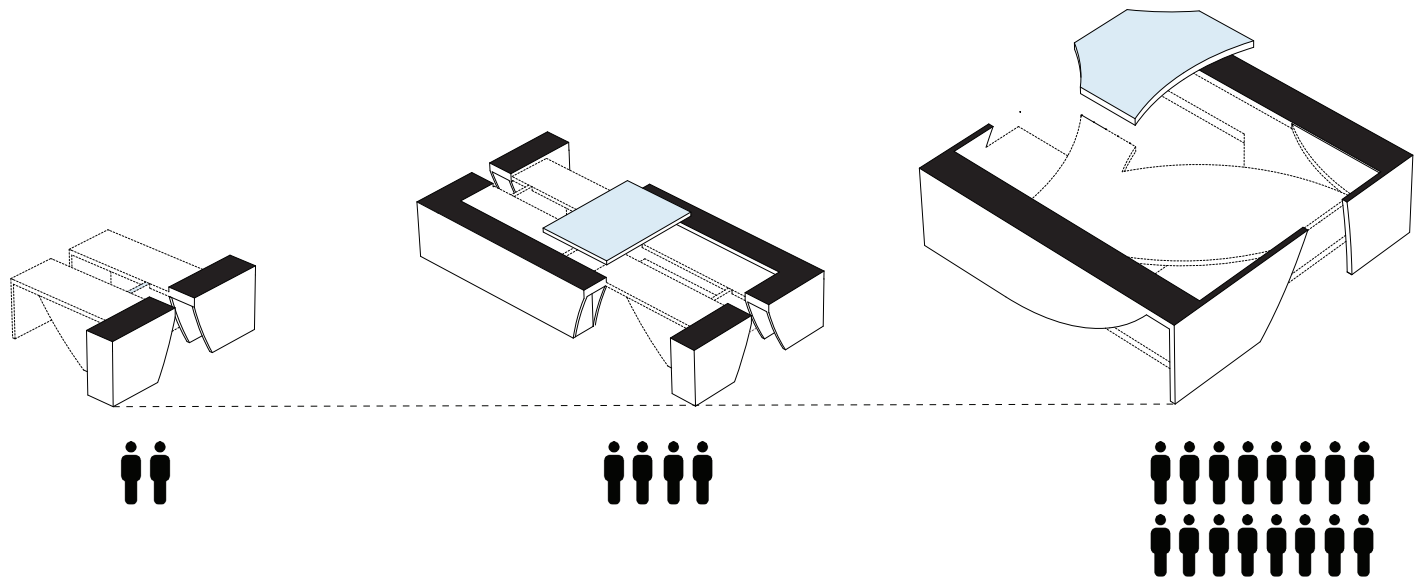
FIG.4-6

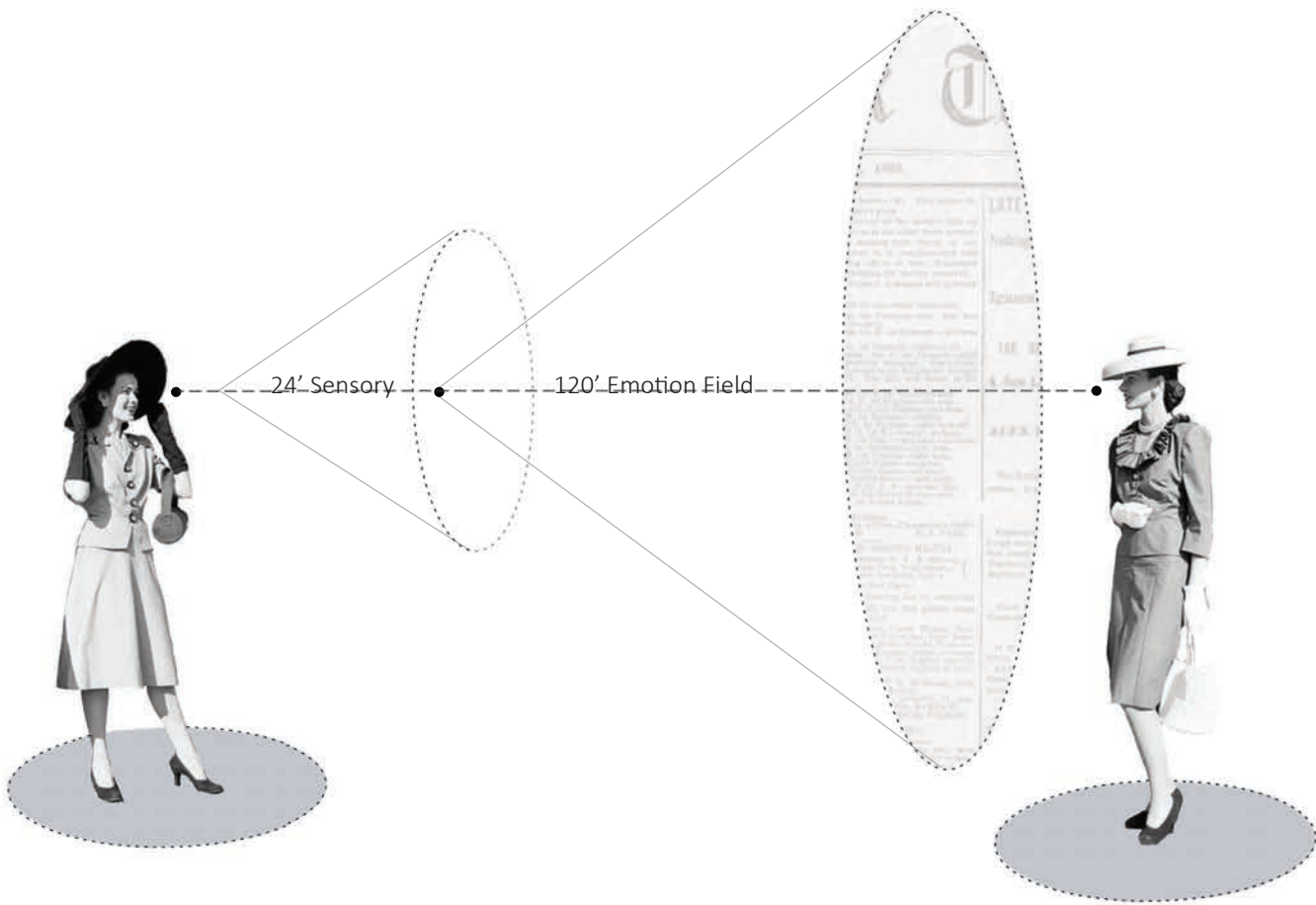




The Proposed Solution

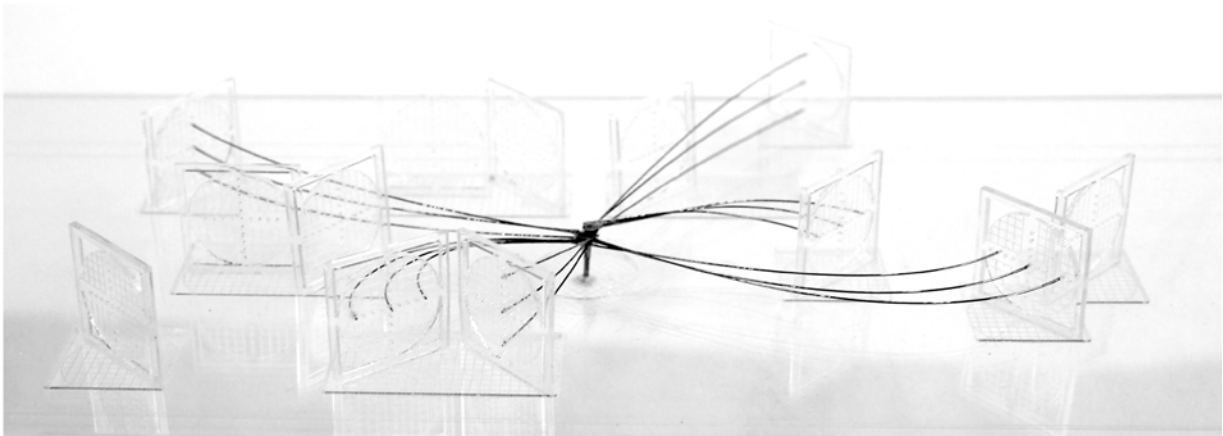
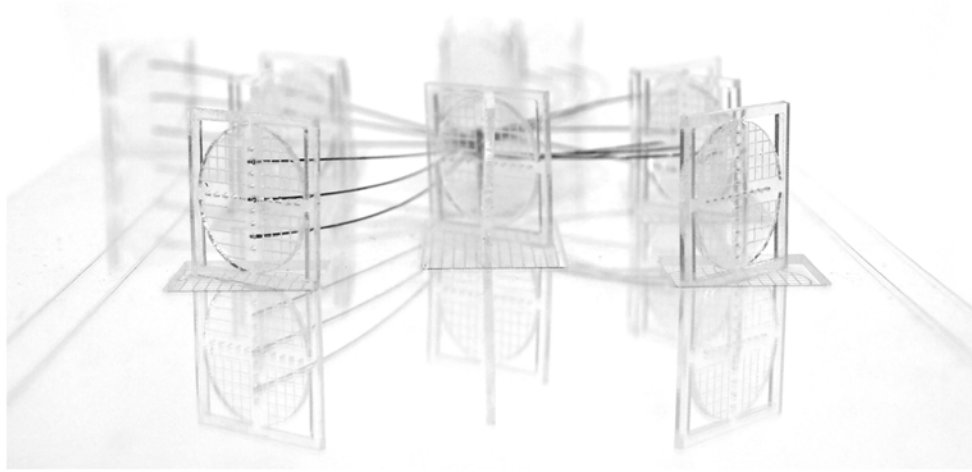
