¿TE VAS O TE QUEDAS?

VARIATIONS IN EXPLANATIONS FOR HOUSING ABANDONMENT IN TIJUANA, MEXICO

Abstract:
Tijuana, a city along the Mexican border with the United States, is currently suffering from a housing abandonment crisis. Various explanations have been offered to explain the occurrence of the phenomenon, but none of these satisfactorily account for the uneven distribution of abandonment in the city. This study explores the variations in explanations for housing abandonment through a mixed-methods investigation. It finds that the "distance" that stakeholders have from the problem of abandonment has an effect on the complexity of explanations that these actors are likely to offer. It concludes with a discussion of the implications of this finding on Mexican housing policy, ending with prospective policy paths that could incorporate more effective multi-scalar, multi-agent approaches to housing provision.

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¿TE VAS O TE QUEDAS?: VARIATIONS IN EXPLANATIONS FOR HOUSING ABANDONMENT IN TIJUANA, MEXICO

A Thesis Submitted to the Department of Urban Planning and Design,

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by

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Contents

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Research for this thesis was conducted alongside the investigations of Harvard's RESHIM team during field visits to Tijuana. I want to thank INFONAVIT for the efforts they have made in promoting research on this important topic in recent years, and for granting me special access and use of valuable data sets throughout the elaboration of this research.

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GENERAL OVERVIEW:

There is a housing abandonment crisis in Tijuana, a crisis that is evidenced by the monumental landscapes of residential vacancy that are conspicuous across the city. This is a situation that has become increasingly common all over Mexico, with the Mexican government reporting the presence of over 5 million vacant homes all over the country and giving the nation a vacancy rate of 14% - the highest in Latin America. Areas along the northern Mexican border have been especially hard hit; cities in this region frequently boast vacancy rates that exceed 20%. Tijuana is no exception. Nationally, it is one of the metropolitan areas with the highest rates of abandonment as roughly a fifth of its housing stock, according to reliable estimates, sit empty. Actors in diverse sectors have offered varied explanations of the phenomenon pointing – in turn – to different factors including the economic downturn, the overproduction of housing, housing quality, violence and migration. The limitations of these frameworks are evident when one looks at the uneven distribution of vacancy in Tijuana. This incongruity begs us to reconsider whether perhaps we should be asking a different question in research on housing abandonment, one less focused on the factors that are driving vacancy across cities, and instead enquire what is driving the abandonment in housing vacancy at a smaller scale of analysis, including at the neighborhood or even household level. To that end, this thesis seeks to answer the question of what accounts for variations in the explanations of housing abandonment, focusing on Tijuana as a case study. The thesis builds on the assumption that if we have a better understanding of the smaller-scale, situational patterns of abandonment, we will be in a better position to proactively generate urban policies that can mitigate against the driving forces of abandonment.

To better understand the specific nature of factors specific to Tijuana, and taking seriously scholars' recent call to more fully incorporate a study of history in the evaluation of complex social processes and policy, this thesis begins by taking a detailed look at first, the history of social housing in Mexico and then at the history of urban growth in the city of Tijuana. In this second chapter, I argue that social housing production has gone through a series of translations in the last century, being tweaked and modified by the Mexican state to suit the political exigencies of a particular moment in time. The first translation was strongly shaped by the socio-humanistic imperatives of the Mexican revolution, producing housing that had a strong social purpose and reflected the egalitarian ideals of revolutionary architects, planners and government officials. This was followed by a second translation, which saw an intensification of the political role that housing production played in Mexico historically. During this period housing as patronage grew in prevalence as it was used as a concession to secure loyalties from unionized workers and government employees, or to allay the potential for popular uprisings in times of political crisis.

The most recent turn in Mexican housing policy, the third translation, has seen the subjugation of housing allocation to paradigms that stress market efficiency and rationalized resource allocation, a logic that has brought exclusively economic considerations to the forefront for the first time in Mexican housing. Although this rationality has been wildly successful at fulfilling the quantitative gap in housing, it has been ineffective at providing housing that functions adequately for the people that reside in them.

After laying out the development of housing policy over the last century in Mexico, the thesis turns back to the site, reviewing in the third chapter the literature that has been produced in regard to the urbanization of Tijuana since the Argüello family first imagined Zaragoza – now known as Tijuana – could be a viable settlement at Mexico's edge. I trace the rise of Tijuana from sleepy town of 242 of people to chaotic metropolis of informality, transnational communities and intermittent waves of intense state intervention. I argue that the urbanization of Mexico's 5th largest city has been largely led by informal or private actors, a process which has been the consequence of sporadic federal interest and weak local authority. This has meant that housing has in Tijuana been, by in large, produced progressively and informally, leading to an incredibly diverse, complicated and conflictual distribution of land use patterns across the city which has been mostly devoid of state direction or regulation. However, this apparent chaos in housing shifted substantially during the rise of the third translation of social housing policy, as Baja California and the northern region became preferred destinations for the production of government-financed housing in the country. This has created an urban fabric that alternates between irregularly produced *barrios* and geometrically planned *fraccionamientos*. This latest translation in housing policy, with its accompanying footprint of government-financed housing, has also been followed by a phenomenon that is altogether new in the city: housing abandonment.

In order to answer the question of what accounts for the intra-urban variation in housing abandonment in Tijuana, I engage in mixed methods research. The use of mixed method in this thesis reflects many of my ideas about research in the urban planning realm. First, the driving factor in research should be the issue of concern and not the method. Second, no single method is capable of capturing the complexity of urban process, therefore the need to combine methodological views and perspectives to produce a better understanding of complex realities. Third, by privileging one method, urban research accepts the biases inherent to such method as well as the risk of representing social processes as one-dimensional realities. The mixed methods paradigm is premised upon the notion that data collection and analysis across qualitative and quantitative methods generate a more robust set of findings that can account for interactions between multiple scales, multi-agent, and constantly evolving problems like housing abandonment in Tijuana. The challenge, though, is to truly integrate the research steps in order to avoid a disparate set of disconnected analyses.

Here is what I did methodologically. First, I explored narrations of abandonment using qualitative research tools, including unstructured interviews with key actors in housing in the city, alongside with windshield surveys and direct observations conducted during 7 weeks in Tijuana. The goal was to identify the main arguments and ideas used by different actors to account for housing abandonment in the city. The interviews revealed the importance of scale in interpreting abandonment, showing that the degree of separation from homeowners – either scalar or in terms of interaction – had an important effect on the interpretations that were offered by the various actors that I interviewed. Based on my analysis, actors at the top of the policy hierarchy were more prone to providing simple depictions of the problem and solution, in contrast to actors on the ground who spoke of complex interactions between factors that overlapped and mixed at different times to provoke abandoned housing.

Secondly, seeking to complement this analysis using the tools frequently used to inform the formulation of dominant narratives and views of housing abandonment, I also engaged in statistical modeling at the neighborhood level to identify and gauge the influence of physical and contextual factors to housing abandonment. A reflexive take on regression analysis revealed the utility of this type of analysis, as well as exposing the very real constraints that this methodology has in developing comprehensive interpretations of abandonment. The limitations imposed by poor data availability, as well as conflicting definitions of key indicators like abandonment and vacancy, promotes oversimplification that are simply unable to capture the range of processes that lead to housing abandonment across time. Nonetheless, statistical modeling at the neighborhood scales facilitated an understanding of the role of localized factors and place-driven processes that makes housing abandonment and urban phenomena hard to explain through extrapolations and brute generalizations. These outcomes are consistent with fieldwork, as interviews with local actors resulted in accounts of a rich and diverse understanding of what was leading to housing abandonment in Tijuana, but similarly revealed the limitations of this granular perspective in trying to connect the phenomenon to the larger forces at play in and around the city.

These results hint at three general conclusions: First, The ONAVIS – an acronym for Mexico's housing agencies – should engage in localized problem-definition when designing policy-initiatives and interventions because it promotes functionality and incorporates a multiplicity of perspectives. Second, evaluation and program design should carefully consider the locus of analysis and scale of action because "distance" affects the type of explanations that agents are likely to give for housing abandonment. Finally, in their most abstract form, they reaffirm the value of conducting mixed-methods study, not only for the strength has that triangulation brought towards the adequate representation of a phenomenon, but also for each methodology's ability to speak to a different spatial scale of analysis.

The first conclusion, a more theoretical epistemological observation, carries implications for those of us involved in policy analysis generally and housing policy specifically. It cautions us to more seriously consider how the locus of analysis – which I define as distance, either institutional or practical, to a problem – and the scale of action which actors have at their disposition (i.e municipal or federal agent) can affect how policy-makers, practitioners, and researchers understand problems and devise solutions.

As it stands, the predisposition to hypothesize the causes of abandonment at a predominantly quantitative and macro-level perspective that emanates from centralized agencies based in Mexico City has neither allowed government officials nor the academy to provide a complete diagnosis of the housing abandonment phenomenon, or to avoid the worst excesses of state simplification described by James Scott (Scott, 1998). Unfortunately, this has resulted in policy recommendations and evaluations that carry not only an inherent quantitative disposition, but also a scalar inclination. Thus, one of the conclusions of this work is to call on government agencies and scholars of abandonment to more fully incorporate varied methodologies in their evaluation of housing programs but also to include different scales of evaluation and problem-definition within their assessments of abandonment. This latter point will require not only a willingness to act, but also more widespread access to higher-quality data on the state of the nation's housing and increased funding for research work.

Further, pertaining to policy, this thesis has findings that complement and build on recent calls to begin to treat the house as more than a simple "object", and instead begin conceiving it as a "subject" (Davis, 2015). In addition to this crucial cognitive shift, an epistemological reconfiguration that demands a move away from the territorial confines of the housing unit and towards a wider conception of house as catalyzer of urban value, my analysis further argues that the subject of housing should be treated at varying loci of analysis, which will allow the varied housing "subjects" – definitions which differ significantly depending on the institutional and scalar positionality of actors – to enter policy initiatives and interventions. By shifting the scale of problem-definition, I argue that stakeholders will be more capable of creating policies that treat housing as as part and parcel of a healthy urban fabric, and also lead to housing that is appropriate for its context.

Finally, on a more epistemological note, mixed-methods studies are shown to be valuable and necessary for the study of housing abandonment in Mexico. This is true not only for the strength that triangulation brings to the adequate representation of a phenomenon, but also for increasing the robustness of understanding across spatial scales. Combining in-depth interviews with regression analysis allowed the development of alternative understandings of the abandonment phenomenon which were empirically tested using statistical modeling. This analysis confirmed that local experiences not only provide a richer pictures of the problems of abandonment, but also representations that are quantifiably as "true" as the simple depictions generated at the national level. At present, the majority of studies that look at abandonment rely predominantly on quantitative methodology to make assessments. This has led to a methodological uniformity which has not adequately represented the phenomenon.

I want to close on an optimistic note. A study of the history of social housing policy in Mexico, shows that it is in a constant state of flux, that housing policy undergoes translations depending on the exigencies of particular moments in time. The present translation, with its underlying epistemic commitment to economic rationality above all else, falls far short from the ideals of housing espoused during the Mexican Revolution. This can be seen as failure, or an opportunity. Those that see it as an opportunity, know it does not need to be this way. Fundamentally, I believe we are due for the next translation of housing policy in Mexico, but on that will only be consolidated with a serious modification of the ways in which we have traditionally understood housing. This thesis is just one part of that larger agenda; a crucial task if we are to be more successful at building housing that is responsive to the needs of Mexicans. Ultimately, if we are to stem the abandonment of houses, not just in Tijuana but in Mexico more broadly, changing our lens is our most urgent task.

1. THE COMPLEX LANDSCAPES OF ABANDONMENT IN TIJUANA

The first time I ever heard of Valle de las Palmas, the site of two housing developments in Tijuana, Mexico. I was still in college. A group of students and I had been invited to present a project initiative at the Clinton Global Initiative University that was being hosted in San Diego that year. Unsurprisingly, our group – which had been working on a bi-national education program along the Arizona-Sonora border – was brought together with other initiatives which were working in Mexico and deemed to be innovative. Among our panelists was a representative from Urbi Desarrollos – at the time one of Mexico's largest housing developers – presenting about Urbi's ambitions for the construction of an entirely new "sustainable city" in Tijuana's periphery. Because of how impressive the presentation was, even after all these years, I can vividly recall the renderings of solar-panel fitted homes and the pleasing narrative of cutting edge eco-technology. The young woman delivering the presentation spoke compellingly of the social good that projects like those in Valle de las Palmas were going to do for Mexico's poor. Their project was exciting and had the seal of approval of the Clinton Global Initiative University. Amidst all the buzz over their work, in which I was admittedly caught up, I remember feeling slightly skeptical. Somehow, a commercial housing developer seemed out of place –especially next to a former mayor of Ciudad Juárez and the executive director of a prominent non-profit – on a panel whose purpose was to discuss the issue of poverty reduction along the border.

The next time I heard of developments in Valle de las Palmas was several years later, and it was under very different circumstances. I had just started a Master's degree at the Graduate School of Design at Harvard, and had recently been hired as a research assistant to lead the Tijuana case-study for the Rethinking Social Housing Mexico project (RESHIM). In this new context and almost 5 years later, developments in Valle de las Palmas were no longer associated with the word innovation, or even sustainability. Only two words were casually used to refer to them: failure and abandonment.

From to left to right: Vandalized and abandoned guard house at the entrance of *Fraccionamiento Valle de las Palmas;* Medical facilities are located in a truck bed next to an Oxxo store; Exit sign advertising the development as a "magic village."

From to left to right: Unfinished homes at the entrance of Valle de las Palmas; Inside an abandoned home within a vertical condominium; Makeshift church and municipal facilities. All Photos by Mayra Melgar López.

It wasn't until I visited the developments that I fully understood why. As you drive in *Fraccionamiento Valle de las Palmas*[1] you are struck by the landscapes on the previous page. I had seen pictures in the newspaper and read accounts of what life was like in these peripheral neighborhoods, but nothing quite amounted to being there.

Although they may look unplanned, developments in Valle de las Palmas are no accident. They are the culmination of a decades long planning process that got its start in Baja California in the early 2000s. Given projections that demographic growth would over-run Tijuana municipality by 2030, the state and the municipal government embarked upon a planning process for the construction of a satellite city in Valle de las Palmas about 40 kilometers from Tijuana's downtown. The resulting Valle de las Palmas Master Plan was developed with the arrival of 2 million additional people in mind, a projected growth rate of 150%, which in hindsight the Organization for Economic Cooperation and Development (OECD) has called "overly ambitious" and "unrealistic." (OECD, 2015) One of the planned developments in Valle de las Palmas, slated for construction was *Fraccionamiento Valle San Pedro*, a development that was to be erected by the same national developer I saw give a presentation at the Clinton Global Initiative, Urbi Desarrollos. In its initial stage, plans were made for the production of 10,000 houses, with projections that as many as 160,000 units for 640,000 new residents could eventually be accommodated (OECD, 2015). The developer and the state planned for the creation of new jobs in the area and guaranteed the latest in sustainable urban design and city management would go into the developing the site. In order to promote the development, the state even allocated funds for the construction of a brand-new campus for the state university, which began operating in 2009. This project was much lauded as the future of sustainable urban planning in Mexico and became the country's first certified *Desarrollo Urbano Integral*

[1] Valle de las Palmas can refer both to a geographic location in Tijuana municipality or to a specific housing development that is located in Valle de las Palmas. There are two major housing developments in that location, both built by major Mexican housing developers: Fraccionamiento Valle de las Palmas (Grupo GEO) and Valle San Pedro (Urbi Desarrollos). Both companies invested heavily in the area in preparation for urban growth than never materialized, and today both suffer from service deficits, as well as high rates of abandonment. For the remainder of this paper I will use Valle de las Palmas to refer to geographic location instead of GEO's specific Valle de las Palmas development since both developments are in roughly the same condition. Should I be making comments that are specific to GEO's development, I will be clear that I am referring to *Fraccionamiento Valle de las Palmas*.

Sustentable (DUIS)[2]. The Clinton Global Initiative was not the only international organization to sing its praises. It received numerous prizes and recognition, including Mexico's sole invitation to UN-Habitat's World Campaign Expo hosted in 2010. At the time, UN-Habitat called Valle San Pedro, "an example to follow for those countries that are looking to promote their development, particularly when it comes to generating opportunity and employment" (Ochoa Movis, 2010).

In time, it has become apparent that the enthusiasm was misplaced. Only 2,700 units were ever built and the financial crisis brought construction to halt, pushing Urbi, along with fellow developers, Grupo GEO and HOMEX to the brink of bankruptcy. Promises for localized job creation were never met and the development has yet to be municipalized because it lacks basic services and urban infrastructure. Frequent blackouts and lack of running water, exacerbated by distance from centers of employment and rising criminality, have forced many residents to abandon their homes and seek their fortunes elsewhere. In 2014, Infonavit, Mexico's most important housing agency and housing provident fund, estimated that 7% of the houses in Valle San Pedro were vacant (OECD, 2015). An employee of GEO's *Fraccionamiento Valle de las Palmas* informed me that around 200 of the 2,000 units in the area had been abandoned.

As much as these developments left an impression on me, what astounded me more was that abandoned housing was not limited to Valle de las Palmas; they peppered the city. I found them all over Tijuana, during my various site visits as can be seen in the following page. The last time I lived in Tijuana was in 2000, and the city had not been like this. It was disorderly to be sure, with the many dilapidated and informally-built homes and neighborhoods that are characteristic of Mexican bordertowns. But, I do not remember seeing many that were abandoned, and definitely not the vacant wastelands that are present today.

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[2] The OECD provides an overview of the DUIS program in the 2015 Urban Policy Review for Mexico. The following excerpt, which I quote extensively, provides an excellent summary of the genesis and original purpose of the program: "The Certified Development (Desarrollos Certificados) initiative (formerly Sustainable and Integrated Urban Developments, DUIS) was established in 2009 in response to unplanned urban development throughout the country, a result of accelerated housing construction. The initiative aims to facilitate the elaboration of master-planned, compact, sustainable developments which incorporate many of the best practices in international planning: mixed land uses, diverse housing options, proximity to employment and transport networks, access to urban services, in addition to measures relating to sustainable water and waste management, greenhouse gas emissions reduction and energy efficiency. Certification is granted by the Inter-ministerial Housing Commission (Comisión Intersecretarial de Vivienda), which is composed of representatives from 17 ministries and other agencies.

Map 1. Map of Site Visits in Tijuana, Baja California

From to left to right: Unfinished homes in San Antonio. Photo by Francisco Lara; *Fraccionamiento Valle de las Palmas.* 10% of the homes in the development are abandoned. Photo by Mayra Melgar López.

This experience got me intensely interested in the abandonment phenomenon. Why was this happening? Who were the people leaving their homes? Why were certain areas of the city looking worse than others? And, could Infonavit and the nation's housing developers been aware and avoided this phenomenon?

Sólo falta que tú me abandones: Where Did Everyone Go?

As I started the research, I began to realize that the swaths of abandoned houses were not unique to the city Tijuana; they had actually become a ubiquitous part of the urban fabric in almost every major Mexican city since the start of the millennium. In 2010, Mexico's geography and statistics agency published the results of the decennial housing and population census. The final tabulations registered an astonishing fact: There were nearly 5 million uninhabited homes in the country, meaning that of the roughly 35 million housing units in Mexico, a full 14.2% were vacant – the highest vacancy rate in Latin America (Paavo Monkkonen, 2014; OECD, 2015). Now a vacancy rate unto itself is not necessarily problematic. Housing scholars have long recognized that every housing market has a naturally occurring vacancy rate that is the product of residential turnover, or unit reconditioning. However, vacancy in excess of this natural rate can have negative externalities that are problematic (Rosen & Smith, 1983). This is certainly the case in *Fraccionamiento Valle de las Palmas*, where the abandoned homes have been looted, stripped and vandalized. Beyond the problem of residential abandonment, these areas have also become notoriously bad places to live. Neighborhoods like these are frequently making headlines because of their criminality, their transportation issues, and service deficits. Paavo Monkkonen, one of the leading scholars on housing in Mexico, posits that Mexico's current vacancy rate is above what could be considered structural, estimating that it's about 4% above the international average. By way of comparison, he observes that the rental vacancy rate in the United States has varied from 5 to 10% since the sixties. Another study estimated that the United States average vacancy rate has been around 7% (Banco Bilbao Vizcaya Argentaria, 2011).

Northern Mexico was an area of the country that was especially hard hit, with cities along the border frequently boasting vacancy rates of over 20%[3]. Out of the ten Mexican metropolitan

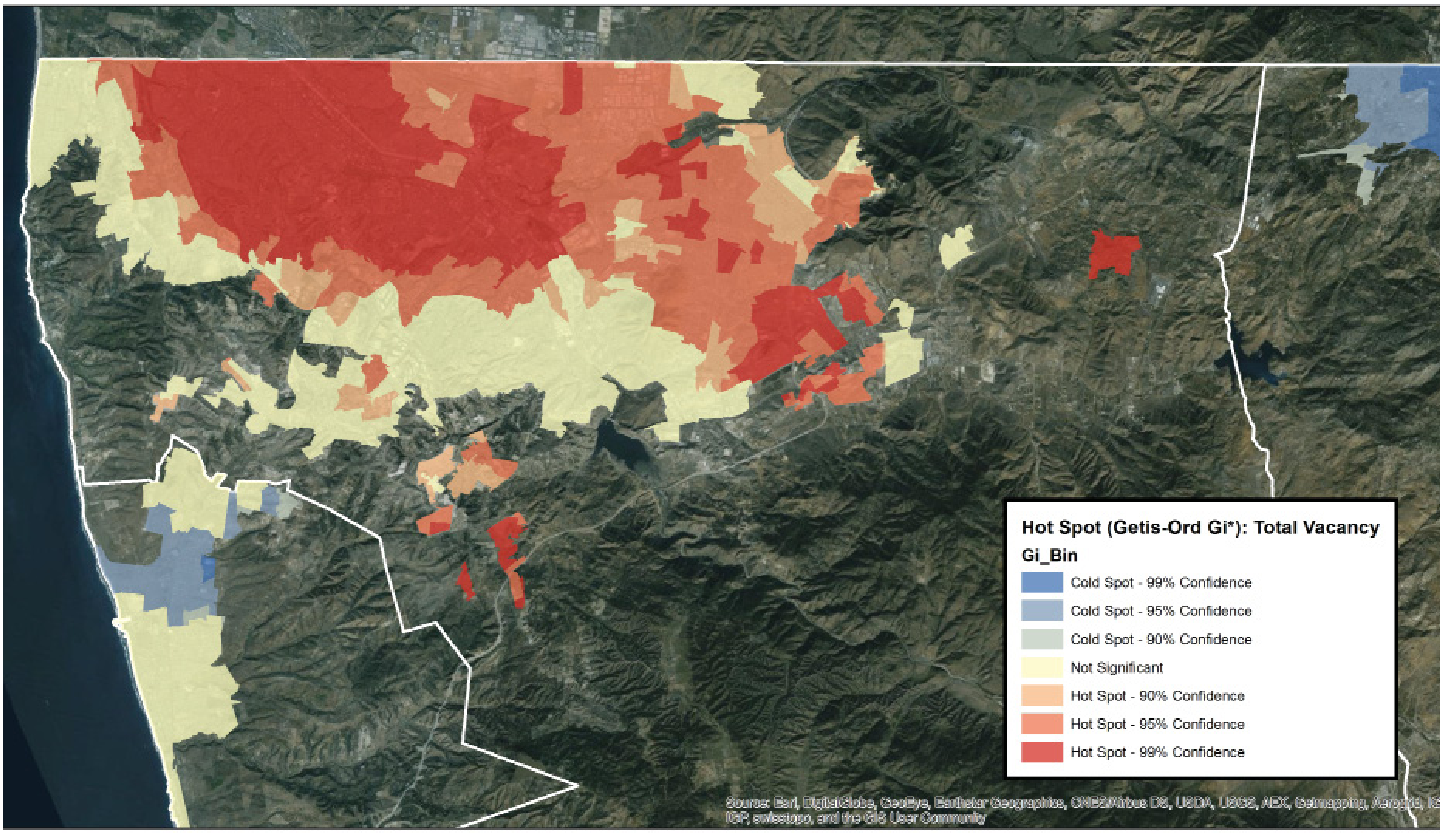
[3] For example, four major cities along the U.S-Mexico border besides Tijuana have extremely high vacancy rates: Júarez (24%), Reynosa (24%), Nuevo Laredo (21%) and Mexicali (20%).

areas with the highest vacancy rates in the country, six of those are located directly on the U.S-Mexico border (OECD, 2015). Tijuana is no exception. Tijuana suffers from one of the highest rates of housing abandonment in the country. Although estimates vary, in 2015 the OECD reported that Tijuana was among the ten Mexican metropolitan areas with the highest central city vacancy rates nationally. Vacancy numbers from the 2010 Census estimate that there are around 124,665 unoccupied units in the metropolitan zone, amounting to a vacancy rate of a little bit over 20%. The great majority of these houses (89%) are located within the confines of Tijuana municipality and the highest total numbers of abandoned units are found directly in central city areas or in peripheral areas of the city to the south and the west[4]. Nevertheless, finer grain analyses show that only a few areas of the metropolitan area have a disproportionate rate of abandonment relative to their share of the housing stock. These are entirely in peripheral areas of the city, specifically in the San Antonio de los Buenos, Sánchez Taboada and La Presa delegations and in the Valle de las Palmas area. The maps in the following page show the statistically significant concentrations of abandonment in the city, first in total numbers and then proportionally.

