Mobile Homeless:
Vehicle-Living, Off-Grid Connection, and the Building of an Informal Home

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Abstract

Research on informal housing has predominantly focused on formations occurring in the Global South, with less empirical focus on the Global North. Utilizing data from qualitative interviews with people practicing vehicle-living in the Metro Vancouver region, this study diverges from the Global South approach, by examining how individuals living out of their vehicles attempt to connect to the urban technological grid, and how these intermittent connections help people build and recreate a sense of home within makeshift, "illegitimate" living spaces. The results of this study contribute to the sociological literature on vehicle-living and housing inequalities, and helps expand the field of informal housing studies through the exploration of a form of mobile makeshift housing occurring within the specific material and socio-economic conditions of the Global North.

Lay Summary

Vehicle living represents a form of informal housing that is often a choice made by people who practice it, but it is also a choice that is constrained by a lack of affordable housing, and the high cost of living in the Metro Vancouver area. Sourcing water, electricity, sewage, Wi-Fi and phone services (the urban grid) is part of how vehicle-living people maintain and create a sense of home in a living space that is considered illegal.

Preface

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1.0 Introduction

The phenomenon of informal housing is regularly associated with large, sprawling, makeshift settlements in the Global South that consist of sub-standard housing often existing outside of the urban technological grid (Roy 2005; Boanda-Fuchs & Fuchs 2018). This understanding of off-grid informal housing as primarily a feature of the Global South obscures the existence of socio-economically marginalized populations that are housed informally in the Global North, and experience partial or complete disconnection from public and private services such as water, sewage, electricity, and broadband. Informal, off-grid living conditions occurring due to socio-economic disparities present significant challenges for nation states in the Global South (Mainali & Silveira 2011; Palit & Chaurey 2011), but the problem is not isolated to the so-called developing world. Remote indigenous communities in Canada often rely on inadequate housing (SSCAP 2015) and have increasingly required localized self-sufficiency initiatives to confront energy inequalities (Rezaei & Dowlatabadi 2016). Indigenous off-grid living conditions have also lead to inadequate access to sanitation and potable water (Patrick 2011; Hanrahan, Sarkar, & Hudson 2014), and uneven broadband development and connectivity (McMahon et al. 2011; Hudson 2013).

Inadequate housing and off-grid living conditions occurring as a result of socio-economic exclusion and remote isolation are issues of significant concern, but urban housing inequalities have been increasing globally (Wetzstein 2017) with correlative effects on homeless populations (Bainbridge & Carrizales 2017). In the absence of sufficient and accessible housing, at-risk populations often rely on the construction of unregulated, informal housing as make-shift shelter (Boanda-Fuchs & Fuchs 2018). Informal housing in the context of the Global North takes different forms (Young, Abbott & Goebel 2017; Wegmann & Mawhorter 2017) due to

differences in urban land use management, and regulatory regimes (Roy 2005). Vehicle-living, the practice of utilizing an automobile as shelter (Wakin 2014), has become a feature of informal housing in the Global North (Bruder 2018, Wakin 2014). Current scholarly research demonstrates that lower socio-economic and precariously housed people in the Global North often face significant barriers accessing broadband services (Halegoua & Lingel 2018; Eyrich-Garg 2011), proper sanitation (Speer, 2016; Capone, Ferguson, Gribble, & Brown 2018) and clean water (Masten, Davies, & Mcelmurry 2016), but how vehicle living populations access and utilize the urban technological grid within the so-called developed world cannot be taken for granted or assumed. The legal occupation of a fixed address and home is often perceived as a culturally shared ideal (Carpentier & Doudaki 2019), but scholarly inquiry suggests that hegemonic understandings of the role of housing and the notion of home are often class biased, and not universally shared (Snow & Anderson 1987; Duneier 2001; Dayaratne & Kellett 2008).

This study investigates how vehicle-living populations in the Metro Vancouver region negotiate partial and complete disconnection from the urban technological grid, and what role the grid may play in their informal housing practices. Utilizing data from 14 interviews collected between September and December of 2019, I argue that vehicle-living is form of mobile informal housing that can be understood as a make-shift solution to the absence of accessible and affordable fixed housing. As an unregulated and unrecognized form of housing, connecting to, and reproducing the features of the urban technological grid are part of an ongoing process of building a "home" in an informal space. The durability of maintaining access to electricity, Wi-Fi, water, telecommunications and sewage disposal is often constrained by individual socio-economic and material conditions, and these constraints often shape how individuals engage with, and rely upon the urban technological grid. This study will contribute to the canon of urban

sociology, the sociology of housing and the home, and builds upon scholarly literature currently exploring informal housing occurring within the Global North.

2.0 Literature Review

2.1 Technological Grids

Vannini and Taggart define technological "grids" as the complicated networks of lines that mediate the flows of energy and resources that sustain and uphold the complex infrastructure of contemporary industrial societies (Vannini & Taggart 2015). Grids are also controlled technological systems, purposive networks managed by institutional and infrastructural agents that interact within specific economic and industrial areas that are often constrained by, but not always limited to municipal, provincial, and national boundaries (Carlsson & Stankiewicz 1991). However, technological grids are more than networks or flows of energy and resources; they are social constructs, reflecting the very structures and histories of the societies, actors and builders that enabled their construction (Hughes 2012). For this study, a *grid* will be defined as an assemblage of privately and publicly owned technologies that are linked together, and purposefully organized to mediate the flow of resources that achieve shared social, material, and economic system goals. As a technological system, the social role of a grid is often represented as infrastructural, but its is also a constantly evolving, re-constituting entity, that is determined by its specific social historical location.

Technologies can be understood as techniques, or actions that are integrated to produce specific mechanical, physical, or chemical effects upon the material world that work toward achieving socially and culturally understood goals (Mauss 2006). Technologies are not static, and often adapt to shifts in technological knowledge, and with these changes, other component technologies must often evolve or be replaced (Lemonnier 1992). In this manner, technologies

can be understood as socially linked, composed of various component techniques, operating independently, but also systematically related (Grant 1986). As the systematic relationships between technologies increase in complexity, becoming systems unto themselves, the ability of technological systems to become society shaping also increases. For example, the gradual electrification of human societies was more than the construction of an energy grid, but also a catalyst that lead to the extension and development of state regulatory bodies, specialized labour and training, urban expansion, sophisticated modes of communication, and the mass production and distribution of consumer goods (Hughes 2012). Therefore, complex technological systems can be understood as ecologies, where the interactive relationships between human agents and the technological environment represent an ongoing process of emergence and meaning making. Complex technological systems are assemblages of technologies that allow human societies to design and reconfigure the material world into manageable and desirable states, but this process of re-ordering is not linear. The influence of technological systems is often reciprocal, transforming both how human societies engage with, and confront the physical world, but also how social reality is ordered and understood (Vaninni 2009).

Complex technological systems have developed throughout human history, but contemporary societies have become increasingly dependent upon their proper functioning. The city states of the Roman Empire channelled water through sophisticated aqueducts, and the ruins of Harrapan cities show traces of complex sewage and irrigation infrastructures, and these technological changes contributed to the expansion of these societies and the power they wielded during their epochs (Bentley, Ziegler, & Streets-Salter 2010). The recent historical development of advanced technological systems mostly followed the various industrial revolutions that occurred globally over the last three centuries. The rise of industrial systems of production, and

the proliferation of market based economies required the expansion of privately and publicly funded transportation, communication, and energy networks to support the demands of manufacturing, distribution, and consumption (O'Neill 2017). The intensification of technological systems in support of industrialized societies, globally and historically, share developmental similarities, but these processes have not been homogeneous. Technologies, and technological systems may be material constructs, but they are also the constructs of existing social-historical locations, and their advancement and construction regularly reflect the socio-cultural relations and historical trajectories of their existing milieu, and these developments have been broadly uneven (Veblen 1990; Hughes 2012). Therefore, any discussion of technological grids must begin with an understanding of the social-historical context of their development.

2.2 Metro Vancouver's Urban Technological grid

The social-historical trajectory of technological and infrastructural development in Canada, and British Columbia, cannot be understood outside of the phenomenon of settler-colonialism as an exploitative arrangement of imperialist socio-economic relations. Innis argues that settler-colonial Canada's early economies were predicated upon staple resources such as forestry, fisheries, agriculture, mining, and other industries that formed a series of flows where raw materials supplied by the settler-colonial society provided the industrial base of the imperialist metropole, and technology and infrastructure in Canada was historically arranged to support Canada's exploitative relationships with England and France (Innis 1995). The Westward expansion of the settler-colonial state of Canada was framed around staple resource extraction, with infrastructural and technological development occurring unevenly between small town sites of raw material density, and the primary urban distribution centres that developed along the

railway systems that shipped goods into the Eastern port cities of Toronto, Montreal and Halifax (Clement 1978).

