REMAKING AN APARTHEID CITY

STATE-LED SPATIAL TRANSFORMATION IN POST-APARTHEID DURBAN, SOUTH AFRICA

BY

DANIEL SCHENSUL

B.A., COLUMBIA UNIVERSITY, 1999

M.A., BROWN UNIVERSITY, 2004

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Date_____ _____

Patrick Heller, Advisor

Date_____ _____

John Logan, Committee Member

Date_____ _____

Jose Itzigsohn, Committee Member

Recommended to the Graduate Council

Date_____ _____

Paget Henry, Reader

Date_____ _____

Gianpaolo Baiocchi, Reader

Approved by the Graduate Council

Date_____ _____

Sheila Bonde, Dean of the Graduate School

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Chapter 1
Introduction

In Durban, the capital of the province of KwaZulu Natal and a city of three million people on the southeastern coast of South Africa, inequality reigns supreme. For residents in core and suburban areas of the city, life resembles that of a fully developed city: easy commutes to corporate, commercial, and manufacturing jobs, relatively low unemployment, full services and infrastructure, solid housing stock, and many of same concerns and comforts of urban living around the developed world. In these areas, there is a wide range of wealth, access, and quality of life, but that range is contained within an overall level of development more characteristic of cities in Europe or the United States than in Africa.

Within ostensibly the same urban boundaries, though up to 15 miles away from the urban core, the majority of Durban's residents experience a completely different city. Durban's African townships house over 70 percent of the city's residents. These communities have limited roads, vast numbers of informal shacks, substandard formal housing, little access to services, extremely high crime rates, limited health and education facilities, and massive unemployment. For those lucky enough to have jobs – fewer than half the wage labor force in many communities – commuting times to the central city are as high as two hours, mainly through a crowded and unsafe network of weakly regulated mini-buses.

Seeing this inequality in Durban is the only way to comprehend it. Leaving the small, single runway airport to the south of the city, driving north on the highway along the coast of the Indian ocean to the city center, visitors to Durban pass through every aspect of this massive developmental inequality. First and farthest from the core is the township of Umlazi, one of two main African townships in Durban established during apartheid. Here almost 390 thousand people lived in 2001, well over 99 percent of them African, many in publicly provided or informal housing. Umlazi has always been the more formal of Durban's townships, with more fixed housing, services, and formal employment. Since apartheid ended, there are more cars and paved roads in Durban's townships, but also more shacks and increasing unemployment.

Over hills – Durban is located in the "valley of a thousand hills" – and yet closer to the city comes Chatsworth, one of the two main Indian areas of Durban. Over 600 thousand Indians live in Durban, the largest population of Indians in any city outside of India, about half of whom live either in Chatsworth or in Phoenix, to the north of the core. Chatsworth and Phoenix were the destination for Indians forcibly removed during apartheid from their long tenure in homes at the edges of the urban core. While these Indian townships were originally replete with one and two room houses, many dwelling have been improved substantially by homeowners. Chatsworth is densely populated, full of formal retail stores, large outdoor markets, and many places of worship.

Just north of Chatsworth comes the outer edge of the urban core. These communities were historically Indian before apartheid, but were zoned white during apartheid and cleared through forced removals. Now called the Old Line Suburbs, running along the old rail lines, during apartheid they housed primarily working class whites. Since transition, Indians have returned in large numbers, building and extending dense concentrations of vividly painted houses on the undulating hills.

Continuing north, the traveler reaches Spaghetti Junction, a swirling intersection of roads and ramps where the coastal highway and the inland highway to Johannesburg meet. Running east towards the ocean, the inland highway cuts through the Berea, the most exclusive set of neighborhoods in Durban's core, areas that were historically white and wealthy and now remain wealthy but less white. Nice restaurants and clubs abound, a high end mall with a movie theater provides a social center for middle and upper class people of all races, and plentiful park space and tree lined streets make for a calm, nurturing environment. Steep hills make up most of the Berea, and on them sit high end apartment blocs and large houses looking east over the expanse of the city center and the Indian Ocean.

Yet further east, the Central Business District (CBD) lies at the heart of Durban's downtown. African working and middle class residents have moved there in large numbers, resulting in a middle income city center, unlike other CBDs in South Africa. The CBD is a bustling work environment in the day, and at night a not-too-crowded mix of partiers and commercial sex workers and their customers. Abutting the CBD is the largest port in Southern Africa, opening up into the Indian Ocean, where a dozen container ships are always in line to enter the port, waiting to offload their cargo for transport or for use in the neighboring South Industrial Basin, Durban's primary industrial center. Durban's nearby beaches to the north and south are legendary surfing spots, with a system of nets to guard against sharks prowling the waters. These beaches were segregated during apartheid; some remain so by social convention while others have become integrated social spaces.

West from Spaghetti Junction on the inland highway is the edge city of Pine Town, a commercial and manufacturing center that serves as the transportation link between the port and much of the country. Pine Town's manufacturing and transportation industry is an old union center, and major strikes there in the 1970s sparked the anti-apartheid movement. After apartheid, Pine Town managed to grow even in down times, and was a major employment center. Several of Durban's post-apartheid communities that have achieved class and race diversity did so in proximity to Pine Town, and nearby African townships also benefited.

Back to Spaghetti Junction, but continuing north along the coastal highway, the symmetry with the southern side of the city is striking. Past the Berea comes Phoenix, the other main Indian population center. Phoenix was the site of Indian protest of early pass laws, led by Mohandas Ghandi in one of his first social movement efforts; the Ghandi Printing Press stands in Phoenix to this day. Farther along, to the west of the highway is a cluster of African townships – KwaMashu, Ntuzuma, Inanda, KwaDabeka, and Clermont, a set of contiguous townships only interrupted by the hilly topography and the Umgeni River. Many areas in these townships are informal, services are limited, and economic growth is extremely isolated. Inanda in particular is full of dense informal settlements, and improvements have been few and with minor impact.

To the east of the highway, along the coast, is Umhlanga Rocks, the wealthiest and whitest area of Durban. Modern mansions with stunning views of the ocean sit near exclusive hotels and a massive mall complex, made all the more incongruous by the relative geographic proximity of widespread poverty across the highway. Interestingly, the mall is another space of middle and upper class racial mixing; Durban's malls are some of its only truly racially integrated social spaces.

The whole of Durban evokes a powerful sense of being two or three cities at once, but certainly not one. As I show in the coming chapters, life in Durban's communities is powerfully unevenly distributed, differentiated into multiple distinct city types, separated by a combination of race, class, and spatial divisions born under apartheid and changing or remaining static in complex ways after apartheid. Understanding the pace and type of change and stasis, and how the state's intervention has impacted Durban's disparate developmental trajectories are the central goals of this dissertation.

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Developmental inequality in Durban was born out of more than a century of racialized state and economic policy, and codified onto space through the pervasive planning of apartheid. Apartheid was ostensibly a national policy, yet its implementation and impact were powerfully local. The most durable aspects of apartheid inequality were built on a base of pre-existing local racialization, and were constructed through local planning to separate and contain people by race. The urban planning model under apartheid was one of concentric circles, with white commercial and residential areas in the center, Indian and Coloured areas in the next ring out, expanses of open space and varying topography used as buffer zones, and finally African residential areas.[1]

Durban's spatial structure matched ideal apartheid planning nearly perfectly, albeit constrained to a half circle by the coastline. Apartheid's effectiveness was not just in segregating race groups, but in keeping them so geographically distant and distinct from one another as to entrench completely different paths of political, social, and economic development within the same urban boundaries. Apartheid produced the most extreme urban areas of racial and economic exclusion in the world. Nowhere in the world were social, economic, racial, and spatial structures so deeply intertwined, with such unequal and deterministic consequences for residents (Heller and Schensul 2005).

The race based societal vision of apartheid had its roots in early settlement by the Dutch and English, and a steady racialization that began in the 19th century (Maylam 1996). Marx (1998) argues that South Africa's racial hierarchy came about through the resolution of intra-white conflict between the Afrikaans, the descendents of Dutch settlers, and the English. While this conflict and resolution did lead to the compromises and alliances that produced national apartheid legislation, I show in chapter three that Durban's local racial history was closely linked to its own political economy, and indeed was a model for the racialization of urban planning and settlement throughout the country. Still, early racialization was incomplete; it only achieved near perfection through the advent and implementation of "high apartheid", which followed the National Party's rise to power in 1948.

The National Party crafted a series of laws institutionalizing racial separation, including most prominently the Group Areas Act of 1950, which geographically separated race groups and was the cornerstone of urban residential development under the apartheid regime. The Separate Amenities Act followed in 1953, doing for public facilities and services what the Group Areas Act did for residence. Extensions of the

[1] These racial categories– African, white, Indian, Coloured – are contested terms, born out of the worst methods of classification under apartheid. At the same time, they continue to have powerful social meaning in South Africa, and remain the basis of census data collection; therefore, I use them in this dissertation.

1925 Wage Act produced the color bar, which set disparate wages for people of different races doing the same job. Apartheid policy makers and planners put into place a series of geographic, economic, and political structures, and implementation included forced removals of millions from their historic communities (Plaztky and Walker 1985). Apartheid reached its peak in the early to mid 1980s, where segregation statistics show almost complete residential separation by race.

Shortly thereafter, the system began to break down due to the combined pressure of the anti-apartheid movement and weakening international support for the apartheid regime. Pass laws were repealed in 1986, and the legal system began to soften; the Group Areas Act was repealed in 1991. Still, decades of enforced disparities meant accumulated spatial and economic inequalities took on a life of their own, even as the legal structures maintaining them began to soften. Jeremy Seekings and Nicoli Nattrass, in their influential book, *Class, Race and Inequality in South Africa* (2005: 6), argue that during this softening period, "the very success of this regime in advantaging white people allowed the basis of exclusion to shift from race to class: white South Africans acquired the advantage of class that allowed them to sustain privilege in the market and ceased to be dependent on continued racial discrimination." Ultimately, from 1990 to 1994, as the political transition progressed, the entire legal underpinning of apartheid was dismantled, though much of its social and economic impacts remained.

After 80 years of sustained struggle against apartheid, from civil protest to direct war and through imprisonment, exile, and return, the African National Congress (ANC) won the first democratic elections in 1994. The ANC arrived with a mandate to undo the systematized racial inequality of apartheid, from its distributional regime to its disparate urban spaces. Deracialization was the central focus of ANC policy; new, national level economic policies focused on removing racial discrimination in hiring and opening up the historically white market to Africans through affirmative action and ownership programs (Seekings and Nattrass 2005: 343). In impacting the distributional regime, the ANC's policy was openness rather than redistribution; this led Seekings and Nattrass (2005) to conclude influentially that the ANC's policies resulted in reformation, rather than transformation, of the late apartheid distributional regime. Affirmative action policies and Black Economic Empowerment ownership programs meant the system was adapted to include middle class Africans who could take advantage of new opportunities; poor Africans with little access to resources, though constituting the majority of the populace, were left behind, supported by social safety net systems adequate for survival but not development.

Urban spatial structures built under apartheid went through a transition similar to that of the distributional regime. The end of pass laws and the softening of redlining and laws restricting residential mobility undermined the legal apparatus holding the apartheid city in place. However, spatial structures are path dependent, durable because of economies of scale and increasing returns to existing patterns of bulk infrastructure, resource distribution, and land tenure (Atkinson and Oleson 1996). Spatial structures were determined by built environments, physical structures that remained in the absence of the planning processes that located and constructed them. The success of the spatial regime, as extreme as the success of the distributional regime, resulted in its own maintenance during and after transition.

Still, for the spatial regime, the key contrasts with the story Seekings and Nattrass (2005) tell of the distributional regime were: 1) that the state was determined to transform, and not reform, the spatial structure; and 2) the national state decentralized spatial intervention to local municipal governments, making them the key "agents of transformation" (DCD 1996; ANC 1994) in impacting the urban apartheid form. Apartheid urban planning, as opposed to its macroeconomic and political policies, was fundamentally local. Now, the remaking of the apartheid city would be local as well.

The Durban municipality was therefore tasked with the daunting effort of reversing 45 years of careful racialized planning and a century of uneven development dividing the city by race. The starting point was near perfect racial and economic segregation. In 1996, census data show that over 75 percent of the city's Africans lived in townships that were economically stagnant: apartheid laws limiting local economic development in townships until the late 1970s resulted in few to no local businesses, and very little local capital. These townships had little to no bulk infrastructure and services, despite near complete servicing of the rest of the province of KwaZulu Natal. The built environment was substandard; townships were planned as temporary dormitory facilities (Harrison et al. 1997), and provided few social services. There were upwards of 250,000 informal dwellings in Durban, mostly located in the extreme periphery given constraints on informal settlement leading up to, during, and after transition.

Meanwhile, the core of the city had first world equivalent services and living standards, solid growth rates, and low unemployment. Much like other cities in this period, Durban had to work hard to keep capital in the city, and even to keep whites in the city, as the 1990s would see a precipitous flight of both. Durban's economy stagnated in the late 1990s as it experienced a loss of manufacturing jobs and a shift to a post-Fordist service economy. The goal of reversing uneven urban development and creating a more equal city seemed that much more out of reach as a result.

However, Durban's local government was able marshal substantial resources to undertake its spatial transformative goals – resources relatively unique in the developing world. First, the state had financial resources from a large, primarily white tax base. Second, the state had the bureaucratic capacity, inherited from the apartheid state, to plan and implement efficient interventions. Third, and as essentially, the state had the political will to intervene, based both on the national mandate for spatial transformation and local city officials involvement in the anti-apartheid movement. These resources resulted in a highly capacitated and motivated local state. The state would purse multiple strategies for intervention, including local economic development, economic development across spatial boundaries, and most expansively, a large scale program of infrastructure and service development meant to close the gap between the core and the urban townships (Harrison et al. 1997; ANC 1994).

Even so, scholars examining both South Africa generally and Durban more specifically have come to the conclusion that the state was unable to fundamentally impact the spatial structure – what Heller and Schensul (2005) call "change without transformation." Much like the argument Seekings and Nattrass (2005) make about the maintenance of the distributional regime, analysts of urban spatial structures in South Africa argue that state intervention reinforced spatial disparities. The argument is that by promoting growth in the core and locking the African poor into substandard locations in the urban periphery through upgrades to formal infrastructure and housing, the state

contributed to maintaining divergent developmental paths (e.g. Huchzermeyer 2005; Mabin 2005). Multiple forces that I examine in this dissertation contributed to the maintenance of the spatial form, including the power of business and civil society actors in the city, legacies of inequality, the lack of developmental potential in townships, the occupation shift towards higher skill jobs, and the hardened nature of the built environment.

A substantial portion of my findings do in fact support this argument. Core and suburban areas have continued to grow, while urban African townships have experienced soaring unemployment, deepening poverty, and continued spatial exclusion. However, the standard narrative paints too broad, too aggregated a picture. My findings, based on local level analysis of the dynamics of apartheid and post-apartheid space, show more variegation. By disaggregating the city and using concepts from urban and development sociology linked to empirical analysis, I identify soft spots in the city's spatial structure that the state targeted and was able to succeed in transforming. So while it was true that much of the city's apartheid structure was maintained, there were also instances of success that have important implications for urban governance and inequality.

Based on analysis of census data and previously unstudied local municipal infrastructure datasets, in this dissertation I show broad areas of stasis and localized areas of important change, strongly linked to the state's determined efforts to use public investment in infrastructure and services to change the face of the apartheid city. This study provides insight into the local spatial dynamics of urban inequality, both between and within race groups, and how these dynamics produce disparate developmental paths. This inequality was hardened and malleable in different places in the city, and I examine how the state capitalized on this spatial variation to impact development. This dissertation examines the potential of state-led spatial transformation in Durban, its limitations, and the forces coursing through the city that shape efforts at change.

Substantive Contributions

My analysis in this dissertation is directed towards two substantive contributions. First, I apply literature in urban sociology, stratification, and the production of urban space to an empirical analysis of Durban's residential spatial structures. This allows me to develop the concept of an urban *spatial hierarchy* that shapes developmental pathways for residents by incorporating stratification of race, class, and place. The apartheid legal and planning structure came to an end in the late 1980s and early 1990s. However, the historical legacies of apartheid continued to determine Durban's spatial hierarchy after formal apartheid ended, maintaining it through the interaction of inequality linked to race and the path dependencies of infrastructure and built environment.

The concept of a spatial hierarchy has wide applicability in the study of urban environments, and brings together previously disparate and at times contradictory literature and analysis in sociology. Understanding the spatial hierarchy of a city provides insight into how race and class inequality connect to mobility. Most importantly, the concept illuminates how and why these interactions vary across the space of a city, and the impact of these variations on efforts at spatial and social urban transformation.

The spatial hierarchy is the terrain of intervention; by applying it to Durban I assess, in my second substantive contribution, under what circumstances and in what places the state can impact the spatial hierarchy. I examine Durban's infrastructural

development after apartheid, focusing particularly on the construction of public housing. I show empirically that certain kinds of public investment in infrastructure and services reinforce the spatial hierarchy. However, I also show that geographically targeted greenfield housing construction has been able to help certain communities emerge from the confines of the spatial hierarchy, becoming what I call *bridging* communities. I define these bridging communities as incorporating three characteristics: race diversity, class diversity, particularly through access for poor Africans, and access to economic opportunity. The emergence of these bridging communities, driven by the state, is a unique occurrence for Durban, standing in contrast to the predictions of the urban literature and South African scholarship. These findings point to a role for the state in impacting urban space, one that complements existing perspectives on the state, urban governance, and development.

Studying Urban Space and the State in Durban

Durban is an extreme case of the making, maintenance, and unmaking of urban spatial inequality. Gerring (2004: 342, italics in original) defines a case study as "*an intensive study of a single unit for the purpose of understanding a larger class of (similar) units*." In focusing on Durban for the study of urban spatial structures and how the state can impact them, I am conducting a single unit case study; following Gerring's anatomy of a case study, my focal variables are state intervention and the spatial structure, and my observations include both historical analysis over the last century and quantitative analysis of 1996 and 2001.

Durban combines what Seawright and Gerring (forthcoming) call extreme, deviant, and most similar cases. Durban, along with other South African cities, presents the most extreme levels of urban segregation in the world. In 1996, emerging from apartheid, Durban was close to perfectly segregated, with an African/ white index of dissimilarity[2] score of 0.93. In comparison, the most segregated city in the United States in 2000, Detroit, had a dissimilarity score for blacks and whites of 0.84 (Doyle 2004). The spatial distribution of segregated communities was also nearly perfectly correlated with race; the vast majority of Africans lived in the periphery, all whites lived in the core or suburban areas, and Indians tended to live between the two. This core/periphery structure is one that Marcuse and van Kempen (2000) describe as occurring with greater frequency in cities in the developing world, given increasing inequality and rural urban migration. As such, Durban is an extreme case of common urban structures of race and space.

At the same time, the city deviates from the standard causal models found in many other cases by coupling its extreme starting point with the state resources and will to intervene. This combination is often absent in cities in the developing world, which lack the resources, and in the developed world, which lack the political will (Briggs 2005). The pairing of a high capacity state with extreme segregation and spatial inequality provides an opportunity to assess what the state can do despite major constraints. In other settings, lack of ability or lack of effort limits this kind of assessment. Furthermore, the extent of the challenge suggests a null hypothesis of little effect; instances of theoretically grounded state impact then take on added weight.

[2] The index of dissimilarity for a pair of race groups can be interpreted as the percentage of one group or the other that would have to move to create even community racial composition across the city.

Finally, Durban shares with many other developing and middle income cities a number of forces that constrain spatial, social, and economic change. Durban has experienced a decline in manufacturing together with an new focus on service sector jobs (Freund 2001; Freund and Padayachee 2002). Immigration from rural areas and other countries of southern African has stressed city service provision, infrastructure, and housing capabilities. An economic downturn in the 1990s reduced employment, exacerbating the shift in the occupational structure. These are factors every city experiences in some way; outside of Durban's extreme and deviant characteristics, it shares a commonality with cities around the world that make the results of this analysis relevant to urban scholarship more broadly.

Gerring (2004) describes the effectiveness of case studies in conducting deep, exploratory analysis of causal mechanisms. These are central tasks of this dissertation, as I endeavor to move the analysis of apartheid and urban restructuring more local and deeper, focusing on the mechanisms of formation, maintenance, and undoing of segregated space. I also use and extend existing theory to explore how the state can intervene effectively despite powerful forces countervailing change.

At the same time, this dissertation is not only a case study. I disaggregate the city of Durban into its component parts, including tiers of the spatial hierarchy and individual communities. At those levels I conduct a medium- to large-N exploratory quantitative analysis focused not on causal mechanisms, but potential causal relationship. In chapter four I discuss how I examine Durban at different levels using different methods.

Outline of the Dissertation

This dissertation proceeds as follows. In chapter two, I develop the theoretical and conceptual bases of the study. The first part focuses on urban sociology, race, class and the production of urban space. The intersection of these literatures allows me to develop the concept of the spatial hierarchy, which I apply to Durban and use to structure the remainder of the analysis. In the second part of chapter two, I examine the role of the state, and particularly the local state, in impacting spatial structures. I draw on urban governance, developmental state, and power literature, generating a model of state action focusing on *places* within the spatial hierarchy where the state can have an impact. Finally, based on the theory and concepts I review, I generate research questions that guide the analysis in the dissertation.

Chapter three focuses on Durban's political economic and spatial development, from the late 19th century through the end of apartheid. The first part of the chapter examines the early interactions of whites, Indians, and Africans in Durban, the emergence of local racialization tied to political economy, and the resulting priming of the city for the implementation of apartheid planning. The second part of the chapter describes Durban's apartheid form during and emerging from apartheid based on the components of the spatial hierarchy I develop in chapter two.

Chapters four and five cover the methodological bases of the dissertation. Chapter four reviews quantitative data sources, collection and processing, techniques of quantitative analysis and mapping, and qualitative data collection and analysis. Chapter five reviews the shortcomings of existing measures of racial composition and segregation for the purposes of this study, and develops the categorization system on which I base my quantitative and spatial analysis.

Chapter six maps changes to the racial residential composition of communities in Durban from 1996 to 2001, the focal period of this study. I begin with Durban's changing economy during this period, and then examine the extent of racial residential change in aggregate. Quickly, the focus shifts to careful local analysis. First, I cover the areas of the city that have remained in their apartheid form, applying components of the spatial hierarchy to them. Second, I focus on a large number of mixed communities in 2001 that underwent similar kinds of change and stasis, and examine them in light of the spatial hierarchy. Ultimate, the results reported in chapter seven allow me to construct the post-apartheid spatial hierarchy.

In chapter seven, I begin by reviewing in detail the local government mandate for urban spatial restructuring, and the political transition that coincided with the undertaking of this mandate. Then, building on the description of Durban's spatial hierarchy, including its emergence from apartheid and its change and stasis since, I describe state investment to expand infrastructure and services in the city. Based on multiple data sources, including municipal infrastructure data and qualitative interviews, I chart state investment in water, electricity, and public libraries. I then concentrate on public housing construction, including upgrades of existing informal settlements and new, greenfield projects.

In chapter eight, I examine places that divert from the spatial hierarchy. I begin with several communities that did so early, and then focus particularly on two sets of communities that sit outside the spatial hierarchy in 2001 as a direct result of state-led public housing construction during the study period. These communities are accessible by poor Africans, have some degree of race and class diversity, and provide access to the core economy, a type previously unheard of in Durban's history.

Finally, chapter nine begins with an empirical summary, describing the vast legacies, stratified change, and small but important instances of transformation I identify throughout the dissertation. I then re-examine the concepts I develop theoretically in chapter two in light of my results. I conclude with a discussion of the relevance of these concepts to other contexts, and generate the outline of a future comparative project.

Chapter 2
Urban Spatial Structures and the State

The South African government, both nationally and locally, had its work cut out for it in changing apartheid's urban spatial structure. Cities are sites of powerful and hardened inequalities, and Durban is an extreme case of these inequalities, as I argued in the introduction. Urban spatial structures are path dependent (Atkinson and Oleson 1996), characterized by self-reinforcing mechanisms that not only prevent change but exacerbate existing inequalities over time. At the same time, people are clearly at times able to move across classes and places.

Understanding how cities remain static and how they change is a complex endeavor, coupling sociological concepts across multiple levels of analysis. At the community level, both within and between communities, the urban sociology literature defines a number of the mechanisms that operate in cities to produce both mobility and stratification associated with class, race, and place. I begin this chapter by examining how these intra- and inter-community mechanisms operate together in cities, in order to develop a concept of an urban *spatial hierarchy*.

At the same time, the production and reproduction of urban space and inequality is associated with macro forces and large scale actors that impact the city and its political economy. These are higher level mechanisms, associated with state, market, and civil society actions and interactions. While the literature on urban inequality is very effective at describing local forces impacting mobility, it provides little leverage for understanding change over time. It often takes as given the role of market forces in reproducing and maintaining inequality and discounts the state's ability to impact urban inequality, except as a complement to maintenance driven by the market. Even outside the urban sociology literature, there are few frameworks of state action that suggest that the state is capable of reversing widespread urban inequalities; instead, most accounts of the state ascribe to it an enabling role in hardening and reinforcing inequalities. I review literature on urban development and the production and maintenance of urban space in the second part of this chapter. This literature is in fact commonly applied to South Africa, used by analysts arguing that post-apartheid trajectories have maintained or strengthened existing inequalities.

However, as I suggested in the introduction, components of my empirical results run counter to the common sociological story of South Africa: I contend that there have been places of transformation in Durban, and that state intervention has played a major role in producing them. I examine recent turns toward models of "good governance" and effective state action, and in particular focus on the developmental state concept, which suggests that the state has an important role to play in economic growth. More recent uses of the developmental state literature have attempted to apply it to broader development, beyond the specific confines of growth, and more locally focused on urban spaces.

In the final part of this chapter, I examine the developmental state literature and the later urban synergy literature to identify opportunities the state has to engage in broader, more transformative urban development. One factor shared across most of the good governance frameworks, including the synergy perspective, is participation of civil society groups and a shift away from top down leadership. For reasons I explain, the

South African state, and the local Durban municipality, have pursued other approaches, limiting the explanatory power of these good governance frameworks.

To account for the successes, I merge the multi-level concepts, coupling the actor focused literature with the concept of the urban spatial hierarchy to ask what the state's role in changing Durban's spatial structures can be, focusing specifically on *where* the state can intervene. I use this conceptual synthesis to develop a hypothetical model of state transformative capacity, based on the power of the state in different parts of the city relative to other societal actors. This model in turn informs my empirical analysis of Durban through the remainder of the dissertation. Finally, I finish the chapter by stating my research questions in light of the goals for the dissertation I described in the introduction and the theoretical and conceptual ideas I introduce in this chapter.

Section 1: Stratification in Urban Space

The urban sociology literature develops a series of competing types of stratification to describe urban social and economic structure. Below I review models of class, race, and place stratification in an effort to understand how interactions of these types determine the nature and distribution of development in cities.

Urban Class Stratification

Class is the original sociological hierarchy: class is defined relative to the means of production, inequality by the distribution of people in different classes, and stratification by the extent to which movement across class divides is possible. Paradigmatic works in sociology that examine class stratification include Weber (1958) on the class, status, and power components of stratification and Blau and Duncan (1967), Jencks (1979), and Jencks et al. (1972) on the socioeconomic attainment model and occupational and income mobility. Two salient factors characterize the extent of class stratification – the degree to which income and occupation is determined by parents' income and occupation, or intergenerational mobility, and the degree to which individuals themselves can move up the class hierarchy during the life course.

Urban class stratification tends to be analyzed through income distribution, labor and consumption markets, and ultimately opportunities for residential mobility. Economists consider inequality to be an essential component of functioning markets, providing an incentive structure for productivity; at the same time, very high inequality can represents market breakdown caused by underlying segmentation. Segmentation, as opposed to continuous distribution, is the key to stratification. Economies that are segmented show different growth rates by sector and across space (Beck et al. 1978), and are characterized by closed labor markets, varying wages for the same jobs, and varying prices for the same commodities. Segmented labor and consumption markets destroy the incentives created by inequality, representing underlying gaps in the opportunity structure rather than unequal but continuous asset distribution.

Stratification in residential markets is indicated by class stratification, though exacerbated by inequalities of place. It occurs with the combination of large differences across space in real estate and rental prices and varying growth rates in those prices. Growth in the core economy outpaces growth in the peripheral economy, reducing the relative value of property in the periphery and therefore decreasing the ability of

peripheral residents to purchase core property. Reduced residential mobility means increased stratification.

In the most extreme type of residential market stratification, real estate markets may not function in all parts of a city. This can occur when parts of the city are dominated by public housing without title transfer, and when limited capital and limited access to credit result in little demand. In cities characterized by an extreme core/periphery divide, residential market stratification is a defining characteristic (Marcuse and van Kempen 2000).

Durban is a high inequality city, with small middle and ownership classes and a very large urban poor population. High inequality contributes to Durban's segmented labor and consumption markets. Segmented markets are characterized by internal divisions, in which prices and growth vary within the same political boundaries due to structural externalities to the market (Beck et al. 1972). Durban's consumption market is segmented, with lower prices for essential commodities in townships verses the core. Durban's labor market is also segmented, such that higher end opportunities are inaccessible to the vast majority of the city's residents. The history of both labor and consumption segmentation date back to apartheid, when the color bar set differential wages by race and Africans had essentially no access to managerial or ownership opportunities, including in townships where the state prevented small business activity (Seekings and Nattrass 2005). Segmented economies represent the highest degree of class stratification, where structural factors preclude movement across class divides completely. When they are driven by racial stratification, barriers to movement are even more formidable.

Urban Race Stratification

Racial hierarchies (Song 2004: 3) have become well established in the literature, though more recently than class hierarchies. Marx (1998) compares the tiered stratification of race in South Africa and the United States with more linear stratification of the pigmentocracy in Brazil. Relatedly, Bonilla-Silva (2004) argues that racial stratification in the United States has moved from a two-tiered system of white and non-white to a three-tiered system of white, honorary white, and collective black. While there are examples of cross-divide movement in racially stratified systems (Bonilla-Silva 1997: 932 points to Barry Alvarez and Martin Sheen as examples of "fully assimilated white Latinos"), race is primarily ascriptive, and the stronger the structural racialization – whether tiered or continuous – the more deterministic the consequences of race become.

In South Africa, there need be no debate about the presence of a racial hierarchy, or about the extent of racial formation (Omi and Winant 1994; Winant 1988). For over a century the three-tiered system of Africans, Coloureds and Indians, and whites has been clear, with apartheid as the final, formal and perfected version of the hierarchy. Marx (1998) suggests at the national level that the racial formation that produced the racial hierarchy stems from intra-white British Afrikaans conflict. In Durban, where whites were almost entirely British, it may have been generated by both white-Indian and white-African class-based conflict (Crush and Ambler 1993; Davies and Rajah 1968; Swanson 1983 and 1976 – I discuss this in greater detail in chapter three).

From a racial stratification perspective, class hierarchies, while important in their own right, are outcomes of racial ordering where they correlate heavily with race.

Differences in social and human capital, legal structures, and environmental inequalities driven by racism and racial stratification in turn limit groups' developmental potential, producing the appearance of class stratification. People at the bottom of the racial hierarchy cannot improve their class status because they are blocked by their race, rather than by their limited class resources.

Class and Race Stratification in Place

As I suggest above, urban class stratification is often analyzed through the prism of residential patterns, in addition to the standard labor market stratification models. Wilson (1978) examines the impacts of within race class inequality on the varying terrain of city and suburb, examining both class and place stratification. Residential stratification is determined by the extent to which people can move across neighborhood boundaries. In contexts of high class stratification, areas of cities become closed off to residents who cannot attain the class status to live in them. Scholars who argue for this model of residential inequality driven by class stratification call it "spatial assimilation": if people can cross class boundaries, they can move to better neighborhoods, regardless of other factors (e.g. Clark 1988; Galster 1988). The spatial assimilation model posits that residential segregation is a result of groups' limited economic and cultural resources, and that as these resources grow segregation declines. Wilson's *Declining Significance of Race* is one of the roots of this model, though it has tended to be applied to immigrant communities. The extent of class stratification therefore determines neighborhood stratification; in Durban's segmented economy, the inability of many people to move across class boundaries would be the primary cause of their inability to move to better places. Places are stratified in outcome, not in cause.

Conversely, an important outcome of racial stratification applied to urban contexts is the place stratification model (e.g. Alba and Logan 1993; Farley et al. 1994; Harris 1999; Lindstrom 1997; Massey and Denton 1993; South and Crowder 1998). The place stratification model points to persistent racialization as the main cause of segregation, suggesting that even as groups do better they will remain spatially disadvantaged by both inter-group relations and structural constraints limiting residential and economic mobility (Charles 2003: 170). Proponents of this model have pointed to studies (e.g. Duncan 1969; Portes and Wilson 1976) that find continued racial disparities in income and access, controlling for acculturation and human capital. Place stratification finds a place for segmented labor markets, which are a massive component of Durban's political economy; some of the factors constraining economic mobility in disadvantaged places include the absence of formal employment, the instability of work, and the difficulty in reaching the poverty line even given substantial work (Wilson and Portes 1980: 298). Durban's differential unemployment and sectoral employment by race is the defining characteristic of the segmented labor market and the major current driver of massive inequality in median household incomes.

These two models are in essence a debate over the extent to which place is stratified; the place stratification model suggest major structural constraints to cross-place mobility, while the spatial assimilation model suggests that place itself is not stratified, and to the extent that people can cross economic divides they will move up in the hierarchy of places. Also, both models see location in the hierarchy of places as the outcome of underlying structural stratification of class and race. In this way, they are

linked to the concept of environmental justice, which suggests massive inequalities in the built and natural environment that order the hierarchy of places and are correlated with both race and class (e.g. Bullard 1994; Capek 1993; Shrader-Frechette 2002).

A third model of place, the enclave model, suggests that there is economic benefit to living with others of the same group (Abrahamson 1996; Wilson and Portes 1980; Wilson and Martin 1982). According to this model, place stratification fails to account for the gain in human and social capital that come from living in an ostensibly segregated community, and spatial assimilation fails to understand that continued economic success comes from staying, rather than leaving. In an ethnic enclave, human capital that fails to provide returns outside the community can be actualized within it, in part through intra-ethnic network ties (Wilson and Portes 1980: 302). In South Africa, the other side of the ethnic enclave coin is that groups on the high end of the racial hierarchy may benefit from, or perceive benefit in, excluding outsiders.

These are hard fought debates (Charles 2003), and point to the importance of understanding race and class in context of place and community. They also point to essential variation that happens within a city: in the same city, some people may achieve place mobility while others remain trapped by varying mechanisms. An essential step in my analysis is to understand how patterns of race, class, and place interact to produce varying developmental outcomes, and varying degrees of stratification, within the space of the same city. While specifying particular neighborhood configurations and the developmental paths they produce is ultimately an empirical exercise I undertake in chapters three and six, I next develop the concept of the *spatial hierarchy* to generate a typology of configurations linked to mobility.

What is a Spatial Hierarchy?

In Durban under apartheid, place stratification was legislated: communities were zoned for specific races, so people's race explicitly prevented them from moving to different or better neighborhoods, regardless of their economic or cultural characteristics. There were some exceptions in practice – most prominently African live-in domestic servants with the correct passes, but also some upwardly mobile Indians and Coloureds who were able to slide by restrictions. Still, the relationship between space, race, and development was clear. White people lived in the vital cores of cities, where there was economic activity, access to services and infrastructure, and prospects for class and residential mobility. Africans lived in peripheral or poorly located townships, the opposite in every respect: cut off from economic opportunity, and indeed from the rest of the city, with meager bulk infrastructure, few social services, and little opportunity for advancement. Indians and Coloureds lived in between Africans and whites, geographically, socially, and economically. Class, and class stratification for the majority of the population, was an outcome of a legal and spatial apparatus that reflected the racial hierarchy.

In post-apartheid Durban, residential and economic mobility are not tied so completely to race. The African middle class is unquestionably growing, though perhaps not as quickly as in other South African cities (Crankshaw 2008: 1697). As I will show in chapter six, the core is changing racially, as Africans and Indians move to the center of the city. At the same time, hypersegregation remains, with high levels of spatial clustering. Parts of the city remain exclusively composed of one race group; in particular,

white suburbs to the north, south, and west and historical Indian areas continue to exclude Africans. In essence, then, some residents of Durban have access to many different kinds of neighborhoods, while others continue to be trapped in poor locations. Framed conceptually, some places exist on a spatial assimilation spectrum, growing increasingly open to people of any race with resources. Other places are inaccessible to certain races regardless of class status and therefore exist within a place stratification framework.

Describing Durban or its populace according to the spatial assimilation model, the place stratification model, or the enclave model therefore fails to capture the range of residents' experiences. Mechanisms of mobility vary across the city, with varying impact on outcomes. In order to understand how these mechanisms vary, I introduce the concept of a spatial hierarchy.

In a city's spatial hierarchy, patterns of spatial assimilation, place stratification, enclavization, racialization, inequality, and access co-occur in describable ways within the spatial structure to produce hardened (anti-)developmental paths for residents. As I suggest above, the point is not to adjudicate between models, each of which have validity, but to understand how the *relationships* between class, race, place, and development vary in different parts of the city – in essence, to determine which model applies where and for whom.

This requires a configurational perspective. Rather than looking for a linear relationship between class and mobility across place, or race and mobility, configurational analysis involves examining a full interactive model of essential variables.[3] I examine how particular values of race diversity, class diversity, location and access link with the models I described above to produce types of mobility and lock-in.

Three key attributes define a place with respect to its location in the spatial hierarchy:

1) Is it race diverse, or does it contain significant numbers of more than one race group?
2) Is it class diverse, or are there people across a number of economic classes within the community?
3) Does it provide access to the economic core(s) of the city, such that living in the community provides the potential for economic opportunity?[4]

To different configurations of these attributed, I assign the following labels: *racialized*, *ethnicized*, *stratified*, and *bridging* (adapted from Schensul and Heller, in progress). Building on the discussion above of racial hierarchies, racialized communities are those where race is the dominant mechanism limiting mobility and further preventing class diversity. Urban townships make up Durban's racialized communities, with few economic prospects and located far from the core economy. Racialized places are at the bottom of the place stratification framework, with a number of structural factors locking people in; an alternative term, one used frequently offset against enclaves, is "ghetto" (e.g. Varady 2005).

Ethnicized places, like racialized ones, are populated by essentially one race group; however, in these areas, race confers some degree of social and economic advantage. Key to the distinction between racialized and ethnicized places is that the

[3] Ragin's (2000) qualitative comparative analysis is a full interaction model which produces pathways to particular outcomes, and I use the same type of configurational logic.

[4] Put differently, is there a spatial mismatch between labor and employment?

latter involve a component of choice on the part of residents (Marcuse 2005). These are ethnic enclaves, with class diversity and access to the core economy. There are Indian and white ethnicized places in Durban, and some newly emerging African ones. White enclaves in Durban can be particularly undermining to transformative efforts, as what Smets and Salman (2008 : 1322) call "escape society", or communities that "protect themselves from the 'nasty' side-effects of the unequal provision of wealth and urban services."

Stratified communities are those where class is the dominant mechanisms limiting mobility, producing areas with race diversity but narrow class bands that limit access solely to those who can afford it. Access to these communities is resource dependent but little else: they are not single race dominated like racialized and ethnicized areas. Stratified communities fall into the spatial assimilation framework, located on a mobility spectrum defined by the economic resources of residents. Under apartheid a few Indians were able to access these communities, and they were the first to mix as apartheid laws were eliminated. Stratified communities are the spatial instantiation of the shift from race to class mechanisms Seekings and Nattrass (2005) describe for the distributional regime.

Finally, bridging communities are a new type, outside of each of the three frameworks I describe above, and unknown in Durban's history under apartheid. Bridging communities are race diverse, class diverse, and provide access to the core economy to residents. These communities defy clear ordering on the basis of race, class, or access. In bridging communities, class and race mixing is not a utopian social vision but a functional way – one of the only ways – to help poor Africans intersect with the core economy, providing them a bridge across geographic and social gaps in the spatial hierarchy (Talen 2006; Smets and Salman 2008). Bridging communities link the separate developmental paths within the spatial hierarchy by bringing together people who are otherwise kept separate.

Table 2.1. Spatial Hierarchy Types and Bridging Communities.
Adapted from Schensul and Heller (in progress).

Pattern	Race Diverse	Class Diverse	Access to the Core
Racialized	No	No	No
Ethnicized	No	Yes	Yes
Stratified	Yes	No	Yes
Bridging	Yes	Yes	Yes

The occurrence of multiple types within a single city has important consequences. If one component of the population experiences spatial assimilation while another experiences place stratification, the gap between those populations will tend to increase over time, even in the face of quality of life improvements for those experiencing place stratification.

The occurrence of multiple types within a single city also means that the city should not be examined as a whole, characterized by a single set of operative causal mechanisms. Instead, the city is composed of multiple groups of communities characterized by different causal mechanisms. This will have major import in understanding dynamics of state intervention across the city, as I describe later in this chapter in discussing power relations.

To sum up, a city's spatial hierarchy is composed of multiple models of stratification, with highly limited interaction across places with different models. Nearly every community in Durban was locked into the spatial hierarchy in 1996 at the end of apartheid, as I show in chapter three, and most were racialized or ethnicized. This lock-in seriously exacerbated the developmental gap between poor Africans and everyone else. By 2001, some formerly ethnicized communities had become stratified, exhibiting the shift from race to class mechanisms described in much of the South African literature. Still others, however, had become bridging communities.

Durban's spatial form, composed of the spatial hierarchy and the communities that deviated from it, is the dependent variable of this dissertation. The spatial hierarchy can be **reinforced**, in two ways: 1) through the maintenance of developmental gaps separating African racialized places from Indian and white ethnicized places, or 2) it can change within tight class bands, towards the stratified type, while retaining the gap between racialized communities and the rest of the city, though in a context of increased racial mixing. Alternatively, it can **transform** through a decoupling of the links between class, race, and space – a bridging of the gaps in the spatial hierarchy.

In the next section, I examine how the state, the primary independent variable of this dissertation, can impact the spatial hierarchy across these types, given a series of contextual and external variables reinforcing the hierarchy.

Section 2: The State and Transformation of the Spatial Hierarchy

Much literature suggests that post-apartheid local government in Durban can have little success in attempting changes to the spatial hierarchy. From the capital logic perspective, the power of transnational and local economic forces resisting change, together with the extent and intractability of spatial problems in Durban and the limited ability of the state to intervene, should preclude effective state action.

From the state institutionalist perspective, the developmental state literature and the good governance literature show that Durban does not have the state-society linkages to produce social and economic development, beyond the confines of limited economic growth. Despite the resources Durban's local government brings to bear on the problem, the dominant literature predicts little change. Most studies of South Africa have indeed found limited change, with what little there is occurring within the existing class, race, and spatial disparities I describe throughout this dissertation (some examples include Crankshaw 2008; Marais 2000; Nattrass and Seekings 2001; Seekings and Nattrass 2005; Turok and Watson, 2001). However, later in this dissertation I suggest that the state has been able to change the fundamental links between race, class, and development in Durban, if only under certain conditions.

Capital and the Production of Urban Space

Harvey (2000: 23) writes that "the accumulation of capital has always been a profoundly geographic affair," and South Africa cities are extreme cases. Across regions and space, capitalism produces uneven development. Building on Marx and Lenin, a number of scholars (e.g. Harvey 1982; Smith 1984) developed the concept of the "spatial fix" for the contradiction in global capitalism between differentiation on the one hand and equalization on the other. Differentiation between places is produced by the division of labor and varying comparative advantage; equalization comes from the global spread of

the basic economic relations of capitalism. Differentiation and equalization are opposing forces; at the regional level, the spatial fix of uneven development geographically and temporally separates these phenomena by continually providing new places for capital to move. Capital moves to cheaper environs with greater growth potential – capital flight – and then repeats the process as new places become more expensive; this results in uneven development. As globalization increased, providing more places to move within a more linked world economy, uneven development increased.

