

PIXELATED NARRATIVES IN INVISIBLE CITIES:
DECODING AND RECTIFYING DISENFRANCHISED URBAN NARRATIVES
THROUGH VIRTUAL MEDIUMS

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PIXELATED NARRATIVES IN INVISIBLE CITIES

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Mediums

Abstract

Despite longstanding histories of homelessness inside the United States, few solutions focus on the social inclusion of homeless individuals within broader society as it is affected by digital mediums. While greater inclusion may not immediately solve the problem of homelessness, such inclusion grants homeless peoples and communities more social resources through which they can gain the opportunity to better their situations and increase representation. The disenfranchisement of homeless persons has become increasingly visible as the prevalence of digital devices continues to modify how urban citizens interact and contribute information to the city. As digital presence and participation become more widespread in societal intercourse, the conventionally muted voices of homeless individuals within communally shared narratives will only increase, if not provided a means to contribute. This dissertation explores the potential of digital spaces as avenues through which narratives of homeless individuals can be introduced within the broader society so as to help them achieve a greater degree of social integration.

Utilizing digital technology to bridge the gaps in homeless peoples' inclusion within society as their experiences are articulated through their own narratives, for example non-traditional uses of public space, activates contact zones for individuals within the city and abroad. As narratives exist in a physical space, retelling them digitally, primarily through the use of personal cell phones, can allow for the bridging of social gaps through contact zones, creating opportunities to increase empathy in non-homeless individuals regarding homeless peoples' situations, thereby decreasing prejudice. This dissertation focuses on narratives as spatially marked urban experiences that co-produce communal conceptions of the city. By focusing on the city as a composite of narratives that influences how the city grows, this dissertation seeks to clarify how virtual mediums can better facilitate the inclusion of homeless urban narratives.

Urban inclusion will be looked at through multiple phenomena including the following: digital platforms designed for homeless individuals, the mapping of homeless individuals by non-homeless peoples via digital platforms such as NYC311, and ordinances in the State of Hawai'i dictating homeless movement. Using New York City and Honolulu, located in the two states containing the highest per-capita homeless rates in the nation, to better understand homeless representation in cities, this dissertation prescribes a mobile platform to integrate disenfranchised homeless narratives, resulting in the creation of more spaces produced by an increasingly democratic urban narrative. By increasing narrative inclusion this dissertation theorizes that resultant cities and the communities that compose them will be better able to serve a greater diversity of each respective city's or community's population.

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List of Abbreviations and Symbols

CoC	Continuum of Care
DPP	Department of Planning and Permitting
FCC	Federal Communications Commission
GPS	Global Positioning Program
HUD	U.S. Department of Housing and Urban Development
HMS	Homeless Information Management Systems
HOPE	Homeless Outreach Population Estimate
ICT	Information Communication Technology
NGO	Non-Governmental Organization
PIT-Count	Point-in-Time Count
SDO	Social Dominance Orientation
SNS	Social Network Systems
VA	U.S. Department of Veterans Affairs
VAIC	Veteran Affairs Center for Innovation
WAP or AP	Wireless Access Points or WiFi access point
WLANS	Wireless Local Area Networks

Preface

Point of Departure

This dissertation analyses the exclusion of homeless community members regarding participating in narratives that facilitate the development of cities. This disenfranchisement is looked at through the dual lenses of physical as well as digital experiences. These experiences are viewed as framing city dwellers' understandings of the space around them. By proposing that homeless individuals' urban narrative contributions are under-represented, cities can be examined as systematic synthesis's of physical and digital interaction that result from communal urban narratives, enabling voices to be analyzed and treated through digital mediums.

Cities are a composite of their inhabitants; each individual marks his or her experiences on the landscape not only physically but also digitally. In excluding specific demographics from participation in the collective city narrative, non-representative socio-spatial perceptions among citizens are created within the city's communal urban narrative. The *communal urban narrative*, as described in this dissertation, exists as a combination of perceptions and assumptions, created by in-groups, about how and who should be using the city. This communal narrative is a natural outgrowth from individual narratives. The definition and concept of *in-group* and *out-group* dichotomy utilized are borrowed from Henri Tajfel and social identity theory. The theory proposes that people psychologically sort both themselves and others into insider and outsider groups; then form biases that tend to favor their in-groups.¹ The majority of people who are non-homeless compose the various in-groups, or the *us*, while homeless individuals compose the out-group, or *them*.

Acknowledging socially constructed categories of people within a given city enables two essential questions to be asked. Who is invited to participate in the collective city narrative and in what capacity? And how does omitting specific demographics from participating

¹ Henri Tajfel, *Human Groups and Social Categories: Studies in Social Psychology* (CUP Archive, 1981).

affect understandings of cities? In detailing the participation capabilities among homeless populations in narrating their own experiences, a map of non-representative communal narratives becomes more visible within the city. Their resulting disenfranchised narratives allow the city to be defined through the dominant narrators' perspectives, thus diminishing the identities, experiences, and interactions of out-group members. The result is the creation of a flattened understanding of urban spatial use derived from the in-group's communal narrative. These spatial understandings go on to inform the city's history and archives.² Non-representative archives recorded through communal urban narratives produce powerful exclusions and create unreliable histories. From these histories, cities are articulated. If only select urban citizens are represented in the communal urban narrative, how can cities be designed to serve the totality of their citizens' needs?

In studying identity and narrative as mechanisms promoting or weakening societal integration, articulated through history, the schism between communal urban narratives and actual interactions as they express themselves out in cities become evident. By focusing on the creation of non-representational communal narratives and their ability to articulate the urban user experience, understandings can be gained regarding architects' and city planners' designs that are ill or well suited to serve the entirety of their citizens. As urban planners draw strongly from programmatic and user profiles, inaccurate archives contribute increasingly to ill-suited design solutions derived in urban planning and architectural developments. Using a digital means of collecting narratives, specifically from members of the homeless out-groups, then mobilizes potential to remedy these inaccuracies and misrepresentations regarding the collective societal narrative.

Digital applications capable of altering homeless inclusion, both online and physically, are currently underdeveloped. This technological design void is one currently being addressed in small pockets around the nation in the form of civic technology collectives, like Hack to End Homelessness,³ and reporting applications, like NYC Map the Homeless.⁴ While today's

² The concept and importance is drawn from Kate Eichhorn's feminist argument which emphasizes the importance of archives to record as well as respond to complex demands of particular historical conditions.

³ @hack2end, "Hack to End Homelessness—Seattle, WA," *Hack to End Homelessness*, May 2014, <http://www.hacktoendhomelessness.com/>.

smartphones and the omnipresent Internet access are viewed, by some, as luxuries, their increasing prevalence, affordability, and relevance as instruments of communication make the digital medium the ideal grounds for digital intervention positioned to effect analog space. In deriving a methodology for urban inclusion as it exists in the digital and physical realms, the mobile application designed in Chapter 7 aims to create a digital platform capable of use in various cities throughout the United States. The resultant digital application, called Esra, utilizes evolving geographic technologies capable of interacting with the analog⁵ space to remap disenfranchised narratives thus increasing their incorporation into the communal narrative as it dictates urban outcomes.

The belief that homeless individuals within urban spaces are among society's most vulnerable and under-represented people in the urban communal narrative has brought them to the forefront of this dissertation. The research portion of this paper aims to bring to light entrenched in-group assumptions and biases as they are integrated and affect the communal urban narrative. In-group/out-group biases toward homeless individuals, seen through class schisms will be looked at as factors effecting integration, that if altered are capable of increasing empathy. This is used as a call to action in Chapter 7, the design portion of this paper. By using the design solution procured in Chapter 7 as a structure for analysis, Esra uses digital mediums to produce an apparatus for narrative inclusion.

By amplifying disenfranchised narratives previously attenuated in the virtual socio-spatial description, visibility and integration of these voices is bolstered, enabling urban planners and architects to renegotiate more spatially inclusive designs such as urban tracts positioned to increase inclusion and decrease inter-group conflict created by more complete understandings of urban spatial requirements for all of its inhabitants. The urban form, post-digital intervention, increases visibility of disenfranchised citizens' narratives, regardless of social strata, recording a more accurate historical archive and cities that better understand the totality of their urbanites.

⁴ David Fox, *NYC Map The Homeless on the App Store*, version 1.0.1, Android 4.0 and iOS (New York, NY: dfoxinator, 2015), <https://itunes.apple.com/us/app/nyc-map-the-homeless/id1023540274?mt=8>.

⁵ Analog spaces, as discussed in terms and definitions, are the physical spaces that make up cities, including streets, sidewalks, and buildings.

Research Question

What causes urban narrative disenfranchisement in homeless individuals and how can new digital applications be used to mitigate contribution losses?

The phenomenon of homelessness within the United States is not a new one but one that is in constant flux as urban spaces grow and become more dense.⁶ This dissertation seeks to clarify how virtual mediums encourage or discourage the inclusion of homeless individuals through the representation of their identities. These representations are looked at for their ability to alter contributions and inclusivity within the communal narrative. Shifts in participation can be seen as factors manipulating urbanites' perception and thus the urban form. By developing more in-depth knowledge of the virtual elements underpinning disenfranchised urban narratives, urban planners and architects can develop cities that are more attuned to serving the totality of their citizens in a cohesive manner, thus minimizing the resultant urban disenfranchisement of homeless individuals.

Physical and Theoretical Context/Background

The two cities considered throughout this dissertation are Honolulu, Hawai'i, and New York City, New York. The cities provide unique parameters to the research as they are investigated to illustrate current urban digital integration and opportunities for intervention. Honolulu exists as the location for the digital intervention Esra, while lessons learned will be borrowed from mobile applications designed in New York City. Lessons gleaned from New York as a result of the city's advanced NYC311⁷ mapping data, as well as the variety of digital design solutions explored by programming groups within New York, make it an information-rich location for understanding urban applications' potential deployment reach.

In addition, Honolulu and New York City are both cities located in states that possess the largest number of homeless individuals in the United States per capita for four consecutive

⁶ Richard H. Ropers, *The Invisible Homeless: A New Urban Ecology*. Human Sciences Press Warehouse, Building 424, Raritan Center, 80 Northfield Avenue, Edison, NJ 08817. 1988, <http://eric.ed.gov/?id=ED309232>.

⁷ "About 311," The Official Website of the City of New York, NYC (n.d.), 3.

years, beginning in 2011.⁸ This dissertation argues that the per-capita exclusion of homeless individuals, as it marks itself on these cities' respective landscapes, constitutes a large portion of the population. Minimizing a specific demographic that constitutes such a substantial segment of the overall population then creates incorrect representation of a city's populace. This attenuation from the communal narrative, from a specific demographic, skews understandings of the *Invisible City*⁹. The Invisible City, an idea borrowed from Italo Calvino, discussed in the Terms and Definitions section of this dissertation, is used to define the idea of a city as opposed to its physical form. The value of Italo Calvino's Invisible City is its ability to render an abstract idea of the city as composed of citizens' representations derived from the communal narrative.

As a result of the percentage of citizens from a specific demographic being minimized within the urban narrative and their constituting such a large portion of the overall population, the composition of the Invisible City no longer reflects the users of the actual physical city. Homeless individuals in the physical city, also called the *analog city*, discussed in terms and definitions, are most often represented in the communal narrative by non-homeless individuals. This is to say that there are many non-homeless individuals contributing their ideas of homelessness to the communal narrative in place of homeless individuals' own self-narrated experiences. The effects of contributing one's own narrative and others contributing narratives for members of out-groups is discussed for the ability to provide agency for the narrated individual—in this case, the homeless individual. Who is doing the narrating of whom has a substantial effect on the story told and how it is incorporated into communal understandings of a city's population.

Honolulu's employment of laws, bans, and ordinances, discussed in Chapter 6, are analyzed as measures used to limit the visual presence of homeless individuals in the analog city. Bill 42 enacted in 2014 by Mayor Kirk Caldwell prohibiting sitting and lying on Honolulu's public sidewalks is discussed as an example of a city's legislature that is dependent on biases

⁸ Laura Allan, "Interactive Map Shows How Each State Stacks Up in Terms of Homelessness," *Movoto Real Estate*, accessed April 26, 2015, <http://www.movoto.com/blog/opinions/homelessness-in-america-maps/>.

⁹ Italo Calvino, *Invisible Cities*, 1st Harvest/HBJ ed., A Harvest/HBJ Book (New York: Harcourt Brace Jovanovich, 1978).

within the communal narrative and, as such, allows for that biased narrative to dictate how city spaces are defined and utilized. This dissertation then examines Honolulu's ordinances and bills passed between 2011-2014 that dictate the physical locations homeless individuals may occupy and in what capacity they may do so. Honolulu's enlistment as the location for Esra the design intervention is well suited because of the city's aggressive policy on unhoused individuals, as well as the relatively limited physical mobility available to homeless individuals within the insular state. Policies regarding how homeless individuals arrive in Hawai'i, as well as the ways they are subsequently moved within Honolulu, frames issues regarding homelessness differently as compared to other states, despite the increasing prevalence of similar legislation elsewhere.¹⁰

In limiting homeless individuals' visual presence many cities are trying to erase the visual impact of homeless lifestyles, and thus their narratives, as they are marked on the analog city and Invisible City. For example, when looking at legislation including sit-lie bans in Honolulu, one of the main justifications discussed by Mayor Kirk Caldwell is the desire to limit the effects of homelessness on the communal understanding of the city. The mayor's attempts to control the analog city through ordinances, thus, affect how citizens discuss the city (the communal narrative) and influence the abstract idea of Honolulu (the Invisible City) as used to market the city primarily to tourists.

Homeless individuals' visibility in cities like Honolulu is increasingly falling under the jurisdiction of the State of Hawai'i. As the state manipulates the analog visibility of the homeless populace, in turn affect the homeless community's contributions, or lack thereof, to the communal urban narrative. Restricting access to the communal narrative is done by altering access to contact zones, in turn affecting homeless individuals' visibility in the Invisible City.

This dissertation hopes to clarify the socio-spatial implication of a life lived disenfranchised by homelessness in Honolulu through lessons gleaned from digital representations of

¹⁰ Tristia Bauman, Jeremy Rosen, and Eric Tars, "No Safe Place: The Criminalization of Homelessness in U.S. Cities," A Report by the National Law Center on Homelessness & Poverty, *No Safe Place* (Washington, D.C.: National Law Center on Homelessness and Poverty, 2014).

homelessness in New York City. The selection of these two cities for the purposes of this dissertation seeks to highlight the repeated homeless narrative structures and power hierarchies, which are documented in analog as well as digital space through legal acts targeting homeless individuals' use of public space. The term *repeated* is used to denote reoccurring single stories of homelessness used to represent diverse arrays of homeless individuals experiences through one-dimensional characteristics. In tracing homeless representation both digitally and in analog form, as they affect a city's broader portrayal of homelessness, in-group biases affecting the communal narrative's understanding of "acceptable" spatial uses are made visible.

The value of analyzing New York lies in the city's degree of digital documenting of homeless individuals. Both Honolulu and New York exist in very different physical environments, but represent their homeless populations similarly within their respective communal narratives. This may be related to similarities in the reporting demographic as well as methods of reporting, as the majority of representations of homelessness in both cities are contributed by non-homeless individuals. By drawing information from New York's methods of narrating homeless peoples' experiences through mobile applications, as seen in Chapter 5, the design solution aims to build an application to increase inclusion to be deployed in Honolulu.

New York City presents a diametrically opposite environmental structure from Honolulu, but paints homeless individuals with a similar narrative brush. Studied throughout this dissertation are the limiting factors affecting homeless people regarding their collective ability to contribute their own personal narratives and how these narratives are mapped in urban space. Use of mobile applications provided by state and private entities will be examined in their capacity to illustrate spatial use as well as enabling some urban citizens to narrate other individuals' experiences. New York's function within the case studies serves to delineate the potential depth of socio-spatial identification information that can be gathered, as it indicates spatial use as well as biases held by reporters. These biases and constructions of inappropriate spatial use, as reported through the NYC311 application and NYC Map the

Homeless, function as indicators of the prevalence of contributions to the communal spatial narrative by non-homeless individuals. As these are the most prevalent type of mobile applications used to digitally narrate homeless individuals' urban spatial acts, they reduce contributions about homelessness provided by homeless individuals, as they contribute a smaller portion of the overall dialogues on homelessness, attenuating their individual perspectives from the communal narrative.

As homeless individuals are included or omitted from narrating their experiences in cities, their voices represent either contributions or attenuations within the Invisible City. In the case of New York, how do digital applications function to tell the stories of homeless individuals' experiences in the city? Lessons gleaned can then be transferred to Honolulu to understand the implications of attenuated narration as it exists in physical space. This dissertation aims to focus on the lack of opportunity available to homeless individuals to narrate their own experiences, as non-homeless citizens narrate experiences for homeless individuals through digital applications.

Research Methodology

Research is often constructed as methodologically stringent examinations of a situation or problem in order to generate new knowledge or validate existing knowledge. As a research-based document, the information gathered and presented in this dissertation aims to explore research understandings as they exist in today's academic realm so as to stretch the meanings and implications derived from pure research into applicable real world solutions.

This dissertation utilizes several research methodologies: literature review of existing theory, survey meta-analyses, case studies, and design as research. An initial literature review is conducted to establish theoretical understandings of the relationships between traditional means of altering urban inclusion, individual and communal narratives, and modern digital communications technology. Through a combination of meta-analyses and individual case studies, this dissertation examines methods of technology access, maps current trends in digital methods, and assesses the applicability of each in specific urban applications.

The employment these of methodologies is exercised to make visible homeless individuals use and procurement methods of mobile technology, techniques used to record homeless individuals urban experiences, and mobile phone applications designed for homeless individuals. By using various research methods to look at the interactions of these elements effecting representations of homeless individuals in cities as they attenuate and amplify identity contribution, underpinning factors of homeless disenfranchisement become clear. The investigation of identity contributions to city's archives, focusing on narrative attenuation of disenfranchised populaces in technology, will function to illuminate successful techniques for integrating the design solution.

The design solution proposed in this dissertation bolsters the capacity of homeless urban narratives to contribute to the Invisible City through a digital application that encourages participation and inclusion. The smartphone application, Esra, has been designed after surveying existing cell phone use among homeless demographics. In addition, supplemental research was conducted regarding federal programs that subsidize mobile phones and data plan procurement and assistance agencies to ensure that homeless individuals are able to use the design produced. To increase understanding of existing mobile applications designed for homeless individuals, case studies on existing applications are conducted for their use in mapping and marking homeless individuals' experiences in various cities throughout the United States.

Case Study Methodology

Case studies looking at current applications help to better understand the technological mediums currently designed for homeless individuals. By employing an analysis style similar to those used in architectural case study rubrics understandings are gained regarding homeless spatial mapping and experiences. In addition to case studies on current applications, this dissertation looks at the application NYC311. The maps produced from NYC311's open-source data serve to expose urban homeless mapping and experiences as they transpire in real time in New York City.

An aggregated analysis of these digital applications greatly informs and contributes numerous design attributes to the resultant application design. Information gleaned from the digital application case studies, used in conjunction with lessons from historical feminist and digital humanities theories, deconstructs common perceptions of disenfranchised urban citizens' contributions and construct a new model of digital urban input, which is used to develop design parameters for the Esra.

The potential of mobile applications that allow homeless users to gain agency within the Invisible City has not been fully explored by mobile application developers, as such applications are only a recent offshoot of an emerging technology and are often directed toward demographics that make financial investments monetarily profitable. The design void could be related to the lack of incentives created by monetary funding, assumptions related to lack of need on the part of homeless individuals, or assumed lack of apparatuses so as to access a mobile application specifically designed for homeless individuals. The applications looked at in Chapter 5 are either government funded or the result of private interests. Four of the five mobile applications analyzed generate no revenue and were developed for alternative motives, ranging from public awareness to documentation for the purpose of removal. As the design development of many applications for homeless individuals is not related to monetary profit, participation from outside designing entities often vary widely and fluctuate dependent on external drivers, like the unpaid free time of application designers. These external drivers could be one of the reasons for the lack of mobile applications designed with homeless individuals as their target audience.

Design Methodology

The culmination of research in Honolulu as well as on existent means of homeless individuals' digital representation builds an understanding of digital urban relationships as they affect homeless individuals' ability to articulate their narratives in the Invisible City. By using this knowledge, coupled with acknowledgments regarding a lack of digital platforms designed for homeless demographics, a space is created for a digital application that would promote homeless self-narration. The application derived, Esra, is a Honolulu-based,

smartphone application that enables the user to digitally contribute his or her analog experiences to the communal narratives that then go on to form the Invisible City.

Using existing street views and urban maps, the user is asked to record his or her narrative atop the existent map of the city. These narrative records are then placed using GPS, along with information gained from internal sensors, onto the maps. Narrative records are taken through sound recordings, images, and text input. Images might be recorded in the form of photographs, illustrations, or mixed-media, dependent on the user's preferred method of narrative contribution. This sensorial data is, then, integrated into the application displaying urban narratives that may be otherwise omitted from the Invisible City.

Many of the technologies utilized in the design outcome are currently in employed various technology fields; however, this application uniquely adapt these technologies in combination to produce a medium capable of annotating the existing digital-urban narrative experience. Applications that target homeless individuals in urban spaces are examined in the case study analysis portion of this dissertation to extract successful and negative modes of narrative contribution.

The design goal of the interactive digital application is to provide a means for integrating disenfranchised experiences into the communal narrative in a non-exclusionary manner. It does not limit participation to homeless individuals but instead welcomes use by all urbanites. The medium functions in a way that disallows itself from being hijacked by non-homeless users by welcoming usership contributions from all members of society. Despite being open to any urban user, the design, as well as the user program and experience, is based on the socio-spatial needs of homeless persons. This is done by soliciting to and targeting homeless individuals. The user agreement promotes community cohesion and monitors the content to ensure that all users' experiences, including those of homeless people, are protected as they choose to share their experiences.

This application is different from other applications designed for homeless individuals, including those analyzed through this dissertations case studies, as it addresses their narrative

needs as opposed to limiting its use to the constraints of their physical needs. Narrative needs are addressed in this dissertation as they provide opportunities for agency, which is especially important among demographics that are disenfranchised. Concepts of affecting change through agency are addressed in the literature review portion of the paper as they draw from feminist theories capable of reframing ideas of inclusion.

Narrative Methodology

The data able to be collected through the design solutions, discussed in Chapter 8, promotes the establishment of a collective narrative of the city; it vocally and visually describes what homeless users feel within the city, allowing them to contribute what is missing from the current communal understanding of their respective city. These narratives aid in understanding a qualitative description of the urban space and its needs, contributing to a more inclusive Invisible City. The lack of understanding regarding homeless peoples lifestyles, held by normalized urban citizens was described by one homeless individual as follows. “People don’t understand about being homeless; we have a very beautiful way of life. We live beautifully, as far as I’m concerned,” recounted Hans, a homeless Los Angeles, California, native.¹¹ Hans’s understanding of homelessness and his way of life conflict with many in-group, non-homeless peoples’ shared perspectives as promoted by the communal narrative. This discrepancy can be seen in media addresses as well as in the laws and regulations controlling homeless spatial use.

This dissertation seeks to integrate into the socio-spatial narrative voices like Hans’s. Infusing the communal narrative with more diverse spatial understandings including those of homeless individuals—narratives of those who are living the experience of being homeless. The consequence of increased diversity of contributions is a more inclusive understanding of the city as an urban space comprised of vastly varying spatial experiences. The discrepancy in spatial understanding between Hans’s narrative and a normalized citizen’s narrative regarding homelessness then provides the potential for empathy for the experiences of all homeless people. If an in-group member is able to experience Hans’s “beautiful way of life,” a contact

¹¹ David Weinberg, *The Belltown Hustle*, Audio Story, PRX -Public Radio Exchange (Los Angeles CA, 2007), <https://beta.prx.org/stories/17050>.

zone is created between the in-group member and Han. This contact zone then creates the potential for the experience to change the contact zone participant's perspective and thus attitude. This experience can through the contact zone be contributed to the communal narrative, engaging other participants and increasing the likelihood of increased empathy.

Terms & Definitions

The definitions used in this paper function to create an alternative vocabulary, and thus an alternative approach to the relationship between urbanism and homelessness, as it is affected by digital mediums. These terms have been selected and employed to inform the reader of pre-conceptions of urban space as it is affected by in-group biases. This terminology aims at creating a new vocabulary of discourse, augmenting traditional ideas of inclusion, which may have historically excluded homeless participation. The terms defined below are derived by merging several theories: feminist theory, digital humanities, architecture and urbanism. By deriving terms from these theoretical spaces this paper hopes to extract and extrapolate seminal theories from these interdisciplinary studies.

In disassembling the vocabulary used to speak about homeless individuals in urban spaces this paper's intent is to compose a new language of increased inclusion. This is done by first acknowledging the implications of language on our understanding of the homeless demographic. For example, by altering the words used to discuss cities, increased inclusion can be incorporated by the newly generated terms. These new terms remove existent connotations in order to employ a vocabulary rewritten for homeless out-groups, as well as the voices of the communal narrative. Beginning with a change in language, this paper proposes that the dialogue surrounding homeless demographics will change, affecting the language of the city as well.

Structure

“Structure” as used in the introduction, is a broadly accepted term used to denote organizations of physical objects built by society. Structures are physical or non-physical organizations affecting the beliefs and values of the populace, creating a tangible effect from often intangible forces. Some authors categorize these as isolated entities while others see

them as interconnected frameworks of energy exchange.¹² This paper will be looking at structures as the framing infrastructure for energy exchange and idea diffusion.

Of particular interest to this dissertation are the in-group's structures, which are informative in understanding the location-based power structures dominating the communal urban narrative. At times the in-group's structures are referred to as geo-political structures due to the encapsulation of politically charged factors such as economics, demography and resources as they affect geographical space. This structure of the geo-politically charged communal urban narrative can then be seen as instrumental in forming the perceptions of the Invisible City.¹³ By analyzing underlying land politic structures that go on to form legislation and design parameters, clarity is achieved regarding how these structures go on to articulate the built form of the analog city. By seeing each of these elements as interconnecting structures that form complex frameworks for building cities, their value becomes instrumental in understanding their effects on the built form.

The working definition of *structure* will be as follows: social arrangements, composed of energy, materials and information,¹⁴ borrowing concepts from Jane Jacobs'¹⁵ formulation of an ecologically interdependent urban framework. Exchanges flow between these elements composed of hierarchies, existing in layers that can be unearthed to analyze structural relationships as they affect the Invisible City.

The effects of structural knowledge are intended to dismantle underlying socio-spatial conceptions as they affect the identities of homeless individuals in digital and analog cities. The interdisciplinary backgrounds taken into account in the terminology, literature review and design document aid in building a formative structure to understand and facilitate structural changes. By constructing an analysis of contributing factors to these spatial

¹² Robert W. Crosby, Institute of Electrical and Electronics Engineers, and American Association for the Advancement of Science, eds., *Cities and Regions as Nonlinear Decision Systems*, AAAS Selected Symposium 77 (Boulder, Colo.: Published by Westview Press for the American Association for the Advancement of Science, 1983), 7.

¹³ The idea of Invisible Cities has been borrowed from Italo Calvino and is described in the terms and definitions section of the paper. Calvino, *Invisible Cities*.

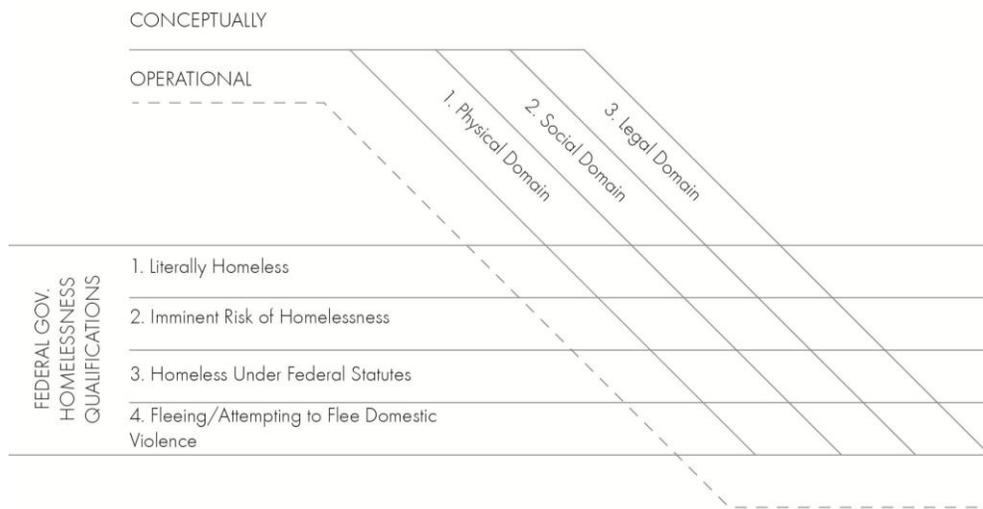
¹⁴ Crosby, Institute of Electrical and Electronics Engineers, and American Association for the Advancement of Science, *Cities and Regions as Nonlinear Decision Systems*, 9.

¹⁵ Project for Public Spaces, "Project for Public Spaces Jane Jacobs," accessed March 16, 2015, <http://www.pps.org/reference/jjacobs-2/>.

structures, new methodologies are built for understanding the homeless experience, as the homeless population mark themselves upon the physical and digital urban spaces of the Invisible City.

Homelessness

The federal government utilizes four categories under which citizens can qualify as homeless: (1) literally homeless; (2) at imminent risk of homelessness; (3) homeless under other federal statutes; (4) fleeing/attempting to flee domestic violence. Many government programs base their classifications on this definition of homelessness.¹⁶ These four categories are then divided into two separate categories: conceptual and operational. The conceptual definition is understood as (1) Physical Domain: having an adequate dwelling to meet the needs of oneself and one’s family; (2) Social Domain: having privacy and capacity to maintain social relationships; (3) Legal Domain: having exclusive possession of secured occupation and legal title.¹⁷ By contrast, operational definitions of homelessness are often determined by individual organizations dependent on the specific sub-demographic they desire to serve. Operational definitions then go on to instruct the methodology used by the organization.



¹⁶ Busch-Geertsema Volker et al., “Homeless and Homeless Policies in Europe: Lessons from Research,” in *Issuu* (Brussels, 2010), http://issuu.com/semabrigo/docs/_8_homeless_and_homeless_policies_in_europe_lesson.

¹⁷ *Ibid.*, 19

This paper addresses aspects of homelessness as they are involved with federally constructed conceptual definitions, with specific focus on physical, legal and social domains. By drawing aspects from all definitions as they compose conceptual homelessness, the design solution becomes capable of addressing narrative inclusion as it exists in the analog as well as digital space.

Pixelated Identity

Pixels function as individual flecks of information that enable the rendering of a larger image or idea. Increased pixels create finer resolution in the finalized image. Similarly, virtual mediums work together like pixels to formulate a more complete understanding of a user's or city's identity.

For example, perhaps an individual has her business identity displayed to colleagues on LinkedIn, where her skills and workplace location are geographically marked. Her sorority sisters and college friends from out of state communicate over Facebook where they are able to look at images of her personal development since graduation. Her family vacations are recorded over Shutterfly, Tumblr curates her art and Yelp facilitates her dining. From this point forward these platforms for social relationships shared online will be called social network services or SNS. The result is that her virtual identity becomes a composition of each of her social networked services or platforms of virtual identification. Each of these platforms allows her to produce a new representation of herself. The mediums each have a target audience and display a separate but interrelated representation of the individual. The composite image comprises her pixelated identity, an interrelated collage of her virtual representations. Similarly, urban citizens and cities have become composites of their virtual identities.

The ability of individuals to morph their identity throughout many digital realms has been greatly increased as the variety of digital mediums has multiplied and as technology has become omnipresent in everyday life. One single user is capable of being a multitude of

different individuals with greatly varying capacities as he or she passes through each different digital application. One does not carry the same identity as one traverses different social arenas; similarly, access to identity shedding and reapplying is a constantly available fixture in the digital realm.

Through critiquing and expanding discourses on agency and identity as they are constructed in urban spaces clarity can be gained in how they can be employed through virtual mediums. By looking at the variety of virtual applications designed to target normalized urban citizens, in contrast to those designed for homeless individuals, a disparity in geographically marked digital design solutions can be analyzed. Each of the applications provides a medium of communication with a specific user connotation and implied message.

For instance, LinkedIn is a virtual medium designed for the business professional. It is used to network businesses and work opportunities. It also takes these experiences and interactions and maps them geographically in time and space. These pieces of information about the contributing individual compose the implied messages of the medium. This is the information conveyed about the user in that pixel medium. This pixel combines with other pixels, contributed by the other members of the urban in-group to compose the group's pixelated in-group identity. The term in-group is defined by Henri Tajfel¹⁸ as the dominant group who share common identity ties, in contrast to the out-group. There are few applications that target homeless populations as their user group. The case studies examined in Chapter 5 analyze the identity pixels available to homeless demographics in urban spaces.

This method of understanding identity as pixels does not suggest that homeless individuals are unable to use digital mediums designed for other target audiences, rather that their unique spatial experiences as they are marked on the analog canvas are not designed for. Advantages of pixelated identities will be discussed for their ability to facilitate admittance into different social groups, controlling the amount of identity information given to other members of the medium, and enabling users to play out different identity roles as they interact with other users. The benefits of these identity pixels will be discussed later in the

¹⁸ Tajfel, *Human Groups and Social Categories*.

paper as they can be seen as factors that can increase or decrease out-group inclusion among in-group members.

Social network service (SNS) members take on a variety of malleable attributes or pixels. These pixels function as information fragments, replacing one another, intersecting transparently and interacting opaquely, thus conveying a collage of information regarding the person's identity. These identity pixels transpose their meanings onto the digital environment that is then layered over our interpretation of the city.

For instance: if many individuals are using Yelp to talk about the city of Honolulu's fish market they are each contributing an identity pixel of the market to the digital city of Honolulu. Each contributor uses their personal photograph, rating, description and experience to mark their analog experience in digital space. These composite pixels about the fish market contribute to the identity of the digital fish market as a part of the digital city of Honolulu. What happens though when there are no or limited pixels representing homeless experiences or personalities? What is eliminated from the digital city? The pixels of various citizens interlock and overlap, informing their relationships within urban spaces and the larger image of the digital community. Changes and shifts to individual pixels as they compose identities in digital space then go on to color the way that cities are perceived digitally.

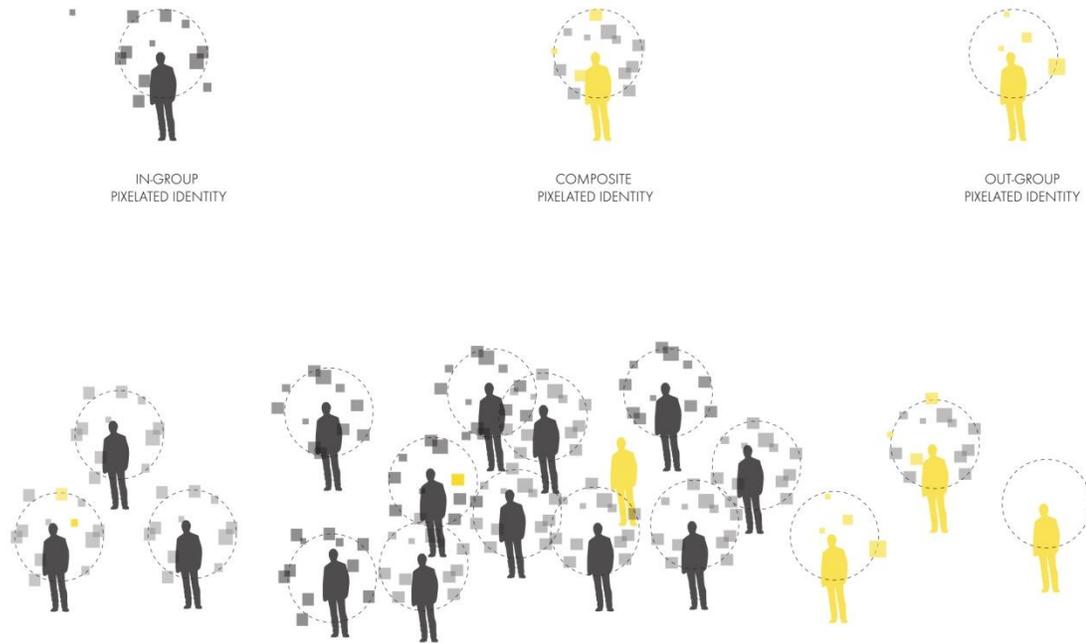


Figure 2 Pixelated Identities

The importance of who is telling the story has become ever more important as participants' ability to cloak and manipulate identity pixels through virtual mediums shifts. If everyone is using the same software or product to elucidate a point, the image conveyed will likely have the odor of that software and reflect a predominant demographic who may be using it. The resultant image of the city as illustrated through that medium is skewed to the contributors' biases as a consequence. In this way, the SNS platforms can be seen as tinting the pixels' information.

Standpoint theory¹⁹ states that every perception as well as knowledge is socially situated. This understanding stretches into understandings of pixelated identity, allowing each identity pixel to be socially situated. The social situation of the pixel can be seen as being situated within the culture of the producing platform. Standpoint theory would also suppose that the communicating platform integrated into the Invisible City adds meaning created by the perspective of the device. In the same way that language dictates what we are able to say, a device and platform function to stage the message produced. The result is pixels

¹⁹ Nancy C. M. Hartsock, *Money, Sex, And Power: Toward a Feminist Historical Materialism* (Boston: Northeastern, 1985).

manipulated by the platform, device and the user's identity being applied to the Invisible City. The danger of this is the potential of only accepting or producing specific pixels, resulting in an undemocratic representation of digital cities, and as a result non-representative communal narratives.

Invisible Cities

Italo Calvino used the idea of Invisible Cities to describe non-physical worlds invented for specific ears, by analyzing the story of Marco Polo.²⁰ As the character Marco Polo narrates the Mongolian emperor Khan's vast stretches of land, the reader becomes aware of the observational removal from the actual location. The fictive work created cities as a composite of the listener's understanding and the storyteller's imagination and memory. The Invisible Cities created are neither fictional nor real, but reside instead in a space in-between. Marco Polo uses these spatial memories to create the reality of the Emperor, much like the way that urban citizens work together to form a communal understanding of the cities in which they dwell.²¹ Thus they establish a non-tangible city of memory and potential, standardized for communal understanding.

In summary the Invisible City is the abstracted idea of the city. It takes information from the physical, the digital, communal narratives, individual identity pixels and history to form an idea of the city. This Invisible City is the imagined image of the city.

The term *Invisible City* within this paper is used to clarify how citizens understand their shared ephemeral space, while highlighting the way that communal narratives function to control the collective spatial perception. Important realizations can be made by noting who in Calvino's novel plays the role of the storyteller and thus who is making the spatial connections for whom. The power dichotomies presented and created through storytelling within the novel shed light on the function of communal urban narratives as they are established and curated by pixelated identities.

²⁰ Calvino, *Invisible Cities*.

²¹ Phil Turner and Elisabeth Davenport, eds., *Spaces, Spatiality and Technology*, Kluwer International Series on Computer Supported Cooperative Work, v. 5 (Dordrecht, The Netherlands: Springer, 2005), 19.

In this way the Invisible City is a mimicking structure of the analog city. It draws ideas of the analog space into its creation, propagated by user identities and understandings. The Invisible City is seen as extremely closely tied to the communal narratives of the space as they co-construct one another.

Urban Narrative

Socio-spatial narratives is an ever-expanding field. The narratives' crafted productions are sculpted by ever-growing, nuanced, interdisciplinary experiences that evolve alongside the landscape, facilitating spatial understandings as they pertain to culture. They coat the city in layers of meaning both individualized and intertwined, creating a collective image, physical in the built form and ephemeral in meaning, adding to the Invisible City.

In the Invisible City citizens function as storytellers, articulating their experiences onto the built environment. These experiences can function to change public policy, the city and experiences yet to be had. In articulating one's experiences onto the space, the user's actions and lives are legitimized. Each citizen, within a city, creates his or her own personal urban narrative. The existence of these stories within space, operate to create a comprehensive map of the users' experiences as they are plotted onto the landscape. These maps can be further extrapolated by interlacing the narratives of interacting individuals to illustrate contact zones.²² These urban spatial relations had by admitted and in-group citizens will be called *Communal Urban Narratives* or *Communal Narrative* since they address the conjunctive quality through which shared knowledge of spatial narratives are established.

Analog Urbanity²³

The hardware, or analog structure, of the city is its streets, sidewalks, sewage lines, parks and treatment centers, a composite of physical infrastructure and buildings; it is the space that people physically walk through. The analog space stands in juxtaposition to and communes

²² Mary Louise Pratt, "Arts of the Contact Zone," *Profession*, January 1, 1991, pp. 33–40.

²³ Digital urbanism stands in contrast to analog urbanism, both borrowed from Mark Morris's Digital Space and Analog Place. Digital urbanism is composed of all virtual mediums urban citizens transpose onto the physical cityscape, including but not limited to geotagging, GPS, virtual experiences, social media accounts and blogs. Digital as well as analog urbanism are discussed further in the Definitions section of the paper.

with the digital space. It is the corporeal and material world of information. This is the city addressed by urban planners like Jane Jacobs who spoke of the analog city, the city most often addressed in city hall meetings and master planning drawings.

The importance of the analog structure is one that cannot be overlooked. Its crucial facets compose the twenty-first-century city, functioning as the structure over which the Invisible City is laid. The implication of ubiquitous technology has changed the ways the analog city is experienced. To ignore these implications is to render the multidimensional modern city in a one-dimensional light.

