

# Re-Considering the Unity of Architecture and Human Well-Being

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Over many centuries people have shared the belief that there are significant connections between human health and the physical environment. Based on this belief, architects of the early Modern Movement such as Richard Neutra (Lovell 'Health House'), Johannes Duiker (Zonnestraal Sanatorium), and Alvar Aalto (Paimio Sanatorium) have designed buildings with the explicit intention of positively impacting human health and well-being. In fact, improving human health was one of the primary tenets of the Modern Movement.

During the second half of the 20th century, the understanding of health evolved, changing from the biomedical model which was concerned with the physical condition of individuals and the absence of disease, to the psychosocial model of health defined as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity."<sup>1</sup> In recent years, the relationships between architecture and human health have gained attention among researchers from a range of disciplines and practicing architects.

Creating healthy and safe, artfully expressive and delightfully functional three-dimensional environments in support of human habitation has been the obligation of architects since the profession was first established. There is a growing need for architects to broaden their understandings of professional knowledge to include research outcomes from fields as diverse as medicine, public

health, and the social sciences, in order to produce a body of design-based insights that can contribute to the creation of "healing" building designs. Thus it seems appropriate to include in programs of architectural education design projects that focus on the needs of underrepresented and disadvantaged populations.

Over the past decade, whenever I had the privilege of teaching graduate level studios, I offered themes that explore the topic of architecture and health through reading, discussing, programming, writing, and designing, challenging students to explore how designed environments can have supportive—and perhaps even therapeutic—effects on the physical, mental, social, emotional, and spiritual well-being of its users. Toward this goal studios have been focused on both the re-interpretation and expansion of traditional approaches to design.

## Research by Design

Case Studies from Graduate Design Studios

## Hazelwood House

During the 2009-2010 academic year, Alan Dunlop FRIAS, FRSA was the Kansas State University Department of Architecture's Victor L. Regnier Visiting Chair. Alan had come to my attention as the architect of the Hazelwood School in Glasgow, Scotland, a learning environment for children aged two to eighteen with severe hearing and vision impairments and other physical and cognitive limitations. Since its opening in 2007,

the school has received numerous international awards for design excellence that is rooted in sensitive and thoughtful considerations about how best to serve these severely impaired pupils through architectural design.

Students in my studio had the honor and benefit of working with Mr. Dunlop. He proposed the project for the year: the design of Hazelwood House—a residential setting for graduates of Hazelwood School, young adults between 19 and 25 years of age who require significant continued support by caretakers to carry out everyday activities.

After initial immersion in the project, including sensory impairment simulation exercises, a field trip to Glasgow early in the fall semester gave students the opportunity to meet Mr. Dunlop and visit Hazelwood School to experience its many design innovations directly. While in Glasgow, we observed children's activities and spoke with the headmistress about the continuing needs of the students after graduating from the school.

We also engaged the pupils' ophthalmologist with questions about vision impairment. Visual impairment can be caused by damage to, or malformation of, the eyes or by injury to the brain leading to diminished processing of visual information. Persons with this impairment not only experience difficulties with movement and orientation, but also with visual memory, visual imagination,

and visual attention. Additionally, social interaction is severely hindered due to the difficulty of identifying someone in a group of people, recognizing someone's face, or learning to combine the spoken word with facial expressions.

Given the severity of the residents' impairments, the primary purpose for the proposed Hazelwood House was to provide a home-like environment. That would ensure a supportive, stimulating, and safe milieu in which to practice and build upon the independent living skills the residents had acquired as students at Hazelwood School.

Upon their return to campus, students conducted an in-depth literature search and honed in on five design-related themes that would support the needs of dual-sensory impaired persons in their efforts to live independent and active lives.