Cities have always been a major focal point of development. They concentrate infrastructure and labor and support economies of scale, providing essential ingredients of capital growth. Urban areas have been the focal point of political and economic development (Harvey 2000; Sassen 1998), and through their concentrating effects gave rise to the nation state (Harvey 2000; Tilly 1992). Cities are also the terrain of regional competition and uneven development, attempting to attract capital in a variety of ways (which I discuss more below), in what Haider (1992) calls the "place wars" and Seidman (2003) calls the "race to the bottom."

Uneven development can be a local phenomenon, contained within urban areas themselves as they seek their own localized spatial fix. Urban areas do not just concentrate workers and infrastructure. Local urban spatial development becomes uneven in the effort to contain within urban boundaries the full class hierarchy, linking the working class to jobs while excluding it from the places reserved for the wealthy and limiting its ability to mobilize effectively (Harvey 2000; Portes 1989). Over the long term, the containment of these varying communities produces unevenness.

What Portes (1989: 8) describes as "growth combined with highly unequal income distribution" has produced massive spatial distortions throughout the world. In Latin America, in the context of huge urban growth, this meant suburban enclaves for elites and peripheral ghettos for the poor (many new arrived in the city), coupling low residential density and sprawl with overstretched urban infrastructure. Peripheral ghettos were poorly serviced, and extremely high numbers of residents relied on the informal economy, all while elites were experiencing formal economic growth. Inequality distributed over uneven space thus produced diverging developmental pathways within the city. Marcuse and van Kempen (2000) more recently describe a related phenomenon: the increasingly prevalent core-periphery structure of cities in the developing world, in which the poor reside in the excluded periphery while elites take advantage of high end urban living in the core. Durban is an ideal typical case of spatial inequality tied to development. It has the core-periphery structure that produces hugely disparate developmental paths, with origins tied to capital accumulation as well as direct state planning, as I discuss in detail in chapter three.

One of the principle factors producing uneven development at the regional and local levels is globalization. Global markets at the same time vastly increased growth potential in cities while creating circumstances for further exclusion of the poor. The shift from Fordist manufacturing cities to post-Fordist service oriented economies produces new occupational structures that benefit skilled labor at the expense of the peripheralized poor. New alliances between the state and private business result in pro-growth policies meant to attract as much international investment as possible, and to be competitive on the global market.

Globalization and urban development resulted in a rescaling of political economy (Brenner 2004; 2001; 1999) in which cities became the prime economic units in the global economy (Sassen 1998) at the expense of national political and economic control. National political and economic boundaries became less important to growth than regional economic linkages, and consequently there has been a shift in the political locus of control towards localities (Kearns and Paddison 2000). The local political calculation linked to this shift has been the effort to maximize urban comparative advantage to attract foreign investment: urban place wars.

If there was a role for the state in this story, particularly the local state, it was in working with business elites to accelerate growth. State provision of social safety nets and redistribution of wealth became a barrier to attraction of capital; welfare reform, neoliberal economic policies, and tax breaks were the routes to growth. In South Africa, at the national level, the enactment of Growth, Employment and Redistribution (GEAR) was specifically meant to attract foreign capital through the usual Washington Consensus strategies.

As I discuss later in the dissertation, in Durban local government worked with local businesses to compete on the global and regional scale for tourism, commerce, and its more traditional economic strengths in certain kinds of manufacturing. However, there are a number of models of urban governance that local and national states pursued, and in South Africa the pro-growth model only characterized a part of the state's approach to governing.

Models of Urban Governance

In the face of a declining role of national governance, local urban governance continues to be a powerful determinant of what happens in cities, if not in the same way it once did. The traditional model of urban governance was focused on management, provision, and welfare (Stoker 1998). Bureaucratic and corporatist state-society interactions dominated (Jessop 1999), as local governments focused on routinized services and delivery through interaction with consistent sets of actors. Analysis of the institutions of state administration were the core component of this perspective on governance, with Weberian bureaucratic structures and administrative independence from politics proving most effective for good delivery (Pierre 1999; Osborn and Gaebler 1992; Peters and Pierre 1998). Urban governance also tended to be subsumed within policies set by the national government, given the historical importance of national economies and political boundaries.

Approaches to urban governance then shifted, following two related trends. First, economic globalization and the strong links between capital, growth, and cities resulted in new urban competition at the regional level and a new importance of locally specific policies to compete (Sassen 1998; Kearns and Paddison 2000).

Second, the declining importance of national boundaries and the emergence of decentralization as a major governance approach resulted in more cities needing to navigate on their own through global marketplaces, rather than being the geographic target of national development efforts (Brenner 2004; Gilbert 2006). Global cities began to serve highly particularized roles in the global economy, including as finance, manufacturing, political, and social centers (Sassen 1998). At the same time, other cities had to compete against larger and larger fields for less specific roles, and more generally

to attract foreign investment. To undertake this, local urban governments "attempted to 'delink' or 'decouple' themselves from their national economies (Kearns and Paddison 2000: 854)," focusing on urban-regional-global relationships rather than the more traditional urban-national ones.

With these trends, the focus of urban governance shifted away from welfare and the provision of services and towards support for economic growth (Jessop 1999; Short and Kim 1999). A large array of scholarship has since focused on the pro-growth model of urban governance (for reviews see Gottdeiner 1987; Kantor 1988; Swanstrom 1993; Vogel 1992).[5] In *Urban Fortunes*, one of the paradigmatic works critiquing the pro-growth model, Logan and Molotch (1987) argue that the urban commodification of land – the shift from use value to exchange value – was associated with coalitions of state and business elites attempting to succeed in the competitive inter-urban marketplace. Building off of *Urban Fortunes*, Cox (1995) examines what he calls New Urban Politics, in which cities engage in the growth machine in order to compete for mobile capital. The result is a desperate race to create a favorable business climate at the expense of most everything else, a common occurrence at the national level among developing countries seeking to draw foreign investment.[6]

I examine *Urban Fortunes* further below, for the moment pointing out that it also portended another important shift in urban governance associated with economic growth. Stoker (1998: 34) describes this shift with the following contrast: the "'traditional' image of urban government is as the direct provider of welfare and other services… [while] the image of 'modern' urban government is as an enabler, a catalytic agent facilitating provision and action by and through others." As Kearns and Paddison (2000: 854) put it, "something has changed and city governments are no longer able, or not as able as they thought they were previously, to direct events." The major focus in scholarship on urban governance shifted to assessing networks and linkages between the state and business and civil society groups, describing a more complementary role for the state relative to its historical centrality and focusing less on administrative institutions (Atkinson and Coleman 1992; Marsh and Rhodes 1992; Stoker and Mossberger 1994). The first of these networked analyses focused on economic growth and the linkages between state and market; more recently, they have expanded to include the kinds of welfare and public good provision historically associated with states, based on linkages with civil society groups and communities.

The urban governance literature provides insight into a key question, one that is at the heart of this dissertation: what can local government do to impact society? And particularly, under what circumstances, from the state and societal perspectives, can local government implement programs successfully to achieve its ends? The initial answer was institutional, focusing on state capacity and structures that allowed it to intervene fairly and effectively. Later, it grew to include state-society linkages. However, as Pierre (1999: 375) points out, public-private interactions strengthen governance capacity, but also

[5] Also, the managerial approach has since made a comeback due to fiscal shocks and the frequent failures of the pro-growth approach in actually producing growth (Pierre 1999). The return has been in the form of New Public Management, which merges older administrative structures with private sector oriented delivery systems (e.g. Pollitt 1990; Peters 1996; Rhodes 1996).

[6] Cox (1995: 218) provides an additional critique of the local pro-growth perspective, arguing that it is based on an assumption of mobile capital that is fundamentally flawed.

expose government "to the full thrust of political pressures from private business and civil society." As I discuss below, these pressures can significantly divert local government from at least part of its intended mandate. Stoker (1998: 49) asks in reference to this issue if it is "possible for elected officials to exercise some control over the partnership networks that constitute the emerging system of local governance?" In this dissertation, I ask the same kind of question, but my answer is focused on space, and therefore on *where* it is possible for the state to exercise some control, taking into account state-society linkages. This is fundamentally a local question, targeting specific urban space, local governance institutions, and local actors; Durban, as I describe in the case justification in the introduction and show throughout this dissertation, is an important and effective context in which to tackle it.

State Institutions and Governance

In the remainder of this chapter, I extend the developmental state literature to understand how the state can make change in the context of an established spatial hierarchy. I use the developmental state literature because it links the institutional focus of the older governance literature with the state-society relations focus of the newer governance literature, is focused on growth and development, and has increased in use at the local level. To the developmental state literature, I add a power perspective derived from both the governance literature and from Michael Mann's (1993; 1984) analysis of state power. Coupling power, state-society relations, and bureaucratic institutions provides an effective lens for analysis of the work of the state in urban society. This framework shows the impact of the state's resources and interventions, but *relationally* to other actors in society, illuminating winners and losers in the effort to impact society.

Assessing power through outcomes is notoriously problematic, in large part because power need not always be exercised, and therefore the lack of outcomes may indicate little effort rather than little power (Wrong 1968). Many analysts of power have responded to this by examining resources. At the same time, inferring power from resources is problematic as well. Resources are inherent to a single actor, whereas power is a relational concept, impacted by the resources and power of others, and by the arena in which actors compete (Bierstedt 1950; Simon 1953). The resources the state needs to intervene effectively – which, for Durban's efforts at spatial change I will argue include a Weberian, autonomous bureaucracy, financial resources, and the collective political will to act – allow the state to act, but these actions have different results in different parts of the city. Given that the state unleashes its resources across the city, determining the varying impact of those actions in different places in the city is a valid way of examining how the state's power varies with respect to different configurations of actors in different places.

In this extension of the developmental state approach, I will incorporate space and spatial structures, linking to an expanding body of research in which space plays a crucial role in determining societal configurations and outcomes (see for instance Hart 2002; Harvey 2000; Lefebvre 1991; Logan and Molotch 1987; Massey 1994). This power in space framework illuminates particular *places* in the city where the state's resources can be exercised to move certain communities beyond the spatial hierarchy, and why the state's resources are ineffective elsewhere.

The Developmental State and Urban Transformation

Arising out of state institutionalist perspectives (e.g. Evans 1979; 1985; Skocpol 1979) and the experience of the Asian Tigers, the early developmental state literature suggested that states had a major role to play in furthering economic growth, specifically with respect to late industrialization (e.g. Amsden 1989; Johnson 1982). In a shift from the laissez-faire post-Keynesianism of the 1980s, scholars of the developmental state argued that states that prioritized growth could develop policy and interact in the market to advantage local firms in an increasingly global world. Some of these frameworks required steep sacrifices by the state, including abandoning traditional roles in public good provision and social welfare for an exclusive focus on economic growth (Johnson 1995). The necessary conditions of the developmental state were three-fold: solid, autonomous Weberian state institutions and bureaucracy, a singular strategic focus on growth, and public-private cooperation in producing a favorable climate for indigenous manufacturers (Evans 1995). The developmental state literature shows that the growth coalition can be effective at producing growth (if little more) at the national level.

At the local level, similar kinds of arguments were being made. Peterson (1981) influentially suggested that cities must pursue pro-growth strategies over local Keynsian social welfare policies that would result in loss of competitive advantage and then stagnation. Logan and Molotch (1987) responded to this general shift in perspective on local political economic strategy by specifying the urban growth machine. The growth machine is produced by a coalition cutting across the public-private divide, composed of elected officials, business leaders, local media, and auxiliary members like universities and sports teams. This "growth coalition" claims that "intensive development benefits virtually all groups in a locality (Logan and Molotch 1987: 85)" in a local instantiation of the national developmental state's singular focus on growth. Logan and Molotch specify the growth machine as a way of critiquing it: both its commodification of land and property – the shift from use value to exchange value – and its disappointing record of actually producing local growth.[7] At least one of these critiques, the shift from use to exchange value, is a fundamentally local one, based on a detailed concept of urban place.

The literature on global and globalizing cities examines urban political economy, and the balance between state and market influences in determining urban development. As I describe above, globalization and related analyses of the power of transnational capital to some extent pushed analysis of the state and urban development to the margins in the late 1990s, in part because of the way transnational capital could dominate indigenous growth coalitions. While retaining focus on the city, this literature described capital logic overwhelming the options and impacts of the state, particularly the local state (Sassen 1990: 237). Even so, there was a role for the state in these analyses. As outlined by Lefebvre (1991) and Brenner (2004), it was infrastructural, in creating an *urban fabric*, or a smooth surface of urban development cutting across regions and state boundaries. Northern Europe was the archetype of this urban rescaling. Scott et al. (2001) makes a similar argument about global city-regions.

However, in a broader take on a similar point to Cox's (1995) critique of capital mobility, Krugman (1996: 18) argues that the concept of competition is misapplied to states and places, rather than firms, in part through a misunderstanding of the difference

[7] Logan and Swanstrom (1990: 4) respond directly Peterson (1981), "challenging the notion that there is a market logic of capitalism to which urban policy at all times must submit."

between competitive advantage and comparative advantage.[8] International trade is not a zero sum game, and different places have different comparative advantages. Place therefore matters.

When place and comparative advantage matter, then there is a role for the state in propping up indigenous industry. In support of this is the undeniable role of developmental state policies in producing growth in the Asian Tigers. Essential to understanding how this applies to Durban, and to urban transformation more generally, is the extent to which the state can have a role beyond the tightly limited pro-growth one, outside the confines of a model built around establishing international comparative advantage.

Evans and others looked to expand the role of the state beyond the confines of growth, and towards more locally focused analysis. A special issue of World Development in 1996 focused on state-society linkages beyond the strict confines of state-market coalitions for growth, and Evan's *Livable Cities* (2002) attempted to relate state-society linkages to broader social and economic development within the confines of cities, with components including quality of life and environmental sustainability. Evans (2002: 5) follows the lead of *Urban Fortunes* in suggesting that there is a real trade-off in livability in maximizing exchange value over use value, contrasting commercial and wealthy residential space with parks and green space.

Also clear, from *Urban Fortunes* to later literature on urban coalitions, is that the members of the coalition matter. Pierre (1999) shows that different models of urban governance produce different interactions with actors; policy outcomes in different urban regimes are influenced by degree of inclusion of other, non-state actors. In the planning literature, there is also recognition that input from civil society groups matters (e.g. Burby 2003), and that it can have both positive and negative effects on planning processes (e.g. Fainstein 1996). Evans (2002) suggests that different coalitions can produce very different outcomes; Logan and Molotch (1987: 209-215) describe instances in which elite interests and growth match with issues of sustainability, and on the other side of this coin Davis (1990) shows in Los Angeles the potential dangers of an unconstrained growth elite. The result of these arguments is that the state has a role in coalitions that can impact issues broader than simply growth, and that the ultimate shape of the coalition matters greatly.

The state synergy model builds on the early developmental state literature, bridging bureaucracy and economic growth with civil society, social capital, and social movements to suggest that the local state can play various roles relative to the market and civil society. These roles can energize growth and at the same time have the potential to affect basic class relations (Evans 1996; 2002).[9] For synergy across the public-private divide, the same two state characteristics of the developmental state apply: Weberian state institutions and bureaucracy that can effectively implement projects, together with an autonomous state – one that is not captured by individuals or power structures with their own strategic goals (Evans 2002). These characteristics link the state synergy model closely to newer models of urban governance I describe above.

[8] Krugman's argument is also a fundamental critique of the "race to the bottom" strategy.

[9] While the empirical foundations of the impact of the developmental state on economic growth are strong, the body of evidence for the role of the state in broader social and economic development is not nearly as well established.

A complementary component of the autonomous state, with regard to broader development, is that goal making is a collective process. In the old developmental state, civil society groups were superfluous, excluded from the framework and the coalition's "single-minded adherence to growth and competitiveness at the expense of other objectives (Oni 1991: 120)." Collective goal making for broader development is necessary for precisely this reason: the model must move outside of the strict confines of the developmental state's growth imperative, and therefore requires actors interested in more than just growth. Collective goals can be broader, more redistributive, and more associated with public goods than those of the pure growth model.[10]

The Weberian state itself is in certain ways sufficient for growth (Evans and Rauch 1999); when growth strategies plus state-market linkages are added, late economic development is possible. When Weberian state institutions, autonomous and collective goals, and state-society synergy are combined, the results can produce an "ecology of agents" (Evans 2002: 222), including representatives of the state, market, and civil society, which may be conducive to broader development; no longer growth coalitions, but now perhaps *development* coalitions. The new state synergy literature therefore presents a model of social transformation, one that proffers an essential role for the state but equally essentially partnership with other societal actors. The key question, though, is what this model can illuminate with respect to Durban's local state and its efforts to change the city's spatial hierarchy.

The Synergistic State and Durban

"Understanding the capabilities of local government organizations is essential for an understanding of urban governance (Pierre 1999: 375)." The ANC came to power with a mandate to transform the apartheid city and a focus on local government as the agent of state intervention (DCD 1998; ANC 1994; RSA 1995); I describe this focus on decentralized governance for spatial transformation in detail in chapter seven. The primacy of local government was based on its high capacity for planning and implementation. Durban has the institutional bureaucratic structures to engage in developmental state interventions. Historically, it has a long, if perverse, experience in using bureaucratic state structures to successfully implement planning schemes, in the form of the highly structured space of the apartheid city. This bureaucratic capacity remained through transition, now shifted to focus on more inclusive ends (Parnell and Mabin 1995), such that the state's local institutional structures to implement planning schemes, in Johannesburg and Cape Town as well as Durban, were unparalleled in the developing world (Cameron 2000; Freund 2001: 14). Durban built over 50 thousand public housing units, and constructed roads, electricity, and water infrastructure on a similar scale, investment I describe in detail in chapter seven. With respect to infrastructure and planning, then, Durban had the capacity of a local developmental state.

Durban's government is autonomous in so far as in certain sectors it implements collective goals, rather than having goals co-opted by individual office holders, either political or bureaucratic (Evans 1995: 48; Migdal 1988). Collective goal making, born from the anti-apartheid movement and post-transition efforts to remake the unequal structures of society, has resulted in a political imperative for transformation. At the

[10] The need for collective goal-making also establishes conceptual links to democracy, rather than the more frequent bureaucratic authoritarianism of the early developmental states.

national level, this political imperative has produced Black Economic Empowerment initiatives, large scale affirmative action, and stated goals to reduce spatial disparities and segregation (ANC 2000; Friedman 1992; Parnell and Mabin 1995; Swilling and Boya 1997).

The political imperative for transformation has also produced at the local level in Durban a remarkable bureaucracy, one that is not just Weberian, or rational, technocratic, meritocratic, and hierarchical. The civil leadership in the Durban city government and many planners, engineers, and managers were involved in the anti-apartheid movement, sometimes as part of the ANC (which can create its own problems, some of which I describe below). In interview after interview, city officials described their personal histories of anti-apartheid activism, and their current commitment to remaking the city's apartheid form. In a sense, then, these are transformative bureaucrats, committed not just to the routinized maintenance of effective city functions but to using those functions for the collective goal of transformation.

The combination of an autonomous state and the focus on local government as the agent of urban intervention produces an important opportunity. While state goals are collective, planning and implementation is locally contextualized, rather than uniform. Evans (1996: 1126) and Tendler (1997) argue that uniform interventions are fundamentally anti-synergistic, because they cannot be based on local knowledge, local networks, or contextually specific planning. Decentralization produces opportunities for more effective state action. All told, Durban's autonomous, locally empowered, resourced and transformative bureaucracy is primed from an institutional perspective for state-society synergy for development. The trouble is, in actual synergy Durban falls short.

State-Society Linkages in Durban

Evans (1995) argues that while the developmental state relies on mutual reinforcement between state and society, certain kinds of state-society linkages undermine transformation. State-market linkages can be particularly risky. Urban growth coalitions are one type of state-society linkage that undermines transformation (Logan and Molotch 1987).

Durban's economic policy and implementation is strongly characterized by the growth machine (Freund 2002: 28). The results of growth coalitions in Durban have included massive mall developments in white legacy areas to the north and west of the urban core, gated communities in the west, and high end tourist and business oriented development in the central city, all serviced by state-built infrastructure.[11] In concert with business leaders, Durban recently opened a casino, a marine world theme park[12], and a convention center in or near the city center.

These kinds of commercial development are not conducive to impacting the spatial hierarchy, and may even limit transformative intervention by drawing otherwise needed resources; an official with Durban electricity described this process, which I detail in chapter seven. These developments also may not even produce growth, given the

[11] Freund (2002: 32) makes the interesting point that the grown machine policies have moved the city away from the industrial and manufacturing sector, Durban's historic (if declining) strength.

[12] Gieryn (2000: 469) quotes Davis (1997:2) referring to a similar theme park, Sea World in the United States, as "a mall with fish."

extent to which cities fight to compete in the global convention and tourism circuits (Logan and Molotch 1987). Maharaj and Ramballi (1998) argue that Durban's investments, oriented towards high end tourism and convention business, have been wasted given the city's traditionally working class tourists. This kind of construction would be the result of what Krugman (1996) calls hunting for competitive advantage instead of comparative advantage. In addition, these developments absorbed large parts of the state's bulk infrastructural investments in core and in suburban edge cities to the north and the west (Maharaj and Ramballi 1998), where many businesses and white residents moved after transition.

One traditional source of state-market linkages that produces some potential for broader development comes when the state requires developers to build low income housing in exchange for zoning adjustments or large scale high end construction. The extent of inequality in Durban, however, means that even low income housing is far outside of the price range of at least three quarters of the African population. In the few instances in which the state has been able to push developers to construct such housing, it tends to target the African middle class, rather than the poor, a common outcome Seekings and Nattrass (2005) cite in regard to the national state's economic policies. Relatedly, as I describe in chapter seven, public housing construction in the core is not an option for the state, given "not-in-my-back-yard" objections from capital and from white and Indian residents; this is a common example of state-market linkages overwhelming state transformative goals.

State-market linkages must be complemented with state-civil society linkages to produce broader development. In Durban, the state is interested in intervening in townships, yet is not embedded with civics, NGOs, and other community groups. South Africa had a strong civil society that organized to help end apartheid, and it still is highly mobilized in some sectors in Durban: in the core, through for instance middle class HIV/AIDS movements, and in the periphery particularly around demanding local service provision and other relatively narrow redistributive interventions from the state (Habib 2007).[13] Some movements have high levels of social capital, which are essential to interacting with the state effectively (Evans 1996: 190-91): the movements I describe in chapter three and eight in the African community of Saint Wendolins are a good local example that produced a unique and positive outcome in Durban. However, "'social capital' is no guarantee of pro-poor urban governance" (Beall 2000: 357). Actualization of social capital to push the state requires linkages.

The ANC effectively cut ties to civil society groups after transition, either absorbing leaders into the party or marginalizing them and their organizations (Heller 2001). The result is a state that, despite many of the institutional trappings of participation (ANC 1994), operates in a top down and technocratic fashion, having cut itself off from major civil society voices (Heller 2001; Williams 2007). What little direct influence African residents in urban townships have is through local councilors, who are oriented towards delivering services and infrastructure for votes. Civil society groups have links to residents, but not to councilors or political structures. This is a particular contrast to the anti-apartheid movement, which relied on linkages with academics and non-governmental organizations; the Saint Wendolins movement was the same. Because of this post-transition shift, state civil society interactions have become contestational,

[13] The shift inward is a common feature of mobilization in poor communities (Nelson 1979).

rather than cooperative. Fox (1996) suggests that contestation need not be a barrier to synergy; however, it must be combined with engagement, which the South African state, nationally or locally in Durban, does not do well.

State-civil society interactions, particularly with movements and organizations associated with the poor, are instead primarily characterized by the push for the state to deliver services and infrastructure to close the gap between the townships and the economic core.[14] This has resulted in what Turok and Watson (2001: 119) call "the pressure for short-term delivery [that threatens] to overshadow the need to reshape and integrate cities." This "demand overload" (Huntington 1975; Sartori 1976) has been associated both in Durban and nationally with the conjunction of internally focused demands from residents and civil society groups, together with the lack of real state engagement with township groups and residents. A central question I examine in chapter seven is what kind of state intervention this has produced in Durban, and with what effects for residents.

Absent Synergy?

What happens when a state with collectively produced transformative will, effective and autonomous state institutions, and substantial economic resources – the stateside ingredients of the developmental state – but absent effective state-society synergy, engages in a transformational project across the terrain of a city? This is the central question in applying developmental state concepts to Durban. The state synergy literature would suggest that the lack of synergy with civil society, together with the borderline rentier nature of state-market growth machine linkages, severely precludes state led transformation. The governance literature, sharing the same institutional and network oriented concepts, would concur. As I suggest above, this is an outcome commonly described in the literature on post-apartheid South Africa: inequality is increasing while poverty and apartheid city structures are being maintained. Particularly with regard to public housing provision, the conventional wisdom among South African policy makers and planners and their local Durban counterparts has been that it mostly reinforces apartheid city divisions (e.g. Huchzermeyer 2005). There is substantial validity to these arguments.

However, the state has used public housing to create bridging communities that narrow the gaps in the spatial hierarchy, as I demonstrate in later chapters. The question then becomes, given the resources the state can marshal towards spatial change, under what circumstances can the state do what it wants to do? This question, and indeed the way in which local government in Durban fits into components of the Evans framework, turn attention to a major issue underlying both the state synergy and urban governance literatures: power.

These literatures ask questions that are fundamentally tied to power. Is the state open to influence from civil society? Can the state have public-private linkages to the market without succumbing to co-optation? Pierre (1999: 375) states that who dominates

[14] The key exception here is Cato Manor, described briefly in chapter three and in detail in chapter eight. The state has to some extent been able to work with community groups, driven by a hard push from European Union funders to do so. Even so, Cato Manor has run into problems associated with informal settlements, top down decision making through the Cato Manor Development Association, and problems with built infrastructure.

urban governance will go a long way towards determining outcomes. Evans (1996: 1120) suggests that there is a fine line between a state embedded in the market and one overwhelmed by it. That line is high stakes, since the framework suggests that crossing it blocks effective growth and developmental processes. The state's interactions with other actors in society can be participatory, but are defined in large part based on relative power. In the next section, I develop a power framework that complements the developmental state and urban governance literatures and, in conjunction with the spatial hierarchy, provides a framework for understanding where the state *can* affect change.

From Resources to Power

Power includes intentionality, action, and effect: for the state to have power, it must implement what it wants to do, and have the results be basically in line with what it intended. This is a high bar to set in regard to urban transformation in South African for two reasons. First, this is as large and durable a system of socio-spatial inequality as has ever existed, meaning large scale transformation, particularly in the short term, is highly unlikely. Second, politicians' and bureaucrats' "power to change the fundamental rules and overturn the distribution of power within civil society is feeble – without the backing of a formidable social movement" (Mann 1984:190). Still, the collective goal of social transformation in South Africa stems from the anti-apartheid movement, which was indeed formidable, and the state has many resources to bring to bear on the problem. My particular focus on state power will therefore be the ability to change fundamental rules, specifically regarding the extent to which communities are locked into Durban's spatial hierarchy. Others have taken on this definition as well, if not from a spatial perspective: Migdal (1988) argues that a strong state is one that can induce economic and social transformation.[15]

State power must be defined relative to and recursively with other power sources in society – namely, market and civil society actors. Mann (1984; 1993) recognizes the power of other societal actors, as part of a historical dialectic that shares Evans' more sharply defined focus on the need for configurational analysis. This dialectic happens within *arenas*, where multiple agents interact to use power strategically. Fundamental to the study of power is identifying the arena of contestation, in which actors' power is defined by the resources they have relevant to the arena (see Bierstedt 1950 and Simon 1953 for extensive discussions of power, resources, and arenas).

The agents and relevant resources across the extent of Durban vary substantially, in predictably spatial ways. Treating the full extent of Durban as the arena of the interplay of state, market, and civil society hides this important spatial variation.[16] Focusing solely on state-society linkages can reinforce this problem, as social network linkages are not fundamentally spatial.[17] In power analysis, the need to specify arenas links the framework explicitly to Durban's spatial hierarchy by recognizing that different

[15] These arguments also suggest that states in capitalist societies are fundamentally weak, at least relative to the market.

[16] I make this same point with regard to urban statistical analysis in chapter five.

[17] Conceiving of networks spatially is highly important in Durban, despite some shifts in the literature on networks that suggest space no longer matters (e.g. Wellman 2001), because any modeling of the apartheid city that does *not* contain space is fundamentally mis-specified. Space plays too clear and important a role.

arenas of the city – stratified, ethnicized, and racialized areas – are defined by different actors marshalling different resources.

As I argue above, in the core, market actors often dominate. Business elites are frequently able to push the state into growth coalitions favoring higher end development. The examples I cite of state infrastructure building to support Durban's convention center, marine theme park, casino, massive mall developments, and gated communities are strong evidence of the growth machine in action. In African legacy areas, given its lack of engagement with important organizations and movements, the state has in large part been overwhelmed by the imperative to deliver services. State power is also limited in these areas by the intractability of developmental problems, and by the risk that building in the periphery may reinforce existing apartheid spatial structures.[18]

There are three key benefits of incorporating power with institutions and synergy. First, it builds on two necessary conditions of the state synergy framework – Weberian state institutional structures and the resources to intervene (Mann 1983) – such that when the state has these it has greater power. Second, the model turns attention to space. In Durban, where space is an essential determinant, understanding the state's power requires understanding power configurations within arenas determined by the spatial hierarchy.

Third, the power-incorporated model can explain places that have experienced, or have the potential to experience, a change in status with respect to Durban's spatial hierarchy. The potential of this model comes both from the configurational approach – examining relative state, market, and civil society power – and from focusing on space. Rather than looking for particular types of state-society linkages, which because of the nature of power relations in various arenas have not emerged, it becomes necessary to look for *places* where the state has power, relative to both market and civil society actors. If there are places where it has such power, the local state may be able to do what it wants to do.[19] Marcuse and van Kempen (2000: 257-260) refer somewhat similarly to "soft locations", or places malleable to change (though they consider change to be driven by globalization and changing occupational structures, not the state). Above, I defined the two necessary conditions for these emergent communities in line with Evans's livability – access to economic opportunity, and residential openness to poor Africans – and added a third, some degree of residential racial integration. The key analytical question that will drive this dissertation therefore becomes, *where* across the spatial hierarchy of Durban does the state have the power to generate these kinds of communities?

Research Questions

A series of research questions guide the analysis of this dissertation. These research questions are based both on the driving ideas of this dissertation described in the introduction, and the theory and concepts introduced this chapter.

1) Durban's Apartheid Development

[18] Yashar (2005) argues that one indication of low state power is the occurrence of unintended consequences of state action; the spatial lock-in caused by state built infrastructure is a very prevalent unintended consequence in South Africa, despite local planners' awareness of the problem, a point I come back to frequently in this dissertation.

[19] This concept of state power underscores the necessity of collective goals and an autonomous, effective bureaucracy. State power without these checks could easily be co-opted by individual power and individual goals within the state.

a. What were the spatial structures of race, class, and access in Durban in 1996, immediately following the democratic transition?
b. What were the historical roots of these structures?

Durban's spatial development and its spatial arrangement in 1996, the first census after the end of apartheid, provide the baseline for this dissertation. Understanding Durban's spatial development and the political economic mechanisms that drove it allow me to differentiate between the production and maintenance of the city's spatial structures. An historical perspective illuminates how Durban's white, Indian, and African populations settled and developed in the city relative to its political economy and space, setting the stage for inequality and racial hierarchy both under and emerging from apartheid. Finally, careful analysis of 1996 census data provides a quantitative baseline for studying change to the city after apartheid. Chapter three addresses this research question.

2) Post-Apartheid Spatial Change and Stasis
a. Between 1996 and 2001, where did community change occur, where did it not occur, and under what conditions were places more or less prone to racial and economic change?

The next essential analytical step is examining residential change between 1996 and 2001. I exhaustively examine changing residential composition at the community level during this time frame, focusing primarily on race but also incorporating income and occupational data to assess changing class composition. In answering this question, I describe Durban's post-apartheid spatial hierarchy. Examining Durban's communities over time, I infer that observed change and stasis reflect underlying mechanisms associated with the concepts I describe above – spatial assimilation, place stratification, enclavization, and racialization. Their distribution and interaction over space are my primary focus. I address this research question in chapter six.

3) The State
a. What were the attributes of the state that helped it to plan and implement infrastructure and service expansion?
b. What did the local state do between 1996 and 2001 to impact communities in Durban?
c. What did the local state do to impact Durban's spatial hierarchy?

In the five years that constitute the focal period of this dissertation, the municipal government of Durban rolled out substantial infrastructure and service expansion programs as part of a concerted effort to transform the spatial structures it inherited from apartheid. This dissertation is focused on the state's capacity and power to intervene in society. Understanding the attributes of the state that facilitated its intervention together with what the state actually did and where it did it are essential analytical steps in assessing the state's ability to impact spatial structures.

I will examine state investment through the lens of the spatial hierarchy, examining how infrastructure and service delivery impact quality of life within the existing spatial hierarchy, and the conditions under which state investment undermines or

reinforces that hierarchy. It is therefore essential to understand both *what* and *where* the state is building. I address components of this research question in chapter three, and the majority of it in chapter seven.

4) Bridging Communities
a. Has Durban's local state been able to overcome the spatial hierarchy in producing bridging communities?
b. Under what circumstances has the state been overwhelmed by or worked in concert with factors reinforcing the spatial hierarchy?

Linking state investment and the changing racial and class composition of Durban's communities is the heart of this dissertation. I triangulate qualitative and quantitative analyses examining state investment and the changing racial residential composition of neighborhoods to answer this question. My results in large part complement and extend the existing literature on the apartheid city in carefully specifying the barriers to spatial transformation preventing the state, despite determined action, from having an impact. At the same time, I show that in certain places the state has been able to drive transformation of Durban's spatial structures. Based on theories and concepts emerging from my literature reviews and my empirical work, I generate a place-based relation model of local state action and impact.

My approach to examining the influence of the state involves inferences about trends absent state involvement as well as the actual causal impact of the state's efforts. In describing the spatial hierarchy, I make an effort to understand the forces the state is fighting against in attempting to create change – in essence, the multitude of forces working to maintain spatial and economic inequality in Durban, to which at times and in places the state contributes. These forces are both specific to spatial path dependencies and the legacies of apartheid, and more general, associated with Durban's political economy during and after apartheid. I address this research question throughout the dissertation, and focus intently on it in chapter eight.

Chapter 3
Durban's Racialized Development

Racialization in South Africa has its roots in European settlement and colonization, developed in part through the violent conflict between Dutch settlers (eventually Afrikaaners) and British colonizers over natural resources such as gold and diamonds as well as political control. Marx (1998) attributes the development of apartheid's three-level racial hierarchy, composed of Africans, whites, and intermediate groups including "Coloureds" and Indians, to the negotiated settlement of this intra-white, elite conflict. Early efforts at shaping South African society according to this racialized system, though, paled in comparison to the advent of "high apartheid," or the institutionalization and planning of total segregation (Maylam and Edwards, 1996). High apartheid formally began in 1950, two years after the National Party was ushered into power. Between 1950 and 1953, major apartheid legislation was passed, including the Population Registration Act, the Group Areas and Prevention of Illegal Squatting Act, the Separate Representation of Voters Act, the Bantu Authorities Act, and the Bantu Education Act (Beinart 2001).

Over the next decades, the apartheid state consolidated and implemented its race based policies while the ANC and its partners lead a wide spread mass opposition movement. In the first 20 years of high apartheid, it is estimated that over three and a half million people were forcibly removed to institute racially planned geography (Platzky and Walker 1985:10). The use of space as a means of creating and consolidating racial exclusion expanded through the 1950s and 1960s, as urban spaces were structured around the racial hierarchy and as the white-led economy grew in leaps and bounds. Apartheid was successful enough to achieve near perfect separation between whites – with their first world economy – and the large majority constituting the rest of South Africa's population.

There is a vast literature on the apartheid state and efforts to overthrow it, from within the system, within the country, and internationally. Ultimately, in the 1980s, because of pressure from all directions as well as a substantial economic downturn, the system began to fall apart. In 1986, the state rescinded the pass laws, even as cities were experiencing a massive influx of internal migrants. In 1990, Nelson Mandela was released from prison in conjunction with the un-banning of the ANC. Exiles returned, and within the next year the legal apparatus of apartheid had been dismantled. In 1994, the first fully democratic elections were held, and the ANC was voted into power with strong support. In KwaZulu Natal, the violent conflict between the ANC and the Inkatha Freedom Party (IFP) that had characterized the four years before the election began to calm, though not before causing widespread displacement, particularly among informal settlement residents who were most vulnerable to conflict (Beinart 2001: 277; Annecke 2002: 260).

The ANC inherited the legacies of apartheid. Cities were at the same time the starkest representations of the consequences of apartheid and the developmental hopes of massive numbers of rural-urban migrants. As I argue in the introduction, the ANC set out to close the service and infrastructure gap in the cities, both to improve quality of life for poor Africans and to equalize the lived experiences of different race groups. The ANC empowered local government in Durban, as in other cities, to undertake this

transformative project. Still, the extent of problems in Durban was massive: the legacies of apartheid were powerful, built on a century of uneven development.

Durban's Historical Development

Durban was settled slowly as a trading center between the Zulu Kingdom and the British, who made use of the large natural port (Freund, 2001: 529). It was formally established by the British in 1835, continuing its role as a trading outpost and shipping center for the emerging sugar and food processing industry, and later as a shipping and supplying center for the gold industry on the Witwatersrand (Freund 2002: 12). Early residents were primarily traders, but as the economy of the city shifted to manufacturing in the late 1800s and early 1900s, Zulu migrants, as well as a large number migrants from India, came for work in the sugar fields and eventually the Natal railroad system. Indian migrants came first as indentured servants, then ultimately more voluntarily. These were the early roots of Durban's Indian population, which to this day is the largest of any city outside of India. The settlement and economic and social development of Indians in Durban greatly impacted the city, affecting its early political economy and the shape of racialization both before and during the apartheid regime.

The Roots of Indian Exclusion

The first Indians arrived in Durban in the 1860s, brought by the British as indentured servants to work in the sugar cane fields. Soon after, wealthier Indians arrived voluntarily and began operating credit and trading businesses, primarily targeting customers within the Indian community (Mangat 1969). By the end of the 19th century a substantial number of Indians were able to break out of these restrictions and operate throughout Durban's economy (Padayachee and Morrell 1991). Some Indian's were in fact able to generate substantial wealth, establishing the roots of Indian economic development in Durban over the next century.

Still, as Indian economic prospects improved, their political fortunes declined. By the early 1900s, racial pressures were increasingly limiting the residential options of Indians, particularly in places where whites had staked a claim (Freund 2001: 530). The Indian population settled primarily at the edges of Durban, where they could develop small agricultural plots and still be a part of Durban's labor force. However, as they grew in size and economic strength, they began to challenge white political and economic control.

While Marx's (1998) argument about intra-white conflict has strong validity at the national level, the early roots of segregation and racialization in Durban stemmed instead from Indian-white conflict over land and resources at the turn of century, particularly as whites developed state structures to enforce land rights (Davies and Rajah 1968: 48; Swanson 1983: 403; Kuper et al. 1958: 14). Swanson (1983: 403-405) suggests that the more concerted resistance to newer legal regimes for property by the Indian population led to white adoption of both anti-Indian and anti-African pre-apartheid race based policies. Early ethnic conflict in Durban was driven in part by class based mechanisms, in so far as the Indian population was the more economically connected, mobilized, and therefore threatening to whites. The roots of apartheid policies are easy to see in early efforts at residential segregation, political exclusion, and commercial

suppression in the Indian community, each of which had emerged by the turn of the century.

The Roots of African Exclusion

Legal and administrative structures for the exclusion of Africans co-occurred with those of Indians, growing in extent and severity through the first half of the 20th century. However, they did so for different historical reasons that furthered the economic gap between Africans and Indians.

In the 1870s, most Africans in Durban were day laborers working in and around the port. The labor market was relatively free, and as day laborers in a time of labor shortages, Africans could command decent wages. Complaints from white business owners about the relative power of Africans in negotiating wages resulted in a set of laws formalizing the port day laborer system – instituting registration and fees – and setting a "minimum salary", which of course became the maximum salary. These laws, which had limited impact, were the precursor of the pass laws that would emerge some 30 years later (Swanson 1976: 165).

In contrast to the peripherality of Indian residence, the early African population of Durban tended to live in an extensive network of hostels, frequently located near the port for quick access to work. Durban had the most hostels of any city in South Africa, housing an African population that was very strongly weighted towards younger working men. Ratios of African men to women were as high as 7:1 in the 1920s in Durban, and were still over 2:1 in 1951 (Freund, 2001: 529 citing Maylam 1996). These hostels, and the low-skilled occupational structure they were linked to, in turn limited African development of residential communities, precluding the kind of economic progress Indians were able to achieve.

Over time, the large population of single male African workers living in hostels became increasingly difficult to control in setting wages and work hours, and also given growing crime. Surveillance was ratcheted up, but became prohibitively expensive. Efforts to pay for the surveillance of African migrants and laborers working in Durban's growing manufacturing sector resulted in the innovation of what became known across the country as the "Durban System." Under the Durban System, revenue from the state run sale of beer to Africans paid for administrative systems to register, house, and surveil African workers, including a system of passes that lead directly to the national effort. The Durban System was successful at both raising revenue and controlling the labor force, and was replicated widely in South African cities in the first half of the 20th century (Crush and Ambler 1992; Swanson 1976).

After the turn of the century, the primary markets for Africans and Indians already showed the developmental gaps between the two groups. Warwick Junction for Africans was composed of a series of informal carts and stalls, while Grey Street, the Indian retail center, was populated by formal shops (Nesvag 2002: 284). The roots of a three tiered racial hierarchy, with Africans at the bottom, whites at the top, and Indians in between, were set early.

Moving to Formal Apartheid

These early efforts at racial exclusion meant that by the time the National Party came to power in 1948 Durban's planners were already well into the process of racial

zoning in the city (Freund 2001: 531). In place already were the three tiered economic system separating whites, Indians, and Africans, along with decades of historical experimentation with separating the three race groups. Durban's local government was primed to undertake the local the planning and implementation of its own spatial apartheid structure, fully ready to cater national apartheid directives to the local political economy (Maharaj 1992). Apartheid fit smoothly into the existing structures. Following the 1950 Group Areas Act, the Durban City Council, composed entirely of whites, appointed a sub-committee to formally zone the city by race. Shortly after it happened, Kuper at al (1958: 14) described this process in stark detail:

> …this Sub-Committee took as its guiding axiom the proposition that contact between races in residential areas leads to conflict. It even regarded as 'most objectionable' the large-scale movement of pedestrians of one race through the area of another. It decided to make use of natural boundaries such as 'rivers, steep valleys, cliffs and hill-tops' to effect as complete a racial separation as possible.

The next two decades saw massive forced removals, as the state implemented zoning policies, grabbed prime land for the white populace, and pushed Indians and Africans into what would become the hearts of their respective populations under apartheid: Chatsworth and Phoenix for Indians, and for Africans the new urban townships of KwaMashu to the north and Umlazi to the south. Cato Manor, with land owned by Indians and leased by a large number of Africans, was expropriated and completely cleared through forced removals. It would remain empty until Africans moved in through informal settlement and the Cato Manor Development Project over 40 years later (Odendaal 2007: 939).

In place of former Indian residences, white working and middle class neighborhoods settled, including some areas of the Berea and communities along the rail line just north of Chatsworth, in what would become the Old Line Suburbs. What were once Indian neighborhoods at the edge of the city became white, extending the white core of Durban from the historical city center to a larger, less fully urban distribution. Some of these areas saw the quickest post apartheid change, as I describe in chapter six.

Some African hostels did remain, maintaining proximity to the ports for the African labor force. In addition, the new urban African townships retained some linkages to the industry and manufacturing in Durban as a means of providing a continued labor pool (Freund 2001: 531).