Metro Vancouver's shift from a 19th century imperial outpost to British Columbia's primary socio-economic urban centre is tethered to resource extraction, but also, technological development. Beginning with the linking of the Canadian Pacific Railroad in Port Moody in 1886 and onward, the city's relative late development allowed it to build with the fixtures of urban modernity, as opposed to having to accommodate, or force the intensive requirements of sophisticated technological systems, and speculators, entrepreneurs and city planners capitalized on this opportunity, often shaping the city and its regulation around modern infrastructural developments (Barman 2007; Lauster 2016). As a result, the foundation of Metro Vancouver's contemporary infrastructural grid both began, and coincided with the city's founding in the late 19th century, and its rapid social, material, and economic growth.

2.2.1 Electrification

Electrification of the city began in 1897 under the auspices of the privately-owned BC Electric Railway Company [BCER]. The BCER's control over the city's electrical grid operated in conjunction with its monopoly over streetcar transit. To power the cable cars, a comprehensive electrical grid was laid down that also connected the neighbourhoods that grew in tandem with the rail lines. The BCER's distribution of electricity as a market commodity remained intact until WAC Bennett's provincial government expropriated the BCER in 1962, transforming the electrical grid, and the distribution of power into a public good controlled by the crown corporation BC Hydro (Barman 2007; Ball 1991). The intent of the Bennett government was to expand British Columbia's electrical grid into the neglected regions of the province as a means of modernizing, and expanding British Columbia's resource extraction industries (Barman 2007).

The distribution of electricity in British Columbia and Metro Vancouver remains a public good sold as a market commodity, under the auspices of BC Hydro.

2.2.2 Water Works

Centralized water supply was institutionalized within the city charter beginning with the founding of the Vancouver Water Works Company in 1886. Within a decade, most of the privately-owned water companies in the region had been purchased and were under municipal control. Rapid industrial, commercial and population growth gradually lead to several bold water projects, and the consolidation of regional water supply management under the Greater Vancouver Water District [GVRD] in 1924 (Kuhlberg 2016). Water management and supply continues to remain a public good within the municipalities that make up the Lower Mainland, and along with Metro Vancouver, the GVRD continues to oversee water distribution in the Lower Mainland drawing from several reservoirs from around the region (Metro Vancouver 2018).

2.2.3 Sewage & Sanitation

The management of sewage pre-dates the city charter, as the early settler-colonial outposts in the region regularly diverted waste away from settlements and camps as an attempt to control the spread of infectious disease. The early sewage systems primarily emptied into Burrard Inlet and False Creek, but after the city's incorporation in 1886, and subsequent urban expansion, heavy water pollution in a resource dependent port city that was economically reliant upon fisheries lead to the establishment of the Burrard Peninsula Joint Sewerage Committee [BPJSC] in 1914 (Cain 1976; Ball 1991). The BPJSC drafted and maintained extensive sewage systems that worked with currents and wind to divert wastewater away from shallow harbours to preserve the health of recreational swimming and the fishing industry. The BPJSC systems

remained effective until the mid-century. Burdened with increasing levels of sewage flowing out of the Lower Mainland, the Greater Vancouver Sewerage and Drainage District was incorporated in 1956 along with and ambitious plan to gradually construct a series of treatment plants that would cleanse wastewater and mitigate pollution levels in the Fraser River and Burrard Inlet. The first plant was constructed in 1963, and a series of others followed. Sewage and sanitation operations remain a publicly provided service, and five plants now operate within the metropolitan Vancouver area, and have undergone consistent upgrades to remain effective in the face of steady urban expansion (Cain 1976; Metro Vancouver 2018).

2.2.4 Telecommunications

The earliest telecommunications systems in Metro Vancouver were mostly telegraph lines, but telephone services quickly followed in the wake of the Canadian Pacific Railroad, and in 1886, the privately owned New Westminster and Burrard Inlet Telephone Company was established to service the newly founded city of Vancouver (Rens 2001; Collins 1977). By the turn of the century, the New Westminster and Burrard Inlet Telephone company had expanded into the British Columbia interior and controlled telephone services in Victoria. In 1904, the company provided telecommunications to most of the province, and changed its name to the British Columbia Telephone Company [BC Tel] (Rens 2001). BC Tel quickly became the monopoly telecommunications carrier for the province, an industry standard that remained in effect until a series of Supreme Court decisions lead to the Telecommunications Act of 1996 which effectively helped deregulate and liberalize telecommunications' markets in Canada in an attempt to facilitate the country's shift toward broadband and mobile communications platforms (Wilson 2000). Faced with increasing competition from traditional competitors like Bell Canada, and new upstart market challengers, BC Tel merged with the newly privatized Telus corporation

in 1998 (Leslie-Spinks 1998). Now under the Telus brand name, the private corporation remains the dominant player regarding home telecommunications' services in Metro Vancouver and British Columbia, but does not hold the same position within broadband and mobility markets.

2.2.5 Broadband Networks

Metro Vancouver played a significant role in the evolution of broadband services in Canada. The computer science departments of both Simon Fraser University and the University of British Columbia developed various networking platforms, and were connected to NetNorth, an early online interface that linked several university computer science labs across Canada in the 1980s (Ca*Net Institute 2001). NetNorth served as the foundational platform for what would become Ca*Net, a high-speed networking infrastructure for developing online services and products that would allow Canada to compete economically within the growing knowledge industries. The capabilities of Ca*Net were extended in the early 1990s to serve as the framework of broadband systems by the Canadian Network for the Advancement of Research, Industry and Education, a non-profit federally operated organization dedicated to the advancement of Canadian online initiatives (Shade 1994; Luppicini 2006). Broadband services in Canada and BC expanded exponentially during the 1990s and 2000s and are mostly privately distributed commodities, but despite the so-called liberalization of communications markets in the wake of the 1996 Telecommunications Act, internet access in Metro Vancouver and British Columbia is still highly mediated by large, long term market players such as Shaw Cable and Telus (Van Gorp & Middleton 2010).

2.8 Access to the Technological Grid

The construction of Metro Vancouver's urban technological systems often began out of sheer necessity, or driven by market demand (Lauster 2016). However, like many North

American cities of the mid 20th century, Metro Vancouver's infrastructural development gradually took the form of standardized, capital intensive, networks expanding out from the metropolitan core that linked the residential peripheries into an industrial grid of technological flows (Graham and Marvin 2001). Access to the technological grid is highly mediated by a wide range of institutional actors within both the private and public sphere, that operate at the international, federal, provincial, and municipal level (Richards & Vining 2001). Furthermore, access is often established by the infrastructure's particular mode of governance, its relationship to market forces, and the tensions between both marketability and public necessity that often determine whether the technological infrastructure is privately or publicly owned (Ennis 2016). Services such as sewage or waterworks are essential to the function of a city, and the ongoing provision of these services often supersedes their viability as a profitable market commodity. However, the public provision of utilities is not completely universal. Water and sewage services are bounded by the spatial limits of urban distribution systems, and while access is not limited to residential and commercial buildings, consistent and ongoing connection is usually dependent upon the consumer's ability to remain housed, and regularly pay for access to these services. Privately distributed services, such as broadband and telecommunications, are territorialized and highly dependent upon consumer demand. Disparities of service can be common, with geographic location, and a user's ability to pay for increased access being highly determinant (Offner 2000).

Residential and commercial buildings are the primary access points for urban technological infrastructure, and the impetus for its expansion and development (Kirkpatrick & Smith 2011). Building codes are consistently modified and increased to both accommodate the functional requirements, and standardize the expansion of technological grid (Barnett 2011). However, as cities rely upon technological infrastructure for the smooth functioning of urban

economies, transportation networks, and essential services, access is not limited to the commercial and residential structures of the built environment. For example, publicly maintained washrooms ostensibly provide basic water and sewage facilities (Molotch 2010), and the provision of private and public "free Wi-Fi" enables broadband connectivity for anyone with access to a mobile device. Furthermore, the broad shift from landlines to cell phones has increased telecommunication linkages for the precariously housed, but the transitory aspects of these populations still leads to short and long term periods of disconnection (Bender, Begun, DePrince, Haffejee, & Kaufmann 2014). In sum, the ability to connect into the urban technological grid should be understood as somewhat fluid, and varies from person to person, but is predominantly mediated by the degree of access to permanent housing and technological infrastructure, and a person's ability to pay the cost of maintaining their connections to the grid.

2.9 Urban Off-Grid Populations

Urban off-grid populations are individuals and groups experiencing varying degrees of housing insecurity ranging from homelessness to precariously housed conditions (Eyrich-Garg 2011; Speer 2016). The social and historical circumstances of homelessness and precariously housed populations differs regionally and from country to country (Tipple & Speak 2009), and is often contextual to specific socio-economic, cultural, and political conditions (Springer 2000). However, the primary markers that define the conditions of housing insecurity are fairly consistent. Insecure housing is understood as structurally inadequate accommodation that is often socially isolating, not intended for habitation, and often temporary and emergency (Busch-Geertsema, Culhane, & Fitzpatrick 2016). Housing insecurity also varies in degrees of severity; from living and sleeping outside or in a temporary shelter, to individuals sharing short term accommodations with friends and family, or informal or substandard living quarters (Amore,

Baker, & Howden-Chapman 2011). The degree of housing security experienced by these populations exists along a continuum between temporary, cyclical, or full time precarity and disconnection from the resource rich urban grid (Forrest 1999).