Situationist Guy Debord²⁴ illustrates his understanding of the urban experience by physically treading the analog city, recording experientially gained maps. Fearful of the implications of the car, he strove to fully experience the city as it is physically laid out. His attention to the speed of interface via walking, as opposed to within the confines of a moving vehicle, had severe consequences for the process of the experience. The documentation of this experience he called *Dérive*. Today his central concern regarding automobile integration is overshadowed by citizens capacity and velocity of moving through analog space, propelled by an ability to experience locations with the drop of a Google pin.

An individual is no longer forced to walk or even drive within the analog space to get an encompassing feeling of the physical meanings of the space. However, who is determining these meanings? In eliminating a person's physical experience in the analog city, what are we ensuring? One must ask: when we reduce the analog experience to a digital street view who is eliminated? Whose digital narration are we exploring and what does their perspective display?

Digital Urbanism

²⁵ Since prehistoric times, a society's use of technology has been a determining factor in its characterization. These transitions through technology have been illustrated heavily in the

²⁴ Guy Debord, *Society of the Spectacle* (Detroit: Black & Red, 1983).

²⁵ Daft Punk, *Technologic*, CD. Human After All (Virgin, 2005).

“Charge it, Point it, Zoom it, Press it, Snap it, Work it, Quick, Erase it, Write it, Cut it, Paste it, Save it, Load it, Check it, Quick, Rewrite it, Plug it, Play it, Burn it, Rip it, Drag it, Drop it, Zip, Unzip it, Surf it, Scroll it, Pause it, Click it, Cross it, Crack it, Switch, Update it, Name it, Rate it, Tune it, Print it, Scan it, Send it, Fax, Rename it, Touch it, Bring it, Pay it, Watch it, Turn it, Leave it, Start, Format it.

Technologic, Daft Punk

transformations of the analog urban form.²⁶ The form of today’s city is becoming increasingly dictated by the ubiquity of technology and virtual mediums. The ability to access information online has rendered some services unnecessary, while simultaneously creating other spatial requirements that did not exist before. Our interaction with the urban landscape has taken on new forms that enable users to partake in events across the world and have a life in cities they have never physically set foot in.

This has created a city that parallels the analog city,²⁷ while maintaining a completely different citizenship, user base and socioeconomic grounding.

The following illustrates the digital city of Honolulu: the user can walk Waikiki beach, via Google maps in 2011 as well as 2014,²⁸ and they can interact with fellow Waikiki beachgoers visually and verbally via Waikiki YouTube videos.²⁹ The visitor can see their hotel, the Marriot Resort and Spa, walk through their room and experience the Marriott’s Revive Collection bedding with 300 thread count cotton linens,³⁰ before they visit the pool deck to watch the sunset.³¹ The visitors then talk to multiple other tourists and locals³² in Waikiki

²⁶ A. E. J. Morris, *History of Urban Form: Before the Industrial Revolutions* (Harlow, Essex, England; New York: Longman Scientific & Technical: Wiley, 1994); Lewis Mumford, *The City in History: Its Origins, Its Transformations, and Its Prospects* (New York: Harcourt Brace Jovanovich, 1961); Leonardo Benevolo, *The Origins of Modern Town Planning* (Cambridge, Mass.: MIT Press, 1971).

²⁷ Mark Morris, “Digital Space and Analog Place: A Shared Reality,” in *97th ACSA Annual Meeting Proceedings, The Value of Design*, ed. Phoebe Crisman and Mark Gillem (ACSA Annual Meeting, 2009, Washington, D.C.: ACSA Press; Distributed by Assoc. of Collegiate Schools of Architecture, 2009), 173–78, <http://apps.acsa-arch.org/resources/proceedings/indexsearch.aspx?txtKeyword1=Digital%20Space%20and%20Analog%20Place%3A%20A%20Shared%20Reality&ddField1=0>.

²⁸ “Waikiki Beach Marriott Photosphere Nov 2014 Google Maps,” *Google Maps*, accessed February 3, 2016, <https://www.google.com/maps/@21.27324,-157.8242969,3a,75y,67.46h,96.57t/data=!3m8!1e1!3m6!1s-TGtE04DqoLE%2FVHpnUUB9vnI%2FAAAAAAADS9w%2FZyxUCv7F45M!2e4!3e1!1!6s%2F%2Fh6.googleusercontent.com%2F-TGtE04DqoLE%2FVHpnUUB9vnI%2FAAAAAAADS9w%2FZyxUCv7F45M%2Fw203-h101-n-k-no%2F!7i8192!8i4096>.

²⁹ aroundtheisland, *Waikiki Beach Walk* (Honolulu, HI), accessed February 3, 2016, <https://www.youtube.com/watch?v=RLWjioFs59c>; berlincitylife, *Waikiki Beach Hawai'i Oahu 2014 HD*, accessed February 3, 2016, <https://www.youtube.com/watch?v=o-puKW-g8mw>.

³⁰ “Waikiki Beach Marriott Resort & Spa,” Hotel Review, *HawaiiGolf.com*, accessed February 3, 2016, <http://www.hawaiigolf.com/listings/120/>.

³¹ “View from Pool Deck—Picture of Waikiki Beach Marriott Resort & Spa, Honolulu,” Vacation Advisor, *Trip Advisor*, accessed February 3, 2016, http://www.tripadvisor.com/LocationPhotoDirectLink-g60982-d214683-i27234556-Waikiki_Beach_Marriott_Resort_Spa-Honolulu_Oahu_Hawaii.html.

about their favorite sushi restaurants³³ before deciding to visit Benihana's for the live dinner show,³⁴ followed by a hula performance at the Hilton Hawaiian Village.³⁵ At the end of the long day the visitor can share their pictures with friends and family back home,³⁶ even have a book published physically displaying the experiences.³⁷ Or if the user is in a hurry they can experience 36 hours in Honolulu including pricing, compressed into a 6 minute and 6 second clip courtesy of the *New York Times*:³⁸ the digital Waikiki experience, including interactions with homeless individuals,³⁹ famous persons⁴⁰ and street performers,⁴¹ but not being forced to interact with anyone.

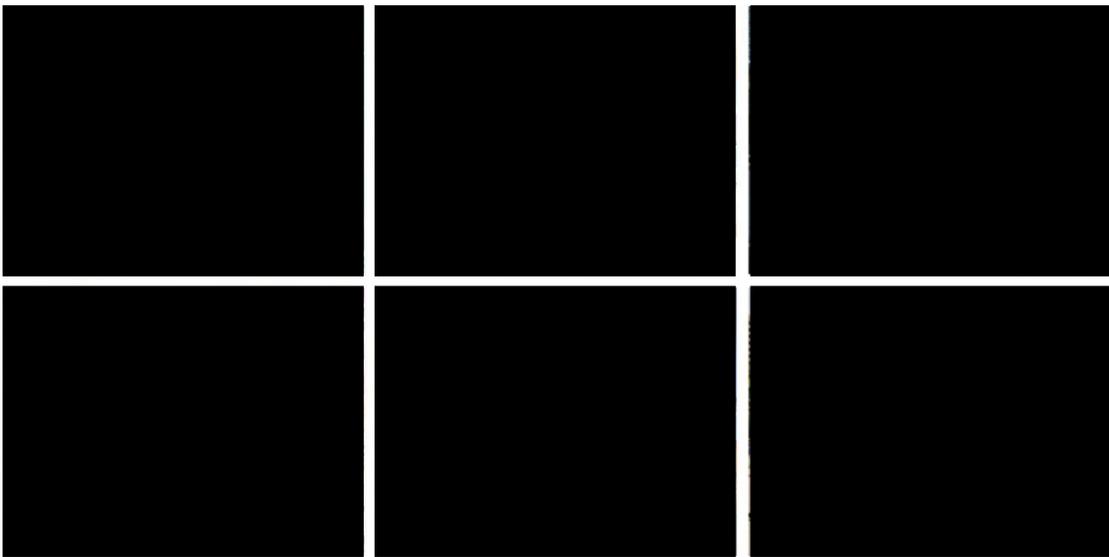


Figure 3 Digital Honolulu Experience

³² Jade Eckard, "Honolulu Japanese Sushi Food Restaurants: 10 Best Restaurant Reviews," Travel and Leisure, *USA Today 10 Best*, accessed February 3, 2016, <http://www.10best.com/destinations/hawaii/honolulu/restaurants/japanese/>.

³³ Yelp, "Best Sushi Restaurant Honolulu, HI," *Yelp*, http://www.yelp.com/search?find_desc=Best+Sushi+Restaurant&find_loc=Honolulu%2C+HI.

³⁴ Dorakusushi, *Benihana's Sushi* (Benihana's Honolulu, HI, 2014), <https://www.youtube.com/watch?v=tkscFqlBapQ>.

³⁵ Brian Acosta, *Waikiki Beach Hawai'i Oahu 2014 HD* (Waikiki, Honolulu, HI, 2015), <https://www.youtube.com/watch?v=o-puKW-g8mw>.

³⁶ Kamaaina 56, "Waikiki Beach The Kamaainas Thought This Place Was over Built Even Then," Photoblog, *Flickr* (n.d.).

³⁷ "Blurb Make Your Own Book With Blurb," Book Sales, *Blurb* (n.d.), <http://www.blurb.com/lp-make-a-book?gclid=CJiF0cml28oCFYeBfgodIcALAQ>.

³⁸ Elaine Sciolino, "36 Hours in Honolulu," *New York Times*, April 22, 2015, Weekend Guide sec., <http://www.nytimes.com/2015/04/26/travel/what-to-do-in-36-hours-in-honolulu.html>.

³⁹ H. N. N., "Homeless Crackdown Catches Waikiki Tourists," *Hawai'i News Now* (Honolulu, HI: KHNA and KMGB, May 29, 2015), <http://www.hawaiinewsnow.com/story/29194558/homeless-crackdown-catches-tourists>.

⁴⁰ StarSighting Beta, "Celebrity Sightings in Honolulu, Hawai'i. Pictures and Maps. Follow Your Favorite Stars," Celebrity News, *StarSightings* (real-time updates), <http://www.starsightings.com/location-Honolulu,-Hawaii/>.

⁴¹ "Waikiki Street Performers," Community Group, *Facebook* (real-time updates), <https://www.facebook.com/WaikikiStreetPerformers>.

The digital city⁴² experienced through virtual mediums may have some of the same experiential sound bites as the analog city, but it represents a different space. This paper argues that the produced digital city is not inauthentic in form but instead is an altogether different space. Although a separate entity, it is tied to the analog city and is dependent on it for portions of its critical grounding. Yet, it remains distinct in many other qualities.

⁴² Morris, "The Value of Design."

Chapter 1 Literature Review

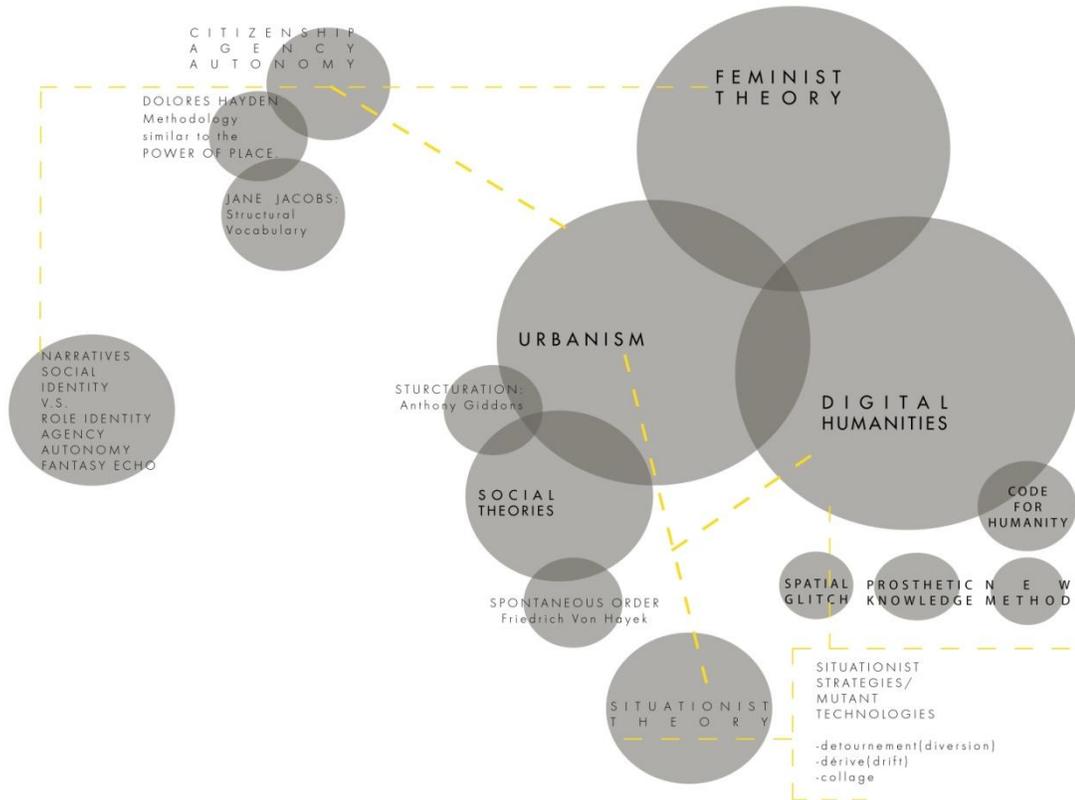


Figure 4 Literature Review Map

1.1 Introduction

The following literature review establishes a theoretical framework for designing a digital intervention to increase narrative inclusions, resulting in transformations in the built environment. In addition to the seminal urban planning writings selected for this literature review, theoretical pieces highlighting alternative methods and perspectives have been added. These interdisciplinary pieces of literature, including feminist authors and communication theorists drawing from digital humanities, have been introduced to integrate disenfranchised narratives into a communal urban narrative. In order to alter how people interact with one

another in cities, the current conceptions of a city's and a homeless individual's place within it must first be deconstructed before being reconstructed.

Despite the numerous articles written about the effects of homelessness in densely populated spaces⁴³ and its derogating consequences,⁴⁴ there still remains much disagreement as to the best means of fixing or aiding the issue. These urban theories, aimed at increasing inclusion, will be looked at here as they pull from historically tried methods. Traditional methods are looked at acknowledging they are firmly rooted in the technology of the time. Modern disenfranchisement can be looked at as it connects historically recorded disenfranchisement with new mediums of communication that homeless individuals are not actively contributing to as a result of lack of mediums.

The effects of disenfranchisement of urban citizens are visible, as mediums of urban communication increase.⁴⁵ This can be seen as homeless marginalization occurs concurrently in analog cityscapes and virtual cities; such as under-representation of homeless identities on SNS sites and ordinances prohibiting spatial use normalized by homeless individuals. Spaces of highly differentiated contribution rates by demographic, increase realms of omission and further disenfranchise narratives from an already dampened demographic. This paper addresses access to the communal urban narrative as an indicator of a city's inclusivity, by analyzing the political exclusion of specific identities.

By analyzing urban narratives created by identities interacting on macro and micro levels, this paper makes clear the political relationships that facilitate demographic-based agency and socio-spatial city control. Through occluding identities and agency on a demographic level within the city, authority over the determiners of spatial futures are established.

⁴³ "Point-in-Time Survey Tools," *U.S. Department of Housing and Urban Development HUD Exchange*, December 2014, <https://www.hudexchange.info/resource/3322/point-in-time-survey-tools/>.

⁴⁴ Pamela M. Diamond and Steven B. Schnee, "Lives in the Shadows: Some of the Costs and Consequences of a 'Non-System' of Care," 1991, <http://eric.ed.gov/?id=ED338998>; Jon V. Martell et al., "Hospitalization in an Urban Homeless Population: The Honolulu Urban Homeless Project," *Annals of Internal Medicine* 116, no. 4 (February 15, 1992): 299–303, doi:10.7326/0003-4819-116-4-299; Sharon A. Salit et al., "Hospitalization Costs Associated with Homelessness in New York City," *New England Journal of Medicine* 338, no. 24 (June 11, 1998): 299–303, doi:10.1056/NEJM199806113382406.

⁴⁵ Pew Research Center, Internet Science & Technology, "Mobile Technology Fact Sheet," Research Document (Washington, D.C.: Pew Research Center, January 9, 2014), <http://www.pewinternet.org/fact-sheets/mobile-technology-fact-sheet/>.

The design proposed in the Chapter 7 seeks to establish a medium of contribution aimed at dismantling current understandings of the communal narrative. Feminist methodology is utilized for its historical aim of dismantling existent naturalized narrations as well as traditions of interdisciplinary grounding. In doing so it aims to elucidate the manipulations of the Invisible City dominated by urban user power hierarchies. This has been termed *queering*⁴⁶ a naturalized notion by disrupting common conceptions. The production of a medium that facilitates participation among historically silenced groups bolsters agents of change to better represent all members of analog urbanism,⁴⁷ culminating in the production of cities that are resilient due to attention to membership, agency and more equally distributed participation.

Jane Jacobs saw this resilience as a function of a community's connection to a space, and believed that spaces grounded in their community have a greater populace to pull from in times of duress.

*Dull, inert cities, it is true, do contain the seeds of their own destruction and little else, (...) lively, diverse, intense cities contain the seeds of their own regeneration, with energy enough to carry over for problems and needs outside themselves.*⁴⁸

Understandings of urban resilience as they relate to urban narrative inclusion are based on increased citizen participation. This is addressed in the writings of Dolores Hayes⁴⁹ as well as Jane Jacobs,⁵⁰ who sought to increase voices of the public in urban planning as it affects design. The resulting designs derived by Jacobs aimed to address the needs of those that would then be using the space as opposed to the needs of the assumed by the designers. She

⁴⁶ Jack Halberstam, *The Queer Art of Failure* (Durham: Duke University Press, 2011).

⁴⁷ The term *Analog Urbanism* is borrowed from Mark Morris in "Digital Space and Analog Place," defined as *the physical material composing cities; contrasted by digital urbanism*.

⁴⁸ Jacobs, *The Death and Life of Great American Cities*, 9.

⁴⁹ Hayden, *The Power of Place*; Dolores Hayden, *The Grand Domestic Revolution: A History of Feminist Designs for American Homes, Neighborhoods, and Cities* (Cambridge, Mass.: MIT Press, 1982); Dolores Hayden, *Seven American Utopias: The Architecture of Communitarian Socialism, 1790–1975* (Cambridge, Mass.: MIT Press, 1976); Dolores Hayden, *Redesigning the American Dream: The Future of Housing, Work, and Family Life* (New York: W.W. Norton, 1986).

⁵⁰ Jacobs, *The Death and Life of Great American Cities*.

explained this discrepancy as emanating from a lack of understanding as well as under-representation.

This paper frames cities as large-scale geo-political entities composed of individuals, functioning as microcosms of change, in order to look for a multifaceted approach that addresses the constructed fluid spatial-narrative. To build the multidimensional theoretical structure capable of suturing the urban narrative fabric this paper draws on feminist theory, digital humanities and urbanism theory. This paper purposefully pulls away from traditional urban theories in an effort to avoid the repetition that has allowed for the continual recurrence of homeless issues. By using feminist theory to fracture the traditional means of urban analysis, this paper hopes to demonstrate the prospect of increased equality by means of decreased stratification using evolving technologies of digital humanities to bridge gaps of narrative inequality.

1.2 Urban Methodology

Cities have been viewed through a vast variety of lenses in recent decades, each revealing separate ideological structures and urban iterations. In looking through the traditional lens of Jane Jacobs to glean an urban vocabulary,⁵¹ a structural foundation can be laid. This paper bases the design solution as well as the research document on a traditional methodology, to which situationist theories are applied; it strives to clarify urban participation effects on spatial experience and identity forms, as they are administered to narrative mapping.

Situationist International theories span from their initial formative critique of the status quo.⁵² Their method of urban appraisal seeks to utilize *hypergraphics* to rid sedated citizens of illusion, through artistic interventions and urban praxis. The utility of this graphically driven, call to action will function to illustrate the experiences of hidden identities, as they play themselves out in cities. The layering of a historically situated method of structural analysis

⁵¹ Ibid.; Spaces, "Project for Public Spaces Jane Jacobs."

⁵² Guy Debord, *Society of the Spectacle*.

and urban political theory, utilizing artistic propaganda-type methods, enables a synthesized method capable of moving forward in a virtually primed urbanism.

By analyzing historically situated urban-narrative-based design, the foundation of the urban experience can be seen as it is articulated by stories resulting in the creation of urban form. One could argue that, due to technological advances previously utilized methodology no longer addresses the totality issues of today's cities. The methodological melding of the two urban strategies, analog and digital creates a space for disenfranchised narrative exploration in the unexamined and under-represented urban experiences.

This paper is particularly interested in the ways cities interact with homeless demographics, as urban mechanisms function to push fringe demographics further to the communal peripheries.⁵³ Levels of participation in the communal narrative are of interest as they speak to equality within cities. To better understand equality formations as they are inscribed on cities, Jane Jacobs is used to create the structure on which other urban narratives like those of Dolores Hayden are hitched.

1.2.1 Defining Urban Elements as Pondered⁵⁴ by Jane Jacobs

The vocabulary of the modern urbanist is comprised of definitions created by Jane Jacobs, whose opposition to Parks Commissioner Robert Moses, founded community-based urban activism. This foundation in activism constitutes an ideal platform for homeless narrative emphasis as it provides a space for uprooting accepted urban social norms. After finding her early footing “rooting for the underdog,” Jacobs’ battles intended to advocate for silenced minority voices. Founded in the neighborhood’s opposition to the New York Expressway in

⁵³ The Design Research portion of this paper looks at the effects of Hawai'i State laws on homeless encampment placement in the urban environment.

⁵⁴ The use of the term “pondered” as opposed to “theorized” is selected because Jane Jacobs was not a formally educated planner. Not that formal education is a requisite of thought, but her proposals were contrary to many urban planners of the time and were derived from existing in the space of the proposed solution in a more bottom-up manner.

the 1950s, Jacobs campaigned for place-based, community-centric design, which was then radical, but is today fundamental to urban planning.⁵⁵

Her promotion of higher density building, building reuse, bottom-up community planning and mixed-use development was integral to her perception of the city as a living ecosystem, inclusive of all its inhabitants. Her book *Life and Death of Great American Cities*⁵⁶ goes beyond suggesting that cities were undergoing attack, to say that they were being massacred by “slum clearance,” which functioned to dismantle elemental parts of the urban ecosystem. She saw this removal of urban spaces as a violation of those occupying the lowest rungs of society and further marginalizing their chosen ways of interacting in the city. She perceived this as similar to removing connecting structures from the ecological model.

She went on to suggest that observing cities from the ground is the only way one can understand the fluidity and interconnectedness existent in urban spaces. Her methodology of urban design extends from geography-applying ecology to understand the interdependent relations spanning throughout a city. Her ground-up understanding of cities has become plausible in ways she probably never fathomed in 1961, as individuals are able to experience the spatial city sequence, interacting with it from the comfort of our mobile phones. The ecology of the city has transformed itself, inviting technologies into intimate interactions. This evolution within the ranks of urban ecological organization has forced a new understanding of long-standing relationships.

Urban planners have since utilized a mapping system of micro-macro planning that acknowledges the intersectional qualities of urban relationships. This paper argues that the micro isn't small enough and the macro isn't large enough. In analyzing scales of inclusion through pixelated identity later in the paper, this dissertation address issues of proportion on an individual level that greatly affects the large-scale city.

⁵⁵ Kent, “Project for Public Spaces Jane Jacobs.”

⁵⁶ Jacobs, *The Death and Life of Great American Cities*.

To comprehend the relationships existent between new technology and urbanism of today, Jane Jacobs⁵⁷ would have needed to include a chapter addressing the use of mobile devices in the city. Located between Chapter 4: 'The Use of Sidewalks, and Chapter 5: 'The Use of Neighborhood Parks, Chapter 4.5 would address the implications of cellular phone use in everyday city life. Cellular and mobile devices would be analyzed in terms of their ability to provide those occupying the lowest rungs of Jane Jacobs' social ecosystem with class mobility.

New technologies unevaluated by Jane Jacobs have sewn themselves intrinsically into cities, becoming part of the urban ecosystem in an inescapable way. It is only through further exploration and understanding that the medium can be gracefully aligned with the foundational city laid down by Jane Jacobs. This is not to say that the proposed direction of Jane Jacobs is incorrect, but that the development of urban spaces has taken on a new dimension. This paper proposes that in order to fully understand the implications of the modern city, one must develop theories that include technological developments as they mark themselves on the urban environment with ever-growing frequency.

1.2.2 Urban Ecology as Network Theory

Jacobs utilized the metaphor of ecology to denote the deeply interconnected web of the city. An interconnected web composed of buildings, streets, neighborhoods and their histories functions as a living organism. These elements comprising the city work synergistically to keep the city in good health. The strength of Jacobs's ecology model resides in the inability of conceptually isolated systems to capture the essence of living systems present in cities.⁵⁸ The bottom-up, urban, structural understanding activates a more intrinsically intertwined system accounting for elemental entropy and power exchanges, as opposed to decontextualized narrow understandings.

⁵⁷ Ibid.

⁵⁸ Crosby, Institute of Electrical and Electronics Engineers, and American Association for the Advancement of Science, *Cities and Regions as Nonlinear Decision Systems*.

By using an analysis based on interconnected facets to structure the perspective of the city space, thus following the format laid out by Jacobs, designers are able to see the effects and affects of their design. Her methods of analysis enable the articulation of a vast array of intricacies required by cities, allowing her method to function as the framework of what follows here. Many of the elements named by Jacobs were in response to the 1950s American Urban Renewal; they thus opposed issues like downtown expressways as cars increased in pervasiveness. Today the issues faced by cities have evolved, compounding old issues and adding new ones.

By proposing additional elements to Jane Jacobs existing synergistic fundamentals theorized in 1961, this paper addresses issues faced by cities today. This strategy juxtaposes her urban planning methods alongside technological evolutions. Of particular interest is the integration of virtual mediums like SNS and mobile telephone applications, or apps, as they have become integral to today's urban lifestyles. Similar to Jane Jacobs' focus on those occupying the lowest levels of 1960s New York society, this paper uses developments in technology to provide urban resources to homeless individuals, who also occupy low societal rungs. Despite the vast array of elements that have come into existence in the ecologically defined city, the focus on virtual technologies has been selected for their pervasiveness as well as their versatility in creating platforms with unbridled potential.

1.2.3 Historically Referenced Power of Place: Urban Landscapes as Public History

Utilizing the structure provided by Jane Jacobs, historical planner Dolores Hayden makes an effort to acknowledge all of the innate intricacies of urban space as they compose public history. Through focusing on cultural landscape politics in Los Angeles as they represent gender, race, ethnic pasts and trajectories, Hayden activates marginalized city accounts. The book *Power of Place: Urban Landscapes as Public History*⁵⁹ is her investigation of the narrative power of place activated by overlooked urban citizens. Unlike Jacobs, whose urban structural understanding limits itself to the users as groups within urban ecology, Hayden

⁵⁹ Hayden, *The Power of Place: Urban Landscapes as Public History*.

addresses individualized narratives. The use here of these two urban planners functions to create both a micro and macro understanding of urban narrative contributions as they are composed by events. They thus present individual narratives as they compose communal narratives innately tied to urban spaces.

Hayden's urban interventions created from specific individuals narratives are made physical by an emotionally triggered and physically tied *story* which creates a sense of place. Drawing her narratives from spaces of oppression, the works function to tell the stories of individuals in their struggle. Hayden process involves the selection of one narrative to be representative of the urban conflict at that time, thus acknowledging the power of individual stories as they are marked on the city. In this way, she creates art and architectural pieces calls forth identities from the past that resonate with the public who occupy the space currently.

Her understanding of urban participation as a relationship between the powerful and meek, is furthered explained by her selection of voices to showcase. Her assumption that strong voices of power are already visibly marked on the communal narrative and thus physically manifest on the landscape, indicates what she perceives as already included in the public archive. She thus selects narratives which are untold, belonging to disenfranchised and stifled demographics. By eliminating deafeningly loud voices already marking the cityscape, her archive selects specific individuals and their historically censored memoirs.

The Design Research portion of this paper draws from Dolores Hayden by creating a medium for individuals to integrate themselves into narrative-saturated urban spaces. This is done by building a forum of narrative dissemination accessible to homeless individuals who may have been previously silenced in narrative-inundated cities. Hayden uses physical forms to mark selected disenfranchised experiences in cities, creating analog space to mark ephemeral experiences.

These memoirs, which physically manifest on the built form, create monuments to the previously silenced voices. "Biddy Mason Born a Slave" is one example of Hayden's selected

narratives.⁶⁰ The story is one of a slave born in 1818 in Georgia, who moved to San Bernardino, California, was freed, became a midwife, and died in 1981. Her memorial is located on 331 South Spring Street (Broadway and 3rd) in Los Angeles, where it establishes her social inclusion through its physical existence as a monument. The monument which takes the form of a park and 81' foot long 8' high wall imprints the memory of Mason in the form of a time line indicating racially charged indicators of time in Masons life. The narrative selections made by Hayden and her Power of Place committee, function to pull individual disenfranchised narratives out of the excluded masses and into the physically manifested city, becoming representations of their demographic within the communal urban narrative.

The memorial does not establish inclusion of all freed slave narratives in California, but instead it creates a representation of them in the form of Biddy Mason. This representation of a black slave woman and her accomplishments is then able to be included within the communal narrative. This representation successfully brings similar stories into the communal narrative but glosses over the individuality of those stories. The loss of individuals information of similar narratives due to lack of spatial representation is a symptom of the analog urban medium. As analog space within cities is limited so is the ability to physically marked all citizens narratives within them. Dolores Hayden's use of the urban medium gathers strength from the emotional expressiveness of physical spatial representation, bringing large demographics into social inclusion through monumentality of single individuals narratives. The result is the destruction of specificity of particulars that exist in each individuals narrative, but inclusion of the groups representation within the communal narrative.

Dolores Hayden's practice is sometimes termed place studies. For the purpose of this paper, it is called the study of the urban narrative, or narrative studies. It is called this because it addresses individual stories as they feed into communal stories marked on the physical place. Hayden's critical analysis and research at Yale melded American studies, urban history and poetry to produce her synthesis: Place Studies, a medium of urban communication for

⁶⁰ Dolores Hayden, *Biddy Masson Born a Slave*, Park located on Broadway and Spring St..

silenced voices. Traction created by her public works agency, The Power of Place, is used to organize localized public assemblies, neighborhood tours, artists' books and public sculptures.

By working with architectural preservation teams to understand, perpetuate and commemorate urban landscapes as minority families experience them, Hayden's monuments bring historical understanding of disenfranchised urbanites into focus. The actualization of her research as a physical solution experienced and modified by citizens, enables agency over histories otherwise viewed as oppressive. In targeting projects dealing with bitter urban memories, including slavery, repatriation and internment, Hayden highlights methodology for personal recovery, rooted in the building of stronger communities.

This paper acknowledges the strength of this creative urban preservation method, designed to enhance the community as well as integrate the narrative of the more underrepresented citizens. Hayden's method is successful in the Los Angeles area, utilizing methods available through technology existing during The Power of Place's creation. Her methods have successfully been adapted to a variety of populaces, but their mediums are limited to the physical cityscape and the written word.

By broadening Hayden's methodology of place studies into the virtual sphere, as opposed to the limits of the physical sphere, a greater facilitation of citizen participation is possible. The narrative broadness and depth addressed between all members of urban society, stretches a vastness incapable of existing solely in physical urban spaces. Today an overlapping of the virtual sphere, atop the existent physical sphere, enables a historically unprecedented layering of data. This new, layered mapping permits interaction between the physical and the urban as it imprints itself on the city's cultural landscape documented in a variety of multimedia. In suggesting that in a world where much of the current reality of "users" is limited to the virtual realm, an interactive medium of identity contribution would further infuse the urban communal narrative by extending spatial participation accessibility.

The methods utilized in *The Power of Place* speak heavily to those of Guy Debord.⁶¹ Both were seeking methodologies for reintegrating estranged publics, resulting in a physical manifestation of public spaces. Where Debord sees human interface and quality of life reduced by capitalism, Hayden sees human capital and value diminishing due to insufficient gravity given to specific voices. Both writers cite the isolation of urban masses as a result of modern living. Their solutions in the form of urban spatial manipulation, addressed the human-to-urban interface, seeking to understand the intricacies of the human experience.

The collaborative projects that Hayden stitched into the city employ the preexisting structure of the urban fabric and unorthodox situations existent in urbanism. By borrowing the elemental breakdown described by Jane Jacobs in *The Life and Death of Great American Cities*, Hayden reveals a strong understanding and basis in theory preceding her work. By drawing on a combined methodology utilizing Jacobs' essential understanding and Hayden's physical narrative stitch work, Esra amplifies single narratives of analog experiences through virtual mediums. Dolores Hayden strove to increase inclusion and thus agency by representing repressed demographics. By broadening the strengths and design principles of *The Power of Place* into digital mediums, lessons learned extend understanding of agency and autonomy into the virtual sphere.

1.2.4 Agency Within the City

To better understand cities as power structures as defined by Dolores Hayden, one must first understand agents and agency, and their relationships with identity as a spatial phenomena. Agency can be seen as the capacity of a person or agent to act and make their own choices within a given structure or environment, such as the city or digital social network system. By understanding the interactions of these phenomena Hayden creates a structure to understand how certain forms come into existence in the built environment.⁶² Through understanding these questions planners are able to ask questions such as, who is

⁶¹ Debord, *Society of the Spectacle*.

⁶² Kevin Fox Gotham and Krista Brumley, "Using Space: Agency and Identity in a Public-Housing Development," *City & Community* 1, no. 3 (September 1, 2002): 267-89, doi:10.1111/1540-6040.00023; Talmadge Wright, *Out of Place: Homeless Mobilizations, Subcities, and Contested Landscapes* (New York City SUNY Press, 1997).

capable of influencing their environment and how do those power structures become paramount functions capable of reframing the city? These are questions being asked by a growing number of contemporary theorists⁶³ as ties between spatial formation, agency and identity are becoming increasingly strong.

For the purpose of this argument, agency will be looked at as the capacity of an individual to choose their action and in effect exercise power.⁶⁴ In focusing on an individual's agency over their representation, power structures facilitating urban growth become more clear. In the case of this paper, homeless actions are examined for their ability to represent and self-narrate their experiences. The activation of narrative identification as described by Hilde Lindermann Nelson⁶⁵ and the methods used by Hayden function to make heard voices and narratives previously subordinated to institutions and practices. Hayden saw these practices as the traditional and dominant representations within the city. Hayden's use of urban space to represent minimized voices extrapolates ideas of Nelson's narrative ownership of these voices.

Hilde Lindermann Nelson's understanding of personal narrative continues to say, by focusing on the stories of groups whose identities have been defined by larger power structures and comparing them to one another, that larger insights can be gained. Nelson arrives at the idea that identities are composites of how individuals see themselves as well as how they are perceived by in-group members. These perceptions form the actor's actions within the dominant group construct. Her theory further says that if a dominant group constructs identities of homeless individuals through socially shared narratives that mark them as subnormal, those who bare the damaged identity cannot exercise their agency freely.⁶⁶

⁶³ Pierre Bourdieu, "Social Space and Symbolic Power," *Sociological Theory* 7, no. 1 (Spring 1989): 14–25; Anthony Giddens, *The Constitution of Society: Outline of the Theory of Structuration* (Berkeley: University of California Press, 1986); Michel Foucault, *Space, Knowledge and Power: Foucault and Geography* (Burlington VT. Ashgate Publishing, Ltd., 2007).

⁶⁴ Natalie Stoljar, "Feminist Perspectives on Autonomy," in *The Stanford Encyclopedia of Philosophy*, ed. Edward N. Zalta, 2015, <http://plato.stanford.edu/archives/fall2015/entries/feminism-autonomy/>.

⁶⁵ Hilde Lindermann Nelson, *Damaged Identities, Narrative Repair* (Ithaca, NY: Cornell University Press, 2001).

⁶⁶ Ibid.

1.3 Feminist Interventions: Understanding Muted Voices Among the Urban Layers

Why feminism? The use of feminist analysis categories of identity, narrative, citizenship, and agency is intended to detect naturalized differentials of power constructed as timeless, natural and universal. This methodology has been incorporated to enable a more complete understanding of urban relationships, often seen as binary and polarized. The spaces designed through a feminist methodology of intervention allow for an *Other* perspective that does not belong to typical socio-cultural lenses. This understanding seeks to establish relationships and conditions that permit a fuller urban conversation, permitting disenfranchised demographics the agency to participate fully in conversations, as the determining factors dictating their future.

Feminism, as it plays out in the following pages, serves as a paradigm shifter; it uses its methodology to function as a heuristic device for inequality. This is a tactic utilized in many humanity, social science and history fields as it establishes a juncture in interdisciplinary stances established to reframe normalized archetypes. The formative grounding of this heuristic device is drawn from First-Wave Feminism and sets as its primary goal to create political, economic and social equality for the sexes.

As the lenses of time shift, so too do staunch single-dimension understandings created by First-Wave Feminism, branching out to accommodate a wider range of silenced voices. The branching has broadened to a multifaceted understanding of the depths and reaches of feminist theories, which this paper seeks to extend to virtual architecture. The specific branch, or wave, of feminist theory used in this paper is Fourth-Wave Feminism⁶⁷ and Post-Structural Feminism. In this paper Post-Structural Feminism functions to emphasize the

⁶⁷ Fourth-Wave Feminism, or feminism 4.0 as this paper will be calling it, is a budding branch of feminism that draws strongly from virtual conversations, propagated by a virtually facilitated community.

“contingent and discursive nature of all identities,”⁶⁸ while Fourth-Wave feminism is selected for its roots in Queer Theory as it addresses *queerness* and media effects.⁶⁹

1.3.1 Queering the City

The term *queer* has a tumultuous history. Once employed for homophobic abuse, the term is now used as a theoretical umbrella for the engagement of an array of socially minimized self-identifications. This paper proposes that the existence of the *normalized city* is one that has great influence on citizens’ understanding of the communal urban narrative. To counteract the idea of the normalized city the idea of queering is employed, disrupting typically understood socio-spatial constructs as formed by socio-normative identities. The difficulty in aligning Queer Theory with any specific identity category makes it beneficial for the acknowledgment of disenfranchised identities in the construction of new, inclusive, communal urban narratives.

1.3.2 Narrative

Narrative is discussed in many lights in this project because it is seen as the main means of increasing inclusion. The function of storytelling in feminist literature and research operates to serve multiple purposes including creating counter-traditional narratives, or in the case of this paper: *queering the narrative of the city*. These chronicles can operate in a non-linear manner, resulting from their temporality, enabling an ambiguity created by the coexistence of multiple simultaneous histories.⁷⁰ As a result, academic feminisms have at their root a desire to document memory previously cloaked by a more dominant story. Throughout history, this narrative has been called many things, including the subaltern story, but is always about broadening the array of individuals who are granted authorship.⁷¹

⁶⁸ Vicky Randall, *Theory and Methods in Political Science*, ed. David Marsh and Gerry Stoker, 3rd ed., Political Analysis (Basingstoke, New York: Palgrave Macmillan, 2010), 116.

⁶⁹ Ealasaid Munro, “Feminism: A Fourth Wave?,” *Political Insight* 4, no. 2 (September 2013): 22–25, doi:10.1111/2041-9066.12021.

⁷⁰ Joan Wallach Scott, *The Fantasy of Feminist History*, Next Wave Provocations (Durham: Duke University Press, 2012), 51.

⁷¹ *Ibid.*, 24.

The use of feminist methodology in the forthcoming research paper lies in feminism's history of radical refusal to settle down and accept the given societal standards. Just as the history of feminist theory seeking to share untold female narratives, this paper aims to attain a space for displaying invisible experiences, as they unfold on landscapes:

*Feminist methodology [...] might be summarized by these axiomatic statements: there is neither a self nor a collective identity without an Other; there is no inclusiveness nor collective identity without exclusion. No universal without a rejected particular. No neutrality that doesn't privilege an interested point of view and is always an issue in the articulation of these relationships.*⁷²

The experiences of the *Other* occur concurrently with normalized populations, yet are made illegitimate by muted speech platforms.⁷³ By acknowledging the existence of a juxtaposition between in-group members as they stand in contrast to out-groups/*the Other*, an increased understanding of relationships that form cities can be extrapolated and explored. By deconstructing, geo-political relationships as they are structurally embedded in narrative contribution, similarities and differences are exposed, allowing gaps in usership to be made visible. Exposing these differences will not immediately dissolve the boundaries between in-groups and out-groups. Instead by increasing out-group recognition amongst urban citizens the first steps of equalization are encouraged through the empowerment of diverse narratives.

Silenced populations exist in every society, creating a need for solutions across a broad range of spaces. The selection of the city for this paper is the result of its concentration of people, thus increased ability to broaden the range and diversity of voices present through narrative contribution.

1.3.3 Standpoint Theory

⁷² Ibid., 73.

⁷³ Ibid., 37.

In an effort to activate a broader range of narratives as they compose urban spaces, this paper seeks to promote the validity of individual experiences as they transpire within the city. One such feminist approach to validating individual experiences as they occur within a larger political structure is standpoint theory. Standpoint theory functions to uproot single-narrative constructs held by the normalized populace regarding the subaltern, seeking instead to affirm individual voices by showcasing and affirming a greater array of narratives. This theory asserts that issues created by single narratives produce essentialist knowledge.

Standpoint theory functions to dismantle essentialist understandings by proposing multi-variant, situation-based stories. In contrast, essentialism proposes that every story or individual has a set of defining characteristics. It proposes that these characteristics are shared by all in that group, for example, a property is related to an object as essential. One could then infer that all individuals within x group contain y traits. An example of essentialist knowledge could be: homeless individuals don't have jobs, or homeless people don't participate in social spaces appropriately.⁷⁴ The statement and other essentialist statements frame a single narrative as an absolute quality or characteristic possessed by all from that demographic.