## *Social Interaction in Household Settings and the Larger Community*

Persons who are deaf-blind have similar needs for social interaction and companionship as everyone else. Outside of the family, such relationships are typically forged with peers who live with similar limitations, with caretakers and aides, and with members of the larger community surrounding the Hazelwood House. Therefore, most student design proposals broke the architectural program into small households in which residents would feel at ease and comfortable. Recognizing the



*Hazelwood School*



*Hazelwood School from above*

potential for the Hazelwood House to be negatively perceived as an institution or a ghetto, students chose to accommodate the program in several separate, small buildings scaled to structures in the surrounding neighborhood. An additional benefit of this approach was to foster the residents' sense of belonging to a particular identifiable household, to establish clear personal boundaries, and to nurture social interaction with one's household "siblings."

Furthermore, students sought to give neighbors living in the surrounding community opportunities to interact with the residents of the Hazelwood House, with the intention to increase self-confidence and support the perception that they were valuable members of a larger community. Some design proposals included a variety of spaces to invite neighbors in—such as courtyards and gardens in which festivals could take place. Others included small stores for the sale of produce and other products created on the premises. And, in one instance, a therapeutic riding stable was proposed as a place to be shared by both the Hazelwood House residents and residents of the neighborhood.

#### *Kitchen and Dining as Primary Social Spaces*

Through observation of pupils at the school, it was clear that residents of the Hazelwood House would not be likely to sit in living rooms casually chatting with one another. While electronic devices can assist hearing-impaired persons with communication and social relationships, they do not substitute for direct interaction with housemates. Pupils who could see were using sign language while blind-deaf pupils spelled words into each other hands, a technique effectively used by Helen Keller. Both approaches require people to be physically close to one another. In fact, students observed that residents tended to be in close proximity to one

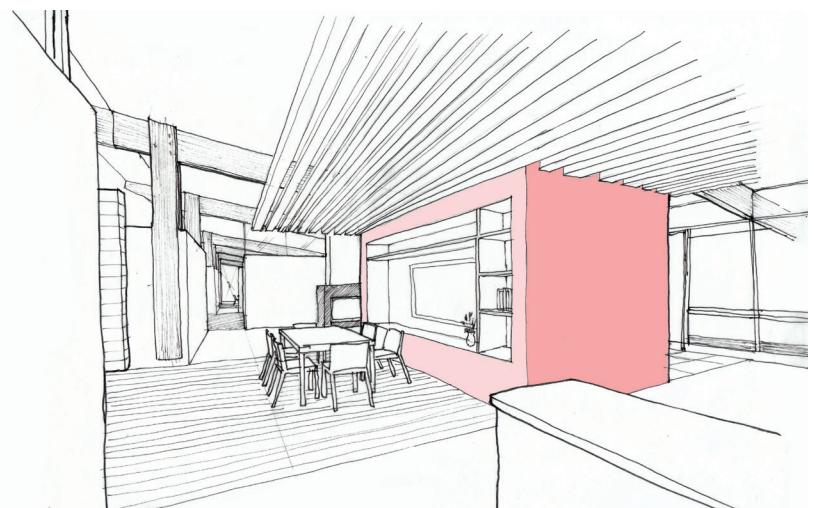
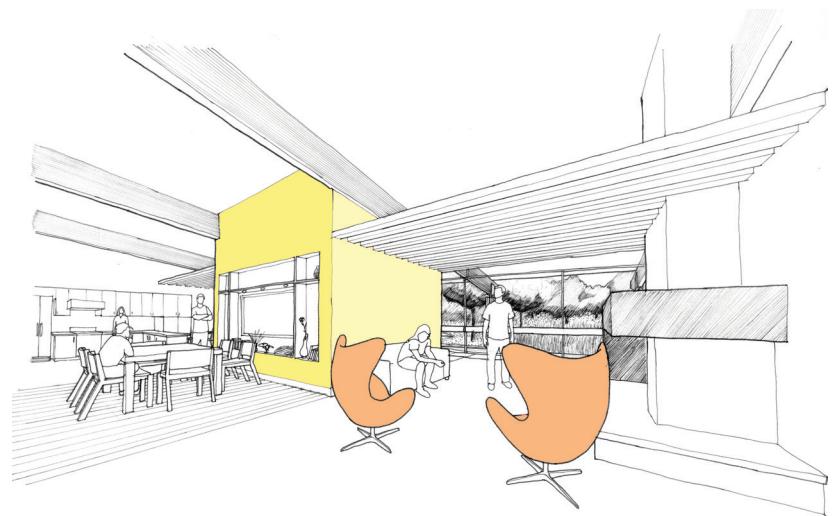
another, often in the kitchen, working on meal preparation, sitting in a small group around a table while eating, or perhaps engaging in other chores. Thus, all design schemes propose kitchens and dining tables as hubs for human relationships.