Housing insecurity places precarious populations at a higher risk for social isolation (Somerville 1998), decreased social networks and reduced health outcomes (Hwang et al. 2009), and the erosion of rights often associated with liberal-democratic citizenship (Kennett 1999). Inadequate access to housing correlates with patterns of social exclusion (Sommerville 1998) which places severe structural limits on economic participation, steady employment, political engagement, and social support (Burchardt, Le Grand & Piachaud 2002). Moreover, as housing and property ownership is often a site of social mobility, wealth accumulation and political access (Molotch 1976), the social exclusion linked with homelessness and housing precarity often carries the stigmas of social dysfunction (Springer 2000), and the failed capitalist subject who is unable to contribute properly to the growth and development of the urban milieu (Belcher & DeForge 2012). Therefore, urban off-grid populations can be understood as homeless or precariously housed individuals at higher risk of stigmatization and social exclusion.

2.10 Informal Housing, Vehicle-Living & The Process of Homemaking

The UN defines informal housing as unplanned and unregulated residential settlements that lack security of tenure to both land and the built environment, and are often disconnected from public services and infrastructure (United Nations Habitat 2015). Informal housing can also be understood as an unauthorized method of building a “self-help” living space that utilizes available resources and materials, and is often non-compliant with existing building standards (Boanda-Fuchs & Fuchs 2018). However, these definitions imply that housing, whether formal or informal, exists as binary of legitimacy and illegitimacy. Formal housing is recognized and

regulated by the state, while informal housing is categorized as unstable and existing outside the limits of the law (Tutu & Stoler 2016). Moreover, dichotomous understandings of informal housing often relegate the prevalence of makeshift dwellings as primarily a phenomenon of the so-called “developing world” (Roy 2005) which obfuscates how unregulated housing practices differ in the “developed world”, and are adapted and contextual to existing legal structures and regulatory frameworks (Durst & Wegmann 2017).

Informal housing in North America, like homelessness, can be understood as a spectrum of experiences (Boanada-Fuchs & Fuchs 2018). The category is often broad, ranging from temporary tent cities (Loftus-Farren 2011) to unrecognized basement apartments (Tanasescu 2009) and semi-legitimate housing tracts (Wegmann & Mawhorter 2017). Lived-in automobiles, while not recognized as formal housing, do provide a mobile, makeshift form of shelter that is often secure, and can be relocated when necessary (Wakin 2014; Wakin 2005). Moreover, motorhomes and RVs are often manufactured to replicate the design and the domestic features of fixed housing, and many come with sinks, faucets, showers, toilets, stoves, refrigerators, electrical sockets, water storage, and temperature controls already built into their layouts (Twitchell 2014). Vehicles not specifically designed for recreational camping, such as vans and trucks, can be customized to meet the needs of a living space (Wakin 2014).

Vehicle living is often classified as a form of homelessness (Homelessness Services Association of BC et al. 2019). This categorization suggests that the practice represents the absence of a "home", but notions of home and belonging can be present outside the regulated boundaries of fixed housing and the built environment (Robinson 2002; Wade 1997; Wakin 2014). Access to secure and adequate housing is an integral need that promotes safety and stability, but the built environment is more than a collection of material structures. Buildings

guide and organize social action, but they are also open for re-configuration and re-interpretation beyond their design (Gieryn 2002). Structures are often built for the purpose of providing a home, but meanings of home and inclusion are often socially, culturally, and personally contextual (Moore 2007). In the absence of regulated formal housing, informal housing often becomes a site of makeshift home construction, an ongoing process that sometime reproduces prevailing social historical understandings of home within the context of being homeless (Kellett & Moore 2003; Dayaratne & Kellett 2008).

3.0 Data & Methods

This study examines how people living in their vehicles in Metro Vancouver stay connected to the urban technological grid, and how these practices relate to the building of informal housing and to constructing a sense of home. Since the early 2000s, housing costs in Metro Vancouver have been increasing dramatically (Devlin 2017). The region's ongoing "housing crisis" has been exacerbated by depleted and aging rental stock, uneven provision of affordable housing, and tight competition for living space (City of Vancouver 2017; Mösgen, Rosol & Schipper 2018). Recent homeless counts conducted by Metro Vancouver and the City of Vancouver indicate that homeless populations across the region have been growing (Homelessness Services Association of BC et al. 2019; BC Non-Profit Housing Association & M. Thomson Consulting 2017). Informal housing erected by homeless populations in the form of "tent cities" have proliferated across the region and have met varying degrees of toleration and dispersal (Lazaruk 2020). However, informal housing in Metro Vancouver also includes a shifting population of people living in their vehicles around region (BC Non-Profit Housing Association & M. Thomson Consulting 2017). Vehicle-living differs from tent encampments in that it is often highly mobile, ownership is regulated and recognized by the state, and vehicles

can often mimic the so-called “comforts of home”, or can be customized to provide these features, or directly connect into the urban technological grid (Wakin 2005). Therefore, as a site of urban off-grid living and informal housing, vehicle-living is a strong unit of analysis.

This study was based off 14 interviews with people both preparing to live out of a vehicle, and currently embedded in the lifestyle. Employing a purposive, snowball recruiting strategy, the interviews were collected between September and December of 2019. Although a highly mobile population, each participant claimed Metro Vancouver as their primary region of residency, with the cities of Vancouver, Burnaby, and North Vancouver as the most common squatting spaces. The recruiting process began with mapping out where vehicle-living tended to cluster in the aforementioned regions. Clusters were predominantly located in industrial zones, “big box” retail areas, and public park spaces that provided large parking lots. When the mapping process was complete, I visited each clustering area about once a week, and flyered the windshields of lived-in vehicles with a document that promoted the study and its purpose, and included contact information (email & cellphone), and an offer of a $20 honorarium that would reimburse participants for any lost time or wages. In addition, I also walked around residential neighbourhoods that bordered the clustering areas, and flyered single vehicles that appeared to be occupied as a living space. Recruitment did not extend beyond flyering windshields and only occurred when the vehicle seemed temporarily unoccupied. This strategy was employed out of respect for the vehicles being private spaces located in public areas, and the dwellings of a hard to reach, vulnerable population (Liamputtong 2007). Of the 150 flyers distributed, 26 responses were received with 14 materializing into one-on-one interviews. Out of the 14 people that participated in the study, 11 were direct responses to the flyers, and 3 were through snowball referrals.

For this study, I employed a semi-structured, qualitative interview approach. Qualitative interviews studies can make explicit the implicit understandings participants hold when they engage with their social and material lives (Weiss 1995). The interview process highlighted how participants connected with the technological grid, but also provided rich data describing how disconnection from services impacted their lives and daily routines, and how it informed their processes of building informal housing. Other qualitative research methods, such as surveys or focus groups, would have been difficult to organize given the short time frame for data collection for this study. Moreover, because the sample for this study came from a heterogenous, spread out and mobile population that is often hard to reach, and connecting with participants was sometimes difficult, qualitative interviews proved to be the most effective and useful method for this study.

The interviews consisted of 12 men and 2 women [Table 1]. One participant was preparing to exit fixed housing for vehicle-living, and the other 13 participants were already engaged in the practice. Each participant's biography and socio-economic context varied drastically, with some struggling to survive on a daily basis, and others living somewhat more comfortably. People often cited the $20 honorarium as the primary reason for participating, but intellectual curiosity, and a desire to advocate for vehicle-living were also mentioned as incentives for participation. Out of respect for their privacy, I did not ask participants why they were currently living out of a vehicle, and informed them that discussions regarding their background could be provided on a voluntary basis only, but were not necessary for the study. Almost all of the participants volunteered biographical information, but this interviewing practice was maintained throughout the study as a means of mitigating the possibility of triggering past traumas (Liamputtong 2007; Boilevin, et al. 2019). Each interview averaged

around 60 minutes, with the longest being 90 minutes and the shortest being 35 minutes. The interviews followed a structured guide, and were augmented by unscripted probing questions that attempted to flesh out more data when relevant discussions of interest were introduced by the participant. The interviews were conducted in places suggested by the participant, and where they felt most comfortable. These locations included coffee shops, public parks, workspaces, and participant's vehicles. All of the interviews were one-on-one between the participant and the author. The interviews were transcribed from audio both concurrently during the recruiting stage, and after the data collection period ended. The interview data for this study was coded using Nvivo qualitative software, and analyzed abductively for emergent themes. Abductive analysis examines and contextualizes diverse and seemingly atypical data within a framework of relevant sociological theory. Through extensive analysis, abductive methods often build new, or invigorate existing sociological theories based on unique research (Tavory & Timmermans 2014; Timmermans & Tavory 2012). One of abduction's strengths is its ability to find a fit between current data and previous research that links causes and effects that seem obscured (Tavory & Timmermans 2014). For the purpose of this study, the initial construction of analytic codes was developed out of the existing academic literature regarding homelessness, informal housing, the home, and vehicle-living. However, beginning with the transcription process, further code construction developed out of insights that emerged from the interview data. Abductive methods provided a flexible analytic space that connected outwardly divergent or contradictory themes into coherent explanations for patterns within the dataset.