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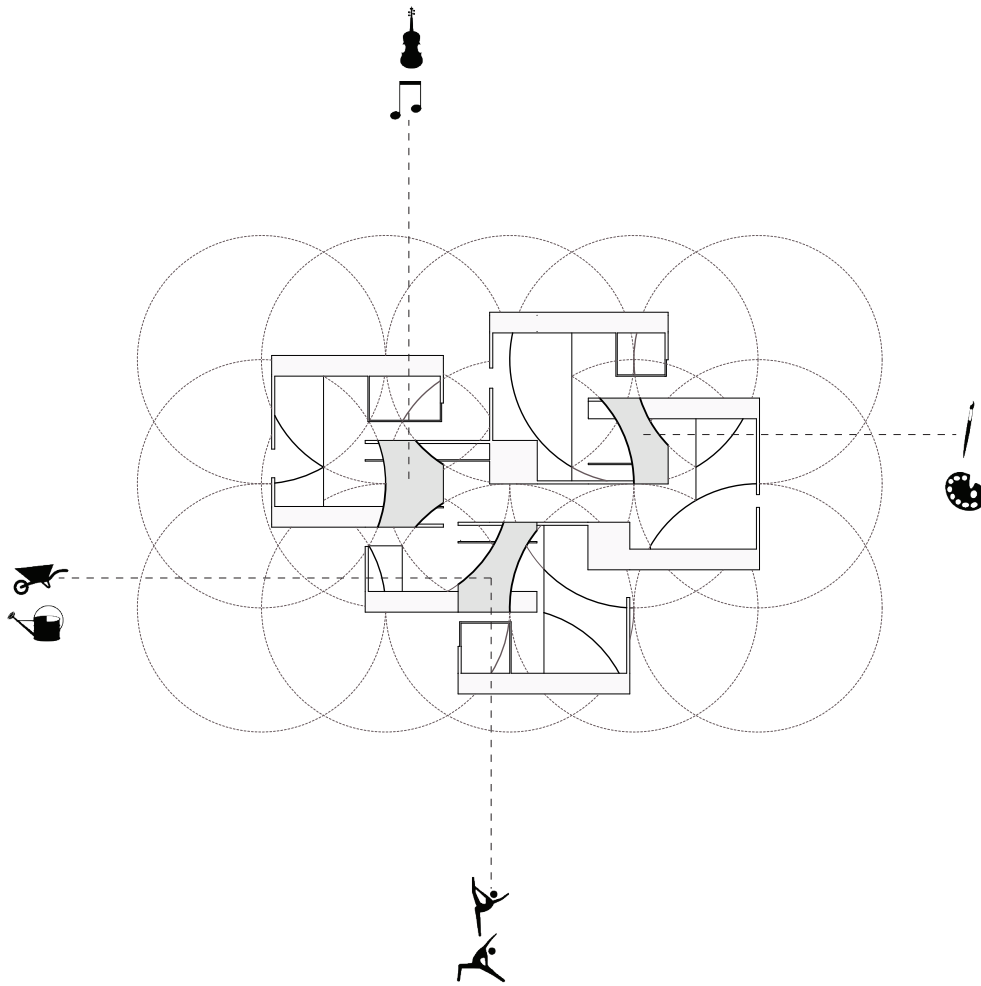




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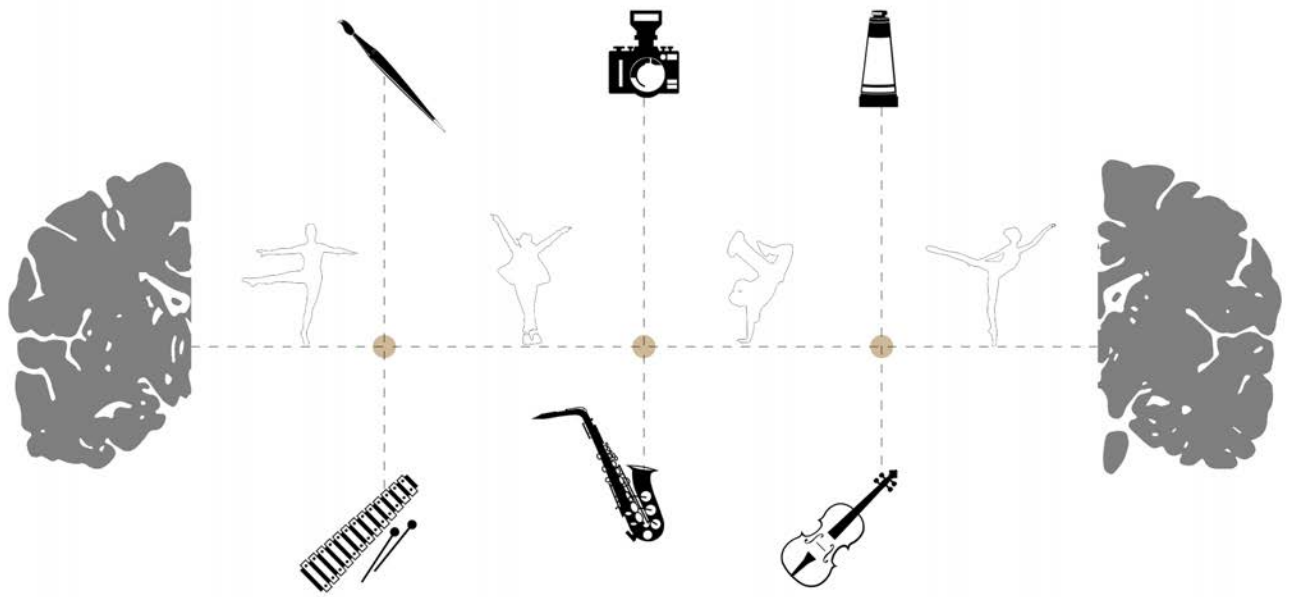
