



Analysis

Class/racial conflict, intolerance, and distortions in urban form: Lessons for sustainability from the Detroit region

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ABSTRACT

In this qualitative analysis into the equity conditions of urban sustainability, an examination is presented into the complexity of one particular aspect of intra-generational equity, racial and class discrimination and its role in distorting urban form and in generating resource inefficient and environmentally destructive human activity patterns. The article, therefore, focuses on the role of discrimination itself in encouraging ecological degradation. The Detroit region shows that racial and class conflicts can facilitate the shaping of the urban built environment as one population sub-group, largely white and upper-income, attempts to distance itself from another sub-group that is largely black, lower income, and considered a threat. The outcome is not only disinvestment and decline in the urban core, but also excessive suburbanization, as whites seek homogenous urban environments and use space to increase the distance between themselves and the black population. The study shows that the lack of cooperation and tolerance across ethnic/racial and class subgroups facilitates inefficient low-density and scattered developments, and excessive degradation of natural ecological systems.

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1. Introduction

While urban areas constitute some 2% of the Earth's land surface, urban dwellers consume over 75% of the Earth resources depleted in any year (Girardet, 2000). With most world resource stocks directed to urban areas – which are the aggregation of global wealth – cities are responsible for much of the global environmental degradation (Vojnovic, 2013). Cities themselves, however, do not have significant capacity in generating material resources, such as food and energy. Cities also have little ability to absorb or recycle waste and to clean air to any reusable extent, and they continue to discharge raw sewage into surrounding bodies of water (USEPA, 2004). Urban inhabitants rely on large natural areas beyond urban boundaries for resources and environmental services to meet the basic necessities of urban systems; leading Eugene Odum (1997, p. 290) to argue that cities are “parasites on the biosphere”.

Considerable interest has been devoted to changing consumption and development processes within cities, as evident with the global discourse on urban sustainability. In the US, sustainability discussions have focused particularly on the question of urban form. It is difficult to argue that there is a generic American city, since the built environment of high-density, pedestrian-oriented cities, like Boston, is very different from the built environment of low-density, automobile-oriented cities, like Phoenix. However, over half the American population lives in suburbs, with the rest split between urban and rural areas; a

settlement pattern that reveals the scale of US urban decentralization (US Census Bureau, 2000).

These decentralized development patterns also have clear racial and class imprints, white flight to the suburbs and the blackening of inner-cities, as illustrated by Metropolitan Detroit (Darden et al., 1987). Since the early-1970s, the majority of the US population living in metropolitan areas lived in suburbs, and this majority was overwhelmingly white. While the suburbs remain predominantly white, the 2010 Census has shown growing racial and ethnic diversity. In Metro Detroit, however, the racial divide has intensified. Some 83% of the city of Detroit population is black (US Census Bureau, 2011).

In exploring the complexity of the inter- and intra-generational equity requirements for advancing toward sustainability, we analyze one particular aspect of intra-generational equity; the role of discrimination – racial and class – in distorting urban form and in generating resource inefficient human activities. Racial and class conflicts shape urban form as one population sub-group, largely white and upper-income, attempts to distance itself from another sub-group that is largely black, lower income, and considered a threat. The result is excessive suburbanization, as whites seek homogenous urban environments and use space to increase the distance between themselves and blacks, a decentralization process known as white flight (Figs. 1–2). The resulting low-density and scattered developments facilitate excessive degradation of natural ecological systems and reduce regional economic performance and the overall welfare of cities.

This article focuses on the role of racism, a variable seldom considered in the sustainability discourse, in distorting housing markets and urban form, suppressing advancement toward urban sustainability. The analysis shows that racial and class discrimination contribute to