The dataset was heavily weighted with respondents that identified as men, and somewhat small at 14 participants. However, recent Metro Vancouver and City of Vancouver homeless counts demonstrate that these numbers reasonably reflect the gendered makeup of the region's

homeless populations (Homelessness Services Association of BC et al. 2019; BC Non-Profit Housing Association & M. Thomson Consulting 2017). Moreover, vehicle-living people are both hard to reach, and a smaller subset of the homeless population. Therefore, contact and recruitment can be difficult with vehicle-living populations due to low trust, and possibly low access to forms of communication such as email, phone, and text.

To avoid “leading” or “loaded” probing questions during the interviews, I often informed the probes based on previous interviews with other participants. If one participant suggested a strategy or a routine around connecting to the grid, I would build possible questions for future interviews around these discussions, adding them into the guide. However, I do not believe the framing of probing questions biased the data. Participants demonstrated enough agency to refute any seemingly flawed questions when they did not align with their personal experiences. Furthermore, when interviewees negated these problematic queries, I abandoned these lines of inquiry.

Table 1: Participant Biographical Attributes

Alias	Age	Gender	Employment Status	Race/Ethnicity	Sexuality
Joanna	51	F	Self employed	First Nations	Straight
Fred	60s	M	Retired Maintenance Worker	White	N/A*
Kevin	50s	M	Self Employed Craftsman	White	Straight
David	50	M	Service Worker	White	N/A*
Marcus	50s	M	Unemployed	White	Gay
Eric	58	M	Service Worker	White	Straight
Rob	28	M	Service Worker	White	Gay
Bill	30s	M	Unemployed	Black	Straight
Fraser	36	M	Unemployed	White	Straight
Geoff	35	M	Unemployed Manual Labourer	White/Metis	Straight
William	60s	M	Retired Tradesman	White	N/A*
Felix	35	M	Manual Labourer	White	Straight
Joe	60s	M	Retired Tradesman	White	Straight
Lori	28	F	Service Worker	White	N/A*

*Participant did not disclose biographical information

4.0 Results

4.1 Why Live in a Vehicle?

4.2 *Vehicle Living as a Choice*

At the beginning of each interview, participants were informed that they did not need to disclose the reasons for why they were living out of a vehicle, but they could voluntarily provide this information if they felt comfortable. However, the majority of the people who participated were quite open about how and why they practiced vehicle-living, and asserted that vehicle-living was a personal choice. The impetus behind the shift between fixed housing and living out of a vehicle differed depending on the person's worldview and material conditions. Some positioned the decision as a good fit for how they wanted to live their lives, but the choice to inhabit a vehicle was often guided by the socio-economic constraints of residing in a city burdened by excessive rents and living expenses. However, these seemingly disparate justifications for vehicle-living often blurred and overlapped in varying degrees. For Fred, a single white man in his early 60s who has primarily lived in fixed housing his entire life, the shift to living full-time out of a Sprinter van was about reconnecting with pleasurable experiences from past RV excursions, but also about living a more minimalist lifestyle as he shifted from full-time work to retirement:

> Yeah, I've always enjoyed living in small space, and 40 years ago, I actually spent a year in a 27 ft motorhome. Travelled all over Canada and the United States with my ex-wife and my young daughter at the time, and I just really enjoyed that experience… I ended up getting a job here in Vancouver. So, I moved here permanently. I'm now coming up on retirement, and I'd just love to be able to get back to that. I'm gonna be able to travel a little more with the Sprinter. So - so, its gonna make it a little easier because it will be totally self-contained, and less places to have to worry about cleaning smaller space.

Fred's desire to live with less, and pursue a mobile lifestyle that eschews fixed housing norms was not an uncommon sentiment. The privilege of owning a vehicle, and the ability to take one's

living space on the road was also attractive to Fraser, a single man in his mid 30s, who had spent significant time travelling throughout North, Central and South America, often relying on fate to guide his journeys:

> Like, it started because of travel right? So, waking up and having a different patio every morning, and being in a different place every day was - that was the draw. That was like the lifestyle. It was to be on the road, to meet new people, meet new cultures, have different views... it was the trip, always what travelling encompasses, but having your own roof and your own bed, and your own kitchen, and everything. Like, your home with you... to always be at home, and to be on the road.

The sense of independence Fraser gained from exiting fixed housing, and living on his own terms was also attractive to Geoff. Living in a vehicle provided Geoff the flexibility to spend "one year in Mexico, one year in Australia, one year in New Zealand, one year in Asia, and roughly 7 months in Europe". The ability to travel was very important to Geoff, but also becoming seemingly free of the material and financial constraints often associated with renting or owning was also significant:

> You're free from people. Like, living in a house? For instance… you have to give the damage deposit. Then you have to pay the first month's rent. Sometimes last month's rent, letter of reference. Then you have the furniture, and you have to get the moving truck. Then you have to get the cable, and the internet, and then you have to set your phone up. I mean this is life right? But its materialism... a house is a place to put your stuff, and its four walls and a roof, and half the time you don't even use half your space you have. You use one room maybe. You don't really need that much.

Quitting fixed housing aligned with Geoff's worldview and travel plans, but his journeys around the world were not always idyllic. Ongoing poverty, and his lack of access to resources and capital meant travelling was often fraught with risk:

> I ran out of money, and I was pretty much living in the streets of Sacramento with other homeless people.

Geoff's experiences in Sacramento illustrate how vehicle-living can be both a lifestyle choice, but also a consequence of ongoing poverty and housing insecurity. The freedoms Geoff enjoys

often overlap with bouts of material instability, but during our interview, he took these experiences in stride. The precarity Geoff associated with living in a vehicle was echoed by Joanna, an entrepreneurial minded Indigenous woman in her 50s living in a motorhome with her partner. For her, vehicle-living was a consequence of limited housing options, and her socio-economic and material conditions:

> It's a motorhome... and uh, its very small... I mean, like, its small, but its a place to be, and I consider myself lucky and I'm so grateful for that, for the motorhome. Because considering the alternative? Like, 'cause I refuse to, um, go buy a tent and live out in the [elements]. Basically, that's what we do anyway, but we get privacy, and we get to cook stuff sometimes, and we get to keep things cold, or sleep in an actual bed, and listen to music.

Joanna's motorhome provided a sense of security and autonomy, but the options available to her and her partner were primarily entrenched within the spectrum of homelessness (Springer 2000). Fixed housing for Joanna, like most of the participants, remained out of reach, and in its absence, the motorhome filled the role as a "place to be", a space somewhere between having a home and being homeless.

4.3 *The Absence of Affordable Fixed Housing*

The decline of affordable housing over the last 20 years in the Metro Vancouver area has placed significant pressure on existing housing stocks leaving many people with reduced options when it comes to renting or owning (City of Vancouver 2017). For Kevin, a self-employed man in his 50s, who split his time between his work studio and his live-in van, vehicle-living was a personal decision that was partly a response to what he perceived to be a city driven by a "growth machine" ethos of supply side housing provision that excludes the many for the few:

> Well, the thing that's missing is access to affordable housing. So, that's the thing that's missing… but its like, you just have to look at like Vancouver, and like the policies. Like who's the driving force behind our local government? Like, why are developers like pushing the agenda of housing in this city, and not like, uh… not like our politicians and community groups?

Kevin's perspective was not unique amongst many of the participants. The lack of affordable housing was also cited by Marcus, a gay man in his late 40s who lives in a vehicle with his partner. Marcus built on Kevin's assertion, framing the decline of social housing in the Metro Vancouver area as a both a policy failure and a social historical development:

> Housing inequality? You know… I think there's not enough social housing. I think the city caves in too often, gives in to developers, you know? Like, the Olympic Village, wasn't that supposed to be all social housing, and then it was part, and now they're almost like this marginalized fraction of it. Uh, so, yeah I don't think there's enough housing.

Marcus highlights the Olympic Village re-development plan, where the promised production of social housing gradually shifted toward luxury condominiums (Antrim 2011). The failure of the Olympic Village project has become historically emblematic of the slow erosion of affordable housing in Vancouver, and how years of insufficient public policy and market based solutions to affordable housing have failed to address the needs of many low income people in the Metro Vancouver region, with disproportionate effects on Indigenous, LGTBQ, senior and youth populations (City of Vancouver 2017). Rob, a young, gay, white man in his 20s who came to Vancouver from a small BC town contextualizes how the lack of adequate and accessible housing impacted his experience coming to the city:

> When I was here the first time, I was really stressed, and most of that stress was for rent. Right? Just straight up. And I mean part of that, might have been like I never had to pay rent before, but I was right out of high school. I was slowly sliding more into debt, just living super frugally and paying my rent... And I was working at a full time job that at the time paid more than minimum wage, and I was basically paying my rent. And I found that really frustrating. And I think that's true with most people, or I think probably, because most people are in debt of some sort. Most people are struggling, or living paycheque to paycheque, or at least people my age. Certainly, every one I know is like, just across the board.