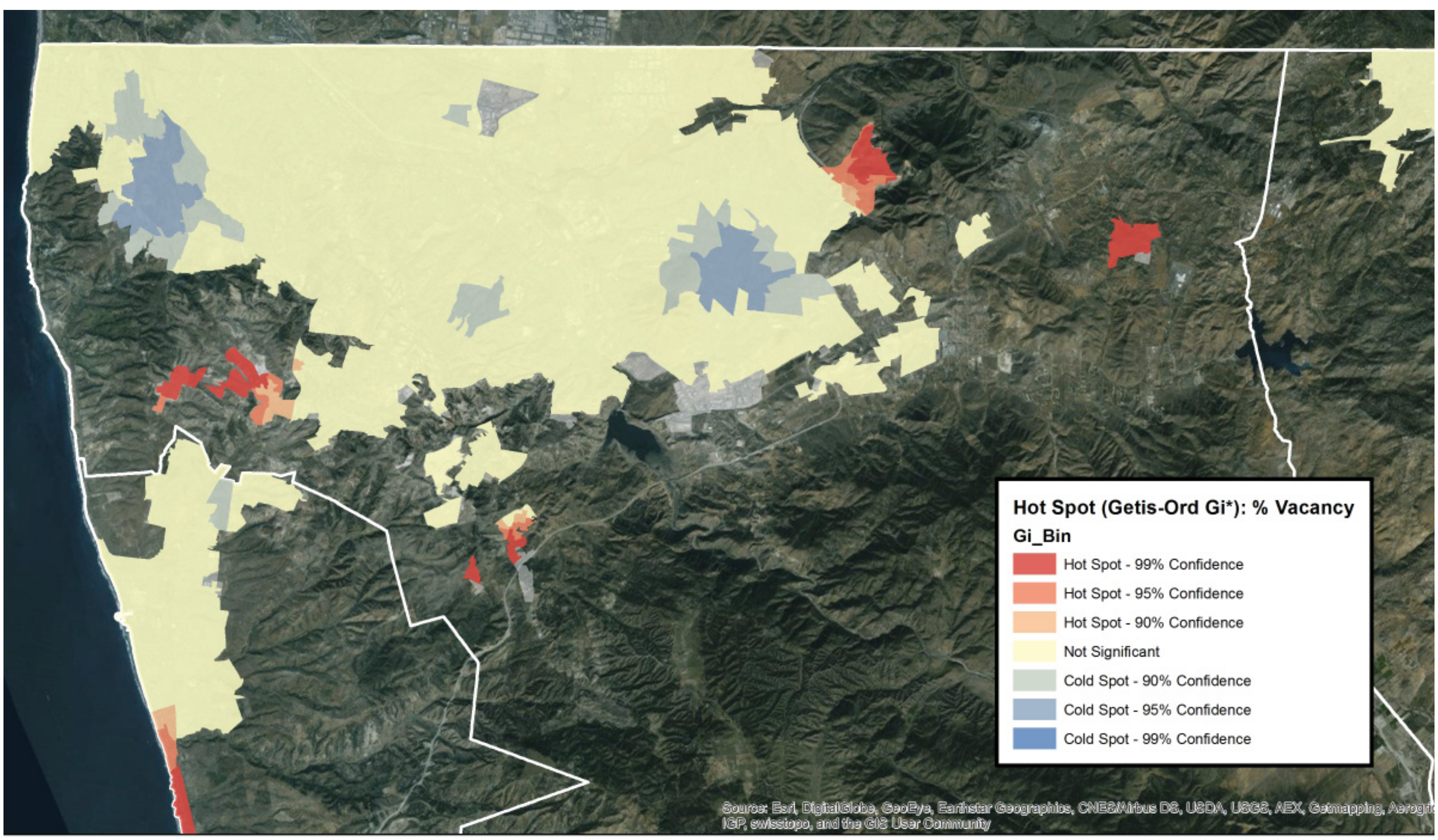
No puedo obligarte a quererme: The Explanations

Few dispute the numbers offered above. It would be difficult to deny that there is a disproportionate number of vacant units in the country. If the numbers themselves did not serve as enough evidence, pictures and stories are worth a thousand words. But, consensus ends with an agreement that a problem exists. Beyond that, there is very little agreement on what is causing people to leave their homes.

Map 2. Statistically Significant Concentrations of Total Vacancy in Tijuana



Map 3. Statistically Significant Concentrations of Percentage Vacancy in Tijuana



Source: Own elaboration based on 2010 Population and Housing Census.

A quick review of media accounts of the issue revealed a wide-array of explanations for the rising prevalence of abandonment, with explanations that ranged from failures in the judicial system (Sandoval Alarcón, 2012) to the recent changes that have been instituted in housing policy since Enrique Peña Nieto took office (Ocampo, 2013). However, some of the most common explanations seemed to revolve around economic issues, frequently in reference to the distribution of unpayable mortgages (Agencia Fronteriza de Noticias, 2014; Muñoz Rios, 2013; Replogle, 2014) or shifting economic cycles (Reyes & Cabrera, 2013; Sandoval Alarcón, 2012), or poor quality, either in terms of services (Burnett, 2014; Muñoz Rios, 2013; Reyes & Cabrera, 2013; ZETA, 2013) and infrastructure (Burnett, 2014; Muñoz Rios, 2013). It warrants mentioning that the latter two explanations were often mentioned either in the context of promoter misconduct or inadequate government oversight of construction. Related to these two actors, another common explanation made reference to oversaturated housing market produced by an energetic national housing policy (Burnett, 2014; Molina, 2013). Additional explanations, also included criminality (Replogle, 2014; Reyes & Cabrera, 2013; ZETA, 2013), the physical distance and social isolation of these new developments (Burnett, 2014; Ortíz Struck, 2015; Replogle, 2014; ZETA, 2013) and immigration (El Universal, 2011; Reyes & Cabrera, 2013).

Several scholars have tried to scrutinize these hypotheses. For example work has been done on unemployment (Paavo Monkkonen, 2014; Sánchez & Salazar, 2011), housing quality (INFONAVIT, 2010), overproduction (Banco Bilbao Vizcaya Argentaria, 2011; Paavo Monkkonen, 2014; Sánchez & Salazar, 2011), distance from urban centers (Banco Bilbao Vizcaya Argentaria, 2011), criminality (Banco Bilbao Vizcaya Argentaria, 2011; Fuentes & Hernandez, 2014; Paavo Monkkonen, 2014) and immigration (Banco Bilbao Vizcaya Argentaria, 2011; Paavo Monkkonen, 2014; Sánchez & Salazar, 2011). But, the majority of it is admittedly preliminary in nature, and the literature on housing abandonment in Mexico is surprisingly small given the breadth and gravity of the phenomenon. To my knowledge there are only four publically-available articles[5] which offer any sort of evaluation of the phenomenon. To give the

[5] In descending order, these are Monkkonen (2014), the housing transition in Mexico: Local impacts of national policy; Fuentes & Hernández (2014) Housing Finance Reform in México: the impact of housing vacancy on property crime; Sánchez and Salazar (2011) Lo que dicen las viviendas deshabitadas sobre el censo de población 2010 and Banco Bilbao Vizcaya Argentaria. (2011). Situación Inmobiliaria México: Julio 2011.

readers a sense of the dearth of academic work on the subject, Paavo Monkkonen, a scholar who has worked extensively on Mexican housing and has written one of the four investigations which are cited above, wrote of the subject in 2014: “In the case of Mexico, there is, surprisingly, only one academic article on this topic” (Paavo Monkkonen, 2014).

All of the work on abandonment that I have found to date owes some debt of gratitude to two seminal studies that were published in 2011. The first is a report written by the Economic Studies Service for the Spanish bank BBVA that dealt with vacancy in the context of a larger description of the health of the real estate market in Mexico. The BBVA bank study (Banco Bilbao Vizcaya Argentaria, 2011) was of the first to hypothesize a link between migration and housing vacancy, observing that 56% of the abandoned housing in the country was concentrated in areas with a negative migration balance or in Northern areas of the country. Furthermore, they found that the municipalities experienced a higher probability of housing vacancy if any of the following socioeconomic conditions were present:

- the municipality had more than 15,000 inhabitants, a high proportion of the population was above 60 years old,
- the population had relatively low levels of education,
- access to health services in the municipality was low in general;
- the rate of the housing stock that was missing at least one basic appliance[6] was high.

The BBVA also took a look at a limited number of housing attributes, finding that the probability of encountering a municipality with higher rates of vacancy than the national average was 56% higher in municipalities where any one of the following is true:

- the population worked in another municipality
- the proportion of the population who had bought their own home was high
- homeowners were the ones who actually lived in the houses.

Finally, they concluded that oversupply was definitely a factor, as the sharpest increases in vacancy were occurring in areas that had the highest proportion of housing that was being built. This was a veiled reference to the north, which due to its higher number of formally salaried

[6] These were households that were missing any of the following: a washing machine, a refrigerator, a TV, a vehicle, a computer, internet, a landline or cellular phone.

workers that work in urban manufacturing centers, concentrated a large percentage of the country's government financing (Paavo Monkkonen, 2009). They cautioned housing developers that the pace of housing construction should be commensurate to the demand, and that the housing that they constructed should at least have basic services. They also recommended that consumer education programs be strengthened to ensure that on the demand side home purchasing practices were judicious.

The second is article written by two scholars at El Colegio de Mexico, and the intent of the article was to describe the trends of recently released 2010 Census number and hypothesize about the causes. Building on the work done by BBVA, Sánchez and Salazar confirmed that there was a spatial concentration of housing abandonment in northern Mexico, with three border states having the highest proportion of vacant housing in the country: Chihuahua (19.1%), Baja California (19.0%) and Tamaulipas (18.6%). In terms of the growth rate of abandoned housing, Baja California had the second highest increase in the country with a 67% increase since 2005. This rate was only surpassed by the southern state of Quintana Roo which had a whopping 88% increase in vacant homes in 5 years.

Although their work did not go as far as BBVA in trying to confirm their findings statistically, Sánchez and Salazar noted that there were some potential patterns in the distribution of abandonment. They called attention to the fact that states with high abandonment, like Baja California, also tended to have concurrently high rates of unemployment due to economic restructuring and high rates of violence associated with narcotrafficking. Moreover, they reaffirmed the hypothesis that had been promulgated by BBVA that migration might in some way be connected to vacancy, in addition to the probable contribution that government-financed housing was having on abandonment.

These articles have received more attention in recent years. Monkkonen's 2014 working paper on the subject is probably the most robust study conducted to date. He conducted regression analysis on vacancy in Mexico's 100 largest urban areas, explicitly testing the connections that are hypothesized by Sánchez and Salazar in 2011. Unsurprisingly, he found a strong association between vacancy and three of the proposed factors, international migration, drug-violence, and the presence of government-financed housing, although the relationship was more tenuous when it came to unemployment. He also tested a series of other variables including population growth rate, population density and an indicator of marginalization, but these proved to be unimportant. Another recent study found a statistically significant association between housing vacancy and burglaries in Ciudad Juarez, stating that high vacancy had a positive effect on property crimes (Fuentes & Hernandez, 2014).

In addition to the limited body of academic work, there are also a series of government reports – not all of them widely distributed – that have been produced by the various agencies that work in housing in Mexico, a group of agencies that have collectively been referred to as the ONAVIS[7]. Beginning with the 2011-2015 Financial Plan, Infonavit[8] in particular, set forth an institutional agenda to try and evaluate the factors that were driving the vacancy phenomenon. This report announced the inauguration of several internal research initiatives "to follow through on the Institute's interest in fully understanding the scope and causes of inhabited housing" (INFONAVIT, 2009). The report itself contained some interesting numbers, including the surprising estimation that 26% of the housing financed from 2006-2009 by Infonavit was currently uninhabited. It also included the results of a survey that asked 188 Infonavit affiliates why they were not currently living in their government financed home. 38% responded that it was because of the lack of basic services or furnishings with another 31% stating that it was too far from work, school or family. 10% responded that that they were not living in their home because they saw it as an investment, and another 10% answered that the housing was of poor quality. 7% said that the house was too small and a small proportion (3%) responded that it was unsafe.

Since the publication of this financial plan, the slated research projects have been finalized (INFONAVIT, 2010, 2012a, 2012b). Unfortunately, their findings have not been widely circulated, which has made their conclusions much harder to scrutinize. Using secondary sources, it is possible to roughly piece together their findings and include them here, but these

[7] ONAVIS is a Spanish acronym that stands for *Organismos Nacionales de Viviendas.* It is the short hand used to refer to all the agencies involved in housing development in Mexico. This includes INFONAVIT, FOVISSTE and CONAVI, among others.
[8] INFONAVIT is a government housing institution that has been in operation in Mexico since 1973. Its acronym roughly translates as "The Institute for the National Worker's Housing Fund." I go into further detail about its history in Chapters 2 and 3, but in brief Infonavit essentially operates as a government-backed mortgage bank which is financed by a 5% payroll tax on its employees. In 2005, the organization accounted for 70% of loan volume for social housing (Paavo Monkkonen, 2009) and in the last decade they have provided 6 million individual credits or housing loans (OECD, 2015), making it the single most important source of housing financing in the country.

reports should be made publically available. According to the OECD and Monkkonen, the commissioned reports started by taking a general survey of housing state in 6 different cities, including Tijuana. This was necessary because Infonavit does not regularly conduct an inventory of the conditions of its housing stock (OECD, 2015). After concluding the survey, it followed up via telephone with 309 *derechohabientes*[9], or Infonavit-affiliates, who confirmed that they no longer inhabited their home. When asked why they had decided to leave, a primary reason was that the home that they had been given was too far away from centers of employment (INFONAVIT, 2012b). This same study also reported that a number of individuals (13%) were taking out housing loans simply because they were afraid of losing the opportunity to do so, and that another 18% had taken the loan out simply as an investment[10]. The Institute also noted in this study that the majority of owners intended to move to these homes eventually, and that some had even expressed satisfaction with their decision to purchase these homes[11].

While there is no question that these sort of studies are valuable, they confine their analysis primarily to the individual consumer and their specific rationale and less to the actual conditions of the housing or other built environmental conditions. This is important not just because attention to these conditions gives a more nuanced understanding of housing abandonment, but also because they will have some bearing on the policy responses. If it is a problem of individual decisions, then INFONAVIT might change its subsidy policies with respect to mortgage granting. If it has something to do with design, then policy should focus on that; if it has to do with amenities, then this must be addressed in the housing production and the mortgage granting process.

All in all, the review of the explanations that are commonly presented in the media, academic work and government institutions, present a fairly complicated picture of the causes of

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[9] In English, *derechohabiente* is translated literally as "right's holder." Broadly, it is the term used to refer to anyone that is entitled to benefits from a government institution. In this case specifically it refers to affiliates to the government financing institutions like Infonavit, Fovisste, CONAVI, etc. Infonavit-affiliates are any worker that works for a private employer, be it at an Oxxo or a large investment firm. They are automatically enrolled in the housing system once they begin to get paid.

[10] It is not clear from either the OECD paper of Monkkonen's work whether these two figures (13% and 18%) refer to a national sample of Infonavit affiliates or from the 309 affiliates that were interviewed by phone.

[11] It is also unclear from Monkkonen's paper where this observation is derived from. Presumably, since it refers to the owners of uninhabited houses, this is based on the 309 individuals that were surveyed by Infonavit.

abandonment. However, the more carefully I reflected on these explanations specifically in relation to Tijuana, the more doubts I began to have about their applicability to Tijuana.

No es posible ganarle al destino?: The False Destiny of Tijuana's Abandonment Crisis

On their own, these explanations point to Tijuana as an unfortunate victim of circumstance. With a high proportion of "migrants," historic violence at the beginning of the millennium (Sánchez & Salazar, 2011), proximity to the United States and a high volume of housing, no wonder Tijuana has such high rates of uninhabited homes. Nonetheless, while it seems that these hypotheses are effective at being descriptive, they fall short of developing a robust mechanism and temporally adequate assessment of the preconditions that are pushing people out of their homes. In other words, they are quite effective at pointing out that certain characteristics are correlated with abandonment, but fail to provide logical explanations in which these two are connected ways.

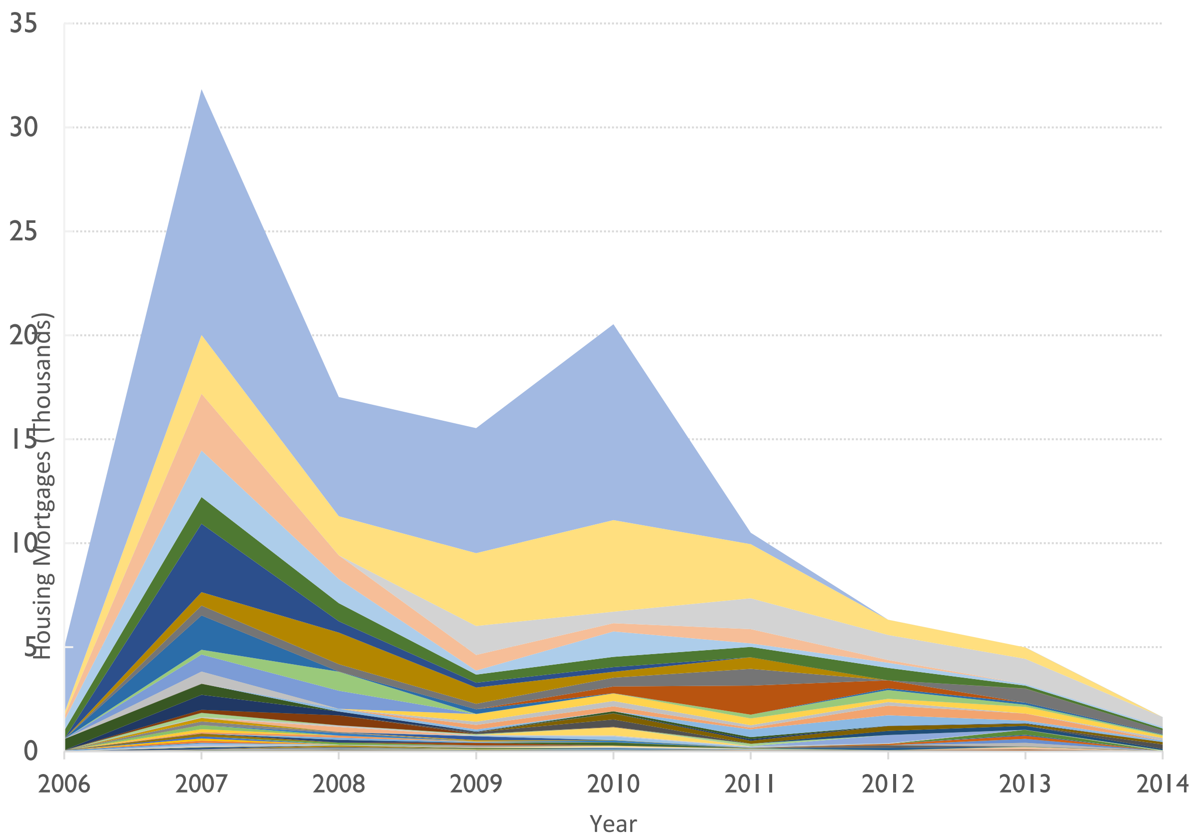
I lay out a few of these contradictions in further detail below, discussing why they are insufficient to account for the entire phenomenon in Tijuana. To be clear, in this section I am not suggesting that these explanations have no effect or are not important. Rather I aim to show that they do not fully explain the phenomena and leave questions unanswered.

Economic Crisis

The global economic crisis is frequently cited as a major talking point in reference to the rise in abandonment, especially given the maquiladora industry's sensitivity to the economy of the United States. Animal Politico cites an Infonavit official who argues that sequences of booms and busts in the Mexican economy are a critical reason for the abandonment of houses. This is a claim that is repeated by BBVA and Sánchez & Salazar. In principle this explanation is unproblematic. The supposition here is that the contraction in the Mexican economy caused people in Northern Mexico to lose their jobs disproportionately, which has in turn provoked delinquency on housing mortgages and eventually contributed to abandonment. Unfortunately, the timing here is not simple as described here. To start, even prior to the global economic crisis in 2008, cities in the north were already starting to show signs of high vacancy. Recalling that estimates of international vacancy are around 10%, the 2005 census reported that the state of

Baja California had a vacancy rate of about 14% and the state of Chihuahua, another northern state had a vacancy rate of 16%.

Figure 1. Annual housing construction by developer in Tijuana (2006-2014)



Source: Own elaboration based on Registro Único de Vivienda

Looking at the data at the level of the municipality in Tijuana, paints a slightly different picture than the aggregated state data. 2005 estimations of the vacancy rate in Tijuana put the number at 12%, a rate lower than the national average and more aligned with what one would expect structural vacancy to look like. This number is actually much more consistent with the conventional notion that vacancy is related to economic restructuring given that the census reported that vacancy in 2010 was 20%. However, there is still reason to be skeptical of this conclusion. First, it pushes us to ask why Tijuana is special in comparison to other municipalities in Baja California like Playas de Rosarito, which had a vacancy rate of 20% and Mexicali, which had a rate of almost 16%, in addition to thinking about how Tijuana differes from municipalities in other states like Coahuila and Chihuahua. Secondly, even here the timeline is not exactly iron-clad. The 2008 crisis also coincided with a period of historic violence in Tijuana, a period which lasted from 2008 to 2010. It is certainly possible that the rise in vacancy had more to do with the rise in violence associated with the drug trade, and that global economic crisis is merely coincidental. This starts to seem even more probable when one examines the rate of housing mortgage placements through government financing from 2008 to 2009. If a rise in abandonment is related to economic restructuring or rising unemployment, which Sánchez & Salazar observe rose precipitously from 2008 to 2009, then you would have expected to see a sharp decline in the amount of credits, the ONAVIS' terminology for housing mortgages, placed through those years (Figure 1). This is not the case – housing construction had some of their best years in terms of volume of housing produced through 2010. It wasn't until around 2011 that the market contracted fully which was after the final census snapshot was taken.

Does this suggest that economic restructuring had nothing to do with abandonment? Not necessarily. It seems quite reasonable to think that there would be a delay in housing decline from the shock in 2008. But, if we are to explain vacancy in terms of the economic crisis, then there needs to be some clarification of the temporality of the phenomenon. Is there a delay from the time of unemployment to when people become delinquent on their mortgages? How long is that period? Also, how does this figure relate with the high vacancy rates of central city areas that have little government financed housing?

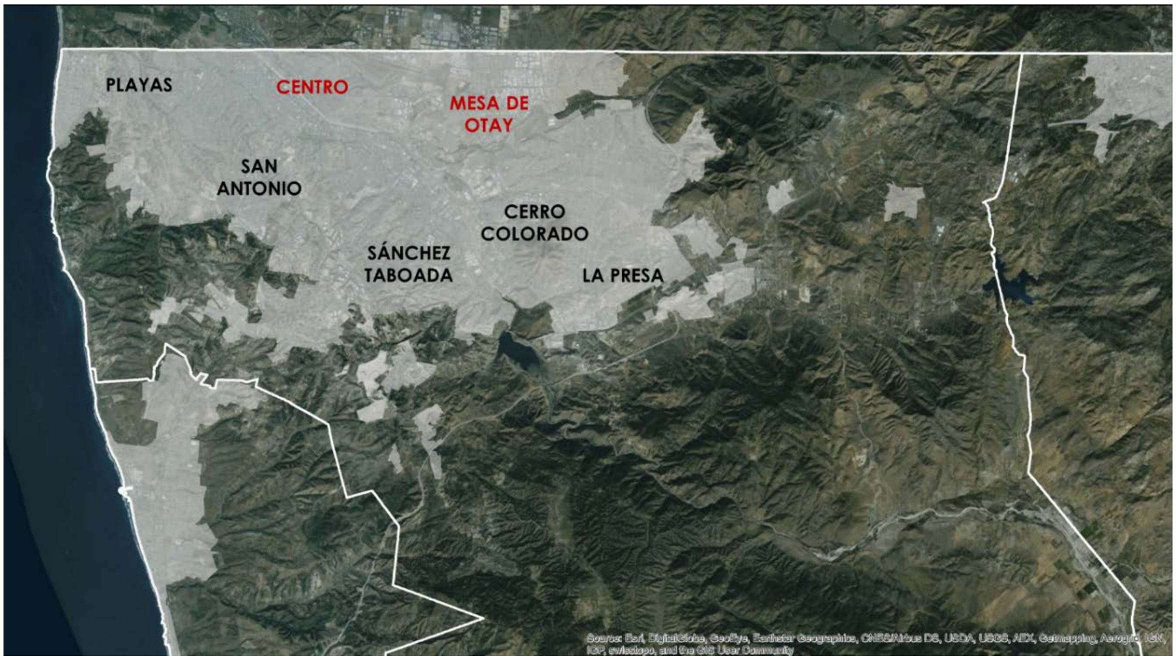
There are still many open questions about this explanation that remain unresolved.

Policy Failures, Distance from Urban Centers and Services

Policy failure is the most widespread explanation for housing abandonment among developers, policy-makers, academics and citizens alike (García Peralta, 2010; Maya Perez, 2008; Paquette Vassalli, 2009; Villavicencio Blanco & Durán Contreras, 2003). In a testament to the infinite humor of the Mexican people, many refer to government-financed housing as *ratoneras (ratholes)* or *pichoneras (pigeonholes)* because of their small size. However, these descriptions are often accompanied by a telling adjective; they are not just *pichoneras,* they are *pichoneras del Infonavit* (Infonavit pigeonholes).

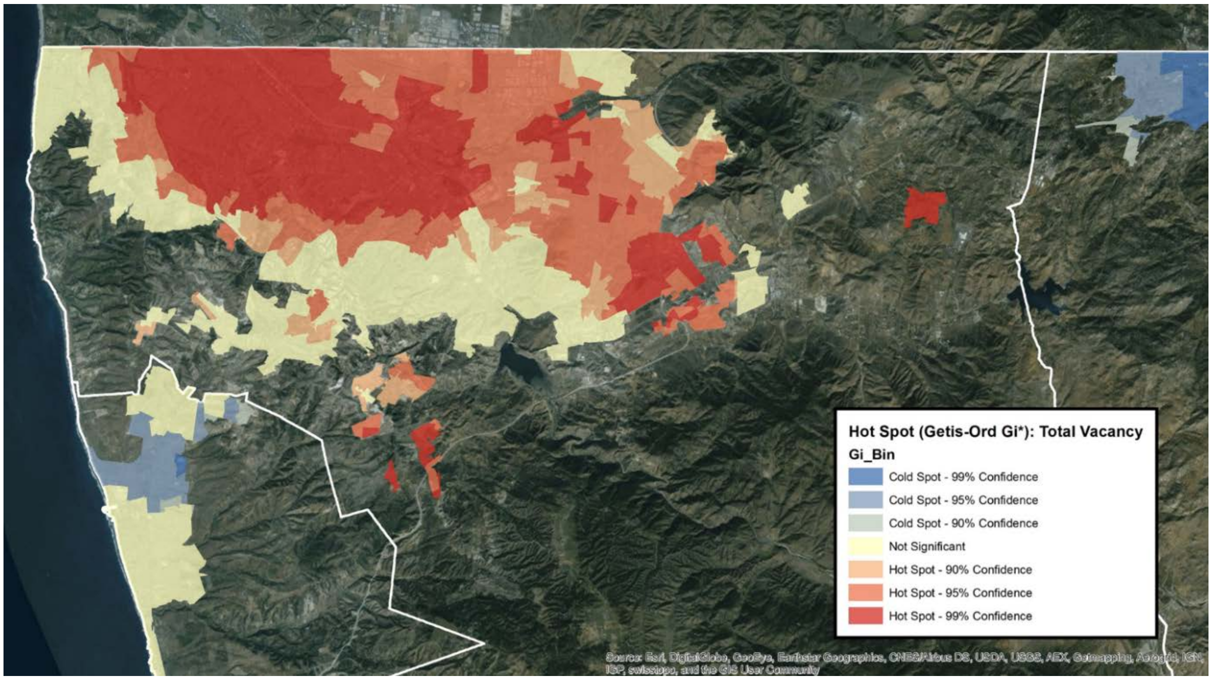
Besides the focus on housing size, housing's distance from city centers as well as the lack of adequate infrastructure and services are also frequently viewed as the result of policy failure, not only by the ONAVIS but also by the municipal and state authorities who have failed to live up to promises of service provision like public lighting, water, sewage and the construction of public schools. But, how well do these explanations stand up to scrutiny? Contradictions are perhaps best captured in a series of maps.