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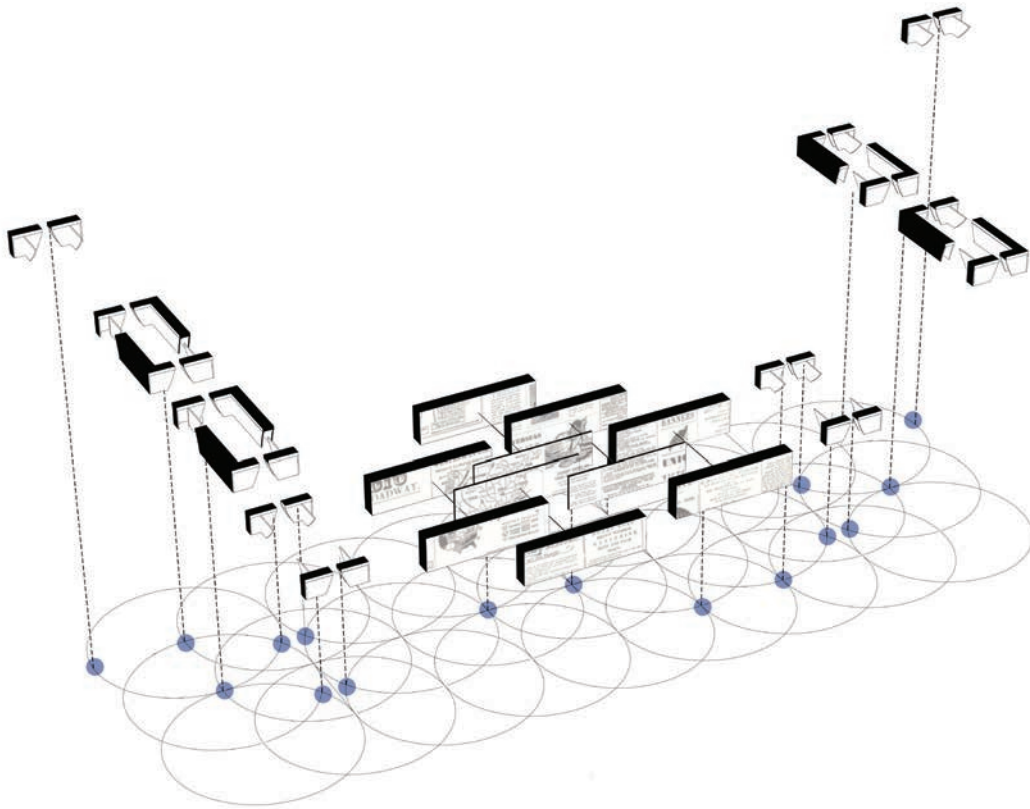




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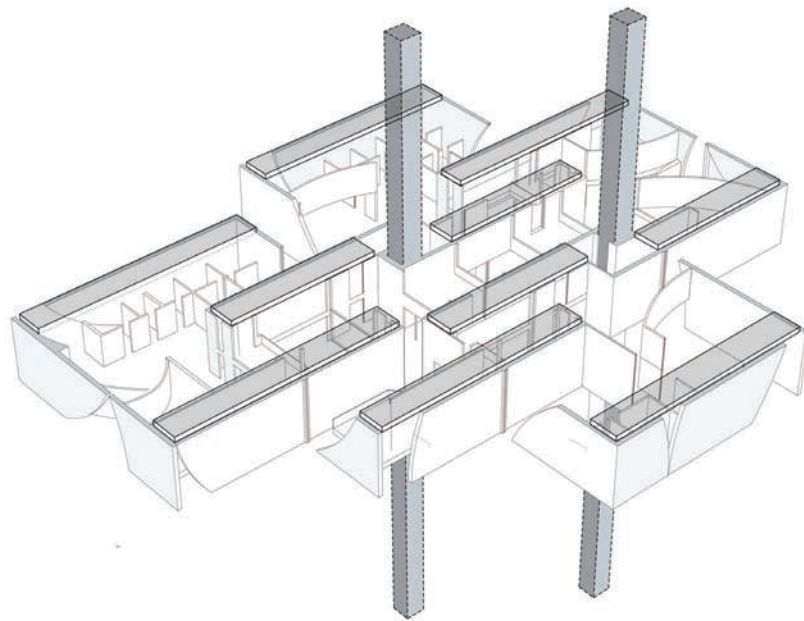