Durban's African and Indian residents were hardly passive recipients of the state's efforts to force apartheid laws. In the 1930s, Durban was at the center of the pass burning movement, where Ghandi made his first foray into civil rights; the movement saw successes only really in Durban (Hemson 1996: 154). Later, the intersection of industrial workers, dock workers, and strong organizing in an increasingly manufacturing oriented city meant a powerful labor movement emerged in Durban, one that fiercely resisted the heavy hand of the state. In the 1970s the unions all but shut down Pine Town, in a series of worker strikes that ultimately crippled the transport industry for some time (Hemson 1996). These strikes were the catalyst of the final thrust of the anti-apartheid movement.

Despite the strikes, manufacturing was the primary focus of Durban's economy, with a massively expanding port and shipping industry. Toyota and BMW both made Durban centers of car assembly (Freund 2002: 17), the South Industrial Basin expanded substantially, and Pine Town to the west became the shipping center, routing goods going to and from the port. By the early 1980s there were upwards of 200 thousand industrial workers in the city (Freund 2001: 530). Durban also expanded its tourist industry in the second half of the century, particularly on the South Coast and the Durban beachfront, where middle and working class South African whites would go to spend time on the beaches (Maharaj and Ramballi 1998).

While the economic core of Durban was developing, the second half of the 20th century also saw the emergence of a large number of informal settlements (Marx and Charlton 2003: 6). Housing specialists in Durban's municipality reported that Inanda, to the northwest of KwaMashu, was a particular draw for informal settlements, given the possibilities of land titles for Africans there. Inanda also provided relative protection from the apartheid state, and there were very few white claims to private property, meaning few threats from private white residents as well.

In Durban, informal settlements and "land invasions" by Africans with no formal housing options were pushed far from the city's core. By the end of apartheid, 35 percent of informal settlements in Durban were "backyard dwellings" in formal areas, many of which were in townships, 55 percent were on the outer edge of African townships, and the final 10 percent were even farther away, with barely any connection even to African urban areas (Marx and Charlton 2003, citing Smit 1997). The pattern of informal settlement in Durban was hyper-peripheralization, beyond even townships, with the exception of some settlements in the Indian areas of Phoenix and Chatsworth. As I will discuss in chapter seven, the hyper-peripheralization of informal settlements had severe consequences for the program of upgrading of informal dwellings (called *insitu* upgrades in South Africa) undertaken by the post-apartheid state, given how far these settlements tended to be from transportation networks and economic opportunity.

Rural-urban migration and in-migration from countries of Southern Africa, including Mozambique and Zimbabwe, exploded as the pass laws and eventually the entire apartheid structure fell. From 1985 to 1996, the city saw a massive increase in its African population, and at the same time the beginning of the flight of whites that would accelerate substantially in the post-apartheid period. Table 3.1 shows population statistics for Africans, Indians, and whites in Durban in 1985 and 1996.

Table 3.1. Population by race group, 1985 and 1996 censuses.

	1985		1996		
Group	Population	%	Population	%	Change
African	1,357,395	57.9%	1,738,988	63.7%	+28.1%
Indian	585,441	25.0%	599,296	22.0%	+2.4%
White	335,709	14.3%	316,281	11.6%	-5.8%
Total	2,343,506		2,727,988		+16.4%

Apartheid Zoning

As part of high apartheid, cities in South Africa were planned to establish and retain pervasive and systematic barriers between races, as well as to locate the race-based

communities hierarchically relative to economic opportunity, roads and transportation, and other publicly provided services. The design emerged through planning efforts during the first period of high apartheid, driven in large part by the policies and practices of the Department of Native Affairs (DNA). Evans (1997: 8) describes the DNA guiding principles, focusing on:

> *planned urban location*, an institution closely linked to two other innovations in the 1950s: the racialization of space and the incorporation of "modern methods of town planning" into urban administration. Prominent in every urban center and fundamental to the policing strategies of the apartheid state, the planned urban location embodied the department's perception that spatial configurations were just as effective as – and considerably less costly than – the physical presence of the police in regulating the behavior of Africans in the urban areas. The planned urban locations, in other words, sought to modernize and routinized the compliance of Africans…

This was a Foucauldian understanding of the presence of the state and the most efficient methods of surveillance. Reminiscent of the Panopticon, the key features of apartheid urban planning were concentric circles of race distributed around a single economic core. Whites were centrally locally near economic center, services, and other benefits of city life. Coloureds and Indians were distributed around the whites, more distant from the core.

Next would come buffer zones, in which farmland, empty space, and natural topographical breaks would create gaps in residential settlement to divide race groups (Kuper et al 1958; Evans 1997). Contained within "Guidelines for the Planning of Native Urban Areas" (NTS 4271 6 120/313), Evans (1997: 130) finds that:

> to facilitate the control of African residential areas, a 1954 regulation required all local authorities to encircle locations with "buffer strips… irrespective of the topography of the land… a) a buffer strip of 500 yards between the built-up area of the location and any town or residential area of any racial group other than the Native group; b) a buffer of 200 yards between the built-up area of the location and all other boundaries – except where a National road forms the boundary in which case a buffer strip of 500 yards wide is required or in the case of a Provincial main road, 300 yards. Along all other roads a buffer strip of 200 yards wide is required."

In practice, buffer zones were often much larger, and effectively served their purpose of preventing contact between residential zones. After transition, these buffer zones, which remained empty during apartheid, would provide an important opportunity for development.

Finally, the African population would be located in townships and informal settlements as far as 15 to 20 miles away from the central city area. These areas were intended to be minimally self-sufficient, providing a source of inexpensive labor for mining and industry while maintaining enough geographic separation to isolate Africans from the substantial economic development in city centers. Townships were directly intended to house the African labor force cheaply and in such a way that they could be

easily surveilled. On the far side of townships, regulations ensured that "future growth of locations would not diminish the spatial chasm [by] requiring planners to reserve a hinterland radiating away from the non-Bantu areas for this purpose (Evans 1997: 128)." Townships were intended to be temporary and to link most easily to rural Bantustans, rather than the urban core; township guidelines involved a single road in and out to the core (Kuper et al. 1958).

Apartheid Zoning in Durban

In 1950, just months after the National Party passed the Group Areas Act, the Durban Council convened a Technical Sub-Committee to undertake the racial zoning of the city, driven by the need to "avoid racial conflict" described above (Kuper et al. 1958: 34). Map 3.1 displays apartheid zoning in Durban, which began formally with the Group Areas Act and expanded along with the city's boundaries. Durban's apartheid-based spatial organization was structured around the intersection of two highways: the N3 to Johannesburg, which runs perpendicular to the coast into the heart of South Africa, and the N2, which follows the coastline. These two highways, together with other major roadways, form the shape of a "T", with the intersection at "spaghetti junction" just west of central Durban.

Durban's concentric structure was built around this T, a half circle limited by the coastline. The inner core was white, both commercial and residential, followed by Indian or Coloured areas, then the buffer zones, composed of farmland, empty space, and the hilly, variegated terrain for which Durban, in the "valley of a thousand hills," is famous. African areas, both urban and rural, were the final ring, most distantly located. Durban's apartheid planners and implementers engaged in forced removals to create the structure (Freund 2001). The downtown area, including the Central Business District (CBD), was historically white, with only a few de facto exceptions. One was Warwick Junction, one of the few commercial areas in the central city dominated by the informal economy, providing sites for an estimated 7,500 micro-enterprises in 1996, of a type that provided minimal but essential income to the almost entirely African participants (Hemson 2003).

White urban suburbs ringed the downtown, including the exclusive Berea communities on the inner slope of the first set of hills. On the far side of the slope were the first of the Indian communities, and Indian residence was particularly dense near the corners of the T: Chatsworth to the south, and Reservoir Hills and Phoenix to the north. White residence continued along the highways to the north, south, and west, with suburban communities including Umhlanga to the north. Beyond of the Indian areas were the clearest of the buffer zones, which included farmland owned by the agro-business Tongaat-Hewlett and also some of the steepest terrain in Durban. Finally, African townships were the urban areas most distant from the core: Umlazi to the south, KwaMashu, Ntuzuma, Inanda, KwaDabeka, Clermont, and others to the north. These African townships were as far as 15 miles away from city center, with little access to transportation other than single routes that did not penetrate beyond the outskirts.

Rural zoning by race group was an important part of Durban's apartheid city structure as well. Rural areas, along with the major townships, were part of the KwaZulu Natal traditional authority, the so-called *Bantustans*, and they were very far from the highway systems, completely cut off from the city, and geographically linked to urban townships in an effective implementation of national apartheid policy I describe above.

There were very few Indian rural areas, and those that existed were part of the buffer system, separating Indians from African areas. White rural areas were located on or just off the two highways, particularly to the north and west, where sugar cane and various types of commercial arboreal farming were closely linked to transportation networks.

Durban in 1996, Emerging from Apartheid

Durban emerged with the rest of the country from under the rule of apartheid in the early 1990s, with the negotiated transition, the national election in 1994, and eventually the local elections in 1996. I describe changing economic and political structures in Durban in chapters six and seven. Here, I focus on its spatial structures emerging from apartheid.

Formal apartheid began to break down in the 1980s, and with its decline came new and faster movement: of people, of capital, of resources more broadly. But the city's spatial structure was sticky, path dependent as spatial structures often are (Atkinson and Oleson 1996) on decades of determined state policy and unequal development. Extreme spatial inequality persisted, unlike the legal and planning processes that created it. Absent the formal legal structure, the city's spatial structure continued to limit mobility, hampering the functioning of emerging markets and severely constraining development in some parts of the city while encouraging it in others. Extreme spatial inequality also fundamentally limited the options of the state in intervening across the city, a consequence at the heart of this dissertation, and one I will come back to in the chapters that follow. First, though, it is essential to understand the spatial organization of Durban's communities, and how over time that organization resulted in a highly deterministic spatial hierarchy, as I define it in chapter two, of class and race across the city. In the remainder of this chapter I examine Durban's spatial structure in 1996 as a direct legacy of apartheid. In chapter six, I examine in detail changing neighborhood racial composition between 1996 and 2001 to understand the post-apartheid spatial hierarchy, together with communities where some escape from the confines of that spatial hierarchy has been possible.

Apartheid's Spatial Legacy

In the introduction I describe the experience of seeing the extent of segregation in Durban. Aggregate segregation statistics put a number to that experience. The index of dissimilarity can be interpreted as the proportion of each group that would have to move to create spatial evenness: in 1996, for Africans and whites dissimilarity was 0.93, for Africans and Indians it was 0.89, and for Indians and whites it was 0.93. These figures are very near perfect segregation, and substantially higher than the most segregated American cities, which are themselves highly segregated in comparative terms (Massey and Denton 1993). Even in 1996, two years after the end of transition and five years after major relaxing of apartheid laws, Durban (along with other South African cities) was in a class of its own in separating people by race. Still, an aggregate statistic can only illuminate so much, particularly with regard to the makeup of particular communities that contribute to this extreme segregation.

Local community analysis provides a more detailed perspective. In 1996, nearly 80 percent of the city's population lived in 265 communities composed essentially of

only their race group, places I refer to as "single group".[20] In the 160 single group African communities in 1996, 86 percent of the city's Africans lived alongside 1,483 Indians and 692 whites. In the 52 single group Indian communities, 67 percent of the city's Indians lived with 11,757 Africans and 430 whites; Indians constituted over 96 percent of the residents of single group Indian communities. In the 53 single group white communities, 68 percent of the city's whites lived with 33,981 Africans and 12,681 Indians. Whites constituted 81.2 percent of the residents of single group white areas; Indians, 4.8 percent; Africans, 12.8 percent, in a scale many key informants indicated was in line with the presence of African live-in domestic employees in white households. The extent of single group communities provides a detailed sense of what it takes to produce the index of dissimilarity levels observed in Durban in 1996.

Map 3.2 displays the relative location of three types of single group communities in Durban in 1996 – African, Indian, and white. As I describe in the introduction, the symmetry of racial residential composition in Durban in 1996 was a powerful indicator of the effectiveness of apartheid planning. The city is bisected by the inland highway to Johannesburg; White legacies are on or just off it, Indian areas are relatively equidistant from the core to the north and south, and the same is true for African areas, yet farther away. The areas that are not single group communities are to varying degrees mixed, or composed of significant numbers of more than one group.

Single group areas in 1996 corresponded very closely to apartheid zoning as displayed in Map 3.1. The areas that were historically single group population centers jump out from the map. In the urban core, the Berea just inland and the Bluff in the South Industrial Basin were single group white areas. So too was the wealthy and exclusive suburban Umhlanga to the north, along with western and southern suburbs. Phoenix to the north and Chatsworth to the south were the locations of most single group Indian areas. Finally, apartheid zoning of urban African townships and rural areas matched almost perfectly with the single group African communities in 1996. With regard to the spatial structures of urban apartheid, the single group communities followed the classic pattern, coupled with Durban's T: whites in the core and along the transportation grid, Africans in the periphery, and Indians in between the two.

Life in these single group communities represented the full spectrum of South Africa's massive inequality. Table 3.2 shows census data associated with quality of life in the three different types of single group areas.

Table 3.2. Descriptive Statistics, Single Group Communities, Census 1996.

Single Group Areas	African	Indian	White
Toilet Access	36.2%	99.6%	99.6%
Informal Housing	26.8%	0.1%	0.0%
Income Rank[21]	291	148	46
Unemployment	48.3%	15.2%	4.2%
Skilled Labor*	61.3%	94.8%	97.6%
Professional Labor*	13.1%	26.5%	58.2%

[20] The definitions of single group communities, as well as of other configurations of residential racial composition, are described in detail in chapter five.

[21] Income rank (out of 406, with 1 as the richest and 406 as the poorest) is provided rather than household income due to data comparability problems between the 1996 and 2001 census. I describe this in detail in chapter four.

*Percentages calculated only for members of the race group dominant in the community.

White areas, despite ranging widely in class – from the working class areas in the Bluff and Old Line Suburbs to the wealth and exclusivity of the Berea and Unhlanga – were fully serviced and at the highest end of the income spectrum. White areas also had by any standard very low unemployment. Indian single group communities were middling in income but still fully serviced and constituted entirely of formal housing.[22] Indian areas did however have high unemployment, relative both to whites and to first world economic standards.

Formally employed[23] whites in single group white areas were nearly all skilled, and many were professionals. A similar proportion of formally employed Indians in single group Indian areas were in skilled positions; however, only 26.5 percent were professionals. This provides further indication of their middle tier status in the racial and economic hierarchy.

African single group communities provided a completely different quality of life. There were very few formal services at this time, and particularly little access to electricity: the only populated areas of the province of KwaZulu Natal that lacked bulk electricity infrastructure were African (Annecke 2002: 261). Over 80 percent of African households in Durban around this time relied on paraffin for cooking and candles for lighting (Davis and Ward 1995: 5). The proportion of informal dwellings was very high, in large part because the state stopped building formal housing for Africans in the 1970s; when rural-urban migration exploded in the 1980s, people with few resources were left to fend for themselves in constructing housing. In informal areas, substandard housing materials coupled with the reliance on paraffin meant constant risk of fires, which would spread rapidly and cause massive destruction (Walsh 2007: 162).

Informal housing was also not equally distributed across single group African communities: over 500,000 people lived in single group African communities with less than 10 percent informal housing. Certain groups of communities, for instance Inanda, to the northwest of KwaMashu, had informality proportions above 80 percent. There were similarly wide variations in services in communities, reflecting the variations in formality; however, income and employment figures were uniformly poor. Rates of skilled labor were substantially lower than Indians and whites in single group communities, and these communities had half the rate of formally employed professionals as Indian communities – which in turn were half the rate of white ones.

The spatial legacies of apartheid incorporated race and class powerfully and comprehensively. The vast majority of Durban in 1996 was completely racially segregated, in full concert with apartheid's legacy of spatial, social, and economic inequality. At the same time, small parts of the city were mixed. Some degree of residential racial integration began well before 1996. Class based racial mixing began in the 1980s (Maharaj 2002; Maharaj and Mpungose 1994) continued apartheid

[22] The low percentage of informal housing in Indian areas would appear to contradict the fact that there are African informal areas in historically Indian areas. For instance, Chatsworth is the location of Bottlebrush, one of the city's most consolidated African informal settlements. The planning unit containing Bottlebrush, however, is not a single group Indian area; the presence of an informal settlement – which is always composed of African residents – in almost all instances reduces the Indian proportion below the high threshold for a single group Indian community. This is not an issue for white communities, as there are essentially no informal settlements in white areas.

[23] Occupation data cited in this dissertation refer only to people working in the formal wage labor force.

enforcement. In the mid 1980s, pass laws were repealed and residential racial zoning began to relax somewhat. As result, in 1996, though mixed residential areas were very limited in extent, they did exist. Some 115 communities, with a total population 486,946, or about 20 percent of the city, had some degree of racial residential mixing. These areas were in aggregate 42 percent African, 38 percent Indian, and 20 percent white; however, the distributions of those populations were far from even. Table 3.3 shows index of dissimilarity figures, isolating these communities.

Table 3.3. Index of dissimilarity, excluding all single group communities.

1996	D
African/white	0.74
African/Indian	0.54
White/Indian	0.84

Only the African/Indian level of dissimilarity can be considered low; the African/white figure is very high, and the white/Indian figure is at the level of hypersegregation – and again, these are the mixed communities.

Consequences of the Apartheid Spatial Structure

Transportation access is one mechanism through which the apartheid city structure differentially impacted the economic and social prospects of race groups. The proximity of communities to highways, as well as other major roadways that connect them, is a proxy for their access to Durban's economic poles in the core to the north and to the west, each of which are closely connected to the highway system. Close proximity to the transportation grid facilitates quick and efficient travel, either by car or through semi-public networks of minibuses that provide the primary means of transportation to African commuters.

Road access is particularly important because of the limited options for transportation within and between areas of Durban. Like most aspects of apartheid's spatial distribution, the consequences of the transportation network were both intentionally planned and more subtly compounded by difficulties associated with the geography of the city. As part of the planning for exclusion under apartheid, the state limited the extent to which transportation networks allowed movement between areas of different racial composition. Roads are directed outward from the central hub of spaghetti junction, and the limited public transportation routes consequently tended to be routed through the central city, with the prominent exception of some routes to Pine Town to the west and Umhlanga to the north. Heavy reliance, therefore, on cars and these semi-public minibuses means that there is no transportation alternative to being close to major roadways. Also, transport officials in the municipality reported that the apartheid state built excellent roads, among the best in the world (though again, they had the effect of preventing travel between certain areas as much as they facilitated other routes of travel). Given the quality of the roads and the lack of alternative means of travel, proximity to roads is an essential indicator of access to important areas of the city.

I calculated distance to major roadways (which include highways and somewhat smaller freeways) by identifying the centroid of each community and using the ArcGIS "near" proximity tool to compute distance between these centroids and the closest major roadway. To understand the relationship between community proximity to major

roadways and racial composition, I examined the correlations between race proportions in 1996 and distance to highways. Because more rural, less densely population communities are located farther from major roadways, and Africans disproportionately live in rural communities, I normalized the race proportions by population density. I then computed the Spearman's rank correlation coefficient[24] between the density-adjusted proportional variables and highway distance.

Table 3.4. Spearman's rank correlations, population density adjusted race proportions with highway distance. For all coefficients, $p<0.001$.

1996 Proportion	ρ with Highway Distance
African	0.455
Indian	-0.353
White	-0.254

These correlation coefficients, all statistically significant, show the substantial difference in distance to highways by race. First, African proportion was strongly positively correlated with higher highway distance. This higher distance meant increased travel times to any area of the city outside of the home community, intensifying the difficulty of commutes or precluding them entirely. Given the absence of formal economic opportunity in townships, people were either relegated to the informal economy or forced into long and difficult commutes to other areas of the city. At the same time, access from the central city out to these communities was limited, creating transportation problems for people providing essential services in, for instance, health care, education, and utility maintenance. Given the distances involved in travel between areas of the city, together with the lack of affordability of private car ownership for the bulk of the African population, the arrangement of communities and roads had the effect of containing residents of many townships and informal settlements within their home communities. Even if there were jobs, Africans were not geographically positioned to access them.

Conversely, both Indian and white proportion are negatively and significantly correlated with highway distance. In a way this exercise presents a statistical representation of the apartheid city in 1996, in which African areas were farther away than other areas. It also shows that Indians tended to be close to highways, even closer than whites. One of the ways that Indians residential areas were separated from white ones was through highways that bisected the two; Indians and whites therefore often live on opposite sides of the highways.

Exceptions to the Spatial Legacies of Apartheid

There were three important communities that in 1996 were clearly distinct from the spatial legacies of apartheid – each had nearby highway access, and were accessible to lower middle class or poor Africans: the Central Business District (CBD) and the Cato Manor and St. Wendolins public housing sites. Change in the CBD, a small area in the

[24] Spearman's rank correlation coefficient does not require normal distributions, unlike Pearson's product-moment coefficient, because it converts data to ranks. Race proportions are severely U-shaped, and highway distance has a long leftward tail.

center city composed of small businesses and apartment buildings, was driven primarily by white flight. What was once a white area by 1996 was 40 percent African, 27 percent white, and 24 percent Indian. Many of the whites who remained were poor or elderly, and some were homeless. The African influx was primarily working and middle class, though not the burgeoning wealthy African middle class frequently mentioned in South Africa. Instead, teachers, service workers, and other young professionals moved in, together with some poor Africans taking advantage of private poverty services available in downtown areas (Waters 2007). Occupation data show that 82 percent of Africans in the CBD were skilled workers, and 42 percent were professionals. The CBD is an early example of the kind of class-based change associated with stratified communities, wherein white flight opened up space for Africans and Indians who had the resources to be residentially mobile. White flight would continue over the next five years, as I will show in chapter six when discussing the CBD in greater detail.

Cato Manor is a European Union funded public housing project that took advantage of former open space in the western part of the urban core to locate housing for Africans. Linked to the funding was a requirement for grassroots organizational involvement, and a Cato Manor Development Association that would focus on economic and social development, particularly through small and medium enterprises. While the outcomes of the project have been mixed, and there is no racial or economic integration, Cato Manor still represents the only public housing in the urban core, and along with St. Wendolins was one of only two communities in 1996 where poor Africans could live in proximity to economic opportunity. Still, unemployment was 38 percent in 1996, only 51 percent of formal Africans workers were skilled, and a meager six percent were professionals.

St. Wendolins was originally composed of a large number of African informal settlements, but in contrast to other informal areas, these were well located: they were in close proximity to Pine Town, a major commercial and industrial center along the highway to Johannesburg. The apartheid state targeted this area for white settlement, and scheduled forced removal of the African population to townships or rural homelands. A coalition of community leaders and academics mobilized successfully to resist these removals, and then lobbied the state before and during transition to upgrade informal dwellings to public housing. St. Wendolins has since become a poor and working class formal community, entirely African in composition, where at least some residents have access to jobs in Pine Town. Unemployment in 1996 was above the city average at 48 percent, but a higher than average 67 percent of African workers worked in skilled positions. I examine change over time to Cato Manor and St. Wendolins in substantial detail in chapter eight, focusing on the influence of state investment, including public housing construction.

Discussion

In 1996, the city of Durban was powerfully defined by its history of racial, economic, and spatial inequality. Over a century of racialized development, coupled with 40 years of concerted apartheid planning, had produced a city almost completely characterized by hardened race and class inequality. The vast majority of the city's residents lived in communities composed of essentially only their race group. Even those who lived in ostensibly mixed communities did so at high rates of segregation. There

were only a few exceptions to the links between race, class, and space, some of which held promise for spatial change, as I discuss in chapter eight.

Still, the finding that Durban, emerging from apartheid, was highly spatially segregated is unsurprising. This is only the starting point of the analysis. In the coming chapters, I examine Durban's changing and static racial residential structure from 1996 to 2001, fitting it within the spatial hierarchy I develop conceptually in chapter two. I then examine the role of the state in impacting and reinforcing the spatial hierarchy. First though, I describe in chapters four and five the methods and data that inform this dissertation.

Chapter 4
Data and Methods

Because this dissertation is at the same time a qualitative and historical case study and a disaggregated community level quantitative analysis, it is fundamentally "mixed methods." Many research projects use a mix of quantitative and qualitative methodology that is varyingly well specified and varyingly associated with the research design and goals of the project. In oft used social science research methods texts (e.g. Creswell 2003; King et al. 1994), mixed methods research is an add-on, perhaps important in concept but less so in practice or in the development of rigorous designs. In certain ways, this is good, because mixed methods research should be done carefully or not at all.

Two competing perceptions of mixed methods research contribute to the complexity in creating good designs. On the one hand, different components of the research design call for different research methods. This is generally referred to as the pragmatic approach (Creswell 2003). On the other hand, researchers must be aware that the choice of methods is an important determinant of the analysis and the outcomes of the project; it is not the case that every question has its appropriate method and correct answer. That the researcher may construct outcomes particular to the research process is a concept more frequently associated with the constructionist perspective on social research (Creswell 2003). Regardless of their philosophical underpinnings, though, the fact is that there are substantive conflicts between researchers who use different methods to target the same topics.

Contrary to the suggestion that the used of mixed methods is zero-sum, there are ways in which individual research methods fail to provide enough leverage for particular descriptive and causal inferences. Put differently, different methods leave different black boxes in the models they are utilized to assess. This may help to explain why they bring researchers to different, sometimes opposing outcomes, and why they must be chosen carefully to illuminate different components of the research design.

One prominent effort to systematize mixed methods design within a unified framework of research is Evan Lieberman's (2005) "nested analysis." Lieberman (2005: 436) suggests that large-N and small-N research:

> …can inform each other to the extent that the analytical payoff is greater than the sum of the parts. Not only is the information gleaned complementary, but also each step of the analysis provides direction for the approaching next step. Most prominently, [large-N analysis] provides insights about rival explanations and helps motivate case selection strategies for [small-N analysis], whereas [small-N analysis] helps to improve the quality of measurement instruments and model specifications used in the [large-N analysis]."

Lieberman paints an overly rosy picture of the ease of interaction between different methods, and indeed glosses over instances in which different methods present contradictory conclusions within the same universe. Lieberman also appears to fall into the pragmatic camp, focusing on structured roles for specific methods within a unified research design.

I too fall into the pragmatic camp, and focus my methodological choices on different aspects of my research design; in particular, examining change in my

independent and dependent variables quantitatively, and assessing the drivers of and links between those changes qualitatively. As a result, a major focus of my efforts to develop a mixed methods design has been to bridge more effectively the links between quantitative and qualitative data and analysis. Lieberman still sees them as fairly discrete endeavors, in which the outcomes of large-N analysis lead to focused small-N comparison and analysis. My goal in mixing methods has been to produce quantitative work that can be analyzed qualitatively, in conjunction with local experts; the results of that analysis can produce testable inferences and inform more detailed local case studies. Interacting results can also take on directly the conflicting outcomes problem, identifying where methods disagree and, to some extent, forcing agreement.

The general process I went through began with descriptive quantitative and spatial analysis of changing race, class, and infrastructure in Durban's communities from 1996 to 2001. I then mapped the results, both to extend my own analytical inferences and as an effective medium for presenting results to key informants in Durban. Based on interviews and workshops of the data in Durban, I conducted additional analyses of the data, and synthesized results with theoretical perspectives from sociology literature, particularly urban sociology, race, development, governance, and the state.

At the most aggregated level, I am conducting a case study of Durban. I then disaggregate that case study into quantitative analysis of Durban's 406 communities. I examine the results of that quantitative analysis qualitatively, in concert with key informants in Durban, and finish by building up to case analysis by generalizing from dynamics within specific communities. At each point, as I disaggregate and narrow my focus and then aggregated and broaden it, I apply methodologies intended to produce a range of descriptive and at times causal inferences (King et al. 2004) about Durban, its communities, its political economy, and the state.

In this way, I extend Lieberman's model and the classic mixed methods process of "triangulation" (e.g. Jick 1979; Denzin 1978). Triangulation is generally described in mixed methods research as the process of merging the results of different methodological approaches within the same substantive focus. To the extent that inferences from different methods interact within a single research process, that interaction happens within the head of the researcher. Researchers can test qualitative inferences quantitatively, or inquire about quantitative inferences qualitatively, but there is still an essential divide between methods: one informs the other, discretely or iteratively. In the research for this dissertation, I was able build qualitative techniques into the quantitative analytical process by communicating quantitative data and preliminary results to key informants for analysis. The technological advance that makes this merging of methods possible is GIS software, which produces intuitive geographic maps layered with social data. While the statistical analysis I communicate is primarily descriptive, the mapping methods that I outline in this chapter are fully applicable to a wide range of quantitative analysis, including regression analysis. In the remainder of this chapter, I describe my units of analysis, the data I analyze, the techniques I use to map my quantitative results, and my iterative process of mixed methods inference generation targeting my research questions.

Units of Analysis

The units of analysis for this dissertation are what the Durban municipality refers to as "planning units"; I refer to them interchangeably as communities or areas throughout the dissertation. Planning units were constructed by the Durban municipality based on 1996 census sub places, the first aggregation above the base enumerator areas (Hindson and O'Leary 2000). Several factors drove the construction of these units, and make them particularly well suited to the kind of temporal and place-specific analysis I undertake. First, South Africa's national data collection agency, Stats SA, changed the base enumerator area boundaries between 1996 and 2001, and did not release for public analysis the 2001 data at the enumerator level. This resulted in the need for a consistent unit over time, and planning units provide that consistent unit.

Second, sub places were not fully reflective of community boundaries as city residents knew them. The Durban municipality undertook a qualitative process to adjust sub place boundaries to better reflect perceptions of community boundaries. Working with community residents, they adjusted sub place lines based on street maps. The results of this exercise were a series of units that had names familiar to city residents, and boundaries that matched perceptions of real community boundaries. This kind of unit has a substantial advantage over the standard enumerator area (or tract) analyses undertaken elsewhere for several reasons. First, these units are less likely to cross real boundaries, and therefore less likely to combine areas that are better examined separately. Second, these communities have names and boundaries that are widely recognizable, meaning the results of analysis are more relevant to Durban residents' perceptions of the places in their city. Third, these two benefits come with a temporal consistency of a named community, which given its size (an average of around 10 enumerator areas) and validity is a more consistent unit over time than the smaller and more in flux enumerator area would be. Finally, the historical consistency of the planning units is essential because they match the lines of apartheid zoning, which shaped the city and its communities.

After construction of the boundaries, the next step was applying 1985, 1996, and 2001 census data to these new planning unit boundaries. This was done using software called Data Partitioner. Data Partitioner converts between geographic units by examining the points of overlap and distributing population in overlapping areas according to the proportion of the area in the community that overlaps. This process must be undertaken for each cut of the census data, including any relevant crosstabs such as population by race, income and occupation by race, and the like. As a result, the more crosstabbed categories, the smaller the population within each cell of the crosstab that must be partitioned, and therefore the less valid the partition process becomes. I limited my analyses to two variable crosstabs, primarily race coupled with other variables.

The ideal unit construction process would avoid a partition process entirely, given some loss of validity associated with partitioning based on area. The substantive focus of my analysis is particularly vulnerable to mis-assignments of population across community lines because I am studying segregation and integration patters within communities. However, the spatial distributions of race and class in Durban reduce the consequences of partition because large swaths are nearly uniform in their composition, with very little local variation across large parts of the city. Also, the unit shift between the 1996 and 2001 censuses makes an analysis without any partitioning process impossible. A second option for units was 2001 sub place; however, given the substantive

validity of planning units and their prevalence in Durban for planning purposes, I determined that they would best reflect what was occurring in the city and provide the best means of communicating results to key informants in the city. Given the mixed methods approach of the dissertation, the latter consideration cannot be undervalued.

One of the complexities of using planning units is massively varying size (due in part to equally varying size of enumerator areas). There are 406 planning units in Durban, with a mean population in 2001 of 7,601, a median population of 5,796, and a standard deviation of 7,168. The smallest planning unit has 38 people in it; the largest, 50,008. Population densities vary similarly, with a low of eight people per square kilometer and a high of 24,900. Some of this variation is associated with the inclusion of both urban and rural areas within the city boundaries, and some with the fact that Durban's communities, as its residents know them, do vary substantially in size. Comparing planning units statistically must therefore be done very carefully. One of the benefits of the categorization system I describe in chapter five is that it allows examination of each community's composition, independent of its weight on the full extent of segregation. Ultimately, while a more consistently sized unit would have made certain kinds of analysis easier, I have made every effort to factor into my analytical choices the variation in unit size and take account of its effects on the results.

Data

Two main sources of quantitative data drive the analyses in this dissertation. South African census data from 1985, 1996, and 2001 provide community racial composition data. The 1996 and 2001 censuses provide data beyond basic race categories, including occupation, income, employment, education, and access to services. While I use 1985 race data to develop the categorization system described in chapter five, the substantive analyses of this dissertation are based only on 1996 and 2001 data.[25] I report figures as rates, with relevant populations in the denominator. Table 4.1 provides the list of datasets, sources, and dates.

Table 4.1. Quantitative Data, Sources, and Dates.

Dataset	**Source**	**Dates**
Census	StatsSA	1985; 1996; 2001
Public Housing Construction	Housing Department	Each project dated
Aerial photography	Housing Department	1998; 2000; 2002
Libraries	Corporate GIS	Each library dated
Clinics	Corporate GIS	Undated
Hospitals	Corporate GIS	Undated
Spatial Development Framework	Corporate GIS	Undated
Roads	Transport Department	Undated
Public Transportation Routes	Transport Department	Undated
Informal dwellings	Water Department	Undated

[25] Because of data collection problems during apartheid, the 1985 census only reliably provides population totals by race in each community.

Data I use from the census for this analysis include race group totals, household totals, household income, toilet access, education, employment, occupation, and formal/informal housing totals. Two other relevant variables in the census – water access and refuse pickup – were excluded because analysis suggested that they were lacking validity; when I asked about these seemingly invalid results in South Africa, several key informants associated with StatsSA suggested that data problems were due to flaws in question wording.

I did use some undated datasets for this analysis. I selected from the roads dataset the major freeways and highways, which were built in the 1970s (Freund 2001). I used clinics and hospitals for descriptive purposes, in part because the split in their coverage by race had not changed after apartheid – African areas were still unserved by hospitals. Clinic density may be overstated for 2001 as a result.

Library data arrived with location and a few other attributes, but no dates. A research assistant in Durban was able to track down and record the dates of opening for each library. Data on schools included location and a number of attributes. However, they could not be dated due to complexities of construction, conversion of existing structures to schools, and closing and reopening of multiple schools. Also, the data set did not include private schools, may have been missing a certain percentage of schools in townships, and required substantial work to code size, enrollment, and other essential attributes necessary to develop a valid sense of their distribution across Durban. Given the absence of dates and the extent of other data used in the project, I decided not to pursue school data for further analysis.

Informal dwelling data were collected by the Municipal Water Department; they put barcodes on dwellings, and used GPS to mark the coordinates of barcoded dwellings. The resulting data set was a series of points, each representing a dwelling, with no additional attributes associated with them. The informal dwelling data set was undated and continually updated, and I collected it in 2005. Because I did not have retrospective informal dwelling data, and because informal settlements change quickly due to resettlement, fires, floods, and the like, the data set was only useful as a general descriptor of the location of informal areas. I was able to associate counts of informal dwellings to planning units; however, I did not make substantial use of those counts in this project.

Qualitative Data

I collected qualitative data for this project over three trips to the field, in the summer of 2004, the spring of 2006, and the spring of 2007. During the first two trips, I conducted informational interviews about Durban with city officials and academics, built a network of contacts, and traveled to different parts of the city to observe important communities. Interviews and workshops based on quantitative analysis were done in the third trip. In all, I conducted these workshops with over 50 key informants, eventually getting to the point of receiving repetitive information, a sign that sufficient sample size has been reached. The majority of these respondents were planners, program managers, local site managers, and departmental managers with the Durban Municipal government. A smaller proportion of the sample included academics and some representatives of non-governmental organizations. The sample was not as wide as I initially hoped it would be; specifically, I would have liked to have interviewed more community activists and NGO

leaders, particularly those involved in the communities that became somewhat of a focus of the workshops. Still, though most of my respondents were city officials and academics, many had individual activist histories, particularly in the anti-apartheid movement, and most were able to provide very detailed insights about different parts of the city. More detailed qualitative research on selected focal communities is an avenue of further research.

Analysis and Mapping Techniques

The quantitative analysis in this dissertation is descriptive, in the sense that I do not conduct regression analysis into the causal linkages between state action and the spatial hierarchy. However, the techniques I used to understand the residential racial composition of communities over time in Durban, and of the city as a whole, are very involved. As a result, I devote chapter five to explaining them in full detail. In this chapter, I describe how I used multiple types of geocoded data, with multiple base units, to develop descriptive inferences. I also describe in detail my mapping techniques, and the process of interacting descriptive quantitative analysis, mapping, and qualitative data collection and analysis.

Mapping residential racial change together with the built environment is an essential technique for addressing each of the research questions I outline in chapter two. Cartographic methods of visualization (Egbert and Slocum, 1992; Kumar, 2004; MacDougall, 1992) allowed me to explore and analyze multivariate spatial patterns and, in conjunction with theoretical analysis and qualitative data, generate inferences about the impact of state investment on the communities and basic spatial structures of Durban. Understanding the maps, therefore, was an essential component of analysis.

The techniques I marshaled to map my results evolved as my methods of analysis evolved. I began by simply mapping race group proportions and how they change over time, using natural breaks in the 1996 data for color coding and applying those same breaks to 2001 data. With six maps, I could observe two time points for each of the three groups. In ArcGIS, I layered both time points for each race group, and shifted between them to get an overall sense of the changing patters. I was able to observe a general movement in towards the center of the city for the African population, general expansion of the Indian population, and an entrenchment of the white population in the suburbs. Still, there were substantial limits to what I could learn from these maps. First, I was unable to look at multiple race groups at once. Second, I could not focus effectively on particular communities. Third, I could not incorporate the effects of aggregate population changes, and when the patterns of change were in line with or outside the bounds of those global changes. Fourth, I was not mapping change, but observing change through comparing static maps. Fifth, outside of the very stark African, Indian, and white areas it was more difficult to observe what was happening. I addressed these limitations in several different ways.

I proceeded first to Local Indicators of Spatial Association (LISA) analysis, both to understand spatial association and to be able to examine hot spots of various race groups at the same time. I calculated local Moran's I scores (see chapter five for full description of the measure) in GeoDA for each group over two time points, based on proportions. Then, for each time point, I isolated high/high clusters of each race group and placed them on the same map. With these high/high cluster maps, I had my first maps

of the spatial legacies of apartheid in 1996, and again in 2001. These were visually powerful, though eventually I became unsatisfied with the measure and with the lack of information on large parts of the city that were not coded as places with statistically significant spatial association. I then developed the categorization system.

Mapping Categories

The categorization system I describe in chapter five is very well suited to exploratory mapping to generate hypotheses and causal claims. The purpose of the categories is to identify communities with shared starting points, transitions, and ending points, and then to select particular shared transitions for further analysis. The most prevalent set of shared categories were what I call legacy communities, or places that were composed essentially of a single group in both 1996 and 2001, as a legacy of apartheid. Legacies include Durban's racialized and ethnicized communities. When mapped, they matched very closely with the hot spot analysis based on LISA.[26] I also mapped communities that had transitioned similarly, or that had the same starting composition in 1996, experienced the same change, and resulted in the same ending composition in 2001. Mapping communities that had experienced such similar processes proved to be a valuable technique for inference generation, as I show substantively in chapter seven.

I used two types of base maps of Durban to display racial residential change. The first type used apartheid racial zoning as the base layer. Apartheid zoning effectively demonstrated what the city was *supposed* to look like, according to those integral to its planning. While useful in understanding Durban's basic core periphery structure and distribution around the main highways, the map of apartheid zoning overstated the extent to which particular places were associated with particular races, especially in the core. Segregation was extreme, but not so extreme that every community empirically matched its zoning designation.

In the second type of base map, I used legacy communities to display different parts of the city. This provided as much indication of core periphery differences while displaying the actual, rather than intended, distribution of single race group communities. The legacy maps effectively displayed the two main areas of African townships – Inanda, Ntuzuma, KwaMashu, KwaDabeka, and Clermont to the north and Umlazi to the South – the Indian areas of Phoenix to the north and Chatsworth to the south, and the white areas to the north and west. Display of these areas is enough to provide the viewer a strong sense of the spatial structure of the city. At the same time, where legacy areas were *not* located was equally as important – particularly in and around the edges of the core. Therefore, the legacy map became the best base for layering other types of communities and category shifts, neither of which, by definition, appeared where the legacy communities were located. Still, these maps were limited to descriptive inferences about race and space, without consideration of other important variables. Multivariate maps, sometimes based on different units, were the next essential step.

[26] However, I argue in chapter 3 that construction of the category of legacy communities is more valid than the LISA hot spots.

Analyzing and Layering Other Sources of Data

I first mapped the distributions of other census data, including education, access to services, income, and employment. Some of these maps provided good base layers for category analysis, although I primarily used these variables as descriptors for communities in tables, given that they could not be displayed together. Quickly, though, it was necessary to move outside the framework of census data, and therefore outside of the confines of planning units. I had many layers that were based in polygons of different types, lines, or points. These could by visually layered onto planning unit maps, and modified in various ways to apply to planning units.

The first non-planning unit layer I added to racial composition analysis was based on the municipal spatial development framework.[27] This layer isolated the urban core, peri-urban areas (which in the American context would be called suburbs), the urban periphery, and rural areas. Many of the maps I present in later chapters use this layer, particularly to call out the urban core. The second layer that I added showed major freeways and highways, and particularly the coastal and inland highways that together form the 'T' structure around which Durban is based. The first use of the roads layer was to understand how it was related to the city's form, particularly in its relationship to different legacy areas. Later, I used the roads layer to conduct a proximity analysis in ArcGIS for each community, based on the perpendicular distance from the community's centroid to the nearest major highway or freeway. I used this calculation as a proxy for transportation access, and averaged it across various categories, including particularly legacy communities for each race group.

The next set of data I analyzed and mapped included public housing projects and informal dwellings. Public housing projects were part of a polygon based data set, covering the area associated with the project. With the dataset came a series of attributes of each project, including number of planned housing units, number of constructed units, and date of construction. I attempted to link public housing units to planning units on the basis of the number of constructed dwellings within each community; however, because communities were substantially geographically larger than public housing projects, it did not appear to be valid to apply to the entire community the public housing dwellings in one small part of the community. Also, it was clear that public housing projects that were in one planning unit but on the boundary of another frequently affected both; as a result, I decided that the best approach was to conduct analysis primarily using maps. I did want to display housing project attributes on the map, and the particular shape of the project was irrelevant; therefore, in ArcGIS I displayed public housing projects as circles, larger or smaller depending on the number of dwellings that made up the project. Layering these differently sized and located circles onto the map of legacy communities and spatial development framework proved very valuable for hypothesizing about the links between public housing construction and location and racial composition change.

Two other types of data contributed to my analysis of the public side of the built environment: health facilities, including clinics and hospitals, and libraries. Both of these data sets provided point data for the facility, as well as some attribute information. Hospitals I mapped simply on the basis of their locations. There were however too many clinics to map in this way, so I needed to summarize the clinic data. There were two options. First, I could have counted the number of clinics in each planning unit, and

[27] The spatial development framework was, however, drawn around planning units.

joined that count with the census data. I decided that, similar to public housing projects, associating a single clinic with an entire community was not appropriate. Therefore, I decided to use the point data on clinics to develop a smooth surface – a raster dataset – that would represent the density of clinics in any given spot within the city. I used the density tool in ArcGIS to generate this smooth surface, and mapped it. I was also able to summarize the average clinic density for each planning unit, and join that statistic to the base data. I examined libraries as dated point locations only; like hospitals, there were few enough that summarizing them statistically was not necessary.