Map 4. Tijuana's Neighborhoods



For readers that are unfamiliar with the urban footprint of the city of Tijuana, I have included this map for reference. In red are those neighborhoods that could be considered central downtown areas of the city alongside surrounding neighborhoods in black. This is followed, once again by the map of vacancy.

Map 5. Statistically Significant Concentrations of Total Vacancy in Tijuana



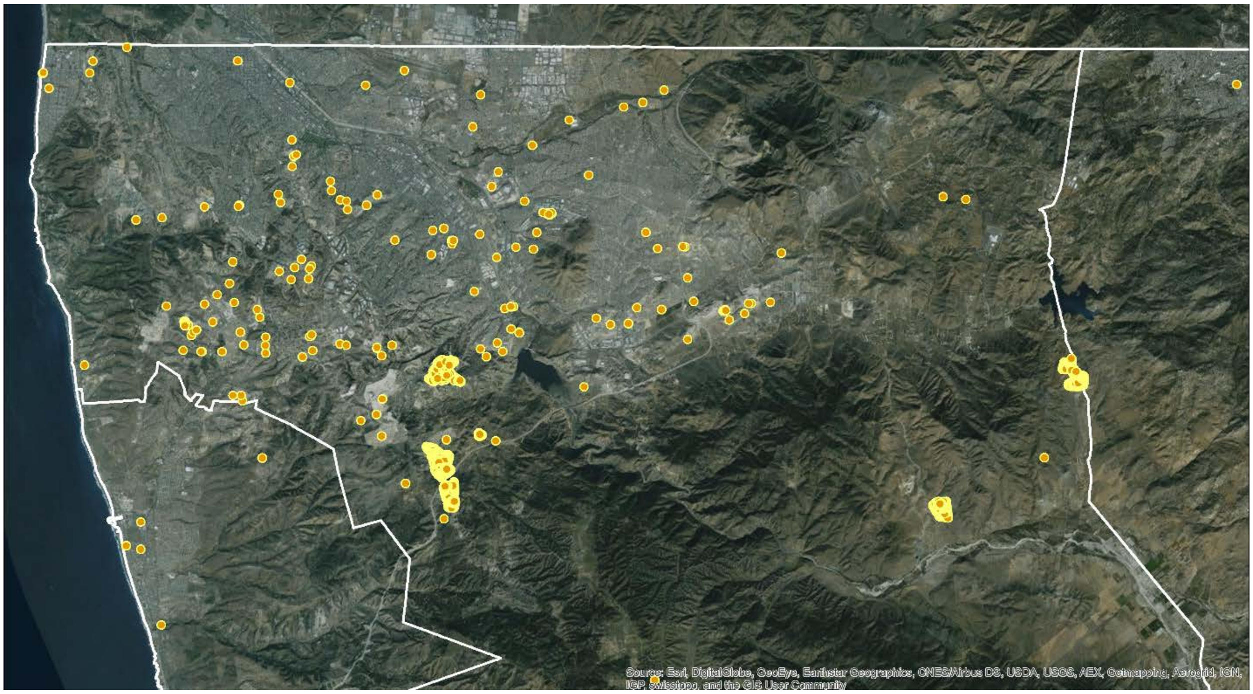
Source: Own elaboration based on 2010 Population and Housing Census

The total vacancy maps already starts to problematize claims made by those who would maintain that vacancy is a product of distance and inadequate infrastructure, first because vacancy is highest in central areas, and second because these areas tend to be some of the most well-serviced in the city.

Taking a look at maps of government financing in the city also creates a more complicated picture. The following map is based on point data from the Registro Único de Vivienda (RUV)[12] of all government financed housing in Tijuana from 2006 to 2010. This was then converted into a hotspot map using the kernel density tool in ArcGIS. The areas in red show roughly where the highest concentration of government financed housing are in the city.

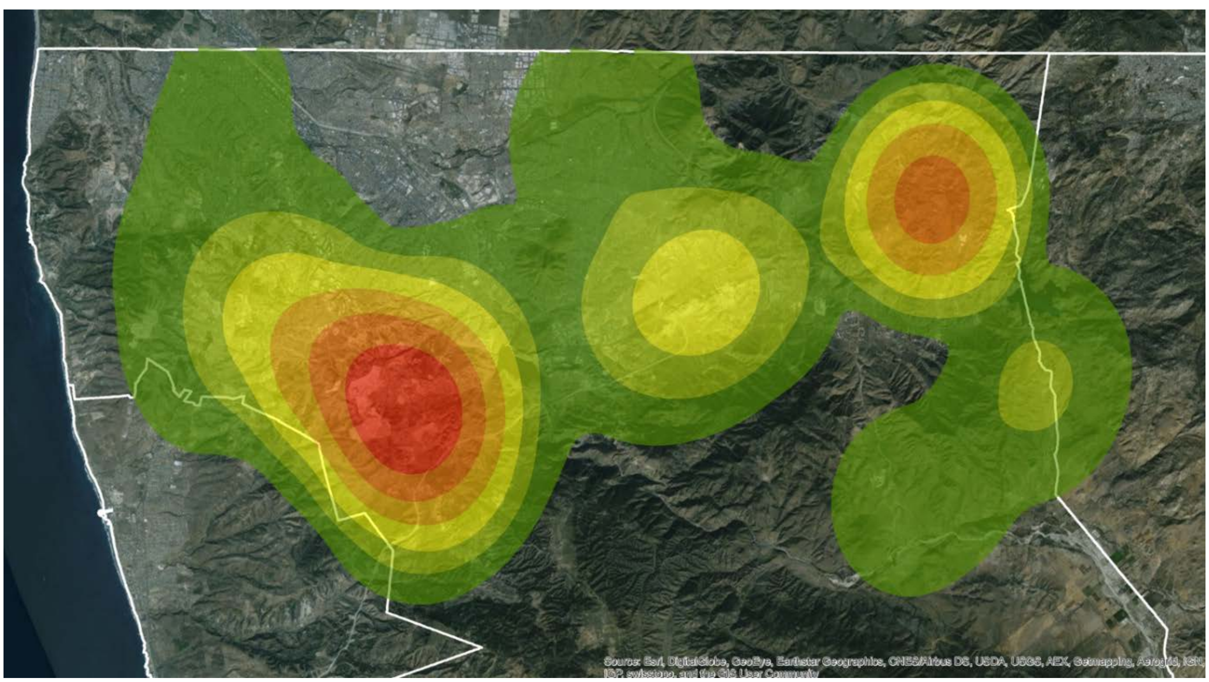
[12] The RUV is a database that everyone who is using government-financing for housing, including developers and individuals, must register their property under. It began operating in April of 2004. The data included here is provided courtesy of Infonavit under the auspices of "Rethinking Social Housing in Mexico."

Map 6. Government Financed Housing (Point Data)



Source: Own elaboration based on Registro Único de Vivienda

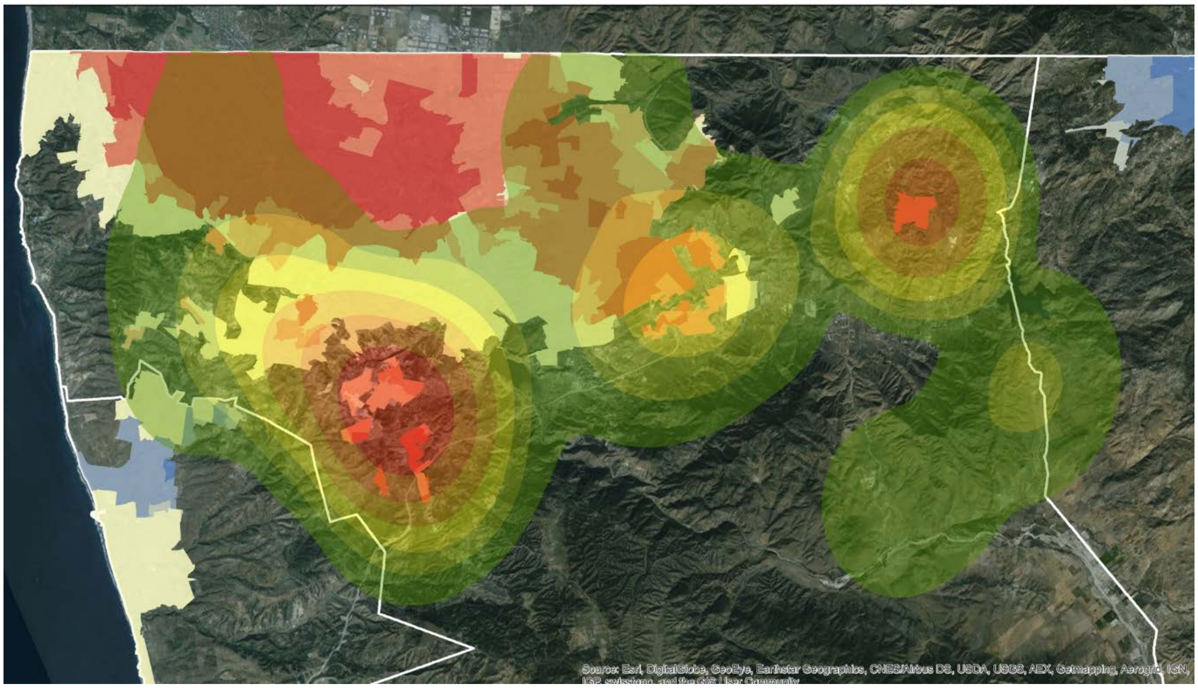
Map 7. Government Financed Housing (Kernel Density)



Source: Own elaboration based on Registro Único de Vivienda

When this is overlaid over the total vacancy map, one can start to appreciate that government-financed housing is certainly part of the equation, but by itself cannot account for the entire phenomenon.

Map 8. Total Vacancy and Kernel Density of Government Financed Housing



Source: Own elaboration based on Registro Único de Vivienda and 2010 Population and Housing Census.

For example from the map it is clear that this housing is heavily concentrated in three areas that are suffering from high vacancy in Tijuana: Valle de as Palmas, near La Presa and in the southern part of Sánchez Taboada. Nevertheless, there is also a glaring absence of government-financed housing in many areas that have some of the largest vacancy numbers in the municipality. What this serves to articulate is that this is not only a story about government housing coming into a neighborhood and then pushing people out – the story is definitely more complicated.

In his 2014 paper Monkkonen speculates that what this pattern reflects is a type of “suburbanization” of Mexican housing, wherein people are leaving their well-located houses for peri-urban areas where they can fulfill their dream of homeownership. He makes this claim on the basis of the statistical association he found between the presence of government financed housing in downtown areas, but not in peri-urban locations across 100 Mexican cities. Unfortunately, as was shown in previous maps, this does not exactly seem to be case in Tijuana where there are important numbers of vacant homes both in central areas and what could be considered peri-urban areas of the city. So if the current pattern of housing vacancy is not produced by "suburbanization," then where is everyone going? The answer is not obvious, but what is clear is that this is not entirely a story about government-financed housing.

Criminality and Violence

Another example of a topic that needs further elucidation is vacancy's relationship to violence and criminality. As far as I have been able to find, there is little to no evidence that successfully clarifies whether violence is a cause of vacancy or an effect of it. There is no question that an association exists. BBVA (2011), Monkkonen (2014) and Fuentes and Hernandez (2014) have all found this relationship validated through statistical work. And both seem to be plausible explanations. It would not be surprising, for instance, that after a firefight between narco-traffickers, a concerned family would relocate to a neighborhood that is safer. Conversely, following the logic of broken windows and their associated literature, it is not unreasonable to suggest that an abandoned home could become invaded by criminal gangs, who, reacting to a sense of disinvestment, begin peddling drugs and eventually cause a rise in surrounding violence. Adding to the confusion, these processes are not mutually exclusive. It could very well be that in one neighborhood or city a rise in violent activities is leading the phenomenon, while in another neighborhood the opportunity presented by the increase in vacant houses is enabling the consolidation of dangerous criminal gangs. Moreover, these processes could be operating in a veritable loop, where one causes the initial vacancy and then provokes the rise of other criminal activity in the surrounding homes.

An unreflexive treatment in relation to housing vacancy creates contradictions in the literature. For example, while Fuentes and Hernandez present a case in Juarez for vacancy as a contributor to the rise in criminality, Monkkonen, BBVA and Sánchez & Salazar argue that violence is a causal factor in the rise of vacancy. The distinction is not trivial, because the prospective prescription is different in each scenario. If the root cause is violence, then in many ways the hands of housing and urban development agencies are tied. They can try to influence the security situation through the built form, but ultimately their actions will be secondary to the wider implementation of initiatives to address insecurity. If on the other hand, housing vacancy is an important precursor to violence, then the effect of that urban planning could have on violence is enormous; urban design and urban planning should become a priority for the federal government and should be included in the national defense strategy.

Migration

A similar, although slightly different ontological trap occurs in reference to migration. As far as I have been able to trace, the hypothesis around the effect of migration is rooted, at least in the literature, in the BBVA 2011 publication. In this article, the authors make an observation that "areas which are traditional exporters of manual labor or with a negative annual net balance of migration" tend to be big contributors to the proportion of uninhabited houses in the country, accounting for 33% of the total number of vacant houses in Mexico. However, they are careful to separate those states that have a negative balance for immigration from border states, which by many indicators also have high measures of migration.

The nuance which with this is treated in the BBVA paper is unfortunately lost in subsequent explorations of the effect of migration on vacancy. The causal explanation in Sánchez and Salazar is ascribed uncritically to international migration, an assumption that is transferred into Monkkonen's work on the subject.

This overgeneralized treatment of migration presents problems when evaluating the effect of migration in border states, and in border cities especially. In Oaxaca and Zacatecas, southern states in Mexico, the inference seems natural, providing an intuitive connected relationship between migration and housing vacancy (i.e migrants are leaving their homes for a better life in the United States). In Northern Mexico these numbers are more ambiguous. One example is Monkkonen's reliance on the share of households that have at least one member currently living abroad as a proxy variable for migration. The use of this measure seems quite appropriate for a context in central Mexico that has a history of being a source of migrant labor. However, the power of this rationale diminishes the farther north you go. After all, it is not that uncommon in border cities for families to have a member living in San Diego or El Paso. Are they international migrants in the same way that a day laborer leaving Oaxaca for Chicago is?

Other measures of migration in the census are no better. In the 2010 census, “migration” is measured using two other questions: Were you born in this state? And were you living in the state in 2005? While these two indicators are fine for capturing flow of population mobility intranationally, they are not great for making determinations about out-migration especially to international destinations. And again, while it is reasonable to expect that in Toluca, Estado de Mexico or Xalapa, Veracruz, having a high percentage of people born abroad probably correlates strongly with high-levels of in and out migration, they are more obfuscating than useful in border cities. It is also extremely common for people living in Tijuana to have children in San Diego. Can we rightly call these individuals American ex-pats? How about family that decides to temporarily relocate to San Diego? If they decide to return to their old house from right across the border, are they immigrants in the same way that someone who came from Sinaloa is?

The proximity to the U.S and the existence of transborder communities in Tijuana complicates traditional notions of what it means to be a migrant in Mexico. The census questions are not designed to register these subtle nuances and thus lump together categories of people that should probably not be compared. Given the bluntness of migration questions in the census, it should come as no surprise that there is a statistical correlation between migration and abandonment. By its very nature and by census definition, Tijuana is and always has been a city of immigrants. The 2010 census reported that 45% of the residents of the state of Baja California were born in another state or country, the second highest rate in the nation. The municipality of Tijuana by itself had an even larger share of “migrant” population. 52% of the city was born somewhere outside of the state (INEGI, 2011). This is in contrast to national rates which are just a little over 17.4%. (INEGI, 2015) However, this sheer presence of immigrants does not mean that immigration is driving the phenomenon. It might be occurring in spite of the presence of immigrants instead of because it.

Additionally, the more I learned about the process involved with acquiring a mortgage, especially through Infonavit financing, the less this hypothesis seemed to make sense. First off, financing through Infonavit is not available to just anyone: you have to be a formally employed worker with a pension. Additionally, getting approved for a mortgage once you are employed is not an immediate benefit. You have to save through the pension fund for months, or even years in order to get the points to qualify, after which you take out a loan that you commit to pay for 30 years. If you were a migrant with no attachment to Tijuana who was looking to jump ship to the United States at any given moment, why would you decide to take on the commitment of a house? The very act of purchasing a home betrays a desire for stability and the wherewithal to plan for the future.

I'm not ready to close the door on this hypothesis quite yet. I could still imagine ways in which immigration as a phenomenon could be related to housing abandonment, but the causal mechanisms would need to be further theorized and the nature of the phenomenon further specified. It is possible that migration here is an intervening variable that is actually capturing the effect of something else. For example, given the parallel rates of rising housing abandonment in Quintana Roo, one might speculate that this phenomenon has more to do with the nature of the labor force in these states, which respectively operating in *maquila* production and tourism, might be more structurally vulnerable that the labor sector in other parts of the country. In any case, at the moment there is not enough evidence to conclude that this is an important factor either way, and more research is required.

Tú sabrás si te vas o te quedas: Variations in Explanations for Housing Abandonment in Tijuana

The contradictions and incongruences that are manifest in all the above explanations are, in some ways, the product of the scale on which the hypotheses were formulated. Although the scale in which Monkkonnen and Fuentes & Hernandez compare housing vacancy is much finer, the hypotheses which guide their analysis were developed at a much larger scale, with BBVA and Sánchez & Salazar conducting their analysis at either the level of the state or of the municipality. Conducting this sort of analysis in itself is certainly not bad analytical practice, but does capture some types of data better than others. It also creates comparability issues because states and municipalities are not uniform, standardized spatial units. This is especially true in Baja California where the size of *municipios* are much larger than in other states[13]. With only 5 municipalities, the average surface area of a municipality in Baja California is 14,023 km^2, a

[13] This is in part due to the unique history of Baja California which did not become an official state until 1952. Before that it was a Federal Territory that was administered by the federal government. When it was finally incorporated the state was partitioned into less administrative units than is typical in Mexico; the average number of municipalities in the country is 77 - Baja California and Baja California Sur only have 5 municipalities each, the smallest number in the country.

total that is only surpassed by Baja California Sur (14,735 km^2). Compare this to Mexico City, recently incorporated as Mexico's 32nd state, which has a total surface area of only 94 $km^{2,}$ and to the average size of municipalities nationally which is 803 km^2 (Instituto de Información Estadística y Geográfica, 2010). The municipality of Tijuana itself is larger than average, with a total surface area (1,234 km^2) that is about 400 km^2 larger than the national average.

The risk that is run, especially in the case of Baja California, is that the putative effect of a certain variable is underplayed – or exaggerated in Baja California's case – not because of the change it elicits, but rather because of the size of the unit of analysis. It also carries the unfortunate assumption that vacancy is distributed homogenously across the municipality, an assumption that Monkkonen's work and Fuentes & Hernandez, show is unsubstantiated. These unlatent assumptions, and the uncertainties they cause in the analysis beg us to reconsider if perhaps we are asking the right question when trying to decode what it is about Tijuana's context in relation to the rest of the country that is leading to housing vacancy. Perhaps a more interesting and more useful question is that of trying to see what accounts for housing vacancy within the city. Is it housing quality? Is it something about the population? Is it something about the geography? Given that the majority of hypotheses about housing abandonment were developed at a national level, I thought that a good way to start is by looking at a smaller level of analysis, beginning with the narratives on the ground in a particular city, in this case Tijuana. To that end the remainder of this thesis is dedicated to exploring this question:

What accounts for variation in the explanations for housing abandonment in Tijuana?

This question, I should clarify is as much about narratives, as it is about causality. I chose Tijuana as a site because of its high prevalence of housing abandonment, both in figures and within the social imagination of its citizens.

I believe that this inquiry is compelling for a couple of reasons. The first is that, as far as I am aware there is little work that has gone about the task of formulating mechanisms of housing abandonment in Mexico at the level of the city. Papers written by Infonavit are the exception, but since they are not publically available there is little way to scrutinize or even build on their observations. Moreover, this question has the benefit of incorporating a growing body of work which has been examining and evaluating the quality of life in housing developments in Mexico, with many focusing specifically on subdivisions that were built by Infonavit.

The second reason is more practical. A smaller-scale examination of the housing abandonment problematique has the potential to elucidate policy levers that have gone previously unconsidered because the problem was seen as too macro for the ONAVIS to influence. This is one of the conclusions that Monkkonen arrives at the end of his paper. I would argue, that instead of focusing on larger structural phenomenon as primary determinants of abandonment – a situation which I should add is harder to address – we should instead redirect our energy into investigating factors that government, the private sector, and most importantly society has an ability to influence.

The thesis is laid out in 5 chapters that follow this chapter. Taking seriously scholars' recent calls to more fully engage in a careful study of history when evaluating social policy (Woolcock, Szreter, & Rao, 2011), in full agreement that these type of evaluations lead to a more candid reflection on the failures and successes of a particular policy and also to better understandings of the impact trajectories these initiatives are likely to have (Woolcock, 2009), chapters two and three seek to lay out the context through which this abandonment has developed in Mexico.

Chapter two explores the history of social housing in Mexico, arguing that since the Mexican revolution, social housing has gone through a series of "translations" that reflect the political exigencies of the Mexican state. While historically the politics of housing have compelled the housing apparatus to be quite attuned to the social and material needs of its users, the more recent "translation" has resulted in a narrowed logic that has superimposed economic efficiency as the primary consideration.

The third chapter takes a more detailed look at the urban development of the city of Tijuana, tracing its growth from sparsely populated Zaragoza in pre-revolutionary Mexico to major transnational metropolis. Throughout this chapter an argument is made that urbanization of Tijuana has been mostly led by informal actors and large private interests, a direct consequence of sporadic federal interest in the region and the limited authority of local agents. The resulting city fabric creates a generalized urban condition whereby actors are constantly engaging in contestation over land, creating a governance landscape that is complicated to navigate for urban administrators, urban designers, and urban planners.

The fourth chapter presents original research on the topic of housing abandonment in Tijuana, detailing the results of seven weeks of field work and interviews, alongside a regression analysis conducted on vacancy using factors that could influence abandonment as proposed by the literature and interviews. These two analysis bring into sharp focus the effects a particular scale of analysis has on developing potential explanations for housing abandonment, making clear how evaluations at high scales of action and high locus of analysis have the potential to mischaracterize and oversimplify the mechanisms which result in housing abandonment, which this analysis argues are complex, bundled forces which interact unevenly across time and space.,

The fifth chapter discusses the implications of these results, contextualizing their contributions and alignment with the literature on state simplification, urban value creation, positive deviance analysis and problem-definition.

The thesis concludes with a policy memo which summarizes the results and insights that I believe this investigation has to offer for policy-makers, researchers and stakeholders in Mexican housing policy.

2. HISTORY OF SOCIAL HOUSING IN MEXICO

In order to better understand the root of the current housing abandonment crisis in Tijuana, I conducted literature review on the history of social housing in Mexico. Here I outline some of my findings as they relate to the current situation, organizing them under a convening framework of varying iterations or “translations” in time.

It is difficult to talk about this history, or about the current housing paradigm without first discussing minimum housing, an extraordinarily resilient concept which was first articulated as a rational approach to solving housing problems at the end of the 19th century. The idea blossomed in Europe and the US in the mid-20th century. From there, the concept spread to other countries, maintaining its rationalist soul, but adapting to local social and political context. This chapter examines the timing and pace of the diffusion of minimum housing as it was embraced by Mexican urbanists and policy-makers from the post-revolutionary period to contemporary neoliberalism. The main argument is that while there has been a shared discourse of modernist rationalism across time, there have been important contextual differences in relation to the dominant political ideology and vision in Mexico, which in many ways shaped how this model was “translated.” The article ends with a discussion of the consequences of minimalist housing and its accompanying market-driven logic in Mexico.

The Roots of Minimal Housing

In planning and architecture literature, the term minimal housing is attributed frequently to the modernist and functionalist architecture that arose in the beginning of the 20th century (Mumford, 2000). Wrestling with the increasingly dire living situations in industrializing cities, as well as with the wanton destruction unleashed by the world wars, Modernist architects set about trying to devise a reasoned and ordered architectural solution. The Congrès International d'Architecture Moderne (CIAM) was organized for precisely that purpose. Although the topic of housing was not explicitly discussed during the first congress, minimal housing became the sole object of debate for CIAM II, whose theme in 1929 was “On the Dwelling for the Minimum Existence,” and it remained a recurring topic for discussion in subsequent editions (Mumford, 2000; Zamorano Villarreal, 2013).

CIAM II kicked off in October of that year in Frankfurt, a setting that had been deliberately selected by the organizing committee. Since 1926, Frankfurt had been the site of an ongoing experiment by the functionalist architect Ernst May in the construction of minimal worker's housing. Through the support of a local coalition of industrialists, municipal officers and architects, May had succeeded in building 12,000 housing units that embodied Taylorist principles of mass production by CIAM II's opening day, (Zamorano Villarreal, 2013). These housing tenements, which had found their design solution in the Zeilenbau (row building) style that had long been a fixture of military barracks, were toured by the visiting architects and served as fodder for subsequent discussion at congress sessions (Mumford, 2000).

Proceedings began with a lecture entitled "Sociological Premises for the Minimum Dwelling of Urban Industrial Populations" by Walter Gropius, founder of the Bauhaus and a leading Modernist thinker. In this lecture, he discussed the evolving nature of the family unit, dedicating a significant portion of his talk to the emancipation of women in society, which he believed would drastically alter the form that housing would take in the future. He wrote that this changing paradigm "awakens thoughts about new forms of centralized master households which partially relieve the individual woman of her domestic tasks by means of an improved centralized organization which is capable of performing them better and more economically than she can perform them herself," (Gropius, 1929). He concluded that "An entirely new formulation [for housing] is required, based on a knowledge of the natural and sociological minimum requirements, unobscured by the veil of traditionally imagined historical needs. We must attempt to establish minimum standards for all countries, based on biological facts and geographic and climatic conditions." He ventured that these needs would best be met through high-rise apartments, to use his words a "dwelling ration", which could account for the increasing individualized nature of people. Le Corbusier took it one step further in the closing lecture of the conference. While Gropius had allowed that there might be some variations in minimums due to climate and culture, Le Corbusier described the home as "a regular sequence of functions," akin to a traffic problem, which could be precisely determined through architectural science. He prescribed standardization, industrialization and taylorization as the elixir to the "poverty" of traditional construction (Mumford, 2000).