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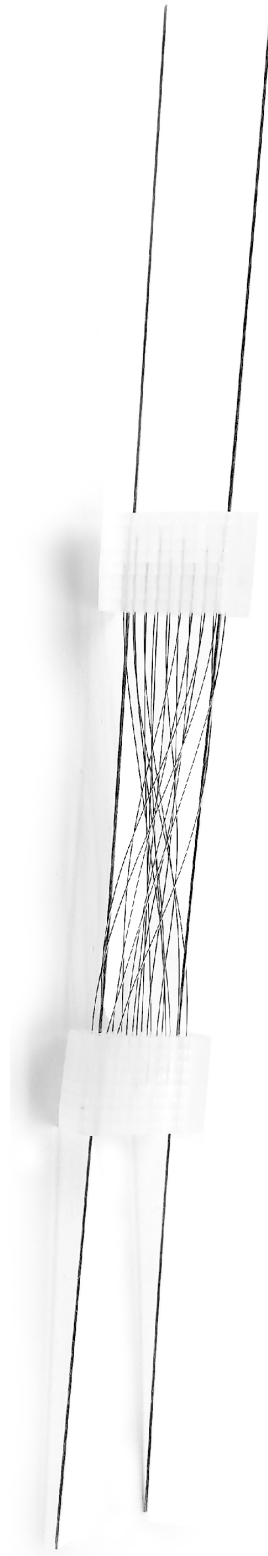




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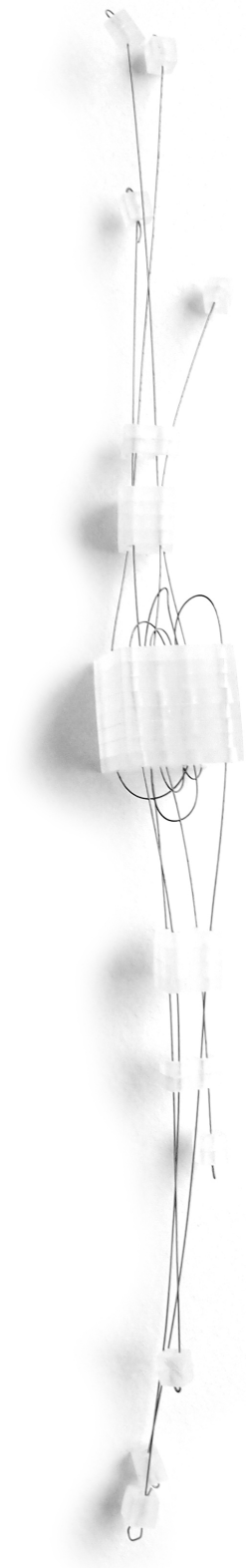
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