Preparation of these datasets left me with several options for analysis and mapping. For data that I joined with planning units, I could run basic correlations, both for descriptive analysis and ultimately to prepare for regression models in future research. For data still in other units, I engaged in multivariate mapping, and well as comparison of multiple maps. Point data could be layered on top of racial composition categories and apartheid zoning. I did this with data on housing (with number of units determining point size), informal settlements, hospitals, and libraries. I conducted comparison mapping with clinics and transportation distance, in addition to generating and displaying descriptive statistics. I also was able to present maps of other data in Durban along with racial composition data following the procedure I describe next.

GIS Maps as Tools for Qualitative Data Collection

I was limited in the extent to which I could explain the multivariate patterns I was mapping – limited to the theories I could make relevant, and limited by my lack of truly in-depth knowledge of the context and history of Durban (despite substantial time in the field). I felt I had a strong descriptive sense of the changes the city had undergone between 1996 and 2001, but less of a causal understanding, and little ability on my own to hone in on essential communities emerging out of analysis. I plan to extend my understanding of the patterns I was observing through more in-depth, causally oriented statistical analysis, a next step for this work. For this dissertation I chose to conduct an additional round of field work, using qualitative interviews and focus groups with key informants in Durban to better understand what I was observing in the data.

One of the problems with key informant interviewing is the extent to which respondents report convention wisdom as fact, particularly when key informants are asked to provide information beyond their specific knowledge base (Marshall 1996 provides a good review). What I was attempting to develop was *not* a qualitative description of the changes Durban had undergone since transition; instead, I was looking for explanations of the changes I had observed in the data, and their potential association with state investment, economic centers, apartheid zoning, and the like. Mapping provided the essential bridge between analyses of census and municipal infrastructure data and key informant interviewing, allowing me to ask respondents to explain, based on their expertise, what I was showing them in the data, rather than to explain in aggregate and in detail what they thought had happened over the prior 10 years to the various communities (a task far better suited to quantitative analysis).

Maps are for many people a fundamentally intuitive medium, and are as common in South Africa as they are in the United States. The units of analysis I used were named and corresponded to real neighborhoods and communities, as I describe above, meaning that my analyses could be associated with specific places and displayed on maps that

were understandable to key informants. If I had been limited to displaying tables, or long lists of communities with shared category shifts, these interviews would not have been possible as I structured them. Because I was able to display my analyses of racial change together with other data on maps, I was able to structure interviews and workshops around the presentation of the results of quantitative data analysis.

Data driven workshops and interviews proceeded as follows. First, I presented aggregate results of changes in segregation in Durban from 1996 to 2001. I then focused on particular types of shared category shifts in communities, following the structure of chapter seven on racial change in Durban. I next presented presenting maps of public housing construction, hospital and clinic density, transportation access, and other relevant data. At each point in the presentation, I asked key informants to respond to the data they were seeing, first by assessing their validity, and then by explaining why observed patterns might have occurred. This part of the presentations was done from completed, static maps. The second part of the presentation, more directed towards specific communities, happened with live data manipulation in ArcGIS. I had prepared data sets – my primary census analysis file, roads, housing, libraries, schools, health facilities, informal settlements and dwellings – to be easily accessible in ArcGIS. When key informants discussed a particular community, I zoomed in on the multi-layered map, displaying the focal community, its racial residential category shift, and its services and infrastructure. I also used the identify tool in ArcGIS to display complete tabular data on the community based on my analyses. In this way, I was able to answer key informant questions about community characteristics, pose questions myself, and continue to ensure that the conversation was grounded in the best available data.

One of the standard purposes of key informant interviewing is interpretation of quantitative data (Kumar 1989). However, the extent to which key informants can interact with quantitative data effectively can be quite limited, depending on their familiarity with social science data analysis. Researchers must take great care to present data in a clear and understandable way to key informants without oversimplifying results. Some types of analyses have historically been extremely difficult to communicate clearly without greatly reducing their complexity. The method I outline here for using maps to communicate data analysis could be used to display regression residuals in an understandable way to key informants.

This kind of interactive approach to the presentation of data has clear benefits for dissemination and policy impact, in so far as quantitative data are presented clearly and accessibly using an intuitive medium. This is a substantial benefit, given recent calls by Michael Burawoy and others to return sociology to the public. One of the common critiques of the public sociology approach, however, is that the effort to communicate results to lay people inevitably hurts the research process by producing oversimplification. With this process, that communication is an essential part of the research process itself. I used the techniques I describe here to gather essential data on the city and on specific communities. The empirical chapters of this dissertation are fairly evenly split between my quantitative work on census and municipal infrastructure data and the qualitative data I gathered using the techniques I described here. I believe this represents a new progression in mixed methods research, in which key informants are deeply involved in quantitative data analysis and interpretation.

Chapter 5
Categorizing Residential Racial Composition and Change

By all measures, Durban was and remains extremely segregated. Across the extent of the city, at the height of apartheid in 1986, the index of dissimilarity (D), a common measure of pairwise segregation that can be interpreted as the percentage of one group that would need to move to create spatial evenness, was above 0.90 for all pairs.

Table 5.1. Index of Dissimilarity, Durban.

Dissimilarity	1985	1996	2001
African/White	0.94	0.93	0.91
African/Indian	0.93	0.89	0.84
Indian/White	0.96	0.93	0.87

From 1985 to 1996, and from 1996 to 2001, D values for all pairs declined somewhat. In this setting, the question of how to understand declining segregation, and how it translates to instances of residential racial integration in communities, is complicated. For instance, the D for the full city is skewed by the massive number of entirely African communities: the city contains 144 formerly African zoned areas, with populations of 1.17 million in 1985, 1.38 million in 1996, and 1.57 million in 2001, and at no point have then been more than about 10 thousand non-African residents in these areas combined – under one percent in aggregate. None of these areas exhibited any significant change in racial composition from 1996 to 2001. In fact, because they experienced substantial population increases, driven primarily by internal rural urban migration as well as migrants from Southern African countries, they experienced an actual decline in the percentage of non-Africans.

To examine the influence of these African areas, I selected areas of the city not formerly zoned as African. This selection encompasses 262 communities composed of areas formerly zoned white, white rural, Indian, Indian rural, and Coloured. These communities are either in the urban core or closer to it than African communities.

Table 5.2. Residential population by race, 262 communities not zoned African, 1985-2001

Year	African Pop	African %	Indian Pop	Indian %	White Pop	White %
1985	193,815	17	577,461	49	335,301	29
1996	253,559	19	597,890	44	315,665	23
2001	506,481	33	611,658	40	276,152	18

(Coloureds constitute another five percent of the population in each year.)

Table 5.2 shows the extent of change in just the seven years following the end of apartheid. The African population of these areas doubled between 1996 and 2001, an increase vastly greater than the 21 percent increase across the city as a whole. Despite continued social and economic barriers to movement into more central and historically non-African areas, Africans were nonetheless able to gain access. At the same time, whites were leaving the city entirely (and in many cases leaving the country).

When I isolate the areas that were not zoned African, a more variegated picture of the index of dissimilarity emerges. Table 5.3 shows D for each pair for the 262 non-African zoned communities.

Table 5.3. Index of dissimilarity, 262 non-African zoned areas.

Dissimilarity	1985	1996	2001
African/White	0.69	0.78	0.78
African/Indian	0.83	0.77	0.68
Indian/White	0.96	0.93	0.86

The figures for the African/White and African/Indian pairs are substantially lower for this selection compared to the city as a whole. The lower figures are unsurprising given the removal of nearly half the city's population, almost all African and living in communities that are essentially all African. That the Indian/White calculation remains the same is also unsurprising, given that removing African townships and rural areas removes essentially no whites or Indians.[28] The African/white figure in 1985 is lower because of the common presence of live-in African domestics in white households and the relative absence of any other Africans within the 262 non-African zoned areas; by 1996, more Africans had moved in, but generally to Indian communities rather than white ones.

Particularly for Africans and Indians, the D is in steeper decline for this selection than for the city as a whole. What this points to is the need for local analysis, to assess where the declines in the segregation scores are coming, where increases or stasis may be occurring, and what particular configurations of race groups these entail. In the next section of this chapter, I review measures of global and local segregation, including pairwise and multi-group measures and measures with spatial components, examining the benefit they provide to understanding Durban. Based on this review, I argue for a categorization approach to racial residential composition and change. I then describe in detail the process I developed to create such a system.

Section 1: Existing Measures of Global and Local Segregation

In this section I begin by examining closely two global measures of segregation: the index of dissimilarity and interaction and isolation, converse measures of exposure (Lieberson 1981). I demonstrate that their calculation involves important conceptual concerns that frequently go unexamined, and provide the roots to understanding similar problems with local measures of segregation. I then review some of these local measures, beginning with non-spatial multi-group measures: an ecological mean difference measure and the entropy-based diversity index. I suggest that they provide insufficient information and suffer from essentially the same problems as the global measures. For local spatial multi-group measures, I examine Wong's (2002) spatially adjusted entropy-based diversity index, arguing that it mistakenly assumes cross-unit interaction, when such interaction is most appropriately examined as an empirical question. Spatial analysis of local segregation should come after the measurement of segregation.

[28] The D for the African/White pair in 1985 is lower than in 1996. This may be due to the prevalence of live in African domestic workers in white households, and the absence of other Africans from these communities, giving the appearance of greater integration. I will return to this point in the chapter.

Anselin's (1995) Local Indicators of Spatial Association (LISA) provides a useful way of examining the spatial relationships of single group proportions, and also presents an underlying logic similar to the categorization system I ultimately use. However, I argue below in the final component of this section that LISA calculates cutoff points purely based on distributions in the data, providing no room for theoretical or conceptual rationales, fails to account for the full extent of hot and cold spots, and provides shortcuts to analysis of spatial association that must be uncovered and assessed. Given the shortcomings of the various measures I examine, as well as LISA, I introduce the categorization system and argue that, though work intensive, it provides the best method for examining contexts like Durban. In the conclusion to this chapter, after working out the categorization system, I suggest that the particular context and purpose of analysis greatly impacts the choice of measure.

Measuring Segregation

Massey and Denton (1988) outline five distinct axes of the measurement of residential segregation: evenness, exposure, concentration, centralization, and clustering. Evenness represents the degree to which a group is distributed evenly across the units of a global area. Exposure involves the degree of potential interaction between groups within the units of a global area. Concentration examines the proportional amount of physical space in which a group resides. Centralization measures the distance a group resides from a core area, such as a central business district. Finally, clustering, associated with White's (1983) checkerboard problem, indicates the extent to which the areas where a group lives adjoin each other. Based on conceptual and empirical analysis, Massey and Denton (1988) select the best measure for each: the index of dissimilarity D for evenness, isolation (or its converse, interaction) P* for exposure, the relative concentration index RCO for concentration, the absolute centralization index for ACE for centralization, and spatial proximity SP for clustering.

The Internal and External Boundary Problem

Several of these measures are very common in the global analysis of segregation, including particularly the non-spatial measures D and P*. The index of dissimilarity D is specified as follows:

Equation 5.1: Index of Dissimilarity

$$ {}_aD_b = \frac{1}{2}\sum_{i=1}^{n}\left|\frac{a_i}{A} - \frac{b_i}{B}\right| $$

Where, for the pairwise calculation of the index of dissimilarity D for groups a and b, a_i is the population of group a in unit i, A is the total population of that group in the global area, b_i is the population of group b in unit I, B is the total population of that group in the global area, and n is the number of units in the global area.

Equation 5.2: Exposure – Interaction

$$ {}_aP_b^* = \sum_{i=1}^{n}\left(\frac{a_i}{A} - \frac{b_i}{t_i}\right) $$

Where, for the calculation of the interaction P* of group a to group b, a_i is the population of group a in unit i, A is the total population of that group in the global area, b_i is the population of group b in unit i, t_i is the total population across all groups of unit I, and n is the number of units in the global area. The interaction index is the group b-weighted average of the group a proportion of the population in each aerial unit.

Equation 5.3: Exposure (converse) – Isolation

$$ {}_{a}P_{a}^{*} = \sum_{i=1}^{n} \left(\frac{a_i}{A} - \frac{a_i}{t_i} \right) $$

Where, for the calculation of the isolation P* of group a, a_i is the population of group a in unit i, A is the total population of that group in the global area, t_i is the total population across all groups of the unit i, and n is the number of units in the global area. The isolation index measures the exposure of members of group a to each other, as opposed to another group.

Each of these measures assesses different aspects of the distribution of one or two groups within the units of a global area. D is insensitive to relative population sizes between groups, which is beneficial for those who argue that the extent to which one group is segregated from another should not be determined by the number of people the group in the global area (White 1986: 202). Lieberson and Carter (1982: 300) argue that P* provides a benefit in being sensitive to population sizes. All three measures share a basic feature, one that occurs in local measures as well: a denominator of total population and/or group specific total population across the global area. This is a natural component of many measures of the distribution of race groups. However, it also requires a hidden theoretical choice that must be made, and one that it too often assumed rather than examined by researchers.

What is the appropriate population denominator for analyses of segregation, or differently put, should an entire geographic area compose the global study area, or rather a series of subsections? The index of dissimilarity, applied in a comparison between African-zoned and non-African-zoned parts of Durban in the introduction to this chapter, provides a good illustration of this problem. Using citywide population as the denominator for calculation of the index of dissimilarity includes an extremely important theoretical choice as to what constitutes the least segregation. In 1996, Durban was 63.7 percent African, 22.0 percent Indian, and 11.6 percent white; with citywide totals in the denominator, each community would have to match that distribution to result in a D of zero. In essence, then, the researcher is stating that the ideal mixed community has that racial composition. The basis for this decision, though it appears to be a statistical assumption about creating evenness, is actually the population totals within the line drawn around the study area. Municipal boundaries however are difficult to identify, and even more difficult to substantiate. As Massey and Denton (1988: 292) state, unfortunately in discussing centralization rather than dissimilarity, "the boundaries of a central city are political rather than natural creations." This statement applies to many segregation measures, and to substantially broader areas than the central city.

Durban's boundaries have undergone extensive revision since transition. The places that are now considered Durban were composed of a number of municipalities

under apartheid, some of which were not considered part of the city at all.[29] These places were merged to create a unified tax base that could extend resources to African rural areas and townships. The question of what the boundary of Durban is, or what the boundaries of relevant areas within Durban are, is an important empirical and theoretical question. The question has to do with the outer boundary; it also has to do with the extent to which different parts of the city are linked or separate, in the past and the present. The latter set of boundaries is particularly difficult to assess, and is as important as the former. If parts of the city are disconnected, socially or geographically, then including them as part of the whole may not be the right conceptual choice.[30]

The issue of internal and external boundary formation is a very complex question, but one that must be addressed to assess accurately the extent of segregation, if measures with global populations in the denominator are to be used. Exposure is even more prone to the problem, being entirely dependent on the size of the reference population in the global area. The determination of what constitutes even distribution, integration, interaction, and the like may very well depend on the shape of the area; however, this should be a supported claim, not an unexamined assumption. The claim that the entire city is one unified area, and should be examined accordingly, is another claim that requires support. I argue throughout this dissertation that Durban is not one unified space in that regard. The measures of exposure I describe above suffer from the same basic problem; indeed, it impacts them more substantially. In determining the likelihood of exposure, it is even more important to specify appropriately the study area. The variation in exposure is huge across the extent of Durban, and a sum influenced by population size reduces that complexity poorly. As such, segregation statistics that use global population denominators must be approached very carefully.[31] Ultimately, I find local statistics based on dissimilarity and exposure to be of limited utility for Durban, except to provide a gross sense of temporally discrete levels of segregation.

Spatial Measures and Spatial Structure

Other axes that Massey and Denton (1988) identify – concentration, centralization, and spatial proximity, incorporate the spatial structure of the global area. Concentration and centralization measures suffer from a necessarily simplistic assumption of spatial structure, a second instance in which a measure makes an assumption where empirical investigation is necessary.

Concentration measures the share of space for a given group, relative to its population size. Smaller area relative to population size represents higher concentration and therefore higher segregation (Massey and Denton 1988: 289); however, this fails to take into account variations in population density unassociated with race within the global area, assuming instead an even urban surface controlling for race. In Durban,

[29] Each of South Africa's large cities was composed of multiple municipalities under apartheid, in part to separate tax bases.

[30] This is not a problem of scale. Wong (2003) points out, along with others, that segregation varies substantially at different scales, from block to tract to neighborhood to community to region, and examining different scales is important. The problem I am raising, however, is about assessing segregation within the right global unit, rather than between units of the right scale.

[31] This critique would come as no surprise to those who use the measure, and for many research questions, particularly large-N cross-city comparisons, it may not be of great importance. For those thinking about boundaries and greatly varying urban spaces, it is an essential problem, one that analysts have glossed over.

given large rural swaths of various racial composition, and similarly different suburbs, the calculation of concentration would include many geographic factors that would cloud understanding of inequalities between groups. Concentration measures have their utility, but that utility is severely limited in Durban and cities like it, or for analysts looking for a more contextual understanding of their statistics.

Centralization makes an even riskier assumption about urban structure: that there is one important urban center. Urban structure is vastly more complicated, and in studying Durban I have come to learn that the assumption of a uni-polar urban center is a mistake, one that clouds understanding of urban geography, access, and opportunity. Durban, despite having a "central business district", has at least four economic poles. Any proximity measure must take into account these poles. In addition, as-the-crow-flies distance is a crude measure of proximity, and of the impacts of proximity. Transportation networks make some places effectively closer than others, despite being physically farther away.[32] Many analysts use travel times, proximity to major transportation routes and public transportation, and other more contextually sensitive measures as a substitute for straight distance. However, data to calculate these better measures are frequently not available in developing world contexts; in this dissertation, I occasionally use direct distances, though not to the urban core.

Neighbor Measures and the Cross-Unit Interaction Problem

White's (1983) spatial proximity measure and Wong's (2002) spatially adjusted entropy-based diversity index examine population distributions by addressing White's (1983) checkerboard problem, incorporating the distribution of segregated communities as an essential component. White points out that a checkerboard distribution of segregation is substantially different than clusters of segregation, with important social consequences. White incorporates an NxN distance-based weights matrix into the normal entropy calculation, producing a measure that takes into account geographic distribution. Similarly (and partially in response), Wong (2002) adapts the entropy diversity index with a spatial component, though using an adjacent neighbor weights matrix rather than one that is distance based.

White's adjustment is based on the idea that where a high segregation neighborhood is matters. Wong adjusts to account for interaction across boundaries. White (1983: 1017-1018) argues in the conclusion, however, that spatially adjustment of segregation statistics is ultimately based on generic assumptions about the effects of distance, and indicates that a change in the distance function (here, from an inverse exponential weighting to another type of decaying function) changes the outcome of the calculation. Wong's adjustment raises a similar problem – a third instance in which an empirical question of the interaction of people across units is taken as a statistical assumption.

The effects of this assumption can be exacerbated by unit choice. Using small units of analysis (which tends to maximize the degree of statistically observed segregation: White 1983; Wong 2003) makes the assumption of cross-unit interaction more universally valid, given that smaller units – like census tracts – are less likely to be geographically bounded. These units, however, are also less socially meaningful, and as a

[32] Despite the crudeness of as-the-crow-flies proximity, I will use it in this dissertation – one benefit it provides is a statistical description of basic spatial structure.

result the assumed cross-unit interaction may actually be a misspecification of the unit itself. In other words, people may not be crossing units, but instead multiple units may be actually aggregate to one social space, and what looks like movement between units is all actually contained within that unified space.

Conversely, using a larger, more socially meaningful unit – like the planning units I use in this dissertation – makes the assumption of cross-unit interaction substantially less valid. To the extent that units of analysis are bounded in real ways, interaction and isolation should not be adjusted to account for neighboring areas. Again, this is an empirical question. Some have considered manual manipulation of weights matrices to account for physical boundaries such as rivers and mountains; these, however, are only the most obvious of a number of very complex processes to understand the movement within urban areas. As I have stated above, one of the major substantive focuses of this dissertation involves understanding the spatial hierarchy of Durban, and the extent to which different parts of the city are not connected, do not interact.

Limited Information

The final problem I will raise with the existing statistical measures of both global and local segregation is ultimately the greatest limiting factor with respect to the analysis I undertake in this dissertation, and the primary motivation for the categorical process I develop below. Global and local segregation statistics, particularly given more than two groups, simply do not provide enough community specific information to drive a local, detailed, mixed methods analysis of racial residential change. This is especially true for analysis oriented to places rather than individual groups (Alba et al. 1995: 627). One statistic cannot capture the interaction of more than two groups, together with change over time, within the space of a city, without losing a massive amount of information. The problems I raise above all contribute to this loss of information. Also part of this problem is what I call the medium-group problem, borrowing the concept from work on comparative analysis of a medium number of cases (e.g. Ragin 2000). There are interesting methods for understanding the interaction of many groups within an urban environment (e.g. White et al. 2005). There are interesting methods for understanding the interaction of two groups, both locally and globally, over time. However, analyses of a medium number of groups – more than two and fewer than many – have a high information expectation (unlike many-group analyses) while greatly complicating the effort to summarize their composition within a single or a few statistics. Computing multiple pairwise statistics is not a good option, and understanding what the specific composition of more than two groups is within a community with a single statistic is impossible.

Local Indicators of Spatial Association (LISA)

Anselin's (1995) local Moran's I, also known as LISA, helps explore spatial structure, and the software program GeoDA allows specification of a number of weights matrices, including rook and queen contiguity and distance. LISA is a local adaptation of the Global Moran's I, which is specified as follows:

Equation 5.5: Global Moran's I

$$I = \frac{\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}\left(x_i - \bar{x}\right)\left(x_j - \bar{x}\right)}{\sum_{i=1}^{n}\left(x_i - \bar{x}\right)^2}$$

where n is the number of areas, x_i is the value of the variable for area i, x-bar is the mean of the variable across all areas, and w_{ij} is a weight determined by the number of areas j that are contiguous or within a specified distance of area i. Moran's I varies from 0 to 1, with 0 representing no spatial association and 1 representing perfect spatial association (Camara, et al. 2004). Local Moran's I is specified by:

Equation 5.6: Local Moran's I

$$I_i = \frac{\left(x_i - \bar{x}\right)\sum_{j=1}^{n} w_{ij}\left(x_j - \bar{x}\right)}{\sum_{j=1}^{n}\left(x_j - \bar{x}\right)^2}$$

with the same terms as the above formula. Global Moran's I provides a coefficient for the extent of spatial association of a particular variable, given the specified weights matrix. It can be interpreted similarly to a correlation coefficient. Local Moran's I isolates the extent to which the characteristics of individual communities are associated with their neighbors, however specified. The standard use in the literature now for local Moran's I is to identify high/high, low/low, high/low, and low/high areas of association. This is a modified form of Massey and Denton's (1988) clustering. There are several distinct benefits of LISA analysis. First, hot spots are easily interpreted and, as importantly, easily and powerfully mapped. Second, the idea that units are high, low, or neither with regard to a particular variable is, as I will argue below, an effective way to (begin to) categorize communities. This same kind of thinking, in conjunction with prior literature, led me to the categorization system below. Third, the flexibility of weights matrix specification in GeoDa provides more thoughtful ways of specifying spatial association. Local Moran's I does suffer from the boundaries problem, in so far as it has the mean global proportion in the denominator. In addition, the use of local Moran's I to specify hot spots involves several short cuts that, while often acceptable in other contexts, are deeply problematic in analysis of Durban (and I suspect in many other contexts as well).

First, the statistic determines high and low cutoff points based on the unit-level distribution of the variable. That need not be a problem, but if distributions are skewed it can be. As I show below, race group histograms in Durban are deeply skewed. Relatedly, the high and low cutoff points are entirely empirically determined, with no theoretical basis. In conjunction with skewed distributions, this can cause thresholds that both have no substantive meaning and represent poor summations of the variable distribution, calling into question the contextual relevance of the hot spots.[33] Third, high/high and low/low spots by definition do not include the entire cluster; instead, they exclude the final ring of units in the cluster, which are high but not themselves surrounded by high

[33] My examination of LISA thresholds for high/high areas illuminates included communities that, in context, I know to be far too low in proportion to be part of a high/high cluster. I show this below.

units. For contexts where hot spots tail off, this may not be a problem. In Durban, where proportional shifts are severe, hot spots are essentially always smaller than they should be. This problem is exacerbated by arbitrary distribution-based thresholds and the resulting need for a significance test of neighboring differences to mark the end of a cluster.

Section 2: Categorizing Composition and Change

The categorization technique I describe in this section is necessary given all of the shortcomings of the measures described above. It is most essential, however, because ultimately I am not restricting my analysis only to segregation. A final problem with measures of segregation, even local ones, is that they skip an essential step in the analysis. I need to understand community change and stasis first, and then get to segregation. In the remainder of this chapter, I develop a categorization system to identify changes in the racial composition of communities over time, with the particular goal of isolating mixed and unmixed communities of different types and comparing them to each other and to other types of communities. The populations of three large race groups – Africans, Indians, and whites (plus a small number of Coloureds) – need to be summarized across two time points. Each community, therefore, requires a minimum of four data points to convey enough information and as many as six.[34] The categorization system I use builds on the neighborhoods transition analysis developed in Denton and Massey (1991), then Alba et al. (1995) and Logan and Zhang (in progress).

Prior Categorization Systems

Denton and Massey (1991) identified a low threshold of 30 residents of a minority group[35] in a census tract – over that threshold meant the group was present in the tract. They then code which decile the group fell into, and established a transition matrix from 1970 to 1980 displaying the origin decile and the destination decile. In examining multiple minority groups – blacks, Hispanics, and Asians – they went through several techniques, including individual decile transition, paired total decile transitions (black-Hispanic total, Hispanic-Asian total, black-Asian total), and decile transitions for the sum of the three together. They also described the average compositions of each of these categories, from one minority group to all three. Each cell in these transition matrices displayed the percentage of census tracts that underwent the particular transition, with cells on the diagonal representing compositional stasis. They did descriptive analysis of these transitions based on cell percentages, and then modeled a logistic regression of white loss and minority gain, restricted to tracts that begin with less than 50 percent minority composition.

Alba et al. (1995) expanded the technique Denton and Massey (1991) described in several ways relevant to the process that I used. First, they incorporated an upper threshold as well as a lower one, determining a point at which a tract becomes composed

[34] Four data points given the assumption of the presence of only three race groups, e.g. African proportion time one, African proportion time two, Indian proportion time one, Indian proportion time two, with white proportion at both times equaling the remainder of the population in the community; six data points if Coloureds are included.

[35] Denton and Massey (1991: 44) set the threshold for minority group presence at 30 because the census suppressed tabulations below 30 to protect confidentiality.

entirely of one group. Second, they accounted for overall changes in the various subgroup populations during the focal time period in looking at specific tracts (Alba et al. 1995: 629). They used a similar low threshold system as Denton and Massey (1991); however, their threshold is 100 rather than 30. Logan and Zhang (in progress), in contrast, used percentages rather than an absolute threshold, in part to account for differences in group size. They set their low threshold at one-quarter of the average presence of the group in their study sample.

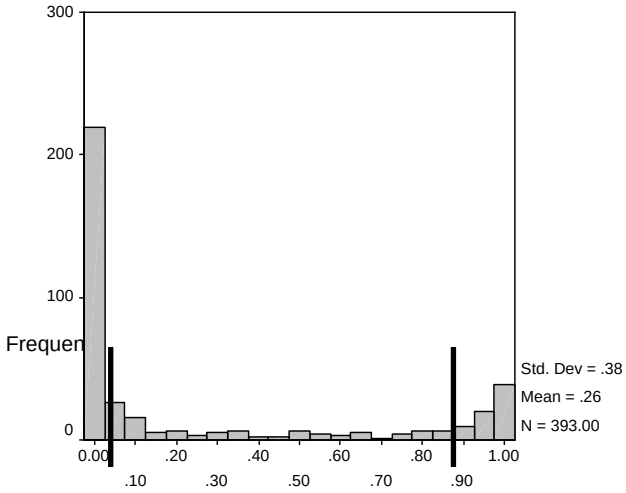
Developing Thresholds

There were several essential steps in undertaking such a categorization process, including ones general to the method and ones specific to the Durban context. First, I defined for each race group a bottom threshold, below which that group is considered not present in a community, and a top threshold, above which a community is considered dominant one group. Alba et al. (1995) and Massey and Denton (1991) used a raw number for minimum thresholds. Logan and Zhang (in progress) chose percentage because of variations in group sizes. I chose percentage as well, because planning units vary substantially in size, as I describe in chapter four, meaning that a raw number would have very different meaning across units. Logan and Zhang also departed from prior categorization efforts by basing their threshold not on an arbitrary line but on the proportion of the group in the population (using a one-quarter threshold). Similarly, I endeavored to identify non-arbitrary low and high thresholds based on theoretical and empirical rationales. These thresholds are important in so far as they identify where the line between absolute segregation and minimal mixing should be drawn.

To identify thresholds in Durban, I examined racial composition of communities in 1985, at the peak of segregation and the height of the apartheid state's efforts to create total separation of races. This did not necessarily mean perfect segregation even given perfect implementation; for instance, white communities were not devoid of Africans because many whites employed live-in African domestic workers. Underlying the use of 1985 data is the idea that most of the city at that time fell into the apartheid vision of residential racial composition. Therefore, the vast majority of communities should fall above an appropriate high threshold and below an appropriate low threshold.

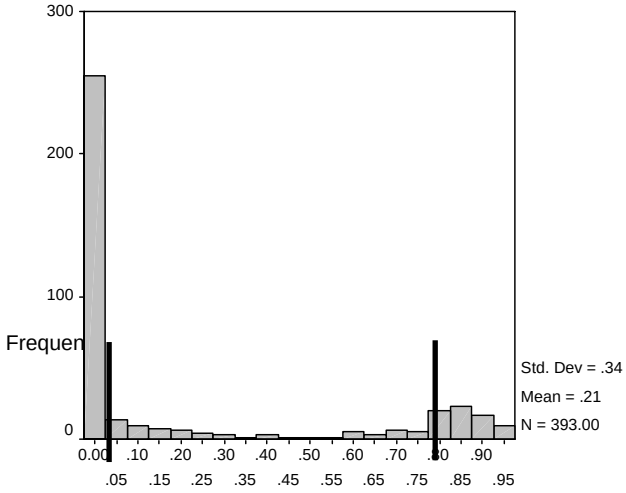
The histograms of racial residential composition are extreme in the distribution they represent, unsurprising given the extent of overall segregation.

Histogram 5.1. Indian Proportion, 1985



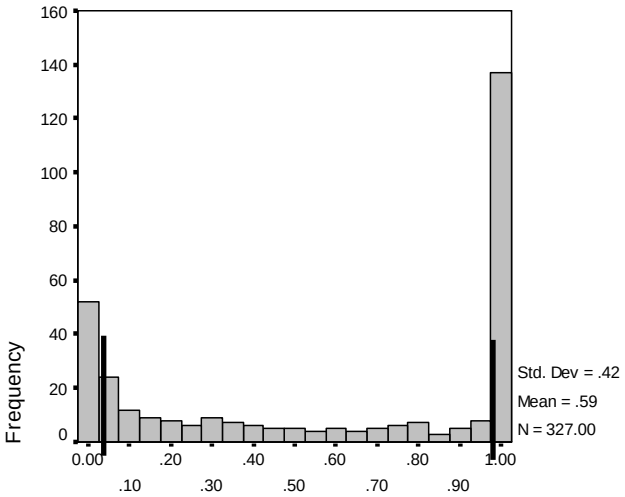
For Indians, the increase begins at 87 percent or greater, and at four percent or fewer.

Histogram 5.2. White Proportion, 1985



For whites, there is a steep increase in the number of communities with fewer than three percent white, and the same at greater than 79 percent white.

Histogram 5.3. African Proportion, 1985



For Africans, because of the prevalence of live-in African domestics, I selected only communities that fell below the high white threshold for histogram examination. Based on this selection, there was an increase at 95 percent or greater, and an increase at two percent or lower. I took these points to represent the thresholds that must be crossed for a community to become mixed or segregated; rather than arrive at them deductively, as prior categorization systems did, I derived them inductively, from the actual practice of apartheid as evaluated in 1985.[36]

More must be done to apply these points to categorization in 1996 and 2001, following Logan and Zhang's point that accounting for aggregate population changes is necessary. From 1985 to 1996, and again from 1996 to 2001, there were substantial changes in the African and white population sizes. The African population grew massively, increasing 27 percent for the first time period and 21 percent for the second. The white population declined, first 6.1 percent, then 14 percent. The Indian population slowly increased at 2.4 percent over the first period and 2.6 percent over the second.

The effects of these population changes were substantial. In 1985, there were 63 communities that were 79 percent white or greater. In 1996 there were 36; by 2001, the number had dropped to 11. Individual community shifts needed to be examined in light of this global reduction in the white population by nearly 20 percent from 1985 to 2001, and in light of population changes for Africans and Indians as well. For each race group, therefore, the cut points needed to be adjusted by the changing size of that specific population group.[37]

The resulting thresholds are shown in table 5.4.

[36] Some might reasonably argue with my selection of these points as thresholds. However, as will become clear later in the chapter, the particular point is not as essential as ensuring that the resulting categorization process is valid. I examine validity by looking at actual proportions of specific communities, meaning that locating a community in one category or another does not prevent close analysis of that community an affirmation of its categorization. I also confirmed validity in qualitative workshops in Durban.

[37] I adjust thresholds based on the changing raw population size of the race group, and not based on its changing share of the population in the city. Change in the latter proportion is affected by change among the other groups, whereas raw change is independent.

Table 5.4. Thresholds.

Year	African		Indian		White	
	Low	High	Low	High	Low	High
2001	0.031	0.968	0.042	0.876	0.025	0.653
1996	0.026	0.961	0.041	0.873	0.028	0.744
1985	0.020	0.950	0.040	0.870	0.030	0.790

When the proportion of any race group in a community is at or above its high value, that community is considered single group dominant. That designation overwhelms any other, such as in the case where a community is over the high white proportion and also over the low African or Indian proportion. When the proportion of any race group in a community is below its low value, I consider that group to have no significant presence in that community.

I compared the high thresholds to the high/high clusters generated in LISA analysis. For African high/high communities in 1985, the lowest African proportion was 77.4 percent. For Indian high/high communities in 1985, the lowest Indian proportion was 29.3 percent. For white high/high communities in 1985, the lowest white proportion was 20 percent. Therefore, my thresholds are substantially more restrictive than the LISA thresholds, and I believe are more valid as well, given their empirical and theoretical foundations.

These thresholds are useful in identifying the broadest levels of segregation and mixing. At the same time, they are extremely far apart, meaning a massive amount of change can occur between the thresholds for which the categorization system would fail to account. Therefore, the next step in categorization was to divide these wide bands contained within the high and low thresholds into smaller categories. This is made difficult, however, by the absence of further empirical bases to make decisions about cutting these wide bands. Looking again at the race group histograms, the distribution of communities between these thresholds is low and flat, with one or two communities represented at nearly every point. I therefore used to substantively derived cut points.

Following Hindson and O'Leary's (2000) local work on understanding communities in Durban, I incorporated a 50 percent threshold. The 50 percent threshold is an important political and social one, defining who constitutes a majority in a community. Communities that have one group above 50 percent, with one or two other groups present and no group above the high threshold are categorized as mixed-majority.

Next, I wanted to identify communities that were evenly split between two groups larger groups, with small representation from a third. When two groups are greater than 40 percent of the population but less than 50 percent, and there is a third group present, I refer to these communities as two-group-mixed. Finally, communities in which all groups are below 50 percent but are not otherwise coded in one of the above categories are categorized as non-majority-mixed. I have developed the following notation for coding combinations of the three race groups.

Table 5.5. Category definition and notation.

Type of Category	**Notation**	**Examples**		
Single race dominant	Single Greek letter	Δ	Ï	Ψ

		(African)	(Indian)	(white)
Mixed communities				
2 groups, 1 at or above 50%	Two Latin letters, capital letter is >=50%	Ai	iW	Aw
2 groups, both below 50%	Two Latin letters, lower case	ai	iw	aw
3 groups, 1 above 50%	Three Latin letters, capital letter is >=50%	Aiw	aIw	aiW
3 groups, all below 50%	Three Latin letters, lower case	biw		
Subset: 3 groups, 2 between 40% and 50%	Three Latin letters, small capital letters are between 40 and 50 %	AIw	aIW	AiW

I began category analysis by checking for validity of single group communities. The following table shows the mean proportion of the dominant group in single group communities in each of the three time points.

Table 5.6. Single group proportion means

	Mean single group proportion		
	1985	1996	2001
Δ: Single Group African	.99	.99	.99
Ï: Single Group Indian	.97	.96	.94
Ψ: Single Group White	.86	.83	.75

The means for African and Indian communities are appropriately high, which should not be surprising, considering the high cut points used to identify single group communities. The white mean is somewhat lower and drops with whites' overall decline in the city. All single group means are well above the cut points established above.

For whites, to examine the extent to which the lower threshold affects coding of communities just above and below it, I looked at the presence of communities three percentage points above and below the cut points for each of the three years. In 1985, 15 communities fall within three points above the cut point, while five communities fall within three points below it. The higher density above relative to below suggests an appropriate choice of cut point. In 1996, five communities are above within three points, and three are below, indicating that the impact of the precise location of the cut point is fairly small. This is similarly true in 2001, with seven communities within three points above, and four within three points below.

Table 5.7 displays the distribution of communities within the various categories at each time point.

Table 5.7. Categories Assignments and Population, 1985, 1996, 2001.

	1985		1996		2001	
Category	**Freq**	**Pop**	**Freq**	**Pop**	**Freq**	**Pop**
Δ	145	1,187,636	160	1,493,121	155	1,654,408
Ï	68	490,687	52	416,401	37	314,742
Ψ	66	308,793	53	266,477	43	165,970
ai	1	257	2	4,728	2	9,961
Ai	21	82,906	27	125,052	35	258,568
aI	22	73,373	22	157,390	33	229,349
aw	1	6,385	0	0	0	0
Aw	10	12,821	10	8,939	15	24,560
aW	12	34,684	4	1,746	3	860
aiw	7	5,684	5	24,874	11	64,264
Aiw	10	22,438	14	25,716	24	87,360
aIw	11	23,348	3	4,954	8	23,954
aiW	12	43,540	20	126,939	25	157,712
AIw	1	594	1	5,633	3	3,484
AiW	0	1	1	5,768	4	27,567
C[38]	6	50,360	6	60,250	7	60,748
ac	0	0	0	0	1	2,776
No Pop	13	0	26	0	0	0
Total	406	2,343,506	406	2727988	406	3,086,283

The majority of communities in all three years were categorized single group dominant: 69 percent in 1985, 63 percent in 1996, and 58 percent in 2001, showing steady if small decline over time (decline that corresponds to similar slow declines in the aggregate index of dissimilarity figures). Between 1996 and 2001, 51 communities moved from single group into mixed categories. Increases in the number of mixed communities are found across the board, including mixed African and Indian, mixed African and white, and all types of three group mixing. These category shifts are in line with the fairly substantial residential racial shifts uncovered by central city calculation of the index of dissimilarity above.

Category Analysis Techniques

Chapters three and six are based on substantive analysis of categories and category shifts. I validated category assignments in Durban through key informant interviews and workshops described in chapter four. In the remained of this chapter, I summarize the data and review techniques for analysis and validation of categories. I also

[38] C here refers to Coloured communities; ac to communities with both African and Coloured populations. I have excluded Coloureds from the substantive analysis given their very small population in Durban; however, several communities that were substantially or entirely Coloured required coding for exclusion.

discuss techniques for descriptive analysis, explaining the methods I used and the important comparisons between categories that generate my substantive findings. This process resulted in a further set of categories, this time focusing on coding category changes. Finally, while the category change technique is very effective for descriptive analysis, it can also be used for logistic regression, as Denton and Massey (1991) do. While such a regression is beyond the scope of this dissertation, it is a next step in my research and I describe how the process can be undertaken.

I began with analysis of 1996 to understand the baseline post-apartheid spatial and racial structure of the city. I examined the location and characteristics of first single group dominant communities and then mixed communities of shared racial configurations. I then moved to temporal analysis, focusing on several key types. Here, a second round of categorization was necessary, this time focused on shared change and stasis over time. This secondary categorization focused tightly on segregation and desegregation, and is for the most part very straightforward. Complications arise when communities are very close to thresholds, and when their populations are small, as I describe below.

Temporal analysis of categories, following the literature I cite above, relies on a transition matrix, with a row for each time one category and a column for each time two category. Cells on the diagonal represent no category change; cells off the diagonal represent a shift. Table 5.8 shows the transition matrix for 1996 to 2001.

		2001																Total
		Δ	Ï	Ψ	ai	Ai	aI	Aw	aW	aiw	Aiw	aIw	aiW	Aiw	AiW	C	bc	
1996	Δ	**143**				6	1	4			2	2	1				1	160
	Ï		**35**				14					1		1		1		52
	Ψ			**38**				3			1		10		1			53
	ai				**1**	1												2
	Ai	1	1			**18**	2				5							27
	aI		1		1	4	**14**					2						22
	Aw			2		1		**3**			3		1					10
	aW	1							**1**	1					1			4
	aiw									**3**	1		1					5
	Aiw	2				2				1	**7**		1	1				14
	aIw	1										**2**						3
	aiW			2				1		4	2		**9**		2			20
	AIw										1			**0**				1
	AiW									1					**0**			1
	C															**6**		6
	No Pop	7		1		3	2	4	2	1	2	1	2	1				26
Total		155	37	43	2	35	33	15	3	11	24	8	25	3	4	7	1	406

Table 5.8. Transition Matrix, 1996 to 2001. Cells on the diagonal, bolded, count communities that did not change categories.

The first two types of secondary categorization are on the diagonal. First, over half of the communities fall in the first three cells of the diagonal. These are what I call *legacy* communities – single group dominant in 1996, and single group dominant of the same group in 2001 – and they constitute 206 of the 406 planning units. The extent of single group communities that remain in stasis in this time period is massive. I examine them in detail in chapter six.

Second, farther along the diagonal are mixed communities that retain the same composition from 1996 to 2001, which I call *mixed static*. Mixed static communities are an essential category because they address one of the primary problems of using census data to analyze community racial composition. Census data provide a snapshot of community composition, and in this case the two snapshots are taken five years apart. Given tendencies toward unstable community racial composition, for instance through white flight, what appears to be integration could in fact be the process of a community shifting from one group to another. Mixed static communities, however, retained their racial composition over these five volatile years, giving an indication that they may have a stable residential composition. The three most prevalent mixed static configurations are majority African with some Indian, majority Indian with some African, and majority white with some African and Indian. The latter two match the two most prevalent category shifts: from single group Indian to majority Indian, some African (N=14, highlighted on the matrix), and from single group white to majority white with some Indian and African (N=10, highlighted on the matrix). The combination of these category shifts and the mixed static categories cover a large number of communities with important characteristics; I analyze them in detail in chapter six.

Four temporal categories remain, describing shifts experienced by communities. First, there are greenfield communities, which had no or few residents in 1996 and grew substantially in 2001. Second, there are communities that desegregated. Third, there are communities that "demixed". Fifth, there are communities that experienced a flux in composition that cannot be summarized within any of the prior categories.

I defined desegregated communities first by using the category shifts: if a single group dropped below its high threshold, a new group rose above its low threshold, or a majority group dropped below the 50 percent threshold. In addition, though, there was movement between high thresholds and the 50 percent threshold that appeared as well to constitute desegregation. As a result, I identified a second pathway of desegregation: absent a category shift, if there was a narrowing in proportional difference between groups of 25 percentage points or greater. I coded demixed communities as the exact inverse of desegregated communities. The following table shows the pathways, as well as the number of planning units and population associated with each pathway.

Table 5.9. Single group and Mixed communities in 1996, and their pathways through 2001[39]

1996	1996-2001	2001	# of Units	2001 Pop
Single group	Demixed	Not applicable	--	--
	Static	Remains single group: *Legacy*	216	2,064,171
	Desegregated	Becomes mixed	49	286,575
Mixed	Demixed	Becomes less mixed* or single group	9	79,238
	Static	Mixed static	49	312,128
	Desegregated	Becomes more mixed*	39	218,603

* "Less mixed" means that a group that was present left the community, or that the proportional gap between groups widened by 25 or more points. "More mixed" means a group that was not present arrived, or that the gap in proportion between groups narrowed by 25 or more points.