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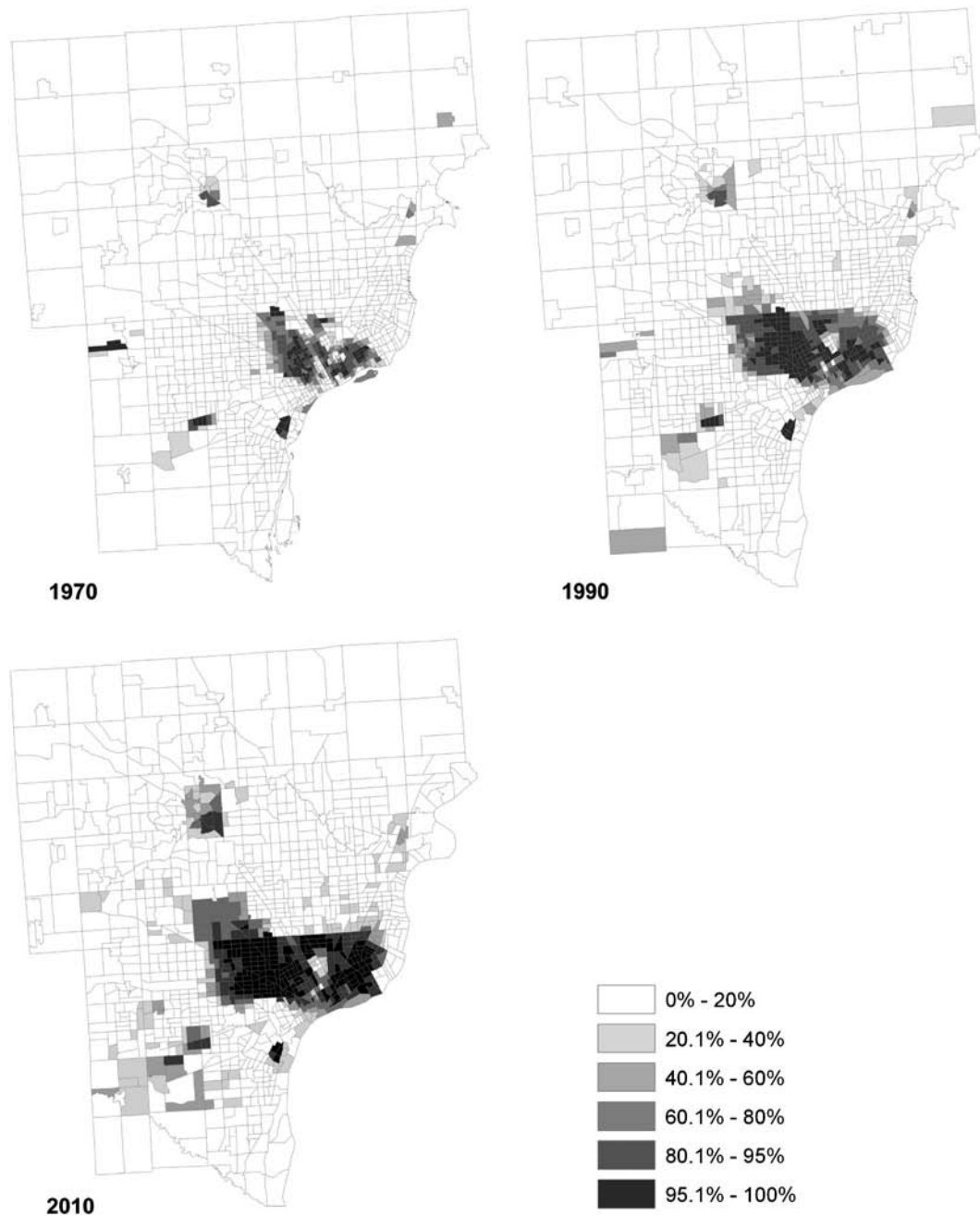


Fig. 1. Metropolitan Detroit, percent black (1970–2010).

ecological degradation, an underrepresented discussion in the sustainability debate. It also reveals that socially equitable, resource efficient, and environmentally benign outcomes can be achieved simultaneously, stressing the importance of pursuing urban sustainability.

After exploring the decentralization of Metropolitan Detroit, we will examine the complex dimensions – natural environmental, built, and socio-economic – of racial and class driven urban processes that hinder sustainability.¹ The study reinforces the inherent coupling between inter- and intra-generational equities by illustrating that by not pursuing intra-generational equity, in this context resolving racial

and class conflicts, communities encourage resource inefficiency and environmental degradation, hindering inter-generational equity and the pursuit of sustainability.

2. Class, Race and Sustainability

Environmental, social, and racial equity are inherently coupled, and this is clearly evident in the research on environmental racism. The notion that the poor and racial minorities are disproportionately exposed to environmental burdens began to receive attention during the 1980s. In 1979, the first environmental racism lawsuit on grounds of civil rights violation, *Bean versus Southwestern Waste Management*, was filed in Houston. Over the coming decades, studies on racial justice would further raise the prominence of environmental racism (Bullard, 2007). Research linking the environment and racism spans some four

¹ In the article, we refer to Metropolitan Detroit as the Tri-County area of Macomb, Oakland, and Wayne Counties. The wider SEMCOG (Southeast Michigan Council of Governments) region, we reference as the Detroit region. SEMCOG consists of Macomb, Oakland, Wayne, St. Clair, Livingston, Washtenaw, and Monroe Counties.