For Rob, the lack of options lead to a cycle of forced austerity and debt, a situation he had difficulty escaping. The housing available to Rob was often small, poorly maintained, over-

crowded and the cost of rent consumed much of his income. However, for more at-risk vehicle-living populations, even low quality fixed housing seemed almost out of reach. Joanna, who has scant access to capital, and primarily lives hand to mouth with her partner, claims that outside of vehicle-living, the city has left them with few options, and the options that are available are mostly intolerable or difficult to access:

> Um, I feel that means there are shelters even though they're not… uh, what do you call it? They're not like, they're… its not easy living in a shelter. Cause there's a lot of people that are, you know, in different places in their lives... they take stuff... I've had my stuff taken and I've gotten into arguments. Over the stupidest things, and then the checking in every four hours is ridiculous! Um, so, its just too hard. Yes, there's the Kettle... they will help you find housing, but its such a lengthy process.

Participants often stated that the decision to shift into vehicle-living was mostly a product of their own volition. The pathway into vehicle-living often varied from exiting fixed housing to finding a way off the streets, but most asserted that vehicle-living gave them a sense of independence and mobility that accommodated their worldview and provided space to live their lives accordingly, but the choice to live out of a vehicle was frequently constrained by limited housing options and low socio-economic and material conditions. However, it would be unfair to categorize people who live out of their vehicles as victims of circumstance. Rather, the sense of independence expressed by the participants is what often informed how they confronted, and made up for the absence of fixed housing in their lives. With few options available, participants re-purposed the vehicles they owned, often making the best of what was immediately on hand to build an informal home out of an unorthodox space.

4.4 Vehicle Living as Informal Housing

4.5 *A Sense of Control/Ownership*

Informal housing is the construction of make-shift, self-help unregulated housing often as a response to the absence of accessible, formal regulated housing (Boanda-Fuchs & Fuchs 2018;

United Nations Habitat 2015). Vehicle-living differs from fixed informal housing settlements primarily because it rarely remains entrenched in a specific geographic location, and the living space is often legally owned by the occupant (Wakin 2014). That said, some people in the practice of vehicle-living do reside in broken down, or immovable vans or RVs, but this is not always the standard, and often represents the most precarious of vehicle-living populations (Wakin 2014). Most of the participants in this study were highly mobile, and expressed a relative feeling of independence and control over their housing situation and their lives, but also sense of illegitimacy and stigma associated with how they lived and attempted to build a home in an unconventional make-shift manner. The sense of independence gained from making a home out of a van was expressed by Kevin as an escape from the seemingly rigid cycle of rent and work that came from living in fixed housing:

> Yeah, in many ways, by abandoning the rent trap, I like got into a place where I actually had more control over my life, and decisions I could make. So, like having access to a community centre, being able to like afford healthy food, having the time to actually like, workout, prepare, and do all that kind of stuff without… the like, 40 hours a week of work, or an hour and a half of commute time. Uh, just like, rigid schedule dictated by some one else. Kind of like, uh, by setting that aside it gave me more control over my life.

In many ways, Kevin's decision to exit formal housing and eliminate the demands of rent and tightly scheduled labour represents an attempt at finding a do-it-yourself, irregular solution to living in an expensive metropolitan area. This sentiment was not uncommon. For William, a retired tradesman in his 60s, the decision made sense as it also allowed him to replicate the features of a home outside of fixed housing, but the choice to live informally out of a motorhome also came with a sense of stigma:

> You gotta understand, people who look at RVs and trailers and stuff like that as suffering. I got a 28 ft friggin RV! I mean you show me in your apartment where you have a 28 ft room! I got a furnace -- I mean, if everything was working, and it was -- I'd have a furnace with a thermostat. I'd go in at the end of the day, and turn my

> thermostat up. Boom! Furnace comes on. I got a fridge. I got a stove. I got an oven. I got a toilet. I got a shower. I got hot water tanks. You know? I got everything you got in an apartment. If I don't like where I am today, I'll go over there.

William illustrates how the inherent mobility of vehicle-living provided him with a sense of control over his surroundings. His articulation of the stereotypes associated with living in an RV also highlights the stigma that is often associated homelessness, and informal housing that is perceived as illegitimate. However, the privilege of being able to relocate also opened up avenues of escape when bylaw officers and concerned citizens made vehicle-living intolerable. William's inference that his RV is his home on wheels, a space that he owns and has control over, was succinctly communicated by David, a working man in his mid 50s who lives in his van in Vancouver:

> Its important to remain. I would say yes, this is a public space, I want to be able to use it, and on that public space, I have my private space, and you can't tell me what to do or not in my van, my home.

For David, the van is his home, a private but informal living space he owns, that also contradictorily occupies a public space - the city street. For many people, the urban thoroughfares and parking areas that crisscross the city are often viewed as strictly networks of transportation and automobile placement, and the laws that legitimize road usage are mostly framed in this manner. However, for people who practice vehicle living, streets are also potential locations for squatting which often contravenes how roads are regulated. Understood this way, a vehicle dwelling often inhabits a contested, interstitial space between a legitimately owned automobile, and an illegitimate and informal home that occupies a tightly regulated, but publicly accessible roadway. As a result, participants regularly worked at keeping a low profile to avoid attracting attention, and when that failed, the ability to relocate often afforded an easy solution to potential conflict.

4.6 *Illegitimacy and Harassment*

Harassment from authorities and housed populations were common complaints shared by the participants in the study. The severity of harassment varied from person to person, with it often being contextual to their material and socio-economic conditions, but the theme of being policed for living in a vehicle was consistent. For Eric, a white man in his late 50s, who moved into an RV to save money and buy property in Northern BC, making a vehicle your permanent home comes with a risk of harassment and displacement:

> Like, I got two notices over there? No, three! Because the 3rd one was, if I don't move, then they gonna tow. And then I came over here, right? And I heard - cause I have some wholesalers that I deal with over there - that they did tow one of the cars, one of the RVs. Because he couldn't move. It was on blocks. So, they took it away right? Yeah, well officially they are not supposed to do that, but they did. So, you know, again I am better than most of these guys, better off. But thing is, if I wasn't, that would be a big thing. I mean, they tow your car. How you gonna get it back for paying $300, $400, $500? Like, how you gonna do it? There's absolutely no way. And then where are you gonna sleep? If don't have the RV?

Eric highlights the contradictions between how streets are regulated in the Metro Vancouver area, and how the practice of vehicle living often contravenes these laws. Urban road management is mostly predicated upon maintaining and regulating the flow of vehicles and their placement, and not the preservation of squatting rights. Vehicle-living, although sometimes tolerated, is generally not a legally codified usage when it comes to urban street bylaws. Bylaw officers in the Metro Vancouver area enforce the existing laws that determine what type of street usage is legitimate and illegitimate, and as Eric suggests, these contradicting usages often lead to unforeseen impacts like the loss of someone's "illegitimate" and informal home. Eric's position on the contradictions between road management and the needs of vehicle-living was expanded upon by Joe, a retired labourer in his late 50s:

> The only concern you have is, really is the bylaw, the bylaw people. And they're pretty good [at] not bothering us too much, you know? I spoke to one guy this year,

> earlier in the year, like just not too long after I got the RV back in June. And he came up to me, and was talking to me, and said "you know, you only got 24hrs, you gotta move", but that's the only time I've spoken to him. I've never had a ticket. Like, first of all they'll write you a warning ticket. If you don't move, the next day they'll write you a real ticket. And then if you don't move after that, they'll tow ya on the third ticket. Right? So, you got enough warning. You gotta be hanging around your RV. You can't take off for a week and go to Mexico.

Joe's understanding of the bylaw officers as mostly paid representatives and enforcers of municipal regulations emphasizes how the harassment experienced by vehicle-living populations is often a consequence of land and road management in urban centres that excludes land usage that does not conform to legal frameworks that proscribe how housing and street usage are regulated. Joe's assertion that he has to hang around his RV to make sure he does not lose his home is probably not a concern that formally fixed housing populations consider on a daily basis, but for vehicle dwellers, the informality of their shelter places their homes at risk. The danger of losing one's home was an ongoing stressor for many of the participants. Here, Geoff recounts an outrageous story that illustrates how street laws can make living out of a vehicle hazardous, and how the norms of formal fixed housing are somewhat sub-textually embedded into the punitive measures vehicle-living populations often face:

> Well… I think we should get the ball rolling and if this bylaw thing goes through, and they start giving us tickets, to give us incentive to move into houses? Right? That's what it is… they're trying to give us incentive to move into a house by ticketing us for being on the streets…Yeah, its scary. Oh yeah, I'm always looking for the tow truck driver. He did tow my friend. My friend lived in a van, and he towed my friend in the middle of winter. I'm not joking you. So, we fuckin broke into the towing area, and we hijacked the fuckin thing out of there. We fuckin jimmy rigged it, and we got out of there. We drove right through the gates.