As table 5.9 shows, many communities did change during this period. The two categories of mixing account for a total of 88 communities with a population in 2001 of just over 500,000. Also, very few communities "demixed", indicating that the direction of change was largely towards mixing, if slowly. These community racial composition pathways from 1996 to 2001 call out for careful, local analysis.

Future Analysis: Logistic Regression of Desegregation

This dissertation is limited to descriptive statistical analysis of Durban in the post-apartheid period. I limit the analysis for several reasons. First, the process of finding a dependent variable, which ultimately led to this categorization system, was extensive and complicated. It required many months of data cleaning and coding, analysis, and validity checking in Durban. Second, the substantive findings of this dissertation are strongly supported by the descriptive analyses I conduct, as I show in the remaining chapters. Third, confirming the validity of the categories and the success of descriptive analysis was a necessary test of the methods I develop, and needed to be done before regression analysis. Finally, I would like to undertake a spatial logistic regression to model the findings of this dissertation, but the techniques for such a regression need to be developed: as it stands, there is not currently any software that will directly model spatial logistic regression.

I do have a plan for future analysis using spatial logistic regression. First, similar to Denton and Massey (1991), the dependent variable would be community change, coded as no desegregation verses desegregation.[40] Important predictors would be chosen

[39] An additional 35 communities were Greenfield developments between 1996 and 2001, with little or no population in 1996; four more experienced changes in racial configuration not reducible to the categories above; a final five had populations that were too small to categorize validly. The communities not represented in table 5.9 had a total population of 132,770 in 2001, or just over four percent of the population of the city.

[40] A second option would be a multinomial logistic regression that would include demixing areas. However, because there are so few demixing areas, and because a multinomial dependent variable substantially increases complexity, the value added of the third category at the moment appears to be minimal.

from, for instance, occupation structure, household income, self report of services, public housing construction, proximity to roads, and density of public transportation. I would use 1996 data as predictors to whatever extent possible. Substantial further data cleaning and coding would be necessary to prepare predictors for this analysis.

I would like to explore incorporating a spatial component in this model, whether as a lag for the dependent variable or, perhaps more likely, to examine spatial association among independent variables. At the moment, given the absence of a direct software process for spatial logistic regression, one option would be to construct a neighbor effect manually in GeoDa. Given my discussion of the complexities of spatial association above, it would be essential to appropriately specify the weights matrix. This may include manual manipulation to account for physical and social barriers. Alternatively, I could run a multi-level model, examining effects at the community level and within the larger spatial hierarchy. In my post-dissertation work I will explore these options.

Chapter 6
The Post-Apartheid Spatial Hierarchy
Local Patterns of Race, Class, and Access in Durban, 1996 to 2001

As the rules that defined and maintained the apartheid city broke down in the late 1980s and early 1990s, people began to move. Early movement was apparent in 1996, when 20 percent of the city's population lived in communities that, by virtue of being to some degree mixed, were not express legacies of apartheid planning. That movement accelerated between 1996 and 2001. However, it tended to accelerate within specific paths: only certain areas of the city were porous, and only to certain people. In this chapter, I examine community residential change in the post-apartheid period. I begin by assessing the aggregate magnitude of change and its consequences, including for transportation and health facility access by race. The aggregate picture – of small declines in segregation and small improvements in access within the confines of maintained spatial structure – matches those painted by most scholars of post-apartheid change, but does not represent the full story of change over time. To fully understand local dynamics of change and stasis, I conduct a detailed analysis of composition and change at the community level. Based on this analysis, I categorize communities in light of the spatial hierarchy, the conceptual typology I developed in chapter two.

To recap, in chapter two I identified three key types that make up Durban's spatial hierarchy, and a fourth type that is outside the spatial hierarchy.

Table 2.1. Spatial Hierarchy Types, and Bridging Communities.

Pattern	Race Diverse	Class Diverse	Access to the Core
Racialized	No	No	No
Ethnicized	No	Yes	Yes
Stratified	Yes	No	Yes
Bridging	Yes	Yes	Yes

Racialized communities are composed of a single race group, are minimally class diverse, with few people living outside of poverty, and provide little access to the core economy. Ethnicized communities are similarly racially segregated, though more through fortification and choice than ghettoization. They contain some class diversity and provide access to the core economy. Stratified communities, which began emerging with the relaxing of apartheid laws, are composed of multiple race groups, but within tightly defined class bands – economic resources of residents determine access, meaning there is very little class diversity. Stratified communities also provide access the core.

Finally, outside of the spatial hierarchy, transformed communities are race diverse, class diverse – including particularly poor Africans – and provide access to the core economy. As I showed in chapter three, there were only three communities in 1996 that fell outside the spatial hierarchy: the CBD, Cato Manor, and St. Wendolins. More emerged in the interim, as I describe in chapter eight, largely attributable to state construction. In chapter nine, the conclusion, I will return to the literature and concepts I raised in chapter two to show how the local state has bucked the inertia of apartheid space and impacted the spatial hierarchy.

Durban's Changing Economy

The period from 1996 to 2001 in Durban was characterized by slow economic growth, increasing poverty, and increasing unemployment (Maharaj and Ramballi 1998; Pillay 1996). Durban's economy was historically based on tourism, the port, sugar processing, manufacturing, and retail commerce. Manufacturing in particular was essential, providing over 30 percent of GDP in 1996. All of these sectors declined drastically in the late 1990s. Manufacturing decline in particular was hit by the shift to trade liberalization and the consequential loss of tariff protection (Morris et al. 2002: 114).

The skills and education gap between race groups in Durban meant the shifts in the occupational structure were especially consequential to African workers. Unemployment skyrocketed during this period, rising from 32.4 percent to 43 percent. Despite a substantial increase in both the total population of the city and the number of people looking for work, the raw number of employed people actually declined by over 10 thousand from 1996 to 2001.

Table 6.1. Employment, 1996-2001.

	1996	2001	Change
Employed	792,963	782,483	-10,531
Unemployed[+]	379,710	590,351	210,641
Total*	1,172,673	1,372,783	200,110
% Unemployed	32.4%	43.0%	10.6%

+ Unemployed but looking for work.

* Employed plus unemployed but looking for work.

Unemployment was not distributed evenly; it was concentrated heavily among the African population, for whom employment rates were as high as 60 percent. Indians were also not immune from growing unemployment, with rates in Indian communities rising above 20 percent. Whites saw their unemployment increase to almost eight percent from just above four percent in 1996.

Among those who were working, there were interesting changes in the occupational structure. The decline in manufacturing and shift to a service oriented economy certainly hurt Africans, who relied on lower skill jobs to participate in the formal wage labor market. In both 1996 and 2001, Africans constituted 92 percent of the unskilled formal employment. However, the 21 percent increase in African population was not matched by the increase in unskilled jobs: there were only five thousand more unskilled workers in 2001 than 1996, about a one percent increase. This was a major driver of the increase in unemployment in the city.

The difference in occupation structure by race is powerful. Table 6.2 looks at the distribution of skilled formal wage labor across the city by race.

Table 6.2. Proportion of workers within race group in skilled positions.

Skilled	1996	2001
African	58.2%	62.9%
Indian	95.2%	92.8%
White	97.4%	97.5%

First, the percentage of Africans working in skilled positions is substantially lower than either Indians or whites. Second, the proportion of skilled African workers increased somewhat, an indication of the growing participation of resourced Africans in the higher end labor market; table 6.3 shows a similar uptick for professionals as well.

Table 6.3. Proportion of workers within race group working in professional positions.

Professionals	1996	2001
African	13.4%	15.0%
Indian	31.8%	32.9%
White	54.2%	57.0%

This finding is much more apparent when looking at the proportion of each occupation type that is African. African representation in unskilled labor does not change from its extremely high level. However, their representation in Durban's skilled and professional positions is much higher.

Table 6.4. Proportion of workers who are African, by job type.

	1996	2001
Unskilled	92.2%	91.6%
Skilled	41.1%	49.5%
Professional	27.8%	33.9%

This period therefore saw a general decline in available work relative the growing population; at the same time, those who were able to find formal work, particularly Africans, were increasingly working in higher skilled positions. This is characteristic of both the shift to the service economy and the growing inequality within the African population that Seekings and Nattrass (2005) describe. As I will show, these changes are also in line with the residential shifts the city experienced.

Aggregate Residential Racial Change

From 1996 to 2001, the city of Durban experienced significant shifts in population and overall racial composition. In particular, flight of whites out of the city and movement of Africans into the city, primarily through rural to urban migration and migration from Southern African countries, produced a populace in flux.

Table 6.5. Durban's Changing Population, 1996-2001.

	1996		2001		
Group	Population	%	Population	%	Change
African	1,738,988	64%	2,107,599	68%	+22%
Indian	599,296	22%	614,675	20%	+2.6%
White	316,281	12%	277,479	9%	-12%
Total	2,727,988		3,086,283		+16.4%

These substantial demographic shifts might be expected to produce significant change in the extent of segregation across the city. As I showed in chapter three, the baseline of

racial segregation in 1996 in Durban was extremely high, beyond even the kind of hypersegregation seen in the most segregated of American cities. Over the next five years, aggregate levels of segregation would however only decline marginally. Table 6.6 shows the index of dissimilarity figures for each race group pair in 1996 and 2001. Each figure declines, but by just a small amount, ending in 2001 still well above the mark of hypersegregation.

Table 6.6. Index of Dissimilarity, Durban

Pair	1996	2001
African/White	0.93	0.91
African/Indian	0.89	0.84
Indian/White	0.93	0.87

The minimal declines in aggregate segregation levels match with the general consensus on post-apartheid urban transformation: while there may be some blurring of the starkest components of apartheid segregation, the apartheid city remains fundamentally unaltered (e.g. Seekings 2008; Christopher 2005; Owings 2008).

There are, however, reasons to question this consensus for Durban, even at the aggregate level. In chapter three, I examined the association between transportation access and racial proportion. The results indicated that Indian proportion was strongly and negatively associated with distance to the nearest freeway or highway, white proportion was somewhat less so, and African proportion was strongly and positively associated with distance. Table 6.7 displays those correlations for both 1996 and 2001.

Table 6.7. Spearman's rank correlations, population density adjusted race proportions with highway distance. For all coefficients, $p<0.001$.

	ρ with Highway Distance	
Proportion	1996	2001
African	0.455	0.412
Indian	-0.353	-0.365
White	-0.254	-0.243

The reduction in the correlation for Africans was about 10 percent, which is consistent with a small but substantial movement of Africans towards communities that were closer to major highways and freeways – one somewhat larger in magnitude than the extent of segregation decline. Understanding who has been able to move, and to where, is essential for determining whether these movements are impacting the spatial hierarchy, or operate within the spatial hierarchy. In the remainder of this chapter, I describe the results of my local analysis of change and stasis in Durban in light of the spatial hierarchy.

Legacy Communities

I begin by looking first at the set of communities that did not change, retaining instead their historic levels of hypersegregation. As defined in the chapter five, I refer to communities that were single group in 1996, and that remained that way in 2001, as

legacy communities.[41] These areas were African, Indian, or white emerging from apartheid in 1996, and remained that way through 2001. Of the 406 planning units in Durban, 215 were legacy communities: 142 African communities, 35 Indian communities, and 38 white communities. Map 6.1 displays their relative locations. According to the typology outlined in table 2.1, these communities are either racialized or ethnicized parts of the spatial hierarchy.

African Legacy Communities

Umlazi to the south and Inanda, KwaMashu, Ntuzuma, Clermont and KwaDabeka to the north form the main set of urban African legacy communities, linked to rural legacy areas to the northwest and southwest. Most of the African population of Durban lives in these 142 African legacy communities: 1.4 million in 1996, or 81 percent of the African population of the city, and 1.6 million in 2001, or 75 percent. These areas saw an increase exclusively in African population from 1996 to 2001, but an increase that in proportional terms was less than for the city as a whole; hence the declining percentage of Africans in legacy areas relative to the rest of the city.

Nearly all, or 130, of the 144 apartheid zoned African areas are African legacy communities. Conversely, only 12 African legacy communities were not originally zoned African.[42] With a few exceptions then, the map of African legacy communities matches apartheid planning for where Africans would be forced to live.

There were two main projects of apartheid planning for African settlement: first, to separate Africans from other race groups, and second, to attempt to transition Africans to rural "homelands." Of the 142 African legacy communities, 81 were zoned as urban (75 as African townships, the others Coloured, white, or Indian), and 61 were zoned as rural (55 as African rural). The 81 zoned urban areas had an African population of 973,848 in 1996, and 1,061,192 in 2001. The 61 zoned rural areas had a population of 427,813 in 1996, and 517,887 in 2001.

Nearly all of the communities that compose the urban townships of Durban are racialized, with no race diversity, limited class diversity, and little to no access to the core economy. Table 6.8 contains descriptive statistics on African legacy areas.

Table 6.8. African Legacy Areas.

African Legacy Areas (N=141)	**1996**	**2001**
Population Density (per sqk)	6294	6263
Distance to Major Highways	2097m	
Informal Housing	34%	25%
Toilet Access	40%	59%
Unemployment Rate	49%	60%
Income Rank	300	256
Skilled Labor	62%	64%
Professional Labor	13%	13%

[41] The term *legacy* is a temporal one: a single group community in 1996 that remained single group in 2001. The set of legacy communities is therefore smaller than the set of single group communities in either 1996 or 2001, corresponding instead to the overlap between the two.

[42] These 12 communities are: Siyanda-Camp and Tshelimnyama-Mpola, originally zoned coloured; Luganda, zoned Indian rural; AMT Industrial, Cato Crest, Chesterville, and Mobeni, zoned white; Amawoti, Etafuleni, Oceans, Tin Town, and Uthweba, zoned white rural.

These communities tend to be far away from highways and freeways, with few having major roadways running through them. Nearly all of the informal housing in the city was in these communities in both 1996 and 2001; the rate however decreases, even with the population increases in these areas, a finding that matches with the scale of housing construction I describe in chapter seven below. The unemployment rate is staggeringly high, with increases from 1996 to 2001 that match the general downturn and crisis of unemployment in Durban and South Africa more widely during this time frame. Of the relatively few people working, a slightly increased majority were in skilled positions by 2001. Rates of professional employment remained the same.

Key informants, including respondents involved in local governance in KwaMashu and city planners, described substantial variation in quality of life in urban African legacy areas. KwaMashu is the oldest and most formal of the townships to the north of the city; in some ways, the classic apartheid township. The land was originally state owned (verses tribal or mission land for other areas), and the state built hostels with standard two room flats to house temporary workers. KwaMashu was planned as a labor reserve for white industry.

Central parts of KwaMashu have within the last several years received significant infrastructure and economic investment. The town center is bustling with national chain stores, including a large and highly profitable grocery store, and the Metro authority has built and paved roads. One of the important drivers of this investment has been the Area Based Management (ABM) program: the INK (Inanda, Ntuzuma, KwaMashu) ABM is one of the more effective deliverers of funding and programming. KwaMashu has in the last few years become a somewhat more appealing place for people to live, and respondents suggested that those with the means to move may not be leaving in as great numbers as was previously the case. Several respondents in the Housing Department, City Planning, and the INK ABM suggested that a growing number of Africans with means were keeping houses in KwaMashu while also having property in other parts of the city. By 2001, though, though, the urban renewal of KwaMashu had not progressed nearly as substantially.

Neither Inanda nor Ntuzuma, which flank KwaMashu, has received the same level of investment. Both townships are quite different from KwaMashu. Inanda was historically a more complex, heterogeneous place, with much mission and tribal rather than state owned land, and it was known as a freer place that provided some refuge from the police. Inanda was much more difficult to plan and surveil for the apartheid state. It has more informal settlements than KwaMashu, as does Ntuzuma, and these areas remain some of the most difficult places to live in the city.

Across Inanda, Ntuzuma, and KwaMashu, one of the most striking characteristics is the continued absence of local businesses, a legacy of apartheid-era laws preventing local business development and the very limited local capital base on which residents can build. The local business directory produced by the INK ABM, which includes only indigenous businesses, has only 216 listings despite serving areas with a combined population of over 600 thousand. The limited emergence of local businesses is particularly discouraging given the longstanding focus in South Africa on strategies to encourage new small, medium and micro enterprises (SMMEs) in townships (Rogerson, 1997; Harrison et al. 1997).

Umlazi, the main township to the south of the urban core, has a different history than KwaMashu, though it is also a formal township. Umlazi was tribal land, rather than state land, and was built in the 1960s with more resources than KwaMashu. Umlazi was not as heavily settled as KwaMashu early on, and to this day the townships of the north weight the bulk of Durban's population to the north of the Emgeni River. The consensus now among city planners is that Umlazi has been better serviced and more developed, due both to its historical advantage and to its closer proximity to the airport, the South Industrial Basin, and the urban core. Still, the thrust of Durban's development now and in the future is towards the north, with a new airport being planning to the north along with new industrial areas, the massive Gateway mall complex, and wealthy Umhlanga, so Umlazi may be losing its (very relative) spatial advantage in Durban's economy.

Housing in African legacy areas varies as much as the townships themselves. The most developed and well located areas in townships have formal homes of varying sizes, mostly linked to formal services due to massive infrastructure and service rollout since the end of apartheid, which I discuss in chapter seven. Housing stock degrades quickly though, from smaller and less well built formal homes to the publicly built 36 and 40 square meter RDP homes to, at the bottom end, informal dwellings, or shacks. As I show in chapter seven, access to services varies with quality of homes, both in the presence of bulk infrastructure and in individual access to services; in townships, service cutoffs due to non-payment are a fact of life. Social services in townships are also limited; more formal and central areas tend to be well serviced by clinics, community halls and the like, but public housing areas and informal settlements are far less so. Municipal data on hospitals and clinics, which I review in more detail in chapter seven, show that no urban townships are serviced by full hospitals.

As I will discuss in detail in chapter seven, the program to expand infrastructure and services in townships has undeniably resulted in quality of life improvements. Greater access to water, either through in home access or the system of community stand pipes, and better electricity infrastructure, if not always actual service, has meant some improvements to communities. At the same time, more than three quarters of the African population remains in legacy areas, for most because they do not have the resources to leave. In recent years, as suggested above, townships may have begun to improve to the extent that they are becoming desirable places to live, not just because of social networks but because of better quality of life. This was less the case in 2001, though social networks still played a large role in people's decisions about where to live. Many respondents discussed the ubiquity of ties to townships for Africans who had moved out, including to some of the newly mixing areas I discuss below. Several respondents who work in the INK ABM said that people choose not to move out because their close network of neighbors provide them security from break-ins and theft, while unknown neighbors in other parts of the city would not.

The biggest scourge in African townships, one that keeps people locked into these racialized communities of the spatial hierarchy, remains unemployment (Seekings and Nattrass 2005). With close to two thirds of eligible people out of work in 2001, few prospects for major community change exist, despite important improvements to quality of life through better infrastructure. The extent of unemployment in African townships underscores the importance of access to the core economy, and how lack of access associated with apartheid geography continues to stunt development. Infrastructure

improvements, particularly those that formalize housing and services in poorly located communities, have not led to development because they do not close the economic access gap that limits prospects for poor Africans. Widespread delivery has effectively assuaged important civil society demands for public investment (Mabin 2005). However, delivery in townships in the late 1990s, especially insitu upgrade housing projects, has exacerbated the spatial hierarchy by locking people into non-developmental spaces (Huchzermeyer 2005).

Indian Legacy Communities

Indian legacy areas are primarily in Phoenix and Chatsworth, the two apartheid zoned Indian urban townships to the north and south of the central city: only four (Merewent and Mondi, south of the bluff, and Verulam West and Tongaat South to the north of Phoenix) of the 35 Indian legacy communities are outside of Phoenix and Chatsworth. All Indian legacy communities were zoned Indian under apartheid. However, only 35 of 85 total areas zoned Indian under apartheid were Indian legacy communities; the other 50 communities had a range of Indian representation, though the large majority of Indian zoned areas were over 40 percent Indian. Indians were dispersed in far greater proportions than Africans outside of legacy areas, and by increasing amounts. This was party because of the closer proximity of Indian areas to white areas in the apartheid city structure, and partly due to the larger economic and human capital resources Indian communities could mobilize, given their status with respect to the racial hierarchy. In 1996, 52.4 percent of Indians lived in Indian legacy communities; by 2001, than number was down only slightly to 49.6 percent.

Much of Phoenix is Indian legacy, and in 2001 about 108,000 Indians, or one sixth of the city's Indian population, lived in its legacy areas. A similar number, about 128,000, live in the Indian legacy areas, all Indian zoned under apartheid, in and around Chatsworth. Housing in these areas was built by the state in the early apartheid era to house Indians forcibly removed from the urban core. Much of it has since been renovated or reconstructed entirely. When the housing market began to function effectively in Indian legacy areas, many Indians were able to derive some wealth from home ownership and improvements, an option not available to Africans, who leased land in the townships.

Two observations emerge from comparison of apartheid zoning of the Indian population and the locations of Indian legacy communities. First, of the three contiguous areas zoned Indian – Chatsworth, Phoenix, and the Newlands/Resevior Hills area, only the first two contain legacy Indian communities. Indian proportions in the Newlands and Revservior Hills areas vary more, with other groups represented. Second, not all of Phoenix and Chatsworth are legacy areas. Instead, the central parts are legacy areas, remaining essentially unchanged, while the Indian population at the geographic outskirts of Phoenix and Chatsworth areas has eroded, at least in proportional terms. I analyze the changes happening to these boundary areas below.

Table 6.9. Indian Legacy Areas: Descriptive Statistics.

Indian Legacy Areas (N=35)	**1996**	**2001**
Population Density (per sqk)	6170	6482
Highway Distance	1026m	
Informal Housing	0.4%	1.1%
Toilet Access	99.5%	98.6%
Unemployment Rate	15%	22%
Income Rank	145	230
Skilled Labor*	95%	92%
Professional Labor*	26%	26%

*Indian workers only.

Indian legacy areas are ethnicized, with little racial diversity but both class diversity and some level of access to the core economy. They are half the distance to major roadways as African legacy communities, with similar urban population density. Services and housing were entirely formal.The unemployment rates in both 1996 and 2001 were categorically different than in African legacy communities: very high for industrialized country standards, and increasing, yet under a third of the African rate. Nearly all Indian workers were skilled, though the rate declined slightly, and the rate of professional labor remained constant at twice that of African legacy areas.

These Indian areas have the feel of ethnic enclaves in other cities around the world; Indians have lived in Durban for well over 100 years, and these areas bear the markings of Durban's unique Indian-South African culture. Indian legacy areas have much higher business density than African ones, including many ethnically embedded businesses and organizations. The decline of Indian legacy areas has been associated with the movement of wealthier Indians to the urban core, including to areas on the edge of the core that were, before forced removals, primarily Indian. I discuss those areas in greater detail below.

White Legacy Communities

White legacy communities were located in four key areas: the northern, western, and southern suburbs, and the bluff in the South Industrial Basin. Glenwood, in the western part of the urban core, was the sole central city white legacy holdout. The locations of white legacy communities stand in stark contrast to the areas of the city that experienced change between 1996 and 2001. The entire traditional Durban "T" was zoned white during apartheid, including the center city and north, south, and westward spokes; excepting the bluff and Glenwood, the legacy areas for whites are suburban, along the outer reaches of the T, rather than in the center city. As a result, only 36 of the 121 white zoned communities under apartheid were legacy white (an additional two white legacy communities were not zoned white under apartheid). Many of the remaining areas are among the best, most centrally located areas of the city.

Of the city's roughly 316 thousand whites in 1996, 45 percent lived in white legacy communities; that percentage stayed the same in 2001, meaning that the overall decline in the white population of the city was matched in white legacy areas. In both periods then, a bit more than half of the city's white population remained in fairly central areas that experienced some degree of residential racial mixing in 1996 and/or 2001.

Table 6.10. White Legacy Areas: Descriptive Statistics.

White Legacy Areas (N=38)	1996	2001
Population Density (per sqk)	1438	1360
Highway Distance	724m	
Informal Housing	0.6%	0.7%
Toilet Access	99.4%	98.7%

Data on white legacy communities shows substantially lower population density than African or Indian legacies, a testament to the suburbanization of the white population. Despite lower population densities, white legacy areas are very close to major roads because they have followed the T structure. These areas were fully formal and serviced.

Table 6.11. White Legacy Areas: Income and Occupation.

White Legacy Areas (N=38)	1996	2001
Unemployment Rate	4%	8%
Income Rank	32	42
White Skilled Labor	97%	98%
White Professional Labor	59%	60%
African Skilled Labor	29%	40%
African Professional Labor	10%	20%

Unemployment in white legacy areas was low by any standard in 1996, and crept upward to a rate about average for industrialized countries in 2001. Income data show that white legacy areas were the wealthiest in the city. Nearly all formally working whites were skilled, and almost two thirds were professionals. I included African workers in the table because of the reported presence of live-in domestics. The total number of African workers was about one fifth of that of whites in these areas; in 1996, nearly three quarters were unskilled. By 2001, that number was up to 40 percent – still well below the African average, but indicative of an increase in the number of wealthy Africans who were able to access these areas. Still, these proportions represent a small number of workers: in 2001, while 20 percent of working Africans in white legacy areas were professionals, there was only one African professional for every 13 white professionals.

The four regions where white legacy areas predominate are quite different. The suburbs to the north – on the coast, in an unbroken seam from Prospect Hall and Athlone to Umhlanga – are wealthy and serviced by their own highway, which runs along the coast. Each exit off that highway, from the beachfront north, leads to a white community. Umhlanga has elite hotels, restaurants, and residences, and is home to many of the richest people in Durban. The western suburbs are similar to Umhlanga, though more newly settled with white flight from the center city. City officials indicated that companies that fled the urban core went primarily to the western suburbs, where they could benefit from proximity to Pine Town and where their white employees would have shorter commuting distances.

The Bluff, with occupations statistics shown in table 6.12, and the Southern suburbs are middle to working class white areas. The Bluff is historically more Afrikaans than English, and provided residents with easy access to manufacturing jobs in the South

Industrial Basin. Very low proportions of the few Africans in the Bluff are skilled workers, likely indicating that most are live-in domestics. The southern suburbs – Amanzimtoti and Kingsburgh – were resort towns for working class white South Africans during apartheid, while Umkomaas to the far south is a tourism and scuba diving town.

Table 6.12. Bluff Communities: Income and Occupation.
Fynnlands, Grosvenor, Ocean View, Brighton Beach

White Legacy Areas (N=38)	1996	2001
Unemployment Rate	6%	10%
White Skilled Labor	96%	97%
White Professional Labor	44%	45%
African Skilled Labor	26%	35%
African Professional Labor	9%	14%

White legacy areas are ethnicized areas in the spatial hierarchy, but are not ethnic enclaves as the term is traditionally used in the literature, referring to minority or immigrant communities benefitting economically from community ties (e.g. Wilson and Portes 1980, Abrahamson 1996). Instead, they are what Marcuse (2005) refers to as citadels, or elite areas fortified against intrusion by other groups. Johannesburg's gated communities, for instance in Sandton, are the most extreme example of this kind of fortification, but Durban's white suburbs are strong examples as well. Indeed, there gated white communities have begun to emerge, for instance in the north near Umhlanga (Durington 2006). A small number of wealthy Africans and Indians sometimes live in the highest end white communities, but these areas still represent some of the few spaces where race mechanisms operate as strongly as class ones to exclude non-white groups.

Across all three groups, legacy communities maintain the stark divisions of the apartheid city, their characteristics tightly aligned with the three-tiered apartheid racial hierarchy. The extent of segregation across the city as a whole is driven by legacy areas; so too are the extremes of maintenance of disparate developmental paths. However, they do not constitute the entirety of the city. Many areas of the core and some areas in the periphery have experienced change in community composition.

Shared Configurations of Racial Mixing

In this section, I focus on two types of racial residential composition that account for many of the communities that have undergone the most change. The first type is composed of communities that are majority white (or greater than 50 percent white) with significant representation of both Africans and Indians (as defined in chapter five). The second is composed of communities that are majority Indian with significant representations of Africans. As indicated in the transition matrix in chapter five, these two types were the most common mixed racial configurations in 2001.

I temporally subdivided these two categories, following the logic I outline in chapter five. This is a study of change over time, meaning that I need to examine the racial configuration of these communities in 1996, and explain changes that occurred between 1996 and 2001. So the first subdivision involves identifying communities that began as single group in 1996, and then arrived at the focal configuration by 2001.

Second, as I discussed in chapter five, the census is a snapshot of the racial configuration at the particular moment of enumeration. The time points of the census of

are five years apart, during which time many people would have moved. As I describe in chapter five, using a single time point to identify mixing may mischaracterize an in-progress change in composition, e.g. with two groups passing each other as one arrives and the other departs. White flight has been a driver of changing racial configuration in many urban areas in the United States, for example, but for moments in time communities that are experiencing white flight appear racially mixed. It is important to identify configurations of racial mixing that are relatively stable, or not characterized by the flight of one group and the arrival of another (see Ellen 2000 for a discussion of stable racial integration in the American context). The second subdivision therefore involves identifying communities with the focal configuration in both 1996 and 2001, and comparing them to the communities that changed. The communities that held on to the same racial configuration – majority white, with some African and Indian representation, or majority Indian with some African representation – may have reached a stable equilibrium, and I compare these communities to ones that experienced shifts.

Majority White, with Some African and Indian

I focus on two types of communities in this section, as described above. The first are those that were single group white in 1996, and by 2001 had become majority white, with substantial populations of Africans and Indians (as a shorthand, I will refer to this configuration as mixed majority white). The second are those that had arrived at mixed majority white by 1996, and retained the same basic configuration by 2001. These latter communities, therefore, were at least during this time period stable in their racial configuration, and not characterized by major flight. Map 6.2 displays the relative location of these two types of communities, on a background of white, Indian, and African legacy communities.

The following set of communities had arrived at the mixed majority white configuration by 1996: Northdene, Hillary, Memorial Park, Mount Vernon, Woodlands, Umbilo, Essenwood, Umgeni Park, and Parkhill. They were scattered around different parts of the city, including the Berea in the center, the Old Line railway stretch southwest of the core, and Woodlands north of Umlazi. A nearby set of communities were single group white in 1996, but mixed majority white by 2001: Escombe and Malvern (Old Line suburbs); Yellow Wood Park; Wentworth in the bluff; Bulwer, Musgrave, Windermere, and Morningside in the Berea; Westville Central; and New Germany, near Pine Town. Together, by 2001, these communities formed a series of contiguous groups, sharing certain characteristics in common and having what appears, from geographic and temporal continuity, to be a stable racial residential configuration. These communities are not all characterized by the same path. Instead, three different histories of change and continuity emerged from interviews and workshops: the Berea communities, the Old Line Suburbs, and the New Germany area.

<u>The Berea</u>

The Berea communities – Bulwer, Musgrave, Essenwood, Windermere, and Morningside – form a seamless line of mixed, majority white communities in the premiere neighborhoods of the central city. These neighborhoods fall on the upper slopes of the first ring of hills, with elite services and spectacular views of the city, and are

served by the high end Musgrave Center retail mall, one of Durban's racially integrated social spaces.

Table 6.13. Racial Residential Composition, Berea Communities.
Bulwer, Musgrave, Essenwood, Windermere, Morningside.

Berea Communities	**1996**	**2001**
White	74%	59%
African	16%	20%
Indian	8%	18%

The Berea neighborhoods contain some of the most expensive housing stock in the central city; the steep slopes of Morningside are filled with large homes and mansions; long walled off driveways provide high security, and many home owners have dogs for security as much as companionship. However, the Berea also contains a large number of flat developments, both for rental and purchase. Respondents in City Planning reported that the mix of housing stock is one key driver of change is these areas – students, well off singles, and well off young couples are able to move to these high end neighborhoods while avoiding some of the exorbitant housing costs. These neighborhoods are very desirable: they are extremely well located, near highway and bus routes, close to markets and shopping, and close to the CBD. Young African and Indian people, who were able to take advantage of access to the market either through affirmative action programs or business development, have moved to these areas. Table 6.14 shows the substantial increase in both skilled and professional Africans in the Berea between 1996 and 2001. A second indicator of the changing occupancy of homes in these neighborhoods is that average household sizes are quite low: below three people per household, and dropping. Some of this low household size is also driven by the presence of students in the area who attend the Durban Institute of Technology in Musgrave.

Table 6.14. Occupational Statistics by Race Group, Berea Communities.

Berea	**1996**	**2001**
White Skilled	98%	98%
White Professional	62%	64%
African Skilled	**34%**	**56%**
African Professional	**15%**	**30%**
Indian Skilled	97%	99%
Indian Professional	67%	69%
Total Unemployment	4%	6%

At the same time as Africans and Indians are moving in, whites are not moving out in numbers much higher than their general decline in the city as a whole. Some whites are leaving, but in these neighborhoods they have not left in enough numbers to drop below the 50 percent threshold. The Berea still represents the highest end property and services in the city, so white flight has not taken hold in the same way as in other parts of the central city.

A major driver of change in the Berea has been property prices (an issue that came up in nearly every interview for many communities around the city). Durban's housing boom occurred primarily after 2001, but the housing prices in the Berea have always been high. The presence of apartments means wealthier young couples can afford to live there, while the maintenance of high prices for stand alone houses means that wealthy residents – historically white, but increasingly Indian as well – are staying.

The Berea neighborhoods are very appealing – for those looking for luxurious living that is more urban and integrated than the white suburbs to the north and west, for those looking for fenced off and highly secure homes, and for young professionals with disposable income and social connections. Musgrave Center has been for a long time an area of integration, a place where the central city's elite shop, drink coffee, and socialize. The Center has an upscale cinema, a range of restaurants from a quick pie shop to high end cafes, a large grocery store, and a number of higher end retail shops. Musgrave Center is in some ways the most elite of the many shopping malls in the city, including the massive developments at Pavilion to the west and Umhlanga Rocks to the north.

Similarly, a cluster several of dozen restaurants, clubs, and bars can be found in Musgrave and Morningside, on a stretch of Florida Road. Most nights these places are populated by people of all races – access is determined far more by class than race. Also near or in the Berea are a number of parks and athletic fields, ABSA stadium where the local Rugby team, the Sharks, plays, a number of car dealerships, computer stores, other restaurants, and more working class shopping areas primarily frequented by Indians and Africans. The range of commercial and social options available in and around the Berea is quite substantial; this may be a reason that many of the communities are holding on to a diverse residential population, by race though not by class.

<u>The Old Line Suburbs</u>

The second set of neighborhoods experiencing the mixed majority white configuration – but a very different array of social and economic characteristics – is the Old Line Suburbs. These railroad company developed communities run along the old rail line and later the Edwin Swayles Freeway, north of Chatsworth. By 2001, the mixed majority white configuration characterized all the Old Line Suburbs: Mount Vernon, Memorial Park, Hillary, Malvern, Escombe, and Northdene. However, the processes that drove these communities to this configuration were quite different than what operated in the Berea.

Table 6.15. Racial Residential Composition, Old Line Suburbs.
Mount Vernon, Memorial Park, Hillary, Malvern, Escombe, and Northdene.

Berea Communities	**1996**	**2001**
White	73%	58%
African	11%	13%
Indian	15%	26%

The Old Line Suburbs were, before the Group Areas Act, densely populated by Indians. Forced removals sent the Indians to bordering Chatsworth and Shallcross, and working class whites, many of them Afrikaans, took their place. Northdene in fact was a bastion of right wing political Afrikaans organizing in the 1970s and 1980s. These

neighborhoods had modest housing, mostly stand alone, on small plots, but larger than those in Chatsworth.

By the early 1990s, with the relaxing of apartheid laws, some of the neighborhoods began to change. Indian families began moving from Chatsworth, first to Mount Vernon and Northdene, and eventually back to all of the Old Line Suburbs. Indeed, most of the influx in these communities before 1996 and between 1996 and 2001 was Indian rather than African, although there were also new African residents.

Respondents involved with the civics and planning in Chatsworth indicated that many young urban professional Indians left Chatsworth after transition, leading up to and during this time period; they went both to the central city and to the Old Line Suburbs. These reports match the quantitative data showing declining income in Chatsworth. While there was a level of comfort in Chatsworth, a "social value" associated with family networks, temples, and shared culture, people wanted to upgrade to better housing stock. Many remained in Chatsworth and upgraded the original three room houses that defined so much of the area. Other wanted to move though, and the Old Line Suburbs provided bigger plots of land and larger foundations on which to upgrade. Also, as compared to the central city, these suburbs provided stand alone houses that were affordable due both to their more distant location, to the older age of the housing stock, and to the working class characteristics of the communities. Finally, the Old Line Suburbs were near Chatsworth, meaning people could leave Chatsworth but retain ties to their families and social networks who stayed. Respondents indicated that younger Indian families who have moved into houses in these suburbs might leave older family members in Chatsworth, but remain close enough to continue to provide care.

Table 6.16. Occupational Statistics by Race Group, Old Line Suburbs.

Old Line Suburbs	**1996**	**2001**
White Skilled	97%	97%
White Professional	42%	45%
African Skilled	41%	50%
African Professional	13%	25%
Indian Skilled	97%	98%
Indian Professional	49%	52%
Total Unemployment	7%	10%

Whites stayed in the Old Line Suburbs for different reasons than in the Berea. As table 6.16 shows, whites in these areas tended not to be professionals; working class whites did not fared as well in post-Apartheid South Africa as professional whites. Their property values did not, at least by 2001, appreciate in the same way as central city properties. For a certain subset of the white population, then, residential mobility was not an option in the same way.

The Old Line Suburbs now are very densely populated, though still primarily with stand alone housing stock. Land plots are relatively small, and houses have grown to encompass them, with residents building expansions, adding the walls and barbed wire fences common to properties all around Durban, and painting the houses in vivid neon and pastel colors. Most of these dense residential neighborhoods are organized in a series of cul-de-sacs off major roadways, with small roads winding up and down the steep hills

that are so prevalent this far from the ocean. The quality of housing and roads in these areas varies: Mount Vernon, for instance, has a range of homes relatively larger than some of the other communities, with higher levels of security and very new roads. In other Old Line suburbs, there is less security (fewer and shorter walls, for instance), some newer lower-middle class apartment developments, older streets and pavement, but still evidence of people adding, building, painting, and otherwise improving homes. None of these suburbs are in any way being abandoned or declining, unsurprisingly given the massive increase in Durban's population in the last 10 years.

These suburbs are retail serviced by small strips of stores that pop up at various points along the Edwin Swayles Freeway and other key traffic routes. At one of these strips, I found a mix of business types and people: pedestrians, primarily African, and drivers, Indian, white, and African; stores including a sports bar, a hardware store, an internet café, two hair salons – one oriented towards white working class weddings, as the photographs on the façade indicated – and a computer store that looked to have recently gone out of business. This strip was organized around a petrol station, frequented by a high proportion of commercial trucks in addition to cars.

Mixed, Majority White Communities and the Spatial Hierarchy

Both the Berea and the Old Line Suburbs fall into hardened parts of Durban's spatial hierarchy, despite their mixed racial composition. They are stratified communities, with racial diversity and access to the core economy but little class diversity. Racial change in these communities has been driven in part by a process of decompression (Hindson and Morris 1997), in which Africans and Indians who had resources (economic, human, and/or political) but were prevented from moving to the core by apartheid laws were able finally to do so. Some of this change began before 1996, as evinced by the communities that were by that time already mixed majority white. The state facilitated capital accumulation for non-whites through affirmative action programs and African Economic Empowerment (BEE), which put non-white ownership requirements on corporations. Africans who were politically connected to the ANC were particularly able to take advantage of BEE (Marais 2000). Finally, white flight from the core to white legacy areas described above, or out of Durban or South Africa entirely, created market availability for Africans and Indians moving into the core.

The key aspect of these communities that make them a part of the spatial hierarchy is the tight bands of class that constrain entry into them. Africans and Indians who move into both of these sets of communities must already have resources to do so – more for the Berea than the Old Line Suburbs, but in both instances far more than nearly all Africans and many Indians can access. The Berea neighborhoods in particular are prime examples of the shift from race to class mechanisms described at the national level by Seekings and Nattrass (2005). As Hook and Vrdoljak (2001: 212) argue, the new racial politics of space are predicated "not so much on categorical racial prohibitions as on highly individualized and specific rights of admission." In these communities, substantial capital, both human and economic, determine rights of admission for Africans and Indians (and indeed whites).

This is not to minimize the importance of racial residential mixing that is occurring. In these communities, class is for the most part trumping race, itself a massive achievement for a city so steeped in racism. Still, the mechanisms that account for this

change are market based, and only a very limited proportion of the residents of the city have effective access to functioning markets. The segmented economy and labor market mean that for, at the very least, most of the 75 percent of Africans in the city still living in legacy areas, these communities are *far* out of reach.

These communities also experienced a property price boom after 2001, much like many other urban contexts. Property price increases added substantially to the wealth of residents, including those Africans and Indians who had been able to gain access. At the same time, for the few residents in townships who owned property, key informants in the Housing Department indicated that prices were actually declining. This was true primarily for residents of public housing in the townships, in part because of the use of substandard materials for construction.

While I have only discussed a subset of the core communities in detail, much of Durban's core is characterized by stratified communities. Not all of them are majority white, but access is determined by tight class bands. The spatial hierarchy in both legacy areas and stratified areas of the core is hardened. The next sets of areas I introduce operate in between African and Indian legacy areas, geographically as well as economically. In these communities, the sharp apartheid-based lines between legacy communities are blurring, driven by class-based movement and the growth in informal settlements.

Majority Indian with Some African

I follow the same pattern as above in this section, but with a different racial configuration. Here, I identify communities that by 2001 were majority (over 50 percent) Indian, but with signficant populations of Africans. Again, I subcategorize these communities: ones that had arrived at this configuration by 1996 and held it to 2001, and ones that were single group Indian in 1996 and shifted this configuration by 2001. Map 6.3 displays their locations. I will focus on three different areas of the city where majority Indian with some African communities are located, each with different factors associated with mixing.

Communities in and around Phoenix, Verulam Central, and Tongaat Central

I begin in the north, in the historically Indian township of Phoenix, across the way from the N2, from Umhlanga Rocks, and from the Gateway retail complex. As I discussed above, not all of Phoenix is composed of Indian legacy communities. The edges of Phoenix have begun to change. Westham and Redfern both fall in Phoenix, but on the border with KwaMashu and its African legacy areas. These communities, between 1996 and 2001, went from single group Indian to majority Indian with some African population. Just to the south, Clayfield and Rockford have experienced the same. These communities saw an influx of 8,500 Africans between 1996 and 2001, totaling a 54 percent increase, with only a small decrease in the number of Indians.

Table 6.17. Occupational Statistics by Race Group.
Communities in and around Phoenix, Verulam, and Tongaat.

Phoenix, Verulam, Tongaat	**1996**	**2001**
Indian Skilled	96%	93%
Indian Professional	31%	31%
African Skilled	56%	68%
African Professional	21%	20%
Total Unemployment	14%	22%

Respondents in the INK ABM and in City Planning indicated that most of the movement here was associated with the private housing market, rather than informal settlements. Table 6.17 shows a substantial increase in Africans in skilled positions – though not the increase that the core communities saw in professional positions. The increase in unemployment is in line with Indian legacy communities in the city over this period.

With the exception of Trenance Park, which borders the high informality township of Inanda and did receive informal settlements[43], the changing areas around Phoenix had a notably low percentage of informal housing and high levels of formal services. Quality of schools was reported to be a major factor in African movement into Phoenix; schools in KwaMashu suffer from serious problems, and the demand for better schooling that can be found in Phoenix is high. Similarly, demand for better health care may be driving African movement into Phoenix, given the absence of hospitals in KwaMashu, Inanda, and Ntuzuma. Respondents told me that even now the only anti-retroviral drugs available in the area are distributed at Mahatma Gandhi Hospital in Phoenix. Finally, African movement to Phoenix provides a similar kind of upgrade that Indian movement from Chatsworth to the Old Line Suburbs provides: better properties, access to a private housing market, and more social and infrastructural services, in close enough geographic proximity to the townships for residents to hold on to family and social connections.

