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A Modern Craftsman Revival

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Craft and design are directly related. An environment is not one entity but a collection of individual elements that are perfectly composed into a harmonious work. The designer’s material sensibility should be evident in each individual component, both macro and micro, or he will be alienated from the creative process. To compose the grand symphony he must never abandon intent and write with one calculated phrase after another. A craftsman’s hands should find the opportunity to manipulate all components and create harmony to ensure the elements of the space connect with no discord. When the designer and craftsman are one, creativity will be apparent.
ABSTRACT

The modern Craftsman movement is an attempt to break the contemporary mold, that is a desire to introduce a younger generation to a level of interior detail that has been lost in contemporary construction and material usage. Components such as drywall tend to envelop all contemporary residential surfaces leaving little room for tectonic expression and opportunities for detailing. Further, a modern revival would re-establish the goals of the original movement and ensure the hand was present in the design of the home, as discussed by Winter & Vertikoff, “all versions were meant to counter the excesses of the Victorian period by returning to a preindustrial past when handicrafts displayed personal involvement in the products of a laborer’s work” (31).

A craftsman by definition is very skilled in a particular trade (Merriam-Webster, 2014). Gustav Stickley, a key founder of The American Craftsman architectural movement, describes a Craftsman style home as being rooted in specific principles that define the home itself. He states, “These principles are simplicity, durability, fitness for the life that is to be lived in the house and harmony with its natural surroundings” (Stickley, 11). To accomplish this ideal the movement required craftsman from many disciplines, such as masonry and carpentry, to create hallmarks of this style in each home such as handcrafted stone facades and custom built-in cabinetry that were very functional while also very beautiful. While these elements were typically time consuming and expensive, reviving the concepts in modern application is possible. By reducing waste and manipulating materials quickly and accurately, certain forms of modern technology such as 3D printing, laser cutting, water jet cutting and CNC construction can provide a cost efficient and time saving process of material manipulation.

Introducing concepts of Craftsman kit construction to the interior, as well as modern technology to lessen the cost of handcrafted details, opens the possibility to new methods of modular design in which interior units are configured around structural skeletons and central base points that provide supply lines to residential units. One example is Dutch design firm Minale-Maeda’s keystones, a 3D printed connector that holds together any necessary components; the firm can even print a home’s plan to size and save time and the need to obtain anything but essential components (website). Another interesting example is Dutch brand Fraaiheid’s Minimal Waste Table, which is created from one piece of laminated plywood with a CNC milling machine which makes for extremely minimal waste (Williamson, 2013). These examples of automation require a craftsman’s hand and mind to create the concept but introduce a modern approach to reducing waste, time and cost.

Richmond’s Fan District provides an appropriate target demographic for the introduction of residential models that are efficient and economical means of residential development. Within the Fan, 40% of residents are ages 20-34, 37% of residents have a bachelor’s degree, and 51% of households are renting (US Census Community Survey, 2012). Sensible materials, local artistry and modern technology form a residential model that is suited for craft patrons and young adults such as the demographic living in the Fan. Evidence of the population’s support and appreciation for art and craft is found in the number of galleries, studios and museums that have thrived in the area for years. Evidence of the demographic’s demand for affordable housing lies in the significant number of renters who are unwilling to buy or unable to afford the style of housing they desire.
A MODERN CRAFTSMAN REVIVAL

This thesis investigates the parallels between contemporary residential life and that of the original craftsman movement. It explores a modern craftsman revival that promotes the use of new technologies such as 3-D printing, laser cutting, and waterjet cutting along with eco-friendly materials to create affordable housing while preserving craft and technique.

PERSONAL RELEVANCE

My undergraduate fine arts degree drives an appreciation for work which escapes commoditization. A recent craft history course deepened my interest further, and brought the idea for the exploration of craft preservation in residential application to light. While affordability and design seemed to be something I thought to always be at odds, I found through researching the American Craftsman movement that they can be one. Many of my friends who are starting their careers have shared concerns about finding well designed, affordable housing. I am interested in exploring how to bridge the gap between these two issues while integrating principles of the Craftsman style.