Standpoint theory contests essentialism by proposing that knowledge stems from social position and thus results in the affirmation of many perspectives. Sandra Harding,⁷⁵ who originally coined the term *standpoint*, drew from Marxism the idea that people of the proletariat, particularly females, possess knowledge unavailable to the privileged class. She proposed that those at the top of social hierarchies overlook legitimate human relations and the genuine nature of social reality, thus missing information intrinsic and crucial to the human experience.⁷⁶

Feminist standpoint theory relies on three principle claims: (1) knowledge is socially situated; (2) marginalized groups are socially situated creating greater exposure, producing in them

⁷⁴ "Essentialism Philosophy," *Encyclopedia Britannica*, Encyclopædia Britannica Online (Encyclopædia Britannica Inc., November 18, 2015), <http://www.britannica.com/topic/essentialism-philosophy>.

⁷⁵ Sandra G. Harding, *Feminism and Methodology: Social Science Issues* (Bloomington: Indiana University Press, 1987).

⁷⁶ "Essentialism Philosophy."

greater understanding and awareness of issues and questions than non-marginalized groups; (3) research, especially when concentrated on power relations, should begin with the experiences and understanding of the marginalized because they are often more attuned to many of the issues of everyday reality. Based on these principles, standpoint theory makes contributions to political activism, epistemology and methodology as it focuses its lenses on political and social power relations.⁷⁷

The function of standpoint theory in this paper, as it is incorporated into virtual mediums through narrative inclusion, is not without potential shortcomings. The strengths of increased inclusion through standpoint theory include escalating urban awareness of homeless individuals and dissipating single-narrative power concentrations; however shortcomings include potential narrative distortion. This distortion will be analyzed through virtual application fantasy echo, high-jacking, and the creation of victims.

1.3.4 Fantasy Echo

An echo is a reverberation, repeating, copying and extending past sounds. These delayed imitations of sound return as incomplete versions, often fractures preceding sentences, frequently only repeating ends of sentences. These reverberations span expanses of time and space, generating gaps of understanding and intelligibility.⁷⁸ Fantasy echoes act similarly, creating an inaccurate repetition within narratives. These repeated stories function as partial truths of an event or understanding formed in the past. They are not lies or truths, instead they function to tell a partial story resembling some version of prior understanding.⁷⁹

This is a concern regarding the use of memoirs as narratives. As soon as a story is told it becomes a distortion of its original version. Joan Wallach Scott continues to maintain that these fantasies function to propose retrospective identification, and imagined resemblances:

⁷⁷ T. Bowell, "Feminist Standpoint Theory," *Internet Encyclopedia of Philosophy. A Peer-Reviewed Academic Resource*, accessed May 3, 2015, <http://www.iep.utm.edu/fem-stan/>.

⁷⁸ Scott, *The Fantasy of Feminist History*, 52.

⁷⁹ *Ibid.*, 48.

“the echo is a fantasy, the fantasy an echo.”⁸⁰ The two intrinsically intertwine, producing identity. Fantasy is synonymous with imagination; both articulate individual and collective identity. The fantasy echo works to extract a single coherence from the confusion by reducing multiplicities to singularities to create an understandable identity or story. This entity is not true or false but a representation of multiples.⁸¹

To avoid the pitfalls of fantasy echoes a virtual application must be designed acknowledging the merger of narratives in advance. By understanding that narratives will be intertwined to build stories that are interpreted separately from their original function, they can be displayed in a way that does not diminish the story as a result of the combination.

1.3.5 Creating Victims

The danger of creating a platform for the presentation of specific narratives is that it creates the possibility of facilitating a simplistic dichotomy of rich and poor, us and them, the saviors and the saved. This inevitable hierarchy promotes and reinforces a sense of superiority and domination.⁸² In a series of lectures and interviews Lila Abu-Lughod warns against campaigns that promote one populace *saving* another as it places the saved in a position of reduced power resulting from their subjugation. The act of *Saving* requires one group to be *saved* while the other does the *saving*. This unequal relationship creates and illustrates class disparities, promoting structural hierarchy in the narratives displayed. In addition this assumes that one populace is being saved *from something* as well as *to something*, creating relationships of ascendancy in acts as well as position.⁸³

From Abu-Lughod’s perspective existent digital mediums showcasing homeless individuals being *helped* places them in a position of reduced power as the person doing the helping is embodied as the savior. This has direct translations to the author’s interactions in Aala park in Honolulu. There the most common group the homeless individuals interacted with

⁸⁰ Ibid.

⁸¹ Ibid., 50.

⁸² Ibid., 76.

⁸³ Lila Abu-Lughod, “Do Muslim Women Really Need Saving? Anthropological Reflections on Cultural Relativism and Its Others,” *American Anthropologist* 104, no. 3 (September 1, 2002): 783–90, doi:10.1525/aa.2002.104.3.783.

intimately were church members. The homeless Honolulu citizens then referenced their position and actions in relationship to the church as one where they were being helped from the “sins they may have committed” to their personal betterment. This is not to say that what the church groups are doing isn’t helping them, but that there is an innate power structure reflected in the homeless–churchgoer relationship.

In the production of the virtual application this will be taken into account in the way that the narratives are displayed as well as in who is able to display their narratives. In creating a platform designed with homeless individuals as the target audience, yet permitting use by all individuals, an inclusive platform that more uniformly displays identity is created. The reduction in identifiable virtual identity minimizes relationships displayed as saviors and saved by merging content consumers and content producers with homeless individuals and sheltered individuals. This lack of distinction minimizes potential to see one demographic as serving a specific role of saved or savior.

1.3.6 Identity

The purpose for delving into identity roles and group identity is to understand the barriers that tend to form out-groups and in-groups, in an effort to integrate disenfranchised demographics into the broader society in a more socially cohesive manner.

For the purpose of this paper, the general theory of self will enlist a combination of social identity theory and identity theory, as it does in much social psychology research, thus enabling the folding of micro and macro processes.⁸⁴ The melding of these categories enables the avoidance of unneeded terminology, while gaining a fuller understanding of intergroup relationships resulting from classifications.

Both theories deal with intergroup relations—how people come to classify themselves as members of one group/category (the in-group) in comparison with another (the out-group). Possessing a specific social identity, or group-based identity, means communing with a

⁸⁴ Jan E. Stets and Peter J. Burke, “Identity Theory and Social Identity Theory,” *Social Psychology Quarterly* 63, no. 3 (2000): 224–37.

particular group, and perceiving things from the group perspective. From this point of uniform perception, many studies analyze the following issues: group attitudes shifting toward an equilibrium point among perceived homogeneous members, instigating participation in social movements, and identifying the functions of groupthink.⁸⁵

Social identity theory proposes that possessing a definitive identity requires acting to achieve the requirements befitting the role. This results in accommodating and arbitrating interaction among role partners, as well as managing the environment to manipulate the resources for which the role is responsible. In this way, the foundation of role identity is the dissimilarity of perceptions and actions that follow a role in relation to other roles. Group identity is the communal identity in its uniformity of perceptions among group agents.⁸⁶

This is to say if one wants to be perceived as an accepted member of normalized Honolulu society they must fulfill a role within that society deemed valuable by the groupthink. If they step outside of that role they risk being moved from members of the in-group to members of the out-group. This identity then facilitates their interactions with other in-group members. The theory would also support that normalized citizens of Honolulu share common understandings, what this paper calls the communal narrative, which go on to facilitate biases. Membership in the in-group then provides resources to their members in exchange for their compliance with in-group governing rules. This could be seen as the ability to interact in public spaces in a manner deemed socially acceptable..

1.3.7 Feminist Cyborg Identities

Donna Haraway was one of the first feminists to look at the ways we discuss identity perspective shifts caused by technologies. Drawing heavily on the influences of Joanna Russ,⁸⁷ Samuel R. Delany,⁸⁸ John Varley,⁸⁹ James Tiptree, Jr.,⁹⁰ Octavia Butler⁹¹ and Luce

⁸⁵ Marlene E. Turner et al., "Threat, Cohesion, and Group Effectiveness: Testing a Social Identity Maintenance Perspective on Groupthink," *Journal of Personality and Social Psychology* 63, no. 5 (1992): 781–96, doi:10.1037/0022-3514.63.5.781.

⁸⁶ Stets and Burke, "Identity Theory and Social Identity Theory," 226.

⁸⁷ Joanna Russ and Amelia Jones, eds., "The Feminism and Visual Culture Reader," in *The Feminism and Visual Culture Reader*, 2nd ed., In Sight: Visual Culture (London: Routledge, 2010).

Irigaray,⁹² Haraway looks to stories or narratives as a means of understanding naturalized identities, as they exist in increasingly complex societies.⁹³ She utilizes the term “cybernetic organism” or “cyborg” to address a technological organic combination producing new political landscapes. She continues by saying that interaction through digital mediums creates partial identities fractured from the individual’s actual identity, enabling them to act in ways that may be contrary to their typical standpoints.⁹⁴ This form of alternate identity is unavailable to the technologically ostracized, leaving them on the shorthanded side of the digital divide. In these shadows, Haraway acknowledges a platform for critique of the social and economic inequalities that have in their evolutions within technology.⁹⁵

1.4 Digital Cities

Cities are currently undergoing a drastic transformation that this paper argues has not occurred since the advent of the car. Today the means through which people are traversing the physical sphere is often via digital mediums, such as Yelp and Teleporter;⁹⁶ this digital traversing results in the creation of what this paper is calling the Digital City.

The newly created field of Digital Humanities is establishing links among many realms of humanities as computer applications create new mediums capable of reanalyzing a broad array of topics. This new structural analysis device is in its infancy in the architecture realm. Its exploration has been limited to digital renderings, bioclimatic understandings and urban navigation devices, with few theorists delving into the principles of digital constructs as they affect user understanding in architecture.

⁸⁸ Samuel R. Delany, *Tales of Nevèrÿon* (Hanover, N.H.: Open Road Media, 2014); Samuel R. Delany, *Flight from Nevèrÿon* (Hanover, N.H.: Open Road Media, 2014).

⁸⁹ John Varley, *Demon* (New York City: Ace Books, 1987).

⁹⁰ James Tiptree, Jr., *Star Songs of an Old Primate* (New York: Ballantine, 1978).

⁹¹ Octavia E. Butler, *Mind of My Mind* (New York: Open Road Media, 2012).

⁹² Luce Irigaray, *This Sex Which Is Not One*, trans. Carolyn Burke and Catherine Porter (Ithaca, N.Y.: Cornell University Press, 1985).

⁹³ Donna Jeanne Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991).

⁹⁴ *Ibid.*, 149.

⁹⁵ Deborah Lupton, “The Digital Cyborg Assemblage: Haraway’s Cyborg Theory and the New Digital Health Technologies,” SSRN Scholarly Paper (Rochester, N.Y.: Social Science Research Network, May 20, 2013), 12, <http://papers.ssrn.com/abstract=2272963>.

⁹⁶ Jim Andrews, *Teleporter*, version 1.9.1 (Google Maps API: Vispo, 2014), <http://vispo.com/go/>.

By proposing that mobile technology affects citizens everyday lives profound implications on citizens' identities as they contribute to communal urban narratives are elucidated. Through the exploration of disenfranchised narratives as they interface through contact zones and are created by evolving mobile technology, a greater depth of understanding can be woven into the design solution. In addition, these technologies recreate and manipulate common conceptions among urban citizens, changing how cities are perceived.

1.4.1 Communication Theory

The imprint of the intangible virtual over the physical creates an invisible network that Joshua Meyrowitz⁹⁷ describes in a comparable way to this paper's explanation of the Invisible City.⁹⁸ Drawing from McLuhan's⁹⁹ and Goffman's¹⁰⁰ theories of social behavior, Meyrowitz suggests that human behavior is socially determined, fixed in time and place. Thus, human behaviors are dictated by a matrix of social situations, determined by space and time, creating the intervention point for virtual mediums. Space defines individuals' situations via boundaries, limiting perception and interactions. The result is different actions' dependency on social situation.¹⁰¹

Meyrowitz proposes that technology is transforming the *sense of place*, necessitating a modification to traditional social behavior theory.¹⁰² He argues that the information flow of technology reduces the significance between physical place and social space. This evolution of information movement: (1) manipulates the user's social position and physical location, thus disassociating situation from their physical boundaries; (2) alters the user's perception, resulting in the manipulation of *sensory balances*, thus changing behavior patterns.¹⁰³

⁹⁷ Joshua Meyrowitz, *No Sense of Place: The Impact of Electronic Media on Social Behavior* (New York: Oxford University Press, 1985).

⁹⁸ Ibid.

⁹⁹ Marshall McLuhan, *Understanding Media: The Extensions of Man*, 1st MIT Press ed. (Cambridge, Mass.: MIT Press, 1994).

¹⁰⁰ Erving Goffman, *The Presentation of Self in Everyday Life* (Garden City: Doubleday, 1959).

¹⁰¹ Tarik A. Fathy, *Telecity: Information Technology and Its Impact on City Form* (New York: Praeger, 1991), 86.

¹⁰² Harry Triandis, "The Self and Social Behavior in Differing Cultural Contexts," *American Psychological Association, Inc. Psychological Review* 96, no. 3 (1989): 506–20.

¹⁰³ Meyrowitz, *No Sense of Place*; Fathy, *Telecity*, 86.

Based on Meyrowitz's assumption, we can conclude that the digital space provides a medium for people to act in ways other than their typical "selves," thus exploring alternate means of existence and alternate outcomes in their physical space. This description paints the virtual medium with potential for users to inhabit identities other than their own, extending their realms of understanding to new identities.

1.4.2 Diffusion of Innovation

The implications of Meyrowitz's understanding of social behavior theory are further augmented by the theory of diffused innovation, which proposes that information technology results in selectively heightened contact channels that function to propagate society's exposure to innovation.¹⁰⁴ The user's adoption and interpretation of said information alters behavior and leads to an adjustment of actions and activities.¹⁰⁵

Further diffusion of specific ideas can function to alter the adoptive society, resulting in an affected populace. The contagion of ideas throughout society creates processes of alteration function and structure.¹⁰⁶

Rugers proposed there are five variables that determine the rate of adoption by members within a social system,¹⁰⁷ two of the variables having profound influence over virtual mediums. Specifically, they are: (1) communication channels (e.g., mass media or interpersonal), and (2) the nature of the social system (e.g., its norms, degree of networks and interconnections). Through the manipulation of those two variables, the degree of members' participation and adoption can be addressed.

1.5 Literature Review Conclusion

In tracing the formation of urbanism, both virtual and analog, as influenced by structured layers of identity, this paper proposes urban discourses to be complex interactions that often

¹⁰⁴ Everett M. Rogers, *Diffusion of Innovations*, 5th ed. (New York: Free Press, 2003).

¹⁰⁵ Fathy, *Telecity*, 87.

¹⁰⁶ Rogers, *Diffusion of Innovations*, Fathy, *Telecity*, 87.

¹⁰⁷ Rogers, *Diffusion of Innovations*, 207.

cause member inclusion or exclusion. Each structured layer applied to the urban form focuses a new lens, enabling access to communal urban narratives and increasing potential for inclusion. The construction of this multivariate heuristic device makes visible inclusion and exclusion as they function within each layer of stratified urbanism.

To better understand homeless narrative inclusion, the Invisible City is proposed as a means of seeing what is included as a result of communal urban narratives. The Invisible City, which is understood as a canvas of composite layers, can then be depicted through its contributors as they coproduce one another. The first of these layers is the analog space. The analog space is the initial visible structure that we can analyze by building upon the work of Jane Jacobs. Jacobs' advocacy for disenfranchised demographics, seeks to serve impoverished urban citizens. This strengthens the design process by highlighting citizens of cities who are not traditionally perceived as contributors to the design outcome. However, where Jacobs focuses on New York tenement residents, this paper's research will focus on homeless urban residents.

Jane Jacobs sees many of these interactions happening on sidewalks. For example, she notes their importance regarding the space where casual public interaction and contact zones occur: "most of it is ostensibly trivial but the sum is not trivial at all. (...) [It creates] a web of public respect and trust."¹⁰⁸ In this way the city becomes an ecological web of miniscule relationships forming the Invisible City. Dolores Hayden furthered Jacobs' design principles of highlighting under-represented groups by building monuments in Los Angeles to integrate missing stories. These physical representations of missing narratives serve to *queer* the city as it had formerly been produced. This queering of the city creates a theoretical space to call into question the normative city.

Where Dolores Hayden used physical monuments to queer the city this dissertation proposes the use of new digital mediums. Such mediums function in a similar way to monuments, resulting in the increased visibility of homeless narratives as they exist in urban space.

¹⁰⁸ Jacobs, *The Death and Life of Great American Cities*.

Without dissecting the components of the urban narrative, there can be no causality inferred by exclusion. Exclusion becomes just another accepted part of urban existence. Instead, the heuristic device activated through layered analysis, creates space to focus on problematic representations of homeless individuals. This new approach takes into account members of society as equal in worth but unequally represented. By making the under-representation of homeless individuals visible, the fabric through which communal narratives are threaded reveals the layers of urbanism. This paper does not assume the prior existence of socially powerful dichotomies, rather it examines different social and political discourses as they contribute to narrative understandings in hopes of increasing inclusion to attain empathy.

Chapter 2 Merging Homeless Narratives Into the Invisible City

The modern Invisible City today is written in code as well as in the analog conversations.

2.1 Introduction

The city is constantly being rewritten, recoded and reanalyzed. Citizens today no longer exist in Jane Jacobs's "American Cities"¹⁰⁹ composed of coplanar narrative threads weaving a single communal story. Modern narrative threads can be analog and digital in form, and when woven together they create layers of meanings. As people are spending increasing amounts of time online, digital narratives are becoming gradually more prevalent. Each additional digital representation of the city creates another version to be layered onto the analog space. This hybrid space of urban narratives describing citizens' experiences as they transpire, marked in time, composed of digital and analog threads works together to continually coproduce one another.

Modern citizens are weaving their identities into the communal narrative by "geo-tagging," "hash-tagging," "liking" and "retweeting," providing "trending feeds," and promoting their personal "handles" over Jacobs's elemental city structure. The virtual experience has become intrinsically intertwined in the analog urban fabric, modifying the original user experience and creating a hybrid of digital and analog within the Invisible City. This is to say that there exists a variety of ways that the city can be experienced, which contributes to the conceptualization of the city—the Invisible City.

"Lifeline Program for Low-Income Consumers," accessed May 3, 2015, <https://www.fcc.gov/lifeline>.

¹⁰⁹ (Jacobs 1961)

Traditionally the Invisible City was experienced by a citizen or visitor physically walking through the analog space and speaking or writing about it. The modern city of today, as defined by Jane Jacobs and Dolores Hayden, still exists in these same forms, but can now also be experienced via digital platforms. The result is that the Honolulu visited through Google street views, online posts and virtual tours is vastly different from the Honolulu in which one can set physical foot. In addition, every digital medium, including Google street views, blog posts and virtual tours, produces a different version of Honolulu, full of separate yet often connected interpretations. None of the fabricated Honolulus—the digital through its many mediums or the analog—are more “real” than one another, but they work together to create the hybrid idea of the city—the Invisible City.

The Invisible City is communally created by urban spatial narratives, the idea of the city existing as the result of citizens’ shared perceptions. An example of this concept can be found in how various non-homeless normalized members of the city (e.g., bankers, nurses, attorneys and soccer moms) all living in Honolulu have different ideas of what defines Honolulu. The “idea of the city” exists as the individual’s personal narrative composed of perceptions, biases and experiences (both analog and digital).

The soccer mom may work a full-time job at a school where she is also a PTA member. Twice a week after school she coaches one child’s soccer team at the park. The bulk of her commute is done via car between her children’s activities, work and home. Her understanding of these spaces, creates by her interactions, forming her individual narrative. Thus, this is her personal abstraction of “her city”—her constructed idea of the city, a composite of her interactions and understandings within it. A result of her interactions is that she may obtain more specific knowledge about certain locations and spatial relationships within the city. For example, she may have a different understanding of the soccer fields and their importance to elementary school children, as opposed to the banker who drives by the park daily. The difference in spatial understanding between the banker and the soccer mom can be seen as derived from time spent interacting in the park and interactions with a specific user group, her child and her child's teammates.

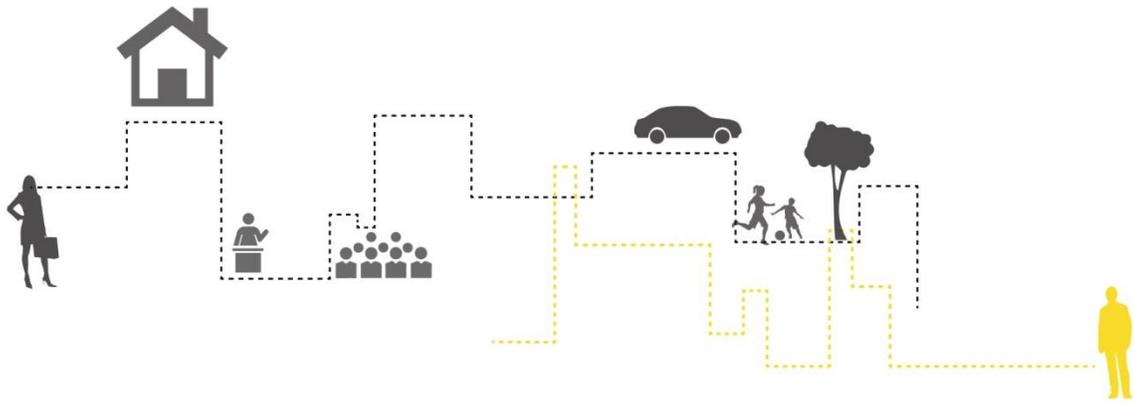


Figure 5 Personal Narrative

She, then, may contribute her personal idea of the city, her Invisible City, to the communal narrative. This could include ideas regarding the soccer fields, her job and home as a result of her in-group status. Her narrative then becomes intertwined with that of other normalized, in-group, city dwellers to form the communal narrative—the combination of all in-group narratives.

However, not all these narratives are of equal weight within the city as determined by social dominance order's (SDO) observation of individual-based social hierarchies as well as group-based social hierarchies.¹¹⁰ *Group-based social hierarchy* would suggest that her contributions to the communal narrative are defined by her “social power, prestige, and privilege that (she) possesses by virtue of her ascribed membership in a particular socially constructed group, such as race, religion, clan tripe lineage, linguistic/ethnic group or social class.” In other words, the positive receipt of her perspective of the park could be a result of being a member of the PTA, a socially constructed group and accepted in-group. Her admittance into the communal narrative could also be seen as a result of her *individual-based social hierarchy*, her influence, reputation or wealth by “virtue of [her] own highly valued individual characteristics.” Her individual-based social hierarchy could be a result of being an intelligent hard worker who other community members appreciate and value. These means

¹¹⁰ Felicia Pratto, Jim Sidanius, and Lisa Stallworth, “Social Dominance Orientation: A Personality Variable Predicting Social and Political Attitudes,” *Journal of Personality and Social Psychology* 67, no. 4 (1994): 741–63; Jim Sidanius and Felicia Pratto, *Social Dominance: An Intergroup Theory of Social Hierarchy and Oppression* (Cambridge: Cambridge University Press, 1999), 32, <http://catdir.loc.gov/catdir/samples/cam032/98044356.pdf>.

of narrative contribution are not completely independent, but often work in combination especially in multifaceted human social systems. For example an individual's achievement and contribution are recognized differently depending on social groups. This is to say if there are two soccer coaches of equal intelligence, coaching students of equal ability, but the students from one team are from upper-class families with well-connected parents, attending the "right schools," there is a better chance that this soccer coach will have more access to the communal narrative.¹¹¹ Factors associated with one's socially determined orientation thus go on to establish the degree of participation in communal narratives, permitting some members' narratives to be enhanced, while out-group members' contributions to communal narratives are attenuated.

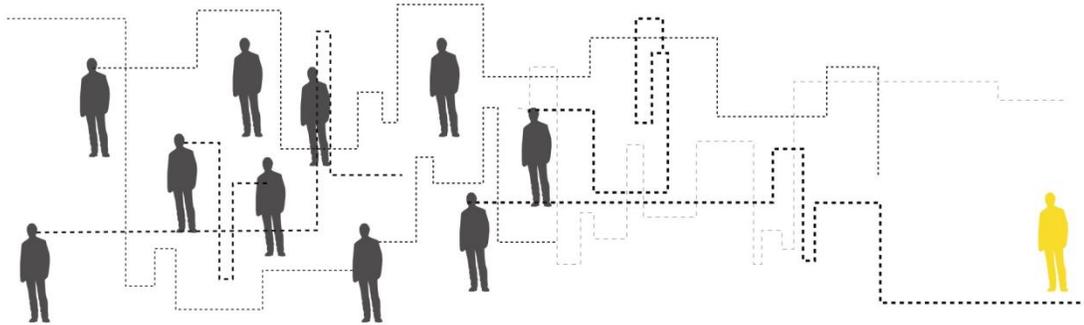


Figure 6 In-group Narrative

These in-group ideas formed around the city shepherded by the dominant social order do not create equal representation for all in-group participants. The spatial narratives have differing degrees of power to effect change within the city dependent on the identity of the contributor: his or her individual-based social hierarchy, his or her place within the society: group-based social hierarchy, and the manner of contribution, this will be examined as the medium of communication. According to social dominance theory, these inter-group hierarchies are represented by the social dominance order (SDO), which then either attenuates or promotes specific identities or narratives.¹¹² This is to say that different members have varying levels of agency within the communal narrative based on their

¹¹¹ Sidanius and Pratto, *Social Dominance: An Intergroup Theory of Social Hierarchy and Oppression*, 32.

¹¹² *Ibid.* 42

positions in society. The medium of communication in combination with the members' identities allow for different levels of contribution, as well.

The Invisible City differs from the communal urban narrative as it is a composite of in-group and out-group narratives. Contributions by out-group members still, as in the case of Dewey, discussed below, supply a much smaller proportion of Invisible City; however, their representation is not altogether absent. The following portion of this dissertation will look at digital methods as a means of increasing homeless narrative contributions to the communal narrative and, in effect, the invisible city.

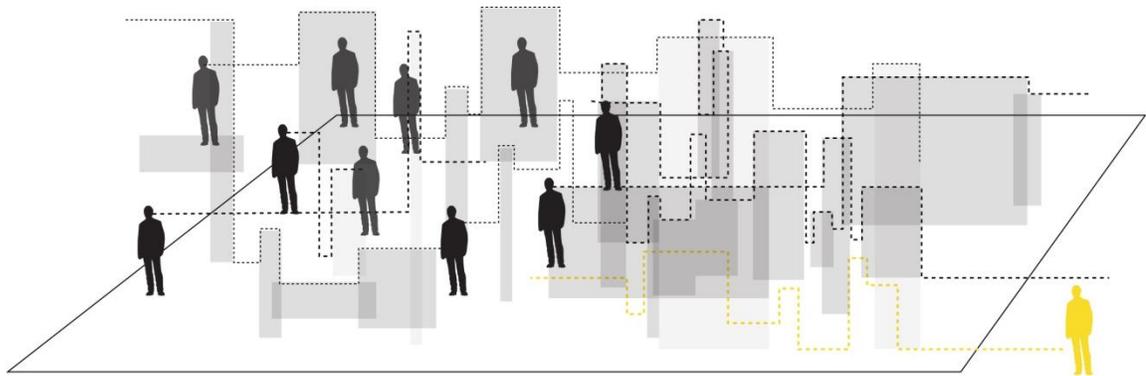


Figure 7 Invisible City

The intangible spatial identities of the city, as they comprise the Invisible City's narrative are created through in-group association processes, resulting in the exclusion of out-group members. This is to say that there are spaces that have understood characteristics held by the dominant groups in society. These communal understandings of the dominant or normalized citizens regarding spaces are called in-group biases.¹¹³ For example, how do dominant in-group members perceive a city park? A park is seen by most as a space used during the day. It is often used by families or groups interacting in a social manner, and the space is maintained by the city, state or nation. The Merriam-Webster dictionary adds that a park

¹¹³ Steven J. Heine and Darrin R. Lehman, "The Cultural Construction of Self-Enhancement: An Examination of Group-Serving Biases," *Journal of Personality and Social Psychology* 72, no. 6 (1997): 1268–83, doi:10.1037/0022-3514.72.6.1268.

space likely has facilities used for pleasure and exercise.¹¹⁴ These in-group biases of what parks should be used for are so entrenched among many in-group members that they now compose the dictionary definition of the space.

As a result, in-group members or normalized urban citizens, may use the park space during the day to conduct recreational activities like tossing a Frisbee or playing soccer. Frisbee and soccer could be called in-group actions because they are socially normalized by the dominant group. These understandings are then built into the communal urban narrative regarding what acceptable use of park spaces might be. The communal urban narrative is how the in-group perceives the park as an abstraction of the actual park. Considering acceptable use of the space to be primarily for playing soccer, Frisbee and other socially normative behaviors, can be seen as in-group biases. These in-group biases proceed to facilitate ordinances and regulations regarding what can occur within the park space and during which times. The communal narrative that parks are predominantly places for children and families to interact during the day, results in regulations prescribing spatial use in the analog space. The spatial prescription that the park be closed at night is a regulation that affects the analog space, oftentimes prescribed due to the in-group's biases. The analog effect dictates the physical result that the park lights are off after 10:00 p.m.

As a result, the effects of these communal narratives can be seen as affecting analog space. Thus, the communal narrative regarding the concept of uses for a park is affected by in-group biases; this definition then becomes accepted, made law and otherwise marked on the analog space.

¹¹⁴ "Definition of PARK," *Merriam-Webster*, accessed January 26, 2016, <http://www.merriam-webster.com/dictionary/park>.



Figure 8: Communal Narratives Affects on Analog Space

The communal narrative–analog space relationship isn’t innately negative nor does it enact inherent negative effects on the space; instead, the relationship is causal as well as mutually co-producing. This paper will not argue that the communal narrative or analog space have greater power over one another, only that they produce effects on one another.

Furthermore, if changes occur in the analog space with the capability of influencing the communal narrative, the reverse can also be seen as true. Continuing with the park example, if there is a student organization that has night soccer games on a park’s field, their evening usage will likely change the in-group biases regarding what time they believe is acceptable to use the park as a result of in-group favoritism, which states that identifying with a group provides prescriptive normative behavior. Due to the student organization being a subgroup of the larger in-group, they possess the increased capacity as a result of in-group identification to effect in-group bias as it is affected by normative in-group behavior.¹¹⁵

In-group use of the park outside of normative hours will then alter ideas in the communal narrative regarding appropriate park use, the function of a park and, in effect, the definition of a park. The importance of who is trying to change the in-group bias and their relationship to the in-group largely effects outcomes as a result of in-group favoritism. In-group favoritism tips the balance of power positively toward in-group members,¹¹⁶ with some theorists proposing it to be the prime mechanism of discrimination.¹¹⁷ In-group favoritism

¹¹⁵ D. Abrams and M. A. Hogg, “Towards a Single-Process Uncertainty-Reduction Model of Social Motivation in Groups,” *Group Motivation: Social Psychological Perspectives*, 1993, 173–90.

¹¹⁶ Anthony G. Greenwald and Thomas F. Pettigrew, “With Malice toward None and Charity for Some: In-group Favoritism Enables Discrimination (Report) (Author Abstract),” *The American Psychologist* 69, no. 7 (2014): 670.

¹¹⁷ *Ibid.*, 411.

can be attributed in this case to the student organization’s ideological representation in the SDO. In contrast, what are the effects on the communal narrative regarding the park when out-group members step outside of the recognized acceptable uses for the space?

Homeless members of the out-group often use parks in different ways from normalized in-group members. These individuals might pose a conceptual threat to in-group members’ understanding of what a park is by holding contrary understandings of spatial use. For example, homeless individuals might use the park as a place to sleep especially at night.

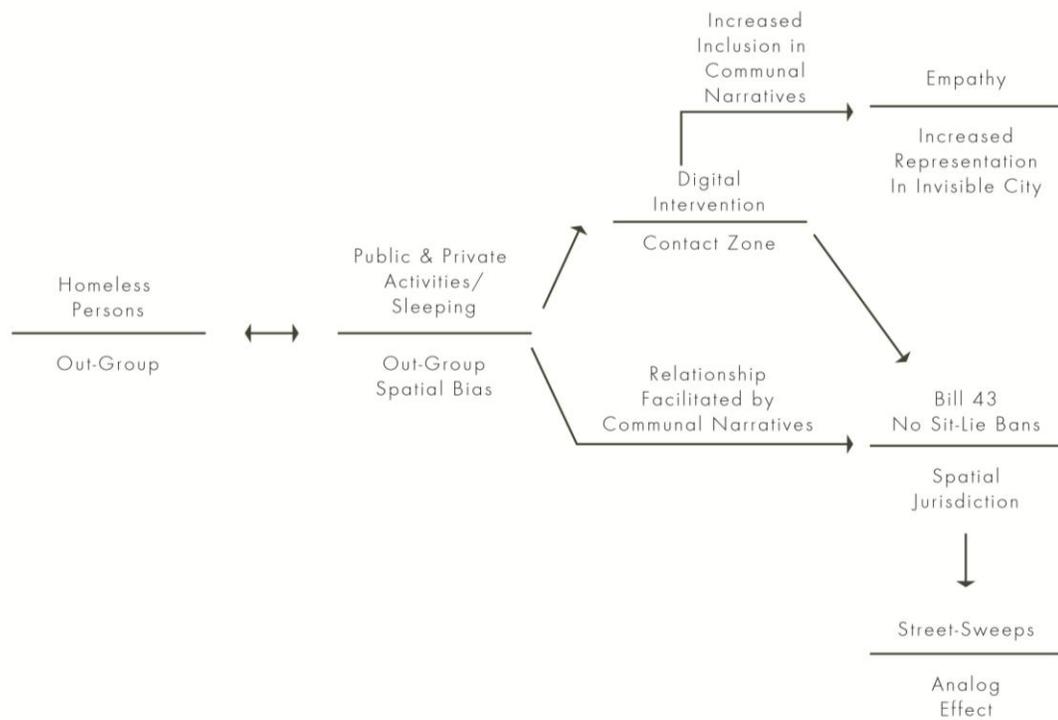


Figure 9 Out-group Contact Zone Affects

Because sleeping at night in a park is not typical in-group member behavior, such an act can be seen as distinctly that of an out-group member. In-group biases determine that this act is an inappropriate activity for the public space; out-group biases see sleeping as an acceptable use for the space: acceptable, given that homeless individuals lack shelter. Perceived differences between acts connected to group bias structure result in divergent understanding

between members of the in-group and the out-group regarding proper park spatial use. These differences in understanding can be considered a threat to the dominant groups' perceptions. These threats can be real threats,¹¹⁸ due to intergroup competition over scarce resources. An example of this is if the park is small and is only able to accommodate a limited number of people. By contrast symptoms of symbolic threats¹¹⁹ may take the form of non-homeless individuals feeling like they are unable to conduct their regular activities in the presence of out-group members.¹²⁰ They might believe that they are unable to have picnics with their children in the presence of said homeless individuals.

These differences in out-group urban narratives as they oppose the communal narrative can be seen in competition with one another. Out-group members, or homeless individuals, holding out-group biases believe parks can be places to sleep at night. These out-groups less frequently see their beliefs employed within spatial ordinances or laws regulating use of space. Out-group bias dampening can be seen nationally in laws prescribing spatial use. In the United States from 2011 to 2014, there was a 34 percent increase in city-imposed bans prohibiting "camping in public."¹²¹ Laws such as these can be seen as products of the communal narrative, ones that serve to deny analog participation as a result of in-group biases that do not align with out-group biases.

When contemplating the communal narrative, it is important to comprehend that out-groups also participate in shared narratives mapped on the urban space. Similar to the communal urban narrative, the homeless individual's narrative is composed of the shared urban experiences of the out-group; dissimilarly it is not readily added to common conceptions of the Invisible City. Diminished contribution can be attributed to the relatively interdependent

¹¹⁸ Victoria M. Esses, Geoffrey Haddock, and Mark P. Zanna, "Values, Stereotypes, and Emotions as Determinants of Intergroup Attitudes," in *Affect, Cognition and Stereotyping: Interactive Processes in Group Perception*, ed. Diane M. Mackie and David L. Hamilton (San Diego: Academic Press, 1993), 137–66, <http://orca.cf.ac.uk/38411/>.

¹¹⁹ Victoria M. Esses, Lynne M. Jackson, and Tamara L. Armstrong, "Intergroup Competition and Attitudes Toward Immigrants and Immigration: An Instrumental Model of Group Conflict," *Journal of Social Issues* 54, no. 4 (January 1, 1998): 699–724, doi:10.1111/j.1540-4560.1998.tb01244.x.

¹²⁰ Miles Hewstone, Mark Rubin and Hazel Willis, "Intergroup Bias," *Annual Review of Psychology* 53 (February 2002): 575–604.

¹²¹ Bauman, Rosen, and Tars, "No Safe Place: The Criminalization of Homelessness in U.S. Cities."

relationship between in-group favoritism and out-group derogation as interdependent components of biases.¹²²

This dissertation extends the relationships proposed by Brewer and Brown in *Intergroup Relations*¹²³ to understand that those participating in lifestyles outside social norms constitute a proportionally smaller section of the communal urban narrative, as they are not permitted to contribute equally in community dialogues.

¹²² Marilyn B. Brewer and Norman Miller, *Intergroup Relations* (Buckingham, England: Open University Press, 1996).

¹²³ *Ibid.*

relationships are characterized by identity differences that play into identity policies as they exist set in space, time and culture. For the purpose of this paper, space, time and culture will be understood as the context of the Invisible City, as they constantly shift to manufacture and manipulate one another. In the diagram below these contact zones are illustrated by zones where narrative paths cross or touch.

Contact zones as experienced by Dewey can occur in analog space as well as digital space and can provide opportunities for intergroup processes to occur. Intergroup contact,¹²⁷ as it allows for intergroup processes, has long been studied in connection to its explicit effects on prejudice and systematic biases.¹²⁸ Thomas F. Pettigrew expands intergroup contact theory into the twenty-first century¹²⁹ with meta-analytic data¹³⁰ suggesting that ties created by intergroup contact results in increased empathy and decreased anxiety.¹³¹ Pettigrew further analyzes the relationship between emotion and intergroup contact through 713 independent samples from 515 studies.¹³² Other studies find that anxiety is common in initial encounters between groups. This anxiety is seen to increase the tendency to ignite negative responses.¹³³ Continued contact generally reduced anxiety, while negative interactions increased it.¹³⁴ Other researchers add that anxiousness and negative encounters can occur even without

¹²⁷ Christopher L. Abersson, Michael K. Porter, and Amber M. Gaffney, "Friendships Influence Hispanic Students' Implicit Attitudes Toward White Non-Hispanics Relative to African Americans," *Hispanic Journal of Behavioral Sciences* 30, no. 4 (November 1, 2008): 544–56, doi:10.1177/0739986308324804; Nilanjana Dasgupta and Luis M. Rivera, "When Social Context Matters: The Influence of Long-Term Contact and Short-Term Exposure to Admired Out-group Members on Implicit Attitudes and Behavioral Intentions," *Social Cognition* 26, no. 1 (February 1, 2008): 112–23, doi:10.1521/soco.2008.26.1.112.

¹²⁸ Thomas Pettigrew and Linda R. Tropp, "A Meta-Analytic Test of Intergroup Contact Theory," *Journal of Personality and Social Psychology* 90, no. 5 (2006): 751–83; Gordon W. Allport and Mazal Holocaust Collection, *The Nature of Prejudice* (Cambridge, Mass.: Addison-Wesley Pub. Co., 1954).

¹²⁹ Pettigrew, "Intergroup Contact Theory."

¹³⁰ Pettigrew and Tropp, "A Meta-Analytic Test of Intergroup Contact Theory."

¹³¹ Pettigrew, "Intergroup Contact Theory," 71.

¹³² Pettigrew and Tropp, "A Meta-Analytic Test of Intergroup Contact Theory."

¹³³ Walter G. Stephan and Cookie White Stephan, "Intergroup Anxiety," *Journal of Social Issues* 41, no. 3 (1985): 157–75; Walter G. Stephan and Cookie White Stephan, "Antecedents of Intergroup Anxiety in Asian-Americans and Hispanic-Americans," *International Journal of Intercultural Relations* 13, no. 2 (1989): 203–19; Cookie White Stephan and Walter G. Stephan, "Reducing Intercultural Anxiety through Intercultural Contact," *International Journal of Intercultural Relations* 16, no. 1 (1992): 89–106; M. R. Islam and M. Hewstone, "Dimensions of Contact as Predictors of Intergroup Anxiety, Perceived Out-Group Variability, and Out-Group Attitude: An Integrative Model," *Personality and Social Psychology Bulletin* 19, no. 6 (1993): 700–710; David A. Wilder, "Chapter 5—The Role of Anxiety in Facilitating Stereotypic Judgments of Out-group Behavior," 1993; David Wilder and Andrew F. Simon, "Affect as a Cause of Intergroup Bias," 2008, 153–72.

