Excellence in Housing Education Course or Activity Award

Elemental Encounters: The Architectural Detail and Elderly Housing

MICK KENNEDY
University of Michigan

TONY PATTERSON
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Architectural Elements: Pedagogy and Practice

Elemental Encounters focused on the generative power of singular details and their impact on the broader development of spatial organization in plan, section, mass and volume in response to the specific design challenges posed by housing for the elderly. Typical housing studios often view the ‘unit’ (and its aggregation) as an irreducible cell. This studio sought to break that unit down further to Architectural Elements (and their aggregation) at a nested set of scales from the architectural fragment, to the street, and urban block. These Architectural and Urban Elements form the loci of intergenerational encounters in the home, courtyard and in the city.

Architectural Elements: Kitchens, Walls, Windows, Roofs, Stairs, Porches, Gardens, Courtyards, Pathways were explored and designed across a range of scales and material languages. These are the sites of both personal, familial and community interaction. The studio considered these Elements simultaneously as programmable spaces as well as fully detailed architectural constructions. The aggregation and hybridization of these Elements formed the architectural textures and collective identity of the building projects developed in the studio.

The studio pedagogy developed a series of assignments with critically targeted deliverables each of which focused student design work on the simultaneous evaluation of key issues relating to Elderly / Intergenerational Housing (circulation, movement, patterns of daily activities, eating, sleeping) and the specific detail, material and construction propositions to accommodate and enrich these experiences. These Elements became the building blocks for developing residential building strategies, through aggregation, clustering and their engagement with site conditions. Each assignment sought to focus design learning through specific deliverables carefully chosen to require students to analyze problems, distill research, input and feedback, and then to develop specific, articulated design propositions.

As a subject for studio learning, Elderly / Intergenerational Housing requires re-framing many basic assumptions about the spatial organization of dwelling units. Private and communal spaces inherently need to be reconfigured to allow a wider range of ages, uses, and abilities. The manner in which various spaces are re-conceptualized to allow a diversity of individual and shared activities became a critical design study.

“If you go to a school where there are classes in writing, these classes should not be to teach you how to write, but to teach you the limits and possibilities of words and the respect due them.” Flannery O’Connor

Comprehensive Design

As the penultimate studio before thesis, Elemental Encounters required each student to demonstrate an overall aptitude in generating a comprehensive architectural project. The goal of this studio was to engage, negotiate, and synthesize comprehensive design from a broad range of agendas.

1) Research: Each student analyzed a housing precedent to understand considerations of massing, unit type, fenestration, circulation, and building systems. All students executed this analysis with the use of Revit software guided by a series of video tutorials targeted at each set of deliverables.

2) Schematics: Each mixed-use residential project will be developed with clear analysis of its site parameters alongside code and density requirements. Manipulating and/or hybridizing the studied precedents is encouraged to develop a coherent strategy of unit types, circulation, systems, sustainability approach, and overall massing. Issues of siting, address, landscape, and scalability of the design is a necessary component for all studios.

3) Development: The final phase of work is dedicated to the production of models and drawings that address the comprehensive design criteria. The pedagogical methodology is designed to continually advance design without hesitation. The goal is push the schematic project through a refinement of organizational and performative diagrams, exterior wall section details, and high resolution models and drawings.

Expertise Lecture Series

Within the context of the comprehensive design studio, five distinguished consultants were invited to speak to their expertise related to housing.

James Davidson, Partner, SLCE. SLCE Architects is known for their excellence at negotiating zoning, economic efficiencies, marketing trends and interior organization in housing design.

Nat Oppenheimer, Principal, Silman Associates. A leading practitioner and educator in the field of Structural Engineering who has worked on numerous low income housing designs in the greater NYC area.

Kiel Moe, Assistant Professor, Harvard GSD. Director of the Energy, Environments and Design Research Lab at Harvard’s GSD.

Michael Ra, Partner, Front Inc. Front, a leading facade design firm, developed high performance envelope systems for the Toledo Glass Museum among many other high-profile designs.