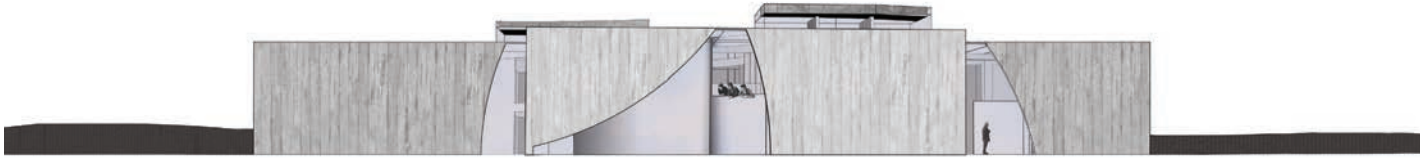




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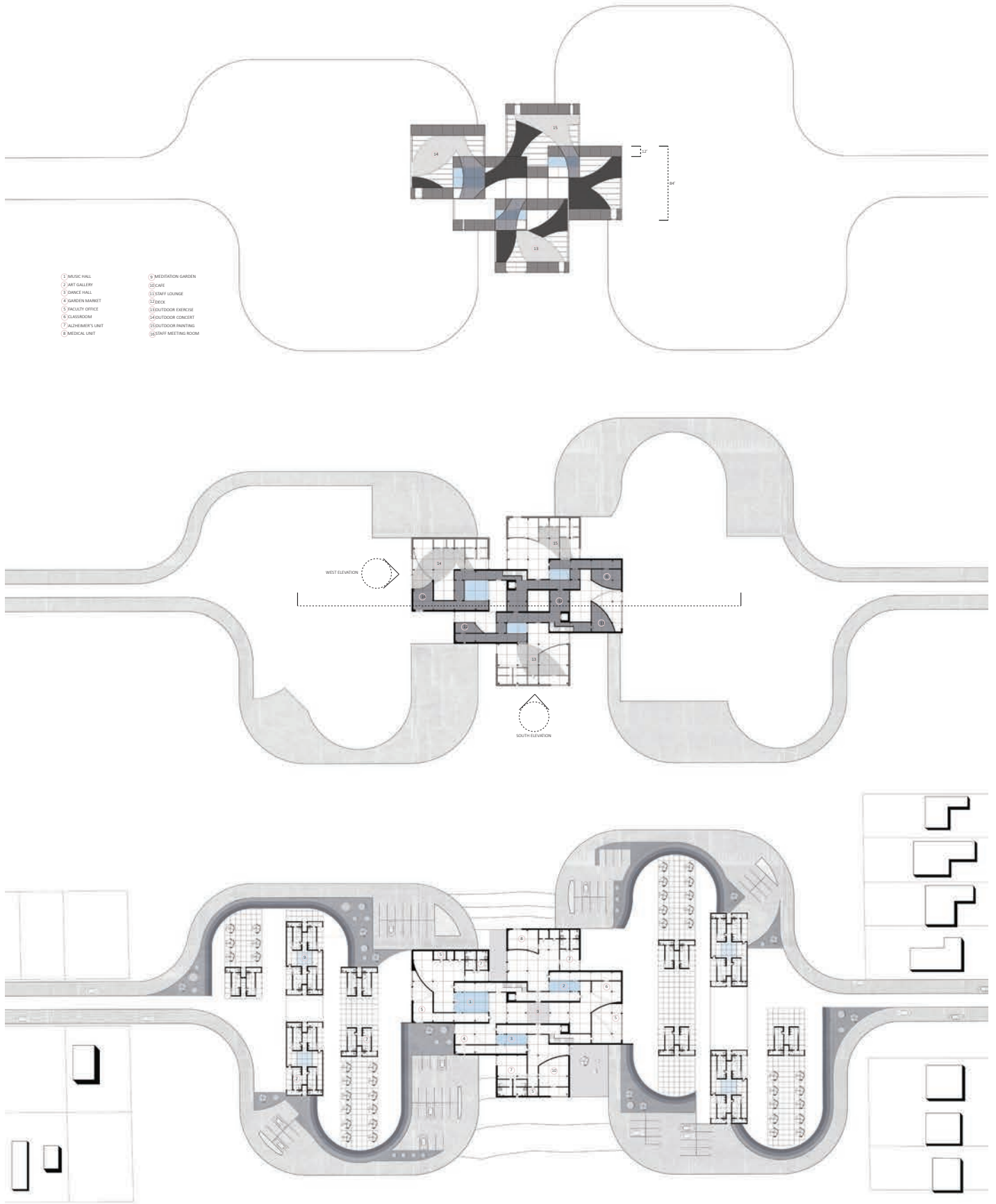
The Proposed Solution





The Proposed Solution

