# DESIGNED FOR HOME: OPPORTUNITIES FOR ENHANCED ONTOLOGICAL SECURITY IN PERMANENT SUPPORTIVE HOUSING APARTMENTS

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## ABSTRACT

*To maximize the number of new dwelling units for people experiencing long-term homelessness, permanent supportive housing (PSH) developers have minimized the floor area of such units, creating very small studio apartments in purpose-built, single-site housing projects. The objective of this study was to reveal the variety of spatial organization patterns of these apartments and to assess if theoretical hallmarks of ontological security—constancy, the ability to conduct day-to-day routines, identity construction, freedom from surveillance—may be supported by design decisions. This is the first study to closely examine the interior layouts of such dwellings, despite 1,840,000 PSH apartments having been built in the past 13 years. The dataset is a representative sample of 24 PSH studio apartment floor plans. The archival plan analysis examined typological features of the apartments and the affordances and attributes related to the hallmarks of ontological security. A key finding is that overall layout is determined primarily by entry sequence decisions: constancy and freedom from surveillance may be enhanced by close attention to the layering of this space. A second key finding is that the ability to conduct day-to-day routines and construct identity may be enriched by apartment layout and storage provision. Thus, despite the size constraints of PSH apartments, designers could possibly enhance ontological security affordances through defined layout, ample storage, and a layered entry sequence. For PSH residents, achieving ontological security in their dwellings is a necessary step toward recovery from long-term homelessness.*

## INTRODUCTION

Over the past two decades, as persistent homelessness increased in North America, permanent supportive housing (PSH) emerged as best practice for creating not merely an immediate exit from unsheltered conditions, but also a long-term home for residents (Nelson & MacLeod, 2017; Parsell et al., 2015; Woodhall-Melnik & Dunn, 2016). According to the 2019 Annual Homeless Assessment Report to Congress, the number of PSH units available in the United States doubled from 188,636 in 2007 to 373,030 in 2020 (Henry et al., 2019). Certainly institutional systems of shelter exist in the United States, yet they tend to offer "protection from the elements but little that supports the creation of a home" (Rivlin & Moore, 2001, p. 327). While there is deep scholarship evaluating the PSH model, only a few of these studies have assessed the designed environments of these projects (Huffman, 2018; McLane & Pable, 2020).

In the 2000s, Housing First (a policy offering permanent housing quickly for people who are homeless) prioritized independent, scattered-site apartments in the community for people transitioning from long-term homelessness (Tsemberis & Eisenberg, 2000). As an alternative to the scattered-site approach, some organizations, such as the U.S. Veteran's Administration, created single-site PSH for practical reasons related to coordination challenges in the scattered-site approach (Austin et al., 2014). Somers et al. (2017) stated that single-site Housing First communities may be established because of potential efficiencies and economies of scale.

Because of these efficiencies, public and private organizations have generated single-site PSH projects in new and rehabilitated buildings. Some of these projects took the form of single-room occupancies (SROs), while others incorporated fully contained studio or efficiency apartments (Fisher, 2010). In the latter case, each apartment had a private bathroom and kitchen *en suite*, whereas in the SRO buildings, cooking and bathing facilities were shared and located down the hall from dwelling units. The use of SRO buildings as PSH follows their original use as temporary living arrangements for single adults, especially for recent arrivals to industrial cities in the late 1800s and early 1900s and their second use in the 1980s, after changes in psychiatric institutionalization policies (Jones et al., 1991). Though there are PSH funding mechanisms for both SROs and fully contained apartments, the focus of this study is the latter because of their affordance of autonomy, privacy, and activities of daily living (ADL), features of ontological security (Adair et al., 2016; Chan, 2018; Knight et al., 2014).

Because up to 50% of the floor area of PSH buildings is dedicated to shared space (Bollo & Donofrio, 2019), there is a compelling incentive to design the units efficiently while maintaining autonomy, privacy, and control for the residents. Yet research examining design features meant to enhance resident independence and command in a homeless context is limited (McLane & Pable, 2020). Pable (2012) tested a set of design interventions in a family's shelter space including individually controlled lighting, increased storage, and additional personalization opportunities. The results showed the importance of privacy and control for decreasing the family's stress as they transition from homelessness. Chan (2018) explored what makes supportive housing feel like "home" for individuals who were once homeless by conducting semi-structured interviews with adults with physical and/or psychiatric disabilities ($N = 37$) who were living in congregate or independent permanent housing. She identified specific everyday routines that contribute to feelings of constancy and control, such as the ability to maintain "regular stuff". In their dual case study, McLane and Pable (2020) found through interviews with 10 residents and 12 staff members that identity formation for residents is enhanced by deviating from institutional aesthetics.

Studies have also shown that single-occupancy apartments (Adair et al., 2016; Burns et al., 2020; Henwood et al., 2018a) and larger, independent apartments (Anucha, 2005; Nelson et al., 2007; Tsai et al., 2010) are explicitly preferred by residents. The Chez Moi research team found that single-room, single-occupancy dwellings with shared bathrooms had lower mean housing quality scores than independent apartments for people transitioning from homelessness ($N = 340$) (Adair et al., 2016). Through qualitative interviews ($N = 30$), Knight et al. (2014), discovered that *en suite* bathrooms in a new PSH building provided residents with more choice, control, safety, and security compared with older SROs with shared bathrooms. Dwelling attributes can also contribute to residents' sense of freedom and autonomy. In recent studies, the concept "dwelling as a vessel for autonomous daily life" addressed the importance of autonomy and a housing design that supports both independence and privacy for PSH residents working to regain control (Rollings & Bollo, 2021).

Housing design presents a tension between supporting individual autonomy and encouraging residents' involvement in the building's community (Johnson, 2009). The potential risk of separate apartments is loneliness. However, research has shown that for most tenants living in independent apartments with supportive services, loneliness was not a serious problem or it was an issue they could overcome (Piat et al., 2018). Living in full apartments correlated with a sense of control, stability, and security (Watson et al., 2019). Extensive common areas in these projects set the stage for interaction and provided a place for human connection (Huffman, 2018). There is also evidence that an autonomous apartment gives residents a greater chance to reconnect with family and friends in a noninstitutional environment (Tsai et al., 2010).