The local state is now seeking to facilitate these blurring borders between KwaMashu and Phoenix by building what they call a "Bridge City." The Bridge City is being constructed in Phoenix Industrial, just south of Redfern and just west of Phoenix's major industrial complex. It will house primarily government buildings and services, and is in part intended to increase linkages between the two historically separate areas of the city. The location of public offices to draw market investment is a common planning strategy (Harrison et al. 1997: 50). Also currently under construction is a highway from KwaMashu through Ntuzuma and KwaDabeka to Pine Town, which should have important effects on economic opportunity for township residents. This highway will also connect residents of the western suburbs to the new airport and to Umhlanga, with no detour through Spaghetti Junction, the N2 N3 linkage point just west of the center city. The northern part of the city is becoming the new hub.

Multiple respondents reported that "alternate CBDs" had emerged to the north of the city in the 1990s, including Tongaat Central and Verulam Central, both areas that

[43] Trenance Park went from one percent informal housing in 1996 to 12 percent in 2001; all other communities were at or under one percent in both years.

were Indian in 1996 and shifted to majority Indian with some African population in 2001. With commercial and retail opportunities, and in relative proximity to the highway, these areas became more appealing. A band of continuous, if thin, Indian residential areas during and just after transition were book-ended by Tongaat Central to the north and Phoenix to the south. These areas were located between the residentially white coast and inland sugar cane farms. Parts of this band are still Indian legacy areas, but Africans have been able to move to some of these communities. This band will become increasingly well located as the economic core of the city continues to move north. In 2001, property prices had yet to increase substantially, and there were options for public housing; as a result, Africans who had some resources but not enough to move to the core were able to access these places.

The communities to the north of the core that were majority Indian with significant African populations were for the most part stratified communities. Excepting Trenance Park, these were communities where working class and lower middle class Africans with some resources could move to improve their developmental potential. They were not as inaccessible as the stratified communities of the core: fewer resources were necessary for access, meaning they were open to a broader set of Africans in townships.

Chatsworth

The borders of Chatsworth, particularly the southern borders, have also begun to change, in a pattern that from a distance appears the same as Phoenix: communities that border African legacy areas, here Ulmazi, shifting from Indian to majority Indian with some African. However, residential changes in Chatsworth have followed a very different path from Phoenix, despite their similar composition change. Most of the influx of African population in Chatsworth, and the formerly Indian areas around Chatsworth, has been a result of "land invasions," or informal settlements of Africans. In particular, Crossmoor, Bayview, Klaarwater, and Bulbul have high densities of informal settlements. Also, Bottlebrush, just southeast of Crossmoor, is one of the most established African informal settlements in the city and the one area in the center of Chatsworth that is not an Indian legacy area. Klaarwater and Bulbul were originally zoned as rural Indian areas, serving in part as buffer zones between Chatsworth and Umlazi. Klaarwater's informal settlements arrived early, by 1996, and census data indicate that it was one of the poorest communities in the city at that time. Excepting Klarwaater, which improved somewhat economically, the other communities around Chatsworth declined precipitously in relative wealth between 1996 and 2001.

Table 6.18. Racial Residential Composition, Communities around Chatsworth.

Communities around Chatsworth	**1996**	**2001**
Indian	91%	69%
African	8%	30%

Table 6.19. Occupational Statistics by Race Group, Communities around Chatsworth.

Communities around Chatsworth	1996	2001
Indian Skilled	95%	91%
Indian Professional	31%	28%
African Skilled	62%	65%
African Professional	32%	23%
Total Unemployment	15%	28%

The shifts in these communities, which show residential mixing because of informal settlements of Africans amid formal Indian residential areas, are difficult to characterize. Life in informal settlements is far more precarious than in many types of formal housing: Africans in informal settlements like those in Bayview do not have formal services like water and electricity, nor do they have formal homes that provide long term protection from weather, fire hazards, and crime. Residents of these settlements tend not to interact socially with Chatsworth residents around them, though they may find economic opportunity in the community in a market or through the informal economy. In that sense, then, an African informal settlement that is geographically within the confines of an Indian area might be considered residentially diverse but not socially integrated, based on the lived experience of residents.

At the same time, Africans in Bayview's informal settlements have chosen to live there; are closer to transportation, some types of services, and economic opportunity than they might be in Umlazi; may interact much more with people of other race groups than would be the case in Umlazi; and vote in the same local elections as Chatsworth residents who share the same ward, or political boundary. A program of insitu housing upgrades in these areas, as opposed to the kinds of highly peripheralized upgrades in places like Inanda, might formalize a substantially better geographic location for African residents.

In sum, two very different processes occurred after apartheid in the areas between Indian legacies and African legacies near Chatsworth and Phoenix. In Phoenix, market mechanisms and some public housing drove African movement into the border communities, and towards the alternate CBDs to the north. These are lower middle class stratified communities. In Chatsworth, informal settlements drove the changes. Both resulted in better geographic locations for African residents, providing better access to markets and more services. Neither, however, provides a path to development that could encompass a substantially larger portion of the African population. Most Africans do not have the resources to move to Phoenix and other areas to the north. Conversely, few poor Africans have access to well located informal housing in Durban, where the core and many Indian areas have been protected from new informal settlement since the shortly after transition.

The Central Business District

As I described in chapter three, in 1996 Durban had three communities that were distinct from the spatial legacies of apartheid: the CBD, Cato Manor, and St. Wendolins. The CBD continue to change in racial composition through 2001. In 1996, the racial composition was 40 percent African, 24 percent Indian, and 28 percent white – seemingly very mixed, but an instance of a census snapshot taken in the midst of a determined white flight. By 2001, the CBD was 62 percent African, 20 percent Indian, and 11 percent

white. The period saw a substantial influx of Africans (from 6500 to 12,700), no change in the Indian population, and a halving of the white population (from 4,605 to 2,280). Many of the whites who remained were poor and some were homeless (Waters 2007). The African influx was primarily working and middle class, though not the burgeoning wealthy middle African middle class frequently mentioned in South Africa. Instead, teachers, service workers, and other young professionals moved in, together with some poor Africans taking advantage of poverty services available in downtown areas (Roberts 2007; Waters 2007). Table 6.20 shows population statistics, and it is particularly interesting to note that in both years, the occupational structure of all three race groups is essentially the same.

Table 6.20. Occupational Statistics by Race Group, Central Business District.

Central Business District	**1996**	**2001**
White Skilled	96%	95%
White Professional	41%	38%
Indian Skilled	97%	96%
Indian Professional	43%	44%
African Skilled	82%	89%
African Professional	42%	40%
Total Unemployment	11%	25%

Durban's CBD did not experience the extreme flight associated with the Johannesburg CBD –corporate abandonment of skyscrapers and relocation to Sandton, and massive influx of informal settlements – but did swiftly change from a white working class area during apartheid to what was in 2001 a majority African community, with some Indians and whites. Key informants indicated that the white flight continued during the next several years, and described the CBD as essentially devoid of white residents. The CBD continues to be ideally located for access to transportation and economic opportunity, and its residents experience substantially more integration into Durban's economy. The CBD is therefore a stratified middle class community, much like the majority Indian communities that experienced increases in African population I identified above. The extent of similarity in the occupational structure may also indicate some degree of real social integration (at least among Africans and Indians, given white flight).

Durban's Post-Apartheid Spatial Hierarchy

Racialized, ethnicized, and stratified communities make up the vast majority of the city. These areas constrain development. They frequently do not preclude development; indeed, ethnicized and stratified communities often promise developmental pathways to those who can access them. However, the nature of the spatial hierarchy is to provide these pathways to some, in a manner consistent with the spatial assimilation model, while at the same time locking other people into stagnant places. In this way, the spatial order of the post-apartheid city is much the same as that of the apartheid city, though with different maintenance mechanisms. In a pattern similar to the maintenance of the developmental regime through the political transition described by Seekings and Nattrass (2005), the spatial structure of apartheid has continued to survive the breakdown in authoritarian laws separating race groups.

Whites in Durban are generally in two places in the spatial hierarchy: fortified suburban enclaves and stratified communities in the core. Those suburban enclaves are riskiest for the long term development of the city, pushing sprawl, pulling capital out of the core markets to edge cities in the north and west, and powerfully maintaining segregation and inequality. The core enclaves, particularly the more working class areas of the Bluff, have less spatial impact, but generally the defended white areas are the last parts of the city where race continues to be a powerful excluding force. More qualitative research is necessary to understand mechanisms of racial exclusion in these areas.

Indians in Durban are primarily in three distinct places in the spatial hierarchy: 1) urban, more traditional ethnic enclaves such as Chatsworth and Phoenix, 2) stratified middle class and wealthy communities in the core, including the Old Line Suburbs, and 3) stratified working and lower middle class communities along the highway to the north of the city, where Africans with some resources have also moved. Indians, represented across the class spectrum, generally fall into the spatial assimilation framework in that they are able to move or, when they do not have residential mobility, are constrained to ethnic enclaves that provide access to the core economy and therefore developmental potential.

Finally, Africans, as Seekings and Nattrass (2005) persuasively argue at the national level, are clearly divided between those who are economically and residentially mobile and those who are stagnating in isolated townships. The large majority of Africans are stuck in areas of townships that, despite the improvements I describe below in chapter seven, continue to provided limited developmental potential. These residents of the city are confined to the place stratification framework, unable to move and, due to history, structural constraints, and lack of resources, unable to generate a path out of stagnation. There are some exceptions emerging, like the KwaMashu town center, but they still contain limited local economic development. Meanwhile, a substantial portion of the remaining 30 percent of Africans (not all, due to the continued presence of live-in African domestic workers in the core) are operating in the spatial assimilation mode, moving to better communities in the core and even occasionally the wealthy suburbs.

This is where Seekings and Nattrass (2005) end, and where many analysts of South African urban space end as well. However, I will show in chapter seven that the state was focused on transforming the spatial structures of apartheid, and not just improving quality of life within the confines of the spatial hierarchy. Certainly, many of the state's activities were oriented toward the latter. However, in chapter eight, I argue that the state, through construction of well located greenfield public housing, was able to generate instances of the final type I develop in chapter two – bridging communities – where the gap between developmental paths for middle class residents and poor Africans in Durban was narrowed.

Chapter 7
State Investment in Durban, 1996 to 2001

From 1996 to 2001 at the national level, the ANC pushed a macroeconomic shift to the neoliberal policies of the Growth, Employment, and Redistribution Act. Policies designed to undermine the racial gap built by apartheid targeted mainly the African middle class, including affirmative action programs that mostly benefited skilled workers and Black Economic Empowerment ownership programs that only the wealthy and well-connected could utilize. These kinds of policies, together with a national occupational shift towards skilled employment and a post-Fordist service economy, resulted in the maintenance of the distributional regime that Seekings and Nattrass (2005) describe.

These were not the only policies undertaken by the state. While the ANC may have been uninterested in altering the distributional regime, it was interested in impacting apartheid based urban spatial structures. This interest was relatively unique, standing in marked contrast to other, similarly resourced states. For instance, Briggs (2005: 236-7) writes that "the United States, as compared to other nations, is long on programmatic know-how and experience—with a rich history of relatively well-documented and highly varied interventions that respond to segregation and its consequences—but short on political will." The ANC did not lack this political will. It prominently stated its focus on changing spatial structures, particularly in the built environment components of the Reconstruction and Development Programme (RDP) enacted in 1994:

> The key to [the link between reconstruction and development] is an infrastructure program that will provide access to modern and effective services such as electricity, water, telecommunications, transport, health, education and training for all our people. This programme will both meet basic needs and open up previously suppressed economic and human potential in urban and rural areas (ANC 1994: 1.3.6).

Infrastructure was at the heart of the program, which targeted *both* quality of life improvements – basic needs – and wider developmental potential for the populace. Quality of life improvements were a first essential step, but would only result in long term development if they linked people to the promise of the historically white economy.

The 1995 Urban Development Strategy of the Government of National Unity (RSA 1995: section 6.2.2) stated this distinction explicitly: "there can be no talk of developed urban areas unless urban residents are better housed and provided with well-functioning infrastructure services." At the same time, there was clear awareness of the dangers of reinforcing the existing urban spatial structure through infrastructure development. Evans (1997) points out that the ramp up of housing provision in townships in the 1950s under apartheid was explicitly intended to lock Africans in poorly located, contained, surveilled areas where they could at the same time provide a labor pool and be restricted from urban development. ANC leaders were clearly aware of this. In the same section, the strategy paper points out that investment can:

> Either reinforce apartheid patterns by supplying infrastructure where:

- People currently live due to past restriction and so reinforce apartheid, and
- Supply infrastructure and housing on distant greenfield sites where land is cheap;

or

- Seek to integrate cities and towns by ensuring that infrastructure and housing are suitably located.

Seven main goals motivated the second option, better located infrastructure and housing to promote integration: promoting local economic development, closing the infrastructure gap, providing housing and security of land tenure, tackling spatial mismatch between work and residence, improving environmental planning, improving local delivery authorities, and establishing secure living and working spaces through crime reduction.

A key difference between RDP policy directed towards the apartheid city and distributional regime policy of GEAR was that rather than determining spatial restructuring policies at the national level, the ANC undertook a concerted effort to decentralize policy making and intervention to empower local government as the key agent of urban change. The White Paper on Local Government (DCD 1996), South Africa's definitive statement on the need to move towards decentralized governance, called this "developmental local government." Extensions of municipal services and various urban renewal projects, while receiving provincial and national funding, would be under the domain of local government (ANC 1994; DCD 1996). In Durban, this meant that a high capacity, motivated, resourced local government would determine how to intervene to impact apartheid space.

In chapter two, I reviewed the state institutional literature to show that these characteristics produce in Durban a local developmental state that can act effectively, if not consistently, across the space of a city. In chapter six, I examined residential change to the race and class composition of communities in the city within the framework of the spatial hierarchy. In this chapter, I chart the emergence of a unified and capacitated local government in Durban. I next examine the program of infrastructure and service expansion undertaken by the state, based on analysis of available municipal spatial data tracking construction over time. I then link this program to the spatial hierarchy, looking at it through the lens of national and local strategies to impact space. Finally, in chapter eight, I identify instances in which the state was able to achieve, albeit on a small scale, what it sought: "…to integrate towns and cities by ensuring that infrastructure and housing are suitably located."

Evolving Local Governance

The 1996 to 2001 time period was an eventful one for local government in Durban. Under apartheid, the territory that now constitutes the Durban Metropolitan Area was composed of six local municipalities, together with tribal authorities (*Bantustans*) containing rural areas historically zoned African. Governing structures were separate, following racial zoning closely, and tax bases were distinct. That meant funding for municipal government varied with the racial boundaries of local councils, exacerbating

inequalities associated with the spatial structure of the city. In 1996, the first post-apartheid local elections were held in Durban[44], and the ANC won handily in urban areas over the Inkatha Freedom Party (IFP), which took rural communities.

The national ANC took power intent on urban transformation, and local government in Durban became just as focused. The anti-apartheid movement in Durban was driven by civics and allied non-governmental organizations like the Built Environment Support Group and the Urban Foundation, all of whom struggled against the apartheid city in the 1980s through transition. These same groups played a key role in transition, developing important concepts and institutions that would guide city policy in its efforts to undo the spatial legacies of apartheid. Over 75 civic groups and NGOs formed the Campaign for a Democratic City (CDC) in 1991, targeting deracialization of the city and quality of life improvements (Maharaj 2002: 182). NGO and civic leaders also pushed for the unification of the tax base in the city, which had historically been separated by racial lines. Some of these leaders eventually moved into or began consulting with government, as I describe in chapter two, a process that on the one hand undermined civil society autonomy but on the other hand provided some legitimacy to the state in its interventions.

Over the next four years, the separate municipal administrative councils in Durban underwent a process of unification, ultimately producing the eThekwini municipal authority, which encompassed all six sub-areas together with the tribal authority lands. Early on in this process, the tax bases were united, meaning the emerging unified government was able to apply income drawn from the still primarily white economy in the core to areas that in the past were cut off from funds, including African townships and rural areas. Ultimately, city planning went from an engineering oriented process separated by the old multiple municipality structure and based on water catchment areas to a more unified, spatial development perspective (Brietzke 2008).

This was also a time when Durban's local government was learning how to intervene more effectively and with more control over implementation. For instance, immediately after transition, public housing projects were initiated by private developers, who would choose the site and then apply for funds from the city to develop it. However, these private developers would target cheap sites, which were far from bulk infrastructure and unlinked to the city. The developers would also purse one of the six different local authorities, which did not coordinate their planning or development. In the early stages of construction, one Housing official who was heavily involved in this process told me the city was "learning how not to be ripped off by developers." They responded by unifying housing planning under the unicity structure, and taking over the role of developer. Since 1997, Durban's government has done its own site development for public housing construction, allowing it to pursue the kinds of locations called for in the national Urban Development Strategy I quote from above. Ultimately, the Durban local government was well positioned to undertake its infrastructure program, perhaps better positioned than any other city in South Africa.

[44] These elections happened about eight months after local elections in the rest of South Africa, due to administrative problems and political violence between the ANC and the IFP (Maharaj 1996: 184).

Water Infrastructure

Expansion of water infrastructure was one of the principal components of Durban's service extension program. Huge inequalities existed in Durban's water coverage: core areas were replete with fully functioning first world level water services, while townships were serviced by limited stand pipes or not at all, and had to rely instead on wells and direct access to river water.

Metro Water officials indicated that Durban was a pioneer in the system of "free basic water" provision in South Africa, which involved extending infrastructure to provide households and communities access to basic water provision at no cost, with escalating fees for higher levels of service. Durban Metro Water pursued multiple strategies for water expansion in areas without existing utility water services: from most to least expensive, fully pressurized water systems, roof tanks for some pressure, ground tanks providing low pressure, and communal stand pipes (Njiru et al. 2001). The vast majority of installations in townships were ground tanks or stand pipes. Ground tanks limited free water to households to 200 liters a day (enforced through "trickle" devices that would slow the flow of water to match the cap), and required advanced payment for amounts beyond the basic subsidy. Standpipes targeted communities rather than households. Roberts (2007) describes long queues of township and informal settlement residents forming around stand pipes, indicating widespread need for water, particularly in informal settlements, and the intensive amounts of time (hours, in many cases) it took to get it.

Between 1993 and 1999, the focus on ground tanks, which were cheaper to install and link to bulk infrastructure, resulted in a substantial expansion of the number of households in the city with access to in-home water. Ground tanks were used for all household water needs, including drinking, washing, and toilet functioning. Table 7.1 provides census statistics on the aggregate change in toilet access[45] across the city; table 7.2 examines toilet access in African legacy communities.

Table 7.1. Citywide Toilet Access, 1996 and 2001.

Citywide Toilet Access	1996	2001
Households with Toilets	420,727	575,944
Total Households	648,041	823,447
Proportion	64.9%	70.0%

The citywide table shows the total number of households with toilets grew by over 155 thousand, proportionally more than the overall growth in the number of households. Hence toilet access increased from 64.9 percent to 70 percent. Most of this increase occurred in African legacy areas, where the large majority of households without toilet access were, in both 1996 and 2001.

[45] Temporal analysis of expansion of the city's water infrastructure is impossible because of the absence of an effective dating system in the dataset. Self-report of on-site water access in the census, as I describe in chapter four, is plagued with data collection problems and therefore invalid. However, self-reports of in-home toilet access provide a good measure of the interaction between the expansion of bulk water infrastructure and its links to houses, in so far as the latter is impossible without the former.

Table 7.2. African Legacy Toilet Access, 1996 and 2001.

African Legacy Toilet Access	1996	2001
Households with toilets	115,679	202,176
Total households	289,939	381,712
% Households with toilets in African legacy areas	40.0%	53.0%
African legacy proportion of citywide households	44.7%	46.4%
African legacy share of citywide households without toilets	76.7%	72.5%

In African legacy areas, the increase in households with toilet access substantially outpaces the overall increase in households. When comparing African legacy areas to the entire city, there is some evening of the gap in toilet access. The share of citywide households without toilets in African legacy areas drops a four points, despite a rise of a two points in the proportion the overall share of households in African legacy areas. The increase in toilet access in African legacy areas was greater than the increase in the city as a whole.

Map 7.1 isolates African legacy areas and displays proportion change in toilet access by household, 1996 to 2001. On this map, three trends are visible. First, there is greater toilet access in rural areas to the north, though not to the south, despite very low rates of access in both areas in 1996. Second, there is significant expansion of toilet access in two township areas: 1) KwaDabeka, on the more distant townships from highway access and the urban core; and 2) the outer reaches of Umlazi. In Umlazi, some of this increase is associated public housing construction and the resulting decline in informal housing, which I address below. The correlation between change in toilet access and change in informal housing percentage is a statistically significant but moderate in magnitude 0.3.

The installation of water infrastructure produced substantial quality of life improvements, both for households and for communities that can rely on better water access and improved systems for waste water disposal. Water services are also essential for local economic development, providing one part of the necessary infrastructure for small business growth. However, tight limits on supply under the free basic water system, and the inability of many poor African residents to pay for water services beyond the minimum, has meant mounting water debt in townships. Illegal connections also abound, much as they do with electricity connections.

Electrification[46]

Under apartheid, the entire province of KwaZulu Natal was covered by bulk electricity infrastructure – with the exception of African townships and rural areas (Annecke 2002). The gap between core and peripheral areas of the city could not have been wider: core areas had the electricity infrastructure to develop, while peripheral areas did not. If township residents wanted electricity, they were required to pay up to R10,000 for the city to extend bulk infrastructure, a sum far out of reach of essentially everyone. The price was even higher for households in rural areas, given their distance from the existing bulk infrastructure. Only if a large number of people, at least several hundred, went in together could individual subsidies be combined so that the state would bear the cost of infrastructure construction. Concentration of poverty precluded many collective requests, which were further limited because residents with few resources still had to pay for the electricity once the bulk infrastructure finally arrived.

The Electrification for All program changed that system. Electrification for All began in 1991, alongside the start of the national political transition, and involved two main components. First, the state began a large scale effort to extend bulk infrastructure to uncovered areas, including townships, footing its own bill. Second, the state continuously lowered the price of provision of electricity infrastructure and services to poor residents and added incentives for poor households to buy services. The price for extending service to individual dwellings began at R300, dropped to R145, and eventually a hot plate or iron and kettle was included; finally, the cost dropped to as low as R50, and group rates were promoted. This put to-the-dwelling infrastructure within the reach of a substantial number of residents; however, wattage costs after service extension continued to hamper residents' ability to maintain electricity service, and cutoffs were widespread.

Officials at the Electricity Department claimed a 250,000 customer expansion during the 1990s, at a cost to the city of R800 million (roughly $115 million). Most of these new customers were private residents, and many experienced continual cutoffs due to inability to pay. Electricity officials were careful to stress multiple times that the presence of bulk infrastructure did not necessarily mean either immediate increases in customers or maintenance of new customers because of the need to pay for dwelling connections and continuing supplies to the house.

Informal dwellings have been and continue to be a gap in electricity coverage. Electricity Department respondents reported that they would not build individual dwelling infrastructure to informal dwellings, given lack of security in land tenure. As Durban's population of informal dwellers has expanded, this gap has widened.

A large number of new customers were also corporate. Electricity in Durban is for the most part demand driven: outside of the Electricity for All program, the Department

[46] Quantitative data on electrification are extremely limited for two reasons. First, construction of bulk electricity infrastructure in Durban is still stored in CAD, a flat data storage system that is not integrated into a database. At the time of my fieldwork, the Department was several years into the process of converting CAD maps to ArcGIS and generating a database of infrastructure, but was only five percent through the existing coverage. Second, individual reports of electricity access, such as those from the censuses, are unreliable because pay-as-you-go electricity results in frequent cutoffs. Cutoffs are strongly weighted towards the townships, resulting in skewed aggregates. Therefore, this section is based on qualitative interviews of four senior administrators in Durban Electricity, who provided historical context and progression on extension of bulk and household infrastructure dating back to before transition.

built infrastructure in response to large scale corporate economic development. Residential areas in the core were already covered by existing bulk infrastructure, so electricity delivery in the core was dominated by this kind of growth oriented construction. For instance, Ushaka Marine World, the marine theme park I discuss in chapter two, required an increase in bulk supply beyond what already existed in the area. The massive mall complex, Gateway, at Umhlanga Rocks also required an expansion in bulk infrastructure. New large scale economic developments continue to draw a large amount of the Department's resources. This kind of bulk infrastructure is linked to economic growth efforts in the city and limits expenditure on closing the electricity infrastructure gap, widening the gaps in the spatial hierarchy. Also, corporate customers need to do little lobbying to receive bulk infrastructure, given the perceived need for growth. Housing, Electricity, and Transport Department officials all described the speed with which corporate interests and private housing developers in the city would receive bulk infrastructure, sometimes at the cost of delays to new public housing projects. Electricity infrastructure therefore produces strong reinforcement of spatial inequality, with accelerated corporate and private provision in the core coupled with bulk infrastructure expansion without consistent usage in racialized places.

Post-Apartheid Library Construction

The location of libraries in Durban as the city emerged from apartheid powerfully reflected the spatial legacies of apartheid. The municipal government constructs and administers libraries, and through the apartheid years located libraries to ensure good access in core areas and no access in African zoned areas. Map 7.2 shows the distribution of Durban's 55 libraries in 1991, which were constructed under the apartheid regime: there were none in any African zoned areas. Between 1991 and 1996, during the phasing out of apartheid, seven libraries were constructed, mostly in Indian areas (see Map 7.3). For 1996, I calculated the distance between the centroid of each community and the nearest library in ArcGIS, and then summarized those distances in two ways. First, I examined the Spearman's rank correlations between race proportion and the distance to libraries.

Table 7.3. Spearman's rank correlations, race proportions with distance to libraries. For all coefficients, $p<0.01$.

1996 Proportion	ρ with Library Distance
African	0.635
Indian	-0.560
White	-0.373

There is a very large positive correlation between African proportion and distance to libraries – the larger the proportion, the greater the distance to libraries. Both the Indian and white coefficients are negative, meaning the larger proportion Indian or white, the closer the community is to a library.

I also examined the median population weighted distances for single group communities of each type.

Table 7.4. Median population weighted distance to libraries for each single group community type.

Single group type	Median Library Distance
African	3.6 K
Indian	0.68 K
White	1.2 K

These median distances show how much farther from libraries African communities tended to be. They also show that Indian communities were in general closer than white communities, reflecting both Indian residence in denser areas closer to the core than white suburbs and the benefits of new library construction between 1991 and 1996.

Between 1996 and 2001, the state built another 18 libraries, for a new total of 90. Map 7.4 shows the location of these new libraries; they are disproportionately in formerly African zoned areas, with some in Indian areas as well, and none in formerly white zoned areas. I recalculated centroid distances to the nearest library in 2001 based on these 18 new libraries, and re-examined median legacy community distances as well as correlations with proportion. The results show a substantial increase in African access to libraries.

Table 7.5. Population weighted median distance from centroid to nearest library by legacy community type.

Legacy Community	1996	2001
African	3.6 K	2.1 K
Indian	0.68 K	0.51 K
White	1.2 K	1.2 K

Library constructing from 1996 to 2001 substantially reduced the distance many Africans would have to travel to find access to a library. It somewhat decreased the distance for single group Indian communities while not impacting the distance for single group white communities.

Table 7.6. Spearman's rank correlations, race group proportions with centroid distance to the nearest library. All coefficients are significant, $p<0.01$.

Correlations	1996	2001
African	.635	.466
Indian	-.560	-.448
White	-.373	-.129

Table 7.6 shows that in general, the correlation between race group proportion and library distance declined, though it remained significant and large in magnitude. The distribution of libraries was less associated with the race in 2001 than it was five years earlier, and the state had taken steps towards providing poor African areas greater access to social and human capital that libraries can provide.

Hospital and Clinic Access

One of the factors that continues to differentiate African legacy areas from the rest of the city is the hospital clinic divide. Though I cannot track this trend over time because of the lack of dated information on clinics and hospitals, I examined the current point data on clinics and hospitals in relation to the spatial hierarchy. Map 7.5 displays hospitals layered over legacy areas, the urban core, and major freeways and highways. The overall spatial distribution of hospitals very much follows the Durban T, with high density in the core, along the western suburbs, and to the south. There are several hospitals in Chatsworth and Phoenix as well. Three African legacy areas have hospitals: St. Wendolins, to the west, the site of the social movement I described briefly in chapter three, and which I examine closely in chapter eight; Umlazi, the main urban township to the south, and Mobeni, a somewhat wealthier African area to the north of Umlazi. Nearly all of Umlazi is very distant from the one hospital just inside its boundary; to the north, there are no hospitals in Inanda, KwaMashu, Ntuzuma, KwaDabeka, or Clermont.

Clinics are the dominant forum for health care provision in townships. As I described in chapter four, I used the point locations of clinics to create a smooth surface corresponding to the density of clinics. Map 7.6 shows that surface, layered with the urban core, major freeways and highways, and hospitals. This map shows the clinic density in both Umlazi to the south and the townships to the north, as well as in the St Wendolins area. African legacy areas are clearly service by clinics rather than hospitals., Indian legacy areas are serviced by both clinics and hospitals. The population weighted median clinic density for Indian areas is 20 percent higher than for African legacy areas. White legacy areas are not as serviced by clinics, with densities at half of African legacy areas and one third of Indian legacy areas.

There are important consequences to the hospital clinic divide. The facilities at clinics are not close to what hospitals can provide. Also, historically, hospitals have been the only source of anti-retroviral medication to treat HIV. As I report in chapter six, respondents indicated that in Inanda, KwaMashu, and Ntuzuma, HIV positive people who wanted treatment needed to go to Phoenix to get it. The hospital clinic divide is one of the most powerful legacies of the apartheid service gap that has been essentially untouched.

Public Housing Construction

While other kinds of infrastructure development have been important for improving quality of life in formal townships, public housing construction has been the key driver of Durban's effort to impact both residential informality across the city and the city's spatial hierarchy as a whole. For city planners, policy makers, and particularly politicians, including ward councilors, the need to provide housing has been overwhelming. Large scale public housing, nearly all of which targeted low income Africans, was essential given the numbers of people living in the city's more than 200 thousand informal dwellings. Housing also requires bundled services; Electricity and Water Department officials indicated that water and electricity, being generally demand driven, would follow housing developments. As a result, public housing planning became a way to address the service gap more generally.

Access to public housing in Durban is income based. Income cutoffs were low enough to exclude all but the poorest Indians, and all whites. Families must be under

R3,500 (roughly $500) per month to qualify for a housing subsidy: 83 percent of African families in Durban fall under this income threshold, while only seven percent of white households do, mostly pensioners who already have stable housing.[47]

Durban's Housing Department plans two types of public housing project: 1) insitu upgrades of existing informal settlements, in which they replace informal dwellings with formal units on the same site as the informal settlement, and 2) greenfield developments in new, empty areas to which residents are moved from informal settlements. Both types of project involve constructing standard "RDP housing" units, or small, two room single story structures on small plots of land.

Since transition, the state has planned 75,115 insitu upgrade units in Durban and constructed 27,343. Insitu upgrades happen on sites of informal settlements, and are therefore located on the basis of informal settlement history. Residents historically chose these locations for a variety of reasons: a few because of their beneficial location, but most in distant places where they would be threatened neither by the state nor by private property holders. As a Housing official described, "Shacks go where people can build, not always where they want to build."

In Durban, informal areas were most frequently in and around African townships, and in certain instances also well established in Indian areas. The informal settlement of Bottlebrush, located in the center of Chatsworth, is an example of the latter. Water Department data on point locations of informal settlements show the vast majority to be on the far sides of the Emgeni and Umlazi rivers, well beyond the core. After transition, there were very few informal settlements inside the core, unlike cities like Johannesburg.

In general, Durban's housing department has attempted to avoid moving informal settlements. Housing officials reported that there was a strong preference where possible to upgrade where people are in order to cause less social and familial disruption. Given that the large majority of informal settlements were distantly located, insitu upgrades have generally tended to be peripherally located. Map 7.7 shows the locations of insitu upgrades, relative to the urban core and legacy areas. Table 7.7 provides statistics on informal housing, self-reported from the census.

Table 7.7. Informal Housing in African Legacy Areas, 1996-2001

	1996	**2001**
Population	1,405,692	1,592,052
Households	289,939	381,712
Household Size	4.85	4.17
Informal Dwellings	110,830	115,575
Proportion Informal	38%	30%

Despite the addition of over 90 thousand new households in African legacy areas, there were only five thousand net new informal dwellings during this period.[48] These aggregate statistics show a substantial impact of public housing construction, though at

[47] From R1,500 to R3,500, the family must contribute R2,479; below R1,500, it is a full subsidy. The subsidy is a one time grant to assist in purchase of a house, primarily one constructed as part of a public project. There are also some credit subsidies for families earning between R3,500 and R7,450 per month.
[48] There was also a substantial reduction in household size in African legacy areas – that is an important finding to explore elsewhere.

levels that could not quite proceed quickly enough to account for the increase in population and households. Key informants in the housing department confirmed that the pace at which they were building was not sufficient to do better than keep up with the growth in informal housing. They also indicated that the pace of housing construction has declined in recent years, given decreasing budgets and capacity.

Local analysis of informal housing is complicated by several factors. First, there were substantial changes in the total numbers of households in many communities. Second, some residents of informal settlements were upgraded on the same sites, remaining within the community but moving to formal housing, while others were relocated into greenfield housing. It is also difficult to directly link public housing construction data to census data; it is impossible to determine where public housing project residents come from, and what proportion of declines in informal housing is due to private verses public housing construction.

Still, I can point to communities that experienced important changes in informal housing. Parts of KwaMashu and Umlazi experienced some of the largest numbers of new informal housing. Umlazi T (township sub-communities were historically given letter designations) had under 200 informal dwellings in 1996; by 2001, it had over 4,500 informal dwellings. Other parts of Umlazi saw increases as well. To the north of the city, KwaMashu A already had 3,905 informal dwellings in 1996; by 2001, that total had gone up to 10,981, a substantial proportion of the overall 11 thousand household increase in KwaMashu A.

The township of Clermont, just east of New Germany, received a substantial number of both greenfield and insitu upgrade public housing units; from 1996 to 2001, the number of informal dwellings declined from 9,254 to 6,924. A number of communities in Inanda also experienced substantial declines in informal housing. Ohlange-Mafukuzela received 1,577 insitu upgrades between 1996 and 2001; census data show a decline in informal dwellings of 1,585, and a very small overall change in the number of households. Another African township, Soweto, experienced a similar decline.

These housing projects show the conflicting effects of insitu upgrades of informal settlements, as well as poorly located greenfield housing. On the one hand, people are clearly being moved into formal housing, often with access to services like water and electricity; these measures provide the potential for substantial quality of life improvements. On the other hand, these projects are firmly in racialized legacy areas, and often at the outskirts of them, far from transportation access, economic opportunity, and social services. The location of many of these insitu upgrades reinforces the spatial hierarchy by locking poor African families in to distant racialized communities.

Greenfield Housing in Buffer Zones

The provincial subsidy for land for each public housing unit is R1,000. This amount tends not to be a problem for insitu upgrades, where land costs are low. Hunting for sites for greenfield developments is another matter. Well located empty land is very expensive; until recent increases, the small land subsidy forced the Housing Department to buy what a Housing official described as “marginal land that was far away from everything.” As a result, analysts have argued that housing policy has reinforced urban inequality (e.g. Huchzermeyer, 2005, Jenkins 1999), an idea that has become conventional wisdom among many city officials whom I interviewed. Still, the same

Housing official indicated that the Department has historically tried to stay as much as possible within the existing urban edge. There are public housing sites outside the urban edge, in the west and north, and there continues to be potential for densification far south of the core, just within the Durban boundary, but they are fully aware of the lack of economic opportunity there. "We are trying to target the right areas. We are trying to fill in gaps."

Durban's city manager plainly stated in an interview that the city cannot build public housing in the urban core, even when land can be secured at reasonable cost: with the notable exception of Cato Manor, which is cut off from surrounding areas, the state is too weak relative to forces in the core that vehemently resist public housing, a common pattern that matches the literature I review in chapter two. Planners and developers were forced to look elsewhere.

The state has planned 49,068 greenfield units and constructed 23,193. The housing department pursued densification in areas more proximal to the core where possible; however, a department official told me that densification requires housing structures that are closer together, with smaller plots of land, providing residents with less upgrade potential. Neither politicians nor housing recipients want smaller plots, despite the need for more units in better located areas and the consequential scarcity of space. The state also cannot build two story structures because the thick concrete slab necessary between floors is too expensive relative to the per-unit housing subsidy. Still, locations of greenfields, in contrast to insitu upgrades, were chosen by planners (and earlier, developers), and in choosing locations, they tended to settle on buffer zones.

Buffer zones, as I described in chapter three, were open areas that separated racial zones during apartheid. State-market linkages were essential to the creation of buffer zones: planners used agricultural land owned in part by Durban's large agro-businesses (Tongaat Hulett, particularly) and also by the state to create space between residential zones. The state was in the business of defending the buffers during apartheid; after apartheid, as a consequences of the state's historical presence in the buffers and the decline of agriculture in Durban (the remaining agriculture is located to the north, south, and west, beyond the white legacy areas), the state became the only game in town.

In the post-apartheid era, land markets have made buffer zones appealing, as their locations just outside the urban core and proximity to African areas have made them less of a target for private developers, depressing prices. With very limited subsidies, planners looked for inexpensive open land, and found two kinds of places – the far periphery, and buffer zones. The far periphery was farther from bulk infrastructure, and therefore more expensive to service, which project by project resulted in infill of green spaces in the buffers. In interviews, Durban planners also reported being extremely sensitive to the widely known problem of peripheralization of public housing (Jenkins 1999), to the point of being somewhat surprised by the relative proximity of many greenfield projects to the core. Greenfield projects have tended to line the boundaries of the core and the coastal and inland highways. Map 7.8 displays the locations of greenfield housing projects, relative to the urban core. I examine the effects of some of these greenfield projects in chapter eight.

Discussion

The extent of building undertaken by the state from transition until 2001 – some 50,000 housing units, bulk infrastructure for water and electricity covering nearly the entirety of the city, and an array of social services including 18 libraries – is massive. Important improvements to quality of life came with this infrastructure expansion, narrowing the gap between historically unserviced townships and the urban core. From 1998 to 2001, Durban's African residents reported improvements in their perceptions of their quality of life specifically with regard to perceived changes in residential areas (O'Leary 2006: 366); housing and water access were particular areas of improvement. That Durban was experiencing an economic downturn coupled with soaring unemployment during this period makes the extent of construction even more remarkable. In some sense, then, the state succeeded in doing the first part of what it set out to do in planning and implementing large scale infrastructure expansion – but with what effect on the second part of the plan?

Most extensions of bulk infrastructure occurred within Durban's spatial hierarchy. While they improved life in the periphery, they did not in and of themselves contribute to a new spatial developmental order. Many residents, particularly those living in informal settlements, remained completely excluded from core areas of the city; to the extent that insitu upgrades formalized historic locations of informal settlements, they actually may have contributed to reaffirming the spatial hierarchy. While public hosuing also improved quality of life in the short term by moving people from informal dwellings to formal RDP housing, the structures themselves have often been of poor quality with short half lives due to the very limited subsidies for housing construction. O'Leary (2006: 369) also reports that Africans' general perception of quality of life did not improve; the quality of life gap between Africans and other city residents remained high and consistent throughout the focal period of this dissertation.

As one Durban city planner told me, "areas need to have economic growth to experience change." Infrastructure, while necessary, is not sufficient; to have growth, areas must also be linked to the core economy. The economic downturn did preclude changes to the developmental pathways available to Durban's residents. However, so did the location of insitu upgrades. Over the long term, it is hard to see how the policy of insitu upgrading of informal settlements has substantially helped poor Africans in Durban; this is the stark conclusion drawn by so many analysts of South African infrastructure provision (e.g. Huchzermeyer 2005; Jenkins 1999; Mabin 2005).

Still, greenfield housing provides potential in so far as it creates the possibility of better locations – if not necessarily better built environment or higher quality units. Specifically, greenfield housing projects in buffer zones may provide better access to economic opportunities and potentially mixed income and race communities. In chapter eight, I examine several instances in which greenfield developments have helped generate bridging communities closing the gaps in the spatial hierarchy.

Chapter 8
Bridging the Spatial Hierarchy

In chapter six, I described the post-apartheid spatial hierarchy, replete with racialized communities in peripheral urban townships, fortified ethnicized white suburbs, ethnicized Indian communities, and the racially mixed stratified communities of the core. I argued in chapter two that when the state intervenes in the core, including in stratified and ethnicized areas, it has a tendency to reinforce the divisions of the spatial hierarchy by focusing on private development and growth. In the racialized areas of the periphery, infrastructure development has resulted in quality of life improvements, but absent substantial economic development this has served to lock people in to unviable places that provide few developmental opportunities.

As I described conceptually in chapter two, bridging communities are not part of the spatial hierarchy. In Durban, anything like a bridging community was explicitly avoided, in part through the implementation of buffer zones during apartheid planning; they were in turn precluded from emergence once apartheid laws began to fade through path dependence and the split market. Bridging communities, as I define them, have some degree of racial mixing, some degree of class mixing, and provide access to the core economy; in practice this means that poor Africans can access these communities without major flight by other residents, and then can access the core economy. Bridging communities span the divided tiers of the spatial hierarchy.

Greenfield public housing by definition operates outside historically developed areas by focusing construction on previously empty places. As I discussed in chapter seven, the need for empty space pushed greenfield housing either to the far periphery or to buffer zones, which were the only remaining empty places near the urban core. Planners in Durban attempted to avoid peripheral greenfield projects where possible, though some planned by private developers were approved and constructed to the north and south. Construction in the buffer zones proceeded, with unique effects on residential patterns.

In this chapter, I focus on a number of greenfield housing projects that provide insight into the potential of well located urban development to provide access to diverse communities for poor Africans and thereby serve a bridging function. First, I examine Cato Manor and Saint Wendolins as examples of well located public housing with mixed success associated with their relative isolation and lack of racial and economic diversity.

Second, I examine projects in New Germany, near Pine Town to the west of the center city, and Newlands, just off the highway north of the core. I argue that in New Germany and Newlands, the state was able to using public housing construction to generate truly bridging communities.

Early Bridging Communities

There are two major public housing projects in Durban that were built outside the standard system of subsidy driven state or developer planned construction: Cato Manor and Saint Wendolins. These efforts resulted in early versions of bridging communities.

Cato Manor

As I briefly described in chapter three, Cato Manor is a European Union funded housing project, the only RDP style public housing project in the urban core. It was planned on the site of massive forced removals of over 120,000 Indians, Coloureds and Africans in late 1950s and early 1960s, with the latter sent mainly to the newly formed KwaMashu (Edwards 1996). While the forced removals were ostensibly to clear space for white settlement, no whites ever arrived (Edwards 1994: 416). What was left was a huge, completely empty hilly space in the western part of the urban core, five miles from the CBD, one that would remain empty for decades until resettlement in the 1980s, primarily by a large number of Africans who built informal dwellings.

Initiated in 1993, the aim of Cato Manor Development Project (CMDP) was to couple public housing with local partnerships to "create an area spatially and functionally integrated with metropolitan Durban in ensuring that poor urban residents have access to employment as well as social and infrastructure services (Odendaal 2007: 935)." This space was at the time of transition one of only two large areas well within the urban boundaries of any South African city still available for planned development (Edwards 1994; the other was in Cape Town), and so represented a major opportunity. Debates raged over the use of the space in the early 1990s, but ultimately the Cato Manor Development Association was able to gather external funds, including from the EU, to generate public housing.