¹³⁴ Patricia G. Devine, Sophia R. Evett, and Kristin A. Vasquez-Suson, "Exploring the Interpersonal Dynamics of Intergroup Contact," in *Handbook of Motivation and Cognition, Vol. 3: The Interpersonal Context*, ed. R. M. Sorrentino and E. T. Higgins, Handbook of Motivation and Cognition. (New York: Guilford Press, 1996), 423–64.

intergroup prejudice.¹³⁵ In addition, positive emotions activated through optimal contact can mediate intergroup contact effects. This means that positive interactions result in an increase in members' acceptance of intergroup interactions. From investigations on intergroup contact theory as well as social dominance order many theorist propose empathy plays a role in creating positive emotions stimulated by optimal contact.¹³⁶

If these studies are applied to Dewey's intergroup contact at Blue Water Mission, the relationships between intergroup contact and empathy can be further explored. The reader may hypothesize that some of his fellow office workers may have felt a sense of anxiety when Dewey initially started working in the church office, as a result of his being a homeless individual, an out-group member. Through weekly interactions at the church, Dewey came to feel like "they are family." Dewey's feelings can be associated with a reduction in anxiety, which increases with each subsequent interaction. The positive effects of his interactions can be seen as affecting the way church coworkers feel about homeless individuals. From there, these in-group members of the church are able to influence the communal narrative of the city regarding homeless individuals.

Empathy through optimal intergroup contact, or contact zones, has been proposed to adjust biases among both in-group and out-group participants.¹³⁷ In addition, contact zones have been correlated to increases in empathy for stigmatized out-group members that then can improve attitudes toward the whole out-group.¹³⁸ Further research indicates that positive emotions aroused by intergroup friendships create a foundation for modifications to future actions as they affect members of the out-group.¹³⁹ These modifications have been

¹³⁵ Ibid.

¹³⁶ C. Reich and M. Purbhoo, "The Effect of Cross-Cultural Contact," *Canadian Journal of Behavioural Science*, Canadian Psychological Association (CPA) (1975): 313–27.

¹³⁷ C. D. Batson et al., "Empathy and Attitudes: Can Feeling for a Member of a Stigmatized Group Improve Feelings toward the Group?," *Journal of Personality and Social Psychology* 72, no. 1 (1997): 105–18.

¹³⁸ Ibid.

¹³⁹ Samuel P. Oliner, Pearl M. Oliner, and Mazal Holocaust Collection, *The Altruistic Personality: Rescuers of Jews in Nazi Europe* (New York; London: Free Press ; Collier Macmillan, 1988).

particularly noted among adults who had more close intergroup friendships as children.¹⁴⁰ These understandings extend to the example of Dewey by supposing that modifications in the church coworkers' opinions of Dewey, and thus other homeless individuals, would result in an increased acceptance within their personal narratives regarding homeless out-group members. These personal narratives could then go on to inform how children raised by adult in-group members are educated regarding homeless individuals and potential biases they could then have regarding this demographic.

The value of contact zones as they function to facilitate intergroup interactions can be seen in the Honolulu example of Dewey, whose interactions function to facilitate greater empathy and thus inclusion in the communal urban narrative. This example, which plays itself out in analog Honolulu, illustrates traditional intergroup contact zones. In Dewey's example, his face-to-face interactions create empathy among in-group and out-group members. But how does this function in the digital city? As physical contact zones optimize empathy produced in the analog city the increasing ubiquity of technology produces another sphere to integrate homeless narratives.

¹⁴⁰ Yehuda Amir, "The Role of Intergroup Contact in Change of Prejudice and Race Relations," in *Towards the Elimination of Racism* (New York: Pergamon, 1976), 245–80; Yehuda Amir, "Contact Hypothesis in Ethnic Relations," *Psychological Bulletin* 71, no. 5 (1969): 319–42, doi:10.1037/h0027352.

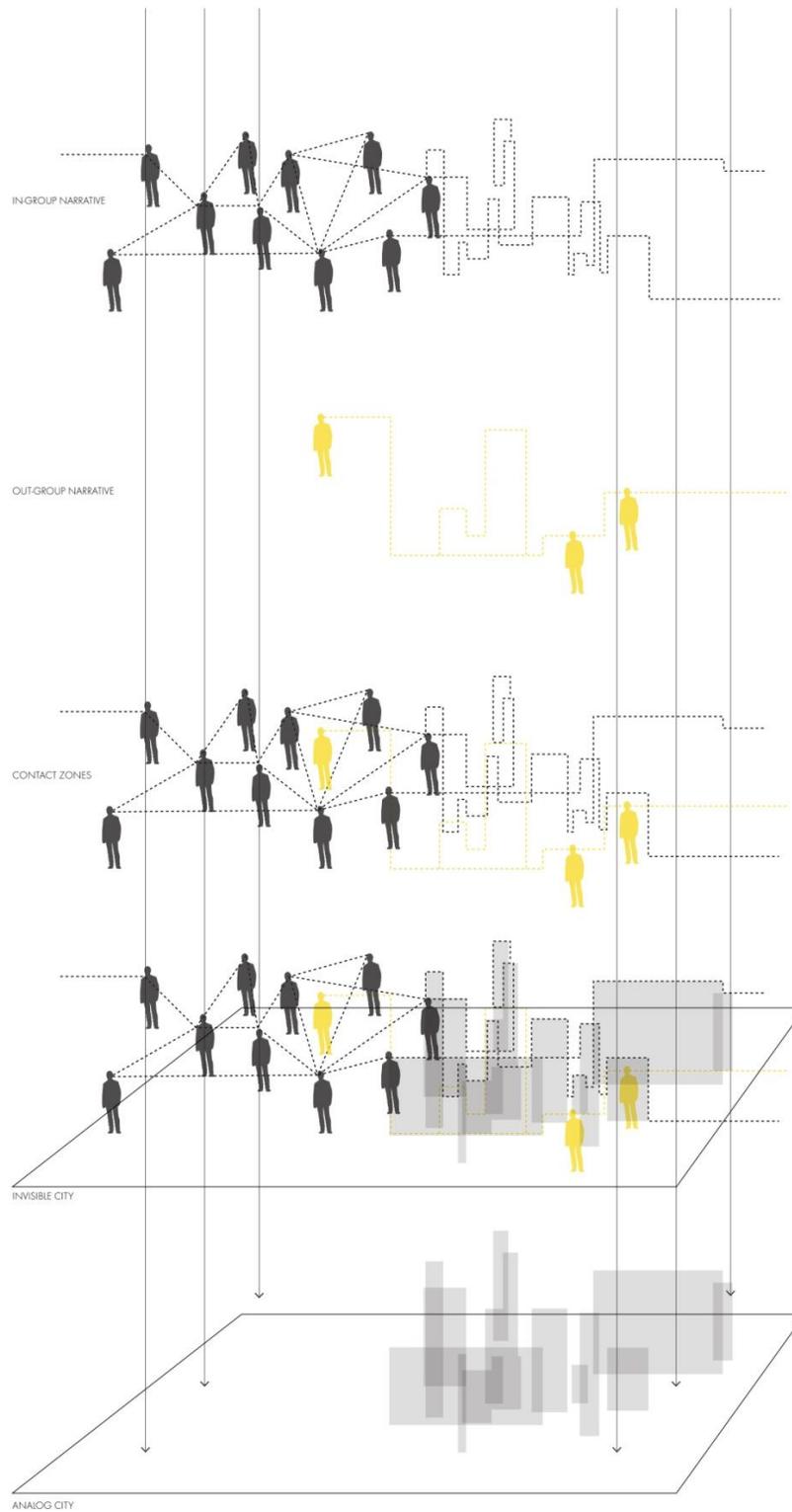


Figure 11 Invisible City Stacking Diagram

2.3 Virtual Contact Zones

The vast entanglement of the virtual/digital with the analog urban experience establishes agency for an array of previously unheard voices but still tends to silence the homeless demographic. This demographic spends large quantities of time on the analog landscape, but its members are often attenuated in digital mediums that could function as contact zones to boost identities and foster intergroup contact.

The synthesis of digital technologies with the analog urban space¹⁴¹ has long become second nature to many urban citizens; individuals are not surprised when they find a location by “dropping a pin” in a virtual map to reveal the destination’s location. The ubiquity of technology is so great that many urban citizens no longer question many of its design implications on the city or the ability of most citizens to interface with these technologies. For example, when a normalized in-group member meets another in a public setting, say a coffee shop, it is safe to presume that each individual has an email address, a cell phone, or some access to information communication technology (ICT).¹⁴² This is a safe presumption as 90 percent of Americans adults owned a cell phone in 2014, with 64 percent of the devices being smartphones.¹⁴³ It may also be inferred that the normalized in-group members participate in social network systems or social media. From 2008 to 2011, the number of people using social network systems (SNSs) has more than doubled,¹⁴⁴ with 66 percent of online adults using an SNS. In addition, 68 percent of Internet users surveyed in 2011 stated that the Internet had a major impact on the ability of groups to communicate with members.” Sixty-two percent of all Americans stated that the Internet has had a major impact on the ability of groups to draw attention to a given issue, and 60 percent of all Americans surveyed said the Internet has had a major impact on the ability of groups

¹⁴¹ For the purpose of this paper, I will be referring to the physical infrastructure of the city as the analog city, as opposed to the digital space explored by Mark Morris.

¹⁴² Information communication technology is an umbrella term that includes communication devices or applications encompassing: telephones, cell phones, e-readers, tablets, computer and network hardware and software.

¹⁴³ Aaron Smith and Dana Page, “U.S. Smartphone Use in 2015,” Internet, Science & Technology Report, Numbers Facts and Trends Shaping the World (April 1, 2015), http://www.pewinternet.org/files/2015/03/PI_Smartphones_0401151.pdf.

¹⁴⁴ Ibid.

to connect with other groups.¹⁴⁵ From information gathered through surveys, it can be inferred that the majority of normalized citizens, persons who participate in social contract doctrines, own an ICT device. It can also be deduced that the majority of Americans surveyed believe that SNSs and virtual mediums facilitate group interaction.

However, what about those who are not able to easily participate? This question goes beyond access to ICT. Homeless access to ICTs is analyzed in Honolulu in terms of WiFi availability as well as thorough nationwide studies of homeless individuals' access to ICTs. Here access to an SNS is determined as availability of mediums developed specifically for homeless individuals.

By asking what about those who are not able to easily participate, answers addressing digital inclusion affected by the digital divide become evident. As each SNS and mobile application is designed with a specific user in mind, what happens when there is an entire demographic without a medium through which to speak? Mobile applications can then be investigated as the contribution medium of their specific demographic. The success of many SNSs has been attributed to their ability to target their specific demographic along with the demographics' required objectives.¹⁴⁶

One Honolulu participant, Sherrie, interviewed by the author, explained how she saw digital inclusion working: she stated that she had a Facebook and an email, but that she didn't use them often. She went on to say that "I don't think Facebook is an accurate representation of who I am as a person." She described how she is a mixture of cultures and that these "cultural differences" weren't really visible in her online persona. She defined her culture as a mixture of different ethnicities, traditions and backgrounds, stating she was originally from Southern California, moving to Honolulu in 1992. The participant didn't specify that her cultural differences were related to her state of homelessness, but that her cultural

¹⁴⁵ Lee Rainie, Kristen Purcell, and Aaron Smith, "The Social Side of the Internet," Internet, Science & Technology Report (Pew Research Center, January 18, 2011), <http://www.pewinternet.org/2011/01/18/the-social-side-of-the-internet/>.

¹⁴⁶ Volker Eisenlauer, *A Critical Hypertext Analysis of Social Media: The True Colours of Facebook* (London : Bloomsbury Academic, An imprint of Bloomsbury Publishing 2013), 24.

differences colored her experiences within the city and that they weren't being represented via Facebook.

She continued to say that it was important that there be no bullying. This was stated in connection with how she would like to see a greater inclusion of "cultural differences." The interviewee never stated directly that she required protection from bullying if she were to divulge her "cultural differences," but that "bullying is another thing and people need to feel safe." This safety can be represented in both digital space as well as analog space. Sherrie's explanation of "safety" referred specifically to digital space. She continued to say "people need to be able to call out when people are harassing you."

The safety that Sherrie feels is necessary to express her "cultural differences" are examples of how Facebook doesn't meet her SNS needs. A site that does not provide identity protection, along with the time required to report misconduct, could be seen as the reason she doesn't feel "safe." An SNS created to suit Sherrie's needs would provide a "safe" environment for her to showcase her and other users' "cultural differences." This paper argues that many of these "cultural differences" are spatially or location based. By allowing users to show how they are experiencing the city in a safe digital environment a digital image of the city is created that accounts for "cultural differences."

She continued to say that "you see a lot of the same thing" when you're on Facebook. Her use of Facebook as an example may be the result of its position as the most prominently used SNS.¹⁴⁷ She explained representations and diversity of representation in terms of "promotion": "it's not just one person promoting their business, you have to have more people promoting their business." Again this brought up the idea of bullying as she stated that if you want people to "promote" ideas or things they need to feel safe from bullying.

¹⁴⁷ Rainie, Purcell, and Smith, "The Social Side of the Internet."

YELP DEMOGRAPHICS

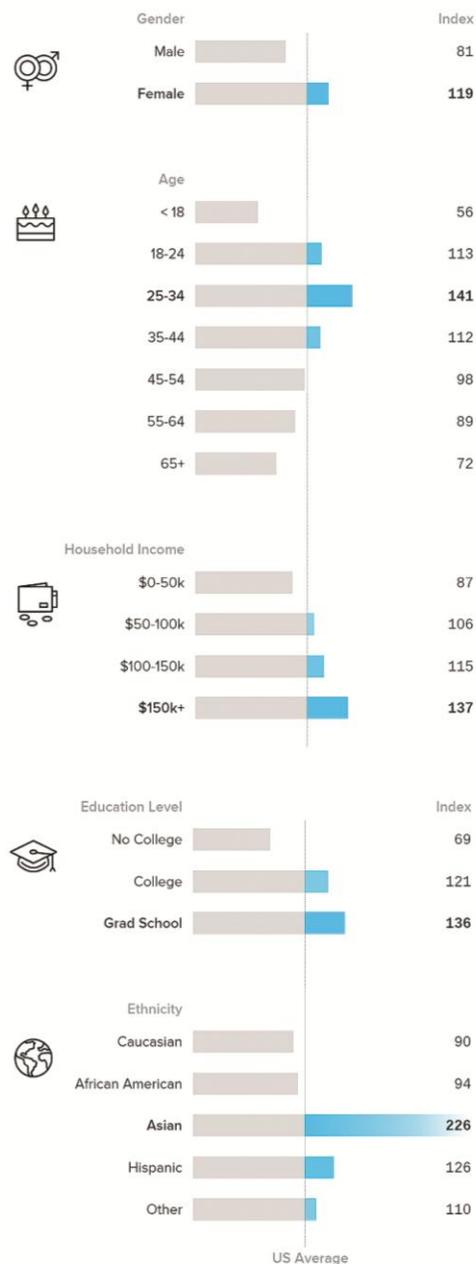


Figure 12 Digital User Profile

Information gleaned from Sherrie's and other homeless individual's interviews illustrates some of their concerns regarding safety and identity disclosure. This identity disclosure will function as grounds for analysis for the mobile application case studies as well as the application produced in Chapter 7.

The following case studies in Chapter 5 focus on applications designed specifically for homeless individuals. The lack of applications designed for this demographic is highlighted by the small numbers found by the author during the survey process,¹⁴⁸ as well as the complete lack of SNS applications that allow homeless users to GPS map their unique out-group experiences as they transpire in analog space. One example of an SNS designed for in-group mapping narratives would be Yelp. This mobile phone and computer-based platform is a crowd-sourced consumer review site enabling registered users to map their consumer experiences in various restaurants, shops and spas throughout the city. The demographic the SNS was developed for, and those using the site, can be broken down into multiple descriptors to reveal a normalized Yelp user. This normalized user produces a narrative of spatial acts, allowing their

¹⁴⁸ In chapter 5, Case Studies, five applications are looked at for their ability to integrate homeless individuals' narratives into urban spaces. A search of mobile applications done online by the author in September and October 2015 found one application that allowed homeless individuals to self-narrate their experiences. Of the five mobile applications analyzed in the case study three allowed other urban citizens to narrate the homeless experience and one functioned to connect the user's identity to their spatial needs.

identity and their acts to be spatially mapped by GPS.¹⁴⁹

The demographic can be further broken down to illustrate the likelihood that they are from a specific educational background, ethnicity and even what brands they are likely to purchase and cars they are likely to drive. This means that in looking at a location the viewer is able to see who the normalized demographic of the space is. By lining Yelp users up next to other SNS users, digital demographic compositions can be understood as they contribute normalized demographics accepted into the digital city.

In looking at the broad diversity of mediums designed for multiple normalized populaces to digitally self-record their urban narratives in the Invisible City, certain omissions become evident. The lack of application design causes specific user groups to be overlooked as they do not necessarily have a medium of communication based on their classification as “homeless”; this functions to limit their participation in the digital city. The loss to the digital city by not being a demographically representative space, contributes to a reductive Invisible City as constructed with in-group biases as a result of misrepresentation.

The digital city created by limited demographic representation diminishes opportunities for intergroup contact. Studies¹⁵⁰ demonstrated the strengths of online relationships to share values, needs and experiences and to offer potential to assist specific sub-demographics¹⁵¹ of the disenfranchised (e.g., homeless) in finding supportive members of their analog as well as digital communities.¹⁵² Digital contact zones create potential for homeless individuals to interact in a protected environment where they have control over the disclosure of their

¹⁴⁹ “Quantcast Yelp Network/Yelp.com,” Measurement SDK, *Quantcast* (2016), <https://www.quantcast.com/yelp.com?country=US#/trafficCard>.

¹⁵⁰ Bjarki Valtysson, “Access Culture: Web 2.0 and Cultural Participation,” *International Journal of Cultural Policy* 16, no. 2 (2010): 200–214, doi:10.1080/10286630902902954; Sally R. Munt, Elizabeth H. Bassett, and Kate O’Riordan, “Virtually Belonging: Risk, Connectivity, and Coming Out On-Line,” *International Journal of Sexuality and Gender Studies* 7, no. 2–3 (July 2002): 125–37, doi:10.1023/A:1015893016167; Philippa Collin et al., *The Benefits of Social Networking Services: Literature Review*. (Melbourne: Cooperative Research Centre for Young People, Technology and Wellbeing, 2011), http://www.uws.edu.au/__data/assets/pdf_file/0003/476337/The-Benefits-of-Social-Networking-Services.pdf; “Cyberkids? Exploring Children’s Identities and Social Networks in On-Line and Off-Line Worlds,” *Annals of the Association of American Geographers* 92, no. 2 (2002): 302–9.

¹⁵¹ Eric Rice, Alex Lee, and Sean Taitt, “Cell Phone Use among Homeless Youth: Potential for New Health Interventions and Research,” *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 88, no. 6 (December 2011): 1175–82, doi:10.1007/s11524-011-9624-z.

¹⁵² Munt, Bassett, and O’Riordan, “Virtually Belonging.”

respective identities, while seeking analog aid or digital integration. Increased digital in-group–out-group contact zones have the potential to increase social connectedness, and disassemble in-group biases through the production of empathy, creating potential for increased inclusion of homeless narratives in the Invisible City.¹⁵³

By illustrating cities as not embodying the totality of their urban users, misrepresentative records are inputted to the digital archives, allowing biases to be perpetuated in the Invisible City. By including homeless individuals in the digital archive, a more solid democratic illustration of urban usership is created within the Invisible City.

This paper asks how homeless individuals without a digital voice designed for their demographic would speak in the Invisible City, as it is a composite of digital and analog input. Of those who possess information communication technology devices, how does their access to digital platforms designed for their demographic affect how their experiences are mapped? By highlighting exclusions that manifest in analog urbanism, as they jump layers to infiltrate and disenfranchise in the digitally urban space.

The integration of urban technological advances often further perpetuates issues arising from Invisible City exclusions of homeless individuals by extending the narrative omission into the virtual medium. Digital disenfranchisement of homeless individuals is further discussed by looking at case studies in Chapter 5 involving various digital applications in which a noted absence exists of digital mediums designed for homeless individuals to map their experiences.

¹⁵³ “Cyberkids?”; Valtysson, “Access Culture”; Adriana Sala and Javier Mignone, “The Benefits of Information Communication Technology Use by the Homeless: A Narrative Synthesis Review,” *Journal of Social Distress and the Homeless* 23, no. 1 (March 2014): 51–67.

Chapter 3 Homelessness & the Digital Divide

3.1 Defining Homelessness

There exists a concern regarding urban poverty in America, as it affects citizenship. This concern is not new to this century but is an evolving issue, as homeless individuals and families continue to strive for the basic elements of food, clothing and shelter and, as such, are being excluded from growing fronts of digital and urban interface.¹⁵⁴ The selection of this population group for this dissertation is the result of homeless individuals' minimized representation in communal virtual acts as well as disenfranchisement in the analog urban space; this lack of participation further exacerbates issues surrounding narrative isolation as well as urban exclusion.

Much of the information regarding homeless individuals and populations, located in different cities, is based on population counts. The resultant data is highly inaccurate, due to the difficulty of contacting and counting homeless persons. The effect of inaccurate and unavailable data creates a diminished understanding of the plight of homeless individuals, due to improper and inaccurate record keeping. The lack of quantitative information on numbers of homeless people then affects their representation within cities. This dissertation argues for the significance of the contributions of homeless individuals and of their experiences within the city, as related to the substantial amount of time they spend in the analog city. The lack of quantitative census information highlights representational inequality existent within the city.

¹⁵⁴ Rice, Lee, and Taitt, "Cell Phone Use among Homeless Youth."

Explanations for why people become homeless can be viewed in two broad categories: (1) structural; (2) individualistic;¹⁵⁵ current perceptions of causes often view homelessness as a result of forceful interactions between both factors. Gender, race, age and geography all play a significant role in structuring the entering and exiting capabilities of homeless individuals.¹⁵⁶ There are many studies¹⁵⁷ that examine these factors as they function as separate and interrelated entities. To address the relationship between individual circumstance and structural delineation, the design solution created in Chapter 7 by the author creates a viewing platform for understanding the interrelated effects on urbanism of urban identity relationships.

Homelessness manifests in a variety of ways, propelled by different structural/personal and institutional/relationship factors, further enhancing the difficulty of assessment. This paper aims to look at digital solutions to these relationships, as a means to address an ever-increasing issue. The proposed solution assumes that the physical urban space utilized by homeless people is fundamentally changing due to the use of virtual devices such as GPS mapping of specific demographics in cities, demographic analysis and SNS. The following section will show a breakdown of the existent classifications of homelessness and traditional ways of looking at unsheltered and sheltered people.¹⁵⁸ Looking at various pathways into homeless will clarify structural relationships within homeless population subcategories, as they relate to the built environment.

The limitations of existent data, created by understandings restricted to population counts, produces information heavily reliant on the use of categorical definitions. The categorical breakdown utilized by many scholars, as well as government agencies, is as follows:

¹⁵⁵ Volker Busch-Geertsema et al., "Homeless and Homeless Policies in Europe."

¹⁵⁶ *Ibid.*, 3.

¹⁵⁷ Judy Daniels, "Humanistic Interventions for Homeless Students: Identifying and Reducing Barriers to Their . . .," *Journal of Humanistic Education & Development* 33, no. 4 (June 1995): 164; Karin M. Eyrich-Garg, "Sheltered in Cyberspace? Computer Use Among the Unsheltered 'Street' Homeless," *Comput. Hum. Behav.* 27, no. 1 (January 2011): 296–303, doi:10.1016/j.chb.2010.08.007; Linda B. Fosburg and Deborah L. Dennis, "Practical Lessons: The 1998 National Symposium on Homelessness Research (Arlington: VA, October 29–30, 1998)," August 1999, <http://eric.ed.gov/?id=ED443892>. Eric Rice, Alex Lee, and Sean Taitt, "Cell Phone Use among Homeless Youth: Potential for New Health Interventions and Research," *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 88, no. 6 (December 2011): 1175–82, doi:10.1007/s11524-011-9624-z

¹⁵⁸ Many of these terms are "rough terminology" used by other researchers and not meant to pigeonhole demographics. They will be used here to draw parallels between situations, as well as explore potential requirements of each sub-category of homelessness.

'Unsheltered Homelessness' describes individuals who are living in spaces not intended for human beings to sleep; these places include, but are not limited to, bus stations, abandoned buildings, parks, and cars.¹⁵⁹

'Hidden Homelessness' describes those who are temporarily staying in places other than a traditional home setting, but not physically living on the streets. They are mostly uncouneted in U.S. data. This status often manifests as individuals who are staying with a friend or relative in a transitional housing state.¹⁶⁰

These terms produce an understanding of situation-based titles, but they cause us to ignore the specific identity and narrative that produce each situation as it occurs in the everyday life of people in every American city. By looking at methods and products designed for homeless individuals communication, viable design solutions can be procured as they mark themselves on the analog city, creating variations in modes of communication for sheltered, homeless individuals and those effected by hidden homeless.

3.2 Mobile Phone Use by Homeless Individuals

Mobile phones have entrenched themselves in public spaces, creating private portals that further disenfranchise homeless individuals who lack access to or cannot afford such devices. Similarly to the absent data regarding the number of homeless individuals, there is little conclusive research on homeless individuals' possession of high-tech-based communication devices. The boundaries created by the *digital divide*, addressed in the following section, function to further estrange ostracized groups by reinforcing socioeconomic fortifications with virtual ones.¹⁶¹

¹⁵⁹ "Mobile Homes: Many 'Hidden Homeless' Americans Living in Vehicles | Al Jazeera America," accessed March 21, 2015, <http://america.aljazeera.com/watch/shows/america-tonight/articles/2014/10/10/mobile-homes-manyhiddenhomelessamericanslivinginvehicles.html>.

¹⁶⁰ Volker Busch-Geertsema et al., "Homeless and Homeless Policies in Europe," 4.

¹⁶¹ Paul Dourish and Genevieve Bell, "The Infrastructure of Experience and the Experience of Infrastructure: Meaning and Structure in Everyday Encounters with Space," *Environment and Planning B: Planning and Design* 34, no. 3 (2007): 414–30, doi:10.1068/b32035t.

3.3 The Digital Divide: Information Poverty

Early understanding of the digital divide¹⁶² warns of nation-to-nation inequalities, caused by uneven technology distribution. Initially conceived by Lloyd Morrisett of the Markle Foundation,¹⁶³ the term was used to denote the separation between information haves and have-nots. Scholars on homelessness quickly employed the term, stating that one does not have to live outside first-world borders to experience information distribution inequality, pointing out disenfranchised American citizens' hunger for a digital voice.

The difficulties of procuring and maintaining cell phone ownership for homeless individuals can be seen as a volume of cascading issues. The progress through these issues begins with the procurement of a cell phone and billing plan, finding a space to charge the cell phone on a daily basis and possessing an SNS that addresses the social needs of the user. For many urban citizens these are non-issues, as they possess all the requirements for interaction on this level. But for someone who may be unsure of where they are planning on sleeping in 12 hours, these tasks may not be so simple.

Once devices are charged, homeless users may face issues of digital exclusion that mirror the analog exclusion faced in the physical world. Spatial use for homeless individuals is different than that of non-homeless individuals, necessitating differentiated means of digital participation as digital and analog participation are deeply intertwined. Many of these physical needs have been addressed in various apps, connecting homeless individuals to shelter, food and medical supplies, but few address the social needs of homeless individuals in their differentiation from the typical citizen's needs.

¹⁶² Mehdi Khosrow-Pour, ed., "Encyclopedia of Information Science and Technology," *Encyclopedia of Information Science and Technology* (Hershey, PA: Idea Group Reference, 2005), <https://books.google.com/books?id=wa29AQAQBAJ&pg=PA1134&lpg=PA1134&dq=Hoffman+2001+digital+divide&source=bl&ots=PAGBPcXlbc&sig=Nblg2INTEbjXv2MxMX2kv4HAwJc&hl=en&sa=X&ved=0ahUKEwjAttXmiO7KAhVK82MKHciJAdMQ6AEIKDAB#v=onepage&q=Hoffman%202001%20digital%20divide&f=false>.

¹⁶³ Donna L. Hoffman, Thomas P. Novack, and Ann E. Schlosser, "The Evolution of the Digital Divide: Examining the Relationship of Race to Internet Access and Usage over Time, in *The Digital Divide: Facing a Crisis or Creating a Myth?*, ed. Benjamin M. Compaine (Cambridge, Mass.: MIT Press, 2001), 47-99, <https://books.google.com/books?hl=en&lr=&id=MbareJicwKAC&oi=fnd&pg=PA47&dq=Hoffman,+et+al,+2001+digital+divide&ots=B-Inr0fjGc&sig=soIAirANkg6NOUZMJCuP-gG8D0s#v=onepage&q&f=false>.

Relating to Dolores Hayden's goal of creating representations of disenfranchised demographics' experiences in the analog space, where is the digital representation of homeless individuals? It lies in a space where most products and programs are designed and branded for a specific user. The market addressing the social-narrative needs of homeless individuals existing in the digital city are unaccounted for as they don't possess adequate digital mediums of contribution.

Analysis of existent studies and virtual applications show commitment to the physical needs of homeless people in the virtual sphere, yet they rarely address the need for narrative inclusion. Representation of homelessness online is sparse, often outnumbered by single narratives.¹⁶⁴

3.3.1 Information Communication Technology (ICT) Use Among Homeless: Individuals Synthesizing Mobile Data

Many of the following studies used in this paper, relating homelessness and mobile devices have been gleaned from medical research. Medical research has the highest occurrence of published material relating to quantitative factors of homeless individuals' cell phone use as it is included in information communication technology use to date. Existent quantitative data on homeless ICT use is severely limited, composed mostly of cite-specific medical journal studies and homeless subcategories.¹⁶⁵ As a result, the comparative analysis conducted covers a broad expanse of disciplines within the medical field, with a variety of perspectives utilizing varied methodologies. The dearth of existing articles to compare from any particular location, as well as discipline, disallows a focused review of a particular aspect of cell phone use by homelessness individuals, as they vary widely in specific typologies of homelessness. In looking across multiple typologies of homelessness, the conclusions of overarching principles, as they pertain to technology use across user bases, can be made.

¹⁶⁴ Jeremy S. Godfrey, *Rewriting Homeless Identity: Writing as Coping in an Urban Homeless Community* (Maryland: Lexington Books, 2015).

¹⁶⁵ Rice, Lee, and Taitt, "Cell Phone Use among Homeless Youth"; Rachel Gonzales, M. Douglas Anglin, and Deborah C. Glik, "Exploring the Feasibility of Text Messaging to Support Substance Abuse Recovery among Youth in Treatment," *Health Education Research*, September 14, 2013, cyt094, doi:10.1093/her/cyt094; Adriana Sala and Javier Mignone, "The Benefits of Information Communication Technology Use by the Homeless."

From the information gathered, it can be concluded that the use of information communication technology throughout homeless American populations varies widely. Use-effecting variables include location, age, and gender, with some polls showing that 92 percent of homeless youths use ICT at least once a week.¹⁶⁶

The combination of mobile phone use within ICT enables the adoption of increased communication mediums as these mediums grow closer to one another. Today's users are capable of going online through cell phone connections and making phone calls through laptops, creating a merger in use across differing technological mediums and tools. This paper's study of a combination of ICT is significant as it creates a larger more recent pool of data from which to draw, from studies conducted after 2000. Articles regarding use prior to the year 2000 will be ignored for this paper as they are less relevant due to exponential technology use growth, accessibility, and prevalence of mobile technology from that year forward.

Sixteen articles¹⁶⁷ on ICT all confirmed increasing use of the technology among homeless individuals,¹⁶⁸ with the exception of the Redpath¹⁶⁹ study, which found only 55 percent of the

¹⁶⁶ David E. Pollio et al., "Technology Use among Emerging Adult Homeless in Two U.S. Cities," *Social Work* 58, no. 2 (April 1, 2013): 173–75, doi:10.1093/sw/swt006.

¹⁶⁷ Mary Yost, "The Invisible Become Visible: An Analysis of How People Experiencing Homelessness Use Social Media," *Elon Journal* 3, no. 2 (2012): 21–30; Jahmeilah Roberson and Bonnie Nardi, "Survival Needs and Social Inclusion: Technology Use Among the Homeless," in *Proceedings of the 2010 ACM Conference on Computer Supported Cooperative Work, CSCW '10* (New York: ACM, 2010), 445–48, doi:10.1145/1718918.1718993; C. LeDantec and W. Edwards, "Designs on Dignity: Perceptions of Technology among the Homeless" (Florence, Italy: CHI, 2008); Eric Rice et al., "Mobilizing Homeless Youth for HIV Prevention: A Social Network Analysis of the Acceptability of a Face-to-Face and Online Social Networking Intervention," *Health Education Research*, 2012, cyr113; Rice, Lee, and Taitt, "Cell Phone Use among Homeless Youth"; Eric Rice, "The Positive Role of Social Networks and Social Networking Technology in the Condom-Using Behaviors of Homeless Young People," *Public Health Reports* (Washington, D.C., 2010) 125, no. 4 (August 2010): 588–95; Sean D. Young and Eric Rice, "Online Social Networking Technologies, HIV Knowledge, and Sexual Risk and Testing Behaviors Among Homeless Youth," *AIDS and Behavior* 15, no. 2 (February 2011): 253–60, doi:10.1007/s10461-010-9810-0; David P. Redpath et al., "Internet Access and Use among Homeless and Indigent Drug Users in Long Beach, California," *CyberPsychology & Behavior* 9, no. 5 (2006): 548–51; Michelle J. Freedman et al., "Cell Phones for Ecological Momentary Assessment with Cocaine-Addicted Homeless Patients in Treatment," *Journal of Substance Abuse Treatment* 30, no. 2 (March 2006): 105–11, doi:10.1016/j.jsat.2005.10.005; Karin M. Eyrich-Garg, "Mobile Phone Technology: A New Paradigm for the Prevention, Treatment, and Research of the Non-Sheltered 'Street' Homeless?," *Journal of Urban Health : Bulletin of the New York Academy of Medicine* 87, no. 3 (May 2010): 365–80, doi:10.1007/s11524-010-9456-2; Eyrich-Garg, "Sheltered in Cyberspace?"; Jill Palzkill Woelfer and David G. Hendry, "Homeless Young People and Technology: Ordinary Interactions, Extraordinary Circumstances," *Interactions* 18, no. 6 (November 2011): 70–73, doi:10.1145/2029976.2029994; Kimberly Bender et al., "Technology as an Underutilized Tool for Providing Health Services and Support to Street Youth" (137th American Public Health Association Meeting, 2009), <http://apha.confex.com/apha/137am/webprogram/Paper199105.html>; Rosanna E. Guadagno, Nicole L. Muscanell, and David E. Pollio, "The Homeless Use Facebook?! Similarities of Social Network Use between College Students and Homeless Young Adults," *Computers in Human*

265 homeless individuals interviewed having ever used a computer and, of those, only 24 percent having an email address. The fact that the Redpath study is as an outlier could be a result of it being an early examination of ICT. The study,¹⁷⁰ published in 2006, has been acknowledged as representing a “turning point” in technology use by homeless individuals, and is cited often as the counterpoint for more recent studies. Studies conducted from 2006 to 2013 indicate increasing prevalence in cell phone use by homeless individuals on a year-by-year basis.¹⁷¹

Of studies analyzed, three reported high levels of cell phone usage. One stated that, in 2008, 61.5 percent of homeless adults surveyed owned a mobile phone.¹⁷² Data gathered in 2009 in Philadelphia, Pennsylvania¹⁷³ found of 100 youth surveyed 44 percent claimed personal mobile phone ownership, with 20 percent claiming Internet use through their phone. More recent studies show that, of 150 youth surveyed, 62 percent own mobile phones.¹⁷⁴

Information communication technology use, not limiting the definition to phones, shows 92 percent of homeless youth interviewed in Colorado (50 persons) and Los Angeles (50 persons) reporting technology use at least once per week, with the majority stating that their interactions are geared toward connection with friends and family. The same study shows that those interviewed used email and social media sites 3.8 days per week.¹⁷⁵ Findings like these indicate a solid user base, despite the small size of the studies. When viewing these numbers in comparison to the nationwide homeless population, one can deduce that there is a large user pool, and thus demand, for digital platforms specifically addressing homeless

Behavior, Including Special Section Youth, Internet, and Wellbeing, 29, no. 1 (January 2013): 86–89, doi:10.1016/j.chb.2012.07.019; Pollio et al., “Technology Use among Emerging Adult Homeless in Two U.S. Cities.”

¹⁶⁸ Adriana Sala and Javier Mignone, “The Benefits of Information Communication Technology Use by the Homeless.”

¹⁶⁹ David P. Redpath et al., “Internet Access and Use among Homeless and Indigent Drug Users in Long Beach, California.”

¹⁷⁰ Ibid.

¹⁷¹ Adriana Sala and Javier Mignone, “The Benefits of Information Communication Technology Use by the Homeless.”

¹⁷² LeDantec and Edwards, “Designs on Dignity: Perceptions of Technology among the Homeless.”

¹⁷³ Eyrich-Garg, “Mobile Phone Technology.”

¹⁷⁴ Rice, Lee, and Taitt, “Cell Phone Use among Homeless Youth.”

¹⁷⁵ Bender et al., “Technology as an Underutilized Tool for Providing Health Services and Support to Street Youth.”

individuals' unique urban experience, despite relatively little quantitative research on the subject.¹⁷⁶

In the previous chapter demographics were broken down to be understood as application designers see them, a composite of their user traits. These traits are then used to design individual user experience to address their unique demographic need. The lack of ICT contribution mediums could be attributed to the homeless demographic composing an unseen market, but the explored studies reveal a large user group as of 2015 not provided for.

Similar to the advantages offered to sheltered urban citizens, such as communication, GPS location of resources, and online interactions, many studies show that oftentimes mobile phone benefits are equal if not greater for homeless individuals.¹⁷⁷ Inconsistency in their day-to-day lives creates a space where mobile communication can create paramount differences. For homeless persons, who have statistically higher occurrences of health problems, cell phones have been seen to offer contact points to increase rates of recovery.¹⁷⁸ In addition client contact numbers for case workers are required to attain and maintain one's status for many government assistance programs. In relationship to homeless individuals use of ICT in the studies two major themes are extracted: identity management and social connectedness.

3.3.2 Identity Management

As most of the 16 studies analyzed choose to address homeless individuals' need for social connectedness, the importance of controlling, and manage one's identity is not forgotten as it is crucial in allowing individuals power over their representation. Through managing multiple online profiles, homeless individuals are able to present themselves in a controlled light. The availability of "pseudonymity" online, creates for the user the ability to control interactions and social convergence of distinct social groups, mitigating alienation or

¹⁷⁶ Sala and Mignone, "The Benefits of Information Communication Technology Use by the Homeless."

¹⁷⁷ Rice, Lee, and Taitt, "Cell Phone Use among Homeless Youth"; Eyrich-Garg, "Mobile Phone Technology"; Kevin Patrick et al., "Health and the Mobile Phone," *American Journal of Preventive Medicine* 35, no. 2 (August 2008): 177-81, doi:10.1016/j.amepre.2008.05.001.

¹⁷⁸ Patrick et al., "Health and the Mobile Phone."

disenfranchisement. Agency over presentation can also function to isolate identity presentation that could facilitate the procurement of a job or socioeconomic betterment.¹⁷⁹

Online anonymity allows Internet users to surf digital spaces without disclosing information that would lead other users to identify them. Research has shown this to be a determining factor in online participation and interactions.¹⁸⁰ One study found that when users were anonymous they disclosed more information, reported less social anxiety, higher self-esteem and increased social desirability.¹⁸¹

Use of ICT was also shown to boost forms of self-exploration by creating spaces for socially disenfranchised individuals to feel validated. In this sense, homeless individuals' use of technology differed from that of non-homeless populations.¹⁸² The potential of this unaddressed space activates possibilities of use as they mark themselves on analog urbanism.

The design portion of this paper is based on the understanding that homeless individuals lack a medium of identity contribution created for their urban experience. In lumping their experiences in with those of other groups, there is a loss of specificity toward their collective needs. The intention of this paper is to design solutions applicable to the experience of a homeless individual, as his or her current virtual needs go unmet, due to the assumption that homeless people do not have cell phones.

3.3.3 Lifeline Cell Phones

Scarcity of collinear data points regarding cell phone use among homeless populations, represents an information void, not only on a city-by-city basis but also with regard to the United States as a whole. The lack of specific urban location information regarding homeless

¹⁷⁹ Woelfer and Hendry, "Homeless Young People and Technology."

¹⁸⁰ Adam Joinson, "Social Desirability, Anonymity, and Internet-Based Questionnaires," *Behavior Research Methods, Instruments, & Computers* 31, no. 3 (September 1999): 433–38, doi:10.3758/BF03200723.

¹⁸¹ Yair Amichai-Hamburger, *The Social Net: Understanding Our Online Behavior* (New York: Oxford University Press, 2013), 2.

¹⁸² Eyrich-Garg, "Mobile Phone Technology."

For more information regarding mobile application use to increase means of identification and self-exploration please see the "We Are Visible" case study.

cell phone use, discussed in the preceding paragraphs, is now, since 2005, being addressed by the Federal Communication Commission (FCC).

Nicknamed the “Obama Phone” the FCC’s Lifeline phone service is contracted through private carriers to provide one phone per low-income household. Beginning in 1985, Lifeline discounts on landline telephone services were made available to low-income individuals; today the program is available to individuals who participate in federal assistance programs or fall at or below 135 percent of the federal poverty guidelines. As of January 2016 this would be a single individual grossing \$18,455 in the State of Hawai‘i.¹⁸³ Today, as of 2016, the program provides a free mobile phone and monthly allotment of minutes and text, designed for broadband bundling, enabling greater Internet service for those who could otherwise not afford it.¹⁸⁴ This indicates need and potential to aid low-income individuals recognized by the federal government.

Programs like the FCC’s Lifeline create availabilities that counter many of the implications of the digital divide by illustrating paths to technology procurement outside normalized methods. Programs like these could also correlate to high rates of cell phone usage sited earlier in this paper. Though homeless individuals face a variety of potential issues once they have procured a phone, the path to procurement, even if riddled with difficulties, does exist.