U. Sean Vance, Assistant Professor, University of Michigan. Former Director, NC State Center for Universal Design.
Pedagogy

Elemental Encounters began with an in-depth case study of select Elderly and Courtyard Housing precedents documenting unit types, circulation and egress, building structure, building systems and facade design.

In addition to these basic requirements, we focused on the related roles that an array of architectural elements: Walls, Windows, Roofs, Stairs, Kitchens, Baths, Porches, Gardens, Courtyards, Pathways, play within these case studies, shaping space and inhabitation. Student teams generated a series of diagrams studying the distribution of these elements across the Precedent building and site. Further diagrams documented the residents' engagement with particular inter-related sets of elements as they are organized across each architectural project.

Deliverables

_Overview and Massing:

All building plans and at least one building section. Massing diagrams described interaction of mass with context, ground plane, and natural light.

_Unit Types:

Individual unit arrangements (plan) and global unit distributions (axonometric massing).

_Fenestration:

Described at the level of the individual window (section) and overall facade composition (elevation).

_Circulation:

Described in relation to typical and emergency situations, for overall building and within units (x-ray axonometric).

_Systems:

Exploded Axon Diagram of Structural system, envelope, and mechanical systems.

_Elements:

Diagram of selected elements distributed across the building and site, including residents interaction with these elements for an array of activities in the course of their daily lives.
Assignment 1: Elemental Precedents

Elderly Housing Precedents:
Elderly Housing Project. Chur, CH. Peter Zumthor
House for Elderly. Alcacer do Sal, PORT. Aires Mateus
Kenyuen Home for the Elderly. Wakayama, JA. Motoyasu Muramatsu
Housing for the Elderly. Maxent, FR. Maurer+Orsi
Multi Generational Housing. Vienna, AU. Ullmann and Ebner

Courtyard Housing Precedents:
El Pueblo Ribera Court. La Jolla, CA. Rudolph Schindler
Step Up on Fifth. Santa Monica, CA. Brooks+Scarpa
Rehab Basel. Basel, CH. Herzog and de Meuron
Rue de Meaux Housing. Paris, FR. Renzo Piano Building Workshop
Bikuben Student Residences. Copenhagen, DK. AART

Outcomes
The study of Elements within selected precedents provoked a more in-depth study of relationships between unit design and the daily activities of elderly and handicapped residents.

Detailed diagrams of unit layouts, wall sections and details provided more precise methods of analyzing and discussing the successes and failures within these precedents for meeting the needs of their inhabitants. They also served to redirect the scale of our studio inquiry and provided important areas of interest for further development in the students’ own design work.
Assignment 2:
Elemental Aggregation

Pedagogy
Assignment 2 required each student team to study the aggregation of a select series of Architectural Elements in model and graphic form. These Elements (operating individually and collectively) were considered in a fully architectural context, one where material, space, and the activities of inhabitation all play an integrated role. Student teams carefully developed the overlap/interplay/alchemy/chemical reactions between these Elements centering on material character and relationship to inhabitants of different ages, sizes, mobilities, and daily rhythms.

This required a careful study in the design of many basic architectural elements: the pace of a stair, the profile of a handrail and its traced path through a space. It demanded a reconsideration of the location of walls and windows and their integration/hybridization with other elements: seating, reclining, cooking, eating, working. Places for bathing and basic human ‘body rituals’ became intensified design questions—beyond the notional requirements of accessibility—searching for qualitative spatial and material solutions.

Deliverables
_Elémental Aggregation Diagrams and Model 1/2”:_
Diagrams focused on internal relationships between Elements, without regard to a totalized residential unit.
Large Scale Models utilized carefully selected materials (thickness/thinness/texture/color) and crafted to closely relate dimensional constraints and opportunities with architectural intention.