The delivery component of the CMDP has until recently been fairly successful (Odendaal 2007: 940). Through 2004, over 4,700 public housing units had been constructed: five insitu upgrade projects totally 1,582 completed units, and six greenfied projects totaling 3,147 units. There are two fixed clinics in Cato Manor, four libraries, and 11 schools; not a vast array of social services, but not the so-called "toilets on the veldt" housing projects that can be found elsewhere in South Africa.

At the same time, respondents with the Human Sciences Research Council in Durban (which is located on the outskirts of Cato Manor) reported that insitu upgrades have been unable to keep up with expanding informal settlements. Even worse, the density of current informal dwellings is much higher than that of RDP insitu upgrade projects, meaning that insitu upgrades of existing informal dwellings would produce homes for significantly fewer people than currently live in Cato Manor.

In 1996, census data indicated that 93 percent of houses in Cato Manor were informal, a rate not significantly altered in 2001 despite the significant number of housing units constructed. Unemployment in Cato Manor shot up, as it did for Africans in the rest of the city, from 37 percent to 58 percent. Cato Manor also remains completely segregated, at 99 percent African in both 1996 and 2001. Despite its good location as the crow flies, Cato Manor is flanked by hills, particularly on the city side, and clearly isolated by roads, forest, and topography (see aerial photograph 8.1). These geographic features form a kind of informal buffer zone, cutting off Cato Manor from its neighbors. The lack of racial diversity, the continuing extent of informal housing, and the extremely high unemployment together make Cato Manor a mixed outcome at best.

Saint Wendolins

Saint Wendolins, including its connected array of communities of Marian Hill, Tshelimnaya, Marian Ridge, and others, is located about 20 minutes from the bustling industrial and transport center of Pine Town. Respondents from the Human Sciences Research Council (HSRC) and the Built Environment Support Group (BESG) reported to me that Saint Wendolins was originally mission land or traditionally settled rural tribal land, with relatively dense African settlement before apartheid. In the 1970s and 1980s, during the later stages of apartheid, it was zoned white and scheduled for forced removals of Africans either into townships or into the *Bantustans* (the stated justification for removals was "geotechnical instability," as excuses for the most blatant apartheid enforcement became necessary). Saint Wendolins provided prime location near good quality industrial jobs in Pine Town. A civic movement developed – a coalition of community leaders, academics, and planners involved in BESG, an apartheid and transition era organization dedicated to undoing the apartheid city – which fought the removals.

The movement model was one of highly organized communities, structured around resisting removals. The local Mission had an excellent secondary school which produced community leaders who were highly educated and also had a strong working class background. They were poor but well organized and educated, and were able to generate a movement with high social cohesion and link it to the technical additions provided by academics and BESG.

By the late 1980s, the movement had won the right to stay in the Saint Wendolins area, including receiving commitments from the state to construct insitu upgrades of existing informal dwellings. A consultant who had been involved in the movement argued that "that this was the biggest pre-election African housing development breakthrough in the country." Rather than allowing the state to unilaterally construct housing, the civic movement guided the upgrade process with technical support from BESG. A more guided housing construction process linked to a population with a historical tenure on the land laid the foundation for well located insitu upgrades and greenfields that actually provided benefit to the populace.

After transition, Saint Wendolins continued to benefit from its proximity to Pine Town, and continued to receive good services and infrastructure. Saint Mary's Hospital is located in the constellation of African communities around Saint Wendolins, one of only two hospitals in the city in African legacy areas. There are over 20 schools in the wider area and six libraries. In home toilet access in Saint Wendolins increased from just five percent of households in 1996 to 44 percent in 2001, indicating a large expansion in water services. Informal settlements continued to expand, though not at a fast pace: from 18 percent in 1996 to 22 percent in 2001.

Saint Wendolins struggled through Durban's economic downturn, experiencing the standard African legacy area increase in unemployment from 48 percent to 65 percent. Of those still working, the proportion of jobs that were skilled rose from 59 to 67 percent during the period, while professional jobs remained consistently low (12 percent in 1996, 13 percent in 2001). These rates were very similar to other African townships. Even so, the area continues to offer substantially better quality of life than any other African legacy area in the city. Also, as Pine Town's economy improved over the years

after 2001, key informants indicated that Saint Wendolins' economic situation improved along with it.

Saint Wendolins' history is one of intense community mobilization and engagement that succeeded in preventing the apartheid state from undertaking removals and pushed the state to deliver housing. The participation of the community in guiding the housing provided clear benefits. High levels of social and human capital contributed to the effectiveness of the mobilization, as did links to non-governmental organizations that provided technical support. Saint Wendolins is a powerful case of community-led development. It demonstrates that good results come from state engagement with high level social movements, even if that engagement is contestational (Fox 1996).

Post Transition Bridging Communities in Buffer Zones

Cato Manor and Saint Wendolins were both driven by non-state actors; an externally funded development association for Cato Manor, and an NGO-linked community based social movement for Saint Wendolins. These were early versions of bridging communities, but they were not race diverse, nor were they particularly class diverse. The next set of communities – including New Germany and Newlands – received direct state investment of greenfield public housing in buffer zones. These efforts resulted in bridging communities with race and class diversity and access to the core economy.

New Germany

New Germany is located to the west of the center city, just north of the highway to Johannesburg, and is bordered on the west by the industrial and commercial transport center of Pine Town, an economically vibrant area, and on the east by the townships of Clermont and KwaDabeka. The east end of New Germany was a buffer zone during apartheid, separating whites who worked in Pine Town from the townships to the east. Table 8.1 shows residential changes New Germany from 1996 to 2001, and table 8.2 shows income and employment statistics. In 1996, New Germany was very much a standard white community: about a four to one ratio of whites to Africans, low unemployment, and very close to the median household income rank (35) for white communities across the city.

Table 8.1. Census data on changes in New Germany.

New Germany	**1996**	**2001**
Population	8,713	10,959
White population (Proportion)	6,909 (79%)	6,085 (55%)
African population (Proportion)	1,449 (17%)	4,003 (37%)

Between 1994 and 1998, the state built 665 public housing units in New German's buffer zone. Aerial photograph 8.2 shows this construction (outlined), as well as the buffer zone where it was located. By 2001, there were about 11 thousand residents in New Germany, an increase of about 25 percent from 1996. The racial composition in 2001 was 55 percent white and 37 percent African. The African population had increased by 2,554, a scale in line with filling the public housing units, depending on family sizes.

The white population dropped about 12 percent (about the same as the decline of the white population across the entire city); most of the proportion change was driven by African movement into the community, in part certainly associated with public housing construction.

By 2001, unemployment had risen to 14 percent, while the community's income rank had dropped to 63, indicative of the movement in of poor and unemployed Africans who would be able to access public housing. Africans working in the formal wage labor market were more likely to be in skilled positions than in 1996, but less likely to be in professional positions; those who moved in and were able to find formal employment were doing so a lower occupation levels.

Table 8.2. New Germany: Income and Occupation.

New Germany	**1996**	**2001**
Unemployment Rate	4%	14%
Income Rank	31	63
White Skilled Labor	97%	98%
White Professional Labor	52%	56%
African Skilled Labor	72%	77%
African Professional Labor	55%	43%

The key to change in New Germany has been its proximity to the booming industrial areas in southern New Germany and Pine Town that, even during Durban's economically stagnant post-transition period, were able to develop and grow. During the mid to late 1990s, Pine Town continued its development as a key commercial and manufacturing hub for Durban's port. Though textiles faded – Durban's history here is similar to many other middle income cities around the world – other industry moved in: Simba Chips, a popular brand of potato chips, for instance.

Pine Town is well located near the port and on the N3 to Johannesburg. It was ideally located for the shift from railroad based shipping to trucks, and was able to expand its role in delivering goods to and from the port. In addition, Pine Town's history of large scale industry, though it was decimated by a series of strikes in the 1970s, meant that a base infrastructure was built and ready for new uses, including old factories: one city planner said that "hills were leveled, and factories were built." As companies shifted to smaller, more dynamic and interlinked manufacturing systems (partly a legacy of the strikes), Pine Town took advantage. A combination of good local governance, local and provincial infrastructure support, and some additional building projects attracted private investment from banks like Old Ithala and the KwaZulu Finance Bank. Post-transition, many companies relocated from the South Industrial Basin, Durban's huge industrial complex just south of the port, to Pine Town.

During Durban's economic downturn, then, Pine Town was one of the few areas of the city that could provide opportunities for the working class, and Africans were able to take advantage for several reasons. First, much like the Old Line Suburbs, New Germany was historically a white working class area, and property prices were as a result more affordable. Second, the housing stock in the community varies, from high end homes to modest stand alone homes to apartment complexes.

Because of the shift of corporations and factories from the South Industrial Basin, the area continued to appeal to the white population; Pine Town grew and strengthened as an alternative both to Durban's central business district and to the South Industrial Basin's industrial complex. New Germany's location fit well with the movement of the white population west; indeed, New Germany borders on a stretch of white legacy areas that includes Pine Town itself, Manors/Padfield, Kloof, and others. Even so, New Germany's racial composition in 2001 was reflective of both its African legacy neighbors to the north and east and its white legacy neighbors to the west and south.

Route data on minibuses (the state regulated system of mass transit vans) indicate a high density of routes from New Germany to Pine Town, and given that the vast majority of minibus users are African, this provides good anecdotal evidence of substantial numbers of African New Germany residents going to Pine Town regularly. New Germany also has several libraries and schools, and provides access to the hospital in Pine Town. This, coupled with the lack of substantial white flight between 1996 and 2001, suggests a community with access to economic opportunity, open to poor Africans, with a fairly high degree of racial mixing. These characteristics make New Germany a bridging community. Without state-led greenfield public housing in New Germany, this transition would not have been possible.

Newlands West

Two areas make up Newlands West, just to the north of the urban core, and just to the west of the coastal highway: Newlands West residential, a historically Indian community closer to the highway, and Newlands West Open Space, the buffer zone separating Newlands from the township of Ntuzuma. In 1996, Newlands West Open Space had no population – it was an expanse of empty land. Between 1996 and 2001, the city government constructed over 2600 public housing units in Newlands West Open Space, along with roads to service them. Aerial photograph 8.3 displays this truly massive constructions project, along with the buffer zone it partially filled. This construction project abutted Newlands West Residential, with roads and occasional small open spaces maintaining some separation.

Table 8.3. Newlands West Open Space: Residential Change.

Newlands West Open Space	**1996**	**2001**
Population	0	14,946
African population (Proportion)	0	8,525 (57%)
Indian population (Proportion)	0	6,231 (42%)

Newlands West Open Space became densely populated – 15 thousand people moved in between 1996 and 2001. Interestingly, they were not all African, but were fairly evenly split between Africans and Indians. Indians would have to be very poor to qualify for access to public housing (given the split economy, Indians would have to be particularly poor relative to the average Indian), as would Africans, and indeed this is reflected in the extremely high unemployment rate for the community. The income rank is comparable to

the median Indian legacy community, and about 20 spots higher than the median African legacy community.

Table 8.4. Newlands West Open Space: Income and Occupation.

Newlands West Open Space	1996	2001
Unemployment Rate	--	55%
Income Rank	--	232
Indian Skilled Labor	--	95%
Indian Professional Labor	--	34%
African Skilled Labor	--	68%
African Professional Labor	--	16%

Newlands is located near the coastal highway, providing easy access to the economic centers to the north. These include the wealthy white enclave of Umhlanga, Gateway mall, and the alternate CBDs of Togaat and Verulam farther north. Newlands also provides easy access to the city center. Minibus routes show high density from Newlands West Open Space to both the center city and to the high end white legacy areas to the north, where massive mall developments provide substantial low skill service jobs. The role of the state in creating a community in Newlands West Open Space cannot be denied: before public housing construction, no one lived there.

Newlands West Residential, visible on aerial photograph 8.3 just to the east of Newlands West Open Space, may have experienced spillover effects associated with development in the buffer zone. Table 8.5 displays the population, income, and employment changes from 1996 to 2001.

Table 8.5. Newlands West Residential: Residential Change.

Newlands West Residential	1996	2001
Population	24,460	22,268
African population (Proportion)	5,128 (21%)	11,338 (51%)
Indian population (Proportion)	18,908 (77%)	10,024 (45%)

The African population of the community more than doubled, with a steep decline in the Indian community.[49] Newlands West Residential was substantially wealthier in 2001 than the Open Space, with half the unemployment and about 90 sports ahead on the income rank scale; its residents were also poorer in 2001 than they were in 1996, unsurprising given the poverty nearby in the Open Space and the likelihood that it was wealthier Indians who fled the community.

[49] This is a substantial amount of Indian flight. However, given the movement of Indians into the Open Space between 1996 and 2001, it is reasonable to suggest that the snapshot the census provides is not capturing the start of complete flight of Indians out of the Newlands West Residential.

Table 8.6. Newlands West Residential: Income and Occupation.

Newlands West Residential	1996	2001
Unemployment Rate	10%	24%
Income Rank	99	143
Indian Skilled Labor	97%	95%
Indian Professional Labor	35%	35%
African Skilled Labor	82%	82%
African Professional Labor	49%	44%

Africans working in the formal wage labor market were skilled, and a large number were professionals; both rates were consistent across the two years, despite a substantial increase in the number of Africans. Like the CBD, Newlands West Residential, with the shared occupational structure between Indians and Africans, may represent some social integration, though further qualitative research would be necessary to examine this.

In examining Newlands West Open Space and Newlands West Residential together, it is particularly striking that they together form a continuous smooth residential racial configuration of nearly 40 thousand Africans and Indians, though not a smooth class configuration. Newlands West Open Space is very much a bridging community, accessible to poor Africans, with race and class diversity and access to the core economy; public housing construction is responsible for the transition. Newlands West Residential, due to spillover effects, may be a bridging community as well.

Discussion

I have presented in this chapter four sets of communities that do not fit into the neat tiers of Durban's spatial hierarchy. The first two, Cato Manor and Saint Wendolins communities, contain public housing construction and are well located, though Cato Manor is somewhat isolated despite its proximity to the city center. The second two are what I define as bridging communities, pushed by state-led public housing construction to become mixed race, mixed class, areas providing economic access to some poor Africans. These bridging communities provide new developmental pathways to their residents that are new to Durban.

Further research is necessary to examine black boxes in the evidence I use to infer the existence of bridging communities. It is impossible to tell quantitatively or from city-level key informant interviews what the state of social interaction is in these communities. Also, the lack of data on public housing residents makes it impossible to know exactly whether people have benefitted from the public housing I describe here. Finally, cities are always in flux, and the longer term prognosis for these communities is unclear. I come back to these issues, and re-address the framework I develop in chapter two, in the conclusion.

Chapter 9
Conclusion

I began this dissertation by suggesting that inequality is – remains – the defining feature of Durban. As I point out throughout, spatial inequalities associated with race and class are durable, tied to built environments that have their own economies of scale and increasing returns. Left to its own devices, Durban's spatial hierarchy, with roots in apartheid but maintained by market mechanisms and macroeconomic policies favoring the middle class, would continue to widen the developmental gap between Durban's African poor and the rest of the residents in the city. Simply stated, growth in the core economy coupled with low or no growth in the townships would produce a widening gap. And indeed the gap has widened. Durban's township residents remain poor, underserviced (though less so), and spatially isolated, with residents increasingly unemployed and limited in their ability to interact with the core economy. Meanwhile, the core economy remains at first world levels, albeit with an uptick in unemployment.

From a racial residential perspective, many parts of the city are not changing. In 2001, the legacy communities contained 70 percent of the city's population – down just five percent from 1996, still a large majority. Township composition remained very much the same. The data I report support Seeking's and Nattrass's (2005) conclusion that African inequality has increased: the relative income of townships has gone up while unemployment has skyrocketed, indicating increases at the high end, and a substantial number of middle class and wealthy Africans have moved to stratified communities in the core. Many whites are leaving the city entirely, and a number of others, at least those who have not leaving Durban entirely, are fleeing to the suburbs, where white legacy suburbs are locked in. Indians have retain their apartheid-based population centers, while at the same time moving into the core to both wealth and middle class communities in important numbers.

At the same time, some important changes in residential racial composition did occur between 1996 and 2001. Among them are the new racial residential mixing in the urban core, a CBD that has become predominantly African working and middle class, and new communities of mixing farther from the core, to the north, south, and west. In the core, racial residential changes have for the most part have not been accompanied by class changed; most communities remain on the high end of the stratification type. Perhaps the clearest example of the emergence of stratified communities is that Durban's most socially integrated spaces are its retail malls, where people of all races can come together to spend.

The CBD is a prominent exception, both in Durban and compared to other CBDs in South Africa, where middle and working class Africans, whites, and Indians live, but it has also been effectively contained within a sea of higher end stratified communities. The same is true for the well located but still isolated Cato Manor housing projects; as important as they are in and of themselves, neither the CBD nor Cato Manor appears to have had much effect on its neighbors. Outside of the core, particularly to the north around Phoenix and the alternate CBDs of Togaat Central and Verlam Central, the presence of working class stratified communities with both Indian and African populations have meant some opening of communities to a wider range of Africans with resources. Even these more affordable places leave the vast majority of township

residents behind. These trends constitute most of the change and stasis in the city's neighborhoods, and so there has not been major spatial transformation. This is unsurprising given the intractability of the problem and the short time period of this study. However, it is not the only outcome.

State-Led Spatial Transformation Efforts

Spatial transformation in South African cities has historically been the domain of planners, from the developmental of apartheid zoning to post transition efforts to break it down. Shortly after transition, Philip Harrison, Alison Todes, and Vanessa Watson (1997) laid out the existing strategies in place to produce the "physical, social and economic integration of cities and towns… (Harrison et al. 1997: 43)." The article begins by pointing out the dim prospects for office, industrial, and retail development in townships, and both the potential and insecurity associated with small, medium, and micro enterprises (SMMEs). It then examines three existing planning strategies that move beyond basic efforts to spur traditional development: spatial, local economic development, and service and infrastructure.

Spatial strategies were highlighted by the nodes and corridors system of local economic development – an economic bridging plan. Nodes of economic activity would be developed in central parts of townships, and linked to other parts of the city using corridors based on existing transportation networks. The underlying concept of the nodes and corridors strategy was that while people continued to live apart, economic activity could be spurred that bridged racial residential lines. Planners in the city administration told me that the nodes and corridors strategy, which spread to Durban from its starting point in Cape Town, has resulted in some marginal successes in Umlazi, but less so in the townships to the north. The extent of split markets continues to mean that corridors bridging township and core economies are difficult.

Local economic development efforts, focused not on linking growth to the core but on internal township growth, have been hampered by the lack of capital in townships. The spare INK local business directory shows how difficult it is to generate local businesses in areas where large components of the population have little or no income. The lack of local economic development and access to capital has meant that nodes in, for instance, KwaMashu center are populated by national chain stores rather than indigenous businesses. These nodes provide better consumption options for township residents, but not opportunities for local economic development. Indeed, the focus on nodes and corridors was an express recognition of the fact that local economic development in townships, isolated from core markets, would be essentially impossible.

More recently, the changing locations of nodes in Durban – towards the west and north – has meant more proximity to economic opportunity to residents in the northern townships as well as the Saint Wendolins cluster of townships. State efforts to expand out of the monocentric economic structure of apartheid cities (RSA 1995) in Durban are now beginning to result in a city structure that provides better, closer economic opportunity to some township residents.[50]

The central focus of this dissertation, the program of services and infrastructure expansion, has produced decidedly mixed results. There were two main goals of the

[50] New economic nodes in Johannesburg suburbs, however, have increased the spatial mismatch between township residents and economic activity (Crankshaw 2008).

services and infrastructure program: 1) to improve quality of life for the urban, primarily African poor; and 2) to smooth the urban fabric, as Brenner (2004) and Lefebvre (1991) define it, producing a more equal urban terrain that would result in more equal developmental pathways for residents. Infrastructure development in townships has undeniably impacted the first goal. There have been substantial improvements to the infrastructural base of townships, as I describe in chapter seven. Delivery programs have resulted in more housing and bulk infrastructure, and increased numbers of residents with access to electricity and water, if not always the means to pay for them. Insitu upgrades have made a substantial dent in the extent of informal housing, bucking a trend of exploding informality in cities like Mumbai, Sao Paulo, and Nairobi.

However, though the infrastructure gap has been reduced in important ways in Durban, the quality of life gap remains as strong as it ever was (O'Leary 2006). This is consistent with the conclusion I draw in chapter seven, one shared by many other analysts of urban South Africa: despite the substantial delivery rolled out by the state, people's lives have not changed dramatically beyond their interaction with the local built environment. Maintenance of many components of apartheid space has come to pass, through a mixture of formal infrastructure maintaining residential divides and the constellation of other forces contributing to the path dependence of unequal spatial structures.

The State and Bridging Communities in Buffer Zones

As I discussed in the introduction and in chapter seven, the state was well aware of the risks of infrastructure development in the townships, on an already uneven surface that would lock in inequality (RSA 1995). Many of Durban's planners and city officials described the problem to me in interviews, and its apparent insurmountability. Still, the service and infrastructure plan was not limited to upgrades of township infrastructure – particularly in housing, where insitu upgrades were only half the story of public housing projects. Greenfield housing has provided the potential for new spaces accessible to poor Africans. Greenfield housing also provided new strength to the bridging concept, but for residential patterns rather than the economic linkages of the nodes and corridors system.

I have argued throughout this dissertation that the post-apartheid city is a spatial hierarchy composed of tiers of places. There are massive gaps between the peripheral tier of racialized urban townships, the core tiers of stratified places, and the core tiers of ethnicized places. Movement between these tiers has been difficult to impossible outside of the expected directions – e.g. middle class Africans moving to core stratified places, middle class Indians moving from ethnicized to stratified places, whites moving from stratified to ethnicized places. A hierarchy has tiers; a highly stratified hierarchy like Durban's has huge gaps between the tiers preventing movement across divides.

In chapter eight, I argued that the state has created bridging communities linking disparate parts of the spatial hierarchy through well placed greenfield housing in buffer zones, and specifically in New Germany and Newlands. What are bridging communities, in practice? They cannot be fully part of either the stratified or ethnicized parts of the core, nor can they be part of the racialized parts of the periphery, or the same structures that reinforce inequality in the spatial hierarchy would apply. They must at the same time be proximal to both the core and the periphery: close enough to the core to provide economic access to residents, though far enough from the core to shelter them from the

power of the growth machine and high land prices; close enough to the periphery to be accessible to mobile residents, yet not actually part of the social fabric of the periphery, where the delivery imperative dominates. They are therefore spatially defined, located geographically between the core and areas of economic opportunity.

In Durban, buffer zones emerged from apartheid mostly empty, frequently state owned, and serving little purpose beyond racial residential separation. During apartheid, the state actively defended the buffer zones, sometimes in concert with the agro-businesses that owned some of the land, preventing residential development (Freund 2001). With the end of apartheid and the state's new transformative goal, buffer zones became targets of interest for the state, and sites of greenfield public housing. Having been located to ensure separation during apartheid, buffer zones were ideally located to bridge previously separate areas. In the instances I described in chapter eight, this state intervention has resulted in bridging communities: communities accessible by the poor African population, near economic opportunity, with some degree of racial integration.

In chapter two, I argued that the local state in Durban had the internal characteristics of a developmental state, but without the state-society interactions to produce embedded developmental interventions, as traditionally conceived in both the urban governance and developmental state literature. To understand how the state might be able to impact the spatial hierarchy even absent this synergy, I introduced a relational and spatial power framework, in which different parts of the city/spatial hierarchy are characterized by different kinds of state-society interactions and power configurations. Knowing that the state was able to generate bridging communities in buffer zones, how does that relational and spatial model play out?

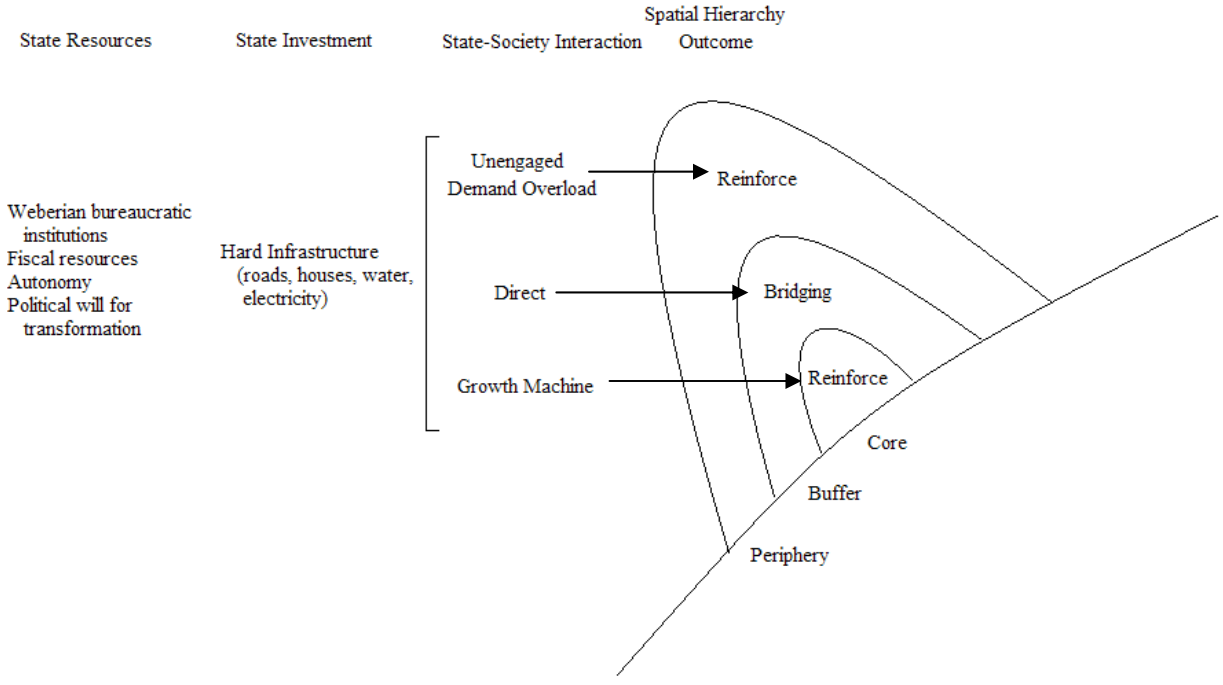


Figure 9.1: A spatial model of the state's ability to impact the spatial hierarchy through buffer zones.

Figure 1 displays a model of state spatial intervention built on a combination of the theory and concepts I presented in chapter two and the empirical analysis I conduct in chapters three, six, seven, and eight. It shows how Durban's local state's resources and delivery resulted in reinforcement of the spatial hierarchy between the urban core and the racialized areas of the periphery, and at the same time drove bridging communities in buffer zones. The relevant investments of the state are hard infrastructure – roads, houses, electricity, water, and the like. These investments do no not vary substantially, in so far as the state builds bulk infrastructure to support mass delivery in the periphery, growth in the core, and bridging communities in the buffer zones. The key differences are the constellations of actors and state interaction with them in different parts of the city. These processes in turn produce outcomes linked to the spatial hierarchy. In the core, the state has little relative power, reinforcing the growth oriented tendencies of market actors there. In the periphery, the state too has little power due to its lack of engagement with civil society groups; the result has been reinforcement of the spatial hierarchy through large scale rushed delivery of often substandard, poorly located infrastructure. These two processes have maintained the developmental gap between the core and periphery (despite a narrowing of the infrastructural gap).

In the buffer zones, the state, through direct investment, has the power to generate these bridging communities that narrow the developmental gaps in the spatial hierarchy. Given the local state's resources, necessary conditions that are the very characteristics that make it a local developmental state, the process of direct output in the buffer zones resulted in some of the few real transformational results to this point. Direct implementation is only effectively possible in the empty spaces of former buffer zones, where the state does not have to compete with other powerful interests.

One potential critique of the concept and impact of these bridging communities is that they are far outweighed by the number of people locked into the spatial hierarchy. Are these bridging communities therefore too small in scale to be meaningful? First, over 45 thousand people live in the bridging communities I have identified, and about 10 percent of the decline in citywide segregation stems from the changing racial composition of these communities. Second, small case studies form the current evidentiary basis other urban development approaches, including Evans' urban synergy model. Third, as I have said, the natural flow of the spatial hierarchy is towards maintenance of the developmental gap, with ethnicized and stratified areas growing while racialized areas stagnate. The state has been working against this natural flow, in the face of many constraints, meaning even limited instances of success have analytical weight.

The Future of Bridging Communities

Several questions specific to bridging communities remain that require substantial further study. The process of buffer zone development produces communities that are immediately linked to both the core and periphery. These communities are not static, though, nor are urban spatial structures more generally (Beauregard and Haila 2000). What will be the paths these communities take over time? One essential factor is the extent of commodification of housing. In Indian areas, many owners of very small state-built homes put up additions, and were able to increase property value substantially when housing markets finally started working. That same process might provide a baseline wealth to African residents who live in public housing units in the buffers. But there has

to be demand. One route to demand would be expansion of the core. The pace of that expansion would determine commodification, and ultimately how long these communities would continue to remain open to poor Africans.

The other direction these communities may take over time is towards further exclusion. Many of the state's housing projects are limited to housing only, with few other social services, parks, and local businesses. If these public housing communities remain that way, they are likely to become more like racialized areas than bridging communities. If, on the other hand, communities are able to mobilize to produce better environments, as has been the case in Saint Wendolins, they may continue to be something entirely new.

Other events since the end of this study period have impacted Durban's spatio-economic structure, underscoring the constantly changing nature of urban environments. As I described in chapter six, Durban is moving away from the monocentric apartheid city structure. The traditional economic poles in the west and north are becoming more central to the economy. The weight of Durban's population is already north of the Umgeni River, a trend that is accelerating along with the economic shifts to the north. Umhlanga and the high end commercial areas are in the north; also, Durban is closing its small single runway airport in the south and opening a new, international airport in the north. The state has responded by planning new roads that will link Pine Town to the new airport, on the way linking KwaMashu and other townships in the north to both more directly. The state is also constructing the Bridge City I describe in chapter six. New spatio-economic structures are therefore providing opportunities that the old monocentric city could not, and the state, with the resources it can marshal and in conjunction with the INK ABM, is planning ways to capitalize on them.

Bridging communities are well positioned for these changes. Part of their effectiveness comes from their proximity to economic opportunity – the same factors driving the changing city structure. Newlands and New Germany both stand to benefit from more linkages with Pine Town and Umhlanga. In addition, townships may benefit as their spatial mismatch is reduced. At the same time, the spatio-economic shift may be producing new urban formations, this time built on the normal factors – race, class, power, the state, the market, civil society, inequality, poverty, environment, to name a few – rather than the perversity of apartheid planning. Some of the most hardened parts of the spatial hierarchy are also to the north, south and west, including the most exclusive white suburbs; given the presence of these kinds of communities, there is no assurance that the Durban's new spatial structures will be beneficial to poor Africans.

Understanding Independent Developmental State Action

Freund (unpublished) argues that the main function of the developmental state in South Africa has been to draw out a new African elite, with whom it partners. This point matches with the fundamental argument of Seekings and Nattras (2005), that reforms to the distributional regime have benefitted the emerging African middle and upper classes, while leaving the poor behind. I too suggest that from the traditional developmental state perspective, the extent of social transformation has been limited. However, I also point to a role for the local state in producing transformation, using the same resources that are necessary to success in developmental state interventions, but without the state-society

relations that have left transformative goals vulnerable to pro-growth pressures on the one hand and demand overload on the other.

I do this conscious of the weakness of the state relative to the problem at hand and the power of other societal actors, as defined by a range of scholars, from Migdal (1988), and Mann (1983; 1994) to Kearns and Paddison (2000) and Stoker (1998). Even if growth is not easy, growth-oriented activities are easy for the state to pursue – they come with a powerful coalition pushing them (Logan and Molotch 1987). Transformative interventions cutting across spatial lines do not necessarily come with powerful coalitions, even community based groups that may reasonably be focused less on wider spatial change and more on improving their own communities (Nelson 1979).

While the state may be weak in spatial transformation relative to other powerful actors and forces in society, it still retains strength at the local level over space. Zoning laws are one key path through which the local state can attempt to control growth and development – from the initial apartheid zoning to slow and smart growth processes in cities around the world (see Gainsborough 2002 for a review). Local states retain control over infrastructure and permitting processes that allow them to continue to shape changing spatial structures even in the face of growing inter-urban competition.

Thinking back to the urban governance literature I review in chapter two, Durban's successes would suggest a return to some of the administratively focused models of the past. With the right local state attributes and spatial perspectives, city governments can be able to "direct events", *pace* Kearns and Paddison (2000). Even if they are limited politically and geographically, my results show that there continues to be a role for independent local state action that is broadly developmental.

Still, I want to be careful not to take this too far. First, independent local state developmental state action requires collective goal making and genuine political will for transformation. The routinized processes of bureaucratic and technical maintenance are not sufficient; Durban's officials' and planners' roots in the anti-apartheid movement, and the historical local participation of academics and NGOs with technical skills and a commitment to spatial change, are essential to even the limited success I have identified.

Second, I am not calling for a return to dominance of direct state action, independent of other societal actors – and not just because, as I have shown in Durban, that kind of direct action is not widely possible. In Durban, and South Africa more broadly, the state has played the hand it dealt itself, in so far as ANC leaders chose to sever ties to civics, community based organizations, and non-governmental organizations (Heller 2001; Williams 2007). What I offer here may work as a complement to the state-society models offered by the synergy and urban governance literature, beginning with the same state resources and examining potential without the state-society interactions.

The long list of failures of local spatial transformation in Durban is a constant reminder of the difficulty the state faces, its weakness without "the backing of a formidable social movement" (Mann 1984: 190). Similarly, the success of social movements in Saint Wendolins in the face of a resistant pre-transition local government is further reminder of the important and effectiveness of community driven development. Developmental state characteristics without embeddedness can produce successes, but state action in concert with social movements and community based organizations can be much more powerful. An activity undertaken by the INK ABM, the KwaMashu located and focused agent of Durban's municipal government, provides a good example.

In KwaMashu, there were 600 different small hospice organizations providing at-home comfort and care to AIDS afflicted residents and households. The ABM office, the local face of the state, put together a list of the organizations, brought them together, provided some training, and linked them to each other so they could communicate effectively and coordinate their activity. This is an ideal complementary role (Evans 1996) for the state in working with civic organizations, one that builds off local capacity while filling an essential role otherwise unoccupied. For community and spatial transformation, in conjunction with a high social capital organization like the one in Saint Wendolins, the state's activities could have multiplier effects and longevity beyond what it can drive on its own in places like New Germany.

Spatial Hierarchies and Bridging Communities in Other Contexts

The concepts I generate from the literature on urban sociology, urban governance, capital and the production of space, and the state have applicability in cities around the world. To begin, I believe that the spatial hierarchy better characterizes developmental pathways in the city. Understanding and specifying the spectrum of pathways and the extent of linkages between them can provide a strong conceptual and empirical underpinning to urban analysis. The literature-based ingredients of the spatial hierarchy – stratification of race, class, and place, spatial assimilation, racialized ghettos, ethnic enclaves (fortified or otherwise) – have been applied to a multitude of both developing and developed cities (see Varady 2005 for a good review of a massive literature). The spatial hierarchy links these concepts with spatial form and developmental potential, providing a basis for empirical specification of how multiple urban mobility models operate and interact across the space of a city. This kind of basis is missing from the more quantitatively driven debates I cite in chapter two that adjudicate different residential models. As I suggest in chapter five, the spatial hierarchy and mixed models of residential mobility would be extremely interesting to model using regression techniques, a next step in my research plan.

I defined bridging communities generally in chapter two as places that link disparate developmental zones of the spatial hierarchy by bringing together people who otherwise are kept separate by urban structures of inequality. Regarding exploration in other contexts, in what other spatial forms, and given what other dynamic spatial processes, will the concept of bridging communities be useful? Durban's core periphery structure is common enough, shared in cities like Calcutta, Rio de Janeiro, and Sao Paulo. Chakravorty (2000) characterizes the post-colonial structure of Calcutta as a series of concentric half-circles of declining income, much like Durban's though without the same level of economic polarization. With is shifting economy and emerging technology sector, Calcutta's spatio-economic structure is also changing, impacting the spatial relationships and blurring spatial and economic boundaries. Caldeira (2000) describes in Sao Paulo a changing and hardening core periphery suburb structure, a reminder that cities are constantly in flux. The inverse structure of degraded cores and wealthy suburban rings is prevalent as well, from Johannesburg, with elite Sandton home to businesses that abandoned the now partly informal core, to cities in the United States like Detroit and Atlanta.

Less common is the existence and extent of purposively planned buffer zones. Other cities certainly have geographic and built environment separators, what Davis

(2007) describes as “no man’s lands”, and Marcuse and van Kempen (2000) describe as “soft locations”. No man’s lands are profoundly anti-developmental, unlikely to generate the kinds of potential associated with buffer zones and bridging communities in Durban. Soft locations, however, are abandoned industrial areas found in de-industrialized cities around the world, where new patterns can emerge and where the state has a real opportunity to be involved.

Bridging communities also occur more organically, in so far as transitions between types of neighborhoods and urban clusters are frequently not abrupt, even in highly segregated and economically polarized cities. Questions to guide further research include: what is the nature of these kinds of “naturally occurring” bridging communities? What kinds of communities bridge, what kinds of communities and places are barriers, and due to what kinds of historical and structural forces? In Caldeira’s (2000) Sao Paulo the market driven emergence of spatial barriers to class and race integration may very effectively preclude the bridging I discuss; train tracks and above ground highways often occupy the same role in cities in the United States.

The question of whether the institutional structures and relational processes I describe in Durban can play out in other kinds of intermediating places is one to which I plan to devote significant further study. Ultimately, I have designed this case study as the beginning of a larger comparative project examining different configurations of my central analytical variables in urban contexts around the world. On the local state side of the equation, Durban brings to the table financial resources, effective bureaucratic structures, a history of planning and implementation, some degree of legitimacy, collective goal making, and the political will to undertake transformation. This is a remarkable configuration of state characteristics; studying other cities will provide an opportunity to examine how the absence of some of these characteristics impacts the model I have developed.

With regard to the urban spatial form and the spatial hierarchy, Durban couples high economic, racial, and spatial inequality with high stratification, producing multiple developmental pathways within its boundaries that are hard to cross. Few other contexts outside of South Africa are this divided. Examining how the spatial hierarchy operates on an already smoother urban fabric, with smaller gaps between tiers of the hierarchy, will help further clarify the concept. Smaller gaps will also provide an opportunity to identify how less capacitated local states, or local states with less will to intervene, combat spatial inequality. These are the projects I look forward to building based on this dissertation.

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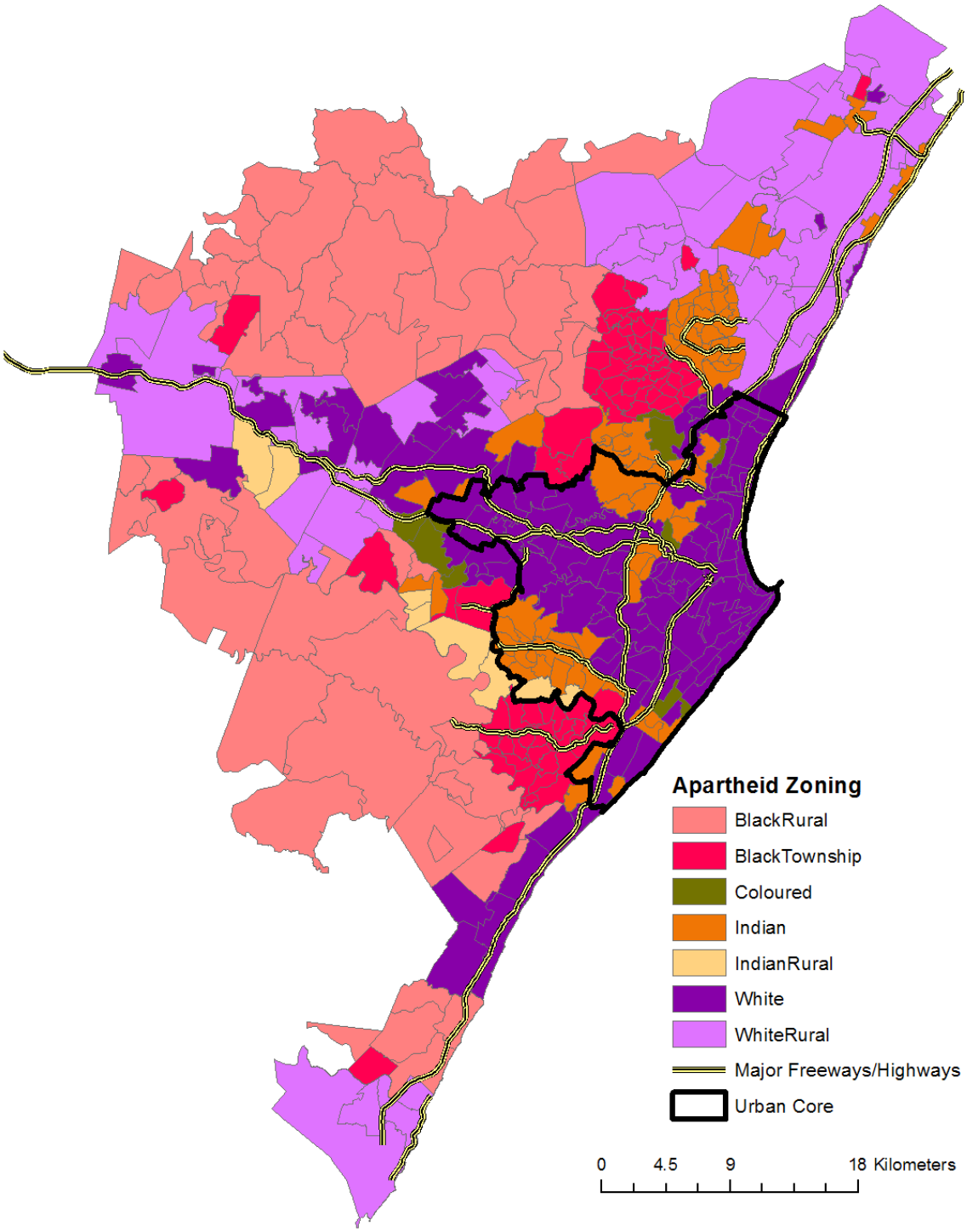
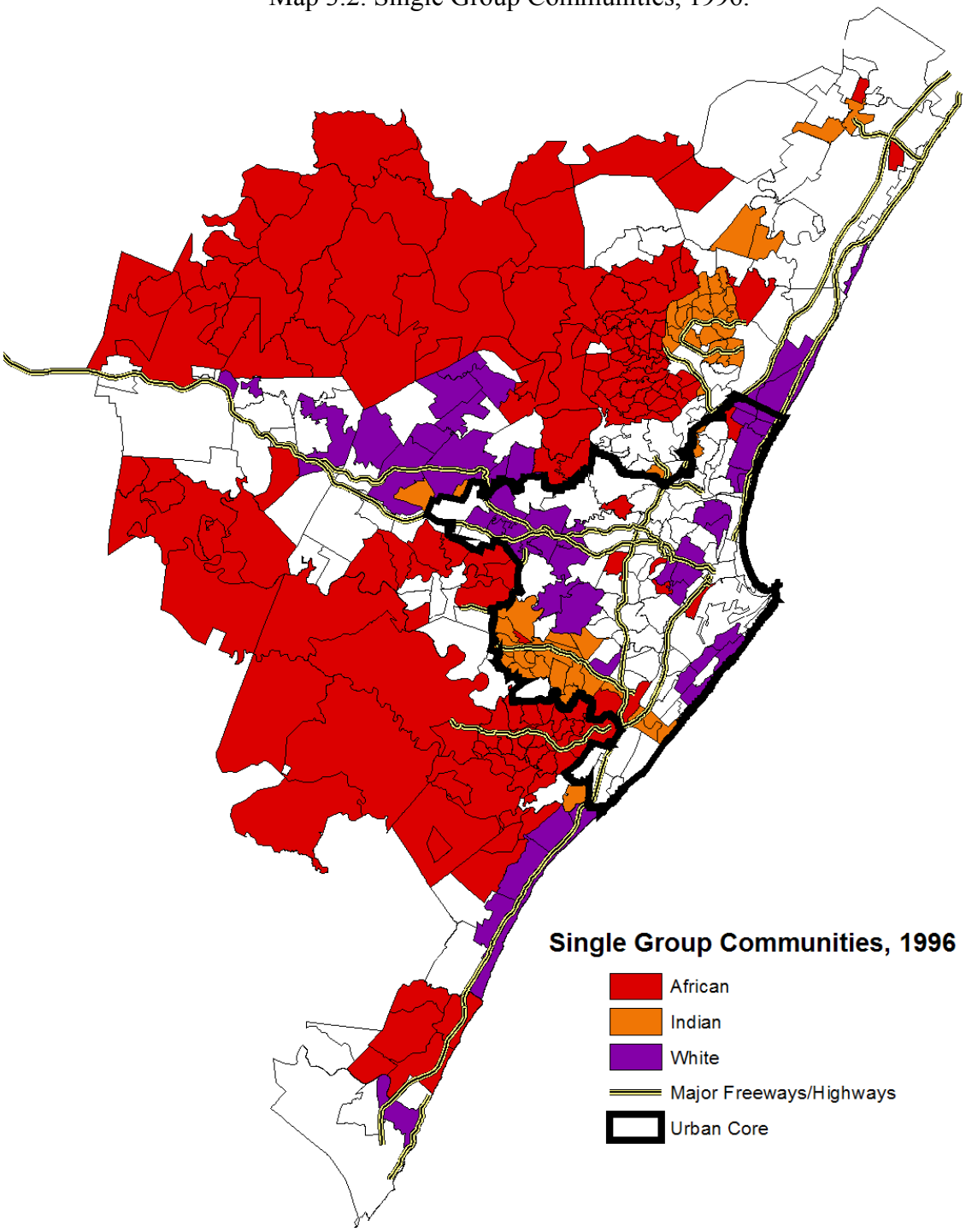
Map 3.1. Apartheid Zoning, Group Areas Act, 1950.