Fig. 2. With the white population fleeing the city of Detroit, miles of derelict and abandoned landscape characterize urban Detroit (A and B), the home of the concentrated black population, while the suburbs occupied by the whites maintain some of the highest concentrations of wealth in the US (C and D).

decades, but this work is largely limited to the study of inequitable exposure of non-whites to environmental hazards.

2.1. Urban Sustainability

The term sustainable development was popularized by the [WCED \(1987\)](#) and their publication *Our Common Future*. In response to what was described as unprecedented social and ecological stresses, the

[WCED \(1987, p. 43\)](#) advocated sustainable development; “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”. While the spirit of this advocacy has wide support, mechanisms for advancing sustainable development remain elusive ([Sneddon et al., 2006](#)).

There is also considerable ambiguity with the concept urban sustainability. Urban sustainability can be loosely defined as the social, economic, and physical organization of urban populations in ways that accommodate the needs of current and future generations, while preserving the natural environment and its ecological systems over time. The benefit of not having a precise definition is that it enables communities to conceptualize sustainability based on their particular values and unique circumstances. One just needs to think of the differences in stresses between Boston and Detroit. However, the lack of a clear definition has made the implementation of sustainability policies difficult. Little is known about the role of governments in advancing urban sustainability, the implementation of sustainability programs, and the institutional and social structures needed to support sustainable human activities.

Despite the ambiguity, by 2007, over 10,000 cities and towns in 113 countries had Local Agenda 21 programs ([Brugmann, 2013](#)). In evaluating these sustainability programs, Jeb Brugmann argues that:

What requires little assessment is the fact that few cities and towns stand today as models of sustainability. Many have made significant... progress in specific areas, such as reductions of air pollutants, waste diversion, improved governance, or increased sanitation services. However, these ‘best practices’ are not a sufficient basis on which to claim success, particularly in the face of continued negative global trends.

([Brugmann, 2000, p. 40](#)).

The urban sustainability discourse continues to be focused on the search for mechanisms to advance sustainability ([Button, 2002](#)). Despite the global interest and the implementation of sustainability policies, the environmental benefit of these initiatives is limited, overwhelmed by ongoing consumption and particularly in wealthy countries.

In the context of this uncertainty, it is important to recognize that evidence spanning some five decades has shown that one particular aspect of citybuilding – excessive suburbanization – is responsible for increased resource consumption, waste flow and natural habitat disruption. Dispersed developments facilitate greater environmental damage; higher levels of resource use and the increased conversion of natural lands to urban uses. Higher infrastructure outlays are also associated with low-density developments. In addition, greater social costs – including social isolation of the elderly – have been coupled with urban decentralization.

2.2. Advancing Toward Sustainability

A characteristic considered vital in sustainability initiatives is ‘integration’; coupling environmental, social, and economic policy dimensions. ‘Integration’ can be achieved in the pursuit of two conditions, inter- and intra-generational equities ([Padilla, 2002](#); [Pelletier, 2010](#); [Vojnovic, 1995](#)). Inter-generational equity is concerned with ensuring the survival of future generations and environmental well-being by maintaining the quality of natural resources and their services over time. One generation can meet this obligation if they leave the next generation a resource wealth no less than what they inherited.

Intra-generational equity, in contrast, is based on promoting equitable access to resources within existing generations. This encompasses providing populations with basic needs, including adequate nutrition, shelter, water, and employment. Simply, it is pointless to encourage conservation to satisfy human needs indefinitely while people in the current generation starve.

This analysis of excessive suburbanization reinforces the importance of coupling inter- and intra-generational equities. Even one particular dimension of intra-generational equity, discrimination, can generate severe distortions in something as durable as urban form, hindering the pursuit of inter-generational equity and urban sustainability. As the article illustrates, discrimination itself can encourage ecological degradation.

3. Urban Decentralization

The automobile, transport truck, public investment in roads/highways, increased incomes, and reduced energy prices all encouraged suburbanization. Suburbanization was also facilitated by F.H.A. and V.A. mortgage guarantees, and by federal income-tax deductions. The subsidization of suburban public services, zoning encouraging single-family housing, urban crime, reduced urban school quality, and preferences for large homes and lots also facilitated suburbanization. Particularly from the mid-1940s, homes and lots became larger, streets became wider, and new developments increasingly decentralized (Vojnovic, 1999, 2000b).