LOCAL RELEVANCE

Fox Elementary is located in Richmond’s historic Fan District, a fine art and crafts community. The Fan is home to a number of fine arts and crafts galleries, artist studios, and community facilities, such as the Visual Arts Center of Richmond, that form close relationships with the local population, both professionally and academically. Virginia Commonwealth University, home to the top public arts school in the country according to U.S. News and World Report (US News and World Report, 2012), is only a short bike ride away. The building is also in close proximity to the Virginia Museum of Fine Art, the Virginia Center for Architecture, the Science Museum of Virginia, and the Virginia Historical Society. The building’s locations within the educational and creative community allow students to develop a close relationship with the fine art and crafts community.

GLOBAL RELEVANCE

The investigation of the parallels between the facets of contemporary society and the original Craftsman movement may articulate a new template for affordable residential housing. Sustainable materials, local artistry and modern technology could combine to create a residential model that is suited for craft patrons, particularly between their late 20s and 40s. Technology of the modern craftsman era can create a globally relevant, advantageous formula for affordable living, by reducing waste and manipulating materials both quickly and accurately, these forms of modern technology provide a cost efficient method of material use. Artistic detailing, motifs, and colors that are often lost within modern residences due to cost, time or skill level required can be adapted and preserved with new technology.

TOPIC

This thesis investigates the parallels between contemporary residential life and that of the original craftsman movement. It explores a modern craftsman revival that promotes the use of new technologies such as 3-D printing, laser cutting, and waterjet cutting along with eco-friendly materials to create affordable housing while preserving craft and technique.

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Children leaving Fox Elementary in September 1955
© Richmond Times-Dispatch
William Fox Elementary was built in 1911 and was one of the many buildings in Richmond, Virginia designed by regional architect Charles M. Robinson. The building is located in the heart of the Fan District, a historic neighborhood that has remained both a school and one of the only examples of the Arts and Crafts style in the city for over 100 years (Robinson, 2014). The Fan area is young (40% of residents are 20-34), highly educated (37% with a bachelor’s degree or higher), and has a thriving rental market (51% of households) (U.S. Census, 2012). The district’s proximity to universities, dining, art and entertainment have also contributed to rising property values in recent years. Re-purposing buildings like Fox Elementary for residential purposes strikes a balance between what residents of the Fan value and what they need.
BUILDING SECTIONS

1 North Facing Section

First Floor

Second Floor

Basement

1' 4' 8'

2 East Facing Section

Second Floor

First Floor

Basement

1' 4' 8'
Approximately 1,000 sq ft

- Property residents in the main building (PROPRIETORS)
  - Includes areas directly accessible to the public, such as common areas.
  - Provides meeting area for potential new residents.
  - Makes marketing materials and brochures available.

- Lower level staff
  - Includes areas directly accessible to the public, such as common areas.
  - Provides meeting area for potential new residents.
  - Makes marketing materials and brochures available.

Approximately 500 sq ft

- The area primarily occupied by the property manager and resident building employees (PROPRIETORS)
  - Includes areas directly accessible to the public, such as common areas.
  - Provides meeting area for potential new residents.
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- Other residencies within building
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Approximately 150 sq ft

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PROGRAM / CODE ANALYSIS

BUILDING TYPE: TYPE III-B

REQUIRED FIRE SEPARATIONS:
- Stair Wells: 1 HR
- Elevator Shaft: 1 HR
- Elevator Equipment: 1 HR
- Exterior Walls: 2 HR
- Storage Rooms: 1 HR

OCCUPANCY TYPE: R-2
(Residential Occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature.)

OCCUPANT LOAD FOR RESIDENTIAL UNITS:
- 200 ft² gross (includes wall thickness)

GROSS SQUARE FOOTAGE:
- First Floor: 13,733 ft²
- Second Floor: 13,753 ft²
- TOTAL: 27,486 ft²

NET SQUARE FOOTAGE:
- 27,486 ft² x 65% (0.65)
- TOTAL: 17,866 ft²

ACCESSIBLE SPACES:
- Media Room
- Lounge
- Mail Room

LIVABLE SPACES:
- Residences / Condominiums

GRAPHIC PROGRAM

FLOOR PLAN LEVEL 1

SCALE: 1/32" = 1'
PROGRAM / ADJACENCY CRITERIA MATRIX

SPECIAL EQUIPMENT (MARKED “Y”) AS FOLLOWS:

MAINTENANCE
- cleaning equipment, repair tools, replacement parts

RECEPTION
- office phone, desktop computers (2), small storage space, desk / counter area, task chairs (2)

STAFF OFFICE
- lockers (2), 6 chairs (formal / informal meetings),Writing desk, file cabinet, file storage, coffee maker, mini fridge / kitchenette, file storage, desktop computers (2)

LOUNGE
- Kitchen: fridge, stove, microwave, cabinet storage, dishwasher, sink, toaster oven
- Dining Area: bar seating, tables and chairs
- General: plush, comfortable furniture
- Entertainment: tables games, large screen televisions

MEDIA ROOM
- large format scanner, large format printer, laser printer, desktop computers (6), digital projector, task chairs

CONDOMINIUMS
- Kitchen: sink, fridge, stove, microwave, oven, dishwasher
- Bath: sink(s), tub(s) / shower(s)
- General: washer / dryer

NORTH
- High
- Medium
- Low
- Yes
- No

NEED FOR ADJACENCY AGREED?

H HIGH
M MEDIUM
L LOW
Y YES
N NO

PROGRAM / ADJACENCY CRITERIA MATRIX FOR ELEMENTARY M. RACER

ACCESSION PRIVACY
NATURAL LIGHT
ACCESSIBILITY
SPECIAL EQUIPMENT
PLANNING ACCESS
PRIVACY
S G FOOTAGE NEEDS

CRITERIA MATRIX

PROGRAM / ADJACENCY CRITERIA MATRIX FOR ELEMENTARY M. RACER

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CRITERIA MATRIX
PRECEDENTS
MIDDLETON INN
ARCHITECT: CLARK and MENEFEE
LOCATION: CHARLESTON, SC

HIGHLIGHTS:
Great example of modular configuration. Rooms are tied together using a central spine that provides a fireplace to each reflected layout.

RELATIONSHIP:
Modular units have the potential to reflect the implementation and configuration of prefabrication craftsman interiors.

As depicted in the plan, small windows on either side of the spine allow for the penetration of natural light while providing viewpoints to either side of the structure.

The rooms also incorporate a wooden shutter system that can manipulate natural light.

Large windows used in Fox will be extremely important in dictating the layout of individual condominiums.

SOURCE:
Floor Plan of Typical Room
Units are mirrored about central axis / spine that house chimney plumes and placement / power for refrigerators.

Section Depicting Stacking of units
Units are stacked 3 high against an earth barrier. 2 units are above ground level to right while the bottom units rest on the ground level of the central courtyard to the left.

© Images provided by Progressive Architecture
DIAGON HOUSES

Multiple Configurations of Diagoon Houses

Hertzberger’s diagrams

Site Plan

Front facade of houses

ARCHITECT: HERMAN HERTZBERGER
LOCATION: DELFT, THE NETHERLANDS

HIGHLIGHTS:
- Present with “an incomplete framework” or “skeleton” that is a half-product which everyone can complete according to his own needs.
- Easily customized for the individual client.
- The design utilizes panelized systems and unit masonry that can be configured in seemingly endless ways.
- Small changes can be made to quickly and affordably change the use of individual spaces within the residences.
- Units can be configured based on the number of occupants and can be reconfigured to accommodate a growing family.

RELATIONSHIP:
- Ability to customize and reconfigure residences may prove to be important within the modern craftsman era.
- Residences that are easily customized, utilizing prefabrication techniques, draw on the prefabricated nature of many traditional craftsman homes.

SOURCES:
- Row Houses: A Housing Typologie, Volume 2
  By Günter Pfeifer, Günter Pfeifer (architect.), Per Brauneck

© Images provided by A + C Arquitectura
**HOMB MODULAR PREFAB (TAFT RESIDENCE)**

**ARCHITECTS:** Skylab Architects

**LOCATION:** Portland, OR

**AREA:** 4,000 ft²

**COMPLETION:** 2013

**HIGHLIGHTS:**

Prefabricated modular units create one cohesive interior based on 100 ft² triangular modules that can be infinitely configured and expanded upon.

Units can span from an 800 ft² residence to 40,000 ft² mixed use structures (spanning from residential to commercial).