#### *Access to Nature*

Connection to the natural environment has been shown to have positive effects on all persons, but it is particularly beneficial for vision- and hearing-impaired persons. Since two of their senses are not or only minimally developed, pupils tend to compensate by becoming highly tuned to sensory experiences such as touch, taste, and smell. Thus, in all student designs, daylighting was carefully considered and outdoor spaces were included as places to enrich the experiences of the residents by offering opportunities to tend vegetable and flower gardens; to feel the changing weather conditions; and to participate with others in gatherings in courtyards; all of which can prompt deeply satisfying emotional responses or memories.

#### *Color, Texture, and Natural Light to Enhance Sensory Experiences*

Very few of the users are completely deaf or blind. While it may be difficult for them to perceive detail, particularly in situations with low contrast or high glare, many vision-impaired persons have the ability to distinguish warm hues such as red, orange, and yellow from cool colors such as blue and green. Controlling the amount, quality, and location of natural light is also crucial in defining the uses of interior spaces, such as active play or quiet learning spaces, while avoiding shadows that can be confusing and distracting. Generally, blind and deaf people have an extraordinary gift to be able to perceive environments with their remaining senses, which compensate by becoming hypersensitive. For example, warm sunlight from the south—in contrast to cool



*Student Andrew Barnes's proposal for socially-interactive interior spaces*



*Student Joshua Winter's proposal for the Hazelwood House*

daylight from the north—is easily perceived and can evoke a moment of pleasure while helping with orientation in a building or room. Similarly, textures underfoot are easily felt and also aid movement.

*“Landmarks” and “Shorelines” to Support Navigation and Circulation*  
Regular physical activity is important for all individuals, but even more so for persons with vision impairment since they tend to be predisposed to leading a sedentary lifestyle. A building can promote mobility by assisting with orientation through the consideration of “landmarks” and “shorelines.” Landmarks are three-dimensional objects, such as a wall painted with a strong red or yellow, which can be identified in a particular location within a building. Shorelines are edges that provide continuous information along a path, such as a textured strip in the floor that the foot feels, or a textured surface in the wall that the hand experiences. By tapping into

their aural, tactile, and kinesthetic senses, vision-impaired people can use “landmarks” and “shorelines” as clues for orientation and direction.

### **School/Therapy Center for Children with Autism Spectrum Disorders (ASD)**

This project, which was offered during the 2010-2011 academic year, focused on the design of a facility for children with ASD in and around Manhattan, Kansas. Students worked with a group of parents who had organized the Flint Hills Autism Parent Support Network to create summer programs and after school activities for their children, allowing participants to further develop their communication and social skills while engaging in a variety of summer activities. Building upon this experience, the question arose: Which kinds of programs, buildings and spaces could contribute to enhancing the everyday life experiences of autistic children and their caregivers?