By 1960, US urban areas were using twice as much land as in 1950, yet the urban population had increased by only 38%. Average urban density, at 2089 people per square kilometer (ppskm) in 1950, was reduced to 1451 ppskm by 1960 (Boyce, 1963). The proliferation of the suburbs would continue. Between 1982 and 1997, while population grew by 17%, urbanized land increased by 47% (Burchell et al., 2005). By 2000, lots averaged 1301 square meters and house sizes averaged 223 square meters, twice the lot and house size compared to just 1970 (Burchell et al., 2002).

Given the concentration of automobile manufacturers in Detroit, the car industry was particularly influential in shaping this city. The success of Detroit's automobile industry was founded on affordable car production, enabling mass private transport, a corporate objective in direct conflict with mass transit. Throughout the 1920s, when Detroit's Rapid Transit Commission introduced comprehensive transportation plans – integrating highways, subways, and streetcars – the City Council and voters rejected the proposals (Foster, 1981).

While cities of Detroit's vintage built subways, Detroit never did. Hence, Detroit never developed the increasing capacity to move its population, which by freeing its roads would increase capacity to transport goods. Without a subway, Detroit was not able to achieve the residential and business concentrations in its core that comparable cities realized (Vojnovic, 2006a). However, the region's emphasis on automobiles fueled suburbanization.

Throughout its history, class and race also were critical in shaping Detroit (Darden, 2009). These class and racial/ethnic imprints in suburbanization – evident particularly after World War II – were facilitated by fragmented municipal structures and isolated residential developments, encouraging excessive outward urban growth.

With fragmentation, as the white and the wealthier suburbanized, the reduced tax-base in the city facilitated urban decline. This fragmentation enabled the development of exclusive Detroit suburbs with a rich tax-base, distant from the concentration of poverty, crime, and minorities. In addition, while many suburbanites work in the city of Detroit, and extensively use its public services, their financial contribution to supporting these services is minimal.²

Regional fiscal disparities are evident in the comparison of taxable assessment (Table 1). In 2000, for instance – after Detroit taxable value declined by over \$147 million throughout the 1990s – Detroit's per capita assessment was \$7573. The tax base exodus was also ongoing.

Such fiscal pressures impact a city's capacity to fund services. Public education is particularly relevant because of its impact on urban form (Table 2). Since K-12 education is an important variable in affecting housing demand by homebuyers with school-age children, the lower spending and poorer quality of education in fiscally-distressed cities encourage families to suburbanize into jurisdictions with better schools (Ghosh, 2004; Orfield, 2002).

3.1. Manufacturing Investment and Urban Decline

The city of Detroit was thriving in 1950, with population growth and economic investment closely associated with the auto industry. In 1950, the poverty rate in the city of Detroit was lower than in the suburbs. However, between 1947 and 1955, Ford, Chrysler, and G.M. constructed 20 new plants in the suburbs of Detroit (Darden et al., 2007). This suburbanization of auto investment had severe impacts on the city, facilitating population and investment decline. Disinvestment in housing was perhaps the most important outflow of capital from Detroit. Deteriorated buildings draw down the value of surrounding property. Deterioration leads to less neighborhood investment, and the neighborhoods soon fall into a self-perpetuating cycle of decay.

3.2. Keeping Out the Unwanted

In the US, a number of defensible design strategies became evident in facilitating segregation. The discontinuous road system – cul-de-sacs and curvilinear streets – was a design strategy for developing isolated residential pods, constructing barriers between populations. Curvilinear street systems are a sharp contrast to grid street patterns, which minimize distances within and between neighborhoods. Eighteenth century Italian suburban villas provide examples of discontinuous roads being used as a design to close developments to outsiders, ensuring privacy and exclusivity (Sewell, 1993). Similarly, in America, discontinuous roads enabled neighborhoods to keep out unwanted visitors, as motorists could not turn into unknown local suburban roads, since there was no way of knowing where these roads lead.

Table 1

Municipalities with the lowest and the highest per capita assessed taxable values in the Detroit region, 2000 (US\$).

Source: SEMCOG (2003a). Fiscal capacity of Southeast Michigan communities: Taxable value and its implications. Detroit: Southeast Michigan Council of Governments.