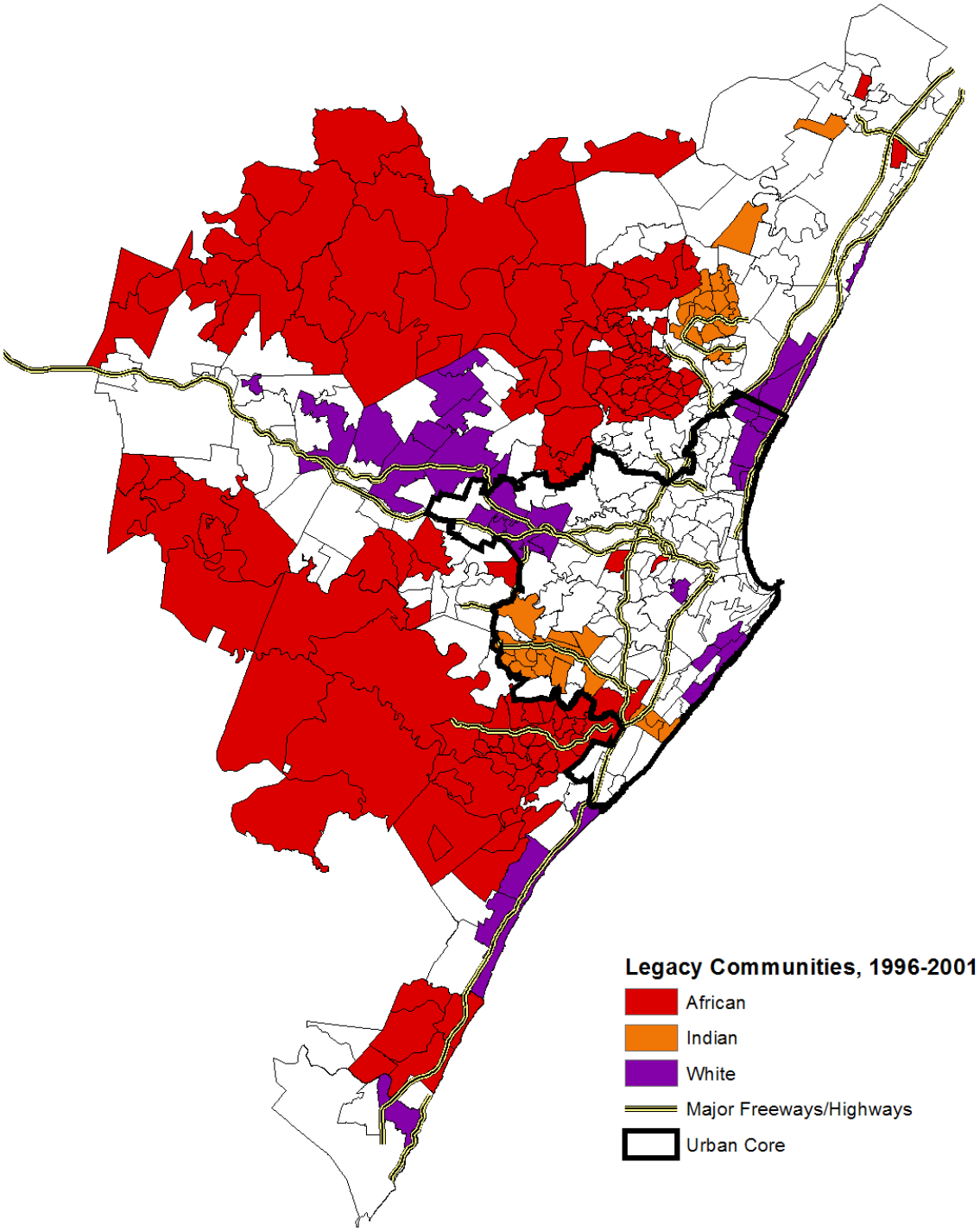


Map 3.2. Single Group Communities, 1996.

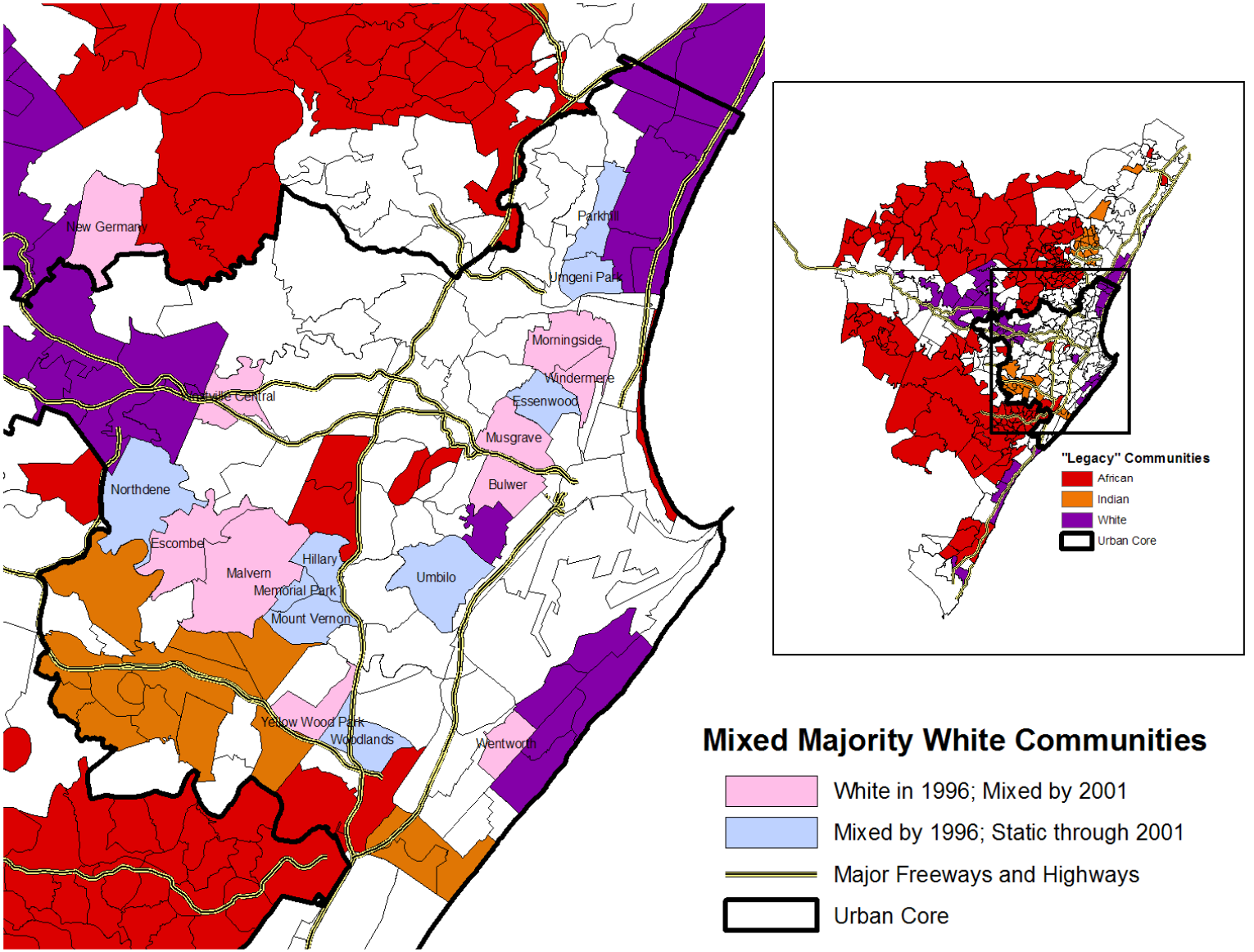


Chapter Six

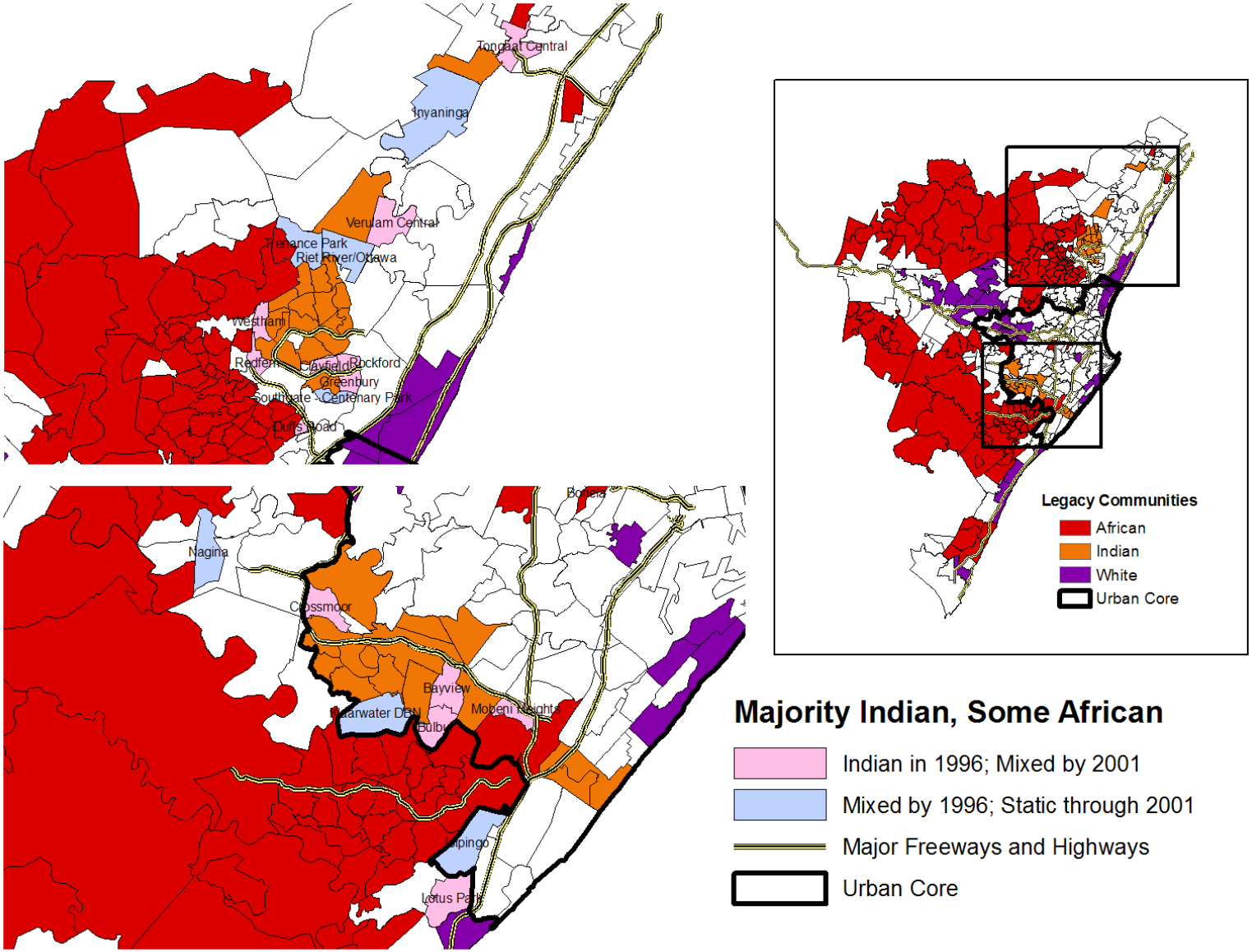
Map 6.1. Legacy Communities.



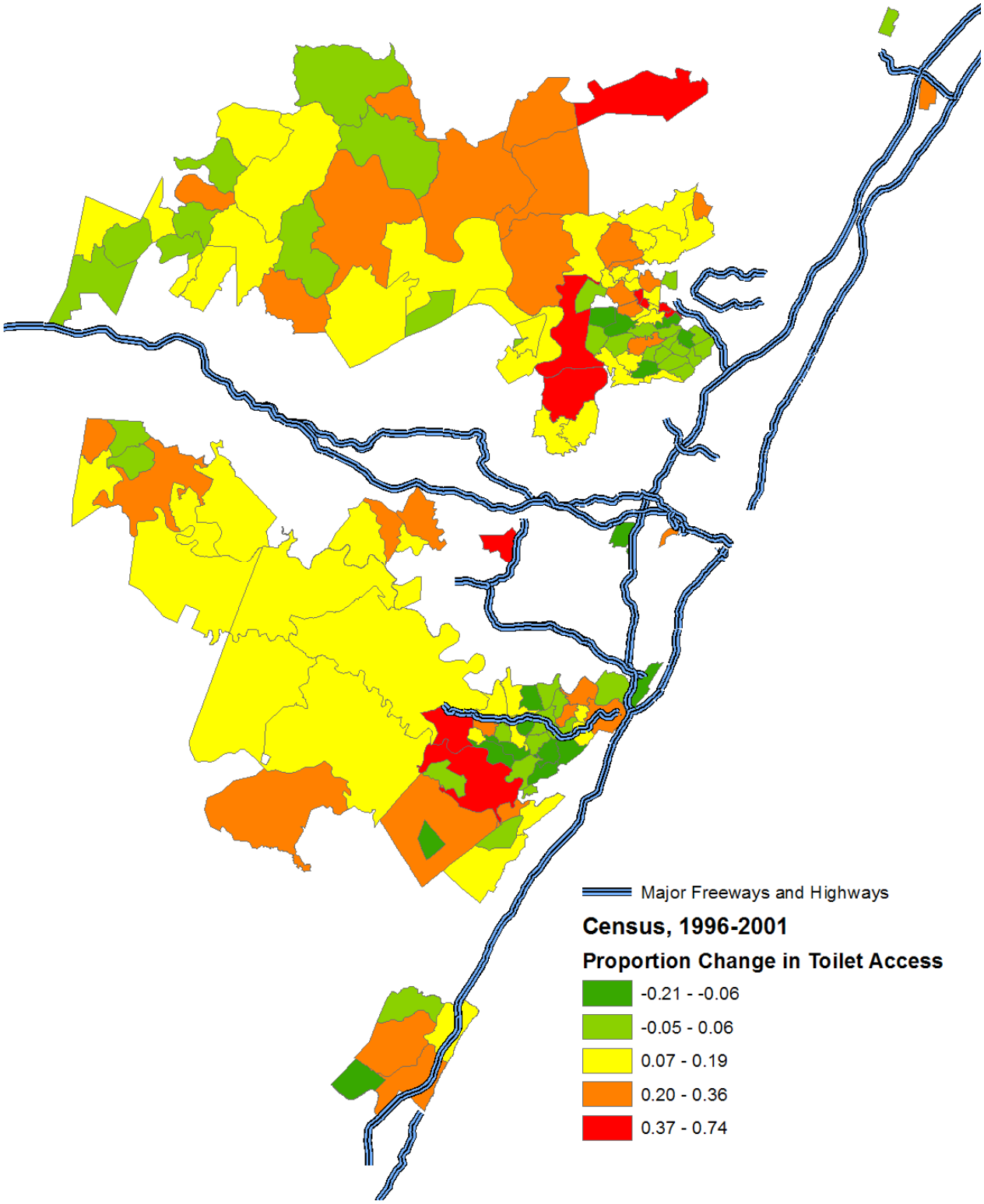
Map 6.2. Mixed Majority White Communities.



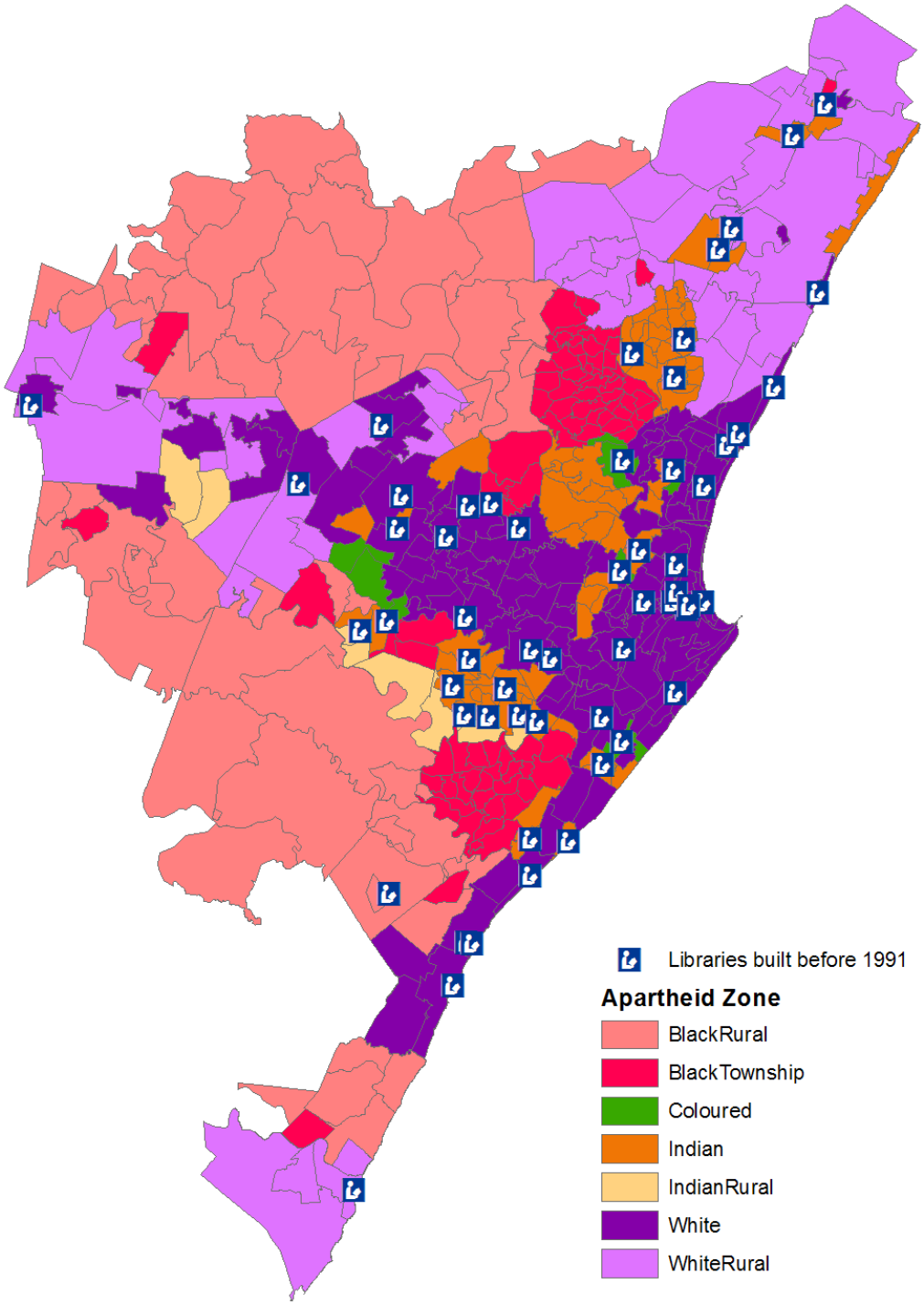
Map 6.3. Majority Indian, Some African.



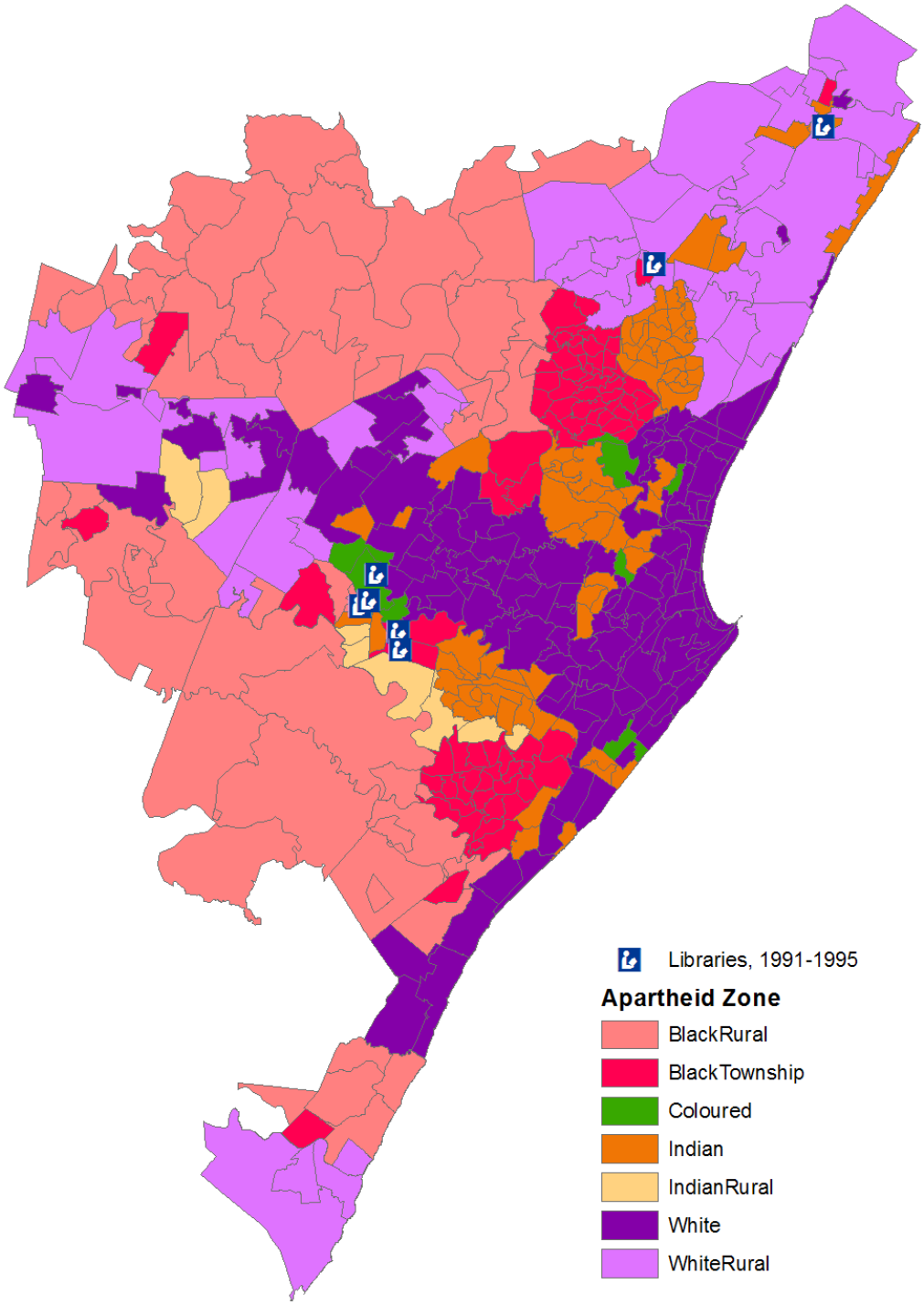
Map 7.1. Household Toilet Access, African Legacy Areas



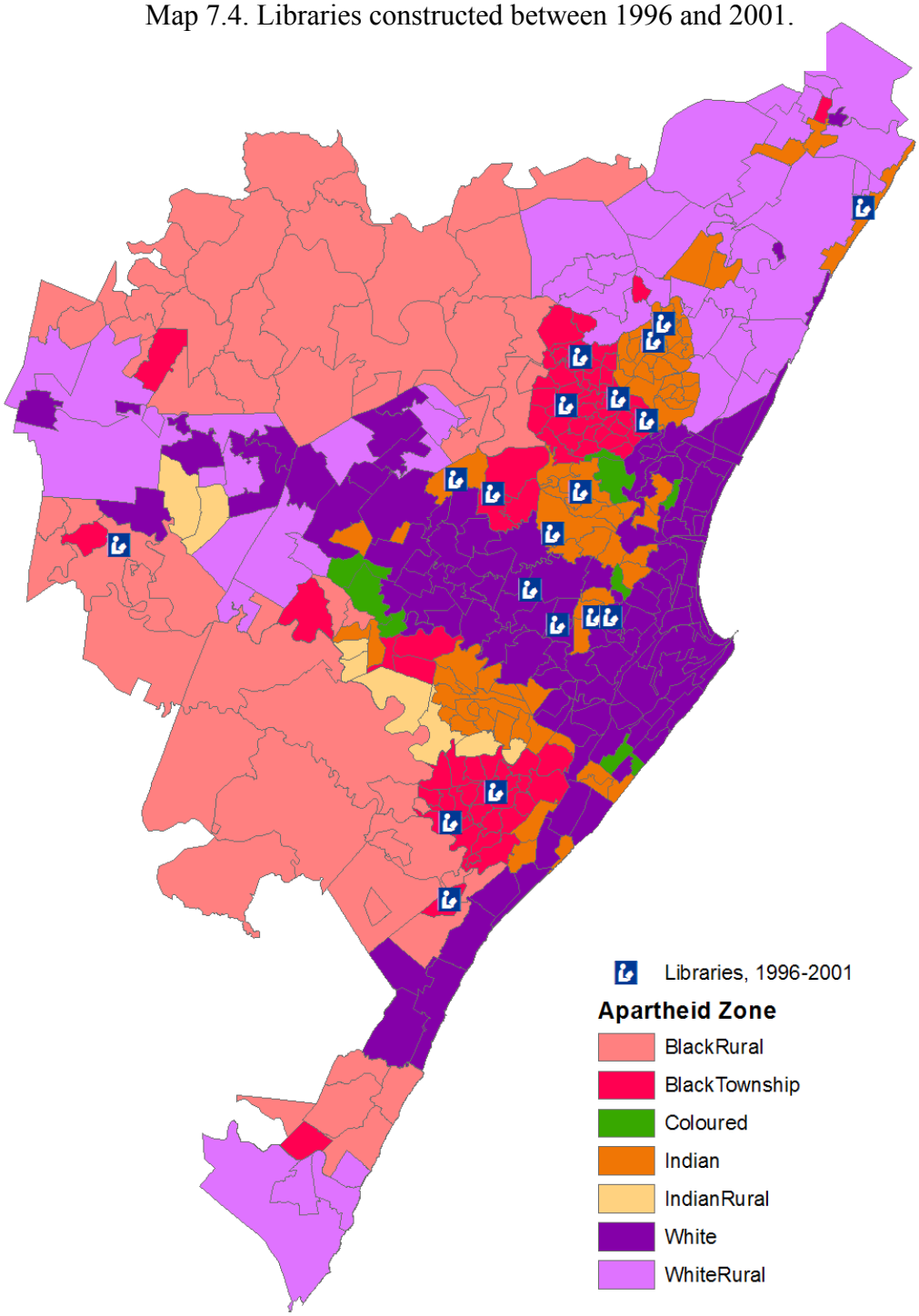
Map 7.2. Libraries constructed before 1991.



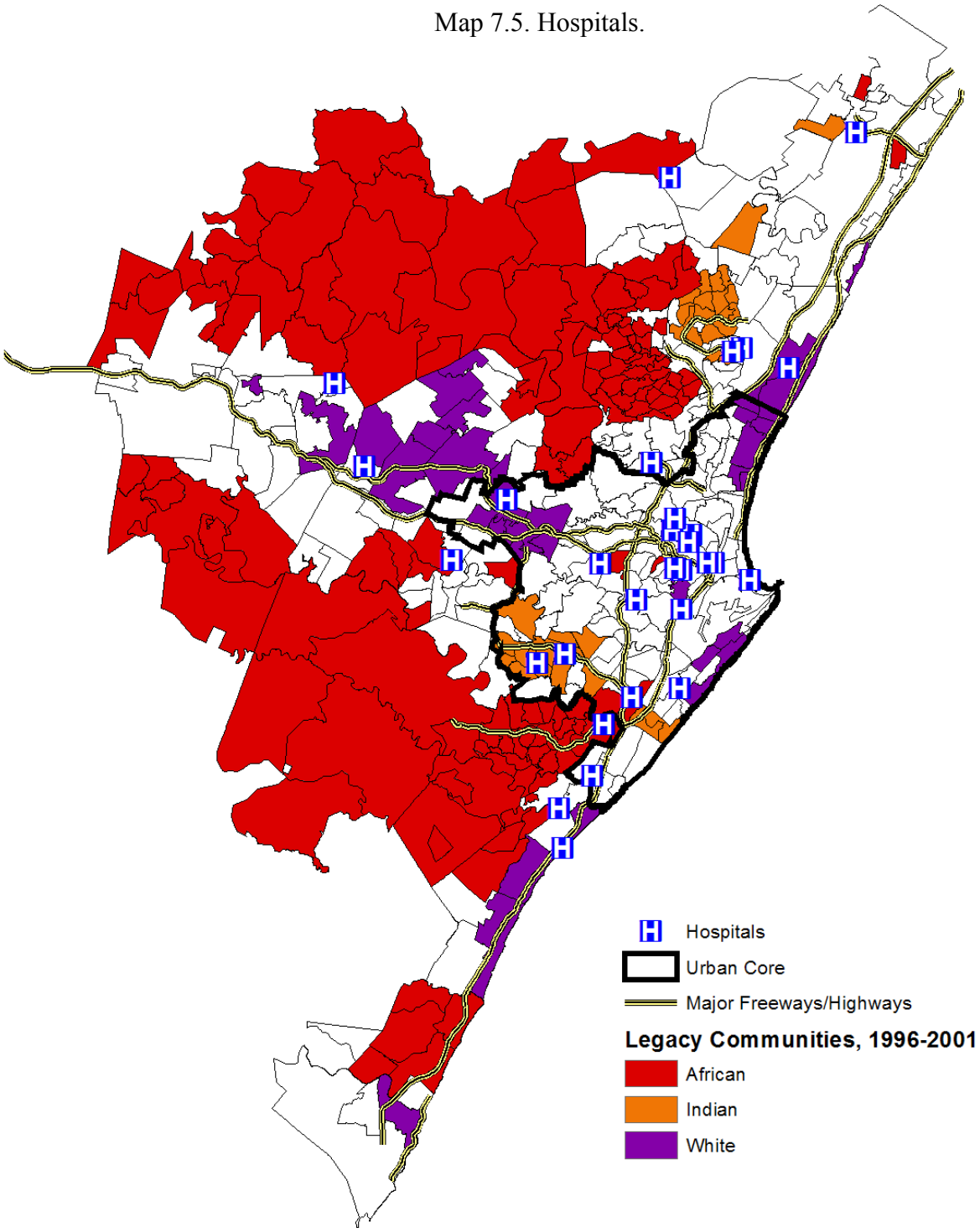
Map 7.3. Libraries constructed between 1991 and 1995.



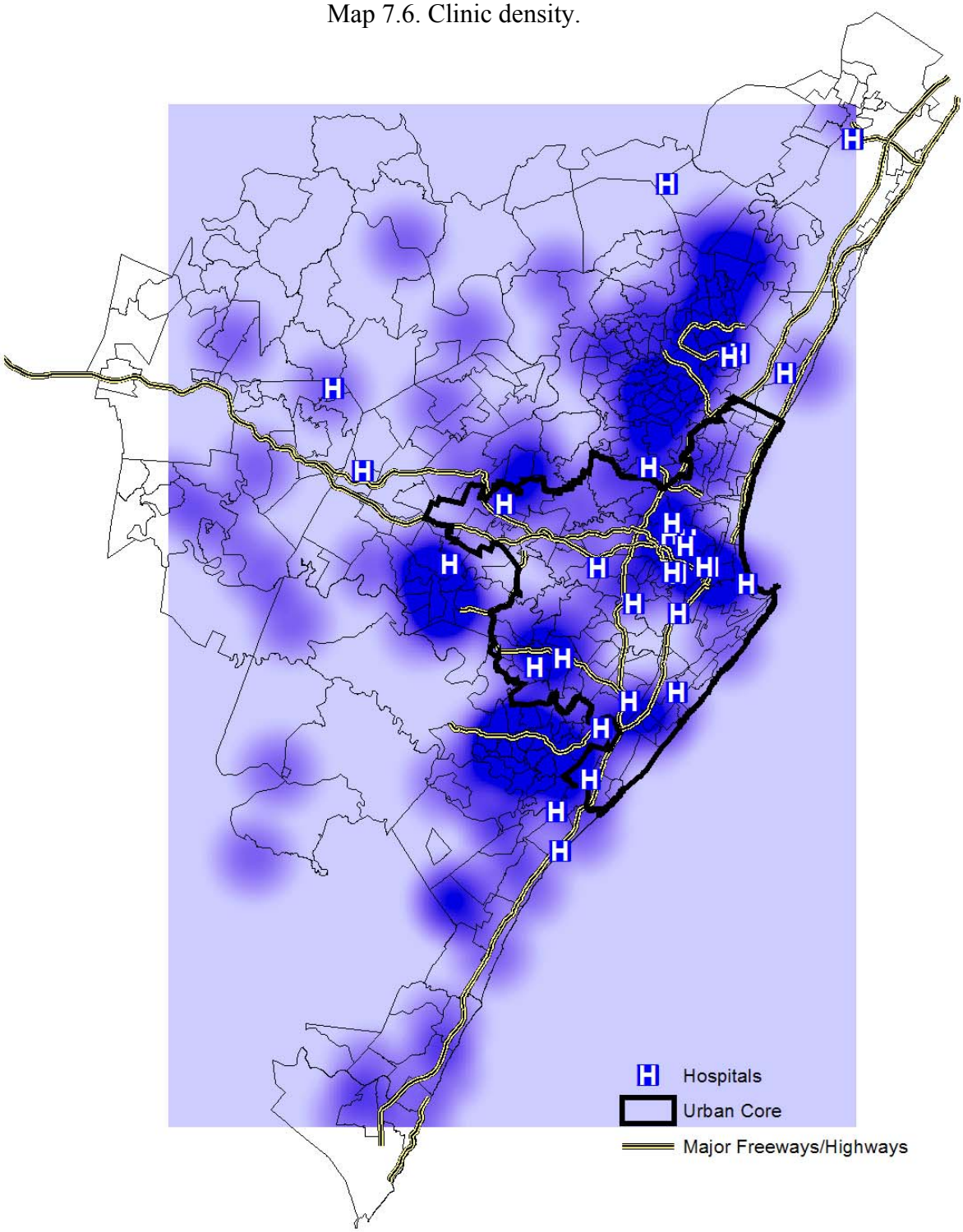
Map 7.4. Libraries constructed between 1996 and 2001.



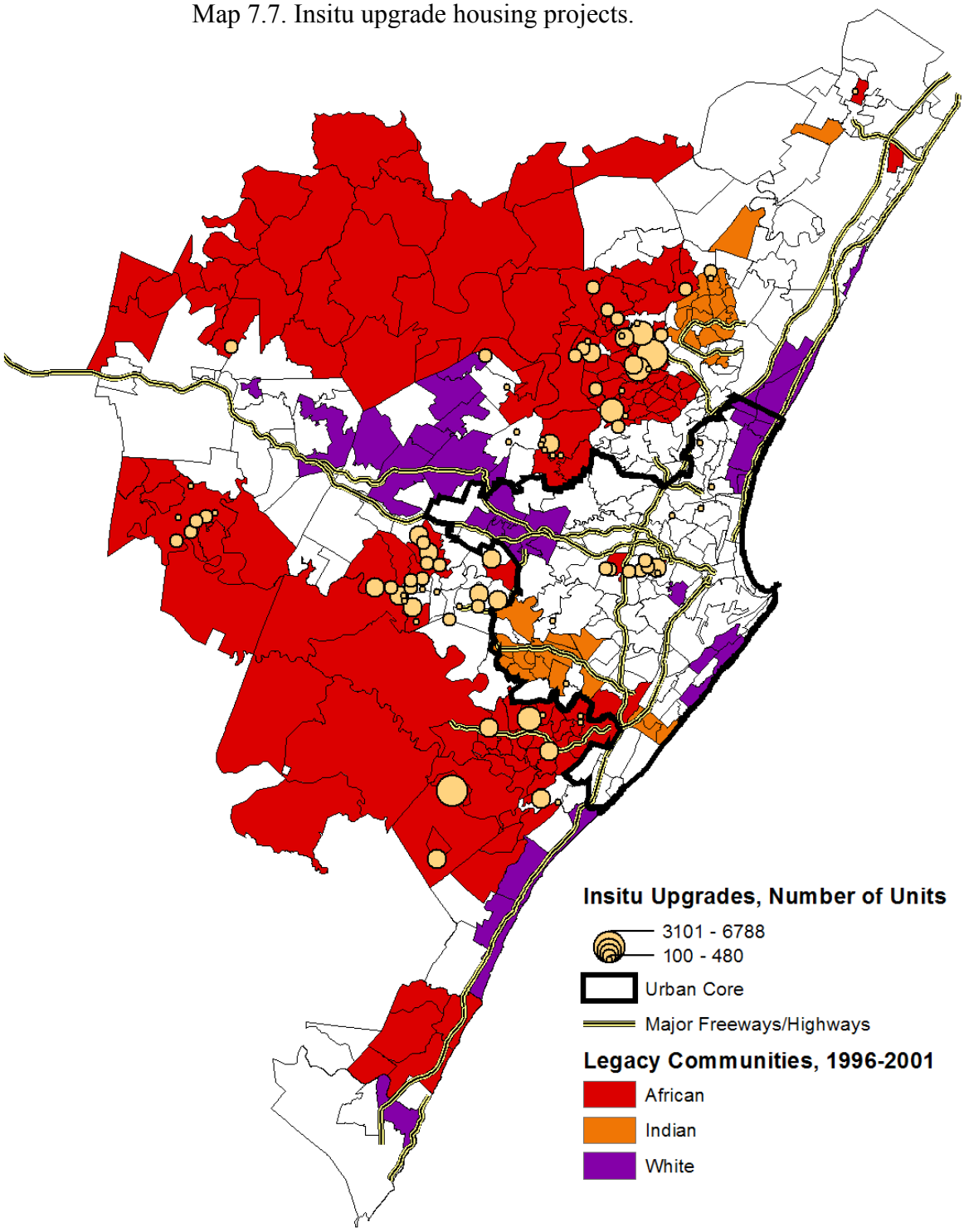
Map 7.5. Hospitals.



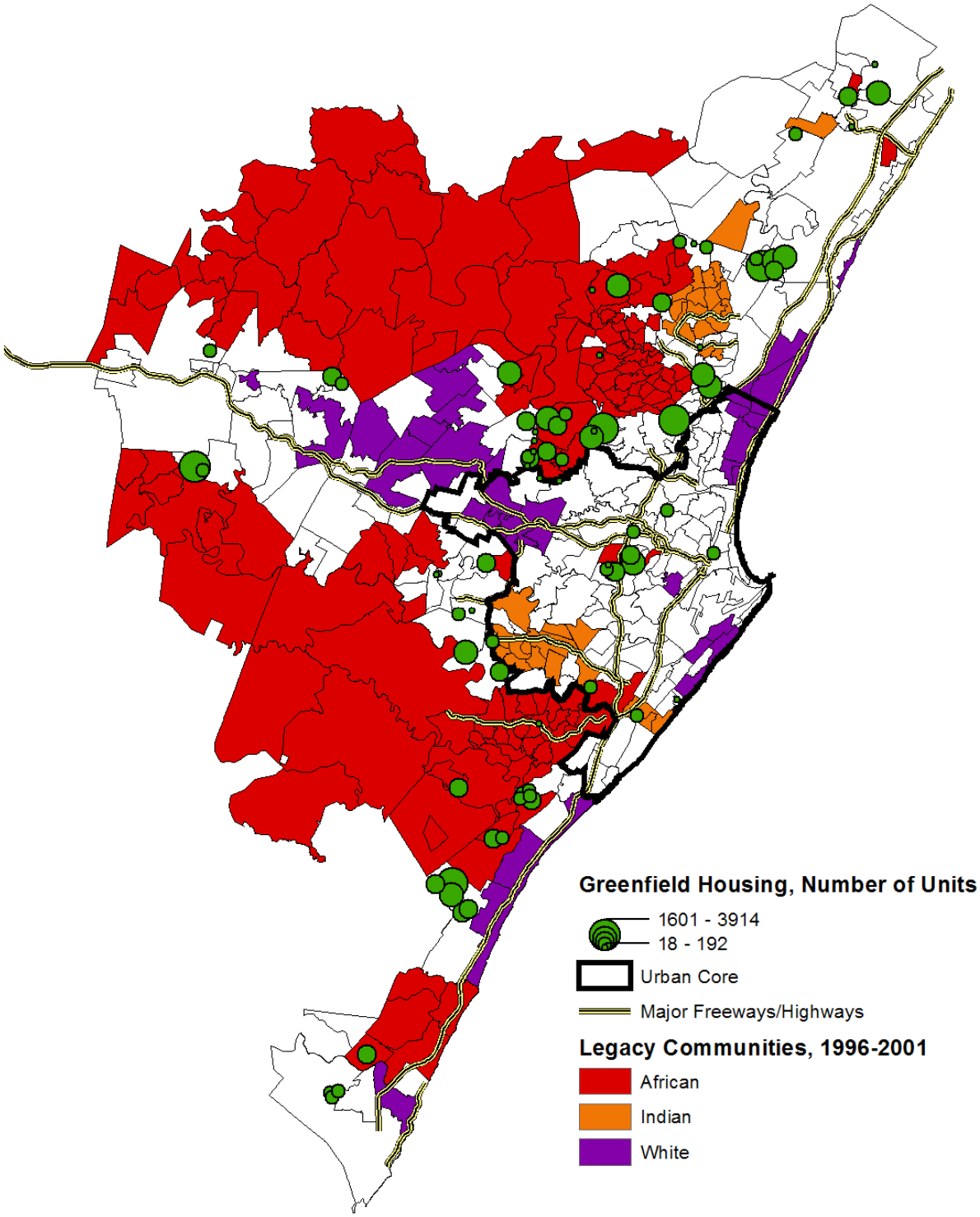
Map 7.6. Clinic density.



Map 7.7. Insitu upgrade housing projects.



Map 7.8. Greenfield housing projects.



Chapter Eight

Aerial Photograph 8.1. Cato Manor, isolated from communities to the east.

Aerial photograph 8.2. Greenfieldpublic housing in New Germany’s former buffer zone.

Aerial photograph 8.3. Greenfield public housing in Newlands West Open Space.