Outcomes
This proved to be the most challenging studio assignment. The work began to challenge the definition of _residential unit_ as the building block of a normative housing studio. Studies were successfully defined by the limits of activity and the inter-relationships of small scale Architectural Elements rather than whole unit volumes. Student teams produced diagrammatic studies for a range of materials and activities to guide multiple iterations, resulting in a flood of thoughtful and engaged design work that became a valuable resource throughout the term.
Assignment 3:
Aggregation Clusters

Pedagogy
Assignment 3 explored the clustering of aggregated Architectural Elements already under development. Each project team studied the relationships emerging between clusters of Elemental Aggregates through diagrams, models, and other graphic means.

These Clusters now centered on both spatial and structural relationships between Element Aggregations. Material, space, and activities of inhabitation continued to play a seminal role while teams began considering thresholds between interior/exterior and between architecture/ground/sky.

From these new Clusters students composed what might be considered residential units, although particular domestic amenities may be distributed, shared, or otherwise unbound by a singularly defined space. Work focused on the material character of these Elements. Elderly and Intergenerational Housing must respond to inhabitants of different ages, sizes, mobilities, and offers an alternative quotidian rhythm in the life of an architectural work. Intergenerational programming also The normative patterns of Sleep-School-Work-Play-Dine re-shuffle from a linear to non-linear sequence, emphasizing the accommodation and control of sunlight, air/ventilation, and acoustics.

Key Studio Readings
*Everything That Rises Must Converge.* Flannery O’Connor
*From Communities of Care to Communities of Meaning.* Maria Dwight
*One’s Bed, Room and House in Old Age.* Eckhard Fedderson
*Floor Plan Design for the Elderly.* Detmar Eberle
*New Forms of Living for the Elderly.* Marie-Theres Krings-Heckmeier
*Courtyard Housing as Type.* Polyzoides, Sherwood, Tice, Shulman
*Courtyard Housing: Typological Definition and Development.* Polyzoides
Assignment 3: 
Aggregation Clusters

Deliverables
While each team member produced their own individual Elemental Aggregation Cluster, each team developed shared representation techniques and formatting. Teams were encouraged to develop multiple design strategies for the Aggregation Clusters. Each team-member was responsible for developing one new construct, represented by:

_Element Cluster Model 1/2“:
Describing relationships between elements rather than a totalized residential unit. Structural slabs plus bearing walls and/or columns, were to be considered as part of the full architectural context.

_Cluster Floor Plan(s) 1/4” + Cluster Section 1/4”:
Floor plans developed to describe the full extent of these Elemental Aggregation Clusters. Quantitative and qualitative design factors (natural light, shadow, natural ventilation, materiality) were given equal consideration exploring fine-grain detail dimensions and experiential impact.

_Elemental Aggregation Cluster Diagram:
Using the shared studio ‘Element Icons’, each team developed a clear diagram representing the updated Element Aggregation Cluster. Relative positioning and proximity, element name, atomic weight, element imagery, and added text description were used to load the diagram with meaningful information relating program activities to specific detail development.

Outcomes
Through the aggregation of Architectural Elements into related Clusters, the studio was better able to explore and understand the inter-relationships of small scale design decisions and their impact on resident activities: sleeping, bathing, sharing food, sharing company. By keeping the focus at this stage of the design process on Elemental Clusters rather than paradigmatic unit types, we were better able to draw upon the useful lessons from precedent studies without the need to transpose given housing typologies to the unique challenges (spatial, material, programmatic) of Elderly Housing.
Assignment 4:
Elements, Aggregates, Clusters, Courtyards, Sites

Pedagogy
Assignment 4 asked studio teams to consider the relationship of their Elemental Aggregation Clusters to a series of potential site locations in Los Angeles, California. The varied opportunities of the site included: lot size, proportions, solar orientation, types of street frontage, and programmatic adjacencies.

In evaluating sites for development, studio teams clarified program strategies for housing in the service of intergenerational and/or elderly clientele as well as other housing amenities and additional program (social service, commercial, educational, hotel, etc).