Units are arranged in connection geometrically.

Units are ready to assemble on site.

Triangular modules add element of interest within overall geometry of modules.

Sharp edges and different configurations among levels create unique building facades that break conventional flat planes.

**RELATIONSHIP:**

Concepts from Skylab prefabricated units can be implicated in Fox Elementary to create an interior method of joining residential units.

**SOURCE:** skylabarchitects.com

The Oregonian

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**Meeting of the modules at a central point**

**View of Interior (Modular divisions are visible)**

**Floor plans within the modular units**

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Floor plans depicting the configuration of triangular modules.
Gensler Architects’ Bangkok office draws on inspiration from local craftsmanship and utilizes local materials.

Traditional Thai screens were constructed using a strong geometric pattern to help divide the space without impeding the penetration of natural light and completely closing off sub-spaces.

According to Gensler, most all of the materials were locally sourced. The textiles were locally sourced at Gensler used fabrics from a local silk market. The local culture is reflected in the space.

RELATIONSHIP:
This is a good case study involving the architectural reflection of local culture, materials, and elements, all of which are extremely important to my thesis. Each decorative element also serves a function and has a practical quality.

The space is responsible in its use of local resources. This may serve as a model for the practice of integrating local craft culture into an interior dwelling. The use of screens to divide space is something that I am extremely interested in as well.

SOURCE:
CONTRACT DESIGN MAGAZINE

© Images provided by Contract Magazine
MATERIAL + TECHNOLOGY PRECEDENTS
MINIMAL WASTE TABLE

DESIGNER: FRAAIHEID
LOCATION: AMSTERDAM, THE NETHERLANDS

HIGHLIGHTS:
A good example of how CNC technology can help tremendously with reducing woodworking related waste. Here, CNC has provided perfect joinery among furniture pieces with minimal waste of materials. The table has been cut using a CNC machine from one piece of laminated plywood.

SOURCE:

© Images provided by Fraaiheid

3D PRINTED KEYSTONES

DESIGNER: MINALE MAEDA
LOCATION: ROTTERDAM, THE NETHERLANDS

HIGHLIGHTS:
3D printed connectors such as these could play a roll in constructing furniture for the modern craftsman revival. These plastic connectors could drive down the price of various interior components and furnishings. Connectors provide a cheap, quick and efficient means of joinery that can be printed on any 3D printer when construction specs are purchased by the supplier.

SOURCE:

© Images provided by Minale-Maeda
**APARTMENT 65**

**ARCHITECTS**: ATELIER PETER EBNER AND FRIENDS  
**LOCATION**: OBEROSTERREICH, AUSTRIA  
**AREA**: 800 ft²

**HIGHLIGHTS**:  
The concept is based on the conservation of the available space in a central spine. This central spine houses various room-defining pieces of furniture that can be opened in every direction (Browne, 22).  
The concealed furniture of the central spine creates the allusion of a room within a room. The kitchen can be fully concealed, a dining table swings out of the volume, seating transforms into a bed and a swing out partition door creates a private office (22).  
The central spine successfully demonstrates its ability to divide a small residential unit under 1,000 ft². This central spine also provides an important degree of flexibility in order to maximize the total square footage within the apartment.  
Bringing the components of residential life to the center of a small apartment space can maximize the surrounding footprint.


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**MODEL APARTMENT**

**ARCHITECT**: SMITH-MILLER & HAWKINSON  
**LOCATION**: NEW YORK, NY  
**AREA**: 1,200 ft²  
**COMPLETION**: 1989

**HIGHLIGHTS**:  
This project exhibits the concept of using a central spine-like mass to delineate space within the confines of a small residential unit. Components of the central mass can be shifted, pivoted, and rotated to serve multiple rooms and spaces within the apartment.

Combining pivoting doors with sliding doors

Natural light penetrates the translucent materials of the doors

View into bedroom with pivoting doors at their open position

© Images provided by Peter Paige, Arch Photo Inc., Eduard Hueber

CHELSEA LOFT

ARCHITECTS: SCOTT MARBLE & KAREN FAIRBANKS

LOCATION: NEW YORK, NY

COMPLETION: 1994

HIGHLIGHTS:
The pivoting door component that is used in the space, exemplifies a successful method of dividing space while allowing the user to adjust the partitions' transparency.