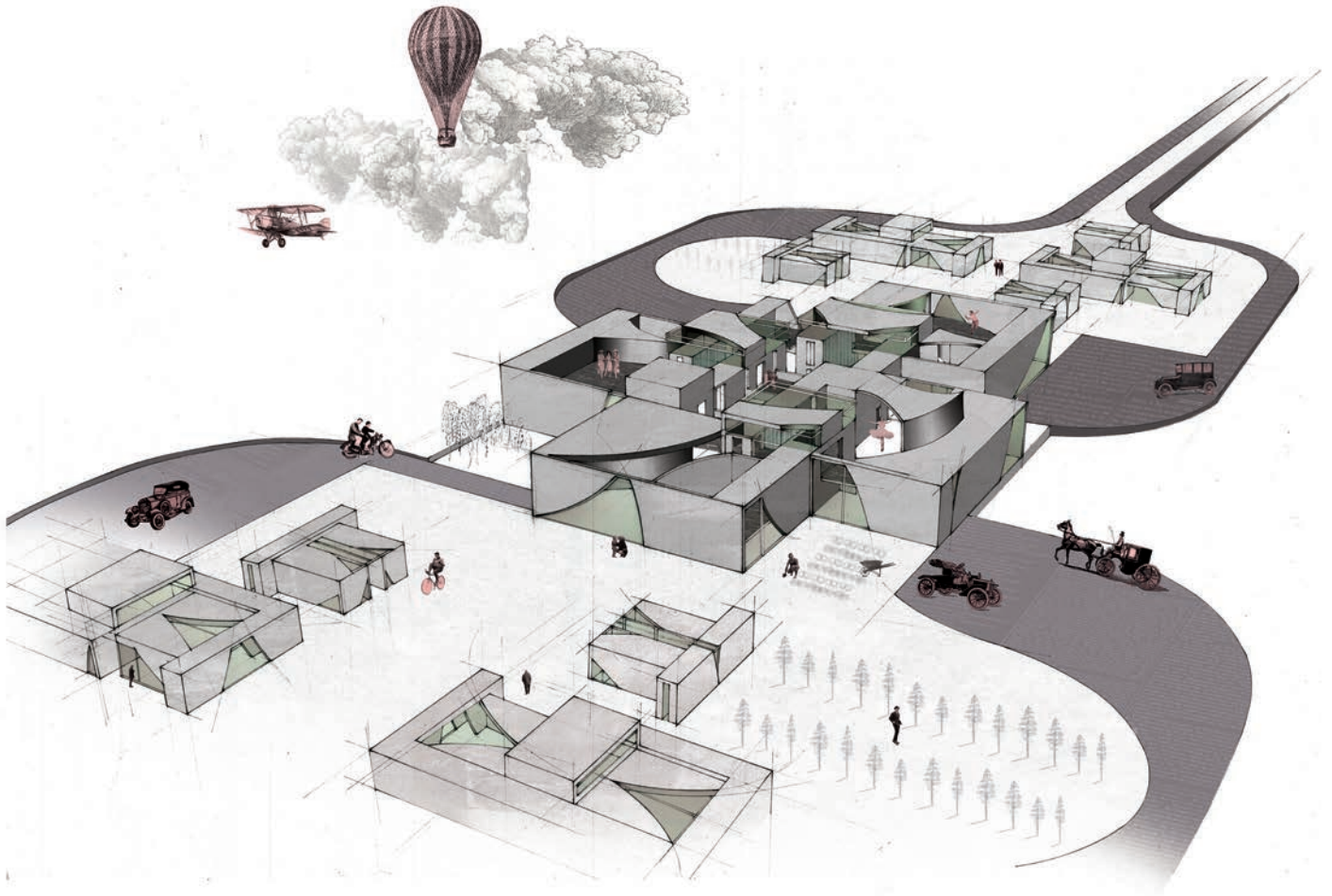
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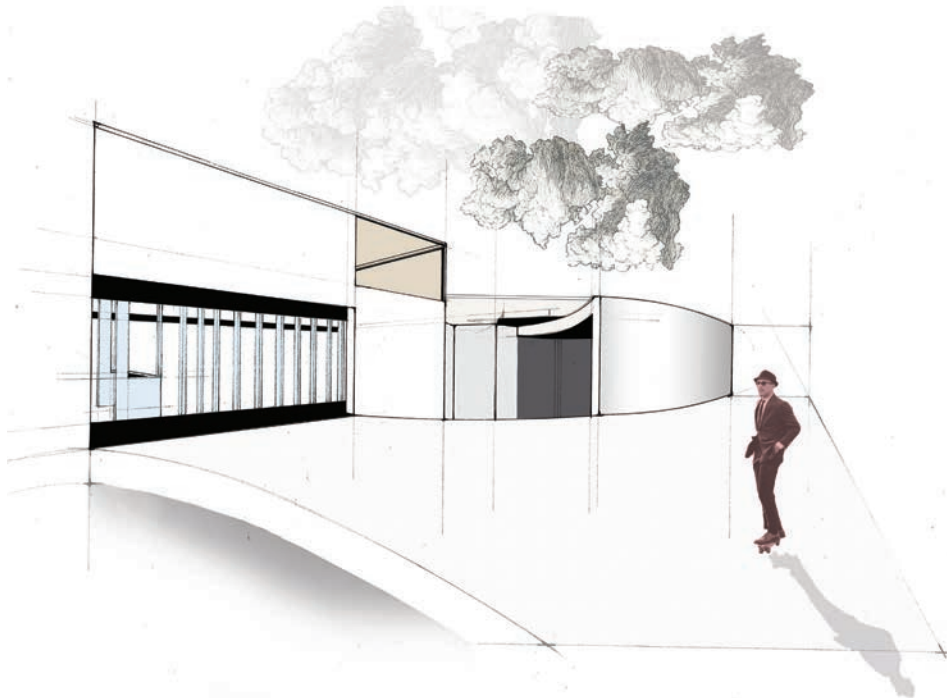
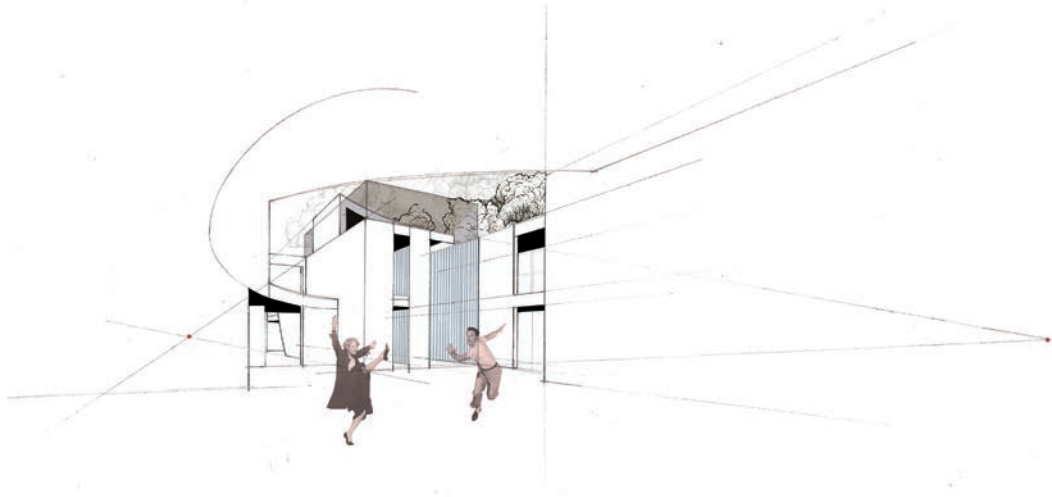