As a vehicle-living person, Geoff fully understood that a seemingly mundane towing could lead to severe consequences for his friend. Geoff's rescue mission with his friend may seem ostensibly deviant, but to the person practicing vehicle dwelling, the regulations that lead to a vehicle being towed are laws that also lead to the loss of that person's legally owned, but

informal home. Many of the participants clearly understood the laws and their purpose, but also viewed them as unfair and unwittingly cruel. This seemingly contradictory duality of empathizing and contesting how their housing choices come into conflict with regulatory regimes also overlapped with how vehicle dwellers understood their position within the spectrum of homelessness.

4.7 *Homeless or Houseless?*

To many of the participants, describing themselves as housed or homeless was a contested and contradictory terrain. The vehicles they converted into informal housing and occupied, often represented a home that they built, but also an indicator of the ambiguity of their housing status. The category of "homeless" was often perceived as too narrow, and in need of modification. For David, the issue of contention was not about whether he had a home or not, but about the irregular features of vehicle-living:

> I wouldn't call myself homeless, but no fixed address. With no fixed address, its close to homeless.

Some of the people who participated in this study had forwarding addresses that belonged to friends or family that they used for postal delivery, while others had no method of receiving mail, and usually relied on email and text services to fill in the gaps. Having a van or an RV to live in often provided them with a space to call home, but not a formally recognized address. David's weekly routine of full-time work, hiking, camping, and photography entailed consistent movement. His van, which was also his home, was consistently on the move. Even if his vehicle could be recognized by law as a living space, formally assigning a coherent fixed address to his home would be difficult due to its highly mobile nature. This liminal space between homeless and houseless that vehicle dwellers experience was further expanded upon by Marcus:

> Um, but you know, I think that in terms of the mobile homeless, that there isn't even a space in the law for us to exist. So, the inequality there is just institutionalized. You can't - you don't exist, you can't exist by law. So, how can you even, in terms of inequality, well its unaccounted for, unseen, and its not looked for, cause it doesn't fit any current category.

Marcus and his partner live out of a motorhome, and he describes their living situation as a feature of homelessness, which also aligns with how the Metro Vancouver regional authorities define the practice as essentially homeless (City of Vancouver 2017), but his articulation of the grey area they occupy highlights how vehicle living is somehow different. While maybe not a home per se, it is a form of informal shelter that exists outside the law, and is unrecognized. Marcus' categorization of vehicle living as the "mobile homeless" underscores the unique feature of mobility that is inherent to his housing status. For Lori, a woman in her 20s working full-time while living out of her van, her occupation of a vehicle as a form of make-shift shelter is a somewhat fraught with similar contradictions:

> I get pretty attached to wherever I am… its where I live, so I'm very attached to it. If I'm away from it too long, I get worried about it. Like, I'm very attached to it, almost like a pet. But there's a little bit of resentment too in it. That its not easy. Its like this life, and this living here is not easy. So, its not quite home.

Affective attachment to one's private space is common feature of human habitation, and often a part of the homemaking process for both formally and informally housed populations (Dayaratne & Kellett 2008). However, as Lori makes apparent, vehicle-living differs, and the experience of having a home in a space that is not purpose built for housing is both a challenge and a reminder of the ambiguity of her housing status. The vehicle is an informal home constructed by the owner in the absence of accessible and affordable housing, that is often a work in progress that both meets the needs of shelter, but never quite fulfills the gap.

4.8 Connecting to the Grid

4.9 *An Informal Process*

Access to formal fixed housing is often governed by a series of regulatory regimes (Durst & Wegmann 2017). Land use laws, building codes, property transference and other processes involved in the occupation and production of housing are usually regulated by regional and state authorities. Informal housing, on the other hand, generally exists outside of governmental oversight as make-shift and unrecognized shelter often constructed by the occupant, or a formal property owner seeking to evade official regulatory regimes. However, for many of the participants, the shift from fixed housing into vehicle living was less black and white, and more of a gradual process that came about through interactions with others already living informally, and experiential learning informed by limited housing options and a self help ethos. As Rob describes here, his decision to shift out of formal housing was not immediate, but a process informed previous experiences with informal housing that occurred gradually:

> I remember when I first started living at my friend's sailboat. It didn't even occur to me to do that on a vehicle you know? I knew an RV, and that was it. Most RVs I've seen are not great. They fall apart, they're really poorly built… they're designed for like the lowest common denominator. Whereas, if you put stuff where you need it, that works for you, it doesn't matter what the size space you're in, like at all.

Rob's experience squatting on his friend's sailboat demonstrates an overlap with other forms of historically contested informal housing in the Metro Vancouver area (Bermingham 2006), but also reveals how the shift into vehicle living can be an ongoing process informed by unfolding interactions and encounters. Rob's decision to move into a vehicle developed out of a previous squatting experience, and the shift from not viewing a vehicle as a possible home to explicit derision toward RVs as a site of self help shelter, suggests a trajectory of learning based around accumulated experiences in the practice of vehicle-living. Informal housing construction, being unregulated, generally has no clear roadmap or end point, and it often requires the occupant of

the vehicle to figure out the next steps on their own terms. This process of experiential learning was further expanded upon by Kevin as he recalled his move into vehicle-living 10 years ago:

> Okay, so, like my life in a van is a progression. So, moving in just was like trying to just like get away from the rent trap, and then it was like, how do I feed myself? How do I access services? So, if I wanted to be clean, I needed to have like access to showers and stuff.

Unlike formal fixed housing, where building codes regulate and require certain features of the urban technological grid to be integrated into the build, vehicle-living, due to its informality, often compels the occupant to re-negotiate how their shelter takes form, how they access the grid and figure out new methods of access that meets their needs and abilities. Quitting formal housing may have helped Kevin exit the “rent trap”, but it also opened up a series of questions and problems that he had to address on his own terms. However, as Marcus suggests here, the solutions each person comes to may share similarities, but they are often dependent upon individual material and socio-economic conditions:

> Whereas we're generating our own power. We're not on BC Hydro, so when we run out of money, we run out of power. So, I think there's always this assumption that people in motorhomes are still running… like those people down by the Home Depot on Terminal with their firepit outside. Well, why were they doing that? Cause they probably had no power, no heat in their vehicle. So, yeah, of course they had to burn things and tarp themselves in and stuff like that. So, I guess you see a vehicle and assume it can run, but a lot of these vehicles can't run and are close to not running.

As an unregulated and unrecognized housing practice, vehicle-living is often an ongoing process of informal construction driven by a self-help ethos and experiential learning. Unlike fixed formal housing, there are no building codes legally requiring connections to the grid. Accessing water, hydro, Wi-Fi and other features requires consideration and effort, and is frequently part of a continuous building and maintenance cycle. However, as Marcus highlights, the capability of informally accessing and reproducing the components of the grid through a vehicle is often significantly constrained by ongoing poverty, the physical limitations of the vehicle, and the

availability of accessible resources. For some, a vehicle can be customized to replicate some of the technological features of fixed housing (water, electricity, internet, etc.), but for people living precariously, refurbishing, and connecting their make-shift shelter to the grid is a daily struggle.

4.10 *Creative Informality*

Connecting to the urban grid is often an ongoing process for most people practicing vehicle-living. For those with enough economic and social capital, reproducing an informal home is less arduous, and with fewer compromises on comfort. In many ways, an individual with access to a full size RV in good operating condition theoretically can bypass much of the labour, costs and physical constraints that often come with having to customize a van or a truck for living purposes. However, whether a motorhome or a hatchback, access to water, hydro, sewage, and Wi-Fi is rarely a given, and is often an iterative process of innovation and shared knowledge. Here, Felix, a casual labourer in his 30s who chose to live in his vehicle to pay down debts and save some money, contextualizes how the shift from fixed housing to living informally out of his vehicle was a learning curve based around compromise:

> I would love to have a shower in there, which I don't, but they [fixed housing populations] do take it for granted I think. Cause, you don't think about the small things like that, once you have fixed property or housing. But yeah, these are the things you learn as you go, and that's how I learned - as I went... Like well, the best thing you can do is, see if you can do it, if it works out for you, and the best way to do it, is actually trying it.

The construction of formal housing is guided by building codes, zoning bylaws and other regulatory structures that often help ensure the safety and proper implementation of electrical outlets, sewage disposal and water supply into a fixed home. The functional designs that enable our access to the technological grid are often hidden or obscured from view (Gieryn 2002), and require specialized labour to install, maintain and repair. However, as Felix suggests, the only authority regulating the flows of the grid into the vehicle is the owner and occupant of the space.