3.4 Enrolling Applicants Without Addresses

Homeless individuals lacking an address often face a variety of issues when applying for government services, including the FCC’s Lifeline phones. One such method of combating these application and enrollment issues is identifying a tertiary party to act as an intermediary. To combat enrollment issues non-profit companies often step in to mediate

¹⁸³ “Federal Register, Vol. 81, No. 15” (Authenticated U.S. Government Information GPO, January 25, 2016), <https://www.gpo.gov/fdsys/pkg/FR-2016-01-25/pdf/2016-01450.pdf>.

¹⁸⁴ “Lifeline Program for Low-Income Consumers,” accessed May 3, 2015, <https://www.fcc.gov/lifeline>.

and promote enrollment. Project Homeless Connect, active in San Francisco, hosts drop-in hours for application and assistance to “help [one] apply for a free [Lifeline] cell phone.”¹⁸⁵

Enrollment functions as the first hurdle in addressing access to technology tools. Monthly payment is a second issue over which other issues, including WiFi, are often layered. Despite these obstacles, studies report the percentage of homeless individuals who possess mobile phones remains relatively high.¹⁸⁶

3.4.1 WiFi Availability

Increased availability of ICT devices decreases the digital divide for homeless individuals.¹⁸⁷ Access to online resources is increasing but does not yet allow all urban citizens the same levels of online agency. While access to digital platforms illustrates one limitation to online agency, access to devices and WiFi present another. Limitations to online agency can be seen reflected in access to WiFi hotspots. Users without data plans forced to use WiFi have alternative options, but are limited in mobility, in comparison to users with data plans. Free WiFi access varies widely by location and tends to concentrate in areas of higher population densities. In addition each state and city has varied WiFi availability.

Despite the growing ubiquity of devices requiring Internet access to function to their full potential, availability of this resource is often determined by ability to pay. Mobile Internet access will thus be looked at as split into three tiers: data plans, password protected WiFi and free WiFi, each denoting a different capacity for mobility for users.

Data plans are typically purchased through a service provider like Verizon, T-Mobile or AT&T. Users connect to the Internet via cell phone networks that use towers and satellites to relay data to and from wirelessly enabled devices. In effect data plan users are able to

¹⁸⁵ “CA Lifeline Cell Phones Drop-in Hours for Application and Assistance,” *Project Homeless Connect*, accessed March 18, 2015, <http://www.projecthomelessconnect.org/events/ca-lifeline-cell-phones-drop-in-hours-for-application-and-assistance-2015-03-09/>.

¹⁸⁶ For more information, please see Information Communication Technology (ICT) Use Among Homeless Individuals: Synthesizing Mobile Data in section above.

¹⁸⁷ Studies supporting the increase in ICT among homeless populations can be found in Chapter 3 of this paper, Information Communication Technology Use Among Homeless Individuals.

access the Internet wherever they are able to make a phone call on their mobile device. These plans can be seen as costly, between \$35 and \$95 a month for unlimited data.¹⁸⁸

Contrasting data plans are WiFi-enabled devices that do not use cell phone networks but use radio waves and transceivers. WiFi-enabled devices connect to the Internet using WiFi access points—telephone lines, Internet routers, and television cables. This type of access is typically used in a coffee shop to access the Internet via a laptop. The range of access for WiFi varies widely, dependent on the number of access points connected to a wireless local area network or (WLAN). The general rule of thumb is that 24 GHz of band reaches up to 150 feet indoors. In addition accessibility can be diminished by physical structures. In effect the mobility provided via WiFi, while more affordable, tends to be less mobile than that of data plans in many cities including Honolulu.

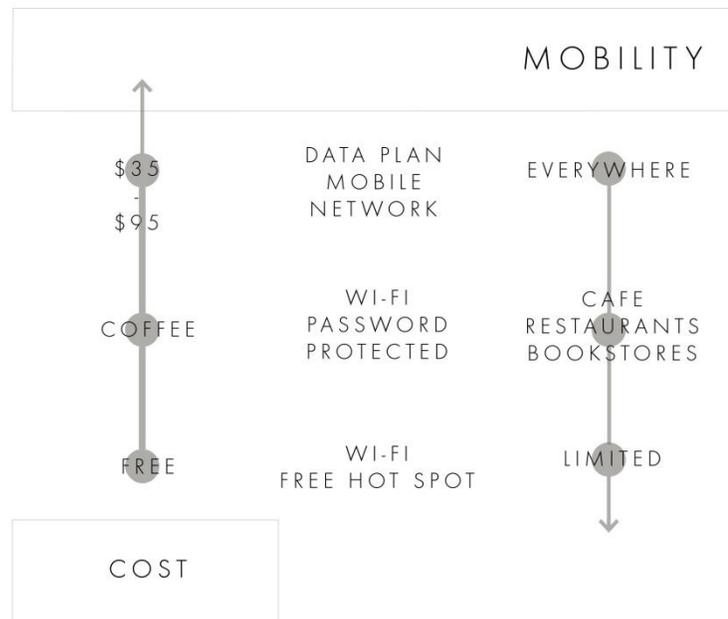


Figure 13 Internet Cost and Mobility

WiFi access can be understood as split into two categories: free WiFi hotspots and password-protected access. This differentiation is important as it dictates who is able to use

¹⁸⁸ Jon Brodtkin, "AT&T Urges Unlimited Data Customers to Give up Plans, Raises Price by \$5," *Technology Review, Ars Technica* (December 1, 2015), <http://arstechnica.com/gadgets/2015/12/att-urges-unlimited-data-customers-to-give-up-plans-raises-price-by-5/>.

the WiFi access point, as well as what costs are incurred. Free WiFi¹⁸⁹, is where anyone can access the Internet provided they have a capable device. By contrast password-protected WiFi access points regulate entry with password requirements. These are often used by stores, restaurants and private companies who prefer users make purchases in order to access their WiFi.

Wireless Internet access can be viewed as having increased costs that coincide with increased mobile capabilities. Data plan holders are able to access free WiFi hotspots and are more likely to be able to afford luxuries like Starbucks coffee, providing them access to password-protected WiFi. This is the most costly option; free WiFi by contrast provides users the least amount of mobility in their movements throughout the city. One outlier to this generalization is that some cities are providing areas with large free WiFi swaths throughout the city.¹⁹⁰ While this isn't the norm it does represent an experimental trend taking place in some cities.

¹⁸⁹ Chapter 6 contains a map of free WiFi access in Honolulu as well as facilities which provide free computers and or printers.

¹⁹⁰ "25 Indian Cities to Get Free Public Wi-Fi by June 2015: News, India Today," accessed February 7, 2016, <http://indiatoday.intoday.in/technology/story/25-indian-cities-to-get-free-public-wi-fi-by-june-2015/1/407214.html>; Terry Schmidt and Anthony Townsend, "Why Wi-Fi Wants to Be Free," *Commun. ACM* 46, no. 5 (May 2003): 47–52, doi:10.1145/769800.769825.

Chapter 4 Narrative Typology

This paper challenges naturalized narrative contribution patterns through acknowledging the design digital gap as it contributes to schisms in online participation. In identifying deleted perspectives in cities and digital spaces, a picture of whittled narrative participation becomes elucidated. Though many urban planners have striven in specific instances for narrative inclusions in urban spaces, the rate of incorporation is being surpassed by narrative and identity deletions. This rate of deletion is increasing as the number of mediums citizens use to participate increases. With the growing ubiquity of mobile communication devices and use of mobile applications as a means of urban participation, many members of urban society are quickly becoming less visible in the communally created urban narrative. This paper borrows identity validation techniques from urban planners such as Jane Jacobs¹⁹¹ and Dolores Hayden,¹⁹² extending their methods into virtual mediums.

4.1 Types of Traditional Narration: Self-Narrated, Other-Narrated, Analog Narration, Digital Narration

For the purpose of this paper, narration will be split into separate types: “self-narration” and “other-narration.” Other-narration will exist as the recital of events as they are experienced by persons other than the recorder. Keeping this in mind will allow a more complete perspective of the persons illustrating the Invisible City. Many of the applications analyzed in the case studies are “other-narrated.” Self-narration will be used when

“Yet there is value in the snippety ‘slice-of-life’ data relay . . . [T]hey see the discursive content of action as something fundamentally fluid and unstable. Every articulation is unique and every different combination of people, space and time yields a set of actions with a somewhat different discursive implications.”

-Gowan 2010 discussing various methods of recording ethnographic data involving homeless participants

¹⁹¹ Jacobs, *The Death and Life of Great American Cities*.

¹⁹² Hayden, *The Power of Place*.

a story is in the first person or when data or a perspective is expressed by the person who functions as the “main character” or subject experiencing events.

The importance of whether the story is told in the first person as opposed to second person lies in the proximity of the storyteller to the experience. The strength of homeless individuals telling their own story is related to their ability to feel responsible for their own narratives. As a result, the following case studies will focus on who is doing the narration as well as what is being communicated and for what purpose.

The contribution of the three factors—the narrator, to whom the information is being conveyed, and the purpose—represents the vast difference in the resultant narration as recorded. In the urban narrative experience marked on the physical city, these differences are further affected by the space in which they are recorded, in other words the culture of the Invisible City.¹⁹³

As narratives are understood as self-narrated or other-narrated, they can also be understood as being digitally narrated or analog narrated. Newspaper articles written about homeless individuals, that do not include interviews would be considered *analog other-narrated* contributions to the communal narrative. Online 311 applications that enable normalized citizens to report homeless acts to authorities, discussed in Chapter 5, constitute *digital other-narrated* contributions to the communal narrative. *Analog self-narrated* contributions are illustrated by Dewey’s conversation with the author described in Chapter 2. *Digital self-narrated* contributions to the communal narrative could be a homeless individual hosting a blog where they discuss their experiences. By addressing the medium of narration, digital or analog, as well as who is doing the narration, self or other, increased nuances of the message can be conveyed.

¹⁹³ Godfrey, *Rewriting Homeless Identity*, 12.

NARRATION TYPOLOGY

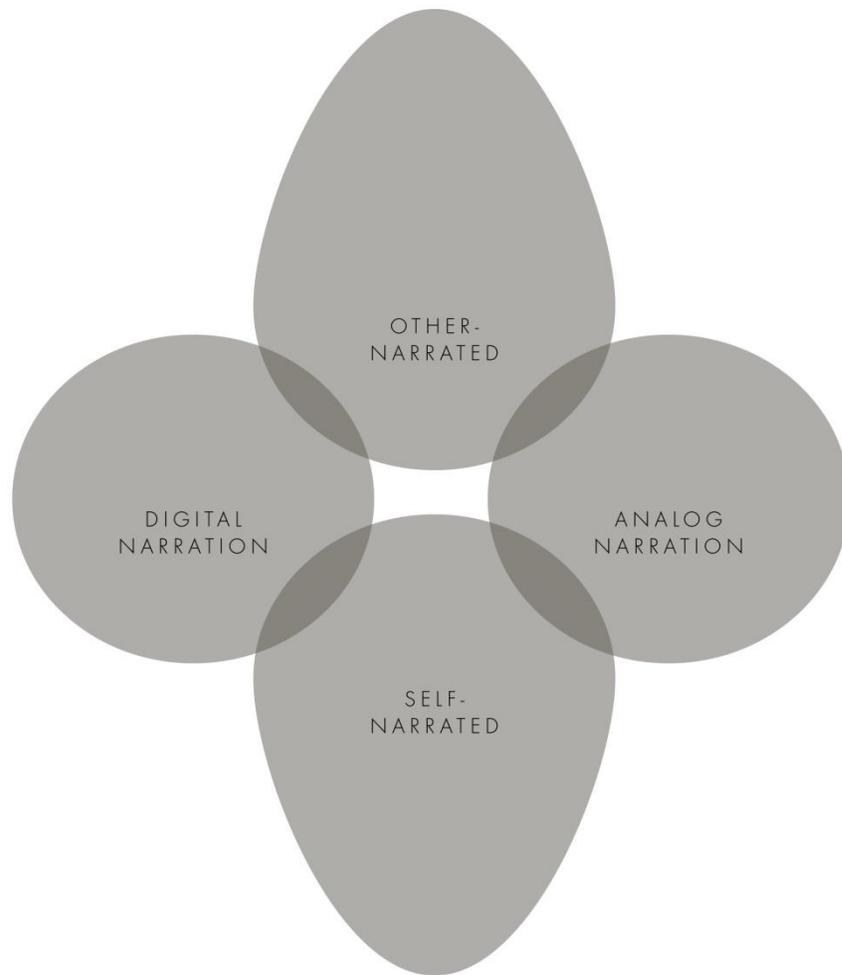


Figure 14 Narration Typology

In sorting through urban narratives, there exists a substantial void in analog as well as digital self-narration for homeless persons as represented in the Invisible City. This absence is obvious when compared to the way the normalized urban dwellers, or non-homeless persons perceive the Invisible City. Those participating in the creation of the urban narrative have very similar perspectives, thus creating a one-dimensional urban narrative. The majority of *Analog Self-Narration* offered by homeless individuals is contributed largely through

conversation, newsprint and interactions, constituting a disproportionately small voice compared to their time spent occupying urban spaces.

Understanding the implications of cities on the perspectives shared, creates an ideal for exploring the importance of personal identification within specific spaces. The socio-spatial implication of living disenfranchised in Honolulu has vast differences in comparison to one living disenfranchised in New York City. The dissimilarities between a homeless person living in Honolulu and one living in New York are as different as two normalized citizens living in New York in comparison to Honolulu; however, due to homeless individuals' absence of self-narrated contributions, these homeless narratives are often other-narrated to be identical.

In looking deeper into different applications designed for specific homeless individuals, a noticeable lack of emphasis on the respective culture and city of the homeless individual was observed. The lack of acknowledgment given to location, as well as narrative individuality, contributes to the construction essentialist narratives for many homeless individuals. These one-dimensional depictions of homeless identity as well as collective experiences, use a single essentialist image to mark homeless people portrayed in the Invisible City.

However, by analyzing narrative mobile applications through case studies, differences and similarities in reporting methods will be considered as they function to widen or shrink narrative contribution gaps in the Invisible City. Each mobile device and its function within each city allow the case studies to show the range of design solutions and how they are applied based on cultural and land boundaries.

4.2 Narrative Inclusion Through Interviews

Research articles recording homeless interviews expressing a desire to be better understood as a means of increasing social inclusion, social cohesion, and social harmony, have been discussed at length in social work circles.¹⁹⁴ But they still lack adequate incorporation in

¹⁹⁴ Urmi Jani, "A Qualitative Analysis of Homeless Women with Children in Transitional Housing: What Are Their Needs" (Philadelphia College of Osteopathic Medicine Department of Psychology, April 2011),

many cities. Ideas of increasing integration are analyzed through homeless peoples' interviews as they articulate the desire to be included in communities. In-group incorporation of homeless individuals into communities is examined as they can use homeless narrative inclusion to combat the negative impacts to the previously listed social structures, while reducing homeless individuals' disenfranchisement. The examined interviews then function to illustrate how increased inclusion can create changes in the community, while also decreasing stigmatization. The following social structures will be shown as they contribute to overall community health, as well as aid homeless individuals.

Social Cohesion is defined as the motivation of members of a society to work together with one another to increase overall survival and success. Evidence is growing that societies with larger inequalities in the distribution of income and resources are unhealthy for all members. It is proposed that large-scale inequalities are associated with the breakdown of social cohesion that leads to increased fear and uncertainty for members of that society.¹⁹⁵

Social Inclusion is defined as qualities that enable people or communities to participate more fully in society and is contrasted against "social exclusion." Social exclusion is defined as having equal access to services, facility resources, power, and opportunity.

Increases in the population of out-groups or homeless individuals have been shown to escalate divisions within the community.¹⁹⁶ This can be seen in the establishment of in-groups and out-groups,¹⁹⁷ or an "us and them" dichotomy. If a family experiences a sudden tragedy, members of the community gather around to provide help and support—this is an example of social inclusion. By contrast, in that same community out-group members or individuals living on the streets, possibly as a result of tragedies, are often aided less

http://digitalcommons.pcom.edu/cgi/viewcontent.cgi?article=1193&context=psychology_dissertations; Michelle Sveiven Smith, "Necessity Not Choice: Worker and Homeless Adult Perspectives on Shelter Usage," MSW Clinical Research Paper, Master of Social Work Clinical Research Papers (St. Catherine University, University of St. Thomas, May 2015),

http://sophia.stkate.edu/cgi/viewcontent.cgi?article=1523&context=msw_papers; Jim Sands and Jill Atkey, "Understanding How Homelessness Affects Us All" (Social Planning & Research Council of British Columbia), March 2007),

http://theatreforliving.com/past_work/after_homelessness/KitchenTable_Guide.pdf.

¹⁹⁵ Richard G. Wilkinson and Kate E. Pickett, "Income Inequality and Population Health: A Review and Explanation of the Evidence," *Social Science & Medicine* (1982) 62, no. 7 (April 2006): 1768–84, doi:10.1016/j.socscimed.2005.08.036.

¹⁹⁶ Sands and Atkey, "Understanding How Homelessness Affects Us All."

¹⁹⁷ Giddens, *The Constitution of Society*.

immediately due to social isolation.¹⁹⁸ One homeless participant interviewed describes this situation: “People need support so they can make their way off the street.”¹⁹⁹ He continues:

There is a nurturing that people need to overcome things. For some people it's been so long since they've been nurtured. That why programs . . . are good because people can come and see how others behave and interact. The environment creates a community. The people are very, very accepting. It doesn't matter who you are; they seem to really care.

–Homeless individual interviewed at a community breakfast in British Columbia²⁰⁰

Such descriptions by homeless individuals illustrate a desire to be socially included. This is not to say that they would like to participate in society in a traditional manner but that they suffer feelings of exclusion as a part of being a member of the out-group. Others who stated that they wanted to feel included recounted that preconceived notions among normalized citizens often stood as an impediment to inclusion.

Social Harmony is defined as a group's or community's ability to interact in a pleasing or satisfactory manner. It can be affected by conflict over public space. These issues are often incurred in the homeless narratives reviewed in this chapter. Conflicts over community spaces increase as large members of the community are left without “private” space. In many of the narratives, individuals shared how they felt these negative perceptions stigmatized them. Research interviews indicate that feelings of mistreatment and inharmonious or negative interactions with non-homeless individuals and service providers encourage homeless individuals to isolate themselves or utilize risky shelter alternatives in order to avoid stigmatization.²⁰¹

Similar results were noted in interviews conducted by the author as participants discussed spatial inequalities that contributed to feelings of social disharmony among interviewees.

¹⁹⁸ Sands and Atkey, “Understanding How Homelessness Affects Us All.”

¹⁹⁹ Ibid., 3.3.

²⁰⁰ Ibid., 8.

²⁰¹ Smith, Michelle Sveiven “Necessity Not Choice: Worker and Homeless Adult Perspectives on Shelter Usage,” 65.

“You know, they [police in the area] allow them to sleep over there but not us,” stated another individual who stayed regularly in Honolulu’s Aala Park.²⁰² There was a repeated feeling of “them and us” as participants spoke of their experiences being treated differently than non-homeless individuals. One homeless individual, interviewed in 2009, stated the following:

All of us need to be educated about homeless people, so that we don’t stereotype them. When you interact with homeless people you learn to be more compassionate and understanding. The conflicts in communities come from the assumptions we have about others.

—Homeless individual interviewed at a community breakfast in British Columbia²⁰³

Each of the research documents suggests various ways to increase inclusion in the communal narrative. The commonality between the interviews analyzed is the recognition of individual social needs to feel included. In many instances, these needs were not verbalized in terms of “I want to feel a sense of social inclusion,” but instead with voices like the following. “The community sees the negative and that’s all they see. They don’t see the human side—the fact that they’re still people,” as shared by another homeless person interviewed at the community breakfast in British Columbia.²⁰⁴

These statements and similar commentary have been collected through interviews surveyed by the author, as well as interviews conducted by the author. The mediums utilized to increase narrative inclusion among interview reports vary case by case.

One of the interviewers composed a “Kitchen Table Discussion Guide” designed to be distributed among non-homeless populaces to incorporate out-group narratives into everyday understandings.²⁰⁵ Another interview report suggests advocacy groups speak out more on behalf of homeless individuals to increase their sense of “dignity” and

²⁰² Aala Park interview with homeless female, voice-recorded interview by the author, January 23, 2016.

²⁰³ Sands and Atkey, “Understanding How Homelessness Affects Us All,” 9.

²⁰⁴ Ibid., 3.

²⁰⁵ Sands and Atkey, “Understanding How Homelessness Affects Us All.”

understanding among non-homeless individuals. This report saw increased advocacy group activity resulting in more affordable housing and access to shared community resources. This dissertation does not propose solutions to end homelessness as a result of greater narrative inclusion but that there should be a fuller understanding of cities and those who use them, which can facilitate greater social inclusion for homeless people, along with harmony and cohesion.

4.2.1 Other-Narrated Contributions of Homeless Identities in Urban Spaces

By focusing on the use of mobile applications to contribute narratives to the Invisible City, digital mediums are proposed in place of traditional analog methods of narrative contribution to increase inclusion. Analog narrative urban contributions, such as newspaper descriptions of homelessness or in-group physical communication, stand in contrast to mobile phone applications that can be used to record homeless experiences. Case studies in Chapter 5 of mobile phone applications are investigated as they provide potential to open new, unexplored mediums of participation for homeless individuals.

Existing means of American homeless participation within the Invisible City span a wide array of reporting systems proposed to quantify, record, and survey homeless individuals' specific situations. However, each method brings its own particular strengths and weaknesses. The following will be used to discuss the strengths, weaknesses, resource costs, accuracy of each method, and who is conducting the reporting for the established data-gathering methods.

Data gathered on homeless individuals serves to narrate their experiences and contributes information on the demographic then shared through in-group's communal narrative. Information gathered using the following methods is commonly collected by state or federally funded agencies and is generally used for (1) service planning, (2) demonstrating a need for resources in the Continuum of Care (CoC) application, (3) raising public awareness regarding the issue of homelessness, (4) accurately measuring, and identifying the needs of populations that are the most challenging to serve (chronically homeless individuals), and (5)

measuring performance of organizations serving homeless individuals and reducing homelessness, particularly the chronic homeless.²⁰⁶

Of methodology addressed in the information-gathering techniques, none of them are built with a concentration on gaining direct input from those who are homeless so as to alter their respective circumstances. The information-gathering techniques seek to increase inclusion of homeless individuals in the Invisible City by quantifying them, expressly to “raise public awareness,”²⁰⁷ which focuses on normalized individuals’ perceptions and awareness of the homeless demographic, but does not necessarily increase empathy or circumstantial understanding of the wide-ranging experiences of the homeless population. In looking at new technologies, such as mobile applications and blogs created to share homeless individuals’ stories, information harvesting that addresses a greater diversity of data in the form of narratives is produced.

4.2.2 Point-in-Time Counts—“Street Counts”

Point-in-Time counts, nicknamed *street counts*, coordinate large groups of individuals to walk through areas, keeping a tally of the number of people who are unsheltered or in one of the five housing types: emergency shelter; transitional housing; rapid re-housing; safe haven; and permanent supportive housing. This is traditionally one of the most common information-gathering techniques, and does not involve the homeless individual contributing any information, marking it as analog other-narrated. As a result the information gathered is strictly quantitative and does not address needs, situation-based components or allow those being counted agency over their recording.

Point-in-Time (PIT) counts, which had their methodology standardized by the United States Department of Housing and Urban Development (HUD), is traditionally one of the most common information-gathering techniques. During area walkthroughs, regions are split into

²⁰⁶ Jennifer Turnham, Erin Wilson, and Martha Burt of the Urban Institute, “HUD’s Homeless Assistance Programs: A Guide to Counting Unsheltered Homeless People,” 2003 McKinney-Vento Technical Assistance Cooperative Agreement (HUD, October 2014), <https://www.hudexchange.info/onecpd/assets/File/Guide-for-Counting-Unsheltered-Homeless-Persons.pdf>.

²⁰⁷ Ibid.

smaller districts and sub-districts; then people, generally volunteers, physically move through the spaces counting homeless individuals. This information is recorded and combined to create maps of homeless population density. The three types of street counts include direct counting of homeless individuals, counting with a survey or interview portion, and counting based on location where homeless individuals gather, for example social service agencies. Some of the information collected traditionally feeds into a national Homeless Management Information System (HMIS) database to be discussed in the following section.²⁰⁸

Issues experienced counting homeless individuals vary widely and will be discussed below. Despite issues involving the high likelihood of inaccuracies HUD recommends the use of PIT counts in order to procure federal funding.²⁰⁹ Many agencies that conduct PIT counts are concerned with aspects of homeless, not necessarily counting the number of people who are homeless. Their involvement is a result of a HUD requirement to provide quantitative information as to who are homeless in the service agencies' annual CoC report. These reports are required by HUD for service agencies to apply for HUD's Homeless Assistance Grants. All PIT counts accepted by HUD's CoC must follow HUD's PIT Count Minimum Standard, which sets out the legal requirements of the count.²¹⁰

Oftentimes, the strong focus on enumerating individuals as opposed to gathering information more directly applicable to the counting agencies' needs, leaves local stakeholders, generally volunteers, lacking in information that would directly aid the agencies' mission. Information gathered through PIT counts may function to fulfill an organization's CoC requirements but often does not increase useful information for the gathering agencies based on their respective goals. Data solely aimed at enumerating

²⁰⁸ "2014 HMIS Data Standards; Data Manual Version 3.1," September 2015, <https://www.hudexchange.info/resources/documents/HMIS-Data-Standards-Manual.pdf>.

²⁰⁹ HUD Homeless Assistance Program: A Guide to Counting Unsheltered Homeless People, second revision, January 2008, 12.

²¹⁰ Lauren Dunton, Tom Albanese, and Tracy D'Alanno, "PIT Count Methodology Guide" (U.S. Department of Housing and Urban Development's Office of Community Planning and Development, September 2014), <https://www.hudexchange.info/resources/documents/PIT-Count-Methodology-Guide.pdf>.

homeless individuals often creates difficulties in enlisting help from groups and agencies who may otherwise commit time to the cause so important to the collective city.²¹¹

Challenges of conducting PIT counts includes the following: the substantial amount of energy required to organize and carry out these interactive events, determining how to present data in a way that is useful to local agencies, such as local shelters or service agencies, and deciding on ways to limit encountering and, thus, tallying the same person more than once.²¹² One of the greatest challenges is miscounting, as it leads to incorrect data. HUD notes the tendencies of organizers to feel that people who have taken on the role of counters might have “missed” some individual resulting in skewed results. Accuracy of reports is dependent on the ability of counters to move into recognized areas where homeless people reside in order to come in contact with homeless individuals and to take a count as quickly as possible before each respective person moves to another location.

To ensure data reliability, some cities have created “shadow counts.”²¹³ Shadow counts are conducted by non-HUD-related volunteers who visit locations designated for assessment and conduct their own independent counts to cross-reference the data obtained by HUD. Oftentimes smaller cities do not have shadow counts available to verify the HUD counts. For example, New York City conducts shadow counts, whereas Honolulu has difficulty fielding enough individuals to hold similar verification measures.

4.2.3 Homeless Management Information Systems (HMIS), A HUD Proposed Future

Homeless Management Information Systems (HMIS) are large bodies composed of arrogate data gathered by independent agencies contributing to HUD’s Continuum of Care (CoC).

²¹¹ HUD Homeless Assistance Program: A Guide to Counting Unsheltered Homeless People, second revision, January 2008, 5.

²¹² *Ibid.*, 10.

1.1.1.1.1 ²¹³ How Many Street Homeless? NYC’s Tallies Leave the Question Open. Ricci Dipshan | October 13, 2015, <http://citylimits.org/2015/10/13/how-many-street-homeless-nycs-tallies-leave-the-question-open/>.

This program, which was employed as a congressional mandate to better understand the phenomenon of homelessness, was launched in 2003.²¹⁴

Locally, administered data system records clients/homeless individual's data so HUD can better understand the size, characteristics, and needs of the homeless population at multiple levels. Information gathered locally is fed into larger databases called Homeless Information Management Systems that assemble data derived nationwide to discover national trends. The information required of all HUD-funded CoCs, is called Universal Data Elements and includes a client's name, social security number, date of birth, ethnicity and race, gender, veteran status, disabling condition(s), residence prior to program entry along with zip code or last permanent address, program entry date, program exit date, and information produced specifically by and for the HMIS—unique personal identification number, program identification number, and household identification number. Other information gathered by CoCs, which varies by service organization, makes up what is called Program Specific Data Elements.²¹⁵ If this information cannot be obtained from the homeless individual it is taken from case managers or case records or is observed by staff.

The information gathered and fed into the HMIS then becomes a representation of the identities of the homeless individual's participation in the given organization serving the homeless. As this information is combined with other individuals' Universal Data Elements it creates a larger image of the homeless community that is then represented in the form of statistics regarding specific location-based data sets. This information, removed from their control, is then used to represent the homeless demographic in analog space. Many advocacy groups have cautioned against this type of system as they feel it is “highly privacy-invasive, and create[s] a system of tracking similar to those imposed on individuals convicted of crimes.”²¹⁶

²¹⁴ “In The Matter of Homeless Management Information Systems (HMIS) Data and Technical Standards Notice” (Before the Department of Housing and Urban Development Washington, D.C., 20410, September 22, 2003), <https://epic.org/privacy/poverty/hmiscomments.html>.

²¹⁵ “2014 HMIS Data Standards; Data Manual Version 3.1.”

²¹⁶ Hoofnagle, Chris Jay, “In The Matter of Homeless Management Information Systems (HMIS) Data and Technical Standards Notice.”

Both Program Specific Data Elements and Universal Data Elements are protected by HMIS's two-tiered protection program. CoC providers are barred from disclosing an individual's identifying information to the public, uncombined. This commitment to individuals' privacy is proposed to minimize damage to the clients while also preventing gleaning of information by outside agencies of unlinked CoCs. Data Elements can be exchanged by participating CoC's organizations through the HMIS program, which has prompted some whistle-blower to draw attention to potential dangers of the system.²¹⁷ Other safeguards and security elements include following Fair Information Practices and Protected Personal Information practices. Both of these practices remove control of personal information from the client, thus removing agency over the user's identity as information can be passed from CoC to CoC.²¹⁸

Information gathered by HMIS is combined and shared dependent on regional or CoC groups that merge the data to gain a larger, but less detailed, picture of homelessness. The data-driven image created by overlapping many individuals' data into one large communal picture exists as the pixelated narrative of homeless experiences. This intricate data, which is not directly accessible to those not associated with CoCs, is composed of a multitude of individual data points, geographically located but lacking any self-narrated contribution.

The inaccessibility of this information to the public because of its arrogate state and its intrinsically private nature as it contains information like social security numbers and physical disabilities, makes it of substantially less use to non-CoC urban planners, architects or application designers. These are individuals who may want to use the information to make better informed urban design decisions, or design applications for particular demographic needs. This is not to argue that the information collected in the HMIS should be public, but that it is one of the few digital identity contribution mediums for homeless individuals.

²¹⁷ Electronic Privacy Information Center, "EPIC—Homeless Management Information Systems and Domestic Violence," accessed February 11, 2016, <https://epic.org/privacy/dv/hmis.html>.

²¹⁸ Ibid.

Instead, the information helps the CoC system trace each individual participant through his or her experiences within the system, but does not create a clear illustration of each respective narrative. Then, the HMIS system maps each individual's experiences as he or she interacts with HUD-funded organizations. Additional information in the form of Program Specific Data Elements, is added by different agencies dependent on what each agency deems necessary for each individual. This information may or may not be shared between agencies, and there are strong opinions as to its usefulness to each homeless individual as he or she passes through the system.

By understanding traditional means of data gathering and HUD's perceived future involvement with HMIS systems, designers are able to look deeper into the potential of data gathering through alternative methods. The importance of digital devices in understanding homeless individuals in the urban context, is still a relatively unexplored field. The following digital mediums will be examined as they compose a new urban landscape of contributions of homeless narratives to the Invisible City. Examining how the use of digital devices allows individuals to function in urban space, case studies will allow further exploration regarding how participation through these mediums ties together the effects of space and how the space effects individuals through these mediums. The functions of these mediums aim to gather information similarly to HMIS, but to be shared open sources. The danger of this could be the disclosure of identity markers of homeless individuals to the general public. While the openness of the information has the intrinsic value of allowing designers to provide for homeless demographics as they mark their experiences in space, it also creates issues for homeless agency over their identities.

By understanding narration of these identities as it occurs in two of four different typologies, analog or digital and self-narrated or other-narrated, the effects of the narrative typology on the communal narrative can be understood. By using digital self-narrated methodology, homeless individuals can be granted the opportunity to add their experiences to the communal narrative by becoming agents of their identity. The homeless individual with the

agency of a digital self-narrated identity can then share their experiences to promote cohesion, inclusion, and social harmony as they deem desirable.

Chapter 5 Case Studies Digital Applications Designed for Homelessness

Case studies of currently utilized mobile applications designed for homeless individuals, are examined to see how they are integrated regarding issues involving urban homelessness. The mobile applications' use is analyzed to discover if they attenuate or promote homeless narrative integration into communal narratives. Digital applications' potential to add to existent homeless infrastructure is creating a space for methodological advancements that are not currently being considered by many urban planners and architects. Advancing digital mediums are being looked at to provide a non-traditional means of inclusion through gathering open-source information, thus increasing accessibility to lay programmers, designers, and urban planners.

Of digital mediums examined, many of the creating teams are composed of individuals interested in the issues surrounding homelessness, but are not traditional non-governmental organization (NGO) activists or staff members. The depth and variety of designer backgrounds, seen in the application-producing staff, can be attributed to the accessibility of information, resulting in an increased number of individuals working together to solve urban homeless issues. Many of the designers are not architects, urban designers, NGO activists, or HUD workers, rather they are people with a shared goal of urban betterment through increased overall quality of life, as it is provided for all urban citizens including homeless individuals.

In an effort to clarify the degree to which homeless individuals are represented in urban digital environments, an analysis style derived from architectural case studies is used to examine various digital mediums. The value of this grading method is its interest in spatial qualities and informational bridging characteristics. As architectural case studies were initially

designed to bridge gaps between practice and academia, these case studies aim to develop a new body of knowledge regarding the practice of recording interactions in urban spaces as it is affected by digital mediums. These case study methods have been historically used for a variety of built project analysis, with the goal of providing a context drawn from the reality of individual projects, for the ongoing instruction of practitioners and as a method of pedagogy.²¹⁹ The examination method formed from a merger of different architecture rubrics used for the case studies has been selected and combined from multiple methodologies to gain a thorough understanding of the digital applications investigated.²²⁰

The most common type of mobile application, designed with homeless individuals as its key target audience, addresses each homeless individual's ability to access key physical resources. Though these applications are not common and are not available in many cities, they are becoming increasingly more accessible. In fact, of the mobile applications designed for homeless individuals, the ones addressing access to physical resources are, by far, the most common.²²¹ These mobile applications are run through different agencies, including HUD²²² and Link SF,²²³ and focus primarily on connecting the users to surrounding resources in their respective vicinity. This information is often gained through connecting the user's location via Geographic Information System (GIS), which is often linked through program mapping software like ArcGIS, which then feeds through Github. This information is able to be modified by the original producer or other participants or programmers of Github who would like to participate and are admitted by the program administrators.

²¹⁹ "Case Studies in the Study and Practice of Architecture: Development and Submission Checklist," Case Studies in the Practice of Architecture (1735 New York Avenue, NW, Washington, D.C., 20006-5292: The American Institute of Architects, 2001), <http://www.calpoly.edu/~sede/pdf/AIAcasestudy.pdf>.

²²⁰ "How to Conduct a Case Study? Architecture Student Chronicles," December 21, 2011, <http://www.architecture-student.com/case-studies/how-to-conduct-a-case-study/>; National Institute of Building Sciences, ed., "Case Study Template Instructions." (National Institute of Building Sciences), 2015, accessed November 28, 2015, <https://www.wbdg.org/references/casestudies.php>; "Case Studies in the Study and Practice of Architecture: Development and Submission Checklist."

²²¹ Jim Horner and Joshua Temkin, *Qbase*, Federal Project Reach Winner (Reston, VA, 2012), www.qbase.com/case-studies/homeless-reach; Kimberly McCollister, *Link SF* (San Francisco: Zendesk, 2013), <http://www.link-sf.com/>; US Department of Housing Development, *HUD Resource Locator*, version 1.0.8, Android 4.0.3 and up, English (US Department of HUD, 2015), https://play.google.com/store/apps/details?id=resources.hud.gov.resourcelocator_android&hl=en.

²²² US Department of Housing Development, *HUD Resource Locator*.

²²³ Kimberly McCollister, *Link SF*.

The most common recourse connections established for homeless individuals through the applications are bed availability or shelter locations, medical facilities, soup kitchens or food-providing shelters, and hygiene locations. Currently the minority of these applications update data based on the availability of recourses in real time. This means that an individual may observe, via his or her device, that there are a specific number of beds at a location, only to visit the location and find the service is closed or all of the beds are taken. Other applications provide a more expansive list of resources available in the vicinity. For example, Project Homeless Connect, based out of San Francisco, provides access to HIV/STD testing, wheelchair repair, mental health assistance, employment counseling, and addiction recovery services.²²⁴

Another prime example of mobile applications designed to connect homeless individuals to surrounding physical resources is the 2012 Reach Project, sponsored by the U.S. Department of Veteran Affairs (VA). Within this project, the VA, a federal agency, partnered with HUD to form the VA Center for Innovation (VACI). Focused specifically on veterans' issues, VACI sought to connect homeless individuals to various resources in the surrounding area using GPS tracking.²²⁵ In order to produce a large number of products quickly, the group held a competition. This competition allowed for a decrease in their overall financial commitment to the projects, as the participants were not paid but were volunteers based on their desire to create a product that benefitted homeless individuals, while allowing participants to compete for prize money. The VACI competition format resulted in the production of a larger number of virtually designed products than would have been procured if the agency had simply hired contracted groups and paid them the same amount offered as prize money.

The project guidelines, as set forth by the VACI, specified a need to connect users with bed availability, health services, legal assistance, and employment and crisis resources specific to a

²²⁴ *Project Homeless Connect*, version 2.7.0, Android 4.0 and up (San Francisco, CA: Project Homeless Connect, 2015), <https://play.google.com/store/apps/details?id=phc.android&hl=en>.

²²⁵ "Project REACH Mobile App Challenge," *Project REACH Mobile App Challenge*, accessed April 23, 2015, <http://reachthehomeless.challengepost.com/>.

particular locality.²²⁶ All of the resources specified by the project guidelines addressed physical resources; however, they overlooked social network resources.

The federally funded 2012 competition, which awarded \$25,000 split between 5 teams for the completion of each of their projects, aimed at increasing digital information design for homeless veterans. The competition's products function as guiding foundations for other virtual designers as they shed light on the underdeveloped platform for homeless individuals. Following the Reach Project awards, programs like Hacking to End Homelessness out of Seattle, Washington, came on to the coding stage. This collective and programs like it were founded by groups of programmers who identify a design void—an underserved populace—and collaborate, unpaid, to attain digital solutions to analog homeless issues.²²⁷

5.1 Mobile Application Analysis Applications through the Architect's Lens

The following case studies of mobile applications, using architectural based categories²²⁸ function as a road map of previously used methods of homeless narrative integration. They have been selected for their innovativeness, uniqueness, or ability to showcase the potential of this underdeveloped medium. It can be argued that not all of the applications selected for the cases studies aid homeless individuals, but they do showcase unique experience-tracking abilities that are used to suit the programmers' aims. The mobile application case studies can be seen in contrast to the broad reach of cities' 311 sites. An example of such a site is the NYC 311 site, which functions to report all happenings within the five boroughs of New York City.

For the purpose of the following case studies the examination of applications addressing access to specific physical resources, as opposed to recording the experiences of homeless individuals, has been omitted. Their omission is the result of increasing production and inclusion in many cities. The case studies have been selected due to their being the only

²²⁶ "VA Center for Innovation," Federal Information, *U.S. Department of Veteran Affairs* (November 12, 2014), <http://www.innovation.va.gov/program-reach.html>.

²²⁷ @hack2end, "Hack to End Homelessness—Seattle, WA."

²²⁸ Kachchi, "How to Conduct a Case Study?"; National Institute of Building Sciences, "Case Study Template Instructions"; "Case Studies in the Study and Practice of Architecture: Development and Submission Checklist."

mediums of their type or because they address narrative inclusion in a unique or uncommon way.²²⁹

5.1.1 We Are Visible²³⁰

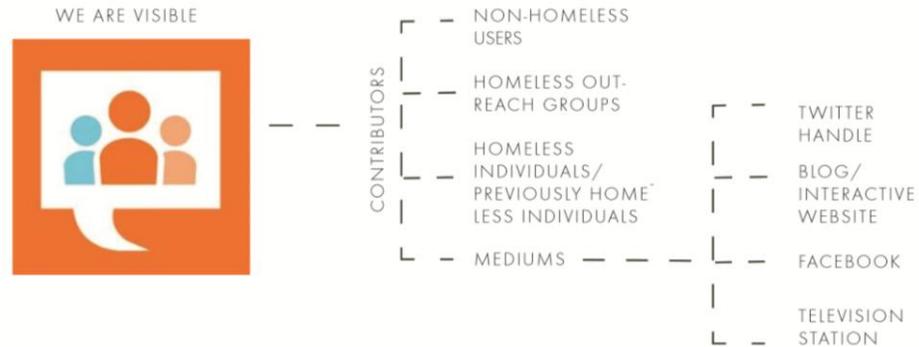


Figure 15 We Are Visible Contributors & Outputs

- a. Location of Use: The application exists as a digital community that uses Twitter handles to create a space for homeless people to share experiences. The medium is primarily restricted to the virtual space, but it does provide a geo-tagging feature. To use this feature, it must be turned on inside the application. The vast majority of We Are Visible (WAV) users do not utilize this feature inside the narration application.
- b. Size: As of December 2015, more than 6,000 people follow the Twitter feed, which contains more than 9,000 tweets from various users.²³¹
- c. Medium/Project Type: The website uses a mobile version of WAV software with which homeless individuals are able to participate in safe, curated, online discussions. The amount of disclosure, visibility, and access to information is controlled: (1) by the homeless individual, (2) by the curator, and (3) by creator Mark Horvath. Feeds are then displayed through the secondary handle “@weareinvisible” in an effort to

²²⁹ The selected case studies were the only ones found to address narrative inclusion during expansive searches extending over a four-month period in the fall of 2015.