The door panels are constructed using a combination of natural and synthetic materials, each serving a different structural and functional purpose while combining to create one uniform aesthetic.

Pivoting doors provide an approach to delineating space within a small footprint.

The size and scale of these pivoting doors can be changed to adjust for privacy concerns, need for natural light, and acoustical needs.

SOURCE:
PRIVATE RESIDENCE WITH 13 CABINETS

ARCHITECTS: WESLEY WEI ARCHITECTS

LOCATION: PHILADELPHIA, PA

COMPLETION: 1995

HIGHLIGHTS:
The project utilizes a number of introduced storage columns in the apartment.

Storeage units surround existing columns and service lines and also create new faux columns to enhance the existing structural grid and provide extra storage space.

The inner tectonics or flesh of the columns provide a great aesthetic all to their own. Painted ash veneer clads the majority of columns while the interiors are composed of wood, aluminum, bronze, acid-etched zinc plate, and glass mirrors.

Storage columns surrounding existing structure and mechanical chases leave room for future adjustments and additions.

“The columns, also functioning as cabinets, visually support the weight of the ceiling while engaging the imagination through the intimate spaces of their cavities” (Oscar, 210).

SOURCE:

© Images provided by Catherine Bogert

AXON of Cabinet Column

Image not to scale

Column doors open to expose interior flesh

Column doors closed along hallway

Columns in place of existing axis within space
The concept of the apartment explores two main architectural systems: the closed system considers the existing space that is traditionally defined by secure walls which dictate volumes and the abstract system that is superimposed on the closed system, defining space without the use of columns, windows, and conventional walls (Oscar 248).

The abstract system is composed of large L-shaped elements that articulate the vertices that create inferred corners and subconsciously divide the interior.

The L-shaped elements are constructed using a plywood substructure with a layer of expanded metal nailed to the plywood. Metal edging is embedded within seven outer layers of hand sanded, dyed plaster finish (248).

Elements such as these can be used to divide space within small residential condominiums without the use of generic, drywall partitions.

SOURCE:
CONCEPT DEVELOPMENT
CONCEPT COLLAGES
INVESTIGATING A CENTRAL SPINE:
BUILDING OFF OF A FOCAL POINT OR HUB
CONCEPT STUDIES
INVESTIGATING A CENTRAL SPINE
BUILDING OFF OF A FOCAL POINT OR HUB
CONCEPT MODELS
INVESTIGATING A CENTRAL SPINE:
BUILDING OFF OF A FOCAL POINT OR HUB
CONCEPT MODELS

A standard spine is utilized in each model. The geometric volumes acting on these spines may vary accordingly.
DEVELOPMENT OF MODULARITY

E V O L U T I O N  O F  T H E  S P I N E

Residential wings depicted in green

Natural light analysis suggests that chase walls and supply lines are best positioned between the existing series of glass facades.

Individual residential units divided into triangular modules at center points

Units divided into large triangular modules opening into hallways
Modules are bought and sold among residents, contributing to expansion and contraction of individual units.

Given the rectilinear nature of the structure, existing partition walls are used to create central spines.

Spines, or central chases (depicted in red), are introduced upon which bathrooms (depicted in green) and kitchen areas are reflected.

Plan views depicted in blue, sub views depicted in green.
Introducing concepts of Craftsman kit construction to the interior, as well as modern technology to lessen the cost of handcrafted details, opens the possibility to new methods of modular design in which interior areas are configured around structural skeletons and center base points that provide supply lines to residential units. Standardized modules are introduced to the residential wings to create a reflection about the geometry of the existing classrooms.

Central spines are implemented to allow kitchen and bathroom areas to share a common 8" Chase wall while residential units are individually divided. Once individual units are combined as resident’s needs change, spines, along with movable partition walls are utilized to create entirely new environments.
Movable Panels attach from a floor grid to a matching coffered ceiling grid that is larger in width and depth.
Skeletal panels are constructed of 1” tubular aluminum and are light enough for one individual to carry and two individuals to set in place vertically.