CIAM II concluded the Existenznminum deliberations with an exhibition of 207 floor plans for minimum housing, with floor areas ranging from as small as 23 m2 per unit to as large 91 m2. This exhibition went on to tour Europe and was later compiled into a book, Die Wohnung für das Existenzminimum, the first official CIAM publication (Mumford, 2000). Although this initial conference was far from presenting a conclusive front, the experimentation and debates that were occurring in Modernist circles in Europe started to gain traction abroad. Gropius became the chair of Harvard's Architecture School, and later paved the path for his colleague, the Spaniard Josep Lluis Sert, to become the dean of the Graduate School of Design (Klemek, 2011; Mumford, 2000). Soon enough, projects inspired by modernist commitments to rationalization and functionalism, such as the ill-fated Pruit-Igoe residential towers in St. Louis, Missouri, were built all over the United States (Espinoza Ortiz, 2014). However, the influence of these debates were not limited to the western world. The functionalist narrative very quickly found sympathetic ears in other places, including Latin America.

Modernism Spreads: Translation through revolution

Beyond housing, the prototypical illustration of the movement's strength in the region was the wholesale construction of Brasilia, Brazil's new capital, under entirely modernist principles in the early sixties. In Mexico, International Architecture – another name for the modernist movement– found its champions in the muralists of the Mexican School of Painting, a intellectual connection that had been a brainchild of post-revolutionary state officials, namely the first Minister of Education, José Vasconcelos (Carranza, 2010; Guillen, 2004). As the head of the agency directly in charge of artistic and architectural education, Vasconcelos took an activist posture, commissioning the luminaries of the muralist movement – Diego Rivera, Jose Clemente Orozco, and David Alfaro Siquieros – to paint murals glorifying the revolutionary national project on public facades (de Anda, 2006; Guillen, 2004). According to Guillen, this decision had important consequences for the subsequent development of modernist architecture in Mexico because it injected native traditions and indigenous themes within the vernacular of both art and architecture. More importantly, it constrained building design in ways that were agreeable to modernist thought (e.g. vast cement walls) and shaped architectural tastes for the functionalist wave to come. Further exemplifying the muralist-architecture connection, while he was the Director of the Central School of Plastic Arts, Diego Rivera himself lobbied adamantly to introduce utilitarian designs into the architecture curriculum (Guillen, 2004). It was on the coattails of this ardent defense of the work of European architects that a cadre of modernist architects, which included Juan O' Gorman, Mario Pani, Juan Segura, Francisco Serrano, and Enrique Yanez first emerged. O'Gorman became an especially energetic proponent of functionalism in the 1920s and 30s, having been fascinated by Le Corbusier's *Vers une architecture* as a young man. During a nine-year period, he built houses, schools, apartments, and buildings guided by a commitment to rationality and efficiency. He argued at the time that "we should not forget that men are only rational animals, and to proceed through any medium that is not the one of maximum efficiency through minimum effort, is not to proceed rationally" (*Modernity and the architecture of Mexico*, 1997).

Minimum housing found its earliest champion in Juan Legarreta, a budding architect of the time who made housing of the masses the focus of his professional work. The title of his thesis, *a project for the construction of worker's housing in its minimum expression*, bears a remarkable syntactic similarity to the overall theme for CIAM II and betrays an awareness of the ongoing discussions in Europe (Zamorano Villarreal, 2013). Legarreta's brief tenure as an architect working on the national scene was groundbreaking for the national housing movement in Mexico. After winning first prize at a contest for the design of worker's housing, his Lema Múzquiz blueprints became the foundation for the construction of some of Mexico's first government housing units, sponsored first by the local government in the capital and later by the Federal Government (de Anda, 2008; Zamorano Villarreal, 2013).

Legarreta's design of a 54 m^2 single-family home as the prototypical housing unit for *colonias* Balbuena and San Jacinto shares a close physical resemblance to proposals put forth by Ernst May and Walter Lompe, another German architect, which has led some to suggest that he drew heavily from their work (Zamorano Villarreal, 2013). Additionally, Zamorano argues that Legarreta's design was more closely aligned to the discursive and ideological tenets of the German Modernists than to other luminaries like Le Corbusier, as evidenced by the centrality he placed on women as chief manager of the daily activities of the home and his commitment to a socially conscious practice. In the end, the form he developed for his tenements were not initially adopted. Juan's life was cut short in a car accident before construction was finalized on his minimal housing, and the government's sponsorship turned to other typologies for political reasons. But his experiments in the tentative enterprise of state-led housing provision were the first of their kind, and they influenced subsequent generations of planners and designers in the country (de Anda, 2008).

Their functionalist leanings and rational architecture none withstanding, it would be misleading to lump the group of Mexican men promoting International architecture in same category as Western modernists. There are significant differences between the architecture of “Mexican Modernism” and the European mainstream of the time. Besides the appropriation of wall space for murals, there was a Mexicanization of the modernist paradigm to include the use of traditional materials that included stucco, adobe, and wood. This recurring use of indigenous themes and concern over the aesthetic that was not present in western modernism (Guillen, 2004). Additionally, Mexican architects understood modernism as more than an aesthetic design project transplanted from Europe; it had the larger goal of fulfilling the social, political and economic ambitions of the Mexican revolution (Carranza, 2010; García Canclini, 2005; Guillen, 2004). While in the United States the importation of modernism led to the block-busting urban renewal order that was easy fodder for social critics like Jane Jacobs, initial experiments in the modernist ‘housing’ in Mexico were relatively successful. Many of the first families that moved into Lagarreta’s neighborhoods prospered in these homes, living there for many generations afterwards. Mario Pani’s *Conjunto Alemán* remains a celebrated piece of Mexico’s architectural endowment, not only for its form but also for the social success of the residential community. At this time, minimal housing had not been stripped of its social philanthropic roots and unleashed in its purest form. It had to be interpreted through a “revolutionary architecture,” with an intact commitment to social justice and concern with marginalized groups, and reconciled with the nation-building goals of political and industrial elites (Davis, 2005, 2014; Guillen, 2004). In effect, architectural modernism was seized by the various agents of social change and served as an ideological platform to advance their respective agendas.

However, as modernist principles became increasingly deployed to justify urban demolition and national industrialization policies in Mexico, rather than for the revolutionary goals of redistribution and advancement of a classless society, contentious debates about their continued value sprang forth. The vanguard of leftist architects and artists, who had been some of International Modernism’s earliest exponents, eventually became its most rabid critics.

O'Gorman, who had garnered such acclaim as Le Corbusier's purest Mexican disciple, became so disillusioned with the appropriation of architectural modernism for business gain, that he abandoned the practice altogether, dedicating himself instead to painting heroic and national scenes that could still serve the collectivist aims of the revolution (Carranza, 2010).

Beyond expressing revolutionary ambitions, modernist housing was a political tool. Since the earliest days of the revolution, political leaders used promises of housing delivery as a means of securing political loyalties from classes that would have otherwise supported the rebellion (Aldrete, 1983; García Peralta, 2010; Perló Cohen, 1979). For instance, in 1921 General Álvaro Obregon allocated 10 million pesos for worker's housing to cement an alliance with an influential labor union. As a concession to the professional bureaucratic classes that ran the civil service, the Calles regime created a special housing fund for state employees who were incapacitated or retired (Perló Cohen, 1979). Eventually these piecemeal concessions became institutionalized within the corporatized bureaucracies of the Mexican state, which managed the patronage networks in light of the political alliances that those in power sought to foster. The provision of complete housing units, like those proposed by May, Gropius and others at CIAM II, was just one option in a vast array of housing "benefits" that the government granted. This meant that the preferred "benefit" was highly dependent on the national political context, which, in the first half of the century gave preference to regularization and rental assistance over new construction (Davis, 1994). For example, while Lagarreta was designing Lema Múzquiz with workers in mind, laborers were demanding that informal worker's colonies receive legal status and official service connections from President Cardenas, instead of fully finished homes. President Ávila Camacho steered the attention of the Mexican government to attend to the needs of renters and their unions in Mexico City, while also encouraging self-construction and regularization (Perló Cohen, 1979).

The fragmentation of the Mexican housing apparatus, a fragmentation whose vestiges persist today, presented challenges for the production of minimal housing in time and scale. First, the dependence of rent-distribution on exogenous political factors provided few guarantees that there would be a sustained commitment investment in a taylorized production model across administrations. Moreover, the diverse housing benefits offered by the Mexican government limited the volume of production that could be achieved in any one typology, thus preventing producers from reaping the benefits of economies of scale. This paradigm only started to shift during the Presidency of Miguel Alemán, and – predictably – politics played a defining role.

Design as Patronage: Building Multifamiliares in Mexico City

Miguel Aleman's presidency from 1946 to 1952 was marked by a stark tendency to favor the production of homes by the state, over land regularization or rental assistance. The legacy of this shift is the big-block apartment complexes, most commonly referred to as *vivienda multifamiliar colectiva,* which are frequently mentioned as hallmarks of Modernist architecture in Mexico. This shift begs two questions: (1) what changed in the political environment that precipitated this change in paradigm; and (2) why did state housing take this form?

Although in absolute terms the number of units built during this time is relatively small, it did represent a significant change in the role of the state in housing provision[14]. Alemán's time in office coincided with a period of precipitous demographic and economic growth in Mexico referred to as the Mexican Miracle. Additionally, around this time the consolidation of political power into the corporatist structure of the Revolutionary Party, over the energetic opposition of industrial laborers, was finalized. The alignment of these two separate processes created a social backdrop rife with conflict, which ultimately found a release in housing.

Financing the construction of large residential complexes served two political purposes: it reinforced a still fledgling construction industry, a move that was favorably viewed among the industrialist circles that had supported Alemán's rise to power, and it provided construction jobs to unskilled laborers that might otherwise have been conscripted in opposition to the regime (Davis, 1994; García Peralta, 2010). Alemán cemented the effectiveness of his nod to the private sector by strategically pairing it with housing delivery to key sectors. Although some financing was freed for the construction of worker homes, the primary beneficiaries of any new housing would be the bureaucratic classes that worked for the government and whose labor union carried significant political weight. By securing the support of the urban industrialists and splintering

[14] From 1947 to 1950, the government granted 92 million of pesos worth of mortgages, almost the same amount as has been granted in the previous 20 years (Perló Cohen, 1979).

would-be alliances among the different worker's sectors, Alemán was able to outflank any challenges to his authority (Davis, 1994; Perló Cohen, 1979)).

These observations address the political environment that led to the rise of *multifamiliar* housing, but they not give an adequate explanation for the vertical typology it took. After all, if housing were simply an offering to placate different classes within the Mexican political landscape, why should form matter? The answer to this question is complex. The architect Enrique de Anda Alanís gives the matter a thorough and comprehensive treatment in his book *Vivienda Colectiva de la Modernidad en México.* De Anda argues that a vertical typology was selected for two primary reasons: an economic calculus and urbanistic considerations. For the financiers of the project, especially for the members of the bureaucracy overseeing these constructions, the economic concerns were by far the more important of the two. To them there was no question that building higher would be a more cost-effective typology. It would allow them to build within the central city and maximize the amount of units that could fit on one parcel. Additionally, since construction would occur in areas that were already urbanized, the costs associated with improvements in infrastructure and other services would be limited. The exasperation that one administrator expressed in reference to Lagarreta's single-family homes is telling of how inefficient they felt these previous housing efforts had been: " [Lagarreta] did not produce anything but those 700 homes that were built by the Federal District Department from 1933 to 1946" (de Anda 2008, translation by author). However, the multifamiliar typology also effectively served Aleman's political project. As mentioned above, his focused patronage of the urban classes were directly served by the construction of multifamiliares who valued this particular form because of its proximity to the city. Morever, it was not lost on them that any resultant improvements from the construction of towers would increase land values indirectly and pay dividends to the propertied elites in the city who actively supported Alemán.

As for design considerations, in the minds of architects in Mexico, the rationale for vertical minimal housing ran parallel to that of European architects. The influence of Gropius' call for vertical housing as the "minimal housing" prototype and Le Corbusier's *Plan Voison* is hard to overstate. De Anda goes as far as to claim that Mario Pani accepted the assumptions of Modernist Architecture without critical examination. He writes, "the responses and solutions offered by Pani, both in their form and content, held a tone that in my judgment has not withstood the test of time. This was perhaps what we should have expected from an architect with such a wide vision; his responses lacked the conceptual firmness that would have resulted from a deployed imagination that sought all possible solutions for the city" (de Anda 2008, translation by author). That is not to say that there was no thought given to the place that vertical housing could have in shaping the urban landscape. Pani saw vertical housing as a way to stem *autoconstrucción* or self-building, which in his view was to blame for the "deplorable" state of Mexican housing. He was not alone in sharing this view. Among some of the cities incipient planners, the construction of dense residential towers in the center provided a path for the rationalization of the migratory flows teeming into Mexico City which had been urbanizing the city in a decidedly uncontrolled, unpredictable, and horizontal fashion.

Ultimately, the state's turn to housing construction did not transform housing's role in the political process. Despite the watershed moment that Alemán's presidency constituted for the form that Mexico's housing policy would take in the future, it did not alter housing's role as a tradable good in the State's client-patron relationship. Even as efficiency increased and housing allocating expanded, bringing the goal of housing for the masses within reach, housing policy continued to be co-opted for political purposes. The expansion of the modern day housing apparatus is no exception.

State Intervention to Facilitator

Following the fallout from the 1968 student movement and the repression that followed, President Luis Echeverría spent his presidency reestablishing public confidence and appeasing parties that had been wronged by his predecessor. It has been argued that the formal fulfillment of a "right to housing" through the creation of state housing funds was of many concessions in exchange for political peace (Aldrete, 1983; García Peralta, 2010). The creation of the Institute for the National Fund for Worker's Housing (Infonavit) in 1972 is particularly salient because it included housing benefits for a sector that had traditionally been excluded: private workers. The government took the unusual step of designating a governing board for the institute that included equal representation for organized labor, employers, and the government, arguing a tripartite board would ensure the equitable distribution of resources. Some see the inclusion of these new parties, especially that of organized labor, as an indication of the newly acquired political muscle of union bosses (Aldrete, 1983; García Peralta, 2010). Under this interpretation, it is unsurprising that credit allocation was handled through a system of obscure lotteries and tended to favor unions' represented in the institute's governing board until liberalization (Paavo Monkkonen, 2009). Additionally, Garcia Peralta suggests that being a member of the governing board created a rent-extraction opportunity for Infonavit functionaries. Individuals of all three constituent sectors in the governing board took advantage of the increased cash flow of Mexico's new housing policy to start construction firms that would directly profit from the institute's activities. It is noteworthy that two of Mexico's most successful private housing developers, Urbi and Casas Geo, rose to prominence around this time (Sánchez Corral, 2012).

Surprisingly, state incursion into housing did not immediately lead to the widespread adoption of a single modernist housing model. If anything, government involvement diversified the housing stock and the location of construction. In spite of the fervent defense of multifamiliares in Mexico City, housing agencies were involved in the construction of many single-family homes, duplexes and triplexes, in addition to residential towers at all scales. They promoted the construction of in-fill vertical housing construction in small lots in the central city, as well as the development of large master plans with over 1,000 homes in peripheral areas (García Peralta & Puebla Cadena, 1998; Puebla Cadena, 2002). A study conducted by Garcia and Puebla registered the amount of Infonavit complexes built in Mexico City from the agency's creation until 1992 and gives an idea of the proportion in which each was built. According to the authors, Infonavit developed a total of 256 residential complexes in that time comprising a total of 228,806 homes. 198 of those development sites were considered small development sites, 40 were medium and the remaining 18 were large[15]. During that time, home construction occurred overwhelmingly in the large complexes (49%) followed by 28% in the medium, and 23% in the small. It is worth mentioning that in the initial years of Infonavit's work (1973-1977) the majority of housing construction occurred in large development areas, and not in the small sites that would have been predominately comprised of multi-dwelling, residential buildings (García

[15] In Garcia and Puebla, 1998 complexes are categorized as follows: (1) Small: less than 1,000 homes, (2) Medium: 1,000 to 3,000 homes and (3) Large: more than 3,000 homes. For the most part, large complexes encompass master plan developments built in the periphery, which must function as independent localities and typically have different types of homes. Medium-sized complexes are built on vacant lots located on intermediate and peripheral areas that are already part of the urban fabric. These residences usually only have one housing prototype within the compound. Small projects occur in urbanized inner city lots are most frequently comprised of groups of vertical *multifamiliares.*

Peralta & Puebla Cadena, 1998). Literature attempting to explain the varied typologies and spatiality of state housing during this period is scarce, but the formal inclusion of the labor sector within the housing apparatus could account for this change. Since labor's constituencies were heterogeneous, concessions would have needed to be modified to effectively the diverse needs of the Mexican worker.

There is a caveat to this assertion. Although the information above seems to suggest that the housing stock was diversified through Infonavit policy, there was also a noticeable trend towards the standardization and rationalization of individual housing units (Boils, 1995), accompanied by a reduction in livable space (Puebla Cadena, 2002; Sánchez Corral, 2012). In his analysis of 76 housing prototypes released by the various housing agencies, Boils concludes, "the prototypes possess the telling intention of making the spatial solution for public housing less complicated. This, undoubtedly, carries positive elements with it, as it simplifies project formulation… Similarly, there is an underlying idea of rationality in the conceptualization and the design solutions of the prototypes; rationality being understood here as a logical and ordered approach advanced in the premise of objective necessities and conditions, or that at least purport to be so" (Boils, 1995). He offers examples of the housing institutions recycling prototypes over decades, adjusting them only slightly to account for diminishing spaces; such compression of the kitchen into a "kitchenette," with identical dimensions to that of the bedroom. He argues that these decisions were taken primarily for economizing construction practices, but also for the sake of simplifying the production process.

Predictably, the rationalization of the design of social housing units coincides with a similar rationalization of the allocation of housing credits and the housing institutions themselves. The World Bank was involved in Mexican housing starting in the early seventies (García Peralta, 2010; Puebla Cadena, 2002). In fact, the rationale for the creation of funds to promote housing development through the private sector largely stems from guidelines created by the World Bank. With the momentum of structural adjustment and neoliberalization, the World Bank began advocating internationally for shifting housing agencies from housing providers to housing enablers. In Mexico, that meant that the most important housing government promoter, Infonavit, would turn away from the role it had traditionally played in construction and focus entirely on lending, a reform that began in earnest with the National

Program for Housing during the Salinas administration (Paavo Monkkonen, 2009; Puebla Cadena, 2002).

Under the guise of efficiency, management of Infonavit was turned over to a group of financial professionals who finalized its transformation into a mortgage bank. Transparency became a priority, as did the predictability of loan allocation and the rationalization of any subsidies. The government actively courted the private sector during this time, seeking to convince it that construction on these loans could be profitable and offering relaxed regulations in exchange for buying in. Reforms continued throughout the end of the decade and into the first years of the new millennium and the Fox Administration. Barriers on lending were lifted and eligibility criteria were relaxed, all with the end goal of expanding lending volume. The reforms worked. Housing construction by private developers exploded. Infonavit had gone from issuing 70,000 loans per annum in the late 1980s, to 100,000 loans in 1998, to more than 420,000 in 2006. The agency was on track to meet the Fox's administration's goal of extending 750 thousand mortgage loans per year to the Mexican people (Paavo Monkkonen, 2009; Zárate, 2001).

Housing Policy in Mexico Today

Although it is hard to establish a definitive connection between the social interest housing of today[16] and the minimal housing proposals of CIAM II, it is hard to overlook the architectural and ideological parallels between them. They even resemble one another physically. Compare a contemporary typical housing development in Tijuana, Mexico to the initial experiments with minimal housing development in the early 20th century.

[16] It would not be farfetched to think that designers and housing developers would have been exposed to these ideas. The professionalization of architecture in the Mexico overlaps with the promotion of Modernism by the Muralists in architecture. It would follow that the curriculums developed in Mexico City would have been adopted elsewhere in the country and studied by subsequent generations of designers (Guillen, 2004).

Above: Ernst May, Römerstadt, Frankfurt 1929
Below: Walter Gropius, Törten-Dessau, 1928

Above: Abandoned Housing Development, Tijuana, México, 2014
Below: Casas GEO, Valle de las Palmas, Tijuana, México, 2015

The resemblance moves beyond architectural façade. To achieve this kind of large-scale housing delivery, a group of developers frequently referred to as the big three – Casas GEO, URBI Residencial, and HOMEX – adopted construction and sales practices right out of the modernist rulebook: standardize, taylorize, and mass produce. This has been called the *maquila* model of housing production, a reference to the assembly-line production plants called *maquiladoras* that began lining the U.S-Mexico borderlands in the early 1970s, and has allowed them to produce a volume that Le Corbusier could only have imagined (Alegría Olazábal, 2008; Boils, 2008; Villavicencio Blanco & Durán Contreras, 2003).

The "big three" were remarkably successful at what they did, and extremely profitable. Before liberalization, there was practically no domestic housing producing sector to speak of. By 2004, nine domestic homebuilders alone had operations all over the country and controlled over 25% of the domestic housing market (Paavo Monkkonen, 2009). Their production model is essentially as follows: They began by standardizing the dimensions of their homes to meet the minimum space allowed by municipal law, reducing the living space of their cheapest model – vivienda ecónomica - to as small as 29 m^2 for a single unit, and increasing their size thereafter by the consumer's ability to pay. They separated all the constituent components of the development process - from land acquisition, to resident recruitment, to the credit allocation - into hyper-specialized departments staffed with specialists, each trained at assigned tasks. Finally, they achieved economies of scale by prefabricating as many materials before breaking ground, and assembling as few things as possible on site, thereby reducing any extraneous labor and transportation costs. If ever there were a constructor that reached the pinnacle of producing a single-family housing unit with the least amount of money possible, this was it.

Though initially hailed as a successful policy, the development's social limits and its destructive impact on life within the city became abundantly clear as time passed. The criminally small homes presented a challenge unto themselves, but these problems were compounded by frequently unmet promises for the delivery of public services, including sewage, electricity and school buildings. Additionally, in their zeal to reduce costs, developers built in peripheral areas where the cheapest land was available.

The Translations of Social Housing Policy in Mexico

The history of social housing in Mexico shows that epistemologies are not irrelevant, nor are they without precedent, in shaping the form and quality that housing takes. Since the revolution, housing in Mexico has been intimately connected to an underlying epistemology, which has had profound implications for its form and the relevance of that form for its inhabitants. These have come in the form of three "translations," through which housing policy was adjusted to fit prevailing national idiosyncrasies.

The first translation came in the form of the socio-humanistic aspirations of the Mexican Revolution, whose egalitarian concerns were forefront in the housing designs offered by revolutionary artists and architects, and the planners and officials who worked within the state. The second translation was a result of the strategic role that housing policy has played in the political dealings of the Mexican state historically. Serving as an important tool in bolstering the legitimacy of the state or securing the loyalty of influential social groups, the shape housing policy took was heavily mediated by the political exigencies of particular dealings between political agents. During times of economic prosperity, when political power resided in industrial elites and the urban middle-class, the government tailored its housing policies to secure their loyalty and upset alliances that could lead to disruptive popular uprisings. During times of generalized social unrest, the State expanded the coverage of its housing benefits in order to appease disaffected parties.

The third and current translation is unique: although economic efficiency has always been a matter of concern in housing provision, the current moment represents the first time in Mexican history that minimal housing has been exclusively translated into a narrative of purely rational allocation of resources and market-efficiency. The rationalization of the Mexican housing apparatus, tied to the rise of neo-liberalization and the adoption of housing guidelines originated in the World Bank, has successfully expanded rent-extraction opportunities and constrained allocation of housing investment exclusively to market-driven projects. Coincidently, these shifts have overlapped with the diminished political strength of organized labor and other civil society groups, which eliminated the mediating role that socially rooted institutions played in infusing a non-economic dimension to housing policy.

Without question, neoliberal housing policy in Mexico has produced enough housing to shelter the masses; it produced millions of homes and allowed the federal government to proclaim success in attending to housing demand. Unfortunately, volume has not led to good urbanism nor to sustainable cities. The uniformity of the urban landscape, the minimal living space offered, their peripheral locations, the limited services and public spaces, and the lack of employment opportunities have all contributed to an epidemic of housing abandonment that left Mexico with some of the highest vacancy rates in Latin America. Lackluster urbanism, as much as increased housing volume, has been the end result of the facilitating policies that placed the private sector as a protagonist in housing construction. This privatization stands in almost diametric opposition to the first "translation" of housing in Mexico. By relinquishing its guiding role in housing policy to the private sector, the Mexican state abandoned the socio-humanitarian imperative innate in housing policy.

The neo-liberal translation of minimum housing has allowed modernism to take its purest functional form so characteristic of failed projects like Pruit-Igoe. It has allowed for the proliferation of a standardized model of housing that can be rapidly mass produced in assembly-line *maquilas,* and ordered the city in a way that reflects a private sector rationale. While this model is certainly the most economical for producing objects that look like houses, it is not ideal at constructing dwellings that fulfill the social and physical needs of its inhabitants. It is ironic that in a time of market efficiency, the quality of housing should be worse than it was during a time rife with rent-seeking and unabated patronage. The old system, for all its inefficiencies and opportunities for corruption, at least served as an effective counterbalance to purely economic considerations. After all, how long would the state have preserved the support of its clients if it started rewarding loyalty with unlivable houses?

This sets the stage for Mexico's modern housing crisis and gives us a glimpse into some potential roots of the problems it faces today. However, before turning to see what this has meant for housing abandonment in Tijuana, it is worth diving just a little bit longer into history, this time focusing not just on the policy translations, but the history of urbanization in Tijuana.

3. HISTORY OF URBAN DEVELOPMENT AND HOUSING IN TIJUANA

The marked tendency towards urbanization in Mexico has presented a challenging socioeconomic panorama that is not fully understood. Beyond the stress that accelerated urban migration imposes upon existing infrastructure and services, rapid urbanization exerts environmental, political, economic and social pressures that are exceedingly complex. Among the most salient consequences of the urbanization phenomena has been the ongoing challenge of directing – some would say planning – the urban growth in a manner that is productive and equitable for its residents. Part of why this is not well understood is that Mexico is large; we need different solutions for different areas. I want to focus on a smaller scale to better understand the unique problems specific to one area, so in this chapter I will zoom in to look at the history of urbanization and housing in Tijuana.