The research cited above is limited in its examination of physical design suggestions for PSH for those experiencing homelessness. While Pable (2012) noted a few control features (i.e., lighting for reading, bed curtains, and increased storage), this in-depth, qualitative investigation explored only two families. McLane and Pable (2020) and Huffman (2018) limited their studies to public-

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use spaces finding that location, visual access, zoning, aesthetics, and institutional policies affected resident use. These authors focused only on community areas, and PSH apartments were not included in the analysis. Chan (2018) examined PSH focusing solely on what makes housing feel like "home" with three themes that emerged: (a) safe spaces, (b) connections to "regular stuff" and past occupations, and (c) agency to choose and pursue personal goals. Clearly, research focused on the interior design of the PSH apartment is needed. Thus, the purpose of the current study was to determine what aspects of PSH apartment design may influence residents' ontological security.

## THEORETICAL FRAMEWORK: ONTOLOGICAL SECURITY

The theoretical framework of ontological security has evolved over the past century. Psychologist R.D. Laing, who coined the term in the context of evaluating psychiatric disorders, defined ontological security as an individual's sense of continuous, whole self (Laing, 1968). Anthony Giddens refined this definition, positing that ontological is contingent upon a sense of order and manifests as an individual's belief that the world is as it appears (Gustafsson & Krickel-Choi, 2020). Dupuis and Thorns (1998) connected the prospect of ontological security to the realm of the dwelling, crediting Peter Saunders for first moving the discussion into the study of housing and the urban condition. Referencing the dwelling, they contributed the following hallmarks of ontological security, which form the framework for this study's analysis:

1. Home is a place of constancy in the material and social environment.
2. Home is a place in which the day-to-day routines of human existence are performed.
3. Home is where people feel in control of their lives because they feel free from the surveillance that characterizes life elsewhere.
4. Home is a secure base around which identities are constructed (1998, p. 29).

Padgett (2007) pivoted from the deep scholarship on housing tenure and ontological security (i.e., Cairney & Boyle, 2004; Hiscock et al., 2001) into the realm of long-term homelessness, noting: "It is ironic that those people whose ontological security is most threatened due to mental illness are also those least likely to be in housing circumstances that would promote ontological security" (p. 1926). In her study ($N = 39$), most participants who received housing reported increases in the hallmarks of ontological security.

Additional research has examined ontological security in the context of former or current homelessness. Henwood et al. (2018b) employed ontological security as a framework to understand how PSH can support identity construction for young adults ($N = 27$) exiting homelessness. They found PSH increased residents' mental health and well-being because it supported healthy social relationships, in part, by allowing residents to control who visited their home and when. Yet, despite the word "permanent" in PSH, these younger residents noted a lack of constancy and stability in their lives, and worried that the "next step" could lead them away from their current environment.

Stonehouse et al. (2021) explored ontological security at various points along the housing–homelessness–housing pathway. Even as their study participants ($N = 9$) exited homelessness, they struggled to attain ontological security. While those who had secured housing noted increased stability and well-being, they maintained the protective habits around security, safety, and privacy developed while they were homeless.

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Rosenberg et al. (2021) evaluated the ontological security of people leaving incarceration and revealed four barriers: impermanence, place rules, surveillance, and lack of control. The study participants ($N = 27$) defined "home" by comparing their current circumstances to life before prison, or to imagining a more stable future. The authors concluded that ontological security is an essential way in which housing and health are associated.

The theoretical construct of ontological security informed the analysis in the current study, specifically through the scholarship related to homelessness, and the hallmarks proposed by Dupuis and Thorns (1998). In this article, the author argues that ontological security may be supported through design and that a small dwelling size need not impede privacy or autonomy. Thus, design decisions might increase the potential for ontological security and thereby the well-being of people who have previously experienced long-term homelessness.

# METHODS

In addition to the ontological security framework, the author relied on Kelbaugh's (1996) philosophy of typology as an architecture of limits. The uniqueness of this study is its use of archival plan analysis. While others have analyzed the plans of common areas (Bollo & Donofrio, 2021; Huffman, 2018; McLane & Pable, 2020), this study is, as far as the author knows, the first investigation to examine interior layouts of PSH apartments in this manner.

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## DATA COLLECTION

The data for this study are floor plans of 24 studio apartments in single-site, purpose-built PSH projects in North America built within 20 years (Table 1). The first criteria for inclusion were unit size (less than 400 square feet) and apartment type (full studio apartments with kitchens and bathrooms *en suite*). Studio apartments do not typically have a separate bed space, which decreases the separation potential between day and night activities and creates a greater need for ontological security analysis and design recommendations.

PSH project selection prioritized diversity in the projects' geography, architects, and sponsors. There are two key geographic areas unrepresented: eastern Canada where dwellings for people who have experienced homelessness are likely to be SRO-style buildings or scattered-site voucher housing; and the southern United States where purpose-built PSH is still rare. Within each eligible PSH project, the sample units had a baseline accessibility level (i.e., an ANSI Type-B design rather than the more accessible Type-A design) and typically avoided outliers on the corners or at the ends of corridors. For projects with more than one unit fulfilling these criteria, representatives of the two most common configurations were included in the study.

The floor plans were obtained directly from the architects and housing providers or from print sources such as Architectural Record. Photographs, building visits, and short conversations with building staff were used to verify the unit features, such as confirming the provision of kitchen appliances. The quality and drawing style of the plans varied widely, so they were scaled to $1/4'' = 1'–0''$ and then traced by hand to enable the analysis to benefit from stylistic consistency. Though care was taken to be consistent across all drawings, the aim was to produce accurate rather than precise measurements of the unit size and dimensions.

## TYPOLOGICAL ANALYSIS

The typological analysis began with the major components of each dwelling: bathroom, kitchen, storage, defined entry, and main living area. The net dimensions are from the finished near side of each wall, per the Building Owners and Managers Association (BOMA) multi-unit residential measurement standards (ANSI/BOMA, 2010). The depth–width ratio was calculated for each unit to determine its plan proportions.