²³⁰ Mark Horvath, @hardlynormal et al., *We Are Visible: A Home Online for Those without One*, version mobile version of WAV peer support network, Operated through Twitter (Digital Community, n.d.), <http://wav.dotcreate.co/>.

²³¹ Mark Horvath, @hardlynormal, “@We Are Visible,” Twitter account that connects to feeds from *Twitter*, accessed November 29, 2015, <https://twitter.com/search?q=%40WeAreVisible&src=typd>.

broaden understanding of homeless narratives. The We Are Visible brand, in charge of the self-labeled community organization, has since spread its reach into multiple social media spheres in an effort to extend vocal capacity.²³² These mediums now include Facebook, LinkedIn, and an innovative storytelling organization called Invisible People. For the purpose of this case study the WAV software and twitter feed integration will be concentrated on.

- d. **Delivery Method:** The narratives are delivered through two main mobile application-based platforms. The first, through the WAV program, operates to create a community with user terms and agreements. These agreements include “Be positive. Respect everyone. Don’t be a jerk, a troll (Internet slang describing a person who deliberately provokes emotionally based confrontation), or a grouch. Have fun.”²³³ The secondary platform is a stage through which debates, conversations, and interactions on the We Are Visible site can be voyeuristically viewed without participating in the digital network on Twitter. The dual system of contribution and viewing through different platforms represents a level of security for the contributors, as they are able to protect their identities while contributing to a communal forum. Twitter, the community forum, is un-segregated and allows individual narrative contributions to be collected with specific location and identity ties removed.
- e. **Costs:** The service is free and requires membership through either service—Twitter or We Are Visible. Using the Twitter account, contributors are unable to add their experiences to the We are Visible feed.
- f. **Architect/Designer/Team:** The design group is headed by Mark Horvath. His team facilitates conversations to maintain adequate levels of appropriateness as well as introduce commentary to spark discussion about both the WAV and Twitter interfaces. The mobile application, which displays homeless narratives as they play out in real time, was begun by Horvath who, at the time of WAV’s conception, was

²³² “We Are Visible,” Community Organization Social Media, *Facebook* (n.d.).

²³³ Mark Horvath, @hardlynormal et al., *Terms: We Are Visible: A Home Online for Those without One*, mobile version of WAV peer support network, operated through Twitter, We Are Visible (Digital Community, n.d.), <http://wav.dotcreate.co/node/13>.

homeless. Horvath started the project when he had been homeless for two years beginning in 2008, and decided to curate “homeless stories,” as he calls them. From there, Invisible People was born. This project later evolved through Seattle’s Hack to End Homelessness project into what is now the We Are Visible software.

- g. Reporter: Homeless individuals as well as housed individuals are able to communicate in peer relationships and interact in a digital medium that allows them to choose to either cloak or expose their housing situations. This environment is one of inclusion developed with the aim of creating a safe digital place for the homeless, and non-homeless, communities. The We Are Visible vision statement is as follows.

We Are Visible is a peer network for the homeless community to help each other through social media and online peer-to-peer support.

- h. Patron: There are no financial beneficiaries related to the We Are Visible community groups.
- i. Goal/Product: We Are Visible is a product of the Hack to End Homeless project based out of Seattle, Washington. Hack to End Homelessness states its goal as the following—To build a social network for the homeless community, collect data on the causes and contributors to homelessness, visualize as well as mine the causes digitally, and improve and create application designs for these causes. Multiple diverse design teams at Hack to End Homelessness have created many products. The collective of groups, each designing separate virtual applications, gather on weekends to design applications aimed at addressing multifaceted homeless issues. Many of the products remain in their developmental stages.²³⁴
- j. Environment and Microclimate: Each of the different We Are Visible digital platforms has intrinsic characteristics. This is to say that the message gleaned by viewers of the Facebook page, has a different understanding of the information than the Twitter site. Like the materials used to construct a building, the materiality of the

²³⁴ “Hack to End Homelessness—Seattle, WA,” *Hack to End Homelessness*, May 2, 2014, <http://www.hacktoendhomelessness.com/>.

digital platform defines the application, its use and information gained. The case studies that follow only look at the medium of WAV application. This application, which contains two layers of identification fortification, the first layer being through the We Are Visible application, and the second being the Twitter application, combine to protect the identity of the homeless contributor. These separate applications, working together, can be seen as separate microclimates through which the information is passed. Each of the applications mutes some content while amplifying others.

- k. **User Behavior and Requirements:** Twitter users are likely to have pre-existing interest in the hashtags, individuals and events they follow, which has led them to follow the various feeds. In this same way followers of the We Are Visible application likely have a pre-existing interest in the topic of homelessness. The desire of the viewer to be involved in homeless narratives is illustrated in their drive to find and view the information. This site is one of the few that functions in this manner—to create a forum for collective sharing of the homeless experience in the digital realm. Behavioral supervisors use the We Are Visible user agreement, discussed previously, as well as the three layers of group moderators, to filter conversations that go against the user agreement.
- l. **Utility and Space Enhancement:** The application carries with it many of the same strengths intrinsically held by digital platforms. Visibility on Facebook provides a very strong public face as 71 percent of all adult Internet users have an account.²³⁵ Aspects of urban use may or may not be present in the Facebook interaction and are dependent on the information provided by the users. The We Are Visible Facebook page allows users to post directly to the page, but the majority of content is contributed by the moderator. This content is largely composed of re-posted articles the moderator feels affects the homeless populace. Due to the majority of contributors not including location data in their posts, this information is absent from the presented content. In contrast, Twitter provides a 140-character limit to

²³⁵ Maeve Duggan et al., “Demographics of Key Social Networking Platforms,” *Pew Research Center: Internet, Science & Tech*, accessed November 29, 2015, <http://www.pewinternet.org/2015/01/09/demographics-of-key-social-networking-platforms-2/>.

illuminate the user's feelings. This means of self-narration allows Twitter users to provide a more personally descriptive tweet that does not necessitate a response from other platform users.

- m. Form and Function: None of the We Are Visible platforms provide a strong urban digital intervention space. Although many of the platforms provide an area for spatially marking the experience, few of the users include this information in their contributions. This decision may be for security or for identification disclosure reasons. The result of the unmarked spatial experience is that there are few urban spatial markers of homelessness.
- n. Barrier Free Environment: Each of the We Are Visible digital platforms is available without financial investment.
- o. Socioeconomic Profile of User Group: In addition to facilitating the building of the online homeless community, We Are Visible does not restrict user interaction based on socioeconomic hierarchy. This means that any individuals who desire inclusion in the online community are permitted, so long as they uphold the boundaries set forth by the user agreements. The open-door policy could be seen as a liability, enabling non-homeless individuals to contribute negatively. Precautions are taken against negative input from non-homeless and homeless users by the presence of supervisory figures. Through moderators and regulations, as well as the group's initial intention of creating a "safe peer-to-peer digital space," peer monitoring is also activated.

5.1.2 Hacking the Conversation²³⁶

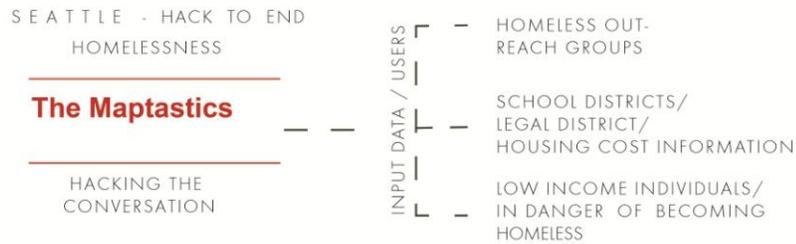


Figure 16 Hacking the Conversation Input & Users

- a. Location of Use: The application is based in Washington State. It is capable of analyzing data through state, county, legislative district, and school district. The spatial breakdown was determined to find affordable homes based on where one wants to live, while keeping in mind variable factors like the quality of education and the political atmosphere of the region. The target audience is not necessarily homeless individuals but low-income individuals, with the creators stating their aim is to prevent individuals and families in Washington State from becoming homeless.
- b. Size: Washington State, with varying degrees of coverage based on the information available through the county.
- c. Medium/Project Type: The website is currently available as an interactive mapping device for Washington State. The mobile application allows people to use GPS or to select a location within the state and see the transit score, school ratings, median income, median rental rate, industries in the area, and affordable housing opportunities.
- d. Delivery Method: The delivery method is a telephone application designed to keep families and individuals from becoming homeless. Hacking the Conversation designers wanted individuals moving through a city to be able to quickly gain information on the suitability of the area.

²³⁶ Ben Miksch et al., *Hacking the Conversation*, English (Maptastics, 2014), <http://www.hacktoendhomelessness.com/presentations/maptastics.pdf>.

- e. Costs: The data-accessing service is free for users. The site and mobile application also connects them to funding opportunities through Washington State’s Housing Trust Fund. This fund supports a wide range of projects aimed at serving low-income applicants, with the majority of their projects to date serving households with special needs or incomes below 30 percent of the area’s median income.²³⁷ As many homeless individuals are not positioned to move directly into the normal housing market, this makes residence mobility slightly more affordable. The cost of entry for the Washington State Housing Fund remains relatively high for homeless individuals; it positions itself primarily as an affordable housing and multi-family rental subsidy program. For many homeless individuals this option is out of financial reach.
- f. Architect/Designer/Team: The design team—The Maptastics—work in cooperation with Seattle’s Hack for Homelessness.
- g. Reporter: This application does not address narratives in terms of “self-reported” and “other-reported.” In this way, this application differs from other applications analyzed. This application was, instead, selected for its ability to show potentially affordable areas for homeless individuals, as they are mapped throughout the state of Washington. The result shows where people might be able to afford housing, while maintaining some of the lifestyles they have. For example, the application allows users to see affordable housing based on a particular school district. This function could allow the users to move to a more affordable location, thus avoiding homelessness while keeping their children in the same school. Hacking the Conversation worked to compile the aggregate information produced in association with Washington’s Housing Development Consortium, YWCA’s Firesteel program, the Low Income Housing Alliance, and Columbia Legal Services. The Maptastics then used the information available through the various mediums to compose location-driven data that can tell users where best to move dependent on what is

²³⁷ State of Washington Department of Commerce, “Washington State Housing Trust Fund,” State-run webpage, *State of Washington Department of Commerce* (Copyright 2012), <http://www.commerce.wa.gov/Programs/housing/TrustFund/Pages/default.aspx>.

most important to them, be it the trends of their legislative district or their school district.

- h. Patron: The sites use information from the Washington State Housing Trust Fund, which allocates money for affordable housing projects through a competitive application process.
- i. Goal/Product: The product goal is to create a map to be used by low-income individuals to find more affordable housing. In addition to finding more affordable housing, the backers of the application aim to connect prospective low-income users with funding resources based on their location. This means that if a specific county has monies allocated through the state to fund a specific type of housing, it will show in the application.
- j. Environment and Microclimate: The areas used for data segregation within the state of Washington are state, county, legislative district, and school district.
- k. User Behavior and Requirements: Users are not limited to those who are homeless, and access to the information is available to the public. The application backers, the Washington State Department of Commerce who runs the Washington State Housing Fund, uses the application to showcase affordable housing opportunities, targets anyone with special needs or income below 80 percent of the local median income.
- l. Utility and Space Enhancement: Although the interactive website is online, the application is still in development, and as of December 2016 does not have a link to the Washington State Housing Trust Fund application. The group, The Maptasitcs, discussed the next design steps as creating a link that allows users to jump from the mobile application to applying for the funding services. The development of this side of the application is important as well as difficult due to perpetually updating opportunities, requiring changes to programming steps. The importance of accuracy in the Washington State Housing Trust Fund application on the mobile application is due to the many ways a potential applicant can be rendered ineligible for housing services. If these ineligibilities are not addressed in the initial phases of the housing

application process time losses will likely be incurred on the part of the low-income users.

- m. Form and Function: The mapping system provides a simple, straightforward means to attain useful housing location information. While not providing an attractive interface, it functions to elucidate potential funding opportunities.
- n. Barrier-Free Environment: The website is available free of charge to anyone who has Internet access. The main barriers to funding opportunities through the Washington State Housing Fund are eligibility criteria.
- o. Socioeconomic Profile of User Group: Individuals who would benefit from this website are any users who gross less than 80 percent of the area median income. The Washington State Housing Trust Fund selection process requires financial obligations on the part of the applicant, which would likely eliminate many homeless applicants. For those unable to afford the required financial investment to procure subsidized housing through the Washington State Housing Trust Fund, information can still be gained regarding potential sites to live and the demographic of the community.

New York–Specific Applications

Attention was paid to applications available in New York City as it ranks among the highest in per-capita homeless individuals in the nation, as well as a comparatively large number of organizations working on solving homeless issues through mobile application design. New York is one among an increasing number of cities installing the 311 application to map issues within the city. As a result, many agencies and secondary applications tap into this resource’s open-source data. The NYC 311 resource and its aggregate data will be discussed in the at the end of this chapter.

5.1.3 WeShelter²³⁸



Figure 17 WeShelter Users

- a. Location of Use: New York City, NY
- b. Size: n/a
- c. Medium/Project Type: Android and iOS 7.0 compatibility.
- d. Delivery Method: n/a
- e. Costs: Downloading the application is free for the user. The user (not necessarily a homeless person) taps a button on the screen of their phone when they see an unsheltered homeless person and a secondary screen pops up allowing the user to donate funds, which are supplied by secondary large corporate sponsors. The donation is then applied to local registered outreach groups. Each tap is generally worth up to 5 cents, although amounts vary dependent on funds available and location.
- f. Architect/Designer/Team: WeShelter Solutions, Inc., is a registered corporation in the state of New York with 501(c)3 status. The team is composed of three founding members: Robb Chen-Ware, Ilya Lyashevsky, and Ken Manning. Each of the founding members works on multiple other digital applications, with backgrounds stemming from product design, creative writing, and computer science. In addition to the founding members, more than 25 other participants from Prolific Interactive, Good vs. Evil, as well as advisors and volunteers worked together to build the interactive platform.

²³⁸ Ilya Lyashevsky, *WeShelter*, version 1.1.7, iOS 7.0 or later, English (New York: WeShelter Solutions, Inc., 2015), <http://www.weshelter.org/>.

- g. Reporter: Cases are digitally other-narrated, or reported by a passerby, most likely non-homeless individuals. The demographic targeted to report is located in New York City, defined by the sponsors as the “urban millennial demographic that cares about social issues.”²³⁹
- h. Patron: The WeShelter application works in connection with large companies, enabling reporters to make donations when they see a homeless individual. Following a donation, the patron company advertises that they are the company that made the donation on the user’s behalf. This symbiotic relationship enables advertisers to get their name out there while donating funds to NYC service organizations.

The WeShelter website solicits sponsors and explains the benefit to the sponsor as: (1) Highlighting the sponsor’s dedication to social good by giving clients and employees a simple way to make an impact in the city; (2) By directly sponsoring repeat acts of good will, positive brand associations are created for users; (3) Targeting local users; (4) Low sponsorship buy-in; (5) Incremental funding model enables sponsors to only fund as much as unlocked by users each month; and (6) WeShelter is tax-deductible. The relatively low entry barrier enables sponsors to donate predetermined amounts. By allowing the sponsor to target a specific demographic within the local area, they are able to create strong positive associations with their brand among an audience who shares common brand ideals.

Another option offered through the application is in connection with NYC 311, which works to provide direct assistance to those in need of immediate aid. This option can be accessed through tapping a single button on the screen that patches a call to the NYC 311 helpline.

- i. Goal/Product: “WeShelter’s mission is to use mobile technology to allow everyone to contribute to ending homelessness.”²⁴⁰ Co-founder Ilya Lyashevsky states that one of their main goals is to raise awareness of the homeless problem, and allowing urbanites to feel like they are capable of making a difference. “We see the app as a

²³⁹ “WeShelter Sponsor Page,” Non-Profit, *WeShelter*, (2016), <http://weshelter.org/become-a-sponsor/>.

²⁴⁰ Ilya Lyashevsky, *WeShelter*.

behavior change—from doing nothing to doing something, even if it’s in digital form.”²⁴¹ The application founders hope the one- to two-minute process of donating, will heighten awareness of the reporter, increasing potential for them to establish empathy for the homeless. WeShelter’s mission aims to include disenfranchised homeless individuals through increasing empathy among “socially minded millennials.”

Reporters gain information as they traverse the city, tapping the donation button when they see a homeless person. In addition to allowing the user to make a donation after tapping the application, time and location stamps the data entry. The data points are then amalgamated to find where homeless individuals are located within the city and what the peak hours of reporting are. The resulting GPS-located data is only given to homeless outreach groups and is not publicly available. Information is then used by these groups to produce heat maps, indicating the density of homeless distribution in the city, and to prioritize outreach times and routes based on that information.²⁴²

- j. Environment and Microclimate: The application works regardless of location, but the designers specifically aim to gain information about homeless individuals in New York City. If a user pushes the WeShelter button when they are not in the New York area, the information provided by the heat map to the New York–specific organizations is useless.
- k. User Behavior and Requirements: The application was designed to require very little energy input. In the words of the designer, “We wanted to create a new way for people to make a meaningful difference, even if they had little time.”²⁴³ The mobile application is very user friendly as it provides clear and limited options that create a streamlined user experience. The ease of use as well as the small time requirement on the part of the reporter allows for increased data gathering as well as sponsor donations.

²⁴¹ Elizabeth Gurdus, “New York Apps Are Battling Homelessness, One Tap at a Time,” News website, *Observer Innovations* (August 11, 2015), <http://observer.com/2015/08/new-york-apps-are-battling-homelessness-one-tap-at-a-time/>.

²⁴² *Ibid.*

²⁴³ Ilya Lyashevsky, *WeShelter*.

- l. Utility and Space Enhancement: The application is used to provide funding to organizations in the area in which the homeless person is geographically marked. In addition to directing funding to service organizations in the area, the application provides other-narrated place-marking information. GPS-located data points are not publicly accessible, protecting the homeless individuals who are reported. The information gathered is only distributed to verified partnering homeless service agencies. Once homeless service agencies have received this information, they can see which areas are more heavily used and at what times.
- m. Form and Function: The simplicity of the interface and ease with which this application can be used establish a very low barrier of entry. The speed of performance, as well as the overall quality of the user design experience (UX), was among the highest of the applications studied.
- n. Barrier-Free Environment: The application is free to anyone who owns a smartphone.
- o. Socioeconomic Profile of User Group: The users of WeShelter are generally non-homeless individuals who are already actively seeking to help those who are homeless. This status can be assumed because they have downloaded the free application in order to help the homeless individuals of New York. This minimizes the potential effect of creating a more conscious public as it only increases awareness among users who have acknowledged the homeless issue as a problem. This acknowledgment is indicated by their downloading the application.

5.1.4 NYC Map the Homeless²⁴⁴



Figure 18 NYC Map the Homeless

- a. Location of Use: New York City, NY. The project originated out of Murray Hill, in Midtown Manhattan, after the software developer felt the city failed to deter unsheltered individuals from taking up residence in his neighborhood.²⁴⁵
- b. Size: n/a
- c. Medium/Project Type: Android 4.0 and iOS 7.0 compatibility.
- d. Delivery Method: Digitally other-narrated by users, likely non-homeless individuals, who witness a homeless individual. The reporter then takes a photograph on their mobile device. That image, along with any additional information on the experience or individual, is shared through the application. The application encourages users to “tag homeless individuals and describe the type of event.” The application uses that information, along with all other reports, to produce a heat map displaying geographical density of homeless residence in the area. The description received when downloading the application from the PlayStore states the following:
“The NYC Map the Homeless (NYC-MTH) app is a simple and easy volunteer crowd-sourcing solution. It gathers data and produces answers. Tap one button to take a picture and tag it. It only takes a few seconds. The pins are automatically displayed and clustered on a detailed map of NYC. When a mapped pin is selected, it shows a precise location, time, and description.”²⁴⁶

²⁴⁴ David Fox, *NYC Map the Homeless in the App Store*.

²⁴⁵ Sophia Rosenbaum, “Engineer Develops ‘Map the Homeless’ App,” News website, *New York Post* (August 10, 2015), <http://nypost.com/2015/08/10/engineer-develops-map-the-homeless-app/>.

²⁴⁶ David Fox, *NYC Map the Homeless in the App Store*.

- e. Costs: Downloading of the application is free for the user.
- f. Architect/Designer/Team: David Fox and the group Third and 33rd and Beyond
- g. Reporter: Cases are reported by passersby, most likely non-homeless individuals.
- h. Patron: The NYC Map the Homeless application is sponsored by a coalition of community members from Murray Hill and Kips Bay in Manhattan, who selected the goals of the mobile application. The application works by allowing any user to photograph, label, and locate any homeless person, documenting this through the application. The information collected is then open source and available to anyone.
- i. Goal/Product: Mapping data is publicly available, along with a photograph identifying the person and any other information the photographer deems noteworthy. The description, available upon downloading the application is provided by the designer David Fox, who says the aim is to produce a method where “[a]uthorities can quickly identify locations of concern and act in a timely manner. In the future, this tool will give authorities and the public the ability to run advanced data queries on the data we compile.”²⁴⁷

Fox’s proposed data-quarrying method would remove control over the homeless individuals’ identity from them, and place it in the hands of the reporter. Many of the functions of the application aim to remove homeless individuals from certain areas, and see the documentation of these people as the first steps. In addition Fox cites the ability of visualizing homeless individuals, portrayed through the lens of the reporter, as increasing awareness of the issue of homelessness. By “hashtagging” these individuals, reporters reveal their own group bias, used to color the image of the homeless person, illustrated in the application. One example of a hashtag recorded August 20, 2015 is #cansgotenoughforbeer, others tags are less aggressive stating things like #publicencampment #sleeping or #needsaid.²⁴⁸

The founding group, Third and 33rd and Beyond, who had documented homeless activity prior to the development of the application, hoped to see the removal of homeless individuals from their neighborhood. The group sees obstructions to their

²⁴⁷ Ibid.

²⁴⁸ Ibid.

goals as public awareness that supports their cause, as well as police and government agencies' ability to "find" homeless individuals. Fox, the programmer, says, "They [the police] have a lot of trouble locating them and if they do [arrive at the location of the report] a lot of times the people are gone and it's too late, so this [information relayed through the mobile application] is in real time structured data of what's happening throughout the city."²⁴⁹

- j. Environment and Microclimate: This design solution was produced as the result of a Midtown Manhattan resident disliking the presence of homeless residents in the area. The application is currently available throughout New York State and eastern portions of New Jersey.
- k. User Behavior and Requirements: The application requires slightly more effort than many of the other applications and provides as a result a live data feed of homeless reporting's throughout the city; an interactive map allowing the selection of a indicated location then shows an image and hashtags of the person reported. The majority of the homeless individuals reported through the application do not appear to know that their picture has been taken and added to the site.
- l. Utility and Space Enhancement: According to the designer, the purpose of the application is to remove homeless individuals because "living on the street is dangerous for the homeless, and it is dangerous for people encountering a homeless person who may perform an act of violence out of desperation or because of mental illness."²⁵⁰ This one-dimensional essentialist illustration of homeless persons functions to identify them as the "other" in the narrative shared by the Third and 33 and Beyond group.
- m. Form and Function: The function of the application is to remove homeless individuals from the urban space of New York. Interviews with the designer reveal his perceptions that the city is not doing enough to "remove potentially harmful homeless people" from the city. The designer's solution is an application to point out

²⁴⁹ Rosenbaum, "Engineer Develops 'Map the Homeless' App."

²⁵⁰ Ibid.

to authorities who the offending person is in a way that can quickly result in their removal from the area.

- n. **Barrier-Free Environment:** The application is available to those who own a cell phone. But it functions to create barriers for those who are being documented. By creating images, as well as hashtags of homeless individuals' offenses, documenters make the documented homeless individuals potential targets.
- o. **Socioeconomic Profile of User Group:** The founding community organization is from Murray Hill, a densely populated neighborhood along the East River in Manhattan. In 2013 the average household size was 1.7 people with a median household income of \$117,364.²⁵¹ The reporters are generally non-homeless individuals who are actively seeking to remove those who are homeless from a given area. The creation of the application followed the co-authoring groups' explanation that they had complained for months to several city agencies and elected officials with little to no response. The resulting application is an effort to take the matter into the concerned community's own hands.²⁵²

5.1.5 Mapping Homelessness in New York



Figure 19 NYC 311 Users & Inputs

One of the most widely used homeless narrative mapping tools in New York is NYC 311. The mission of NYC 311 is “to provide the public with a quick way to access all New York

²⁵¹ “Murray Hill Neighborhood in New York, NY, 10016, 10017 Detailed Profile,” *Urban Mapping by City-Data*, 2013, <http://www.city-data.com/neighborhood/Murray-Hill-New-York-NY.html>.

²⁵² Narmeen Choudhury, “New App ‘NYC Map the Homeless’ Developed to Help Track the Homeless,” News website, *New York’s PIX11 / WPIX-TV* (August 6, 2015), <http://pix11.com/2015/08/06/new-app-nyc-map-the-homeless-developed-to-help-track-the-homeless/>.

City government services.”²⁵³ The service, which receives on average 50,000 calls a day²⁵⁴ regarding more than 36,000 topics, collects data on all service requests in the city. This data includes the citation of any illegal ongoing disturbances or disruptions to New York City life, from pothole repairs to school closures.²⁵⁵ Through the service, users are able to report urban issues regardless of whether the occurrence is legal or illegal. The open quality of the forum provides a digital space for reporting all happenings deemed important to the reporting individual or body. The interactive forum functions through multiple digital mediums including a website, mobile application, call center, Skype number, video relay service, and telephone call center, all functioning to facilitate reporting.²⁵⁶

Launched in 2003, the service was one of the first in the country to take a drastically different approach to technologically delivered city services. The NYC 311 service center is available in more than 180 different languages and reports that 80 percent of all calls are picked up within 30 seconds. A 2008 survey, conducted by an outside firm, reported that the call center had higher satisfaction ratings than the average hotel or retail outlet. Joseph Morrisroe, NYC311’s executive director, attributed this success to the interconnectedness of each of the city’s agencies and technological advancements. Morrisroe considers the focus on metrics, coupled with advanced technology, as key factors in their success, as these elements allow for information to be directed to the correct agency, as well as providing large sums of aggregate data. The collected data is made available to the public in aggregate form.²⁵⁷

Among the things that can be reported using the NYC311 site are incidents of homeless encampment or calls for homeless assistance—only representing two of those that can be reported regarding urban homelessness in New York. Other homeless complaints reported on the NYC311 site include noise, sidewalk blockages, and panhandling. After the service

²⁵³ “About 311.”

²⁵⁴ The average of 50,000 calls a day is the rate reported as of November 2011.

²⁵⁵ Steven Johnson, “What a Hundred Million Calls to 311 Reveal About New York,” *WIRED*, November 1, 2010, http://www.wired.com/2010/11/ff_311_new_york/.

²⁵⁶ “About 311.”

²⁵⁷ Johnson, “What a Hundred Million Calls to 311 Reveal About New York.”

agency receives a report, individuals at the call center are tasked with categorizing the issue, and it is up to these city employees to discern the categorization. This manual categorization creates opportunity for personal bias as well as incorrect categorization. In addition, there are many categories that do not exist, which places city employees in the position of creating a new category or placing the call in the closest associated category. Acknowledging the potential role of human biases in advance, allows a mapping analysis to recognize possible misrepresentations.²⁵⁸ Other potential inaccuracies affecting data sets are related to how the event is GIS mapped.

When an incident is reported through NYC311, the reporting individual can either choose to use the GPS mapping on their phone or report their location in an analog format. This means reporting the cross streets, surrounding businesses, or the address. This method of reporting can lead to possible misreporting, bias, or inaccuracies.²⁵⁹ Aside from potential issues associated with reporting methodology, the NYC311 application provides the most frequently updated information regarding homeless individuals in New York City. Though few of the reports are generated by homeless individuals, it is the most widely used narrative mapping tool available currently.

By using the aggregate information available from NYC311, groups like BetaNYC and #CityGram are able to create interactive maps of issues being reported. These groups and others like them, are affiliates of Code for Humanity. Especially active in New York, the self-proclaimed civic-minded programmers organize at the local level to bridge gaps in civic technology and open-sourced government information. BetaNYC and #CityGram, which meet to GPS-locate issues as they occur in real time, aim at creating information that is then displayed on their website. The information they use, which is contributed via reports to NYC311, is already open source but illegible due to its organization and presentation. Prior to the community groups making the information more legible the 311 data is presented in one extensive spreadsheet, from 2003 to the present. It showcases everything which has ever

²⁵⁸ Interview with Noel Hidalgo of BetaNYC, interview by the author, conversation during #CityGram, NYC, October 24, 2015, Event: <http://www.meetup.com/betanyc/events/226031486/>.

²⁵⁹ Johnson, "What a Hundred Million Calls to 311 Reveal About New York."

been reported to NYC311 in arrears. Community group programmers then filter and organize the content using algorithms and Excel's turntable plug-in. At this point the data set becomes more legible, and can be organized, graphed and manipulated based on specific data points to extract trends. One of the main driving forces behind the coding collectives is to make the information, which is already public, legible to the common New Yorker.²⁶⁰

During an October 2015 meeting where the BetaNYC collective was gathering to create maps from the previously arrears data gained from the NYC311 website, the following interactive maps were created. These maps illustrate the difficulty of extrapolating meanings from maps when there exists no coherent patterns, aside from showing locations where reports occur indicating "homeless encampment" or "homeless assistance." The tag "homeless encampment" typically defines a request for removal of persons, while the "homeless assistance" tag is more often associated with requests for aid. Homeless assistance requests typically increase in the winter months likely due to the increase in hazards related to cold weather.²⁶¹

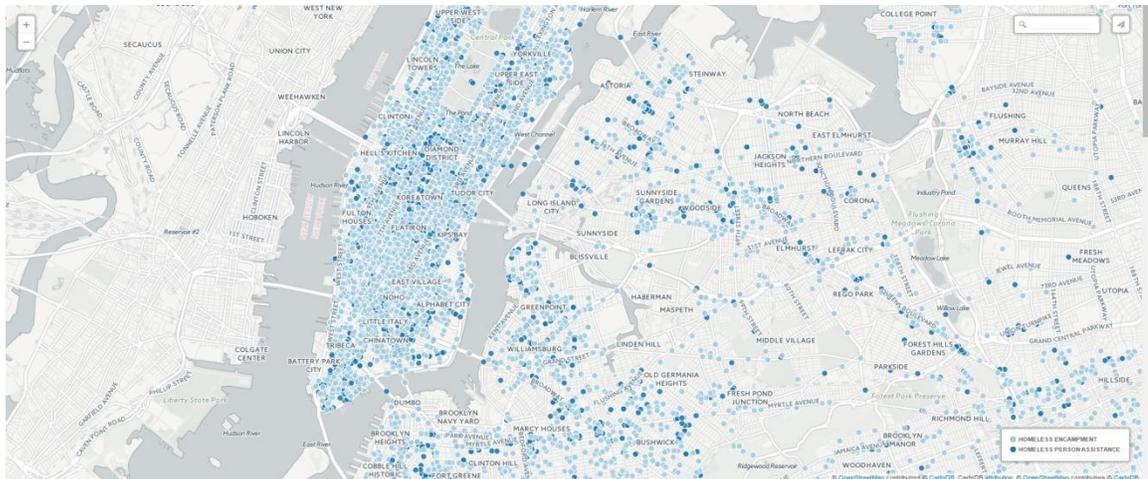


Figure 20 Unsorted NYC311 Homeless Encampment & Assistance Calls

²⁶⁰ Interview with Noel Hidalgo of BetaNYC.

²⁶¹ Interactive maps can be viewed as they update in real time through cartoDB. All NYC311 homeless encampment reports: https://noneckteach.cartodb.com/viz/ea293d70-7a78-11e5-9563-0e31c9be1b51/public_map.

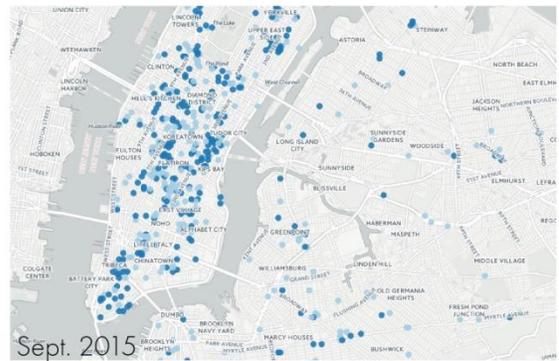
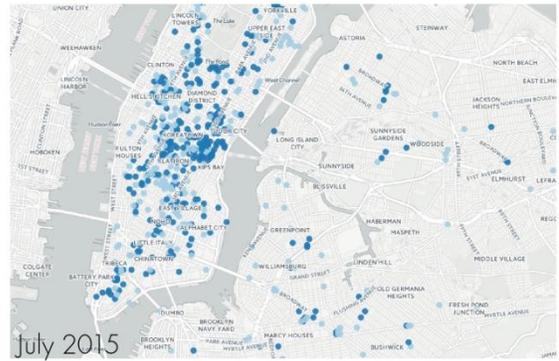
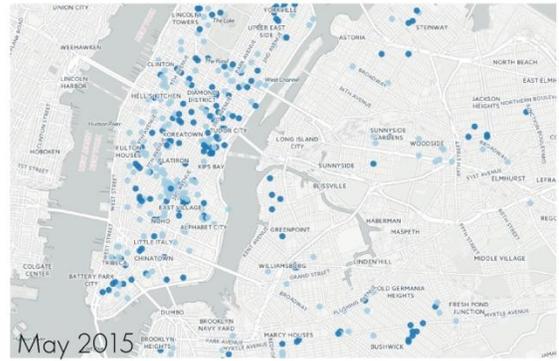
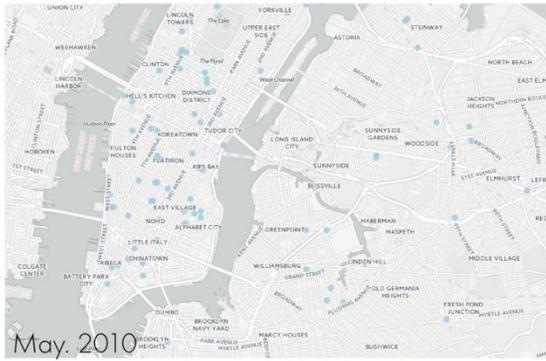
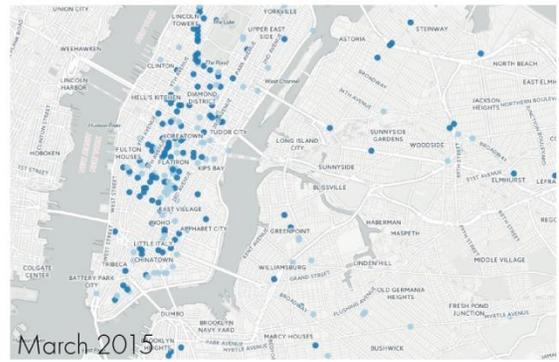
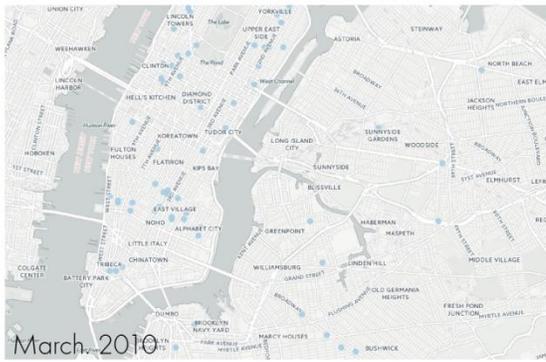
Unfortunately the difficulty of extracting information from the NYC311 website, due to no congruent tagging system with regard to homeless incidents, makes seeking information through the site more difficult. The goal of collectives like BetaNYC as well as #CityGram is to take the information, which is quickly gained through applications like NYC311, and make it legible to the urban layperson.

The Through Time Map illustrates an increase in homelessness in Manhattan; other studies conducted seem to contain contradictory data. According to the Manhattan Outreach Consortium, which has partnered with the city to conduct the Homeless Outreach Population Estimate (HOPE) every January beginning in 2007, the rates of homelessness in Manhattan have remained relatively steady over the past five years.²⁶² Both the NYC311 site and the HOPE project were created by non-homeless individuals.

This increase in reports to the NYC311 site can be seen as it maps itself through time on the video map displayed in still frames below.²⁶³

²⁶² Lisha Arino, "Homelessness and Panhandling Complaints Up 78 Percent in Neighborhood: Data," *DNAinfo New York*, November 9, 2015, <https://www.dnainfo.com/new-york/20151109/lower-east-side/homelessness-panhandling-complaints-up-78-percent-neighborhood-data>.

²⁶³ Real-time video reports, updated month by month, https://noneckteach.cartodb.com/viz/ea293d70-7a78-11e5-9563-0e31c9be1b51/public_map.



The discrepancy in reports over time has been attributed to the overall increase in the degree of use of the NYC311 application. The use of the application doubled from 2014 to 2015;²⁶⁴ this increase in crowd-sourcing is indicative of overall patterns of information gathering. Many cities possess similar mobile applications for reporting urban problems, but few have the usership or are open sourced like NYC311. One such city that uses CitySourced to create a 311 site with open-sourced data is Honolulu.

Honolulu 311 came online April 7, 2015. Partially due to its infancy, comparatively few reports have been received as of January 2016. As the usership is very low there is little data to be gleaned. Limited data entry is exemplified by their being only two 311 reports in Honolulu from April 2015 to February 2016 involving homeless individuals. In addition the Honolulu 311 site only displays one data set; by comparison the NYC 311 site displays more than 1300. These data sets include information from reports of vandalism to where farmers' markets in the city are located. This is not to say that user-ship will not increase to the level of New York, but that at the time of performing this research adequate data is unavailable.

NYC311 as well as Honolulu 311 represents a shift in government-run narration typology. As the 311 sites allow citizens to report from their mobile devices events that happen to them and others immediately after they occur, inputs into the communal narrative are expedited. The purpose of cities' 311 systems is to induce change by reporting perceived issues. As a result other-reporting of homeless individuals can be seen as directly affecting their relationship with the city. Other-narrated inclusions of homeless individuals, through 311 reports, removes narrative contribution from the homeless individual and gives it to the reporter.

5.2 Case Study Conclusion

Through looking at the existent modes of digital urban narration designed for homeless individuals across the nation, a significant absence of homeless voices becomes visible.

²⁶⁴ Ibid.

Previously analyzed studies illustrate the prevalence of homeless individuals who possess information communication devices as well as modes of procuring mobile phones, yet the number of applications targeting this user group is lacking. The majority of the GIS-driven applications designed for homeless individuals addresses their potential need to connect to physical resources like shelters and soup kitchens. This includes applications that are designed through the Federal Innovation Center, in addition to privately produced applications like Hacking the Conversation. As these applications address the much-needed physical requirements of homeless individuals within cities they leave mobile applications addressing homeless individuals' narratives under-designed for. The lack of these mobile designs illustrates a discrepancy in who is able to contribute self-narrated experiences to the communal narrative, as well as who is narrating the homeless experience digitally. By minimizing the ability of homeless individuals to narrate their own experiences, agency over their identity is relinquished to those who narrate for them. The resulting transfer of power as normalized citizens are able to contribute the identity of homeless individuals to the communal narrative, in place of homeless self-narrated contributions, modifies the digital city.

These modifications can be seen in mobile applications such as NYC Map the Homeless. As mediums like this serve to other-narrate the homeless experience, few mobile applications are designed for homeless individuals to self-narrate their urban experiences. This creates a need for urban-integrated mobile application designs with homeless individuals targeted as the main users. The only application found that addresses social network services is We Are Visible. Despite the platform not providing geographical connection to a specific city, it still functions to amplify the voices through almost 5,000 Tweets to more than 6,000 followers since its inception.²⁶⁵ In that sense, the We Are Visible platform has successfully increased homeless self-narrative inclusion. We Are Visible is also the only application found that allows homeless users to self-narrate their experiences within the cities.

²⁶⁵ Information taken from the We Are Visible website, January 2016.

Chapter 6 Investigating Homelessness in Honolulu

Throughout the United States communities grapple with the rights of homeless individuals to public spaces; this is particularly acute in the city of Honolulu. The effects of these power struggles can be seen reflected in the communal narrative. This paper will focus on Honolulu, Hawai'i, with lessons learned in New York City, New York, to gain understanding that can then be used to create design parameters for the digital intervention discussed in Chapter 7. By studying advanced other-narrated SNS employed in New York City an understanding of information-gathering techniques as they facilitate power structures can be achieved. Honolulu is then used to derive design solutions affected by power structures and created through resource locations and public policy.²⁶⁶

The culmination of information derived enables is an urban narrative understanding that can be applied to Honolulu. Honolulu is then used as the site for digital intervention and case study. This case study focuses on issues affecting homelessness in the form of: bans and ordinances,²⁶⁷ spatially placed resources and contact zones. These factors are seen as affecting homeless migration patterns and facilitating participation in the communal narrative as a result of in-group/out-group relationships. The importance of Honolulu homeless individuals relationship with in-group members is intensified by the populations increasing prevalence in the state.