I chose to examine Tijuana closely because, as a border city adjacent to San Diego, these concerns are especially prevalent here. Given the high percentage of informal settlements and a geographic proximity to the United States, the city has a unique morphology that reflects the political and economic dominance of the neighbor to the north as has been discussed by many scholars. This paper aims to identify the major players in the city's urban growth, and through that identification formulate, some hypotheses about what actions the government should engage to achieve the aim of producing a just city. This paper has four parts. I begin with (1) A brief history of urban development and the current context of informality; (2) an overview of government intervention in Tijuana; (3) an exploration of the role the private sector has played in shaping urban development; and (4) conclude with a summary of the current state of urbanization in Tijuana.

Founding and Urban Growth

There are many explanations that are given for how Tijuana got its start. Local legend has it that the central city sits upon the ranch of someone that was known simply as "Tia Juana" in the 16th century. Her name, as is bound to happen, was shortened over time to give the city its current name. Another version has it that Tia Juana comes from a misinterpretation of the ancient indigenous word *Tiguan,* meaning "close to the water," by a Spanish priest (Rodriguez, 2009).

Whatever the case, there is no dispute that in 1829 don Santiago Argüello, a wealthy Californian, received the title to "Tia Juana's ranch" from the Governor of Ambas Californias. That title served as the legal foundation for the establishment of a settlement on those lands in 1889 (Piñera Ramírez). According to Herzog, Tijuana's transformation from ranch to city was "influenced far more by the United States than by Mexico" (Herzog, 1990). The decision to develop these lands by Argüello's heir came at a time of intense land speculation in Southern California and Baja California using capital of predominantly U.S origins. Fueled by a newfound accessibility to California because of railroad expansion, North American investment was responsible for the development of both the cotton industry in Mexicali and the subdivision of Ensenada. In keeping with the times, the design of Tijuana's first urban plan in 1889 was deliberately oriented north, with the main settlement adjacent to the international boundary and a customs house. This decision, no doubt taken out of practicality, foreshadows the outsized influence that proximity to the U.S would have on Tijuana's population and urban form.

From here until the present day, Tijuana's booms and busts resemble what Piñera has called a "history of rebounds," meaning that the city's development was closely intertwined with the happenings of Southern California and the United States (Zenteno, 1995). To give one example, the Volstead Act of 1919, which ushered Prohibition into the United States, had the unintended effect of causing the "Golden Era" of tourism in Tijuana. Just in one day, July 4th of 1920, the city saw 65,000 Americans and 12,000 cars enter a city which had barely more than 1,000 inhabitants. Conversely, the mass deportation of Mexicans during both the Depression and Operation Wetback spurred a high prevalence of informal land tenancy along the border as repatriated workers, lacking the capacity to return to the interior country, set up squatter settlements in the urban periphery (Ganster, 2008; Martínez, 1988).

It is hard to overstate the importance of this last point to the urban development of the city. Drawn by the raw magnetism of the North American economy, and later the national industrialization project, the population of Tijuana exploded starting in the 1930s. The 242 inhabitants registered by the 1900 census could have hardly imagined that by 2010 over 1.5 million people would call Tia Juana's ranch their home (SEDESOL, 2014; Zenteno, 1995). From 1930 to 1990, Tijuana's population grew by a factor of 66 - from 11,271 to 742,686 people -

with municipal growth rates that frequently exceeded 9%. In contrast, the national population only quintupled during that same period of time (Zenteno, 1995).

This uncontrolled growth has had important spatial implications for the municipality. Over one-half of the urbanization in the city's history has occurred irregularly in "colonias populares" (Paavo Monkkonen, 2008). Most colonias were settled spontaneously by lower-income migrants from the interior that could not afford the high cost of Tijuana's serviced areas. They would seek land in the least-desirable locations, in canyons and along hillsides, where land invasions might not be challenged and property ownership could be established. According to Herzog, settlements were geographically situated in three general zones:

> *(1) Along the highway to Tecate to the Southeast, initially in the La Mesa area, and later in surrounding and outlying colonias; (2) in the hills and canyons to the southeast of the central business district – this is where a large proportion of the city's poorest squatter communities sprang up; and (3) along the coast in the Playas area.*

At publication in 1990, Herzog estimated that the size of the squatter population ranged anywhere from 38-42.5% of Tijuana's population and accounted for a quarter of the total urban space. A more current figure has informal settlements comprising 57% of the city area (Rodriguez, 2009) and their residents constituting 64% of the municipality's total population (Alegría, Ordóñez, & Álvarez, 2008). It is under this context of "irregularity" that the government has had to develop its planning apparatus, a topic which is explored in the next section.

Federal Apathy, and Interests/Cycles

To say that informality has played a fundamental part in shaping the morphology of Tijuana is not to say that the Mexican government has played no role. In fact, officials within the Mexican state have always been involved in the development of the city, but only those at certain governmental levels. Here it is important to make a distinction between the three levels of government in the Mexican state: the federal, the state (entidad federativa,) and the municipality.

Both in Tijuana and in Mexico on the whole, of these three, the most important actor has historically been the federal government, with local actors taking on a more prominent role later.

The Mexican political system is notorious for the centralization of its power at the national level. Consequently, the majority of infrastructure programs that been implemented in the city have been decided on based on the availability of funding and interest from the capital. Unfortunately, this has often meant that the development of infrastructure programs was more frequently aimed at advancing national goals, with considerations for quality life as an afterthought. Additionally, improvements have been asymmetrically implemented in areas that have been deemed to have more strategic importance and have usually manifested as infrequent large-scale developments, as opposed to continuous smaller improvements to sewage or electricity (Herzog, 1990). I offer some examples below to illustrate.

One federal intervention that occurred during the infancy of Baja California was related to the expropriation policies of President Lázaro Cardenas. By 1937, The Mexican government had purchased over 47,000 acres from the Colorado River Land Company – a North American company – to the benefit of some 4,500 families. Despite heroic depictions of Cárdenas as a man of the people, border historian Oscar Martinez argued that these particular sorts of land grants had a more practical purpose. Cárdenas hoped to populate the Northern border as a means to secure it from the filibustering expeditions of people like William Walker (Martínez, 1988).

Herzog gives the example of the 1965 Program Nacional de Frontera (PRONAF) which sought to beautify cities and lay the foundation for future economic growth along the border. It is worth noting that this program coincides with the apogee of the Mexican Miracle, a period in history that saw stratospheric economic growth associated with import-substitution industrialization (*Nueva historia mínima de México*, 2004). In Tijuana, given its strategic location near the U.S, this meant priority would be given to those projects that involved trade, industrialization, or tourism. Circulation improvements were made to those areas of the city that carried out these activities, namely Centro Viejo, Zona del Rio, Mesa de Otay and Playas de Tijuana. Additionally, it meant significant investment in infrastructure associated with maquiladora assembly at the Mesa de Otay industrial park. This was accompanied by the construction of a new port of entry tailored specifically to service this section of the city and the expansion of the existing port of entry in San Ysidro (Herzog, 1990; Piñera Ramírez, 2012).

It is impossible to conclude this discussion without mentioning the largest state project of the time in Baja California: the canalization of Zona del Rio. This swath of land, located in the heart of Tijuana, is currently the city's business and governmental district. It is also the location of an upscale mall. However, prior to the completion of the project it was a flood plain that many considered unusable, but nonetheless housed an informal settlement that was known by locals as Cartolandia[17].The project dates back to the López Mateo administration. It proposed the installation of a concrete channel system along the Tijuana River in order to free-up prime real estate near the downtown. Ground was broken on July of 1972 and the freed up space was designated for the touristic, administrative, and commercial uses that characterize it today.

The project is still a controversial topic in Tijuana. It required a multi-million dollar investment in the city center at a time when only 40% of the population in Tijuana had access to potable water. It also required the - by many accounts brutal - displacement of some 5,000 families to the urban periphery, many of whom never received proper compensation (Herzog, 1985, 1990; *Tijuana, cambio social y migración*, 1988). In various ways, it can be understood as the prototype for projects the federal government deemed necessary: large-scale, strategically placed, and connected to national goals. More importantly, it gives us a sense of what the Federal government deemed to be the priorities for the city and begs the question of whether local institutions felt the same way.

The short answer is yes. The Governor of Baja California had a close relationship with President Luis Echeverría during this time and actively lobbied for projects that would benefit the state (Piñera Ramírez, 2012). Yet, perhaps a better answer is that it probably did not matter, especially at the level of the municipality. In stark contrast to their equivalents at the federal levels, state and municipal officers had very little power to implement and manage urban development nationwide. This is reflected best in their respective budget appropriations in 1975. The Federal government during this time was given an allocation for the lion's share, with their budget accounting for 86% of all the public monies in the nation. The rest was given to the State and municipalities, which were allocated12% and 2%, respectively (Herzog, 1990).

[17] Cartolandia because of the shoddy and reused materials that residents had used to build their houses.

Compounding the financial limitations of actors in Baja California was the relative youth of the administrative units during the periods of highest urban growth. Baja California did not become an official state until 1952 – it was the second to last state to join the Republic - and Tijuana was not organized as a municipality until 1954. Previous to this it had a territorial designation, known officially as "El Territorio Norte de Baja California," which made it subject to direct governance from Mexico City (Genel, 2013; Piñera Ramírez, 2012). Lacking experience and sufficient human capital, the record of municipal urban policy is scarce prior to 1970, and the creation of Tijuana's first master plan did not occur until 1984 (Herzog, 1990; *Tijuana, cambio social y migración*, 1988).

Perhaps another indicator of the limited ability of the municipal government to affect urban change is the relatively low amount of money that was spent on public infrastructure during the period of the Zona del Rio canalization. From 1978-1982, for example, Herzog notes that only 15% of a 3.2 billion peso budget was spent on sewage improvements, while almost half was allocated to highway construction and large mega-projects, like those promoted by PRONAF. Nevertheless, this hypothesis requires further development because asymmetrical spending might just as well be an indicator of municipal spending preferences, rather than an indicator of power.

To conclude this section, I want to be clear about where this leaves us, and add an additional complicating thought. Tijuana had a period of urban growth which was clearly directed by the Federal government through large-scale infrastructural improvements aimed at advancing national goals. Its novice municipal and state government had limited means to implement any of their ideas. I have refrained from alluding to the temporality of federal interest in the city, because it is not constant. There is ample literature that documents fluctuating capitalino[18] interest and apathy in the borderlands.[19] Tijuana is no exception. During times of federal apathy Tijuana has been left vulnerable, with a weak state and municipal government that is susceptible to exploitation. Sadly, this governmental weakness has been utilized for the advancement of personal agendas.

[18] "Capitalinos" are people that are from the capital, in this case from Mexico City.
[19] See (Martínez, 1988)

Private Urban Development: Autoconstrucción and Latifundismo Urbano

There is no better tale to exemplify municipal incapacity in Baja California and to illustrate the influence of private agents in Tijuana – many of them large-property owning individuals – than the situation of ICSA in the 1960s. ICSA was a real estate company based out of the D.F. that was comprised of people with affiliations with former President Miguel Alemán. In 1960, they were able to able to obtain a title to the hereditary property rights of Alejandro Argüello, a descendant of the original land owner of el Rancho Tia Juana. Taking advantage of the shaky legal foundations for property ownership in the city[20], ICSA made a successful argument that their acquisition entitled them to the 10,533 hectares of the Rancho Tia Juana, which at the time comprised the entirety of the city of Tijuana. Lawsuits were filed and the matter was eventually take up by the Supreme Court in Mexico City, which, in 1963, ruled in favor of ICSA and ordered the immediate surrender of the properties to the developer, with exceptions given to public offices and buildings built prior to 1960. Everything else, including new buildings, was now property of ICSA. (Piñera Ramírez, 2012)

The acquisition had immediate effects on the life of the city. Citing the uncertainty of land tenancy, all construction and lending in the city ceased for a time, and many citizen groups organized to oppose the purchase. What's more, this unbelievable acquisition of an entire city by a private entity had a surprisingly long shelf-life. After five years of legal battles, the government of Baja California finally expropriated the rights of Santiago Argüello in 1965. However, despite their actions the issue remained mired in legal disputes for over a decade afterwards. For example, a prominent country club was forced to surrender their land and installations to the developer in 1971. The ICSA question was only finally settled through the intervention of President Echeverría, who brokered an agreement that that would compensate the developer $42 million pesos in exchange for renouncing their claim on the deed (Piñera Ramírez, 2012).

As extraordinary as this case may seem, it is actually fairly representative of the way that business has been conducted in Tijuana. Given the intermittent presence of the Federal government and the incapacity of local agencies to enforce regulations, divergent parties have

[20] President Emilio Portes Gil rescinded recognition for the property from the Argüellos in 1929, but Lázaro Cardenas later reconstituted their property rights in 1939. Later, another President - Abelardo L. Rodriguez – donated a large parcel he owned to a country club (Piñera Ramírez, 2012).

operated in pursuit of their own interests with very few constraints. This has manifested itself in two ways in the built form: the development of extensive portions of the territory by real-estate companies, as was attempted by ICSA, and the micro-constructions of urban squatters in various areas of the city.

Examples of the former route abound, with large property owners operating both with and outside the boundaries of the formal state apparatus. The construction of Playas de Tijuana, an upper-class neighborhood near the coast, was initiated by a developer (Genel, 2013), and there are suspicions that the canalization project of the Zona del Rio and a later expropriation of coastal land in Rosarito was carried out at the behest of developers (Herzog, 1990; Hiernaux Nicolas, 1986). Lossak refers to this as 'latifundismo urbano' pointing out that in 1982, over two-thirds of Tijuana was owned privately, mostly by a few influential families. He recounts an interview with a city representative who offered him insight into the informal mechanisms that these large landowners used to circumvent city norms and dictate urbanization on their terms.

> *There have been some people who have been the owners of land that have had no value, urbanistically speaking, who then took advantage of political leaders. They would tell them:*
>
> *"Why don't you give some land to your constituents?"*
> *"Of course, where do I get it?"*
> *'Come with me, I have a couple of properties I can give you on the hillside.'*
> *So people would start settling on these free properties, but this would also start increasing the value of the flat sections of property owners holding's, which he knew would eventually increase his returns. This continued in the city for various years, which allows the construction of very irregular settlements with no services. The government couldn't ask the property owners for contributions in the construction of infrastructure, since the parcels had been gifts. This produced a terrible urban anarchy. Afterwards, the owners, would push political leaders to demand the introduction of services from the government. The government jumps into action to first provide them electrical energy, then water and sewage. In this way, those that had originally given*

> *away some parcels, had the service infrastructure much closer, and it would end up being a lot cheaper to contract those services to develop those properties that they still wanted to sell.*
>
> *Interview with Enrique Cobian, delegado político de la Mesa de Otay, 1984 Taken from (Tijuana, cambio social y migración, 1988), translation by author*

Moreover, the concentration of land in the hands of a few property owners would have given these individuals a tremendous influence over the urban agenda in the context of Mexico's corporatist state. Some have argued that the Partido Revolucionario Institucional (PRI) was only able to garner political support in Mexican cities in exchange for access to urban land and the provision of services (P. Monkkonen, 2012). If this is true, then property owners would have a tremendous amount of leverage over local political leaders through their ownership of the municipal territory. It could be argued that landowners have always held the key to political power in Tijuana: access to the land required to win political patronage.

Another facet of private direction of urbanization processes in Tijuana, comes from property-holding elites, but in the agglomeration of actions taken by the large number of irregular settlers that have shaped the urban landscape. The members of these popular colonias perfectly encapsulate an attitude that was described in Morelia as the "popular modernizer," the profile of urban dwellers who, in the face of scarcity, will attempt to modernize their environment to ensure their own material survival (Edensor, 2012). This represented "an open rejection of housing alternatives, on state control mechanisms and the manipulations that strove to impose them." (Valenzuela Arce, 1987)

This rings especially true in Tijuana, given the historical half-hearted investment in public housing in the city. Mexico has a history as a large promoter of the development of public housing. From 1980 to 1990, 45% of all housing units constructed nationally were the result of government-financed programs. Tijuana, nonetheless, was not one of the preferred destinations for this investment, as houses financed by the public sector only account for 8% of the total building stock (Rodriguez, 2009). INFONAVIT's activity in Tijuana is a prime example of this neglect. By 1984, after 12 years that INFONAVIT had a presence in Tijuana, they had only succeeded in building a scant 9,232 units. Experts predicted that in that year alone, the demand for new housing would exceed at least 10,000 units. Furthermore, of the more than 25,000 credit requests the agency received during that year, only 1,700 had been fulfilled (*Tijuana*, *cambio social y migración*, 1988). During the Mexican Miracle and the construction of the Zona del Rio canal, only 6.7% of expenditures from all governmental levels were directed towards public housing, despite the city's astronomical growth rates (Hiernaux Nicolas, 1986). This made the only really viable option for housing construction in Tijuana that which characterizes it today: auto-construction or self-help housing.

Tijuana Today: Landscapes of Abandonment and Informality

After the creation of Tijuana's first master plan, the municipality's planning apparatus started to become more sophisticated. To complement the ongoing Federal regularization efforts of CORETT, Baja California created its own state regularization agency in 1990 (CORETTE). Not much later, the Tijuana Ayuntamiento also created its own regularization agency, and under the leadership of Mayor José Guadalupe Osuna Millán, IMPLAN was founded (Piñera Ramírez, 2012). Since then, IMPLAN has played a leading role in the development of several city master plans, the most recent of which has been the Plan Municipal de Desarrollo 2014-2016. As of today, there are three agencies that handle land regularization at the state and municipal level: FIMT, Produtsa, and INDIVI, which was the result of a merger between CORETTE and INETT in 2008 (P. Monkkonen, 2012).

However, bureaucratic innovations have not necessarily translated into better urban outcomes. Monkonnen concludes in his analysis that the regularization agencies "are not well designed in terms of the two generally recognized goals of land titling programmes: land market efficiency and economic integration of slums and slum residents" (P. Monkkonen, 2012). He suggests that the design of these agencies, as well as the redundant nature of their mandate, are likely consequences of the political patronage left over from the election of Mexico's first non-PRI governor in 1989.

Likewise, the content of some local urban plans speak either to a lack of information or a complete detachment from reality on the part of the government. For example, the 2008-2013 Sectorial Housing Program (Program Sectorial de Vivienda del Gobierno de Baja California), while recognizing the existence of informality and the lack of official data on the matter, still attempted to quantify the amount of housing units that could be considered informal. The figures they produced fell so short of the academic consensus that they could be accused of being purposefully misleading[21]. This points to a larger problem of data availability in Tijuana. It is not uncommon for different government agencies to produce contradictory numbers. Moreover, not all data is available: the cadastre currently has 360,000 properties registered, but it is estimated that it is missing at least 150,000 more (Rodriguez, 2009).

Additionally, there is evidence to suggest that large private entities still have the ability to dictate the urban agenda. An interview with a regularization agency in Tijuana showed that it was still very common for landowners to operate under a "develop first, ask for permission later" mentality, meaning that they would sell their lots illegally first, urbanize, and then seek to regularize their holdings. In this way they navigated the bureaucracy of their choice, avoiding the zoning regulations and the associated permitting fees that would be imposed on them the by the city, opting instead for the services offered by regularizing agencies like INETT and CORETT (P. Monkkonen, 2012). Furthermore, an analysis of the distribution of INFONAVIT credits for the purposes of construction of social housing reveals that financing for these projects is concentrated in the hands of a few developers. From 2006-2014, 79% of all INFONAVIT construction in the city was carried out by 10 developers, and just two of them – probably Geo and Urbi – accounted for over 47% of the total constructions[22].

State Subservience to the Private: A History of Urban Growth in Tijuana

The evidence suggests that the urban development of Tijuana has been mostly led by private actors, either large property owners or by the human settlement effect of a demographic boom. Although, there has been significant interventions by the Federal government, these interventions have only been realized when they coincided with national agendas. The consequence of this has been large-scale projects which provide asymmetrical benefits to the residents of Tijuana, both socially and spatially. Furthermore, the energetic role of Federal government has been discontinuous in the city, leaving a weak municipal and state government

[21] In the report, they compare the number of officially registered buildings against the number of irregular buildings that have been identified by INDIVI, the agency in charge of housing policy for the state. INDIVI had only identified 107,607 irregular buildings in the entire state of Baja California in 2008, with about a third of those located in Tijuana. By this calculation only 6% of buildings in Tijuana would be considered irregular.
[22] This information is derived from the analysis conducted on RUV data.

in charge that is vulnerable to exploitation by the private sector during periods of federal absence. Although, there have been recent reforms that have attempted to empower local governments to take a leading role in urban management, current research suggest that they have still been unable to insert themselves into the fabrication of the city.

This has meant that housing has in Tijuana has been, by in large, produced progressively and informally, leading to an incredibly diverse, complicated and conflictual distribution of land use patterns across the city which has been mostly devoid of state direction or regulation. Since before the revolution, the government has been absent for all intents and purposes in housing construction in Tijuana, leading to housing that was built in much the same way that the rest of the city was: informally and progressively. However, the apparent “chaos” in housing shifted substantially during the rise of the third translation of social housing policy, as Baja California and the northern region became preferred destinations for the production of government-financed housing in the country. This has created an urban fabric that alternates between irregularly produced *barrios* and geometrically planned *fraccionamientos*, the locations of the latter which can be found in the maps in chapter one. To illustrate just how large this shift has been, the numbers themselves speak volumes. From 1973 to 1984, Infonavit built less than 10,000 homes in Tijuana. Compare that with construction in this latest phase, a period of time that is roughly the same: from 2006 to 2014, 110,000 new houses were financed and constructed by the government. This latest translation in housing policy, with its accompanying footprint of government-financed housing, has also been followed by a phenomenon that is altogether new in the city: housing abandonment.

Which leaves us at the present moment. Given the sequence of events that I just laid out, it is not hard to see why so many people have been quick to point to the government as the primary reason for the rise in housing abandonment. Nonetheless, as I said previously, this is not the only reason that is offered, and government financing by itself can hardly account by the phenomenon. So to further interrogate the question of what accounts for the intra-urban variation in housing abandonment in Tijuana, I engage in mixed methods research. This is the subject of the subsequent chapter

4. DISTANCE AND CORRECTNESS: VALIDATING LOCAL EXPLANATIONS OF HOUSING ABANDONMENT

The results of this study are discussed in this chapter. The first section explores the narratives of housing abandonment surrounding Tijuana based on the "scale of action," the territorial scale in which the interviewee works, and the "locus of analysis," the degree of separation from residents, which I believe are central to the complexity of understanding of housing abandonment in Tijuana through a conceptualization of "distance". The discussion of the qualitative data is complemented in the second section of the chapter, where the examination of the quantitative analysis, based on OLS results, is incorporated. The discussion of quantitative results highlights the importance of small area analysis (i.e neighborhood) not only for the identification and characterization of housing abandonment, but also for planning.

Conceptual Framing

I began by exploring narratives of abandonment using qualitative research tools, including unstructured interviews with key actors in housing in the city[23]. Here, the goal was to identify the main arguments and ideas used by different actors to account for housing abandonment in the city. During the interpretive section of the analysis, a couple of patterns became apparent. Even when unprompted, respondents typically framed the conversation about abandonment in terms of the absence of some sort of characteristic. In their formulation abandonment was the natural result of the absence of some of trait from either the house, the neighborhood, or the broader context. Although conversations over the presence of characteristics were also part of the conversation, the focus was markedly more pronounced in the negative direction. Take this quote from a civic activist who has spent a lot of time in neighborhoods with high abandonment:

"There's a real tough sense of scarcity in these neighborhoods. And not only because there's no money, but like of everything"

[23] A more detailed description of the methodological framework and sources of data for this study are included in Appendix A.

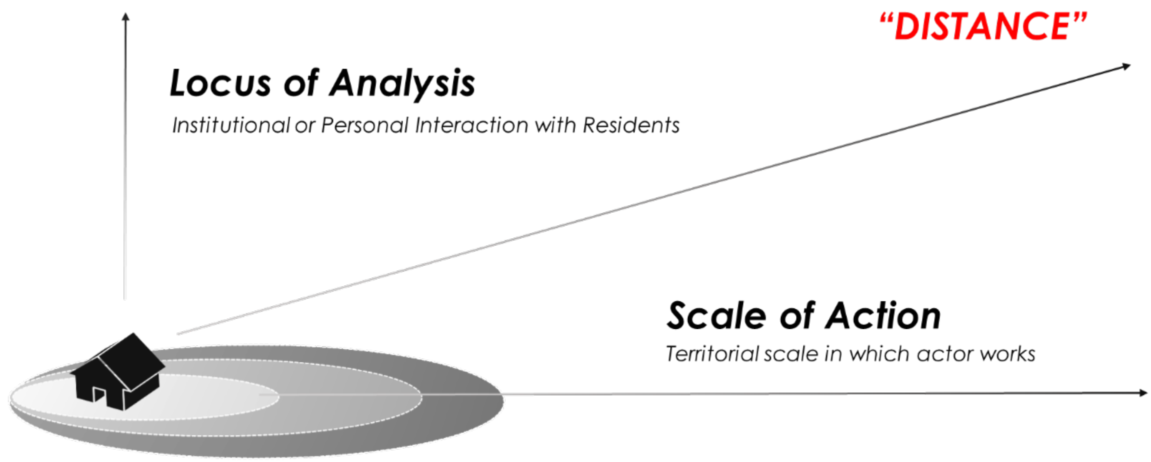
This led me to assemble a preliminary categorical scheme that separated explanations in terms of the presence of certain factors, and the absence of others.

In addition to the discursive emphasis on deficits, the scale that the respondents had with residents seemed to play a big role in the way in which interviewees discussed the abandonment phenomenon. Although initially responses had been organized by sector (developers, municipality, federal, etc.), after several re-evaluations of the narrative it became clear that the degree of interactions with residents and time spent in neighborhoods with high abandonment influenced the particular issues which respondents laid emphasis on during the interviews. This led me to reorganize my thoughts in terms of the degree of interaction that the actors had with people that were closest to the issues of abandonment: residents. At first, I thought that the degree of separation created a material/social divide between respondents, in other words that actors at the very top were more likely to offer physical explanations for the issue of abandonment, while those at bottom were more likely to offer social explanations for abandonment.