	Taxable value per capita 2000	Change in taxable value 1990– 2000 (inflation adjusted)
<i>Municipalities with the lowest per capita taxable values</i>		
Highland Park	\$7012	–\$160,893,645
Hamtramck	\$7346	\$20,497,092
Detroit	\$7573	–\$147,128,602
Inkster	\$8401	–\$2,258,755
New Haven	\$10,875	\$13,786,984
Hazel Park	\$12,175	\$18,616,127
Capac	\$12,988	\$5,299,744
Ypsilanti	\$13,130	\$8,689,726
Petersburg	\$13,588	\$4,278,398
Yale	\$13,743	\$8,798,688
<i>Municipalities with the highest per capita taxable values</i>		
Bloomfield Hills	\$165,794	\$88,066,682
Bingham Farms	\$160,905	–\$5,370,033
Lake Angelus	\$132,393	\$13,613,645
China Township	\$128,835	–\$211,070,756
Barton Hills	\$119,187	\$6,051,530
Orchard Lake Village	\$119,049	\$76,505,575
East China Township	\$114,057	\$2,637,179
Grosse Point Shores	\$112,935	\$640,509
Ann Arbor Township	\$70,420	\$64,531,029
Birmingham	\$66,535	\$170,392,931

² In Detroit, an infrastructure exists that was built to support about 2 million people and yet some 1.3 million people are missing. The remaining population thus faces higher per capita costs just to maintain the city's extensive and rapidly deteriorating infrastructure.

Table 2

Instructional educational expenditure per student among the highest per capita and lowest per capita spending municipalities in Metropolitan Detroit, 2003.

Source: B. Heath, May 25 2003. Michigan still shortchanges poor schools. The Detroit News. 1A.

Municipalities with highest expenditures per pupil	Instructional spending per pupil	Municipalities with lowest expenditures per pupil	Instructional spending per pupil
Bloomfield Hills	\$6148	Clintondale	\$2030
Southfield	\$5518	Redford Union	\$2444
Birmingham	\$5271	New Haven	\$2699
Grosse Pointe	\$4973	Holly	\$2907
Troy	\$4963	Highland Park	\$3054
Farmington	\$4856	Detroit	\$3100
Mt. Clemens	\$4851	Southgate	\$3120
Trenton	\$4737	Pontiac	\$3158
Dearborn	\$4731	Hamtramck	\$3171
West Bloomfield	\$4704	Richmond	\$3197

Note: These educational instruction expenditure distinctions are still evident a decade after Michigan voters approved Proposal A, an initiative that reduced what were then even greater funding capacity differences that existed between wealthier and poorer school districts.

It was not just curvilinear streets that facilitated defensible design strategies that kept out those considered a threat. Building developments further into the periphery, isolated from exiting developments, also facilitated segregation. This led to a constant outward suburban push, and from 1945, generally by higher-income earners (Vojnovic, 2006b). There was also a racial/ethnic dimension to this decentralization, facilitated by racial restrictive ordinances.

Racial restrictive covenants were an effective tool to exclude blacks and others from suburban developments. Such covenants were the major land-use tool for creating racially segregated white neighborhoods (Gotham, 2000). Racial restrictive covenants were private contractual agreements among white property owners residing in all-white neighborhoods. The covenants would indicate in the property deed that the owner would permit 'Caucasians only' to buy or lease property (Vose, 1959). Thus, blacks, Asians, Jews and other national origin groups could be excluded from neighborhoods (Massey and Denton, 1993). Most state courts enforced the discriminatory covenants until they were declared unenforceable by the US Supreme Court in *Shelly v. Kraemer* (1948). However, evidence suggests that even after the Supreme Court decision, some suburbs maintained restrictive covenants into the 1960s (Gotham, 2000).

After the *Shelly v. Kraemer* ruling, racially restrictive covenants decreased since they were no longer enforceable. However, discriminatory actions by real estate brokers and apartment managers continued, necessitating the 1968 Fair Housing Act, which focused on making discrimination in housing illegal (Yinger, 1999). While the Fair Housing Act did mitigate racial discrimination in the housing market, national audits continued to reveal widespread discrimination, forcing 1988 amendments to the 1968 Act (Denton, 1999). Moreover, despite strict enforcement, subtle forms of housing discrimination continue (U.S.H.U.D., 2013).

With restriction on racial covenants, many white suburbanites turned to the covert use of class (with restrictions on minimum lot size) to increase property costs with the aim of excluding 'the unwanted'. Many suburban governmental officials cooperated with builders and developers to deny members of lower-income groups from moving into suburban neighborhoods by requiring excessive lot sizes (Fischel, 2001). Although this form of exclusionary zoning is class-based, it has a disproportionate exclusionary impact on blacks due to their average lower-income compared to whites. These practices led H.U.D. to formally proclaim that exclusionary zoning is an impediment to affirmatively furthering fair housing (A.C.R.B.A.H., 1991).