Panels attach to a floor grid consisting of common 3/4” x 1 1/2” lumber and to a coffered ceiling that brings the panel’s total attachment height to approximately 12’ from grid to coffered ceiling.
PANEL LATCH DETAIL

DETAIL OF MAGNETIC ATTACHMENT OF PANELS TO ALUMINUM FRAME
STAGGERED PANELS CREATE FINGER JOINTS

Panels are shifted on the aluminum frame according to the thickness of cladding that is used. This assures a flush corner when partitions are attached perpendicularly.

CLADDING POSSIBILITIES
The spine, or central chase allows for more drastic movements and communication within the living unit. The distance that the spine protrudes from the existing wall maintains increments of 3’ to accommodate standard kitchen appliances. From there, storage solutions are fully mobile and can be rearranged as desired. Standard datum lines are established on the kitchen facing wall to assure appropriate counter and clearance heights. Storage above is interchangeable using an attachable grid along the spine’s face. This method of attachment is articulate on the face of the spine to enhance the idea of tectonic expression.

Central Spines are divided horizontally into 3’ increments (9’ total) to allow for custom configuration of appliances below. The spines may be expanded to allow kitchens to grow. The interchangeable parts acting on the spines may be raised and lowered to accommodate the resident’s needs.
Project: Assemble Studio
Architects: Assemble
Location: Northcote, VIC, Australia
The main feature of the space is the ceiling which is inspired by triangular origami folds. The geometric pattern can be repeated infinitely while allowing for adequate sound absorption.

Work: Concrete Installation at Malmö Konsthall
gallery
Designer: Mike Nelson
This project focuses on large scale, architectural installations such as this geometrical work made of concrete. These precast designs are monumental in presence and form.

Product: Adjustable Wall Mounted Storage System
Designer: Kerf Design
System uses only plywood and plastic laminate to create a storage system that can be infinitely configured.

Project: prefab Cottage
Architect: Michael Fitzhugh
Described as a "Modular, Modern Prefab Structure" this home uses unique concealed storage, predominantly under the flooring.

Product: Interlocking Rock Blocks
Manufacturer: Hive Modular Arts, Inc.
Interlocking blocks composed of cast rock with plant-based foam cores. Along with traditional metal studs, spaced at 24" apart, these fabricated blocks easily come together to create complete interior partitions.

Project: Geometric Perforated Ceiling Tiles
Example of how modern technology (CNC) has allowed for the construction of custom reconfigurable ceiling panels. The CNC machine provides a perfect geometry and fit among pieces. CNC also is responsible for the acoustic perforations.

Product: The Versatile Collection - Axis tiles
Designer: Yigit Özer
These tiles create unique senses of depth and interesting interaction with light. Individual pieces can be configured in a number of directions for custom configurations.

Project: Geometric Wall Covering System
Architecture Firm: Correia / Ragazzi Arquitectos
Architect: Azulejo Czech
These geometric tiles can be endlessly configured to create unique surface textures, patterns, and movement.

Project: RoboFold - "Sartorial Tectonics" Facade System
Designer: Andrew Saunders
Machine fabricated modular facade system that can be configured in a number of shapes, sizes and densities.

Product: Museum Space Divider
Manufacturer: Freedom of Design
Designer: Janne Kyttänen
A modular space dividing system composed of glass filled propylene.

Product: Modular Wall Covering System
Manufacturer: Granorte
This concept could easily be adapted to use on floors as well. The visual presence of depth within the floors can add another layer of geometry to the space.

Project: Hyundai Card Travel Library
Architect: Wonderwall
Location: Seoul, South Korea
Project demonstrates the successful transition of articulated geometry from a vertical to horizontal surface.
3/4" Interchangeable floor panels are comprised of a 1/4" synthetic rubber base, 1/2" foam spacer, and a 1/4" top layer that can take on a number of finishes and materials.
EXPANSION AND CONTRACTION OF RESIDENTIAL UNITS

A NEW APPROACH TO AGING IN PLACE DESIGN

In addition to reviving Craftsman era principles, this design also allows for unique flexibility in providing aging in place design solutions. Through the use of spines and movable partitions, residents have the opportunity to expand and contract their living spaces while also having customizable material finishes.

UNIT A

Floor plan: first and second floors


milk+(Design+Milk).