Deliverables
Each team prepared propositions exploring three site options related to their developing programmatic and architectural ambitions including:

_Project Data:
Program Description/Clientele/Unit Types/Unit Mix/Amenities

_Site Plan:
Including streets, sidewalks, alleys, courts, parking strategies

_Site/Building Cross Section:
Including site context, streets, sidewalks, alleys, courts

_Building Massing Studies:
Including site context, streets, sidewalks, alleys, courts

_Cluster Model:
Describing relationship of Cluster to site edge conditions, interior courtyard space, ground, and sky

_Updated Element Studies:
Relevant to program development strategies

Courtyard Housing Typology
The studio focused on warm-climate courtyard housing typologies at multiple scales. Close attention was on a range of Architectural and Urban Elements that form the loci of intergenerational encounters in the home, courtyard and in the city. The ‘courtyard’ lies at the root of the architectural discipline, providing security through defensible space, establishing communal outdoor space with varying degrees of privacy, allowing internal access to natural light and cooling breezes. Particularly for warm climates, the courtyard offers invaluable cooling and ventilation solutions that serve to anchor entire cultures. On a range of sites in Los Angeles, chosen for their relationships to existing housing patterns and topographical diversity, the projects explored a multitude of possibilities within this robust typology in search of alternative approaches to dense suburban housing.
Outcomes
The ambition of beginning work with the Architectural Element was fully tested by the need to organize 10-15 units per acre on our sites in Los Angeles. The design of courtyard housing demanded a fine-grain resolution of spatial thresholds, Element and unit proximities, plus an overall reappraisal of individual/shared/communal spaces provoking students to probe beyond the over-simplified tropes of ‘private’ and ‘public’ realms.

By exploring multiple site options and building organization strategies, students were challenged to evaluate circulation paths and accessibility, unit level changes and mobility as well as the incorporation of sun, shade and ventilation strategies relative to Element and unit arrangements. The earlier Elemental studies helped students simultaneously evaluate site conditions, building strategies, and small scale program relationships. This integrated set of variables at multiple scales made for very productive and informative student work, studio discussion, and rapid progress/growth for these young designers.
Assignment 5: Inhabiting Wall Sections

Pedagogy
Assignment 5 was a key studio direction that sought to hybridize the goals of the collective comprehensive design studios with the ambitions of this particular studio. Student teams developed comprehensive wall section drawings exploring the material, structural, thermal, solar and moisture performance of their architecture.

These wall sections, however, were considered as critical design documents to understand the thresholds and places of encounter between interior and exterior spaces which have the potential to qualitatively improve the living conditions for elderly and intergenerational housing. Wall section drawings were developed to closely explore the intertwined relationships between resident activities and the particulars of architectural materials, assemblies, and performance.

Places of human contact and inhabitation were paramount: inhabitable window spaces; seating embedded in walls; the proximity of bathing facilities to light, air, and view prospects; social aspects of spaces for cooking and eating; all important considerations to be intensely studied as part of a thoroughly detailed wall section.
Assignment 5:  
**Inhabiting Wall Sections**

**Deliverables**
All drawings (orthographic, axonometric, and perspectival) were required to clearly articulate the design development of Architectural Elements most relevant to programmatic, building, and site development strategies.

*Wall Sections 1-1/2”
*Associated Exterior and Interior Elevations
*Perspective Wall Section Vignettes
*Passive and Active Heating/Cooling Diagram
*Unit/Building Ventilation Diagram

**Day-In-The-Life Study:**
The studio asked the students to develop a detailed analysis of the daily activities of their proposed elderly residents and to provide a description of their spatial, environmental, and functional needs.

This study was developed in parallel with wall sections to further emphasize the qualities of human inhabitation fostered within the detailed design of envelope.

**Outcomes**
The provocation to consider wall sections guided by programmatic and building design/performance requirements was enthusiastically embraced by the students.