In Michigan cities and suburbs, racially restrictive covenants were widespread (Farley et al., 2000). Restrictive covenants, which originated in Detroit in 1910 (Sugrue, 1996), have been written into the deeds of most developments built after World War I to restrict blacks to certain neighborhoods. By World War II, as more whites left the city of Detroit, many new housing developments (single-family and apartments) contained racially restrictive covenants (Sugrue, 1996). Such covenants,

along with overt white hostility toward blacks from some suburban officials, were sufficient to discourage blacks from attempting to enter many Detroit suburbs before the 1968 Fair Housing Act. In addition, many suburban whites who sold real estate cooperated with suburban government officials and school boards to convey the message that Detroit's suburbs did not welcome blacks (Farley et al., 2000).

Blacks also faced exclusionary zoning as many suburban Detroit municipalities incorporated. Through incorporation, suburban municipalities could control land-use and the ability to zone minimum lot sizes, increasing the cost of suburban Detroit homes. Paralleling wider discrimination practices in housing, more tacit exclusionary zoning based on the upgrading of housing standards – and increasing housing costs – prevailed throughout the Detroit suburbs once racially based zoning was challenged (Hartnett, 1993).

Thus, disconnected road networks, urban decentralization, and restrictive covenants were development strategies within the Detroit region that enabled the construction of isolated enclaves, accommodating class and racial/ethnic exclusivity. At the same time, the decentralization of residents, businesses, and their tax base, facilitated urban decline.

3.3. Redlining

Discriminatory lending practices were important in encouraging Detroit's decline. Redlining is the practice by mortgage lending institutions to draw a red line on a map around certain neighborhoods to indicate where loans are not to be made. These neighborhoods had socioeconomic characteristics, such as older housing, and were disproportionately occupied by poor blacks (Wilder, 2000). Redlining has been widespread in central cities throughout the US. Such systematic selective disinvestment was a form of institutionalized or structural racial discrimination (Jackson, 1985). The practice played a major role in the socioeconomic and demographic decline of many central cities. Redlining was also carried out with the cooperation and approval of the Federal Home Loan Bank and the Federal Housing Administration (Greer, 2012). The federal government's cooperation with the private housing sector to restrict the equal access of blacks to homeownership via denial of credit was one of the best examples of institutionalized racism facilitating the decline of older cities like Detroit (Bradford, 1979).

Redlining in Detroit facilitated its socioeconomic and demographic decline (Mezger, 2000). More importantly, Detroit continues to experience such institutionalized racial discrimination, as revealed in a recent \$3.6 million US Department of Justice settlement with Citizens Republic Bancorp (Buckley and Sandler, 2011). The Department of Justice filed a lawsuit alleging that the bank violated the Fair Housing Act and the Equal Credit Opportunity Act, with institutional racial discrimination at the core of the complaint. The Department of Justice successfully argued that the bank served the credit needs of white

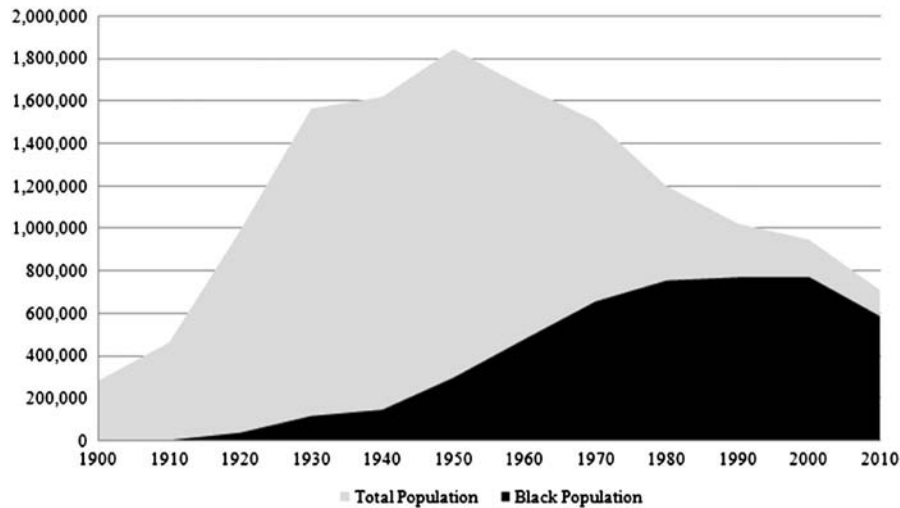


Fig. 3. City of Detroit total and black population, 1900–2010.

neighborhoods to a significantly greater extent than it served the credit needs of black neighborhoods.