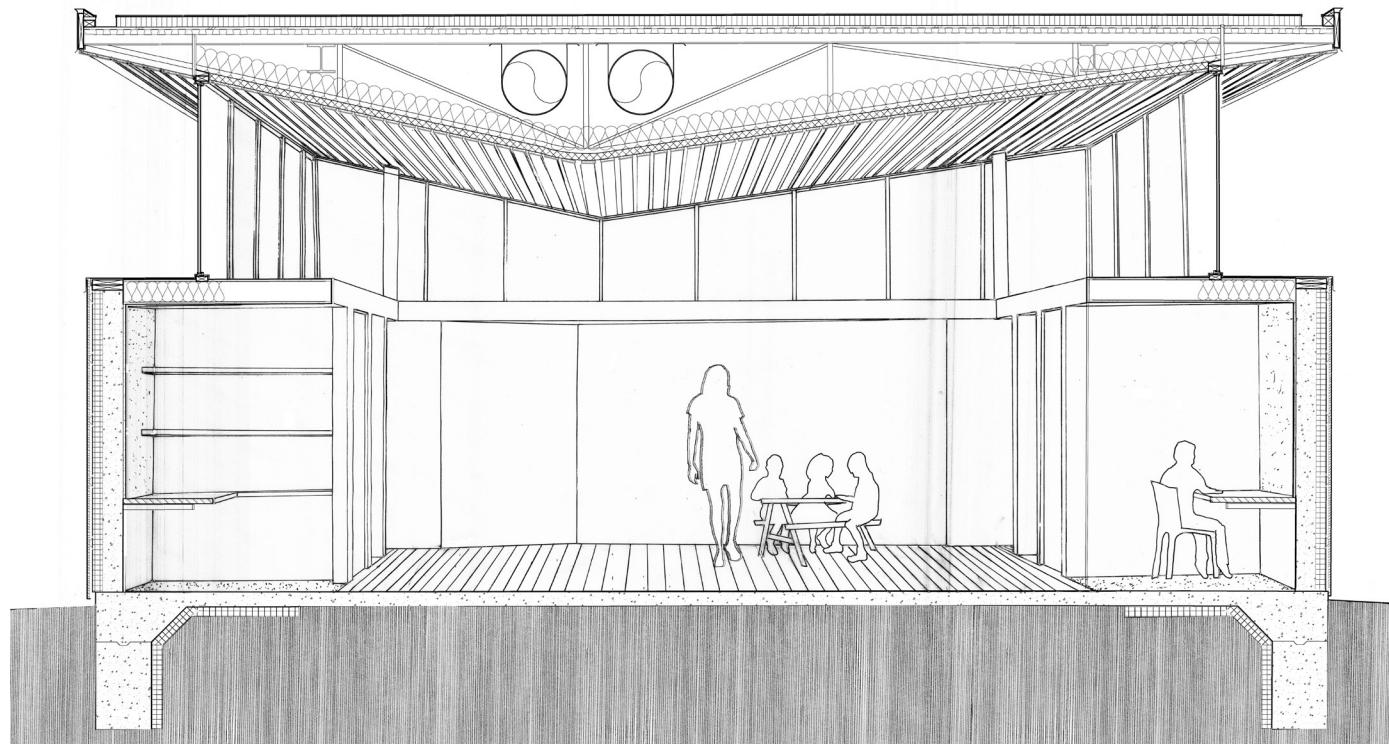
At the time, the Manhattan school system offered very few specialized spaces and programs for children with special needs. Part of the studio challenge was to determine the specific social, educational, and architectural program for this facility. Interactions with user group representatives, as well as research into the needs of autistic persons, helped to develop appropriate architectural responses.

Student designs were intended to be state-of-the-art projects that could serve as precedents for similar facilities to be built in other places in the future. Each design proposal sought to create a supportive, comfortable, and safe environment to enhance children’s independent living skills. Additionally, proposals sought to enhance children’s academic progress and serve their physical, social, and emotional needs.

One student, Kyle White, focused his efforts on the design of an “ideal” classroom to teach children with ASD

the skills and behaviors necessary to live as independently as possible. Based on parent and teacher input, the main goal for this setting was to challenge children to overcome their limitations through rigorous and difficult therapies, thus enabling children to live as independently as possible later on, rather than to allow the children to conform to their limitations.

Mr. White interacted frequently with the school district’s autism coordinator and found that children with ASD depend greatly on the environment in which the teaching takes place, much more so than normally developing children. Immersing himself in the literature, he found that Applied Behavior Analysis (ABA), the most frequently used teaching method, offers instruction in life skills such as looking, listening, and imitating; kinesthetic behavior including development of gross and fine motor skills; and social skills including conversing and understanding another person’s



*Kyle White's proposal for the "Learning Suite"*

perspective. With a typical teacher/student ratio of 1:1, ABA requires a variety of spaces in close proximity, from active to “time-out” space; from large areas for open instruction and group activities to small areas for focused one-on-one instruction; as well as significant amounts of storage space for props. A typical classroom setting is thus not conducive to teaching children with ASD.