In addition to absolute area calculations, an index was analyzed to denote the ratio of each component to the total unit area, including bath, kitchen, and storage. Descriptive statistics were determined to show the size range of each component and the mean and median across all units. Pearson correlation coefficients were used to assess the relationship between the components of the unit.

Space syntax methods, as prescribed by Hillier et al. (1987) and Bafna (2003), helped delineate the spatial organization patterns through relationships between components and the perceptual

**TABLE 1.** Permanent supportive housing projects with representative studio apartments

| Built | Building Name | Location | Designer | Sponsor | Floors | Units |
|---|---|---|---|---|---|---|
| 2006 | Rainbow | Los Angeles, CA | Michael Maltzan | Skid Row Housing Trust | 6 | 89 |
| 2007 | Schiff | Chicago, IL | Helmut Jahn | Mercy Lakefront | 5 | 96 |
| 2010 | Zygmunt Arendt | San Francisco, CA | David Solomon Architecture | Community Housing Partnership | 3 | 47 |
| 2011 | 97 Crooke | New York, NY | Dattner Architects | CAMBA (Church Avenue Merchant Block Association) | 9 | 53 |
| 2011 | Karis Place | Vancouver, BC | NSDA Architects | More Than a Roof | 11 | 105 |
| 2011 | Richardson | San Francisco, CA | David Baker | Mercy Housing | 5 | 120 |
| 2011 | Dunbar | Vancouver, BC | DYS Architecture | Coast Mental Health | 3 | 51 |
| 2011 | Bud Clark | Portland, OR | Holst | Central City/Home Forward | 7 | 128 |
| 2012 | Kingsbridge | New York, NY | OCV Architects | Jericho Project | 6 | 76 |
| 2012 | First Place | Vancouver, BC | GBL Architects | Lookout | 10 | 129 |
| 2012 | Hegeman | New York, NY | Cook + Fox | Breaking Ground | 5 | 161 |
| 2013 | Rene Cazenave | San Francisco, CA | LMS Architects | Community Housing Partnership | 8 | 120 |
| 2013 | Nyer Urness | Seattle, WA | Weinstein A + U | Compass Center | 7 | 80 |
| 2014 | La Casa | Washington, DC | Leo Daley & Studio 27 | Friendship Place | 7 | 40 |
| 2015 | Interbay | Seattle, WA | SMR Architects | DESC (Downtown Emergency Services Center) | 5 | 97 |
| 2016 | The Six | Los Angeles, CA | Pugh + Scarpa | Skid Row Housing Trust | 5 | 52 |
| 2016 | Boston Road | New York, NY | Alexander Gorlin | Breaking Ground | 12 | 154 |
| 2016 | Crest | Van Nuys, CA | Michael Maltzan | Skid Row Housing Trust | 5 | 64 |
| 2017 | First Hill | Seattle, WA | SMR Architects | Plymouth Housing Group | 7 | 80 |
| 2019 | Greenway Flats | Colorado Springs, CO | HB&A Architecture and Planning | Springs Rescue Mission | 4 | 65 |
| 2019 | Lincoln Park | Chicago, IL | MKB Architects | Lincoln Park Community Services | 5 | 20 |

depth of each dwelling. Simple justified graphs for each unit start at the unit door. This technique of abstraction resulted in foregrounding arrangements and similarities between the units rather than their exceptions.

## ONTOLOGICAL SECURITY CONSTRUCTS AND MEASURES

Using the typological and space syntax analyses as a base, the dwelling design patterns were then assessed using a framework drawn from Gibson's theory of affordances (1977) to identify attributes of the apartment that may promote or hinder resident behavior and the experience of the hallmarks of ontological security. Coolen and Meesters (2012) further defined affordances as the mutual relationships *between* objects and people. In this study, while the hallmarks cannot be directly assessed through floor plan analysis, affordances and related attributes provide a bridge to evaluate the potential for ontological security.

The initial list of attributes/affordances was developed by the author based on limited literature on ontological security in PSH (Henwood et al., 2018b; Padgett, 2007; Stonehouse et al., 2021) and dwelling design (Brueckner et al., 2011; McLane & Pable, 2020; Rollings & Bollo, 2021). The face validity of this list was evaluated via feedback from two academic and professional housing experts invited to review the affordances/attributes for relevance and representativeness. The panel's expertise included research, practice, and publishing experience in housing and vulnerable populations (Ahrentzen et al., 2022); and environmental psychology, development of environmental assessment tools, and evaluation of affordances (Rollings & Wells, 2018).

Each expert was provided with the initial list of affordances and attributes with the following questions:

- Given the context of the floor plans of PSH studio apartments, is this list of design manifestations of ontological security hallmarks: (a) accurate and (b) complete?
- Are the ratings for each hallmark appropriately constructed?
- Is the overall ontological rating appropriately constructed?

Each expert provided feedback on these prompts to the author via phone calls, meetings, and emails. To address the first question, the panel recommended combining some affordance/attribute pairs, adding others, and deleting several for redundancy. For example, bath proximity and visibility were combined and an affordance for cooking through a full kitchen with range was added. Based on these comments, the author sent additional questions and revised affordance/attribute lists until agreement was reached. To address the second question and achieve consistency and reliability, the panel recommended a simple binary for the presence of each attribute in the floor plan of the unit. Addressing the third question, the panel suggested that the affordance/attribute pair presence could be summed for an ontological security total.

To assess the potential for *constancy*, affordances for transition from the outside world upon entering the unit and for connection to the outside world through view were measured. Transition affordances were evaluated through the presence of a defined entry, and a proximate closet or shelf in that entry, which would give residents the chance to pause and put away their things upon arrival home. Connection was gauged by the presence of windows on multiple sides of the dwelling and by the unit's window width relative to overall apartment width. If the window width was greater than 50% of the overall apartment width, the author and expert panel hypothesized that the window would provide greater connection to the outdoors and that the unit would feel more residential and less institutional to the occupant.