3.4. Class, Race and City/Suburban Residential Patterns

In 2010, the Detroit metropolitan area consisted of 3,863,924 people. Of this total, 2,598,821, some 67% were white, while 974,744, about 25%, were black. Over 97% of all whites lived in the suburbs and less than 3% resided in the city. By 2010, the already predominantly black city, 81% black in 2000, became even blacker, 83% black by 2010 (US Census Bureau, 2011). The city of Detroit also declined in population to 713,777 people by 2010, dropping from 1.85 million in 1950 (Fig. 3). Thus, blacks and whites in Metropolitan Detroit continue to live in separate neighborhoods, a pattern accentuated over time.

The index of dissimilarity determines the segregation of blacks and whites.³ In 2010, the index of dissimilarity between blacks and whites in Metropolitan Detroit was 80, the highest index for any racial minority group in the region (Darden and Thomas, 2013). By 2010, Metro Detroit and Milwaukee were the most racially segregated large US metropolitan areas.

This extreme racial segregation spurs class segregation. The city of Detroit ranked at the top of the scale in the percent of the population living in poverty, averaging 36.2% between 2007 and 2011, with a per capita income during these years of \$15,261 (US Census Bureau, 2013). Nationally, the poverty rate averaged 14.3% between 2007 and 2011, and per capita income averaged \$27,915. In the Detroit suburbs of Oakland County, however, only 9.5% of the population lived in poverty between 2007 and 2011, while per capita income averaged \$36,314.

The extreme concentration of some of the richest and poorest census tracts in one US metropolitan area has drawn considerable attention. Chris Hansen (2010) describes Detroit on Dateline NBC:

They litter the landscape, thousands and thousands of abandoned homes. And just like these buildings, Detroit is a shell of its former self. One third of the people here live in poverty. Almost half the adults are illiterate, and about 75% of kids drop out of school. I could be describing some ravaged foreign nation, but this is the middle of America.

³ The index determines the extent of unevenness in the spatial distribution of two groups. If two groups are evenly distributed (their proportions of the population are equal in the tracts) the index would be 0, reflecting no residential segregation. If two groups do not share residential space (they live in completely different census tracts), the index would be 100, a case of complete segregation.

The Detroit suburbs, in contrast, offer high-quality schools, exclusive boutiques, and some of the most expensive neighborhoods in the country (Gopal, 2008; US News, 2013).

The Detroit region is a case of extreme suburbanization and inner-city decline, illustrating fragmentation by race and place, separate and unequal economic and political power, and sharp racial differentiation of neighborhood socioeconomic characteristics (Darden et al., 2010). Shaped by years of racial and class discrimination, the region has evolved into a distorted built form characterized by resource-inefficient and environmentally destructive development patterns.

4. Urban Decentralization and Unsustainable Development

Between 1997 and 2001 more than 404,686 ha of US forestland was developed into urban uses (Burchell et al., 2005). In Michigan, between 1982 and 1992 the state lost 345,602 ha of farmland to urban development, an average of 4 ha every hour (Burchell et al., 2005). Added to land consumption, the separation of activities in decentralizing cities has generated resource-intensive transportation patterns, greater automobile-dependence, greater infrastructure requirements, and increased energy use for heating and cooling buildings.⁴

Between 1960 and 1990, the conversion of natural/agricultural lands to urban uses in the Detroit region occurred at a rate 13 times greater than population growth. In 1990, average residential density of development in the region was 7.02 housing units per hectare (huph), while over the following 10 years it was reduced to 3.1 huph (SEMOG, 2003b). The residential density in the city of Detroit, which was 5116 ppskm in 1950, dropped to 1996 ppskm by 2010.

At the regional scale, spatial structure illustrates development options. Monocentric and polycentric regions are relatively efficient forms of land and resource use. These spatial structures facilitate concentrated activity nodes, employment and housing clusters at higher-densities, while also accommodating lower-density peripheral options. In contrast, low-density, dispersed regions use land less efficiently, ubiquitously scattering developments at low-densities. Table 3 shows employment and population concentrations in the Detroit area, revealing regional development characterized by dispersal, and at half-the-density of even Metropolitan Los Angeles.

In addition to degrading wetlands, farmlands, and forests, dispersed development patterns increase distances between destinations,

⁴ The greater energy requirements of low-density, single-family housing – whether in warm or cold climates – are related to the inability of these buildings to take advantage of energy efficiencies associated with units sharing walls and minimizing building-surface exposure to outside elements (Hastings and Wall, 2007).

Table 3

Major employment and population nodes in the Detroit region, 1970 and 2000.

Source: table derived from SEMCOG (2002). Historical population and employment by minor civil division, Southeast Michigan. Detroit: Southeast Michigan Council of Governments.