Staying connected to the grid in a vehicle is rarely a given, and is usually a practice that is self directed, adaptive, and a matter of trial and error. Therefore, the degree of connectivity varies from person to person and even from season to season, and often becomes a creative compromise between daily needs, desired comfort, and the limitations of the vehicle. As this discussion with William illustrates, connecting to, or reproducing elements of the grid is often a make-shift, unfolding process that meets a person's specific needs at that given time and sometimes takes some ingenuity:

> **Nick**: When you need to preserve food, how do you go about that?
> **William**: Well, 6 months of the year you don't need to worry about it right? I have a fridge right? So, when I have batteries and stuff and propane - it runs on propane.
> **Nick**: 6 months of the year you said you don't need it?
> **William**: Well, no, its cold outside. Like, right now, I wouldn't need it. My fridge ain't on now.
> **Nick**: You utilize the cold and the elements?
> **William**: Oh, absolutely. You have to use everything.

For vehicle dwelling populations, seasonal shifts often require creative strategies to tackle the cold in winter, and mitigate other unforeseen issues that might be faced. Here, William confronts the need for food preservation and the lack of electricity coming into his motorhome through the use of a propane powered refrigerator, while minimizing his costs by making the winter months work in his favour. William's fix may come across as unorthodox, but its emblematic of how vehicle-living populations often rely on informal make-shift solutions as a means of addressing gaps in grid connectivity. William's career as a tradesman has aided him with his vehicle-living practices, often informing his technical fixes, but for people with no formal specialized training, addressing the problems that arise from living an off-grid life in the city is often about connecting with other vehicle dwellers and sharing know-how. As Fraser asserts, during his travels, solving the frustrations associated with accessing a toilet and dealing with sewage was often about discussing the issue with others, and finding a fix that fit his capabilities and needs:

> And then, meeting other travellers that were also living in vans, and talking with them about how they dealt with things, and finding a way that was kind of easy was having a bucket with a bag and throwing it in the garbage. And I just left the bucket on the roof, and that's how I dealt with things. And that was for emergencies, right? That wasn't my go to thing or whatever, but like for emergencies, that was the thing so I wouldn't be stressing about anything... Like, I mean I've met other people that have a composting toilet in the van, and would have like wood shavings and stuff. You know? Digging a hole, and if you're in a wild space that's a lot easier, or a lot more acceptable.

Fraser highlights how shared knowledge around vehicle-living often informs how participants meet the challenges of living off-grid in a van or a motorhome. Without regulations or legal structures standardizing how each build occurs, participants adapt and make conversions based on their individual needs and material limitations. For some, a “bucket with a bag” works well enough, while others construct considered waste management systems that mimic the features of a home. The sharing of ideas and solutions to vehicle-living frustrations was common, and participants often cited online communities and social media dedicated to the practice as integral to finding innovative methods that fit. However, the extent to which fixes and upgrades can be implemented is often constrained by poverty and the physical limits of the vehicle. Here, Lori discusses how the limitations of her van, and the cost of conversion impact her ability to access adequate levels of electricity and water:

> Yeah, I mean. I mean, not having fridge and not having a stove is the most annoying thing. Also, not having laundry either. But um, yeah, all those extra things? I do end up having to like, do outside of the van. But yeah, it is annoying and it’s a downside… There just isn’t really the ability to have those things in the van. There isn’t the space, and it just wouldn’t really be feasible with like, the amount of energy and expense that it takes. Like, my partner, he bought a fridge to run on propane, and it like blew the circuit, and he’s actually connected to the house. And it ran on propane too, and it just like within a couple months blew.

Many participants bridged their lack of infrastructural connectivity through the use of community centres, the homes of friends and families, as well as local businesses and public

facilities. Faced with the limits of what they could build, or afford, people often sought out easy access points within the built environment to make up for what they lacked, or they simply went without, making do with what they had at their disposal. Many spoke about “wish lists” with small fixes like solar panels they wanted to install, or low moisture heating systems, but these upgrades were often delayed due to insufficient capital or time. Living without electricity, water or sewage was as much a part of the housing process as the make-shift fixes that attempted to connect the vehicles to the grid.

4.11 *Making Do with Less*

Staying connected to the grid is often an ongoing practice for vehicle-living people. Re-filling water jugs in city parks, locating and connecting into free Wi-Fi hotspots, utilizing public outlets for charging battery packs and devices, and finding local sani-dumps for sewage disposal were some of the most common strategies employed by participants to make up for gaps in infrastructural connectivity. However, for some participants, staying connected to the urban grid was a low priority, and often perceived as not worth the effort or expense. The individuals who placed less importance on maintaining access to the urban grid often framed their decisions as purposefully minimalist. Making do, and going without, reflected how they understood the role of their make-shift shelter, and their socio-economic position. When I spoke to David, he made clear that his van was just a roof over his head and expressed concerns around fires and the risks associated with unregulated housing builds:

> No, no fridge, no appliances in my van. The [van] is like a big empty shell. I have my bike inside it. There's no furniture so its basically like living in a tent… Its a commercial van, no windows. So, no furniture, headlamps for light. The computer and electricity? The computer is the battery… I have a little light stove I can use. So, all my electricity is basically taken from the library, by the computer, or by the USB plug on my workstation at work…There's two people that I know that died in confined space, and those were fires in Squamish. And one of the two? He had two

> accidents, two fires in his boat. The first time he was okay, it was burned, but then after that, he died.

David's customizations to his van generally occurred when he had to address issues such as mold and airflow, but he mostly eschewed anything beyond venting or insulation. For him, going without electricity or running water was just part of the practice of vehicle-living, a component of squatting, and not in need of a particularly necessary fix. The physical limits of the van, his low income, and the risk of injury dissuaded him from making conversions, and he often bridged the gaps through the facilities offered at his workspace. A variation of David's minimalism was reiterated by Felix. David had been living out of vehicles for almost a decade, and had many of the aspects of vehicle-living worked out, but Felix was new to the practice when I interviewed him, and making do with less had been a learning process:

> I mean, it kind of really puts it in perspective how much stuff you actually don't need that you own… I started off with a plasma TV in my van. That was my first mistake right? I gotta need my big screen in there, and you know what? A month down the road, I'm like, nah, this is just too much. Too much stuff that you spend your money on. I actually realized its not very necessary to have all these things… Really, and you get used to it, and actually you realize how much easier it is to live without overburdening yourself with things you don't need.

Before moving into a van, Felix had shared a condominium with a roommate. Shifting into vehicle living meant he had to grapple with limited space, and ongoing disparities in electricity, water, and sewage, and he was forced to reconsider what he could live with, and live without. The process of maintaining the technological flows that are integrated into the built environment is often a daily practice for vehicle-living. For Felix, and others similar to him, adapting to living with less connectivity is a part of the process of living informally in a vehicle. If you cannot maintain a consistent flow of electricity, water, or Wi-Fi, do you really need the perks of the service? And for many, making do with intermittent or no access, becomes the norm and they adapt their daily routines accordingly. Here, Joe corroborates Felix's claim, but further

contextualizes how making do with less must also be understood as a consequence of cyclical poverty and limited housing options:

> Its just a matter of doing what you have to do, but before it was less out of necessity. Of course, you know, I would like to have a place to watch TV and lay on a bed, and you know, take coffee or make some food or whatever you want, but then you gotta think, well can I afford to do that? And uh, you gotta just, you know - what's the word? Improvise, you know? So, that's basically what it is. Its better than living outside. I mean, at least you have a car and you can do whatever you want.

The physical limits of vans and motorhomes guide how vehicle-living populations build their informal homes, and access the urban grid, but as Joe makes clear, privation and precarious living situations are the primary reasons why people live out of their vehicles, and often have to live without steady and proper access to the features of the urban technological grid. Living informally in an unrecognized form of shelter often means occupying a living space that exists outside regulated and legitimate forms of housing. Therefore, for vehicle living populations, connecting to water, Wi-Fi, electricity and sewage becomes an ongoing process that must be creatively maintained in some manner. For people lacking material security, this process often becomes a difficult practice to uphold due to the cost, and the labour associated with continuous maintenance. In some ways, being resigned to living off-grid suggests a form of retreatism similar to Mitchell Duneier's "Fuck it" concept where homeless populations give up on dominant behavioural norms and cultural goals due to feelings of hopelessness experienced through the strain of being homeless (Duneier 2001). Therefore, "making do with less" does express some retreatist attributes, but the goal of maintaining a secure and functional informal home often remains in sight as a work-in-progress for vehicle-living populations. As Joe states, the desire to enjoy the comforts of a home do not disappear with a state of homelessness - it just becomes more difficult. Accessing the urban grid, in whatever capacity, is part of the process of building a

livable shelter where one does not exist, and that includes the construction of "home" in whatever manner the person views as appropriate to their desires and material conditions.