However, the longer I tried to interpret the explanations that were being offered by respondents using this lens, the more dissatisfied I became with its coherence. At the most intense level of interaction it was not so much that physical explanations disappeared entirely. Quite the opposite, in conversations with the respondents that had the highest levels of contact with *derechohabientes* concerns over transportation, housing size, lack of services were very much a part of the conversation, even if they were embedded within the social dysfunction they produced as opposed to the material deficit they represented. Conversely, at its most distant point, it was not that social explanations disappeared entirely. The economy figured prominently in conversations about housing abandonment, as well as the service that good housing policy could do for Mexico's working classes.

These weaknesses led to need to reconsider both the effect that distance created (physical vs. social), as well as the need to conceptually re-introduce an analytical dimension that also included the sectoral participation of certain actors, although perhaps in a way that was more nuanced than their initial labels would suggest. These reflections produced the final analytical frame which is best represented in Figure 2.

Fig 2. Actor "Distance"

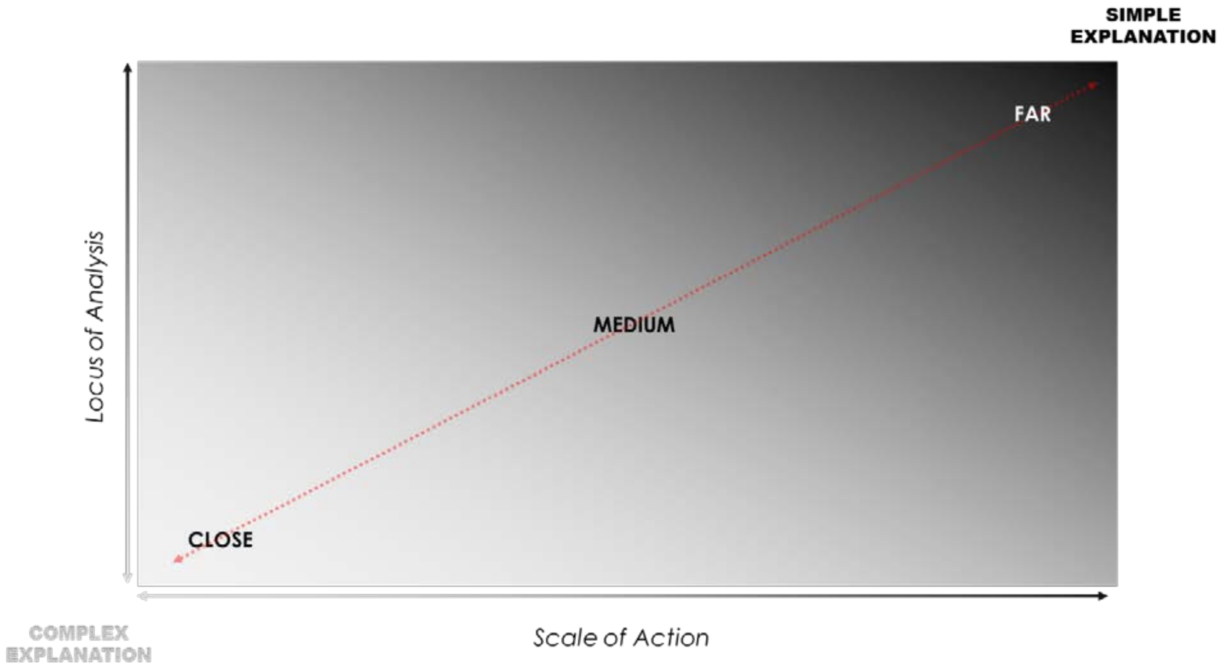


This diagram proved to be a much stronger articulation of actor "distance" than any previous iterations had been. I decided to reintroduce sectoral participation using what I have decided to call "scale of action," the territorial realm in which the interviewee works. This seemed like a more intuitive way to organize my interviews than by pure sectoral positionality because even actors that work within the same sector can work at different territorial scales. For example, the federal housing agencies have a range of employees which run the gamut from overseeing both national operations (a national scale of action) to verification in developments (a neighborhood scale of action). Additionally, I kept the degree of interaction as part of the framework, but decided to start calling the separation the "locus of analysis," which is the degree of interaction, either institutional or personal, that actors have with *derechohabientes* or development residents. Together, these two components combined to form an analytical frame of distance.

The effect changed substantially in this next iteration, as well. Instead of distance generating distinct social and material explanations at the lowest and highest scales, the distance created differences in the *complexity* of likely explanations. More specifically, based on my analysis, actors at the top of the policy hierarchy were more prone to providing simple depictions of the problem and solution, in contrast to actors on the ground who spoke of complex interactions between factors that overlapped and mixed at different times to provoke abandoned housing. In short, the farther you were from the problem, the simpler your explanation. Even more pointedly, those that had a high locus of analysis and a large scale of action were likely to speak of discrete social and physical indicators, while those on the opposite end of the spectrum, spoke more often of organic socio-physical processes whose relative importance shifted temporally. This is graphically represented in the two figures that follow:

Fig 3. Scale-Locus Framework (1)

Fig 4. Scale-Locus Framework with "Distance"



I offer several examples to illustrate plainly how the complexities of explanations shifted depending on the "distance" of the actor. I will begin with an actor that I felt fell into the category of having a large scale of action and a high locus of analysis working my way downward to the finest "distance." I organize these excerpts first by the scale of action and then the locus. These are presented with a brief description and compared in short section following the transcriptions. To save space, I have only included those actors that fall directly on the distance line although actors that worked at hybrid scales were also included during the analysis.

Far-Far

Of those interviewed, the actors that presented the simplest picture of the issue were those that had the least contact with derechohabientes.

This quote was taken from an employee of the state government working on urban issues. I asked them explicitly what they believed was causing abandonment in the state, and they responded in the following way:

> *"It's due to sprawl and quality. And not the quality of the buildings per se, but the quality of the services which they should have. The quality of housing in terms of their volume and size, but also to the provision of service. And if I*

don't have schools nearby, parks nearby, no transportation, that's something. Housing policy ten years ago was about making housing like crazy. We were making almost 50,000 and 60,000 a year. Aside from that, in Mexico, they made it spread out. And in Mexico that caused transportation problems. Without services or transportation, the houses were abandoned."

In this individual's experience, housing abandonment was directly attributable to just two things: housing quality and urban sprawl. Interestingly they defined quality, not only in terms of housing size, but the presence of services that were crucial for urban life, like schools and parks. Moreover, distance and absent public transportation were seen as driving elements of abandonment. From this formulation it could be inferred that the solution to abandonment was relatively simple: build bigger houses, build closer to the city center and provide public services like transportation and schools.

Medium-Medium

The next scale of analysis is an intermediate level. Respondents here were primarily comprised of actors that had a moderate amount of interactions with residents, and worked at an intermediate territorial scale (usually city-level or regionally) because of the nature of their job: interviewees here are mainly comprised of local housing developers on municipal employees, although an interviews with a federal employee who regularly interacted and housing developments was also included.

These actors tended to present a much more specific picture of the physical deficits in neighborhoods. They spoke, not only of distance or housing, but absence of community centers, health services, municipal regulation, among other things:

"The government began to invest significant amounts in infrastructure, for example, here in Valle Redondo, Valle las Palmas, corridor 2000, where there is no commerce, there is no work, no infrastructure, no schools, hospitals, or medical services. You are on the outskirts of the city, where there is only housing"

Additionally, they spoke at length about the particulars of Tijuana's context that enabled these material deficits to become manifest in the first place, in many cases referring to things they viewed as out of their control. For example, the scale of Tijuana's demographic growth and the accompanying demand for housing was a recurring topic of conversation:

> *"The city Tijuana, because of its movement, its daily growth, requires a constant growth. There is a demand for housing that simply doesn't stop in Tijuana. We have a demand that is, let's say, captive, by the citizenry and by people that immigrate here to the city. Tijuana doesn't stop growing, it never stops demanding, it doesn't stop needing housing, so the supply doesn't stop, nor does the self-construction."*

The effects of decisions made at higher levels of government were also referred to quite frequently. Here the interviewee makes an observation about the effects that the nationwide push for placing housing credits, essentially creating the seller's market that was referred to above, had on Tijuana:

> *With the housing boom, that really I think was totally exaggerated, no?, INFONAVIT responded more to the need to place housing mortgages than to housing quality, than creating opportunities.*

In some cases, it was framed as a sort of swindle by the federal housing agencies. Some mentioned that rule changes essentially forced some derechohabientes into homeownership by imposing constraints on the ways in which they could spend their contributions to the savings accounts, limitations that had not existed previously. These quotes lend support to the claim that there was an oversupply in the housing market fed by a manufactured demand:

> *"Today, you have a lot of flexibility [in your housing account]. You can leave your money there, like a savings account which you can withdraw, you can use it to improve your house…but back then it was you can use it on this [house] or this [house]. I think that's part of the reason we have so many abandoned houses, that in some ways you were forced to try to get back your savings… there was someone who would occupy the house, there were others who wouldn't, but they would say "I'm not getting that money back, instead of losing it I might as well*

buy a house." Yes, but you can't buy here, so you would leave and buy a house in the periphery, There, there are many abandoned houses."

"So the people left the houses, actually, there were many people, who did not even abandon the houses, they didn't even go to the houses in the first place. They went at most one time. These house were never ever lived in. they were never inhabited. A great number of these houses never had inhabitants."

Of course, these sort of remarks were not limited to the Federal government, they were also made about decisions that were made at the state level:

"Many of Tijuana's problems are because one Governor decided to bet on one development pole and they invested there. The next Governor comes along and says "Me? Not me. I want my baby." So they go and invest somewhere else. In our specific case, along the 2000 Corridor and the other in Valle de las Palmas. So what happens, neither was finished. There was no planning, there was no infrastructure, or services. But the developers started building and started selling. That's one of the major reasons for all the abandoned housing."

At the municipal level, they could speak in particular detail to the role that developers played in abandonment. Although far from pinning the blame entirely on the housing industry, they spoke in balanced terms.

"In Tijuana we have a wide array that I could talk about, we have some housing developers that never have a single problem, and cases where the developers have 1,000 problems. There are some cases where there development is finished and municipalized in 5 years, but I could also talk about developments that still haven't met requirements after 25 years. I could talk about developments that haven't had a single complaint regarding the construction and I could mention cases where even the piping isn't up to code, where even the stairs don't meet minimum requirements."

Interestingly, they also referred to the existence of a type of housing abandonment that is not widely discussed – abandonment by housing developers, not by homeowners –and for which there was evidence during neighborhood visits. This is another marker for the argument that housing abandonment is the product of market saturation in the city of Tijuana.

This type of abandonment was creating a headache for the city because there was no established legal process for their management. Until a development is officially municipalized, developers are legally responsible for the provision of city services, including payment for public lighting and park maintenance. Before that process is finalized, the city is not legally allowed to enter and provide services, even if the developer has disappeared.

> *There are some cases of developments that were abandoned by developers, cases where there is no one to hold accountable because the developer declared bankruptcy, in which they've even withdrawn their application for municipalization. There is no legal representation in these cases. We are in the process of establishing legal procedures to carry out these cases. We have not defined the terms, but we have mentioned the adoption of these abandoned subdivisions or some kind of recovery*

This was a typical response when asked about the municipality's part in failures to provide necessary services or infrastructure in peripheral neighborhoods. According to people at the municipal level, for the most part their hands were tied. Either they weren't allowed to take action because of legal impediments or they had no legal mechanism to force developers to include important infrastructure[24] because codes in Tijuana had not been updated for decades:

> *"Read the [municipal] code, there's no mention of community centers within the housing development, or medical units which are basic elements that every community should have. They talk about the park, but they only talk about one type of green space. If the development is small then no problem, but if it's big then it doesn't work…it's the same thing that happens in the city, everyone betting on the same little piece of land without any guidance over where things should be."*

[24] Schools are an exception. These do not have to be provided by the municipalities in Baja California. The State is the level of government that is legally responsible.

Of course, that wasn't the only limitation they mentioned. Finances were also tight. In the view of municipal officers, they were perpetually short-staffed and under resourced. They had very few functioning vehicles to go conduct inspections, and even if they did, they had no one on staff that had the technical expertise to go verify that constructions were meeting basic requirements. They ended up consulting with the local Architect's Association for projects that were especially complicated, or relying on Infonavit's own verification process that everything was in order.

One characteristic of actors at this scale of contact with *derechohabientes* is that they more frequently articulated the physical deficits in real world terms. This as opposed to actors that were farther removed who spoke either in technical terms or in generalities. Take this quote from a housing developer speaking about distance as a problem for home owners.

> *"They were coming from where they were, taking an hour and a half to arrive, they would say "it costs me 30-40 pesos to go and come back from my work. I spend 80-100 pesos daily. It's not enough" For someone who earns three or four minimum wages to spend 60-70 pesos on public transportation and three hours en route, coming and going to and from their house, it's not viable."*

They also took note of the temporal dimension of creating viable urban spaces. It wasn't always enough to provide the necessary infrastructure, the order in which it arrived, according to municipal officers, also mattered a great deal. In short, a lack of a planning was a defining characteristic of the proliferation of abandonment.

> *"They decided to developer periurban developments over in Valle de Guadalupe, in Valle de las Palmas…it's been 15 years since they started the development and it's empty. There are abandoned homes, because at the beginning they would say "we're bringing jobs, transportation won't be as expensive" telling them to go over there, over there was never founded on the issue of jobs, production areas were never part of the development equation."*

> *"If when the developer starts building housing, there's already a school in operation, the situation is going to be entirely different. If there's already a functioning community center with resources. I tell you, they shouldn't put them in all the way over there, they should have put [the houses] in when the*

community center was already in operation, so that they could have been educating the homeowners during the process."

Beyond just being attuned to the social implications of the built form, respondents at this level of interaction presented fairly complicated pictures of the intersection of the built form and social relations, going beyond simple characterizations of the absence or presence of a material objects or social processes, and instead arguing that they fed off each other. This is well captured in the following statement by a worker at the municipal level:

> *"People don't have a communal culture, they don't know. You should go to the zones, to the houses – and the houses are really small where there is overcrowding and social problems – it's exactly the same situation. The same social issue where [homeowners] never had any forethought or even visited these houses. I know that it's a social necessity, and it's a social necessity that starts with the fact that a person can't afford a bigger home with the salary that they're earning, because they aren't given the resources to pay it off immediately. So you get pichoneritas (pigeonholes), but pigeonholes that simply aren't adequate for the families that are going to live there. That impact, that increased density which creates overcrowding, which creates social, psychological and other problems, is the same sort of issue that could occur in a city that is not prepared to get more dense housing."*

Finally, at this level interviewees started to offer explanations that were more social or cultural in nature, than the physical. One explanation offered by a developer implicated not the financial structure of the mortgage agreements but what he perceived as a lack of savings culture in Mexico:

> *"Another issue which has always cause problems, from social interest housing up to higher tier residential housing, is that we don't have a savings culture in Mexico. Someone can pay you 1,000 dollars a month, but they can't spend 5,000 in down-payment […] people that are buying homes are purchasing them without even a down -payment. Why? Because the Infonavit credits let them [….] so people start living in their homes without spending a dime, so they don't feel an*

sense of attachment, investment, that this house cost me X number of pesos. […] so they leave them really easily."

Another identified a lack of community education as a problem, an issue which was also frequently cited in those with the closest interaction with derechohabientes:

"The other issue with community building is that we're betting on educating people before they start living [in these developments]. This doesn't work, it doesn't matter how much you give an induction course [about living in a condominium]."

However, they go on to speak about the difficulty of creating programs that would adequately address the apparent lack of respect for community space because of the particularities of each different case

"You need to educate them when they're already living there. The problems don't get resolved until you're actually there, and the problems are never exactly the same for everyone. You can have the same sort of problem everywhere, but with its particularities because the issue was caused by two or three different age groups, by different actors, in different situations."

Close-Close

Those at the other end of interactions with homeowners presented landscapes of complicated social and physical ecosystems, which certainly interacted with the material conditions of the neighborhood, but also frequently operated independently from it. They would speak at length about residents day-to-day struggles, evidencing the precarious social deterioration in neighborhood. Insecurity was a common subject of conversation.

"There's also a lot of insecurity in the context of the colonias. There are gangs, but every once in a while a patrol car comes by more or less over there, but the delegacion (city government) is far away, so when there's really a conflict no one comes."

The existence of criminality at the neighborhood scale was attributed to the absence of neighborhood custodians, or people to protect property or children from becoming victimized.

Since working adults were essentially never home, spending hours en route to their factory jobs in industrial areas of the city, children were often left to fend for themselves.

> *"You can feel the abandonment in many senses, from familial abandonment, [kids] spend the majority of their day alone at home, abandonment of child care, of the sense of protection, of companionship, which are fundamental in a child's development."*

One of my interviewees characterized these neighborhoods as *ciudades dormitories* – dormitory cities, or cities where the people who lived there just came to sleep.

The absence of adults during the day created all sorts of problems. It resulted in the creation of opportunity for criminality in a context where there was no adult or police supervision, essentially making the neighborhood less safe for everyone.

> *"There's something there that's really screwed (cabron) with the abandonment of homes. A house will be completely abandoned, and in less than a week it is already ripped apart. They'd steal the metal from the cables, the piping, the toilets, the windows, window frame. They leave just the frame, like the walls and an empty roof. In five days. And there are people that stand guard at the house, that never leave it alone."*

More perversely it puts working adults – who were already strained at providing care for their kids – in a bind: do you stop going work to watch your kids and then lapse on your mortgage? Or do you continue going to the maquila and hope that your children don't get in trouble? This led to the creation of extreme child care arrangements, which as an interviewee told me, had the house as a protagonist:

> *"One of the strategies that mothers use [while they are away] to keep their kids out of danger is by keeping them inside the house under lock and key. It's really very violent. Or they give a little money to a neighbor to more or less watch them."*

This sort of depiction is fairly characteristic of the type of responses that actors at this scale of interaction made. The physical was not spoken about in terms of the material deficiencies they represented, they were talked about in terms of the social interactions they deteriorated. An example was distance. Here it wasn't talked about in terms of cost or even just time, but rather quality of life:

> *"Two hours to work, another two coming home, plus 10 to 12 hour workdays…where is the effin' (pinche) time to live?"*

However, at this level respondents could be less specific at identifying the physical causes or lack of planning instruments as a cause for the social dysfunction. However, they did not deny their existence, in fact they could feel the sense of deficiency.

> *There is no cultural house. There is no space for workshops for art or whatever. That is, there is no gymnasium, if there are courts. But they are one of the only public spaces where everyone can be. But there's also no coaches, so that there could be a basketball team in the colonia where people could go […] Although there isn't anything else around, there are Oxxos on every corner. This is the nutrition that we have access to. There are not even little variety stores. The store is in the model. Everything is packaged and from certain food providers."*

Complexity vs. Simplicity: A Scalar Comparison

To wrap-up this section I want to compare two answers to offer a stark comparison of simplification that occurs at different distances. Remember the state actor?

> *"It's due to sprawl and quality. And not the quality of the buildings per se, but the quality of the services which they should have. The quality of housing in terms of their volume and size, but also to the provision of service. And if I don't have schools nearby, parks nearby, no transportation, that's something. Housing policy ten years ago was about making housing like crazy. We were making almost 50,000 and 60,000 a year. Aside from that, in Mexico, they made it spread out. And in Mexico that caused transportation problems. Without services or transportation, the houses were abandoned."*

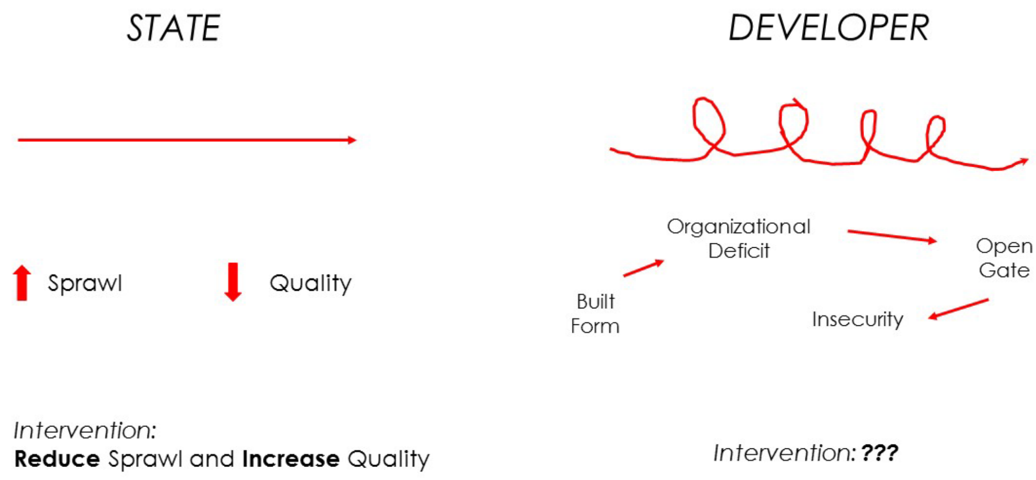
As noted above, this quote was taken from an employee of the state government working on urban issues. The state actor described housing in a very linear fashion (Fig. 5), implicitly suggesting that the remedy to housing abandonment in the state simple enough: Reduce sprawl and improve quality.

Compare this to response from an actor who worked for a developer, giving them an intermediate scale of action, but who personally spent a lot of time in housing developments, which I considered gave them a more granular locus of analysis. When asked about problems neighborhood this is what they had to say about the gates:

> *Another problem is the gates […]If a few decide they want to lock the condominio (gated community), that's fine but they aren't allowed to lock out anyone that lives inside, even if this person doesn't want to pay for the gate. Imagine if you're GEO, how do you make people pay for maintenance? These people are worried about eating, but that's where your kids live.*

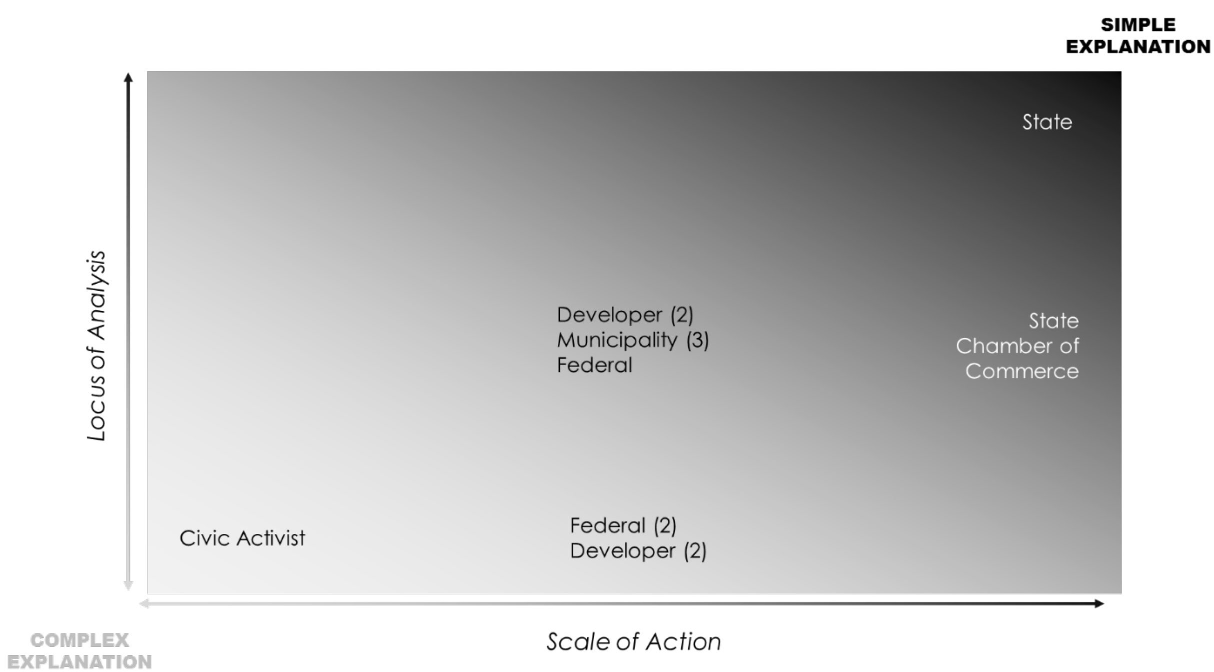
In contrast to the state actor that described housing abandonment as straight-forward cause and effect process, an actor lower on the spectrum described a non-linear process which had many intervening factors. (Fig. 5) The arrangement created by the built form created a collective action problem which made the management of an important physical barrier impossible which presumably led to a rise in criminality. Where is the intervention here? Should it have occurred during the urban design of the condominium, at the first sign of communal dysfunction or in the reduction of criminality? I'm not sure the answer is particular clear.

Fig 5. Simple Explanations (Far-Far) vs. Complex Explanations (Intermediate-Near)



Of course, I did this with more than just these two actors. Overall, I conducted around 29 interviews in the course of my seven weeks in the field, and although I only include the interviews that I transcribed in Figure 6, I am confident that this scale-locus framework is a fairly coherent way to organize the type of explanations that each actors were likely to give.

Fig 6. Transcribed Interviews on Scale-Locus Framework



At the conclusion of the narrative analysis and category building, I was still curious about the implications of the varying discursive explications for housing abandonment and wondered if any of them had empirical support to back their claims. So seeking to complement this analysis I decided to use a tool that frequently used to inform the formulation of dominant narratives and views of housing abandonment at top. I engaged in statistical modeling to stress test some of the hypothesis that were expressed by those interviewed. But, instead of conducting this analysis of at the macro-scale of action that is characteristic of the majority of analysis, I did it at the neighborhood level scale to identify and gauge the influence of physical and contextual factors to housing abandonment basing myself of the explanations that were offered by both those that were close or at an intermediate scale from the problem.

Mixed Methods: Modeling "Distance" through OLS Regression Analysis[25]

Taking a close look at the interviews, I assembled a list of explanations that were offered by those interviewed at the close and intermediate locus-scale range and tried to find quantitative data that could speak to those hypothesis. This resulted in a list that is summarized in Table 1.

Table 1. Explanations of Abandonment (Medium or Close "Distance")

	MEDIUM OR CLOSE			
	Absence of:		Presence of:	
SOCIAL EXPLANATIONS	• **Caretakers/Family** • **Safety*** • Opportunities • Demand • **Community Culture***	• Investment in Property • Economy • Education	• Boredom • Migration • **Demographic Growth***	• Infonavit Coercion • **Poverty*** • **Social Isolation***
PHYSICAL EXPLANATIONS	• Commerce • **Jobs*** • Schools • Police • **Infrastructure*** • **Health Services*** • **Consistency/Planning*** • **Housing Quality***	• **Municipal Regulation*** • **Infonavit Regulation*** • **Housing Size*** • **Community Centers*** • **Public Spaces***	• **Homogeneity*** • **Distance*** • **Developer Misconduct*** • Vandalism	

Naturally, it was impossible to operationalize all of these explanations statistically, but I did come of up with the following list:

Table 2. Operationalization of Explanations of Abandonment

[25] CORRECTION: The submitted version of this thesis inverted coefficient values during the textual description of the OLS regression. Although this inversion has no bearing on the final conclusion of the paper, these have been corrected in this online version. Table and chart values were unaffected.