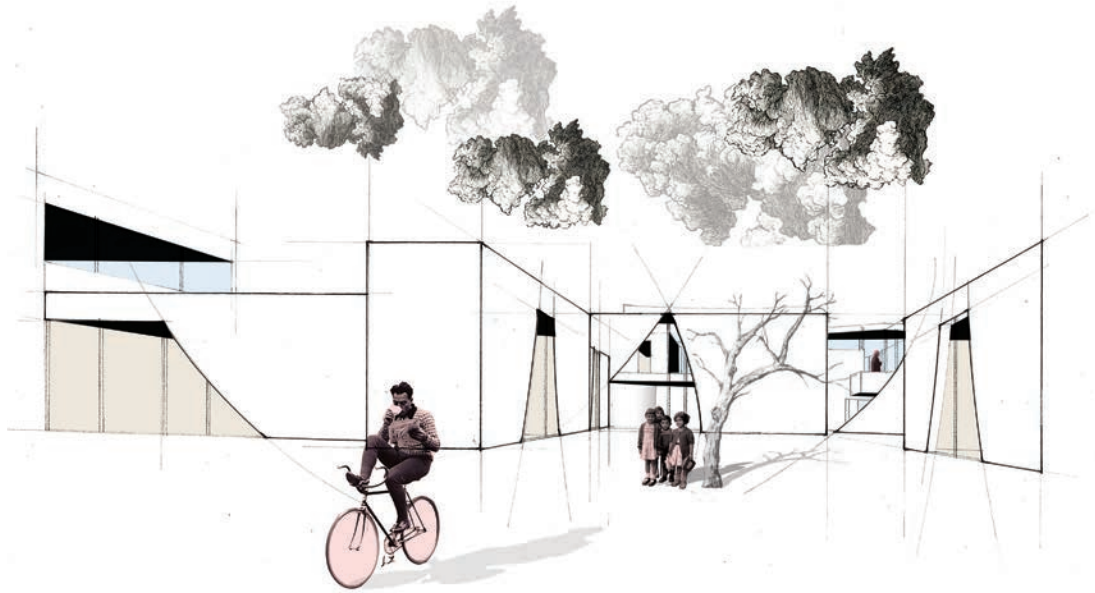




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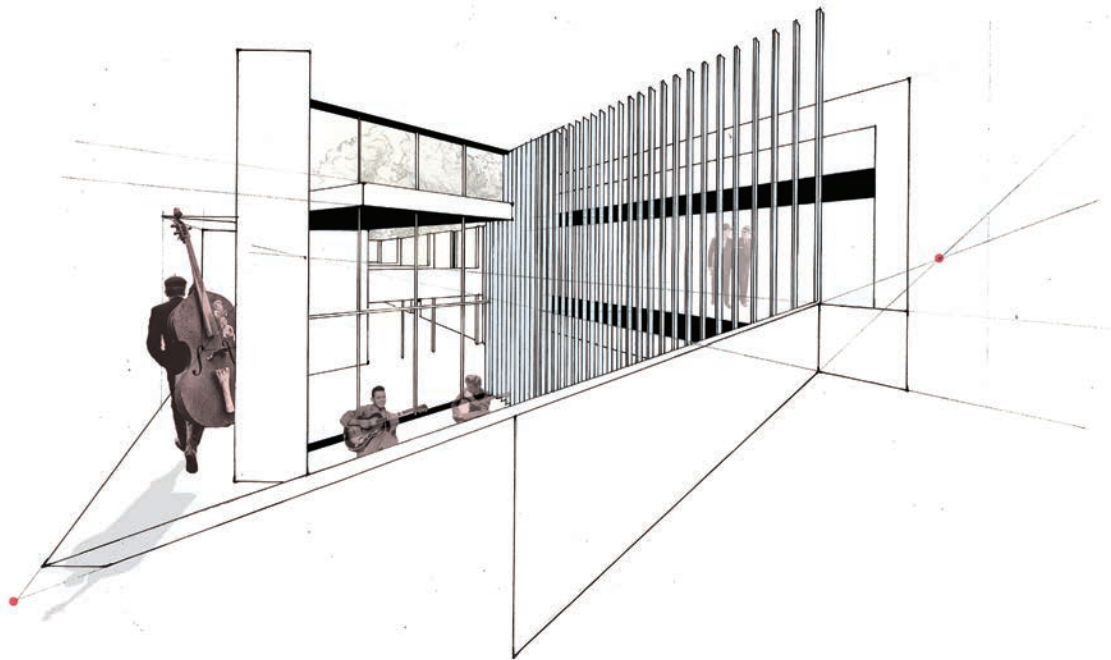
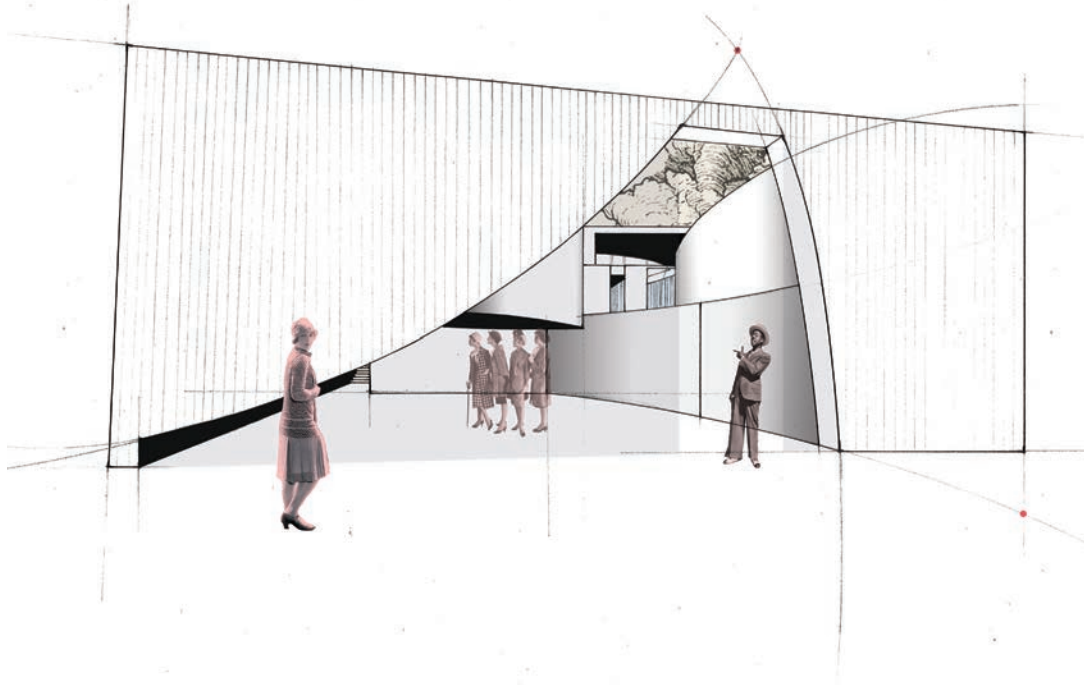
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The