Hawai'i provided residence to the largest number of homeless individuals in the nation per capita from 2010 to 2014 according to the HUD Exchange. New York has ranked second

²⁶⁶ "Welcome to the Homelessness Data Exchange website0865315302," *HUD.GOV U.S. Department of Housing and Urban Development*, n.d., <http://www.hudhdx.info/>.

²⁶⁷ Gordon Pang, "Sit-Lie Bills: Laws Enacted to Clear Sidewalks of Vagrants Come with Site Effects: A History," *Honolulu Star Advertiser*, September 14, 2015, sec. p. 1.

highest in the last two years, with neither state falling below the top five in the past four years.²⁶⁸

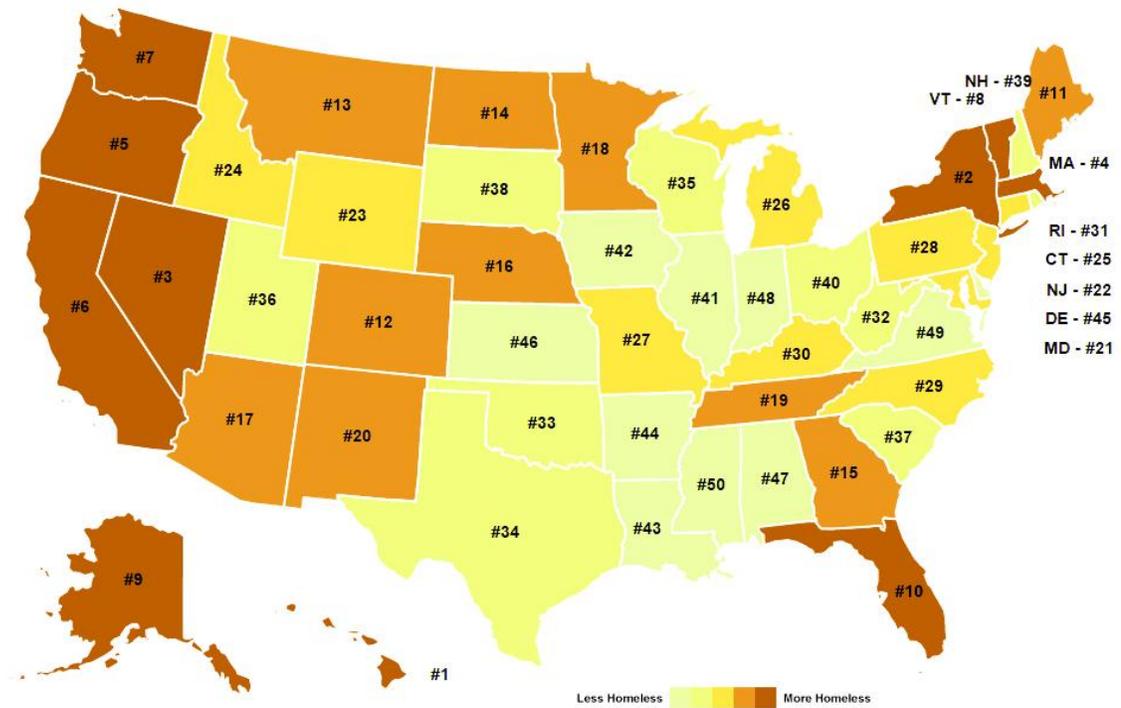


Figure 22 National Per-Capita Homelessness Rates

6.1 Honolulu: Narrating a City’s *Aloha* for its Homeless Populace

Honolulu is examined as the location for the integration of virtual mediums among homeless populations. In addition to the city hosting a large population of homeless individuals, the state has enacted laws restricting where and how homeless individuals can reside within city limits. These two actions can be seen as functioning on a macro- as well as a microscale to dictate the demographics' distribution. As laws are increasingly enacted to facilitate homeless movement, affects and effects on the communal narrative can be seen through spatial power shifts in Honolulu.

²⁶⁸ “Welcome to the Homelessness Data Exchange website0865315302.”

In 2010 when the rest of the nation was experiencing reductions in homelessness in connection with the economic recovery, homelessness in Hawai'i continued to grow. Point-in-Time (PIT) counts estimate that from 2014 to 2015²⁶⁹ the number of homeless people increased more than 18 percent, with the bulk of unsheltered homeless individuals from 2013 to 2015 living in Downtown Honolulu. In 2015 38 percent of all unsheltered homeless on the island of Oahu resided in Downtown Honolulu.²⁷⁰ For this reason, as well as aggressive city ordinances, the downtown area of Honolulu will be the focus for study and the site for the design solution.

The site used for the PIT count stretched from the Honolulu Airport to Pi'ikoi Street and the South Shore oceanfront to Ko'olau Ridge. The area used for the design intervention is smaller than this area limiting the site of analysis and intervention to Honolulu's more dense areas.

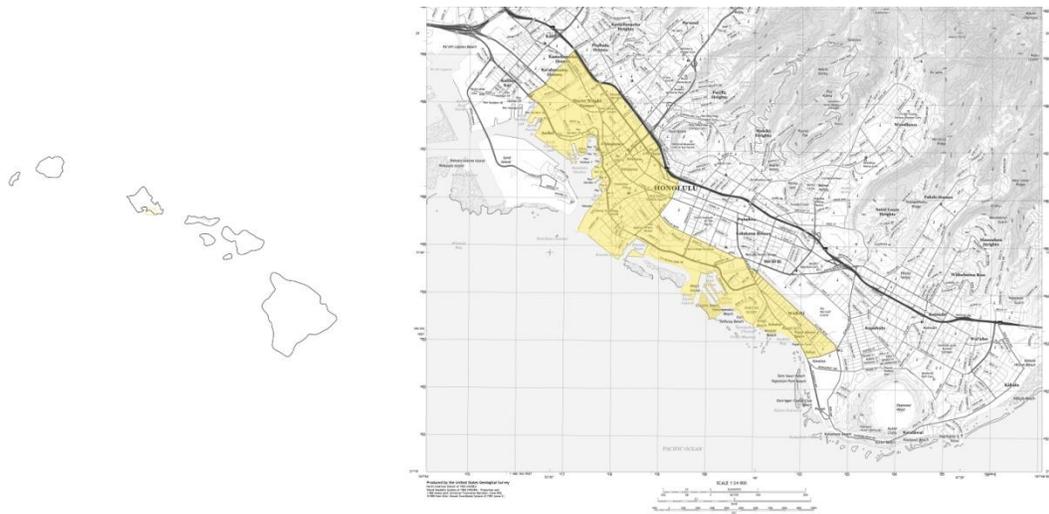


Figure 23 Honolulu Area Used for Intervention

²⁶⁹ The 2015 PIT counts were done over a ten-day period of time. The overview of the text clearly states, "It's important to note that the count is a cross section of homelessness, and does not reflect the number of homeless served over any specific duration of time." Government agencies and other institutions usually address the issue of homeless numbers, while acknowledging the shortcomings of the methodology. Questions involving the precision of PIT counts as a result of the difficulty of conducting counts, participation and methodology are ignored here as they are presently the most accurate quantitative data available in the state of Hawai'i.

²⁷⁰ "City and County of Honolulu Homeless Point-in-Time Count 2015," Oahu Point in Time Count (Honolulu, Hawai'i, State of Hawai'i Department of Human Services Homeless Programs Office: City & County of Honolulu Department of Community Services, April 2015).

The site used for design follows naturally occurring spatial boundaries and limits the area of study to the densest parts of Downtown Honolulu. The site used for digital intervention and site analysis is contained between the H1 highway and the ocean, the southeast boundary Kapahulu Avenue and the northwest, Houghtailing Street. To better understand the project site in Downtown Honolulu, an examination of Honolulu as a whole and its existing relationship with its homeless population must first be made. This is a relationship that can be seen as interacting with land politics as well as Hawai'i's largest industry.

Honolulu's surges²⁷¹ and trends in homelessness are viewed as they are affected by legislative measures designed to protect Hawai'i's largest industry, tourism. Despite various legislative efforts between 2014 and 2015, the city had not "eliminated the visual impact of homelessness," according to Honolulu Mayor Kirk Caldwell.²⁷²

6.2 Honolulu Ordinances Affecting Homelessness

Ordinances in Honolulu, particularly Waikiki, have been enacted in part in an effort to satisfy loud voices asserting that homeless individuals in high-traffic areas damage tourism. These voices contribute disproportionately to the communal narrative as a result of their in-group status, proposing "[w]hen visitors come here, they want to see their paradise. They don't want to see homeless people sleeping in parks or on sidewalks or on the beach."²⁷³ The mayor's response can be seen as echoing the opinions of the normalized populace, influenced by the tourism industry.

These sentiments and the resultant laws represent a power structure within and derived from the communal narrative. Dialogue in the communal narrative often frames homelessness as a threat to tourism, community cleanliness and public safety.²⁷⁴ Strong voices in the communal narrative then propose protection of the tourism industry as a valid reason to take aggressive

²⁷¹ Adam Nagourney, "Honolulu Shores Up Tourism With Crackdown on Homeless," *New York Times*, June 22, 2014, <http://www.nytimes.com/2014/06/23/us/honolulu-shores-up-tourism-with-crackdown-on-homeless.html>.

²⁷² *Ibid.*

²⁷³ *Ibid.*

²⁷⁴ Pang, "Sit-Lie Bills: Laws Enacted to Clear Sidewalks of Vagrants Come with Site Effects: A History"; Kirk Caldwell, *Bill 48 Sitting or Lying on Public Sidewalks Outside of Waikiki Special Districts, Section 1. & Section 2. Chapter 29 Revised Ordinances of Honolulu 1990*, 2014, [http://www4.honolulu.gov/docushare/dsweb/Get/Document-153470/DOC002%20\(45\).PDF](http://www4.honolulu.gov/docushare/dsweb/Get/Document-153470/DOC002%20(45).PDF).

legislative action.²⁷⁵ Mike McCartney, president of the Hawai'i Tourism Authority addressed the issue, stating:

*"I think we are doing it with aloha," a term used to denote compassion. "But doing it with aloha doesn't mean you are not going to be firm. It doesn't mean you are not going to be aggressive. It doesn't mean you are going to tolerate things that you can't tolerate."*²⁷⁶

McCartney's strong voice can be seen stitching the threat of homelessness into the communal narrative. The results of voices like these influence increased nuisance laws, stored property ordinances, banning sitting or lying on sidewalks and prohibiting large items such as tents in public parks.²⁷⁷

Bills 42 and 48, and 46 and 39, all function to control where homeless individuals in Honolulu spend their time and how. Though nothing in the language of the bills targets homeless demographics specifically, the bills do target actions normalized by homeless individuals. These actions include: sit-lie bans (Bills 42, 48); "pedestrian use zones" where large structures such as shopping carts and tents are barred during daylight hours (Bill 39); "Stored Property Ordinances" allowing private property on public property to be removed 24 hours following citation (Bill 54); and Sidewalk Nuisance Laws allowing city officials to remove private property deemed a nuisance from public property without prior notification.

Bill 42, sit-lie bans, makes it illegal for anyone to sit or lie on sidewalks in Waikiki special district. In 2014 this ordinance was extended through Bill 48²⁷⁸ to include portions of Chinatown, Downtown, McCully-Moiliili, Kailua, Wahiawa, Ala Moana-Sheridan, Kaneohe, Waimanalo, Kapahulu, Waialae, Kahala, Aina Haina-Niu Valley and Hawai'i Kai.²⁷⁹ Bills 42 and 48 state that "as sitting or lying down on sidewalks is not the customary use of public

²⁷⁵ Hawai'i News Now, "Homeless Crackdown Catches Waikiki Tourists"; Nagourney, "Honolulu Shores Up Tourism With Crackdown on Homeless"; Cathy Busserwitz, "Homeless and Living in Paradise," *Times, Los Angeles*, November 15, 2015, sec. News, <http://www.latimes.com/nation/la-adna-hawaii-homeless-20151115-story.html>.

²⁷⁶ Ibid.

²⁷⁷ Pang, "Sit-Lie Bills: Laws Enacted to Clear Sidewalks of Vagrants Come with Site Effects: A History." Honolulu Star Advertiser. September 14, 2015. Honolulu HI. p.2

²⁷⁸ Caldwell, *Bill 48 Sitting or Lying on Public Sidewalks Outside of Waikiki Special Districts*.

²⁷⁹ Ibid.

sidewalks,” it is prohibited. Understandings of what is customary public use could be seen as determined by in-group bias. Individuals found guilty of violating Bill 42 as well as Bill 48 are charged with a petty misdemeanor, punishable by up to 30 days imprisonment or a \$1000 fine.

Bill 48 was signed December 2, 2014, by Honolulu Mayor Kirk Caldwell. The controversial bill was widely published in the media²⁸⁰ garnering much attention within the communal urban narrative. Signatures addressed whether participants believed the bill should be adopted or denied. This is indicative of the conversation’s presence in the communal narrative but does not address whether these contributions to the narrative were made by homeless individuals or by normalized citizens speaking out on behalf of homeless persons.

Many of the comments supporting the bill came from members of the Chinatown community. Letters were presented at the public hearing from the Chinatown Improvement District, the Fort Street Mall Business Improvement District, the China Town Business Community and Action Realty Company to name a few. These contributors saw “the escalating homelessness in Chinatown killing off our Chinatown businesses.”²⁸¹ Chinatown community groups represent sub-groups within the dominant Honolulu in-group. The community-contributed narratives surrounding the bill on the city-run website are predominantly from non-homeless individuals, despite the large effect on homeless individuals in the affected area.

The increased presence of community members from the Chinatown area in the conversation could be a result of the bill affecting locations in Chinatown, as well an influx of homeless individuals as a result of Bill 42. Bill 42 made it illegal to sit and lie in Waikiki,

²⁸⁰ Sophie Cocke, “Honolulu City Council Expands Sit-Lie Ban To Districts Throughout Oahu,” News website, *Civil Beat News* (November 14, 2014), <http://www.civilbeat.com/2014/11/honolulu-city-council-expands-sit-lie-ban-to-districts-throughout-oahu/>; “Hawai’i Mayor Vetoes Homeless-Centered Bill Expanding Honolulu Sit-Lie Ban,” *CBS News via The Associated Press*, May 22, 2015, <http://www.cbsnews.com/news/hawaii-mayor-veto-homeless-bill-honolulu-sit-lie-ban/>; “Honolulu Council Approves Expansion on Sit-Lie Ban,” News Recording, *Hawai’i News Now* (Honolulu, HI: KHNA and KMGB, November 14, 2014), <http://www.hawaiinewsnow.com/story/27391756/honolulu-council-approves-expansion-on-sit-lie-ban>.

²⁸¹ Chu Lan Shubert-Kwock, “Chu Lan Shubert-Kwock, Chinatown Business & Community Association – Supports. M-2477,” Letter Supporting Bill 48 (October 8, 2014), <http://www4.honolulu.gov/docushare/dsweb/Get/Document-152811/dspage03370586395536434030.pdf>.

which is less than five miles from Chinatown. Following Bill 42's enactment in September of 2014 Chinatown residence commented on the influx of homeless in town hall meetings.²⁸²

The actual effects of a bill are sometimes unforeseen, as with Bill 42's effect on Chinatown due to its proximity to Waikiki. Another example can be illustrated by Bill 46, which made it illegal for anyone to urinate or defecate on public property across the island.²⁸³ The result of this is that homeless individuals congregate around public restrooms. This can be seen at Aala Park in Honolulu where the public restrooms, located at the southwest corner of the park, contain the highest density of homeless individuals on the block.²⁸⁴ This consequence of the ban was likely minimally or unconsidered during the bill's conception. From this and other examples it can be deduced that the full effects of ordinances on urban spaces aren't always completely or immediately understood. Increased understanding of homeless individuals within Honolulu provides potential to predict the affects by spatial ordinances, beyond the primary symptoms of ordinances.

By increasing the voices of those affected by these urban changes an increased pool of knowledge can be derived through which to create solutions. In admitting contributions by affected individuals, including but not limited to homeless individuals, into communal narratives an increased understanding is gained, enabling urban spaces to adapt more quickly. Jane Jacobs saw these contributions as lessons to be extracted to provide urban planners, architects and designers a greater understanding of the urban citizens they are designing for.

These bans function within specific areas to control where the homeless of Honolulu can congregate, removing their already disenfranchised presence from high-traffic public areas to more isolated regions of Honolulu. These bills' proposed solutions illustrate how the homeless of Honolulu are being pressured out of certain spaces and into others.

²⁸² Pang, "Sit-Lie Bills: Laws Enacted to Clear Sidewalks of Vagrants Come with Site Effects: A History."

²⁸³ "Mayor Caldwell Signs Homeless Bills into Law," *Hawai'i News Now* (Honolulu, HI: KHNA and KMGB, September 16, 2014), <http://www.hawaiinewsnow.com/story/26546356/mayor-caldwell-to-sign-homeless-bills-into-law>.

²⁸⁴ As observed on four site visits by the author in January and February of 2016.

In 2014 members of the Honolulu Department of Urban Planning were advocating Sand Island, the location of a closed WWII internment camp, as a potential site for homeless individuals.²⁸⁵ In 2016 the site is largely industrial, housing the city’s wastewater treatment plant, the Honolulu Disposal Service, and an automobile recycling center. The location has one access point located at the western tip of the island. Sand Island is located four miles from Aala Park where many of the interviews utilized in this dissertation take place, and seven miles from Waikiki where the first sit-lie ban was enacted. Its isolation illustrates the city’s drive to remove homeless individuals from high-traffic zones to prevent them from effecting the tourism economy.²⁸⁶

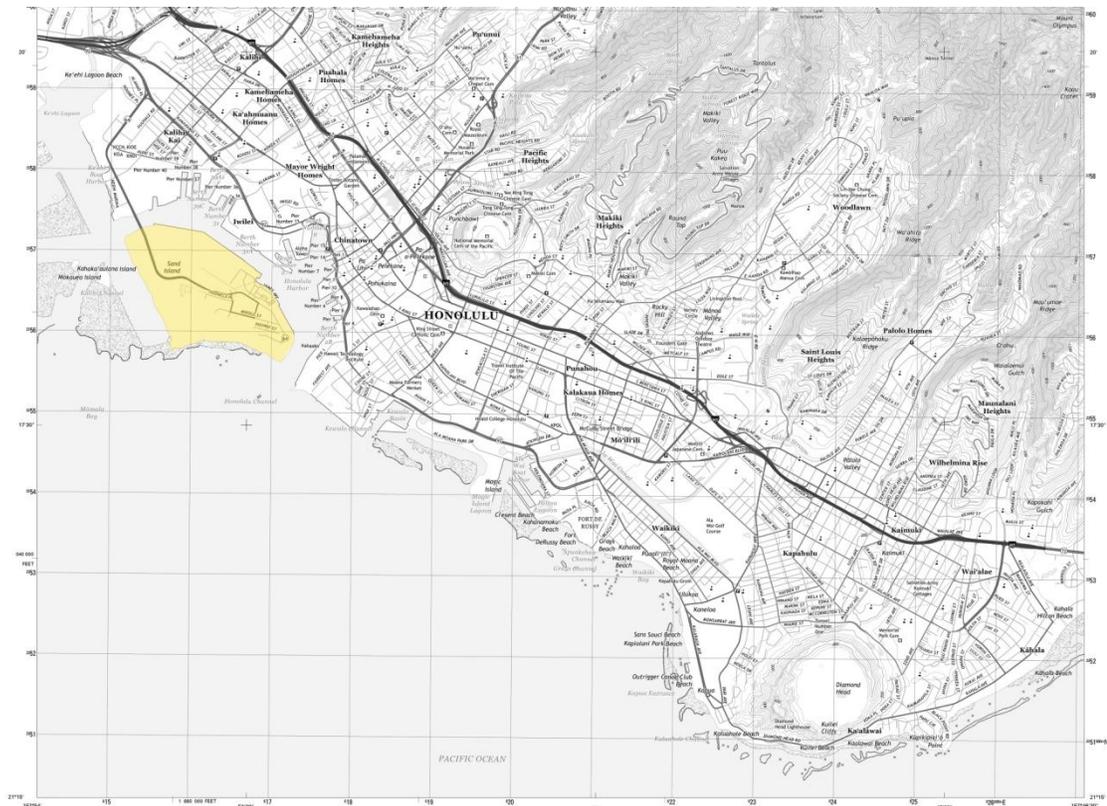


Figure 24 Sand Island Call Out

²⁸⁵ “Community Reacts to Sand Island Homeless Shelter Proposal,” *Hawai'i News Now* (Honolulu, Hawai'i: KHNA and KMGB, August 29, 2014), <http://www.hawaiinewsnow.com/story/26408773/community-reacts-to-sand-island-homeless-shelter-proposal>.

²⁸⁶ Cocke, “Honolulu City Council Expands Sit-Lie Ban To Districts Throughout Oahu.”

These bills in Honolulu are similar to others throughout the nation, as homeless individuals are being pressured to move from places of more dense urban population to more rural spaces,²⁸⁷ physically removing them from the urban landscape as well as resources within it. As these individuals are removed so is their voice from the urban narrative. A homeless demographics are not able to contribute to the communal narrative of space because they are pushed from it.

6.3 Resources for Homeless Individuals

Dense urban Honolulu provides opportunity for increased contact zones and opportunities provided by them in addition to analog resources of the city. By looking at the city of Honolulu in and of itself as a resource that homeless individuals use to live on, their movement can be analyzed as the result of bills and bans contributing to their analog disenfranchisement.

The Honolulu Resource Map shown below illustrates that homeless facilities and resources are located to the northwest. The southwest contains Waikiki, the largest tourist hub on the island, and the first location to enact sit-lie ordinances. Evidence shows that many homeless individuals from Waikiki moved their encampments northwest as a result of the first sit-lie bans. Subsequent bans occurring in Chinatown and along Kapalama Canal illustrate the systematic pressure to drive homeless individuals from the city center and public spaces in dense tourist zones to less dense areas. These less dense areas not possessing ordinances affecting homeless actions also provide fewer spaces of public interaction that could enable opportunities for contact zones.

²⁸⁷ Bauman, Rosen, and Tars, "No Safe Place: The Criminalization of Homelessness in U.S. Cities."

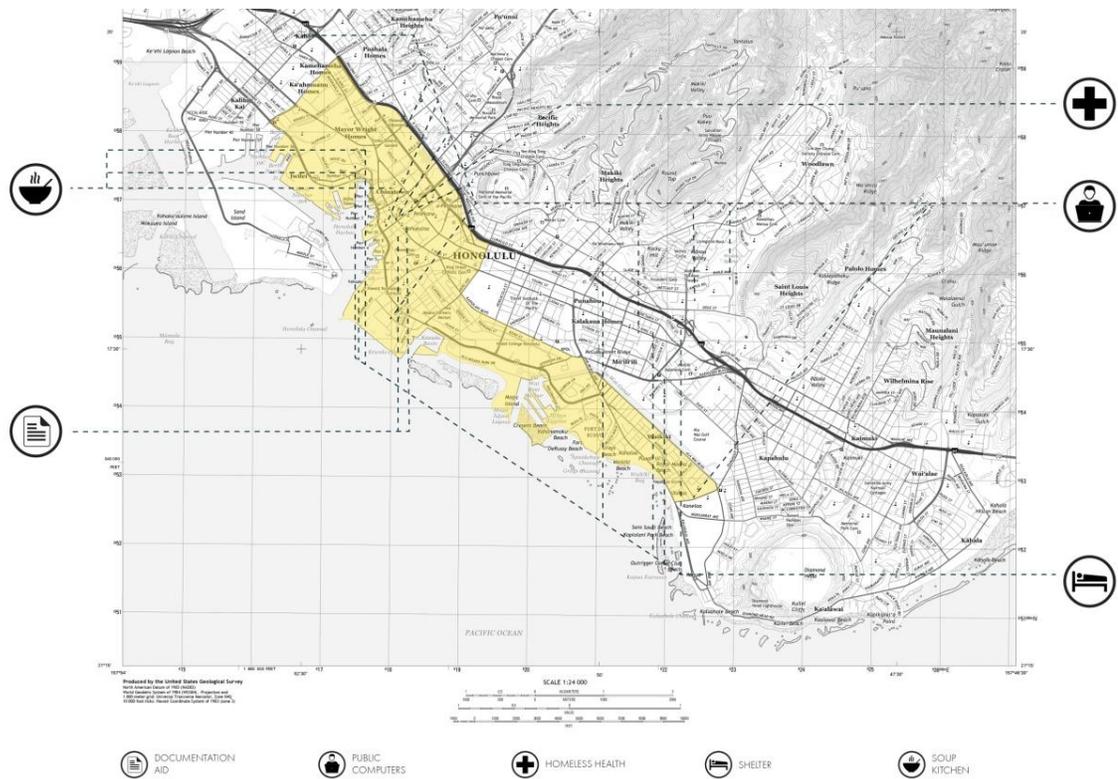


Figure 25 Honolulu Analog Resources

“Traditional resources” for homeless individuals are marked on the map. These traditional resources include, but are not limited to, health facilities, documentation aid, public computers, shelters and soup kitchens. These resources have been proposed to treat the analog symptoms of homelessness but do little to incorporate homeless individuals into the communal narrative. Though these spaces could function to facilitate contact zones, they more often only function to serve homeless individuals’ analog needs.

The resources depicted in the map above are the most commonly acknowledged architectural markers of homelessness. Though this dissertation does not focus specifically on connecting homeless individuals to analog resources, it does acknowledge the importance of them in cities, as well as their ability to mark homeless narratives physically in space. These analog facilities for homeless individuals are discussed as physical markers in their landscape even after they have been displaced as a result of land use bans like Bills 39 and 46. This suggests that after homeless individuals are physically removed from analog space,

as the result of bans, resource sites may be the only physical indicators of their urban experience.

In hopes of increasing inclusion as it is marked in space, the design solution aims to create a digital map of experiences in analog space that can be experienced even after homeless individuals have vanished. By focusing on representation in the digital city, homeless individuals' narratives can be integrated as they are actually experienced despite their increasing removal. This means of homeless experience integration, as it transpires in the physical space of interaction between shelters and soup kitchens marked on the digital world, allows disenfranchised narratives to be shared within the communal narrative.

One of the resources intrinsically important to the success of the design product is the availability of digital technology in Honolulu. Spaces providing computer services are indicated on the map by the public computer icon. The importance of this resource is its capability of getting homeless individuals into different housing situations, jobs, and in contact with other resources. The bulk of research conducted regarding homeless individuals and ICT studies the ability of homeless users to change their circumstances through the use of digital mediums.²⁸⁸ Studies indicate homeless youth to be among the most affected by digital intervention methodologies.²⁸⁹ Though the variety of digital inclusion methods aiding homeless individuals has limited testing, by pushing Honolulu's homeless away from these analog and ICT resources, urban planners architects may lose an understanding of their spatial use that can never be regained, in addition to them losing a resource that provides potential for situational betterment.

Feminist standpoint theory would propose that by losing knowledge of the resources of the city through the perspective of disenfranchised homeless in Honolulu, normalized citizens

²⁸⁸ Rice, Lee, and Taitt, "Cell Phone Use among Homeless Youth"; Eric Rice, Norweeta G. Milburn, and William Monro, "Social Networking Technology, Social Network Composition, and Reductions in Substance Use among Homeless Adolescents," *Prevention Science: The Official Journal of the Society for Prevention Research* 12, no. 1 (March 2011): 80–88, doi:10.1007/s11121-010-0191-4; Eyrich-Garg, "Mobile Phone Technology."

²⁸⁹ Kimberly Bender et al., "Technology as an Underutilized Tool for Providing Health Services and Support to Street Youth"; Gonzales, Anglin, and Glik, "Exploring the Feasibility of Text Messaging to Support Substance Abuse Recovery among Youth in Treatment"; Rice, Lee, and Taitt, "Cell Phone Use among Homeless Youth."

lose a valuable piece of information. This can be deduced as the theory proposes that disenfranchised groups are socially exposed, allowing increased understanding of the city and resources within it as they are effected by power structures. For example if one wanted to know who is defacing public property in places like A‘ala Park in Honolulu, those most likely to know would be homeless individuals. This was verified by Dewey, a homeless man living in A‘ala Park, during a January interview. The participant stated that he remembers how the park used to be. He remembered when it was not filed with graffiti and “spray-paint,” as he called it. In addition, he stated that he knew who had made many of the tags in question.

This can be seen as a result of the large amounts of time they spend in that landscape and their respective relationships to the space as it is where they carry out their activities of the day and where they sleep. Thus they understanding the power structures present in the area. The power structures of the place may include the ideas of who is likely to be blamed for the graffiti and what the ramifications are for those individuals. This knowledge of relationships as they interact with resources could be seen as a function of their socially situated disenfranchisement within the city. This information regarding resource use, as it is spatially marked, is one that possesses value due to its removal from the normalized in-group narrative.

Voices like Dewey's provide potential to contribute spatial knowledge, composed of resource relations, to Honolulu's communal narrative. His and other similar diminished inclusions can be seen as a result of reduced contact zones, which can be aided through the production of digital contact zones to mitigate the effects in place of analog contact zones.

6.3.1 WiFi in Honolulu

As of January 2016 the state of Hawai'i has sponsored locations where WiFi is provided free of charge courtesy of the city's Department of Information Technology. These eight locations in Oahu—four in Honolulu²⁹⁰—provide Internet for those unable to afford data

²⁹⁰ “Honolulu Hot Zones,” City and County of Honolulu Official Site, *Honolulu Hot Zones: Official Free Municipal Website of the City and County of Honolulu* (January 21, 2016), <https://www.honolulu.gov/>

plans. In addition the Honolulu Rail, which is intended to stretch 20 miles through Honolulu, has proposed to provide WiFi at each of its 21 stations.²⁹¹ Some private companies in the state also provide free WiFi without password protection, the most widespread being McDonald's, with 25 locations in Honolulu. The State of Hawai'i also provides free WiFi at all library locations, along with computer, printing facilities and charge stations. These services allow individuals who may otherwise be lacking ICT devices to get online.

Within the city of Honolulu, locations where homeless individuals are able to access free WiFi varies widely; often locations with higher population densities and traffic coincide with increased free WiFi access. Looking at the Honolulu map below, free WiFi zones, higher population density and traffic coincide with ordinances deterring homeless use.

The value of WiFi in Honolulu as in many other cities lies in its ability to connect homeless users to resources that would otherwise be unavailable or difficult to access. These include but are not limited to job opportunities and relationship facilitation as the result of identity management, shelter location and availability and keeping in contact with friends and loved ones. The value provided to the design solution is that users are able to contribute data as they move through the city even if they lack a data plans. Both the ability to gather and contribute information made possible through Internet access function to reduce the size of the digital divide that increases class schisms.

honoluluhotzones.html.

²⁹¹ "Honolulu Rail Transit Project Overview," *HART Honolulu Authority for Rapid Transportation*, n.d., <http://www.honolulustransit.org/rail-system-guide.aspx>.

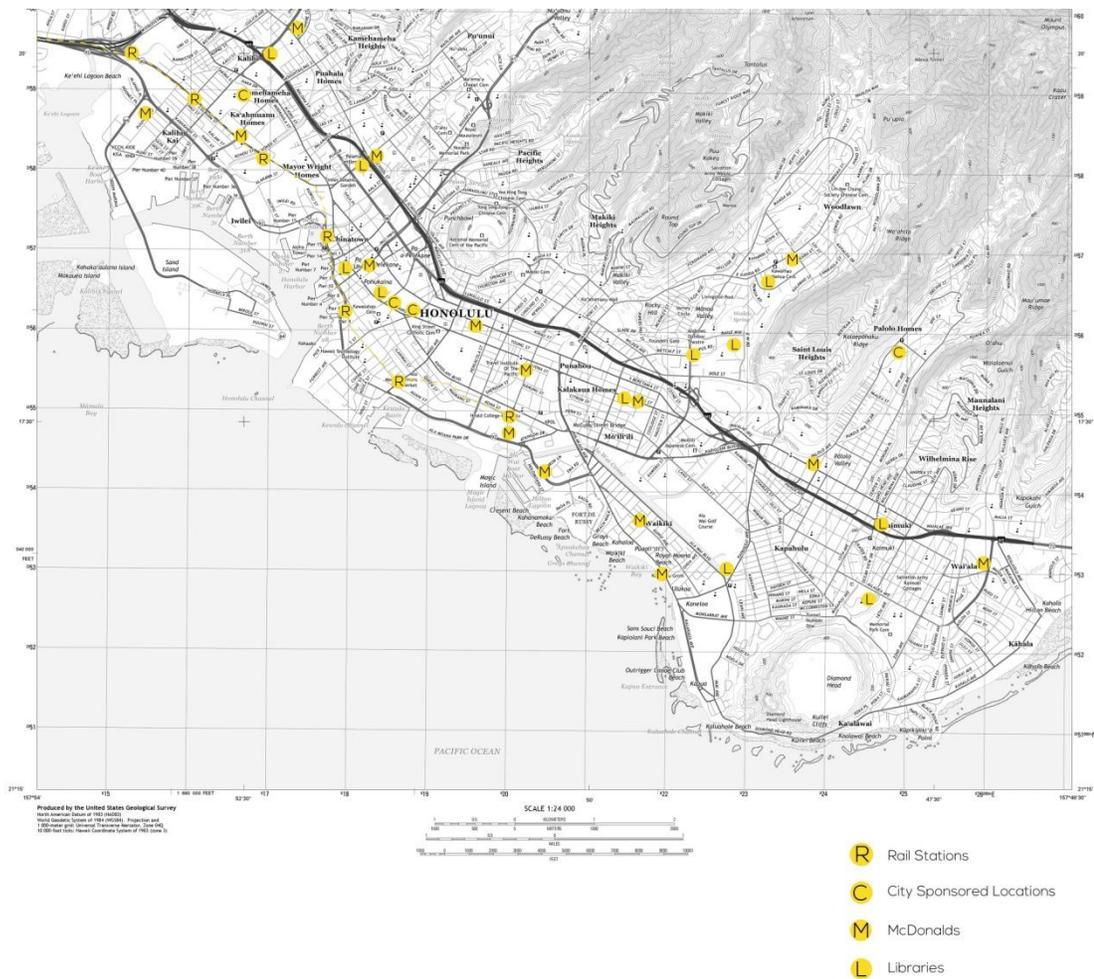


Figure 26 WiFi Access Points

6.4 Cell Phone Use in the Aloha State

The absence of data pertaining to homeless use of cell phones has manifested in a plethora of cities, including Honolulu. As a result Honolulu does not have a record of any mobile application allowing homeless individuals to map their experiences in urban space. The only application is Honolulu 311, allowing other-narrations of the homeless experience. In addition there are no studies to date studying ICT use by homeless individuals in Honolulu, despite the city’s expanding homeless populace. The case studies in Chapter 5 are by no means all-encompassing, notably excluding any applications designed for Honolulu.

In an industry where most demographics have specific applications designed to serve their needs, there is a shortcoming in virtual design specifically for homeless individuals inclusion in the Invisible Cities. The development of the digital intervention thus creates a medium for accessing the Invisible City of Honolulu.

Chapter 7 Esra: A Digital Intervention in an Analog Space

In Ersilia, to establish the relationships that sustain the city's life, the inhabitants stretch strings from the corners of the houses, white or black or gray or black-and-white according to whether they mark a relationship of blood, of trade, or authority, agency. When the strings become so numerous that you can no longer pass among them, the inhabitants leave: the houses are dismantled; only the strings and their supports remain

They rebuild Ersilia elsewhere. They weave a similar pattern of strings which they would like to be more complex and at the same time more regular than the other. Then they abandon it and take themselves and their houses still farther away.

—Italo Calvino, Invisible Cities²⁹²

7.1 Introduction

In Italo Calvino's book, *Invisible Cities*, Ersilia is described as a city of trade. The relationships, functioning as contact zones of citizens, are connected through trade and marked in the city with string denoting relationship type. The strings allow the visualization of intangible contact zones, elucidating affective interactions between members of the populace. Calvino uses the strings established in Ersilia to make visible the relationships or contact zones as they exist in a given city space, thus connecting specific individuals

²⁹² Calvino, *Invisible Cities*, 74.

identities and their locations, indicating residence, occupation, and activities. Locations representing identities, such as offices and houses, serve as *supports* for the relationships or strings. As the relationships of citizens are visualized in connection with their position in society and spatially marked, the city can be read as a composite of interactions creating tension and affect as members' supports are connected. Using the concept of the city in Calvino's *Ersilia* as it symbolizes relationships with string and produces contact zones between its citizens, the digital application *Esra* hopes to facilitate narrative trade by creating a new relationship string—a digital string.

Esra is a mobile application designed for use in the city of Honolulu. The application, which utilizes existing Google Street View Maps, manipulates transparency to ghost collaged experiences called *spatial memories* in the form of sound recordings, text, and images to make visible disenfranchised perspectives of the city in the digital medium. These collected spatial memories are then GPS-mapped to produce understandings of spaces of which in-group content consumers would otherwise be unaware.



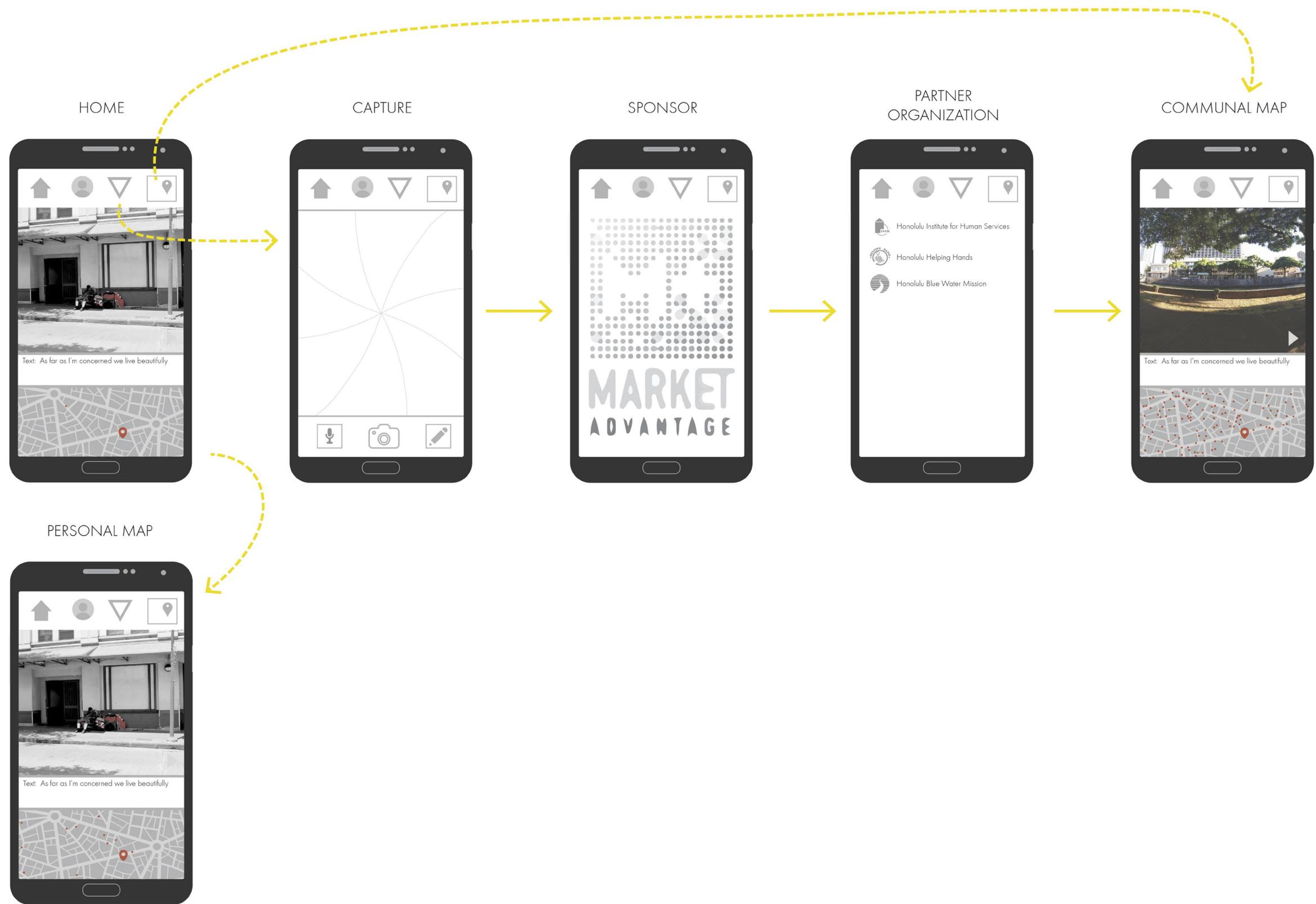
Figure 27: *Esra* Ghosted Experience

The digital intervention, Esra, is designed specifically to address the needs of homeless individuals in urban spaces. As homeless individuals do not have the same degree of permanent identity representing supports in the forms of buildings, the ability to stretch contact zone *string* between them is more difficult. To increase supports, Esra collages *digital supports*, in the form of spatial memories, into the city. Spatial memories, which are self-narrated through Esra, then provide the homeless individual with access to contact zones.

As Esra provides a medium for disenfranchised demographics to self-narrate, specific attention is given to identity protection, as they contribute to the digitally displayed archives. By providing a means for homeless individuals to self-narrate their GPS-marked spatial memories, a new digital medium is created. Esra's creation fills a design void analyzed in Chapter 5; when researching for case studies, no mobile application was found addressing homeless self-narration that is geographically marked.²⁹³ As most of the mobile applications available are other-narrated, narrated individuals lose agency over their identities. By constructing a self-narrated, curated, digital medium, safety measures can be put in place to protect the identities of homeless individuals. This protection of homeless identities promotes self-narration among a disenfranchised demographic whose stories are often told for them by outsiders.