			Variables
1	SOCIAL	Education/Schools	Average grade of schooling
2			Proportion of the population between 3 and 14 years old who do not attend school
3		Opportunities/Employment/Poverty	Proportion unemployed
4			Percentage inhabited private dwellings with internet
5		Caretakers/Family	Proportion of population 65 years old and older
6			Proportion of population married, 12 years old and older
7			Percentage female headed households
8		Migration	Proportion population born in another state or federal entity
9			Proportion of population resident of another state in 2005
10		Housing Quality	Average of occupants per room in inhabited private dwellings
11	PHYSICAL		Inhabited private dwellings that have electric light, piped water and drainage
12		Government Financing/Health Services	Proportion entitled to IMSS (Mexican Institute of Social Security)
13		Government Financed Housing/Housing Quality	Percentage of housing that is government financed
14			Presence of housing that is government financed (ordinal)
15			Mean price of government financed housing within AGEB
16			Mean built surface area of government financed housing within AGEB
17			Average type of government financed housing within AGEB
18		Public Spaces	Average availability of sidewalks
19			Average availability of public lighting
20		Public Transportation	Average availability of public transportation
21		Distance	Distance from service centers
22			Distance from commercial centers
23			Distance from commercial, service and government centers
			Note: Significance levels are as follows: *p <0.05; **p < 0.01.

Pearson's correlation coefficients were utilized to test for co-linearity between the independent variables, as well as their relationship to the dependent variable. Of the 23 of variables that were included, 5 returned statistically insignificant Pearson's R: average occupants per room, inhabited dwellings with electricity and water; mean price and public lighting. The highest positive correlation observed was the proportion of the population resident of another state in 2005, proportion of the married population and distance from service centers. Negative correlations with vacancy were found with the proportion of the population that is 65 years and older, proportion unemployed and the average availability of sidewalks.

Table 3. Descriptive Statistics for Tijuana, Baja California, per Census Tracts (n = 539)

		Variables	Mean	Minimum	Maximum	Std. Deviation
1		Percentage of unoccupied housing	0.19	0.00	0.86	0.11
2	SOCIAL	Average grade of schooling	9.31	6.20	14.49	1.71
3		Proportion unemployed	0.05	0.00	0.15	0.02
4		Percentage inhabited private dwellings with internet	0.36	0.00	0.97	0.21
5		Proportion of population 65 years old and older	0.04	0.00	0.15	0.03
6		Proportion of population married, 12 years old and older	0.41	0.34	0.53	0.03
7		Percentage female headed households	0.26	0.10	0.49	0.06
8		Proportion of the population between 3 and 14 years old who do not attend school	0.17	0.00	0.43	0.05
9		Proportion population born in another state or federal entity	0.48	0.09	0.75	0.09
10		Proportion of population resident of another state in 2005	0.06	0.00	0.25	0.04
11		Average of occupants per room in inhabited private dwellings	1.02	0.48	2.12	0.26
12	PHYSICAL	Inhabited private dwellings that have electric light, piped water and drainage	0.93	0.01	1.00	0.14
13		Proportion entitled to IMSS (Mexican Institute of Social Security)	0.46	0.09	0.85	0.14
14		Percentage of housing that is government financed	0.36	0.00	0.97	0.21
15		Presence of housing that is government financed (ordinal)	0.16	0.00	1.00	0.37
16		Mean price of government financed housing within AGEB	131,484.86	0.00	2,241,000.00	371,506.60
17		Mean built surface area of government financed housing within AGEB	13.41	0.00	176.75	34.21
18		Average type of government financed housing within AGEB	0.50	0.00	5.00	1.23
19		Average availability of sidewalks	2.06	0.00	3.00	0.59
20		Average availability of public lighting	1.77	0.00	3.00	0.45
21		Average availability of public transportation	2.67	0.00	3.00	0.34
22		Distance from service centers	2,282.73	70.11	9,583.57	1,776.42
23		Distance from commercial centers	2,129.78	32.56	12,703.32	1,861.46
24		Distance from commercial, service and government centers	1,580.96	32.56	9,583.57	1,522.64

Source: Own elaboration based on 2010 Population and Housing Census, 2014 Registro Único de Vivienda, VII National Statistical Directory of Economic Units (DENUE).

Table 4. Bivariate Correlation (Pearson's r) between Independent Variables and Housing Vacancy

		Variables	Percentage of Uninhabited Private Dwellings
1	SOCIAL	Average grade of schooling	.215**
2		Proportion unemployed	-.239**
3		Percentage inhabited private dwellings with internet	-.105*
4		Proportion of population 65 years old and older	-.217**
5		Proportion of population married, 12 years old and older	.488**
6		Percentage female headed households	-.135**
7		Proportion of the population between 3 and 14 years old who do not attend school	.254**
8		Proportion population born in another state or federal entity	.221**
9		Proportion of population resident of another state in 2005	.577**
10		Average of occupants per room in inhabited private dwellings	-.050
11	PHYSICAL	Inhabited private dwellings that have electric light, piped water and drainage	.050
12		Proportion entitled to IMSS (Mexican Institute of Social Security)	.368**
13		Percentage of housing that is government financed	.347**
14		Presence of housing that is government financed (ordinal)	.223**
15		Mean price of government financed housing within AGEB	.074
16		Mean built surface area of government financed housing within AGEB	.108*
17		Average type of government financed housing within AGEB	.190**
18		Average availability of sidewalks	-.258**
19		Average availability of public lighting	-.036
20		Average availability of public transportation	-.106*
21		Distance from service centers	.417**
22		Distance from commercial centers	.337**
23		Distance from commercial, service and government centers	.415**
		Note: Significance levels are as follows: *p <0.05; **p < 0.01.	

To examine the relationship between unoccupied housing and the above variables a multi-linear model was created. Model selection was done using SPSS's stepwise function. Since there were several indicators that had high co-linearity a selection was made from those available that would make sense and aligned with the qualitative field word. Using this criteria 7 variables were excluded. These are as follows: proportion population born in another state or federal entity, presence of housing that is government financed (ordinal), mean price of government financed housing within AGEB, mean built surface area of government financed housing within AGEB, average type of government financed housing within AGEB, distance from commercial centers and distance from service centers.

The resulting model included the percentage of unoccupied housing as the dependent variable and 7 other independent variables: proportion of population resident of another state in

2005, proportion of population married, 12 years old and older, average of occupants per room in inhabited private dwellings, distance from commercial, service and government centers, percentage inhabited private dwellings with internet, average grade of schooling and proportion of the population between 3 and 14 years old who do not attend school.

Table 5. Stepwise Regression Model for Percentage of Uninhabited Housing

Independent Variables	Unstandardized Coefficients	Standardized Coefficients (Beta)	Sig.
Proportion of population resident of another state in 2005	0.74314	0.24658	.000
Proportion of population married, 12 years old and older	0.46602	0.11993	.001
Average of occupants per room in inhabited private dwellings	-0.14131	-0.33392	.000
Distance from commercial, service and government centers	0.00001	0.19103	.000
Percentage inhabited private dwellings with internet	-0.39958	-0.76614	.000
Average grade of schooling	0.04778	0.75056	.000
Proportion of the population between 3 and 14 years old who do not attend school	0.22825	0.11372	.026
N			539
Adjusted R2			.562
R2			.567

All of these coefficients were statistically significant at the 0.05 level. The produced model explained 56% of the variation (R^2). Coefficients were standardized to allow for a more intuitive interpretations of the outputs. Using the beta weights, the variable that had the highest effect of housing vacancy was the percentage of inhabited private dwellings with internet (-0.76), followed by (0.75) and then the measure of overcrowding used in the census. 5 variables had a positive relationship with housing vacancy, while only 2 had a negative relationship.

Housing vacancy is positively associated with the proportion of population resident of another state. A 1 point increase in the proportion of new arrivals is associated with a .25 increase in housing vacancy. These results are consistent with the hypothesis proposed by Salazar and Salazar, and reconfirm Monkkonen’s 2012 findings.

Marriage rates were included in the analysis due to possibility that the absence of caretakers, the disintegration of family, and the high presence of single mothers in neighborhoods with high vacancy. Surprisingly, the percentage of the population that is married had a positive effect on increased unoccupied housing with a 1 point increase in marriage rates being associated with a 0.12 increase in vacancy. This was an unexpected result because the assumption had been that marriage was a sign of residential stability. The results do not bear this out.

Average occupants per room was negatively associated with housing vacancy. This was also unexpected. Popular discourse presented a strong focus on hacinamiento (overcrowding) as a driving force behind housing vacancy. The regression did not support this claim. In fact, the model shows that a 1 point increase in the average number of persons per room is associated with a -0.33 decrease in housing vacancy.

Distance has been often cited in mainstream discourse as an important factor in housing vacancy. The indexed value of distance from centers of commerce, services and government centers was significantly associated with housing vacancy. Although the effect is less intuitive than other measures because the units in which the variables are different the beta weights offers us a more readable interpretation: for every 1 kilometer increase in distance there is an associated 0.19 unit increase in unoccupied housing.

Percentage inhabited private dwellings with internet was used a proxy variable for socioeconomic status. The supposition here was that homes with internet access are going to be a strongly correlated with higher economic status. The association, as expected ran negatively with housing vacancy, that is a 1 percentage increase in proportion of homes that had internet was associated with a .77 point decrease in housing vacancy.

A measure of education was included in the analysis to respond to the hypothesis that a lack of education was a driving characteristic of neighborhoods with high vacancy. An association was found between average level of education and vacancy but it ran contrary to what was expected. The higher the education levels, the higher vacancy. Again the difference in units makes comparisons less clear, but the beta weights show that every 1 unit increase in average age of schooling is associated with a .75 unit parallel increase in housing vacancy.

The creation of this model was surprising in the uniformity of its dismissal physical factors as good predictors of housing vacancy. In line with popular discourse and supported by qualitative work, the expectation was that material conditions would be more strongly associated with housing vacancy than they were. However, the regression analysis did not support this claim, and in fact, the only physical condition that was found to have a strong association with housing vacancy was distance. Even when the OLS regression were run again, this time forcing the inclusion of physical measures, their relationships was still found to be insignificant. (Table 6)

Table 6. OLS Regression Model for Percentage of Uninhabited Housing

Independent Variables	Unstandardized Coefficients	Standardized Coefficients (Beta)	Sig.
Proportion of population resident of another state in 2005	0.75744	0.25133	.000
Proportion of population married, 12 years old and older	0.40400	0.10397	.010
Average of occupants per room in inhabited private dwellings	-0.16741	-0.39558	.000
Distance from commercial, service and government centers	0.00001	0.20221	.000
Percentage inhabited private dwellings with internet	-0.42013	-0.80555	.000
Average grade of schooling	0.05179	0.81358	.000
Proportion of population 65 years old and older	-0.41108	-0.10802	.020
Proportion of the population between 3 and 14 years old who do not attend school	0.27622	0.13762	.008
Proportion entitled to IMSS (Mexican Institute of Social Security)	-0.06989	-0.08683	.034
Percentage of housing that is government financed	-0.00195	-0.00347	.916
Proportion unemployed	0.18226	0.03815	.291
N			539
Adjusted R2			.566
R2			.575

Limitations

Before moving on to the interpretive section of this chapter, I think it is important to take a moment to recognize that my work has some inherent limitations. Since this is a Master's level thesis, by its nature anything that is produced here is going to be preliminary, as opposed to a definitive treatment of the subject.

The first limitation that is worth acknowledging is due to the snowball methodology that I used to schedule interviews, there is a glaring omission in my actor pool: interviews with residents and *derechohabientes.* This means that my interviews are only capturing a subsection of all the explanations that are being offered about housing abandonment, primarily those explanations being offered by housing professionals. This is a definite weakness of my analysis and should be addressed and remedied in future iterations of the work. Related to this same point, I also believe that it is valid to have some concerns about the numbers of actors that are at each pole of the distance vector (close vs. near). Out of the 10 transcribed interviews there was only one actor included at each extreme, raising the possibility that the level of complexity was more a result of the individual person than of their positionality within the spectrum of housing policy. This is another issue that will have to be addressed in the future.

Second, there is no question that restrictions on housing data imposes serious limitations on the robustness of the research. Although it is tempting to try to reach a conclusion that social determinants are more important for predicting vacancy on the basis of the OLS regression, the truth is that indicators of the built form are just being introduced into the data-gathering operations of the Mexican census and are still quite rudimentary .This not only a problem of this investigation, but is a problem faced by most researchers in the field of housing in Mexico.

Finally, and related to this previous point, is the failure I have made to make a clear-distinct cut between vacancy and abandonment. They are different phenomena, but I don't frequently treat them as such. This is partially a result of how difficult it is to distinguish between the two during interviews, but also because there is no commonly accepted distinction. Even Infonavit and the Census agency don't used the same definition. Again, this is a weakness I am aware of that should be revisited in due course.

Interpretation

So what do these numbers mean? What do these numbers say about the causes of abandonment in Tijuana? For this thesis, I have decided that I'm not going to venture causal explanations to try to explain these statistical associations for each discrete variable. At this stage in the research process, the data is not robust – nor is the analysis fine enough – to try to establish definitive causality for housing abandonment in Tijuana, or anywhere else for that matter. This is task that will need to be resolved outside the scope of this project, emphasizing in particular the collection of high quality data. However, that is not to suggest that this analysis is not valuable. The work here has allowed me to see two things quite plainly. First, it has allowed me to see the real limitations imposed by poor data availability, as well as conflicting definitions of key indicators like abandonment and vacancy in census, that if not rooted in a solid hypothesis that speaks to the context, can promote oversimplification of the abandonment phenomenon Quantitative methods are simply unable to capture the range of processes that lead to housing abandonment across time by themselves – they need to be complemented with other types of methodologies that are capable of filling its attendant gaps.

Most importantly however, statistical modeling at the neighborhood scales show that municipal and local agents are not wrong in their assessments of the problem. Localized factors and place-driven process are certainly influencing housing abandonment in the city. Many of the variables that local actors identified as being important came back with some association to vacancy. Population traits, including percentage of the population that were recent arrivals, socioeconomic status, and education status returned statistically significant associations, some that were aligned with actor discourse of the phenomenon, as well as others that ran contrary to what was expected. Although more field work would have to be done in order to develop comprehensive hypothesis about the directionality of the associations (for example, why does vacancy run positively with marriage rates? Is it because married people tend to be in neighborhoods with high vacancy, or is that married people are staying in larger numbers in these neighborhoods?) What is clear is that this is not entirely a social problem, nor is simply a physical one. Abandonment is a complex socio-physical phenomenon. The implications of this observation, particularly for policy are discussed in the section that follows.

5. DISCUSSION: POSITIONALITY AND SIMPLIFICATIONS IN PROBLEM ASSESSMENT

These results hint at three general conclusions: First, evaluation and program design should carefully consider the locus of analysis and scale of action because “distance” affects the type of explanations that agents are likely to give for housing abandonment. Second, the ONAVIS should engage in localized problem-definition because it promotes functionality and incorporates a multiplicity of perspectives. Finally, in their most abstract form, they reaffirm the value of conducting mixed-methods study, not only for the strength has that triangulation brought towards the adequate representation of a phenomenon, but also for each methodology’s ability to speak to a different spatial scale of analysis.

The first conclusion, a more theoretical epistemological observation, carries implications for those of us involved in policy analysis generally and housing policy specifically. It cautions us to more seriously consider how the locus of analysis – which I define as distance, either institutional or practical, from a problem – and the scale of action which actors have at their disposition (i.e municipal or federal agent) can affect how policy-makers, practitioners, and researchers understand problems and devise solutions. As the results show, actors at different scales offer wildly contrasting explanations of what leads to housing abandonment in Tijuana. On one extreme, actors tended to depict housing abandonment in broad strokes, either in terms of physical deficiencies, sociocultural backwardness, or a drop in demand that was exacerbated by the economic downturn. On the other end, the tendency was to emphasize the social and cultural processes for abandonment. However, unlike the abandonment processes explained through the largest scale analyses, these were not treated as discrete processes that did not interact. To actors observing the phenomenon on a smaller scale, the built form represented an important factor in neighborhood life, which could in some cases create unbearable conditions. They spoke of the physical as if it were the setting in a play – the landscapes always present in the unfurling of everyday experiences of residents. At times this setting would become important in daily life, creating real impediments, around which the drama would be forced to unfold. Other times it would be secondary, a simple backdrop to the complicated negotiations that occur in relationships between families, neighbors and municipal agents.

The stark difference in assessment of the causes of abandonment - from treating housing abandonment as a linear equation with some unknown variables at the very highest scale, to depicting housing abandonment as a confluence of many intervening factors that together create a dysfunctional system - bears a remarkable similarity to the process of state simplification that is compellingly theorized in James C. Scott's body of work.

State simplification describes the form of knowledge-creation and manipulation that large institutions engage in while in pursuit of narrowly defined interests. According to Scott, this sort of simplification is something common in many large organizations but is saliently observable in actions taken by the state (Scott, 1995, 1998). However, far from being passive simplifications that are translated into information that is easily understood by state agents, Scott argues that the very act of simplification actually results in the manipulation of the world in a manner that will ultimately make it easier to measure, further manipulate, and ultimately control, in a kind of socio-physical observer effect. He uses the metaphor of cooking to express how he believes this occurs. Since government administrators and bureaucrats have little interest in offering a detailed snapshot of the world, and social and natural realities are too complicated to be consumed in their raw forms, the state undergoes a process of abstraction which "cooks" facts into a form that is "legible" to the state.

To illustrate this point, Scott relies on the particularly memorable parable of scientific forestry, a subdiscipline of "cameral science," which sought to reduce government management into a series of scientific principles, in this case regarding the administration of the forest. He describes how the application of these management techniques – as mediated by the crown's interest in having a reliable indicator of yield of timber revenue – ended up fundamentally transforming the forest to reflect that number. As described by Scott:

> *"To this end the underbrush was cleared, the number of species was reduced (often to monoculture), planting was done simultaneously and in straight rows for large tracts. […] The tendency toward "regimentation" in the strict sense of the word. The forest trees were drawn up into serried ranks, as it were, to be measured, counted off, felled and replaced by a new rank-and-file of lookalike conscripts. At the limit, the forest itself would not have to be seen; it could be*

"read" accurately from the tables and maps in the foresters' office." (Scott, 1995)

This situation has a clear analog in Mexican housing, especially in social housing production. Here, the home is to government financed housing as the *normalbaum* (standardized tree) is to the forest. The government was able to create a metric that easily quantified the success they were having in the housing market, but in so doing they stripped away key components of the home that are essential for its key functions.

It is worth nothing that this oversimplified metric served everyone's interests initially; there is a strong argument to be made that the state saw housing as an opportunity to kill three birds with one stone in Mexican housing policy: producing economic growth, introducing social programs, and shoring up the private sector. Developers were given full license to build, and make a sizeable profit at the same time. Derechohabientes, many of whom had lived in overcrowded and materially precarious conditions previously, were going to be able to fulfill a longtime dream of homeownership, and the government was going to stimulate the economy while embarking on an ambitious social entitlement agenda. What could go wrong?

The degree of this state simplification is apparent in some of the statements made by developers and government officials, who at times very explicitly spoke of the underlying rationalities that drove their actions. Their assertions also highlighted that it was not only the state that was prone to relying on a single metric for interpreting success, but also the private sector which valued the market, and the massive housing promoters who were feeding the frenzy:

"GEO, Urbi and Homex were all playing the same game with the same rules. The companies were valued based on the quantity of houses they were building, not the quantity of houses sold. When the (stock market) changed the rules, it snapped […] This is how a director (of Urbi) once put it, "the moment they put me in front of god, I'm going to find the dude from GEO and the guy from Homex sitting right there with me. It's not like I was doing anything different, we were all playing the same game."

These simplifications of the issues could also be observed when speaking to the pressures from the central government at local government offices during the height of the housing boom:

> *"Baja California, you have this many credits. Chiapas, you have this many. What are you doing? – go place some credits! Organize fairs! Go to the maquila and offer them! And put out a logo, while you're out there to sell."*

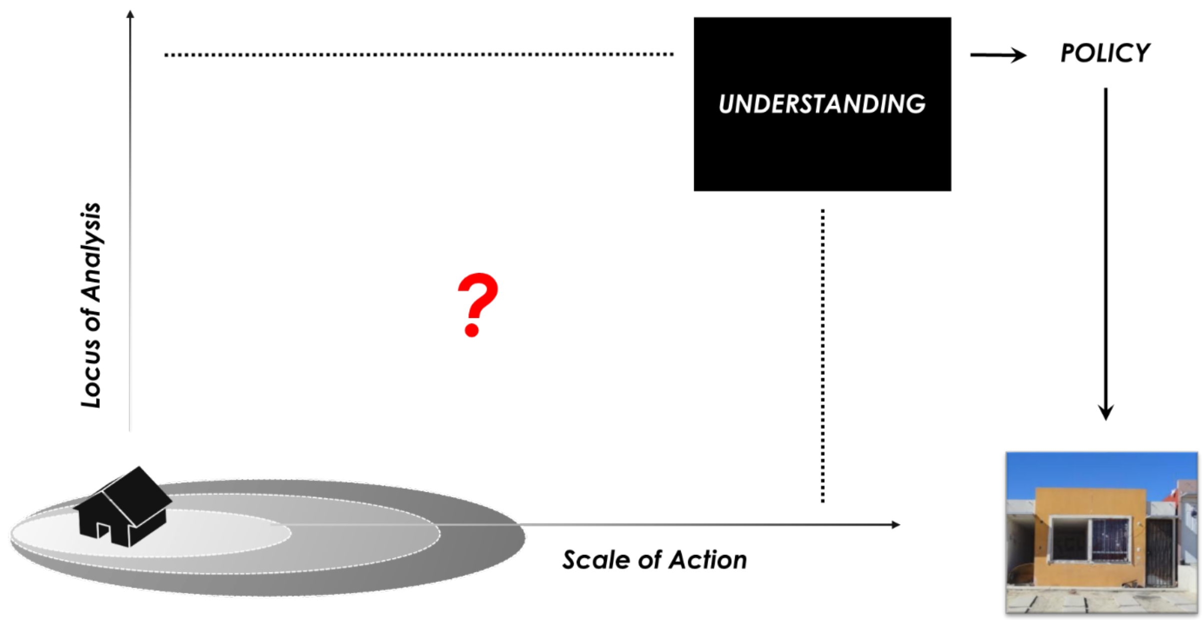
Yet, as the internal contradictions of this metric started to show, as the complexities of the housing ecosystem refused to be simplified into a single unit of measurement, the consensus began to deteriorate, and the politics of this particular metric started to become wholly apparent. It became clear that the conception of housing as a discrete unit was privileging the market logics of housing developers, at the expense of derechohabientes who viewed – and clearly still view – the home as a key anchor for the neighborhood. Take this quote from an INFONAVIT employee that spoke of the shift in approach that has characterized the institute in the last few years:

> *The objective of INFONAVIT was understood quantitatively, on the basis of the housing deficit, and in the last 10, 12 years INFONAVIT was very successful at placing credits […]. The problem is that, well, credit placement in this new reality is not possible, it can't be like it used to, we do have methods to make progress in placements, we have to keep offering new housing credits, we are interested in the production of new housing, but not at any cost."*

In retrospect, it may seem obvious that reducing the complexity of the housing ecosystem into formulas and metrics and wholly ignoring components of successful homes like community-fabric, symbolic attachment, and changing family structure, would be a bad idea. This omission has played a determining role in the worst housing outcomes the institute has had in the recent past.

However, the fatal flaw of Mexico's housing policy is not unheard of in the pantheon of development actions. Federal housing policy was formulated as a service-delivery initiative in which a prototypical Weberian bureaucracy devises a technical solution to a given problem. This practice has been replicated time over across the world. In essence, housing provision is a perfect example of what Pritchett and Woolcock have called discretionary, transaction-intensive services, policies that “intrinsically embody the tension between two desirable goals for public services – that they be ‘technocratically correct’ and that they be ‘locally responsive’” (Pritchett & Woolcock, 2004). In the Mexican case, the pendulum swung too far in the direction of being technocratic, to the detriment of being responsive to people’s needs. This is by no means a suggestion that housing policy should return to the previous way of doing things, but rather a suggestion that there was a veneer of truth, a purpose to the “rational irrationality,” described by Perlo Cohen, to state-driven housing policy. Therein lies the value of examining the different iterations of this enduring concept; it pushes us to start thinking about our context and begin envisioning how to bring back the good in previous iterations of social interest housing policy in Mexico.

Fig 7. Understanding of Abandonment Today



As it stands, the predisposition to hypothesize the causes of abandonment at a predominantly quantitative and macro-level perspective that emanates from centralized agencies based in Mexico City (Figure 7) has allowed neither government officials nor the academy to provide a complete diagnosis of the housing abandonment phenomenon, nor has it avoided the worst excesses of state simplification. Unfortunately, this has resulted in policy recommendations and evaluations that carry not only an inherent quantitative disposition, but also a scalar inclination.