4.12 *Connecting the Home*

The formal recognition of shelter in built environments as legitimate housing usually occurs through the codification of regulatory structures and laws by state and municipal actors that direct, inform and constrain how housing is constructed and accessed. For this reason, vehicle living generally exists outside of what is considered a legitimate form of housing. However, what constitutes a "home" is less concrete, and is mostly a social, personal, and cultural ideal that is often unfolding and shifting (Kellett & Moore 2003). For vehicle-living populations, accessing the urban technological grid aids in reproducing the features of formal housing, and the so-called "comforts" associated with home. The level of effort invested in this process varies from person to person, and is often dependent upon ability of access, and one's material conditions. The processes of accessing Wi-Fi, generating electricity, managing sewage and gathering water often helped ensure the security and habitability of the vehicle, but as Kevin explains, installing a toilet was not about his own comfort, but about how others perceived his informal home:

> Like, I know that when uh, my most recent van I bought like… it has like a port-a-potty in it. And I don't use it. Its like literally for "guests". And I bought this one cause its big enough to have someone over, and entertain them. And uh, when they spent the night, be able to access that. And not be like sketched out by pissing in a funnel, or whatever.

Like other participants, Kevin regularly used public facilities and private businesses for toilet and cleaning needs. He viewed the disposing of waste and the maintaining of a steady water supply as mostly an unnecessary hassle, but Kevin still customized his van with a portable toilet to accommodate the socialized norms and expectations that others may have when visiting

someone's home, norms often associated with fixed formal housing. Sociality varied amongst the participants, but several implied that they hid their housing status from people to avoid the stigma often associated with being "homeless". Despite the stigma, Kevin's implementation of a toilet for guests suggests that his van is more than just a shelter, but also a private space where he occasionally hosts friends and romantic interests, and the port-a-potty functions to accommodate this social need. However, accessing or reproducing the features of the urban grid, as Eric demonstrates, was also often about personal comfort:

> But, what I would like to use [electricity] for is I have a TV. So, you have to imagine that you run around all day, driving in Vancouver, Richmond and all over the place, and even if I come home, I'm usually very tired, but I need a little time to unwind. Because, I can go to bed, but I'm not gonna be able to sleep. Like, my head is running, so what I usually do is I like to watch TV, or a video, or whatever, and that needs energy. Like, that needs electricity. So, that's why I have to get something.

Eric plainly describes the RV he occupies as his "home", but he also suggests that without a steady flow of power, his ability to relax and enjoy his private time away from work is impeded. Sourcing electricity for this purpose becomes less about survival (food preservation, heat, etc.) and more about producing a livable space. Like many people, the home can be a personal site of security and leisure, but for vehicle-living populations, lacking a formal electrical connection means maintaining this personal ideal of home becomes a steady work-in-progress that must be continuously sustained. For this reason, many of the participants made do without television, preferring laptops, tablets, and smartphones with online streaming services due to their size, mobility, and ease of maintenance. Powering up a mobile device with a public outlet is an easier and cheaper method of accessing electricity, but like Eric, and his desire to have a television in his RV, the ideal of enjoying personal leisure time at home remained intact. That said, the process of sourcing or producing electricity for participants was most often about generating heat. Here,

Lori considers the work she and her partner devoted to converting her van to accommodate this need:

> The van wasn't running, so I wasn't getting heated. Everything was super damp, wet. Just almost dripping wet. The floor was like, carpet? Um, so I had to rip everything out and put in plywood and linoleum flooring. So, now that stays dry, and the I put in insulation - like foam insulation in? And that keeps out a lot of the drafts, and it just keeps in the heat of the vehicle... I still am proud of the work that we did on it, but its gotten to the point where I don't know what else to do? And it still needs a lot of work done... Like, happy with the work we did, but it's not anywhere near a finished product. So, yeah, I am proud of the work we did, but it could be so much better. Its like if you went into a half renovated house, and someone's like "yeah, I did this by myself", but you can obviously tell that its not done.

Producing enough energy to heat the vehicle was a consistent issue for many of the participants. The different methods employed included external gas generators, miniature propane furnaces, running the engine intermittently, and several other fixes that accounted for the lack of electricity entering their makeshift homes. Lori displays pride in her re-building of the van to confront the lack of heat coming into the vehicle, and even describes the conversion as a "half renovated house". Working within the physical limits of the van, Lori's makeover also included a wooden bed frame that could be converted into a sitting space with a table, and significant storage underneath. Her unfinished renovation both addresses her inability to maintain a consistent flow of power into her vehicle, and it reflects a dominant cultural ideal of home construction taking form in an informal housing space. The vehicles that participants occupied provided makeshift shelter in the absence of formal housing, and many of the participants valued these spaces as somewhere to return to after the workday, as a place to host friends and acquaintances, or just a site of security and respite. Vehicles were regularly a work-in-progress with the comforts of "home" as the end goal. The ability to achieve these aims was often limited by ongoing poverty, and making do with less was a common experience. In spite of the stigma associated with their semi-homeless status, conflicted feelings of pride and dignity were also common. The vehicle

was important in their lives. It was something they had constructed themselves, something they owned, something that provided them with a home. Essentially, something every human being deserves.

5.0 Discussion

Vehicle living in the North American context is a fairly broad phenomenon. In recent years, the practice has become an increasingly popular "lifestyle" choice, that presents the decision to live out of a vehicle as a repudiation of established housing norms, and a life defined by adventure, minimalism, and self-discovery (Gnomad Home 2020). Similar justifications for vehicle-living were expressed by the participants who took part in this study, but more often than not, part of their decision to pursue the practice was a consequence of ongoing poverty and a lack of affordable and accessible housing options. Periodic experiences with homelessness amongst the participants often ranged from "sleeping rough" to living out of a tent, and the shift into a vehicle often presented itself as a more secure and flexible solution. Lived in vehicles are usually the registered property of the occupant which provides a meaningful measure of control over their shelter, and if a person has enough social and economic capital on hand, the conversion of a RV or a van into an informal home can become an attainable goal. However, as vehicles are not purpose built, or legitimately recognized as a site of home construction, maintaining and building a living space often becomes an ongoing process. Connecting to, or reproducing the features of the urban technological grid is often a part of this informal homebuilding process. However, this process is constrained by the physical limits of the vehicle, existing material conditions and the resources available to the occupant.

The ongoing struggle for homeless and vehicle-living populations to access clean water, heat, Wi-Fi, and sewage disposal indicates a much larger need for robust policies and

investments that address the growing housing inequalities in the Metro Vancouver region. Outside of the construction and provision of accessible and affordable housing for all, participants regularly argued that in the short term, purpose built infrastructure that could provide free access to clean water and sewage disposal, as well as an effective public Wi-Fi initiative, would go a long way toward alleviating some of the immediate daily struggles vehicle-living populations face while maintaining an informal home. For example, participants regularly suggested that vehicle-living was often made easier through the use of mobile devices. Strong Wi-Fi connections helped with paying bills, remaining employed and finding work, staying connected to family and friends, seeking solutions and upgrades to vehicles, and engaging with social services. Although some participants struggled to maintain digital connectivity, the helpful role it played in their daily lives was undeniable. Basically, connecting to technological infrastructure was an important, but often a fragmented process plagued by gaps in access, with participants regularly having to source Wi-Fi, water and other services through various improvised means. The ability to build state funded, high quality affordable housing has been problematic within an expensive, rapidly expanding, deeply contested, and tightly managed urban area such as Metro Vancouver, but the urgent need to confront the ongoing housing crisis with creative solutions was a position expressed by most of the people who participated in this study.

Limitations to this study include a sample that skewed slightly toward a middle aged, straight white male demographic, but as these attributes overlap with regional data describing the vehicle-living homeless population, sampling validity was for the most part fairly accurate. Participants also tended to trend toward full employment, or steady but casual work arrangements, at the possible exclusion of more poverty-stricken, chronically unemployed

vehicle-living populations. Although a possible concern regarding the strength of the sample, the cost of maintaining a privately owned vehicle in a controlled urban area often puts car ownership out of reach for many chronically unemployed, at-risk homeless populations. Moreover, the socio-economic range of the sample was fairly well distributed (Table #1).

Despite these limitations, the results of this study contribute to the sociological field of housing and social inequalities by further complicating the Global North/South divide regarding the production of informal housing in large metropolitan urban areas. The so-called Global North does differ significantly from its counterparts in the Global South both in regard to its material, social and economic conditions, as well as land use management, but the interlinking of flow of material goods and services, as well as human migration implies overlap and interdependence between the two poles (Roy 2005). Therefore, as urbanization increases globally, and correlating housing crises exacerbate existing stocks, the relevance of makeshift housing and the specific forms it may take at the local level becomes pertinent. Furthermore, informal, and unregulated housing should not merely be understood through the lens of public safety or social deviance, but also as a home, and a personal space that is often meaningful and important to the occupant. Cities committed to future housing policy solutions aimed at ending homelessness and ameliorating unaffordability should begin with a "bottom-up" approach, cooperatively working with, and comprehensively understanding the nuanced needs of local homeless populations, to build equitable urban and civic spaces that include all citizens of the city.

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