**All dwelling units in the study afforded basic performance of day-to-day routines because of the presence of kitchens and baths per the sampling criteria.**

All dwelling units in the study afforded basic performance of *day-to-day routines* because of the presence of kitchens and baths per the sampling criteria. The toileting affordance was calculated by the number of spaces between the bed and bath. This draws on the idea of consecutive behaviors (Lee et al., 2013) such as waking in the morning or at night to use the toilet. Passing through zero or one space was considered a positive attribute and passing through two or more spaces was considered a missing attribute. The *day-to-day routine* of sleeping was assessed through a choice of bed positions, as a sleeping space with multiple walls suitable for the head of a bed is ideal in residential interior design (Mitton et al., 2011). Enhanced cooking, beyond the ADL of eating and the presence of a kitchen inside the unit, was evaluated positively by the existence of a full range, with stovetop and oven, as opposed to a two-burner countertop appliance. Humans tend toward spatial segmentation, creating partitions between uses in unbounded space (Kent, 1991); separating the cooking and sleeping space was measured by visual access from a bed wall to the kitchen; no visual access was deemed a positive attribute.

The opportunities for *identity construction* were evaluated through affordances of dressing, hobbies, and personalization. Sufficient storage for clothes may enhance the resident's identity construction, especially as their tenancy lengthens and they accumulate more items; the plans were examined for a built-in clothes closet, deep enough for hangers (2′–0″). Affordance for

hobbies was assessed for permanent features such as built-in desks, or extended counters beyond what was necessary for the kitchen. Personalization, or decoration of one's primary territory in a relatively permanent way (Gifford, 2007), is provided by permanent shelves for display of personal or cultural expressions. Building on Orth and Wirtz (2014), Pable and McLane (2021) noted, "People appreciate the opportunity to not only store belongings but to categorize them for easy retrieval" (p. 160); enhanced organization and hobby affordances were measured by the presence of more than one built-in storage area within the apartments.

**Designing for *freedom from surveillance* is particularly important for the residents of PSH, as agency-imposed inspections are common for completing health checklists required for vouchers and for pest control**

Designing for *freedom from surveillance* is particularly important for the residents of PSH, as agency-imposed inspections are common for completing health checklists required for vouchers and for pest control (Corporation for Supportive Housing, 2013). The potential for *freedom from surveillance* was measured by control theories such as privacy and territoriality (Gifford, 2007). In-swinging unit doors and defined entries were positive attributes that enhanced control. Invisibility of bath fixtures and of at least one bed position were positive attributes for visual privacy (Kupritz, 2003) from the unit door.

The affordances assessed for each hallmark and the attribute's method of measurement are listed in Table 2. All attributes assigned to affordances and hallmarks are positive binary measures; presence of the positive attribute is designated by "1" and absence is designated by "0".

As seen in Table 2, each hallmark was assigned four binary affordance–attribute pairs so they could be weighted equally, and their sum provides an aggregate evaluation for the hallmark. Assuming, as the literature suggests (Dupuis & Thorns, 1998; Henwood et al., 2018b; Padgett, 2007; Stonehouse et al., 2021), that the hallmarks are also intended to be weighted equally in assessing the overall potential of ontological security, the total sum of the affordance–attribute pair presence across hallmarks then provides a simplified assessment of the potential for ontological security for each unit design.

# FINDINGS RELATED TO TYPOLOGY AND SPACE SYNTAX

## TYPOLOGICAL RESULTS

The typological classifications examined by this study were plan width, depth, and the width/depth ratio; entry sequence; kitchen type and location; storage size and allocation; and bathroom fixture types and layout. The net area of the sample units ranged from 236 to 344 square feet; the mean was 303 square feet, and the median was 306 square feet. The nearness of these numbers indicates the sample represents an unbiased cross-section of the population with respect to the floor area continuum. The typical unit was between 10′–6″ and 13′–0″ wide and between 23′–0″ and 27′–0″ deep. Most of the projects possessed greater than 2.0 width–depth ratio. At the higher end of the unit, proportion range were several that employed an interlocking nesting design. The La Casa apartment, at the lowest end (1.28), was the unit closest to square. Complete typological findings are presented in Figure 1.

The typological analysis examined components of the unit, such as the kitchen, storage, bathroom, and living/sleeping areas. The effective kitchen areas ranged from 36 to 77 square feet. Storage had the greatest variation across projects, between 6 and 34 square feet, with a mean of 12 square feet. The living/sleeping area index noted in Figure 1 indicates the share of the living area relative to the overall dwelling area. Across all sample units, the mean and the median living/sleeping area index was 48%.

## OVERALL LAYOUT PATTERNS

Space syntax analysis showed clear patterns in the layout of the dwellings, with two major categories emerging: units with defined entries and those without. Further categorization resulted from the type of bathroom access (entry or kitchen) and kitchen position (separate or pass through).

**TABLE 2.** Ontological security hallmarks, related affordances, attributes, and measures

| Ontological security hallmark | Affordance: Attribute | Attribute measure |
|---|---|---|
| *Constancy* in the material and social environment | Connect to outside: Windows on two sides | 1 = yes; 0 = no |
| | Connect to outside: Window >50% wall | 1 = width of windows >50%<br>0 = width of windows <50% |
| | Transition from outside: Defined entry | 1 = yes; 0 = no |
| | Transition from outside: Proximate shelf or closet | 1 = yes; 0 = no |
| *Day-to-day routines* of human existence are performed | Toileting: Bath/bed one space apart | 1 = Space syntax depth 2 or less<br>0 = Space syntax depth greater than 2 |
| | Separation: Kitchen not visible from bed | 1 = yes; 0 = no |
| | Cooking: Full kitchen w/ range | 1 = yes; 0 = no |
| | Sleeping: Choices for bed position | 1 = at least two options for head of bed<br>0 = one clear wall for head of bed |
| Secure base around which *identities are constructed* | Dressing: Clothes storage | 1 = yes; 0 = no |
| | Hobbies: Additional storage | 1 = yes; 0 = no |
| | Personalization: Display for collections | 1 = yes; 0 = no |
| | Hobbies: Built-in desk for work | 1 = yes; 0 = no |
| People feel *in control* of their lives because they feel *free from the surveillance* that characterizes life elsewhere | Privacy from corridor: Defined entry | 1 = yes; 0 = no |
| | Privacy from corridor: Door swing in | 1 = into unit<br>0 = into corridor |
| | Privacy from entry: One bed position invisible | 1 = yes; 0 = no |
| | Privacy from entry: Bath fixtures invisible | 1 = yes; 0 = no |

*Note*: For the Toileting attribute/affordance, a space syntax value of 2 is equivalent to passing through one other space.