Esra establishes a network of spatial memories able to be consumed by all citizens. The consumption of these spatial memories produces contact zones or strings capable of being experienced from a safe distance. Use of Esra by homeless people, as well as non-homeless or normalized individuals, allows new digital contact zones to be formed along with the addition of self-narrated spatial memories to the established digital archives. Viewing and sharing spatial memories through sound recordings, texts, and images produces digital contact zone strings, the production of which brings under-represented narratives into contact with those of normalized citizens, resulting in increased understanding and empathy for the intricacies involved in the lives of homeless citizens (i.e., out-groups) among in-groups of Honolulu.

²⁹³ For case study analysis, see Chapter 5.



7.2 Content

The digital string produced by Esra intertwines the spatial memories of homeless individuals adding to analog Honolulu. These spatial memories recorded in multi-media can be in a variety of formats including written poems, quotes, interviews, songs, drawings, and photographs, contributed by Honolulu's homeless population to create a digital archive of their experiences in the city. These archives become increasingly important as homeless individuals tend to be more transient.

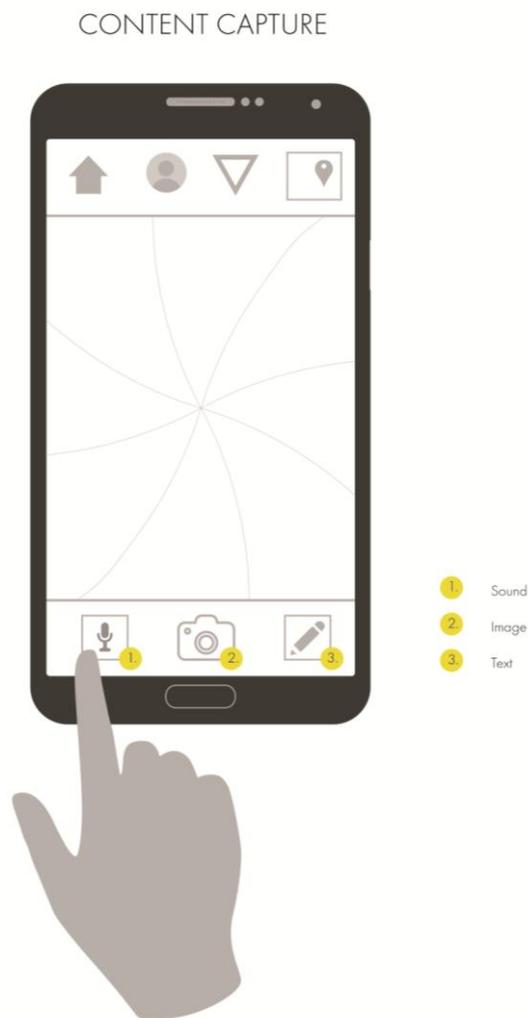


Figure 28: Content Capture Screen

Contributors to Esra are able to choose between three methods of contribution: text, image, or voice recording that take any number of forms, some of which have already been mentioned. Each of these methods captures information that is then displayed on the Capture Screen allowing users to quickly record the desired content. Content is then GPS-tagged for input into the Street View Map, as well as a 2D Reference Map. Following the content capture, Esra displays a sponsor pop-up allowing the contributor to make a small donation, paid by the sponsor, to a charity selected by the contributor. Sponsors, discussed later in this chapter, are companies or organizations who, in exchange for advertising, make donations to partnering service providers. After the Sponsor Screen has been displayed for three seconds, the contributor's spatial memory is placed into the reference map, as well as the Google Street View. The simplicity and limited screen options within the application make it easily accessible for anyone using it. In addition, these qualities streamline the time frame required to input Spatial Memories.

INTERFACE

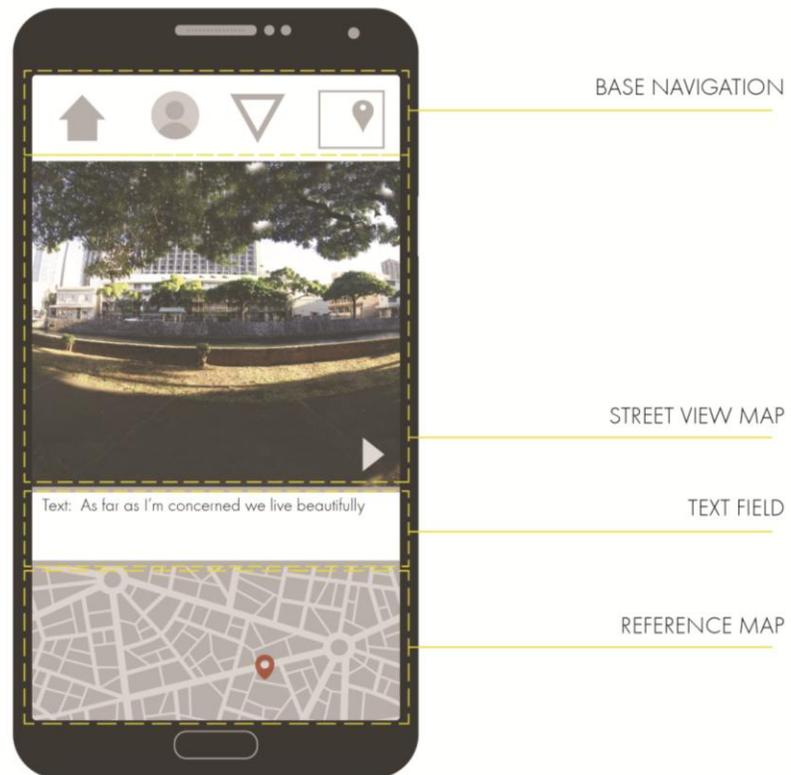


Figure 29 Interface Base Setting

Esra displays Spatial Memories on two separate screens—the Personal Map Screen and the Communal Map Screen. The Personal Map Screen is accessible only to registered content contributors, whereas the Communal Map Screen is available to anyone. Each individual contributing spatial memories through Esra has to be registered; these registered individuals called *contributors* each possess their own profile. A contributor's profile is visible to no one but that user. A similar tactic is used by many of the mobile applications analyzed in the case studies, allowing a degree of protection for the contributors. By logging in, contributors are able to access their Personal Map Screens through which they are able to see their own spatial memories in the form of sound, text, and image.

7.2.1 Sound

Sounds are recorded in Esra time and are GPS-stamped. This geographical data allows the creation of content that is analog site specific. When a user is in Esra's Communal Map or Personal Map, he or she is able to use a personal smartphone to hear recordings of spatial memories that transpired in that location with a 15-foot radius. As the user gets closer to the point at which the recording was produced, the speaker's voice becomes louder, similar to the way sound functions in analog space. In this way, as the user walks through the digital space, he or she is able to travel through an archive of dialogues. For example, while walking down River Street in Honolulu's Chinatown, individuals can listen to a woman named Sherrie speak about her son as they pass the bus stop, Dewey singing Beatles' songs as he sits on a lava rock wall, and Chelsea explaining, "My other half is from Honolulu, and that's why I'm here." These voices fade out and allow the user to move from one story to another as he or she progresses down the street, with a mute button on the cell phone screen permitting silence when desired.

7.2.2 Text

Spatial Memories in the form of texts are input in a similar way as with voice—time- and GPS-stamped. Contributors can write poems, monologues, descriptions, or comments regarding how they are feeling or the experiences they are having. As this text is connected to particular spaces, it can be seen as an embodiment of the emotions possessed by the contributor in a given space. The open format enables contributors to share to the degree that they feel comfortable. By allowing contributors to dictate the contribution method, users maintain agency over the message in addition to integrating documents written by disenfranchised individuals into the city's digital archives. As writings and vocalizations by transient individuals may not become otherwise included in communal narratives, Esra enables their experiences through these mediums to be recorded in Esra's digital archives for the city of Honolulu.

Typed information that has been gathered is directly input into the text feed. This feed scrolls between the Street Views Map and Reference Map on the Communal Map and Personal Map Screens. Similar to the sound contributions, the text format allows users to use words to dictate their spatial memories. This enables them to work and rework their contributions if desired or input them, unedited, directly into Esra. The reduction in initial input censoring enables contributors to see their effects on the digital city immediately. Instant gratification gained through spatial memory contribution mirrors that of many other social networked systems, as people are able to make a post and see it appear instantly on a communally shared forum.

7.2.3 Image

Static images including actual photographs, but not including video content, are received as time- and location-mapped, like all other contributions. However, image contributions recorded by smartphones differ from sound and text contributions as they possess more location information collected through the phones' interstitial sensors. Using information collected in this manner, Esra is able to collage images collected by contributors onto a map of collective spatial memories.

These interstitial sensors include accelerometers, magnetometers, barometers, and gyroscopes, enabling images to be laid transparently over existing Street View Maps. The magnetometer acts as a compass to measure the direction the phone is facing, while the gyroscope records rotation. The smartphone's internal barometer reads the phone's elevation, while the internal accelerometer uses the phone's magnetic and gravity field sensors to read changes in directionality and acceleration. The combination of these smartphone interstitial sensors is often used to find directionality in events such as driving inside a tunnel, as they can place location, directionality, speed, and acceleration in the absence of GPS. Together these interstitial sensors work with GPS to enable a broader depth of location-based data, stored in the image's meta-data, permitting the phone to map the directionality of the image, as it exists in a given analog space. The resulting image

captured through Esra contains all of the additional meta-data, allowing the image to be placed as it exists within that specific context.

Using meta-data, procured through interstitial sensors, the smartphone is able to ghost the spatial memory image, on top of another image from the Google Street Views, using technology similar to that used in Adobe Photoshop's Photomerge. This action is completed by aligning common reference points between the original image and the Google Map's image. The resulting image is one that takes into account the location of the photograph and places it on top of the map as it existed when the photo is taken. The resulting collage produced is a merger of Honolulu's overlapping spatial memories in the form of text, image, and voice.

The importance of recording the multimedia experiences of homeless individuals is based in the temporality of their respective time living in various urban spaces. As homeless individuals must deal with imposed sit-lie bans and other Honolulu City and County ordinances in locations such as Waikiki and Chinatown, narrative contributions from homeless individuals become increasingly important because they contribute to archives of *removed experiences*. The term-removed experiences can be defined as temporary and ephemeral experiences as one migrates through urban space—experiences that could otherwise be lost. The database collected by Esra functions to mark these narratives in digital space and time, as they are reduced by urban ordinances. Issues presented by influences from resources like WiFi-dense zones create design problems for Esra's digital applications. As homeless individuals are unable to access WiFi portals, they are also unable to upload their spatial memories. To mitigate this problem, photographs are automatically tagged as meta-data and can be saved for a later date when the user has access to WiFi.

Once the content is uploaded to Esra, it is combined with that of other contributors. The three methods of content contribution allow for multiple sensorial effects as spatial memories can be heard, read, or viewed while one walks through Honolulu or any other location selected by the user. The spatial memory consumer is then able to experience the city as it is recalled by a variety of narratives—a composite of previously disenfranchised

narratives guiding the user's experience through sensorial facets of the homeless individual's life.

7.3 Modes of Participation—Producers, Consumers and Curators

Participation in Esra can take place in one of three ways—through content producers, consumers, or curators. Users are able to oscillate between modes of participation. Design of the application is aimed at having homeless individuals produce content while roles of consumption and curation are opened up to all demographics, regardless of the user's in-group or out-group status. Curators function as measurers of sharing and safety to ensure the content of the site is not harmful or hurtful, and transfer data from one socially networked system to another. By specifically targeting homeless individuals as content producers and contributors, Esra's database collects experiences rarely had by normalized citizens, to be shared with all users, thus enabling the platform to be appreciated by all, while also being self-policing through the role of the curators.

7.3.1 Content Producers

Esra seeks to make visible, otherwise *invisible* persons and their respective narratives, as such narratives materialize in the form of spatial memories in urban spaces. By equipping Honolulu's homeless population with the ability to self-narrate, digital strings of information are stretched throughout the city. This act of recording spatial memories can be accomplished through a variety of mediums allowing individuals to share, to create contact zones, and to open up avenues for understanding their respective circumstances and situation.

User Role

The role of content producers in Esra is to collect data in the form of sound, text, and image so as to help produce an overall image of the city. This input can be kept in two separate archives retrievable through the mobile Esra application. One is a personal record stored in the Personal Map; the other is a public and communal record stored in the Communal Map.

By allowing contributors to decide how and with whom their experiences are shared, a sense of agency over each respective user's identity and its display is produced.

Personal Benefit

The importance of Honolulu's homeless individuals' self-narrating stems from the loss of knowledge in the urban archive if they are not able to share their experiences. Much of the information gathered regarding homeless individuals in Honolulu comes through secondary or "other-narrated" sources.²⁹⁴ Though this information does allow the dominant in-group to increase understanding of the homeless populace, it does not present the viewpoint of the homeless individual. As a result, the contact zones that are established through viewing quantitative and other-narrated depictions of homelessness is less sensory stimulating, producing fewer content consumers as a result of a less attractive experience. In addition, the content that does not produce strong emotional connections is less likely to create strong contact zones, reducing the likelihood of affecting in-group biases as they facilitate homeless individuals' capabilities of accessing the communal narrative.

Homeless individuals are motivated to contribute their spatial memories by sponsorship, the production of an online identity, as well as the self-satisfaction gained through participation in a larger community. When an individual contributes an experience, he or she is presented with a Sponsored Screen. This screen is an advertisement for the sponsor who has agreed to donate a nominal amount for every contribution. The nominal amount is between five and ten cents. The determined donation amount is not stated on the screen, producing a sense of aid that is not monetarily quantified by the contributor of the spatial memory. Following the Sponsor Screen is the Partner Organization Screen, allowing the content producer to select a partnering service organization within a five-mile radius of the capture location. This selection creates agency for the homeless individual over their decision-making ability, as he or she is able to contribute to the organization of his or her choosing. In addition, it enables the homeless contributor to experience reciprocation toward an agency that might have

²⁹⁴ "City and County of Honolulu Homeless Point-in-Time Count 2015"; *Honolulu 311*, version 1.8.6, Android, iOS (Honolulu, HI, 2015).

aided him or her in the past. In this way, the homeless person is able to map experiences in Honolulu as well as contribute to an agency that is aiding others in return.

As contributors share spatial memories, their inclusion in the digital city is increased. Their contributions are merged with other spatial memories to create a fuller picture of homelessness in Honolulu and the digital community at large. Layering of spatial memories allows contributors to become part of this digital community, which includes homeless persons purposefully sharing their individual experiences as they occur in digital space as well as analog space. Through interactions with Esra, contributors benefit from a sense of community as it serves to mitigate their relative isolation.

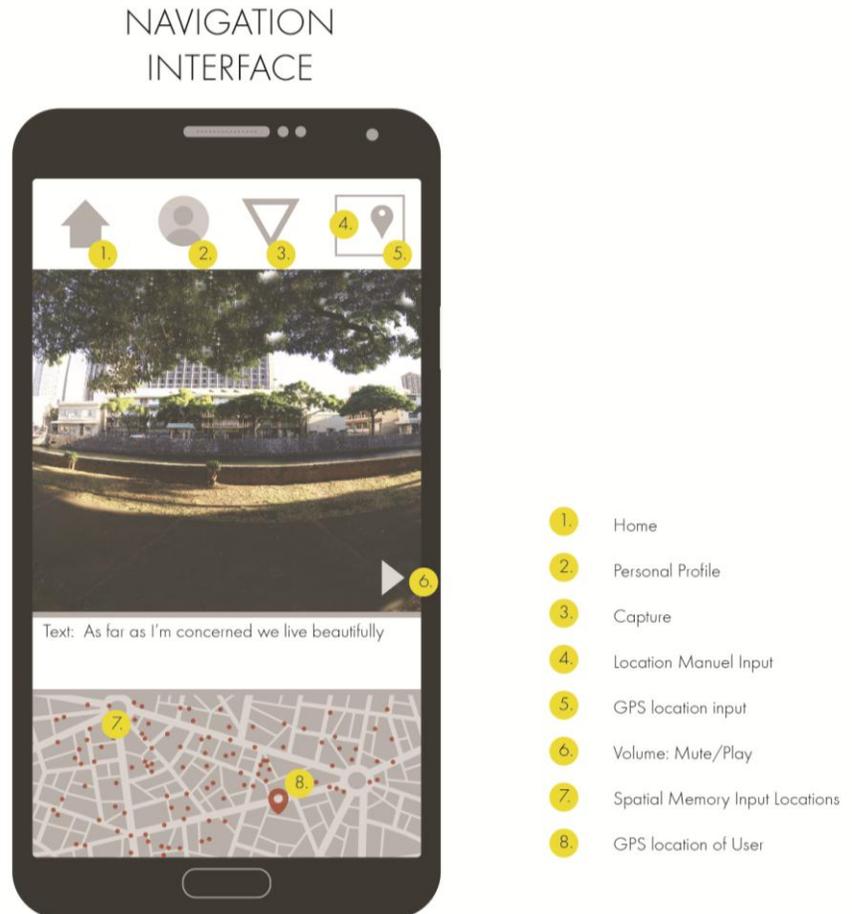


Figure 30 Navigation Interface

Spatial memories that are mapped and shared via the Communal Map Screen are visible to all participants, thus producing an online community, while contributions shared to the Personal Page enable contributors to record their own experiences for a personal archive. This personal archive can be valuable for a demographic that is often moving and unable to retain personal belongings as compared to normalized citizens. This private space for the contributors' documented experiences can serve as a sort of "home"—a place to retain memories and experiences but in a digital format.

7.3.2 Content Consumers

Content consumers are users of Esra who are not required to be registered, and, as a result, they do not possess a profile but are able to browse the spatial memories contributed by Honolulu citizens. Consumers exist as one of three modes of participation or user-ship, the other two being contributors and curators. Consumers can also act as curators or contributors, with the term user addressing each of the three modes of participation. Consumers can, but are not required, to contribute in order to participate, thus allowing them to browse the Communal Map permitting increased accessibility to all Internet users. The Communal Map can be experienced in the context of Honolulu by pushing the GPS button or typing in an address located on each of the interface screens. This can be done from any location. When content consumers push the GPS button, Esra's Communal Map Screen takes them to their location in analog space. This enables content consumers to walk through analog Honolulu as they simultaneously walk through the spatial memories constructed there.

The Communal map can also be accessed by typing a Honolulu address in the text box next to the GPS button. This action transports the consumer's 3D Street Views to that location in the city, allowing them to gaze down River Street through the screen of their smartphone. From the Communal Map displayed on Esra's screen, Honolulu's ghosted spatial memories are visible from anywhere in the world. In this way, consumers are able to dictate the level of closeness experienced with contributors by controlling the analog-sharing environment. As consumers are able to experience Honolulu from afar, new digital visitors can experience

Honolulu as it is composed of in-group and out-group experiences. The increased diversity, portrayed through Esra, adds to the digitally constructed archive of Honolulu, increasing accessibility of the communal narrative to out-group members. Increased access of out-group members to communal narratives by way of contact zones changes the existing digital construction of Honolulu narratives online, producing a space for out-group narratives to be heard by in-group members. The inter-group digital contact zone within Esra facilitates interactions that can provide a space for increased out-group understandings.

7.3.3 Content Curators

Content curating can take place in two ways: (1) reporting as it facilitates safety, and (2) sharing facilitating content reproduction through other digital platforms. Any user is able to curate content. If a user deems content to be inappropriate or damaging to anyone, he or she has the ability to flag it as such. Flagged content is then forwarded to the application moderator who determines if the flagged content is, in fact, damaging or harmful to anyone. If the content is detrimental, then it will be permanently removed from the site. This layer of protection ensures that contributors are not damaging their own reputation or being damaged by other users. In addition, content can be removed at any time by the original contributor.

Curators are also able to share content to other social networked systems (SNS). Sharing creates the potential for increased participation among users of other SNS sites as well as spreading the more inclusive narrative of Honolulu. Sharing is a feature prominent in many mobile SNS including WeShelter and We Are Visible, discussed in Chapter 5, as well as Facebook, Instagram and Yelp. The result is that many SNS online are interlinked to one another. By allowing users to share their spatial memories through Esra, which is then linked to multiple other social networked sites, they are able to significantly increase their inter-group digital contact zones. As sharing of spatial memories is first done by the contributor and only later can be shared by any user, narratives are able to quickly move through the digital construction of the analog space. The sharing through networking system propels and

propagates inter-group contact zones as they increase diverse online groups and communities.

7.4 Sponsors

Sponsorship enables the mobile application to provide incentives through donating to the users' selected service organizations. Donations occur at no monetary cost to the Esra users and are provided, instead, through sponsorship. The way the Esra sponsorship functions is borrowed from WeShelter designed out of New York City. The donation sequence for WeShelter is as follows. A user taps a large button on the screen to unlock a donation, and the watches a three-second advertisement before selecting a service agency to which they are able to donate. The three-second advertisement states that the donation is being provided by the sponsor. The full duration of the transaction lasts from thirty seconds to one minute. Sponsors of WeShelter who donate to the user-selected service organization, are typically budding technology-based companies, such as WeWork, Bumble, and Kickboard.

The benefits of sponsorships are defined as the donation to a partnering organization at no cost to the user aside from three seconds on the Sponsor Screen. The sponsors gain advertising time through the application as well as a tax write-off, as they are making donations to a non-profit organization. By doing this, contributors gain awareness of agencies in the area and incentivize the original contributor.

7.5 Conclusion

Italo Calvino created the city of Ersilia in 1972, making visible through string relationships and contact zones, stretching through the identity-marked supports of the city. Since Calvino's initial depiction of the relationship strings, increased technology has created a new digital string to extend throughout the city. The digital string stretches like those of agency, authority, trade, and blood, to create yet another way to experience the analog city. Differing from the other strings, the digital string is not dependent on the marking of identities in space through architectural supports to create contact zones, but instead is able to attach to digital as well as analog supports. The result is a broader range of contact zones stretched

throughout the city connecting digital to analog, as the diversity of identity representations grows. Rapid growth of the digital string has enabled citizens to stretch contact zones, connecting their self-narrated experiences of the city through mediums like Twitter, Yelp, and Facebook. By focusing on the lack of contact zones among Honolulu's out-group citizens, the mobile application Esra allows muted identities to be depicted in space, thus enabling the extension of contact zones.

The importance of digitally produced contact zones can be found in their ability to facilitate protected interactions as well as produce a medium of communication for those who are less welcomed in common community forums. As homeless individuals are being forced to relocate throughout their cities at an increasing rate, as a result of restrictive urban ordinances, their ability to contribute in analog space is greatly diminished. Simultaneously, access to the communal narrative is seen as reduced in digital space through the lack of socially networked systems specifically designed for homeless individuals. The production of Esra counters identity reduction digitally by creating a medium designed specifically for homeless individuals to narrate their spatial experiences and memories. Recorded experiences in the form of spatial experiences and memories are then used to tie digital space to analog space by representing them within one another. Many digital strings tie contact zones between analog and digital space, but none of them is designed specifically for homeless individuals to narrate their experiences marked in space.

As Esra is designed to serve the narrative needs of homeless individuals—an out-group demographic that is often negatively affected by in-group biases—special precautions are taken in the form of identity agency and self-policing. As means of self-narration and representation are given to homeless individuals, in the form of contributing spatial memories through Esra, it is important that contributors be able to maintain agency over the contributed content, as it is representative of their respective identities. In allowing contributors to remove spatial memories from Esra at any time, as well as allowing them to keep spatial memories private, they are able to maintain control over their representation. This element is very different from many other applications produced for homeless individuals, as this application enables them to narrate their spatially marked experiences and

whether or not to contribute them to the communally accessible archive. This ability to control their identity contribution allows them to create a safe digital home for the representation of their respective identities. In addition to granting contributors control of their spatial memories, if content is deemed to be damaging these users, it is removed. This policing is conducted through the flagging of content deemed inappropriate. Appropriate non-damaging spatial memories then create the supports to which inter-group contact zones can be tied.

Digital inter-group contact zones establish for homeless contributors a point of access that was previously unavailable. As contact zones are stretched from previously unmarked spatial memories scattered throughout Honolulu, user groups who previously were unable to contribute to the communal archive are admitted. As a result of the ubiquity of the Internet, contact zones produced through Esra are not restricted to Honolulu, but are able to stretch out into the world attaching to users internationally. The resulting contact zones in Honolulu, as well as internationally, are able to alter in-group as well as out-group bias.²⁹⁵ Modifications to inter-group biases as a result of increased contact zones have been correlated to modifications in empathy²⁹⁶ as well as decreases in prejudice.²⁹⁷

As Esra increases empathy from in-group members and decreases prejudice by fostering inter-group contact zones tied to spatial memories of disenfranchised demographics, it alters the normalized perception of Honolulu. The newly created Honolulu, with citizens more empathetic to the plight of homeless individuals, enables increased inclusion in communal narratives, which goes on to facilitate urban interactions. The resultant Honolulu, with archives containing diverse spatial narratives, is more inclusive of its citizens as they are able to participate digitally in the analog city.

²⁹⁵ M. A. Hogg, "Towards a Single-Process Uncertainty-Reduction Model of Social Motivation in Groups"; Pettigrew, "Intergroup Contact Theory."

²⁹⁶ Pettigrew and Tropp, "A Meta-Analytic Test of Intergroup Contact Theory."

²⁹⁷ D. M. Mackie, T. Devos, and E. R. Smith, "Intergroup Emotions: Explaining Offensive Action Tendencies in an Intergroup Context," *Journal of Personality and Social Psychology* 79, no. 4 (October 2000): 602-16; Charles Stangor, Linda A. Sullivan, and Thomas E. Ford, "Affective and Cognitive Determinants of Prejudice," *Social Cognition* 9, no. 4 (December 1, 1991): 359-80, doi:10.1521/soco.1991.9.4.359.

Chapter 8 Conclusion Empathy through Digital Voice

Empathy is about finding echoes of another person in yourself.

–Hamid Mohsin²⁹⁸

8.1 Discussion

Mobile technology is being employed increasingly to alter the lives of homeless individuals in the twenty-first century. In 2015, the United States' federal government spent more than \$4.5 billion to address issues surrounding homelessness, with programs spanning many agencies, including HUD, the VA, the Department of Health and Human Services, and the Federal Communication Commission. Given this funding, the U.S. federal government appears to be introducing technologically innovative ways to aid a demographic that has been historically downtrodden. These innovative methods of amplified inclusion of impoverished Americans consist of projects like the Federal Communication Commission's Lifeline cell phone program,²⁹⁹ as well as Project Reach,³⁰⁰ which work to place mobile phones into the hands of homeless individuals and to create mobile applications aimed at the specific needs of these homeless individuals.

By addressing the technological needs of the disenfranchised homeless demographic, the federal government is acknowledging the ability to use this new mobile technology as a means of improving socio-economic position. Their funding can be seen as both indicative of the ubiquity of mobile phones as well as investigating their underexplored potential to help homeless individuals better their personal circumstance. This is true especially of the

²⁹⁸ Cressida Leyshon, review of *This Week in Fiction: Mohsin Hamid*, by Hamid Mohsin, *The New Yorker*, September 16, 2012, <http://www.newyorker.com/books/page-turner/this-week-in-fiction-mohsin-hamid>.

²⁹⁹ "Lifeline Program for Low-Income Consumers."

³⁰⁰ "Project REACH Mobile App Challenge."

Reach mobile application design competition, which sought design solutions from teams throughout the United States to address issues affecting homelessness. This competition, and others like it, explores the underdeveloped potential of alternative digital methodology to relieve long-standing issues of resource and aid allocation to homeless individuals, that have been addressed by government as well as private agonies through a growing number of traditional and now digital mediums.

Through researching growing trends regarding the use of technology involving homeless individuals, the design solution, Esra, proposes that the disenfranchisement of homeless individuals surpasses physical needs into spaces of inclusion, which can then be met through amplifying their digital voices. The significance of expanding incorporation of homeless individuals through digital mediums lies in its ability to create contact zones. These contact zones are employed to increase empathy within non-homeless people and decrease in-group prejudice according to intergroup contact theory.³⁰¹

The scope of this doctorate project does not address vast amounts of segregation that exist in virtual mediums and how it could be superimposed through in-group biases affecting homeless individuals' ability to access and build digital contact zones. Though it has been proposed by some of the studies analyzed in Chapter 3 that the effects of online segregation could be mitigated through identity management to combat the potential for exclusion from certain online groups, no conclusive evidence exists as to its effectiveness. Additional research is needed to develop conclusive evidence as to the receptiveness of online communities to applications like Esra. To verify Esra's success the rate of inclusion into other social networked sites could be tested to determine the rate at which spatial memories from Esra are able to infuse other social network systems. Moreover, large steps forward in terms of mobile innovations and capabilities further enhance digital inclusion platforms ability to articulate different user experiences in diverse ways. Moving into the future, the

³⁰¹ Thomas Pettigrew, "Intergroup Contact Theory," *Annual Review of Psychology* 49 (1998): 65–85; Thomas Pettigrew and Linda R. Tropp, "A Meta-Analytic Test of Intergroup Contact Theory," *Journal of Personality and Social Psychology* 90, no. 5 (2006): 751–83; Anthony G. Greenwald and Thomas F. Pettigrew, "With Malice toward None and Charity for Some: In-group Favoritism Enables Discrimination (Report) (Author Abstract)," *The American Psychologist* 69, no. 7 (2014): 669.

uses of socially networked systems for homeless individuals will continue to grow as use does with non-homeless persons.

8.1.1 Contributions to Practice

As architects and urban planners come to know more about the totality of inhabitants within cities, designers are increasingly able to improve design solutions for urban spaces. This is not to say that by informing designers of the urban homeless plight, they will design more inclusively. However, through increasing inclusion of unsheltered persons narratives, this project aims to expand upon the variety of people considered when urban spaces are designed. As the design solution aims to create a more inclusive archive for cities such as Honolulu in an effort to boost contact zones, it also aims to create a reservoir of knowledge that can be drawn from to produce more inclusive cities. By focusing on urban inhabitants as primary drivers of urban development, it proposes that a more complete understanding of those drivers would produce outcomes in the built environment better suited to the users.

8.2 Review

This dissertation finds foundation in three theoretical backgrounds: feminist research, urbanism, and digital humanities. By employing these preexisting frameworks, problems relating to homeless disenfranchisement can be seen as they exist in the city (urbanism) as the result of limited vocal ability (feminism), which can then be amplified using digital mediums (digital humanities). In drawing knowledge from these foundational theories, an interdisciplinary awareness of cities is obtained. The city structure, with its multidisciplinary lenses is then utilized as a framework to understand communal narratives, as some contributions are amplified and others muted. In effect, narrative methodologies a borrowed feminist tool, enable the city to be viewed through understanding structural hierarchy of dominant and suppressed narratives. Urban theorists from Dolores Hayden to Jane Jacobs suggest that these hierarchies become evident in the urban fabric and through monuments, visible history markers in cities, and through which urban citizens determine what is built within a city, as that urban form represents them in space. Built forms indicative of identity power relationships within the analog city then go on to produce contact zones.

Contact zones, as described by feminist writer Mary Louis Pratt, are places where cultures clash and grapple.³⁰² Intergroup contact theorist Thomas Pettigrew explores the potential of these spaces of interaction to influence the feelings of empathy as well as prejudice in those who are not part of the out-group—in this case that of their perception of homeless individuals. Contact zones within the respective city allow for the facilitation of interactions between the disenfranchised homeless out-groups and socially normalized, housed in-groups. Pettigrew’s extensive meta-analytic research could then be used to propose contact zones as a tool for disassembling in-group bias and increasing participants collective empathy toward homeless individuals by accepting and understanding their out-group narratives³⁰³. By acknowledging the function of contact zones in analog space as well as digital space, the benefits of analog contact zones can be replicated in digital contact zones with reduced inter-group anxiety and increased situational control in comparison to that within physical contact zones. The digital contact zones’ effects on anxiety as well as on situational agency can be seen as intertwined as digital inter-group participants are increasingly able to determine their desired level of participation, as well as the degree to which they would like to disclose their respective identities.

Complications associated with homeless individuals inhabiting digital contact zones are then analyzed through their access to information communication technology (ICT); examples of such difficulties are procuring a smartphone or gaining access to a public library that has computers for personal use. The importance of access to ICT as it facilitates entry into the digital city is due to its potential to affect digital inter-group contact zones altering in-group perceptions. The survey conducted in Chapter 3 detailing the specifics of 16 different studies³⁰⁴ of homeless individuals’ use of ICT, examined together do not conclusively arrive

³⁰² Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation* (London, Taylor, and Francis, 2003).

³⁰³ Pettigrew and Tropp, “A Meta-Analytic Test of Intergroup Contact Theory.”

³⁰⁴ Mary Yost, “The Invisible Become Visible: An Analysis of How People Experiencing Homelessness Use Social Media,” *Elon Journal* 3, no. 2 (2012): 21–30; Jahmeilah Roberson and Bonnie Nardi, “Survival Needs and Social Inclusion: Technology Use Among the Homeless,” in *Proceedings of the 2010 ACM Conference on Computer Supported Cooperative Work, CSCW '10* (New York: ACM, 2010), 445–48, doi:10.1145/1718918.1718993; C. LeDantec and W. Edwards, “Designs on Dignity: Perceptions of Technology among the Homeless” (Florence, Italy: CHI, 2008); Eric Rice et al., “Mobilizing Homeless Youth for HIV Prevention: A Social Network Analysis of the Acceptability of a Face-to-Face and Online Social Networking Intervention,” *Health Education Research*, 2012, cyr113; Eric Rice, Alex Lee, and Sean Taitt, “Cell Phone Use among Homeless Youth: Potential for New Health Interventions and Research,” *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 88, no. 6 (December 2011): 1175–82, doi:10.1007/s11524-011-9624-z; Eric Rice, “The Positive Role of Social Networks and Social

at rates of ICT growth. The survey's varied results can be attributed to a lack of sequential data collected from comparable sub-demographics in the same area, as discussed in Chapter 3. As findings vary widely by location and sub-demographic, the trend of use indicates that the adoption of ICT is growing among homeless individuals with some sub-demographics demonstrating 92 percent user-ship.

The Federal Communication Commission has recognized the value of ICT devices in aiding disenfranchised individuals, resulting in subsidies like the creation of the Lifeline cell phone program. As use trends indicate increasing adoption of ICT among homeless individuals and federal agencies providing avenues of procurement, a theoretical space is created to propose the use of ICT as it includes mobile phones, to assist homeless individuals, and as such disenfranchised, citizens into the communal narratives of the invisible city.

As smartphones are considered for their ability to shepherd entry into the digital city, narratives are considered as they provide tethers to connect contact zones. Narratives are then analyzed as they exist in analog space as well as digital space. For feminist researchers the value of narratives, sometimes called narratology, stems from stories ability to construct knowledge as socially and situationally founded, enabling increased and diverse authorship. As such, third-wave feminism utilizes narrative methodology to deconstruct existing power relationships as they are constructed by dominant, essentialist, perspectives. Narratives as they indicate socially situated positions in power can then be perceived as having four

Networking Technology in the Condom-Using Behaviors of Homeless Young People," *Public Health Reports* (Washington, D.C., 1974) 125, no. 4 (August 2010): 588-95; Sean D. Young and Eric Rice, "Online Social Networking Technologies, HIV Knowledge, and Sexual Risk and Testing Behaviors Among Homeless Youth," *AIDS and Behavior* 15, no. 2 (February 2011): 253-60, doi:10.1007/s10461-010-9810-0; David P. Redpath et al., "Internet Access and Use among Homeless and Indigent Drug Users in Long Beach, California," *CyberPsychology & Behavior* 9, no. 5 (2006): 548-51; Michelle J. Freedman et al., "Cell Phones for Ecological Momentary Assessment with Cocaine-Addicted Homeless Patients in Treatment," *Journal of Substance Abuse Treatment* 30, no. 2 (March 2006): 105-11, doi:10.1016/j.jsat.2005.10.005; Karin M. Eyrich-Garg, "Mobile Phone Technology: A New Paradigm for the Prevention, Treatment, and Research of the Non-Sheltered 'Street' Homeless?," *Journal of Urban Health: Bulletin of the New York Academy of Medicine* 87, no. 3 (May 2010): 365-80, doi:10.1007/s11524-010-9456-2; Karin M. Eyrich-Garg, "Sheltered in Cyberspace? Computer Use Among the Unsheltered 'Street' Homeless," *Comput. Hum. Behav.* 27, no. 1 (January 2011): 296-303, doi:10.1016/j.chb.2010.08.007; Jill Palzkill Woelfer and David G. Hendry, "Homeless Young People and Technology: Ordinary Interactions, Extraordinary Circumstances," *Interactions* 18, no. 6 (November 2011): 70-73, doi:10.1145/2029976.2029994; Kimberly Bender et al., "Technology as an Underutilized Tool for Providing Health Services and Support to Street Youth" (137th American Public Health Association Meeting, 2009), <http://apha.confex.com/apha/137am/webprogram/Paper199105.html>; Rosanna E. Guadagno, Nicole L. Muscanell, and David E. Pollio, "The Homeless Use Facebook?! Similarities of Social Network Use between College Students and Homeless Young Adults," *Computers in Human Behavior*, including Special Section Youth, Internet, and Wellbeing, 29, no. 1 (January 2013): 86-89, doi:10.1016/j.chb.2012.07.019; David E. Pollio et al., "Technology Use among Emerging Adult Homeless in Two U.S. Cities," *Social Work* 58, no. 2 (April 1, 2013): 173-75, doi:10.1093/sw/swt006.

avenues of articulation: digitally produced narratives (digital narratives), analog-produced narratives (analog narratives), narratives as they are produced by the subject (self-narrated), and narratives as they are produced by onlookers for the subject (other-narrated). These narrative styles are then used to examine digital mobile applications, producing more in-depth analysis of the underlying messages they produce. Case studies of mobile applications create a road map of best practices among current digital urban narrative interventions, as they are self-narrated by homeless individuals and other-narrated by those who are not homeless.

The city of Honolulu is studied within this dissertation so as to integrate all of the understandings gained through analyzing a physical city composed of rules, regulations, and individual identities that affect in-group/out-group relationships. City ordinances, along with the spatial layout of Honolulu, are considered together to indicate power structures of the city, socio-economic standing of participants, and analog resources as they are laid out in physical space. Spatial effects of analog and digital changes in Honolulu can be felt echoing and altering contributions to Honolulu's digital archives.

Honolulu can, thus, be represented as a city of architecture created by powerful identities and positions representing themselves throughout the city. The resulting analog spaces go on to represent physical manifestations of dominant identities. These spatially defined identities are then used by homeless individuals in addition to sheltered persons, producing personal and individualized citizens narratives. Some of these narratives are accepted and integrated into the communal narrative that feeds the Invisible City.

Disenfranchised narratives remain attenuated as a result of contact zone isolation. As technology becomes increasingly prevalent throughout the United States, including the city of Honolulu within the Hawai'ian Islands, the means of accessing the Invisible City by way of the communal narrative is broadened into digital space. The created digital contact zone permits self-narrated spatially marked experiences contributed through a variety of ICT devices, including mobile applications. This is increasingly valuable as it establishes a medium for disenfranchised individuals to tie their experience into the communal narrative

by way of contact zones, creating space for increased empathy as well as reductions in prejudice.

8.3 Outcomes

This doctorate project concludes with the production Esra, a mobile application that allows for the integration of homeless individuals' experiences within a digital city; this mobile application is composed of otherwise disenfranchised narratives. Esra's iteration of Honolulu, composed of spatial memories, aims to bypass in-group biases to allow disenfranchised experiences to be entered into the communal narrative unedited. Disenfranchised narratives' digital means of entry enables inter-group participants to comfortably interact with the spatial memories of out-group members. This broadened understanding of homeless individuals spatial experiences, as they occur in Honolulu increases contact zones between homeless individuals and in-group members, amplifying inclusion of homeless individuals and empathy for their respective experiences, while reducing biases toward them.

Esra enables contact zones to be created by allowing users to digitally act out the spatial experiences of others with whom they would otherwise rarely interact. In participating as a consumer of the spatial memories, non-homeless, in-group, sheltered persons are able to gain understandings of the experiences of homeless, out-group, largely unsheltered individuals in ways previously difficult to access. In addition, homeless individuals are then able to contribute their respective experiences digitally through mediums specifically designed for their challenging situations. As such, the idea of recording an increasingly diverse array of persons' spatial experiences so as to compose a communal digital narrative within the Invisible City enables new constructions of the city to be had by users. This method of contribution allows control for the homeless spatial memory donor in ways uncommon among applications designed around homeless individuals; the contributor is granted control over the representation of their experiences in the application.

In order for Esra be successful, the application would need to gain user-ship among homeless individuals. This level of investment by homeless individuals may be difficult as the

number and dispersal of homeless persons in Honolulu is shifting rapidly as the result of city ordinances, and a variety of other factors. In many ways, ordinances causing homeless individuals to be dispersed from specific areas in Honolulu creates an urgency regarding the design solution as many of the existent storytellers will soon be moving to other areas.

Esra aims to increase inclusion of homeless individuals in cities such as Honolulu by creating a medium through which they can speak. This is in no way going to fix the crisis of homelessness, but may attract attention to the plight of the urban homeless and, as a result, increase empathy. As digital mediums become more prevalent and their capabilities of fostering connection increase, their potential grows regarding their ability to aid urban homeless individuals in Honolulu and throughout the nation. This potential will only intensify as technology further develops more opportunity for contact and thus empathy.

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