The difficult challenges of incorporating spaces of bathing, cooking, and eating into the building envelope design proved to be the catalyst for a more focused studio-wide conversation about building materials, construction methods, and performance. Rather than relying on given wall section precedents from available resources, the students grappled with a set of questions at the scale of human operability and inhabitation.

The actions of the hand and body: sitting, standing, grabbing, turning, resting, all became measures to influence the location and quality of materials, structure, windows, building systems, and their assemblies.
PROJECT 1 _ TERRANCED REHAB

Conceived as a physical rehabilitation facility with wellness center, housing for care-givers, patients and their families, as well as assisted living, ‘Terraced Rehab’ leverages surface and grade-change on a sloped Los Angeles site to promote a heightened awareness of both ground and sky. Ambulatory experiences, physical training, and increased interaction between inhabitants are all foregrounded through the design of the circulation path through the project. All dwelling units are organized around two central care-giver units which connect the community in a central courtyard. Units are developed around centralized plumbing cores, allowing interior/exterior conditions to mix through a porous perimeter.
Wall Section Development / Intergenerational Encounters:
A focused study of individual architectural Elements yields an interesting question: can the space of the window and the space of the pathway be used as a means to explore architecture’s role in promoting wellness among rehab patients and their families?

Diagrams tracking movement patterns across times of day for residents of various ages and abilities provided the background understanding to more finely manage small scale dimensional decisions and craft wall sections that better integrate building envelope performance with the pleasures of inhabitation and encounter.

The act of moving through a set of gracious pathways as a daily routine may help promote a sense of community by increasing the frequency of social interactions, or at least the opportunity to ‘see’ and ‘be seen’. Windows, various window sill extensions, and associated program spaces at the windows, extend private space into the semi-public ‘street’, opening onto larger social courtyards. A greater sense of community through increased personal encounters offers a productive approach to intergenerational housing, physical rehabilitation, and aging with grace.
Elemental Aggregate (Pathway + Stair + Courtyard): An extended circulation path steps up the south-facing topography of the site, designed specifically for a set of residents whose lives revolve around daily cycles of rehabilitation and recuperation. The pathway incorporates numerous opportunities for individuals to rest plus small courtyards for groups to gather and socialize.

Architectural Details and Assisted Living (Window + Porch + Pathway): The articulated slatted facade helps shield south light while providing areas of operability for unobstructed views and capturing southern breezes. Windows and porches are developed programmatically and materially in relationship to the pathway. Window sills and countertops come into alignment as a way to ‘program’ the perimeter of the dwelling, the critical zone between interior and exterior, public and private.
PROJECT 2\textbf{ADAPTIVE CORES}

A series of adaptive core elements structure and organize this mixed-use multi-generational housing project for a sloping site on Sunset Boulevard in Los Angeles. The cores have been developed as tightly-packed, highly functional elements serving overall building systems (structure, egress, mechanical, plumbing), as well as housing residential necessities for each unit (kitchen/bath fixtures, seating/sleeping areas, and storage).

Flexible interior and exterior living space is freely distributed between cores, programmed by proximity to core and access to envelope. Designed around a central courtyard to provide all dual-aspect units, operable glazing walls to the communal court and private balconies allow each unit to fully adjust levels of privacy and environmental control. Precisely positioned cores allow for a mix of one- and two-bedroom units with no interior partitions, testing the limits of adaptable indoor/outdoor living.
Intergenerational Units: A variation of unit types accommodate different family sizes, and the development of flexible furniture allows multiple unit configurations serving the needs of intergenerational families as they grow and shrink. Bedrooms become extensions of living spaces as daily activity fluctuates.

Elemental Aggregates (Bath + Kitchen + Wall): All spaces of the residential units hinge around cores containing kitchen and bath functions. The building envelope is manipulated to ensure a portion of each core is on an exterior wall, providing natural light and ventilation into the bathing areas.
Elemental Aggregates:
- Window + Bed + Porch
- Wall + Window + Door
- Bed + Wall + Cabinet
- Cabinet + Social Space + Wall
PROJECT 3_RE-[S]PACING RETIREMENT

This project posits its programmatic charge as intergenerational housing for both young and retired actors in the form of a linear courtyard scheme on an end-lot in West Hollywood. The program is used as leverage to challenge the normative distribution and allotment of spaces within a dwelling. The project proposes that across generational differences there exists shared and continual needs in caring for the body, the storage of memories, and a need for inspired settings in the routines and dramas of everyday life.