The correlation analysis confirmed several of the spatial observations. There was a strong, negative correlation between the existence of a defined entry and the kitchen index, $r(23) = -.68$, $p < .001$. In other words, the units with defined entries had a smaller percentage of the floor area taken up by the kitchen. There was a significant moderate, negative correlation between the existence of the defined entry and the living area index, $r(23) = -.49$, $p < .05$. Units with defined entries had a smaller living area relative to the overall dwelling. Together, these


**FIGURE 1** Sample units with floor area, dimension, and room organization arranged by typological category.

observations revealed that the entry "steals" from both the kitchen and the living area, but the effect was much greater on kitchen size.

The presence of a jogging party wall between units, as in the Karis, Kingsbridge, and 97 Crooke projects, could produce meaningful and useable space. It created opportunity for a desk at 97 Crooke, more room for usable bathrooms at Karis, and a more accessible entry at Kingsbridge (Figure 2). Though nesting required more corners of fire-resistive construction and potentially more structure depending on construction type, the decision to nest allowed for a narrow unit without sacrificing unit accessibility or livability.

Typological analysis revealed the importance of a defined entry in the unit design, the variation in storage across units, and the differences in kitchen and bath position. These findings provide a foundation for understanding the theoretical role of the components for potential ontological security.

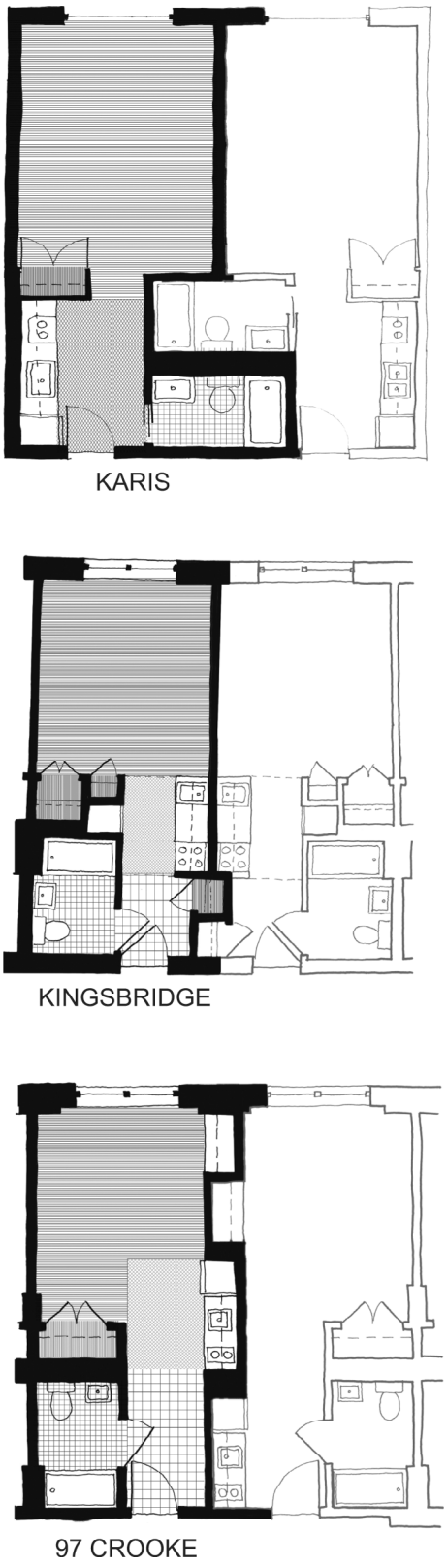



**FIGURE 2** A nesting unit design allowed width efficiency and enhanced storage and workspace provision.

## FINDINGS RELATED TO ONTOLOGICAL SECURITY

This section is a report on the results of the evaluation of affordances and attributes related to the hallmarks of ontological security: constancy, day-to-day routines, identity construction, and freedom from surveillance. The unit-by-unit assessment of each affordance/attribute pair and