Proposed Solution

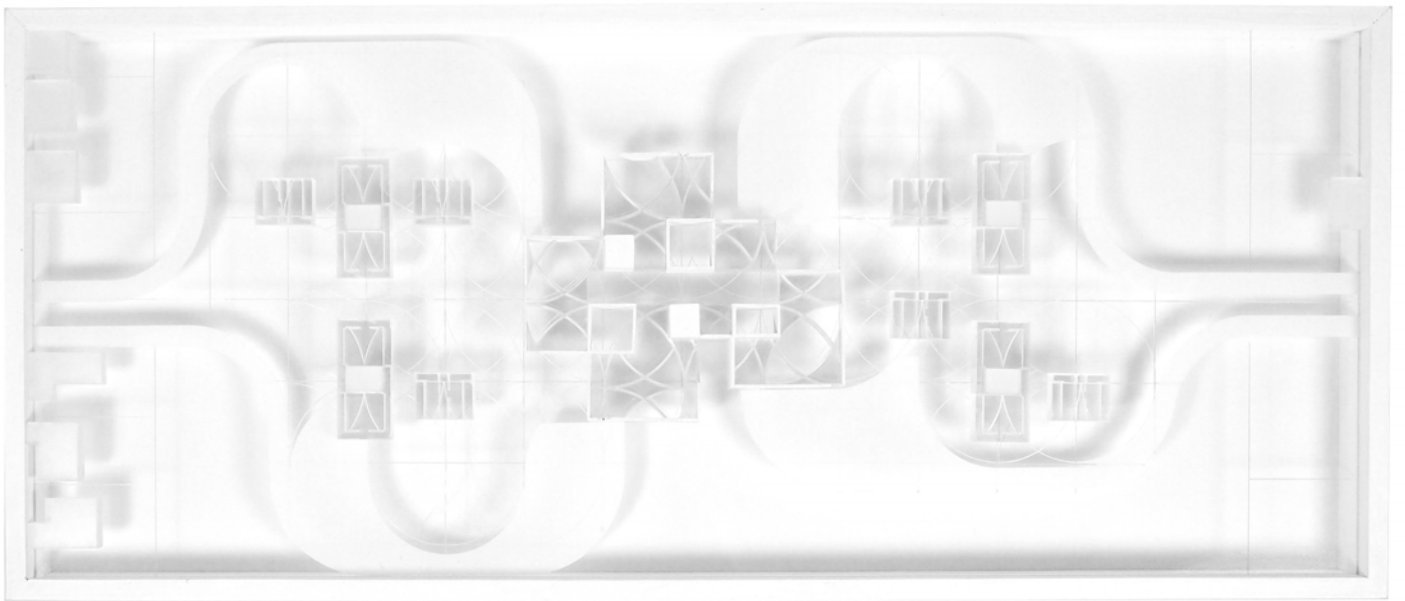
The Proposed Solution





The Proposed Solution

The Proposed Solution



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