Further, this thesis has findings that complement and build on recent calls to begin to treat the house as more than a simple “object”, and instead begin conceiving it as a “subject.” Diane Davis describes the epistemological status quo that reigns within the government:

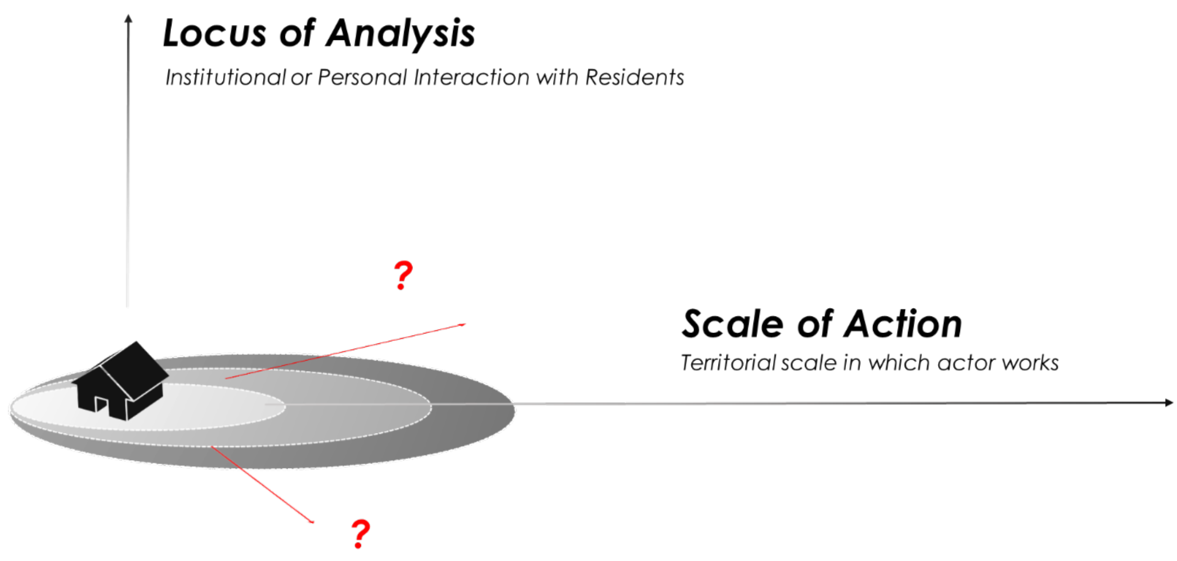
> *“Most have been trained to consider housing as an object -- shelter that protects against the elements; a dwelling typology that minimizes construction costs and maximizes user friendliness; or a built form whose materiality embodies a confluence of resource availabilities, design ingenuity, consumer desires, and market dynamics. Yet some of the most inspired housing experiments both past and present have been produced by those who conceptualize the house as a subject: conceived as a material construct capable of generating new social arrangements, producing alternative spatial geographies, and transforming city landscapes in ways that fashion a more vibrant urbanism and thus the creation of new possibilities for urban value creation.” (Davis, 2015)*

Davis argues for an epistemological reconfiguration that demands a move away from the territorial confines of the housing unit and towards a wider conception of the house as catalyzer of urban value. In addition to supporting this crucial cognitive shift, my analysis further argues that the subject of housing should be treated at varying loci of analysis, which will allow the varied housing “subjects” – definitions which differ significantly depending on the institutional and scalar positionality of actors – to enter policy initiatives and interventions. By shifting the scale of problem-definition, I argue that stakeholders will be more capable of creating policies that treat housing as part and parcel of a healthy urban fabric, and also lead to housing that is appropriate for its context.

Infonavit has already begun showing an openness to shifting the scale of intervention and creating programs that are better at addressing small-scale issues through the creation of programs like *Pintemos México* (Let’s paint Mexico) – a neighborhood program that aims to aid rehabilitation efforts through murals and art (INFONAVIT, 2016); Arrendavit – a pilot program that allows the use of INFONAVIT credit for the rental market (OECD, 2015); and Fundación Hogares – a non-profit that works to improve quality of life and social conditions through community engagement (Schoen, 2016).

These are relatively successful initiatives that show that INFONAVIT is aware that their programs in the past have operated at too large a scale, and that they are trying to adjust accordingly. Of course, these efforts should not be abandoned and their successes should be built upon, but alone they are still insufficient. Although making an argument about incorporating an understanding of "distance" within prevailing policy thinking and research is the primary purpose of this paper, I want to clearly state that I am not suggesting that it is only along the axes of scale of action and locus of analysis in which dialectical shifts should occur. My model does not discount the existence of other equally important dimensions of knowledge-creation – it is just one of many that might exist. In order for the ONAVIS to be truly holistic in creating housing that promotes urban value, they should approach problems not only using my analytical conception of "distance," but incorporate different dimensions that are outside the scope of this thesis to develop.

Fig 8. Other Dimensions of Abandonment Understanding



This is the weakness of the programs which I just mentioned. While the programmatic aims that they are working to achieve are laudable and productive, they unfortunately reflect the disciplinary preferences of a small and select group of people, in this case the expertise of urban planners, urban designers and architects. To adjust Charles Linblom's metaphor slightly, these programs do not so much represent a move away from a state that is "all thumbs and no fingers," rather they represent the insertion of additional "thumbs" into the housing landscape, the thumbs of urban planners, designers and architects who bring particular lenses and forms of "cooking" to different problems. Our particular expertise is valuable and certainly necessary in some situations, but it can never serve as a replacement for the "fingers" of policy which are best embodied in the experiences, grounded knowledge and real needs of people living in government-financed homes every day.

To some degree, state simplifications are inevitable. It is not the ONAVIS' job, nor should it be, to capture and understand every side of the housing problem. It is not only exceedingly labor-intensive, but potentially unproductive for achieving the mission of providing dignified housing for Mexico's workers and poor. However, the recognition that Infonavit is not going to be able to represent everyone's interest should be built into the institutional DNA of any new policy approach, being devised in a way that maximizes diversity of perspective (disciplinary, scalar, sectoral, etc.) and protects against allowing the interests of one group of actors or one particular aim, in this case, the interests of developers and economic growth imperatives, to monopolize policy directives.

A way to start doing this is by allowing Infonavit to relinquish its leading role in problem definition, and begin embracing an expanded role as facilitator of multiple voices at different scales with a different connection to the problem to fully discuss potential paths forward for a given neighborhood, municipality, or city. This would transcend the financial facilitation characteristic of the third translation of Mexican housing policy, and begin a movement towards a 4th translation in housing policy. To riff on Davis' conceptualization, they should reboot themselves to be facilitators of urban value creation, encompassing a shift away from just housing facilitation to a facilitation of good urbanism.

There are bound be critiques of this fundamental shift. One might ask, is this approach not too localized? Will it not increase costs for the production of housing in a way that will hamper the realization of economies of scale which are necessary to making housing for all Mexican workers fiscally-feasible? Does this not amount to giving up too easily on the ideal of "dignified housing" for all Mexican workers? This point is well taken. When asked about the failures of housing policy in Mexico, Infonavit functionaries are quick to respond that the third translation did not fail. The institute was extremely successful at producing houses, which is what they were asked to do. Although you could chalk this up to spin intended to deflect responsibility from the state of the nation's housing, there is some degree of truth to the statement. For the last twenty years, Infonavit has been extremely successful at producing objects that looked like houses, albeit with severe defects in quality. In essence, by standardizing, taylorizing, and mass-producing housing, Infonavit solved the scale problem that housing had faced in decades prior.

Housing delivery inherently lives within the natural tensions of what Michael Woolcock calls the multiple 'schizophrenias' of international development, namely that "small is and is not beautiful" simultaneously and that "everybody and no-one believes in modernization" (Pritchett, Woolcock, & Andrews, 2013; Woolcock, 2015). It is caught within the desire to make something locally-responsive, while still achieving systematic change. These tensions can become paralytic, genuine clichés[26] that Pritchett and Woolcock lambast for leading to inaction and contradictory development initiatives. They would argue for taking a third path, an alternative model for housing construction, one that leverages the productive capacity of the housing *maquila*, while allowing for the flexibility and unpredictability that the lives of people inevitably bring. What could this look like?

There is a growing body of work that is trying to find that balance, that is attempting to devise an alternative path for development, one that – as Michael Woolcock writes – harnesses the strength of "Big D" development (scale and systematic change) with the benefits of "small d" development (locally-responsive and flexible) (Woolcock, 2015). It is a tradition of theory that is rooted in the observations of many groups of scholars that have alluded to some general governance principles that stress the need to focus on governance frameworks that are "good enough" (Andrews, Pritchett, & Woolcock, 2013; Woolcock, 2015).

A groups of professors and practitioners at the Kennedy School have been working on articulating these principles into a coherent policy strategy that might respond to the observations

[26] "One size fits all' does not mean that 'any size fits any' or 'anything goes;' without guidance as to which size fits which, it is merely a platitude." (Pritchett & Woolcock, 2004)."

of governance scholars and the frustrations of development practitioners. They have named this response PDIA, an acronym for problem-driven iterative adaptation. To quote Michael Woolcock:

> *A key feature of PDIA is its focus on solving problems, not selling solutions; that is, it does not regard the primary role of the development profession as being that of identifying universal 'best practice' solutions to common problems (though doubtless some of these exist in clearly technical sectors, such as engineering) and promoting these as the answer – the most efficient and effective response, as verified by 'experts' – but rather of working to craft context-specific (best-fit) solutions to context-specific problems, the precise nature of which is often not obvious, especially to outsiders. (Woolcock, 2015)*

Additionally, there is another body of a scholarly work that is starting to argue for the study of positive outcomes as a justifiable and robust research priority (Grindle, 2004; Hirschman, 1992; Pascale, 2010; Sanyal, 2007). This manner of learning is more consistent with the manner in which humans have traditionally made discoveries or improvements: by documenting and reacting to the state of "observable exception" (Pascale, 2010).

A feature of both of these literatures is a shared view that a crucial ingredient for successful development efforts lies in the moment of problem-definition, essentially that the very act of question formulation for policy can affect the effectiveness of policy initiatives because it sets assumptions on paper and defines policy goals *a priori.* The positive deviance literature holds that the realignment of fundamental research aims towards exploring positive outcomes will shift research and program evaluation away from interrogating the 'whys' of policy failure and instead towards answering the ultimately more useful question of 'how' something fails or succeeds. Even more practically, Andrews et al. argue that "focusing on prevailing problems is the most direct way of redressing the bias to externally prescribed forms towards internal needs for functionality; it ensures that problems are locally defined, not externally determined, and puts the onus on performance, not compliance" (Andrews et al., 2013).

I believe creating a focus on problem-definition is way to begin envisioning the ONAVIS transition into facilitators of good urbanisms. By beginning with something as concrete as defining a problem, agents have an incentive to actively engage to get their interests represented during the formulation process. Furthermore, if problem definition is done correctly, in a manner that engages a multiplicity of actors, and I would add, a multiplicity of "distances," it can act as a powerful convener that, built on a generalized sense of legitimacy and consensus (Andrews, 2014; Andrews et al., 2013; Pritchett et al., 2013), increases the chances of successful implementation and the potential for coordination and collaboration. This is in addition to helping avoid "isomorphic mimicry," design and organizational strategies that mimic the appearance of successful organizations, but are poorly functional for the context they are supposed to function (Andrews et al., 2013; Pritchett et al., 2013) and producing interventions that are viable and contextually relevant. Put another way, good problem definition can help avoid the promulgation of 'solutions in search of problem,' or 'solutions to the solutions of problem.'

Naturally, there are occasions when adopting an approach stressing problem-definition is less useful. Pascale et al. notes that for problems that have clear-cut technical solutions (i.e. vaccines) looking for positive deviance is unnecessary. However, housing is not one of those problems. As it turn out, social housing policy has the three characteristics identified by Pascale that make it a good candidate for a positive deviance analysis: 1) it is enmeshed in a complex social system; 2) it is a policy that requires social and behavioral change, in this case on both the part of the users and producers; and 3) it entails solutions that are rife with unforeseeable or unintended consequences. Additionally, it is a good candidate for PDIA because it is not a quintessential service-delivery program in need of a technocratically "correct" solution; good housing policy is inherently going to require a large number of discretionary, site-specific and flexible administrative decisions.

Finally, on a more epistemological note, mixed-methods studies are shown to be valuable and necessary for the study of not only housing abandonment, but housing design, production, use and social value in Mexico. In brief, the qualitative work showed us that actor "distance" had an effect on the complexity of explanations that actors offered in accounting for abandonment. The "farther" the actor from the scale and locus of housing abandonment the simple the explanations got. Nevertheless, since complexity does not equal "correctness," the more complex explanations offered by the close and medium distance actors were tested using statistical modeling to see if there was any empirical basis for their claims. A reflexive take on regression analysis revealed the utility of this type of analysis, as well as exposing the very real constraints that this methodology has in developing comprehensive interpretations of abandonment. The limitations imposed by poor data availability, as well as conflicting definitions of key indicators like abandonment and vacancy, promotes oversimplification that are simply unable to capture the range of processes that lead to housing abandonment across time. Nonetheless, the OLS regression at the neighborhood scales facilitated an understanding of the role of localized factors and place-driven processes that makes housing abandonment and urban phenomena hard to explain through extrapolations and brute generalizations. In essence, statistical modeling confirmed that local experiences not only provide a richer pictures of the problems of abandonment, but also pictures that are quantifiably as "true" as simple depictions. The value of employing mixed-methods in research on these topics lays in strength that triangulation brings towards the adequate representation of a phenomenon, but also for each methodology's ability to speak to a different locus of analysis and scale of action, among other temporal, political, semantic dimensions. In short, a mixed-methodology is capable of countering this predisposition toward methodological uniformity, avoiding the worst excesses of state simplification, but can better contribute to the understanding of a multi-agent, multi-scalar urban phenomenon.

Ultimately, it is not the purpose of this thesis to describe with precision what the problem within the context of Mexican housing could and should look like[27]. I merely want to suggest that the ONAVIS should seriously think about ways to incorporate locus-scale analysis, programmatic initiatives that allow for local-problem definition and experimentation at different scales of housing in the country, and incentivize research that employ mixed-methods more often. This will definitely necessitate a shift in thinking by the major players in housing in Mexico, but I believe this shift in thinking is worth serious consideration if it will lead in better outcomes the country.

[27] This task is more seriously taken up in a forthcoming report from the Rethinking Social Housing in Mexico team at the Graduate School of Design.

6. TÚ SABRAS SI TE VAS O TE QUEDAS: RESEARCH MEMO AND POLICY RECOMMENDATIONS

Fundamentally, this study set off to answer what accounted for the variations in explanations for housing abandonment. After all, the housing abandonment crisis is a complicated phenomenon, and current explanations are insufficient and inconsistent in offering satisfactory accounts of their prevalence.

Using a mixed-methods approach that included in-depth interviews, as well as statistical modeling, I interrogated these differing explanations. My research shows that "distance" – an analytical frame that is comprised of the scale of action (territorial scale in which an actor works) and locus of analysis (the degree of personal interaction with residents) – has a noticeable effect on the complexity of explanations that stakeholders were likely to offer. Actors that had the shortest distance gave rich descriptions of the process of abandonment, offering socio-physical explanations that overlapped, interrelated and covaried across time and space. Conversely, actors that were the most removed, having the farthest "distance," provided much simpler explanations that focused on discrete social and physical levers that were driving housing abandonment.

The more complex explanations, those offered at a medium or close "distance," were empirically tested for validity through an OLS regression. The results confirmed that local stakeholders hold assessments of the issue of abandonment that are quantifiable, being statistically significant across a number of variables. This outcome suggests that local evaluations of the abandonment problem should not be taken for granted, as they represent legitimate and often more precise assessments of the drivers of the occurrence for a particular place.

These results gesture at three recommendations that could inform policy in the incorporation of more effective multi-scalar, multi-agent approaches to housing provision. The recommendations are aligned with the literature on state simplification, urban value creation, positive deviance analysis and problem-definition, and are listed in order of importance:

1. **The ONAVIS should engage in localized problem-definition because it promotes functionality and incorporates a multiplicity of perspectives.**

   To some degree, state simplifications are inevitable. However, the recognition that Infonavit is not going to be able to represent everyone's interest should be built into the institutional DNA of any new policy approach, being devised in a way that maximizes diversity of perspective (disciplinary, scalar, sectoral, etc.) and protects against allowing the interests of one group to monopolize policy directives.

   A way to start doing this is by allowing Infonavit to relinquish its leading role in problem definition, and begin embracing an expanded role as facilitator of localized-problem definition and creator of urban value. By beginning with something as concrete as defining a problem, agents have an incentive to actively engage to get their interests represented during the formulation process. Furthermore, if problem definition is done correctly, in a manner that fairly engages a multiplicity of actors, and I would add, a multiplicity of "distances," it can act as a powerful convener that – built on a generalized sense of legitimacy and consensus – increases the chances of successful implementation and the potential for coordination and collaboration. This is in addition to helping avoid "isomorphic mimicry," design and organizational strategies that mimic the appearance of successful organizations, but are poorly functional for the context they are supposed to function and producing interventions that are viable and contextually relevant. Put another way, good problem definition can help avoid the promulgation of 'solutions in search of problem,' or 'solutions to the solutions of problems.'

2. **Evaluation and program design should carefully consider the locus of analysis and scale of action.**

   Distance from a problem, defined here as the hybrid effect of locus of analysis and the scale of action, can affect how policy-makers, practitioners, and researchers understand problems and devise solutions. The predisposition to hypothesize the causes of abandonment at a quantitative and macro-level perspective (this is the "distance" most likely to offer overly simple interpretations of abandonment), emanating from centralized agencies based in Mexico City has neither allowed government officials nor the academy to provide a complete diagnosis of the housing abandonment phenomenon. Unfortunately, this has resulted in policy recommendations, programmatic initiatives and evaluations that carry not only an inherent quantitative and scalar inclination, but are also inadequate for addressing the issue.

   A mixed-methodology is capable of countering this predilection toward methodological uniformity, by contributing better contribute to the understanding of a multi-agent, multi-scalar urban phenomenon.

3. **Evaluation of housing policy in Mexico should incorporate mixed methodologies to get at the multi-dimensional nature of abandonment.**

   Mixed-methods studies are valuable and more necessary in the study of housing abandonment in Mexico. This is true not only for the strength that triangulation brings towards the adequate representation of a phenomenon, but also for each methodology's ability to speak to a different spatial scale of analysis. At present, the majority of studies that look at abandonment rely predominantly on quantitative methodology to make assessments. This has led to a methodological uniformity which has not adequately represented the phenomenon.

I want to close this work on an optimistic note. A study of the history of social housing policy in Mexico shows that it is in a constant state of flux, that housing policy undergoes translations depending on the exigencies of particular moments. The present translation, with it underlying epistemological commitment to economic rationality above all else, is far away from the ideals of housing espoused during the Mexican Revolution. This can be seen as failure, or an opportunity. Those that see it as an opportunity, know it does not need to be this way. Fundamentally, I believe we are due for the next translation of housing policy in Mexico but that will require a seriously modification of the ways in which we have traditionally understood housing. This thesis is just one part of that larger agenda; a crucial task if we are to be more successful at building housing that is responsive to the needs of Mexicans. Ultimately, if we are to stem the abandonment of houses, not just in Tijuana but in Mexico more broadly, changing our lens is our most urgent task.

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APPENDIX

Appendix A: Methodology: A More Detailed Look

To summarize, my research was comprised of an in-depth case study in the border city of Tijuana which I will complement with a multivariate regression on variables linked to abandonment, including those identified by Monkkonen 2014. Ultimately, my proposal aimed to increase causal density. My idea was to take qualitative variables, assess them through initial field interviews and then run through a regressions to validate and triangulate results. Below, I include a concept map of my methodology, as well as a more detailed description of the quantitative and qualitative methodology.

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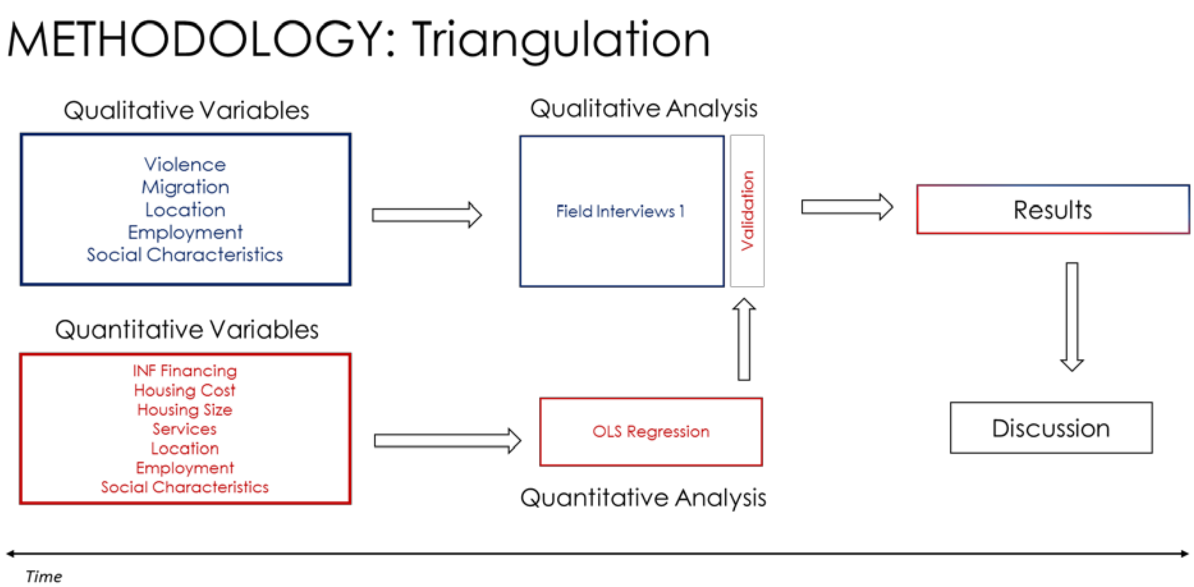

Qualitative

The qualitative component of this thesis consisted of semi-structured interviews, site visits and organization observation. Field work was conducted over the course of 7 weeks on two separate occasions, in January of 2015 and June 2016. Interviews with key actors in housing and local experts form the bulwark of the qualitative analysis, although the site visits and organization visits were important in formulating the quantitative component of the analysis, as well. All in all, 29 semi-structured interviews were conducted during data collection. Interviews were conducted with government officials working at the three levels of government, including municipal, state and federal employees. Members of the business sector and private developers were also interviewed, in addition to conversations that were had with local academics and non-profit employees. A detailed breakdown is included below:

SECTOR	*COUNT*
Housing Developers and Private Sector	**10**
Government	**11**
Municipal	*6*
State	*2*
Federal	*3*
Civil Society	**8**
Academia	*4*
Non-Profit	*4*
TOTAL	**29**

All interviews were conducted under the auspices of the Rethinking Social Housing in Mexico (ReSHIM) research initiative run out of the Department of Urban Planning at Harvard's Graduate School of Design. The author was hired as a Research Assistance by RESHIM in the Fall of 2014 to conduct interviews on governance and coordination in housing policy in the city of Tijuana. Since interviews were semi-structured and the context differed from site-to-site, the author was encouraged to pursue separate lines of inquiry. Given the outsized presence of abandonment in Tijuana's metropolitan area, conversations around abandonment naturally arose, leading to many unprompted discussions over housing abandonment in the city.

Per Institutional Review Board instruction, each participant was consented verbally and informed of their rights as a research subject. Since the conversations were being conducted for an approved IRB-project, no additional IRB approval, as confirmed by Harvard's IRB, was required for this thesis. A copy of the informed consent was provided for each interviewee and the confidentiality of the conversation was assured. Although almost every conversation was recorded, detailed notes were taken both during and immediately after each conversation to ensure accuracy in documentation.

Besides semi-structured interviews, various neighborhoods and developments (some with high rates of abandonment, others with low rates of abandonment) were visited all over the city. Most neighborhoods were visited by car at random times of the day, although a few site visits were organized with the help of Baja California's INFONAVIT delegation. Field notes were taken during the visits, and when possible photographs were taken of the conditions of each neighborhood.

In addition to the site visits, observations of two organizations working in Tijuana's housing – Fundación Esperanza de México (FEM) and PROVIVE – were conducted over several days. These two organizations provided two drastically different approaches to producing housing in the city, one taking a non-profit path for housing in Tijuana's *barrios populares* and the other a profit-driven model which seeks to produce desirable market housing through the creation of social value. Their evaluation of housing situation in the city was useful in that it provided clues to the housing deficiencies that they were attempting to respond to. In all, six visits to these two organizations were conducted – four at FEM and two at PROVIVE.

TYPE	*COUNT*
Neighborhood Visits	**10**
Organization Observations	**6**

QUANTITATIVE

The quantitative section of the methodology has as a principle aim the validation of the narrative discourse of key stakeholders and actors involved in housing production in Tijuana. A multivariate OLS regression was conducted to test the association between housing abandonment as measured in the 2010 Censo de Población y Vivienda, and variables that were identified by those interviewed. Besides the three variables (presence of housing finance, violence and international migration) that were identified by Monkkonen, additional socioeconomic and physical characteristics were included in the regression analysis. Initially, data for 37 variables was prepared for analysis for the 539 AGEBS that comprise the urban footprint of Tijuana, 10 of those were be considered independent variables, and 27 were controls. Those that were initially considered can be found in Table 1. However, as the qualitative work progressed and new hypothesis were introduced or rejected, the quantitative variables shifted. In its final iteration, 23 variables were examined divided into two separate sub-groups: physical indicators and social indicators. These were compared against the dependent variable unoccupied housing at the census tract level.

Physical measures included physical characteristics that interviewees and the media have identified as the source of abandonment. These included indicators of overcrowding (average occupants per room; mean built surface are of social housing within AGEB); presences of government financed housing (proportion entitled to social security and presence of government financed housing); quality (as measured by price); availability of basic infrastructure (sidewalks, public lighting, public transportation and houses with electricity and sewage) and distance.

In addition to physical indicators, social measures were included in the analysis because interviews revealed that stakeholders, especially those that worked the closest with residents, had formulated theories about the social characteristics that made individuals more likely to abandon their property. These included lack of education, absence of caretakers, presence of *vagos* (miscreants), unemployment and poverty. Responding to these formulations, 7 variables measured these social characteristics: Average grade of schooling, proportion unemployed, percentage inhabited private dwellings with internet, proportion of population 65 years old and older, proportion of population married, 12 years old and older, percentage female headed households, proportion of the population between 3 and 14 years old who do not attend school. Additionally, although migration was only briefly mentioned as an explicative factor in qualitative interviews, two measures of migration were included – proportion population born in another state or federal entity and proportion of population resident of another state in 2005– to respond to the literature. Full descriptive statistics for the variables can be found in Chapter 4.

Sources:

The majority of data values were downloaded directly from the Censo de Población y Vivienda (CPV) at INEGI's website[28]. Information on neighborhood infrastructure was also derived from the CPV, but from the special tabulations on infrastructure and the built environment[29]. Data points used to calculate the location coefficients that were used to calculate distance from centers of employment were taken from the Directorio Estadístico Nacional de Unidades Económicas (DENUE). Finally, the Registro Único de Vivienda, which contains information on the location and physical characteristics of social housing, was made available through the researcher's affiliation with the Rethinking Social Housing in Mexico (RESHIM) project based at Harvard's Graduate School of Design. This information was provided in raw format directly by INFONAVIT and organized, cleaned and georeferenced by GSD researchers during the summer of 2014.

[28] These can be downloaded in 2016 from http://www.inegi.org.mx/sistemas/consulta_resultados/ageb_urb2010.aspx?c=28111&s=est.

[29] Available at http://www.inegi.org.mx/est/contenidos/proyectos/ccpv/cpv2010/tabulados_urbano.aspx