In response to the stated requirements, Kyle developed the idea of a “learning suite.” Each learning suite is organized in a clear order that is easily recognizable by children with ASD, thus helping with orientation within the space. The layout accommodates various zones: an active zone for open instruction in the center; an office/work room for teachers and researchers; a foyer, bathroom, and coat closet near the entrance; inward-oriented alcoves for direct one-on-one instruction with ample storage space along the two sides; a sensory space and a quiet room along

the side across from the entrance; and lastly an outdoor play space directly adjacent to the suite, overlooking the larger garden.

In each suite, several children can be involved in activities simultaneously without distracting each other; a small group of children can play ball in the center while another teacher can work with an individual student in one of the small alcoves on the side at the same time without distractions.

### Conclusions

The notion that there are close relationships between architecture and health is gaining momentum. More and more, the work of scientists is demonstrating that people’s physical, psychosocial, and spiritual wellbeing can be positively affected by “life-enhancing,” “healthy,” or “therapeutically supportive” settings. By focusing on the relationships between architecture and health in studio projects, I offer a lens through which to look at the characteristics and qualities of

designed environments, suggesting that all designed environments should have positive effects on their users.

As these case studies illustrate, this approach to studio instruction makes it possible to achieve important goals.

### Human-Centered Design

Students learn to be empathetic to the needs of a specific user group through their interactions with members or representatives of this group. Human connections are made which allow architecture students to put themselves in the shoes of the users and include design considerations from the users’ points of view, thus designing settings that potentially enhance the quality of life of persons of all ages and abilities.

### Knowledge-Based Design

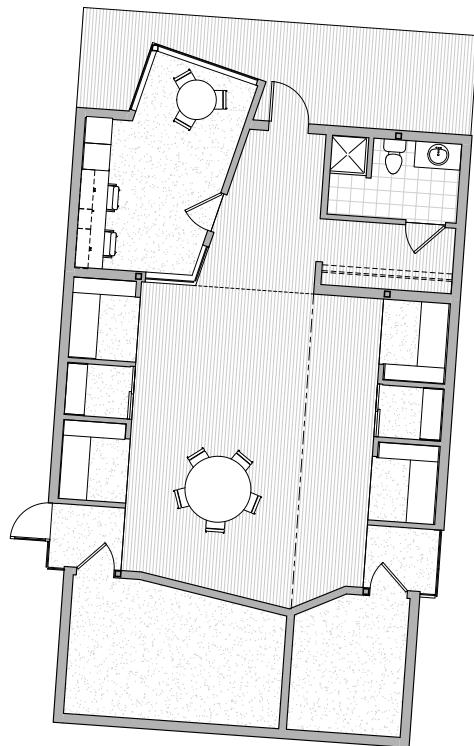
Students learn to ground their design proposals in information generated by researchers and other specialists whose work is focused on issues that can be of significant importance to architectural design. The knowledge-based approach to design can lead to the discovery of innovative design solutions and, in some instances, even to the creation of new building types aimed at improving the daily lives not only for underserved populations but for all people.

### Socially Responsible Design

Students learn to see larger political and societal patterns, which may include the lack of equality for everyone. These insights may contribute to widening the range of architectural and professional concerns for meeting all human needs. Students may come to understand that it is possible for architects to work toward a socially sustainable society that serves the needs of all populations. These insights may include the notion that architects should serve the needs of the whole human as a being of body, soul, and spirit.

Studio projects like the ones discussed above challenge students to design environments for which there is currently no or only little precedent. Students are required to think outside the box, to work outside their comfort zones, to look for answers in areas of expertise with which they are not initially familiar, to take risks, and to test their pre-conceived notions in order to develop design proposals that are appropriate and supportive for intended users.

In the end, I hope that students will be inspired, as practicing architects, to play active roles in serving those members of our society most in need of help through humanly responsive design.



Kyle White's proposal for the "Learning Suite"

### Notes

1. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.

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