**TABLE 3.** Ontological security affordances, attributes, and hallmark indices

| | Crest B | Dunbar | Interbay | First Place | Kingsbridge | Crest A | Greenway | Lincoln Park | Nyer Urness | 97 Crooke A | First Hill | 97 Crooke B | Hegeman | La Casa | The Six | Rene Cazenave | Zygmunt Arendt | Boston Road | Schiff | Bud Clark | Karis B | Rainbow | Karis A | Richardson |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Constancy | | | | | | | | | | | | | | | | | | | | | | | | |
| Connect to outside: Windows on two sides | • | | | | | • | | | | | | | | | | | | | | | | | | |
| Connect to outside: Window >50% wall | | • | • | • | • | | | • | • | • | • | • | | • | | | | | • | | • | | • | |
| Transition from outside: Defined entry | • | • | • | • | • | | • | • | • | • | • | | • | | • | • | • | • | | | | • | | |
| Transition from outside: Proximate shelf or closet | • | • | | • | • | | | • | • | | • | | | | | | • | • | • | | | | | |
| Constancy total | 3 | 3 | 2 | 3 | 3 | 1 | 1 | 3 | 3 | 2 | 3 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 0 | 1 | 1 | 1 | 0 |
| Day-to-day routines | | | | | | | | | | | | | | | | | | | | | | | | |
| Toileting: Bath/bed one space apart | • | • | • | | | • | • | • | • | | | • | | • | • | | • | • | • | • | • | | • | • |
| Separation: Kitchen not visible from bed | • | | • | | • | • | • | | | | | • | • | • | | • | • | | | • | • | • | • | • |
| Cooking: Full kitchen w/range | • | • | • | • | | • | | • | • | | • | | | • | • | | | | • | | | | | |
| Sleeping: Choices for bed position | • | • | • | • | • | • | • | • | • | | | • | • | • | • | • | • | | • | • | • | • | • | • |
| Day-to-day routines total | 4 | 3 | 4 | 2 | 2 | 4 | 3 | 3 | 3 | 0 | 1 | 3 | 2 | 4 | 3 | 2 | 3 | 1 | 3 | 3 | 3 | 2 | 3 | 3 |
| Identity construction | | | | | | | | | | | | | | | | | | | | | | | | |
| Dressing: Clothes storage | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | | • | • | • | • |
| Hobbies: Additional storage | | • | • | • | • | | | | | | | | | | | • | • | | | • | | | | |
| Personalization: Display for collections | | | • | | | • | | | | • | | • | | • | | • | | | • | | | | | • |
| Hobbies: Built-in desk for work | | • | | • | | | • | | | • | | • | • | | • | | | | | | | | | |
| Identity construction total | 1 | 3 | 3 | 3 | 2 | 2 | 2 | 1 | 1 | 3 | 1 | 3 | 2 | 2 | 2 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 2 |
| Freedom from surveillance | | | | | | | | | | | | | | | | | | | | | | | | |
| Privacy from corridor: Defined entry | • | • | • | • | • | | • | • | • | • | • | | • | | • | • | • | • | | | | • | | |
| Privacy from corridor: Door swing in | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | | • | • | • | • | • | • | |
| Privacy from entry: One bed position invisible | • | • | | • | | • | • | • | • | • | • | | • | | • | | | • | | • | | • | | |
| Privacy from entry: Bath fixtures invisible | • | | • | | • | • | • | | | • | • | • | • | • | | | | • | • | • | • | | | |
| Freedom from surveillance total | 4 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 2 | 4 | 2 | 3 | 2 | 1 | 4 | 2 | 3 | 2 | 3 | 1 | 0 |
| Total all hallmarks | 12 | 12 | 12 | 11 | 10 | 10 | 10 | 10 | 10 | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 8 | 8 | 7 | 7 | 7 | 6 | 5 |

the hallmark scores is in Table 3. Each hallmark subtotal is out of a possible 4 points for a total score of 16. The units have been sorted by the overall ontological security score.

## CONSTANCY

*Constancy* was assessed by the sample unit's provision of transition space from the outside world, and by the unit's potential to connect to the outside world. The constancy scores were the lowest of the four hallmarks; the mean was 1.71, and the mode was 1.00; 10 of the units only achieved one of the affordance/attribute pairs and two achieved none.

The transition from the outside world was found in 16 plans with defined entries and 10 plans with a proximate shelf or closet. Kingsbridge, Zygmunt Arendt, and Dunbar were notable for having a defined entry and a dedicated closet immediately adjacent to the entry.

For the affordance of connection to the outside world, slightly over half of the units (13 of 24) had window widths greater than 50% of the unit width. On the other hand, most units (22 of 24) have windows on only one wall. Both typical Crest units have windows on two walls; the Crest building layout is unique because it maximizes corner conditions, and only 3 of the 19 units on each floor have only one wall with windows (Figure 3). For the other buildings that have not maximized corners, this distinction shows the possible inequity in connecting to the outside world for residents of corner units versus those of inboard units.

## DAY-TO-DAY ROUTINES

The potential of the dwelling design to support day-to-day routines of human existence was assessed based on the suitability of the dwelling for sleeping, toileting, cooking, and the ability to separate these activities. The *day-to-day routine* hallmark score mean was 2.67, and the mode was 3.00.

Sleeping space was evaluated based on bed placement choices. Most of the sample units examined (21 of the 24) had two or more positions suitable for the head of the single bed typically supplied for PSH; thus, the affordance/attribute for sleeping choice was fulfilled. However, it is worth noting that half of the sample units had more than two choices for the head of the bed. This higher level of choice, while not part of the assessment in this study, should be evaluated qualitatively in the field in future studies.

**Most of the sample units examined (21 of the 24) had two or more positions suitable for the head of the single bed typically supplied for PSH…**

For day-to-day-routines, the key metric for toileting was the bathroom's proximity to the sleeping space. Of the sample units, 17 had either direct access or access through just one other space; 7 units required the resident to pass through both the kitchen and the entry.

Most of the sample units (15 of 24) had both visual and spatial separation between the sleeping area and kitchen. This affordance was easily achieved in the plans without defined entries, because one entered the kitchen directly from the corridor, away from the sleeping area. However, several sample units had both defined entries and no kitchen visibility from the sleeping area, demonstrating that a trade-off between entry and invisible kitchen was unnecessary.

## IDENTITY CONSTRUCTION

This hallmark was evaluated through permanent, built-in clothes storage, personalization opportunities, and built-in places for hobbies. The identity construction hallmark had a mean of 1.83 across the units, and the mode was 2.00.

Most of the sample units had a single, linear closet, between 6 and 14 square feet. The Bud Clark and Schiff projects had no designated closet space, relying instead on furnishings for clothes storage. Seven of the plans included additional storage space. Enhanced storage was seen in the large, walk-in closet at Rene Cazenave and Greenways.

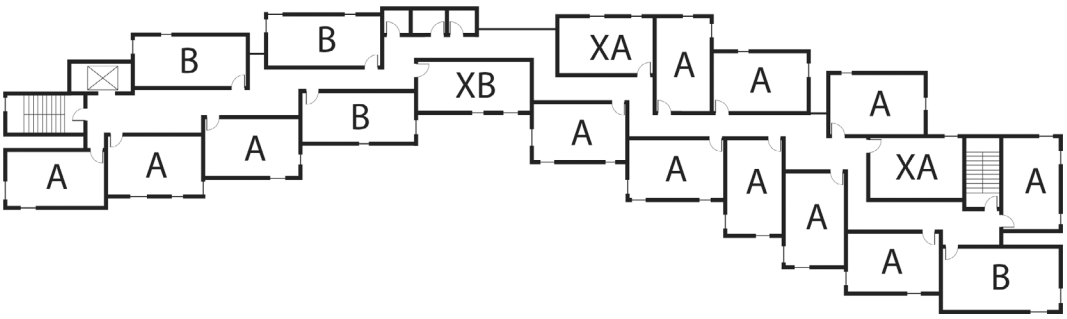



**FIGURE 3** Plan diagram of typical floor of Crest Apartments, with Crest A and Crest B denoted. 16 out of 19 units have corner conditions. Units without windows on two walls are marked XB and XA.