In particular, bathing, spaces for personal body-care rituals, and dressing were enlarged and intensified. Spaces for communal entertaining were given priority over private spaces. Units were provided with an enviable amount of poché space dedicated to storage. Living spaces open directly onto private balconies overlooking the central courtyard, carefully crafted in plan and section to create layered spaces of intimacy and spectacle.
Elemental Aggregates: Diagrams and Large Scale Model Studies

Sleeping Space + Porch: Sleeping spaces are a critical aspect of elderly housing. Direct connection between private, interior areas of refuge and a great window or porch helps individuals maintain visual, acoustic, and thermal contact with the outside world from bed.

Bathing Space + Bed: The ritual of bathing is another important consideration for dwelling that becomes amplified for the elderly. The ability to transition with ease and grace between bathing/showering and sleeping is studied in terms of proximity and planning as well as material impact, natural light, and passive ventilation.

Social Space + Kitchen: The act of preparing and eating meals is often the center of social life in elderly housing. Studies into connections between kitchen and social space, kitchen design fostering social engagement, and various kitchen/dining configurations are conducted in studio units, one, and two-bedroom units.
Intergenerational and Elderly Housing: A range of dual-aspect unit types were explored to accommodate larger/smaller families and individuals, while maintaining Architectural Element connections and qualities. Sleeping, bathing, cooking, and eating are all re-considered with heightened awareness.

Detailed Material Strategies: A concrete structural system is augmented with a series of material ‘liners’ on walls, floors, and ceilings. Various wood elements provide warmth and refinement at the scale of the hand, while ceramic tile offers durability, reflectivity, and radiant heat in the wet zones.
We believe the topic of Elderly / Intergenerational Housing combined with the goals of a comprehensive studio provided an exceptionally fertile ground for student design learning. Rather than relying heavily on housing typologies or construction precedents, the unique challenges of designing for the elderly required a deeper level of research, study, design development, and a closer attention paid to the small scale dimensions of detailing. This hybrid approach required a more synthetic and engaged design process from our students while they addressed the topics typically covered in housing (unit development, aggregation, massing, urban integration) as well as those of a comprehensive studio (systems integration, structural development, wall section, and building envelope design.)

As an alternative to a more traditional process of studio sequencing: programming/schematic design/design development/construction documentation, the smaller scale of the Architectural Elements brought issues of programming for residential inhabitation directly into the precise design process in wall sections, detail drawings, and large format models. This re-framing of housing program relationships charged the technical aspects of the comprehensive studio to investigate new dimensional constraints and opportunities, revised spatial and building envelope adjacencies, and most importantly material configuration and scaling in the service of a range of inhabitant ages, sizes, and abilities.

Studio output: drawings, models, and diagrams were critically reconsidered towards these ends without losing their exploratory value or technical rigor. The role of diagrams, in particular, were emphasized as a means to communicate information and pedagogical intention. The role of diagrams as both explanatory and generative of design thinking played a crucial role within the structure of project assignments and required deliverables. These processes of design development and documentation yielded a more precise level of discussion and critique avoiding an overly broad examination of the complex topic of housing or the overly technical focus of a comprehensive studio.

The ambitions of the studio were made manifest in the work produced by the students, among their many successes, missteps, adjustments, and accommodations. This is the true measure of our teaching goals: the growth evident in students as they proceeded through the assignments and iterative development of design propositions. This growth was displayed in the increasing clarity and sophistication of their discussions and critiques throughout the term as they grappled with the challenges that this hybrid approach to housing studio pedagogy brought to their education.