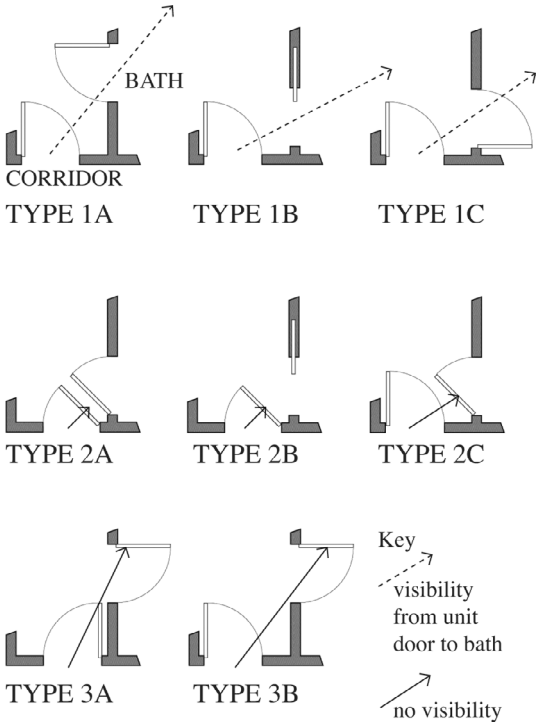



**FIGURE 4** Bath and unit door relationships demonstrating the resident's potential to control surveillance.

Seven of the sample units had designated, built-in space for work and leisure, and many of these relied on innovative tactics. The extra counter at Hegeman was an accessible, lowered work surface per the ANSI accessibility requirements, but also served the living area as a desk or table. An extra counter at First Place faced both the kitchen and the living area. A shelf and work surface in both 97 Crooke units was made possible by the jogging party wall.

## FREEDOM FROM SURVEILLANCE

Freedom from surveillance was assessed through the privacy afforded by the entry sequence, and the privacy provided by bed and bath layouts. This hallmark had the highest mean score (2.75).

The unit door swung into the dwelling in all but two of the sample apartments: Richardson and Zygmunt Arendt. Though swinging the door into the corridor gave more push-side accessibility clearance, it puts the resident in a vulnerable position and limits their ability to control the door opening.

The design and coordination of the bath and front doors afforded the highest level of privacy for the resident's bathroom at Crest B, where the bath was entered through the sleeping/living space, and there was no acoustic or visual connection between the entry and the bath. Fourteen other projects had visible privacy from the front door to the bath fixtures (Figure 4, door type 3A and 3B).

### OVERALL ONTOLOGICAL SECURITY

The overall ontological security potential for the sample units was assessed through a simple aggregation of the index for each hallmark, with each weighted equally (Table 3). No single sample unit achieved the highest possible score across all four hallmarks. For example, Crest B offset a lower score for *identity construction* with higher scores for *day-to-day routines, constancy*, and *freedom from surveillance*, while Richardson scored no points for *freedom from surveillance* and *constancy* but was above the mean for *day-to-day routines* and *identity construction*.

Just as the defined entry had typological weight in predicting the layout of the apartments, it was also important in predicting the highest scores for ontological security. The four highest scoring units for overall ontological security, those with overall scores of 12 or 11 out of 16 possible points, had a defined entry, while the lowest 5, with overall scores of 5–7, mostly had no defined entry with the exception of Rainbow. Middle-scoring units were a mix of entry typologies illustrating that more than a defined entry was needed to create high potential for ontological security.

Figure 5 shows the distribution of attributes in three of the units with high overall scores for ontological security affordances. Each attribute is represented by at least one unit.

## DISCUSSION

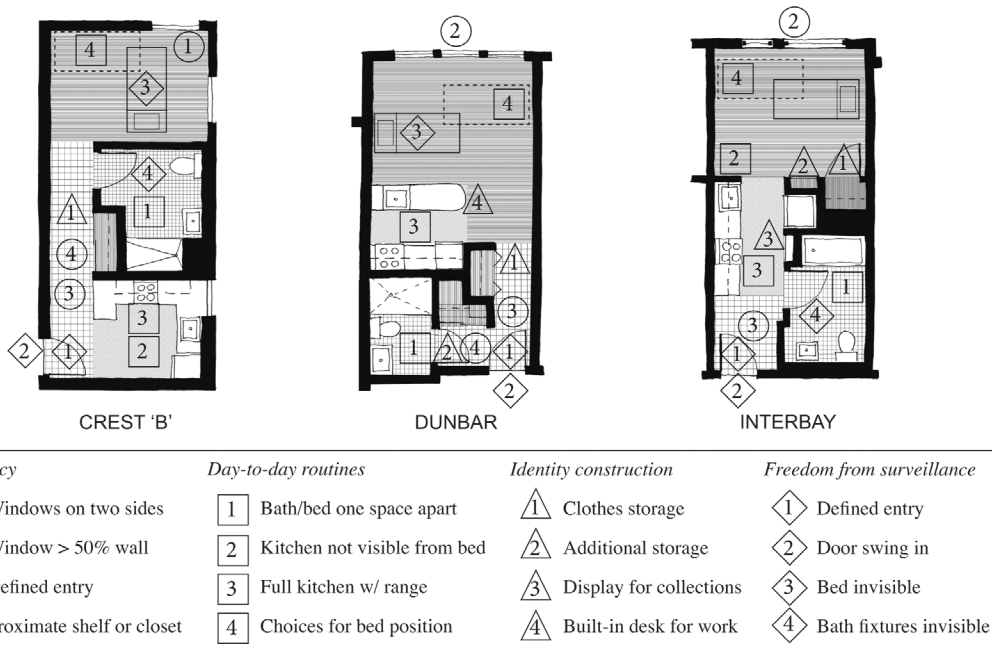
Padgett (2007) found that most participants who received appropriate housing reported increases in the hallmarks of ontological security, and the findings from this current study might begin to demonstrate the implications of design decisions for the ontological security potential of PSH units. The range of projects revealed the constraints created by site geometry and orientation, jurisdiction, geography, and provider priorities; however, patterns were discovered including entry sequences, layering of space, and room delineation that may enhance ontological security. Details such as door placement, opportunities for personalization, and choices for bed placement could allow residents to feel more at "home" by improving control, identities, and routines. These results support the research by Pable (2012) who also found that small modifications influenced internal control among women experiencing homelessness. The residents in Pable's study had increases in storage such as built-in wall shelves and clothes storage allowing them to personalize the space. The Kingsbridge and Dunbar units in this investigation also provided ample storage for clothes, while 97 Crooke had a desk and shelving that may enhance identity. These are important features to consider when designing the interiors of PSH apartments, particularly since Chan (2018) discovered that the ability to maintain "regular stuff" augments control, constancy, and well-being.

**"Details such as door placement, opportunities for personalization, and choices for bed placement could allow residents to feel more at "home" by improving control, identities, and routines.**

Henwood et al. (2018b) reported that apartment design might increase the connection of younger PSH residents to the outside world and their ability to transition to being home, in part addressing the lack of constancy. Some of the sample units maximized the impact of recent ANSI A117.1-2009 accessibility regulations and maneuvering clearances to create a strong sense of arrival. This additional square footage can allow interior designers to plan entry areas with proximate closets or shelves that allow for a pause upon arrival.

Day-to-day routines were challenging to maintain for people who had experienced persistent, unsheltered homelessness (Stonehouse et al., 2021). The design of the apartment has the potential to create a stable platform so that individuals can focus less on maintaining the protective habits around privacy and security that Stonehouse et al. observed. And for those who have been incarcerated, perceptions of being surveilled are a particular barrier to their ontological security (Rosenberg et al., 2021). The assessment of this hallmark's affordances and attributes showed that most unit designs provide some control for the resident in terms of the common PSH surveillance. Bed and bath privacy from the unit door were the least realized affordances and should be considered by designer's unit layouts.

**FIGURE 5** Sample units with relatively high overall ontological security potential.




While there is no single, perfect dwelling, patterns could streamline layout decisions giving designers more time and energy to innovate. Like McLane and Pable (2020), this investigation found that visibility and spatial segmentation could make a difference in allowing residents to feel secure. Zoning of space may create increased privacy and use, which is critical in supporting independence for PSH residents who are trying to regain control over their lives (Rollings & Bollo, 2021). In fact, the units with the highest level of ontological security potential had defined entries that improved privacy and created a layering of entry into the unit. However, because correlation analysis suggested that these entries take space away from kitchens and living areas, discussion with residents could help clarify their priorities.

## LIMITATIONS OF THE STUDY

This study's methodological limitations should be noted to inform future research. First, though short conversations with building staff and site visits were used to confirm the information on the floor plans, these methods were not comprehensive. Future studies on the topic would benefit from rigorous, qualitative analysis of staff and resident perspectives. Second, this was a two-dimensional analysis, and a three-dimensional study would provide richer information, such as the height of the windows in creating a connection to the outside world, or the use of dropped ceilings to delineate space. Because three-dimensional information was not available for all units, the author chose consistency and comparability at the cost of richness. Third, the unit was removed from its full-building context, which precluded understanding the unit door's relationship to those across the hall, which could provide freedom from surveillance.

Because of the overall methodological limitations of an archival study, there are many affordances that were not examined. For example, a day-to-day routine of controlling temperature and light is supported through an in-unit thermostat and window coverings, but this cannot be assessed through floor plan analysis alone. Identity construction, the ability to paint/hang items on the walls, could not be measured without an understanding of the policies at each site. The *identity construction* criteria could be met through resident- or social-service provided additional furniture, but the residents' income and/or the sponsor's housing policies cannot be expected to uniformly allow this option. Therefore, in the context of this study, focusing on built-in features was a more reliable gauge of the unit's potential. On the other hand, for people who have lived in the apartment for many years, provisions for collections or hobbies, such as additional closets, are increasingly important.

As Coolen and Meesters (2012) noted, affordances are not static: individuals create new affordances through familiar objects. The individuals who live in PSH have a diversity of mental and physical health characteristics that were not examined in this study, which could influence the mutual relationships and behaviors *between* objects and people (Gibson, 1977). Thus, the attributes analyzed may have equally different meanings for the inhabitants of the apartments.

## CONCLUSION

The affordances and attributes observed in this study do not, of course, guarantee ontological security for the resident. The apartment itself is just one piece of the ontological experience for a person recovering from homelessness. The design of common areas, the sponsor's policies, and the building's neighborhood play key roles in the resident's day-to-day lives.

But opportunities for ontological security may be enhanced by typologically driven design decisions in studio apartments. In this research study, the author sought and found clear patterns among the small dwellings built as PSH. The most significant of these patterns are related to the entry, the layout, and procession of the rooms after the entry.

This is the first known investigation to inventory and evaluate PSH dwellings for well-being and affordances through the lens of ontological security. It extends a growing scholarship on PSH common area design (McLane & Pable, 2020) to PSH dwelling design. As the number of PSH units grows in the United States (Henry et al., 2019), it is important for interior designers to provide more than just shelter. Design elements, even the details discovered in this study, should be considered to support the creation of a home (Rivlin & Moore, 2001), particularly when these elements could help eliminate barriers that improve the ontological security hallmarks of constancy, routine, identity construction, and freedom from surveillance that enhance well-being (Henwood et al., 2018b; Rosenberg et al., 2021).

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