Cities	Employment	Percent of region	Population	Percent of region
1970				
Detroit City	735,104	37.9	1,514,063	32.0
Dearborn City	105,532	5.4	104,199	2.2
Warren City	93,821	4.8	179,260	3.8
Pontiac City	68,127	3.5	85,279	1.8
Southfield City	55,912	2.9	69,285	1.5
Ann Arbor City	52,499	2.7	100,035	2.1
Livonia City	50,858	2.6	110,109	2.3
Highland park City	33,997	1.8	35,444	0.8
Ecorse City	31,464	1.6	17,515	0.4
Sterling heights City	26,037	1.3	61,365	1.3
Top ten total	1,253,351	64.7	2,276,554	48.1
Region	1,938,512	100.0	4,736,008	100.0
2000				
Detroit City	345,424	12.9	951,270	19.7
Troy City	135,977	5.1	80,959	1.7
Southfield City	128,407	4.8	78,296	1.6
Ann Arbor City	124,378	4.7	114,024	2.4
Dearborn City	108,418	4.1	97,775	2.0
Livonia City	105,019	3.9	100,545	2.1
Warren City	101,187	3.8	138,247	2.9
Farmington Hills City	78,835	2.9	82,111	1.7
Sterling Heights City	68,008	2.5	124,471	2.6
Pontiac City	63,070	2.4	66,337	1.4
Top ten total	1,258,723	47.1	1,834,035	37.9
Region	2,673,052	100.0	4,833,493	100.0

encouraging automobile dependence. For instance, in 1960, vehicle ownership in the Detroit region averaged 365.5 cars per 1000 people. By 1990 this figure had almost doubled to 693.4 cars per 1000 people, automobile ownership rates greater than in Los Angeles.⁵ During the same period, the percentage of Detroit's regional population that walked/cycled to work was cut from 6.4% to 2.0%, while the population that commuted with public transit was reduced from 13.8% to 2.6% (Kenworthy and Laube, 1999).

Table 4 illustrates environmental impacts associated with Detroit's decentralization. The resource demands of this built form are evident in long travel distances, high petroleum use, high emissions, and extensive infrastructure requirements. While Detroit's profile is comparable to the US average, it reflects significantly greater levels of travel and resource consumption compared to higher-density US centers, such as Chicago or New York, or its higher-density Canadian neighbors, Toronto or Montreal.

4.1. Economic Distortions

Urban compactness not only reduces resource use and the degradation of natural systems, but it can also improve regional economic performance. Increased material requirements in the construction and maintenance of decentralized urban forms – associated with material use for the buildings, physical infrastructure, and servicing – generate higher costs. Pursuing compact developments in the Detroit region, Southeast Michigan, can generate considerable benefits, including cost savings in road, water and sewage provision (Table 5).⁶ Achieving greater compactness in the Detroit region, by 2020, could save approximately

⁵ Vehicle ownership in Boston increased from 272.6 cars per 1000 people (1960) to 520.7 cars per 1000 (1990), Chicago increased from 307.7 cars per 1000 (1960) to 547.1 cars per 1000 (1990), and vehicle ownership in New York City increased from 270.6 cars per 1000 (1960) to 483.5 cars per 1000 (1990). Vehicle ownership rates in the Los Angeles region increased from 459.1 cars per 1000 people (1960) to 543.6 cars per 1000 (1990) (Kenworthy and Laube, 1999).

⁶ The compact development scenario assumes that only 10% of new development will be built in the periphery. Designs characterized by higher density developments and clustering facilitate the expected population growth while reducing agricultural and natural land use.

\$1.7 million in public service costs, while also preserving 966 ha of farmland and 337 ha of natural land. In addition, individual housing costs could be reduced by \$11,400 on average; associated with using less land and infrastructure (SEMCOG, 1997). Again, this shows that beneficial social, economic, and environmental outcomes are simultaneously achievable. Less infrastructure and land use in construction reduce costs, with higher-density developments requiring fewer resources.

Economic costs of excessive decentralization are also evident in regional competitiveness. By the 1980s, after decades of suburbanization, some argued that the information economy – with e-shopping, telecommuting, and teleconferencing – would lead to the dispersal of urban America, making cities irrelevant. While Detroit fulfilled this prognosis, prospering urban regions realized the exact opposite development direction, urban intensification. Evident in cities like New York and Boston, infrastructure investment, businesses, and residents began concentrating in the inner-cities. In contrast to the prediction of dispersion and irrelevancy, since the 1980s, residential and employment densities increased within these dominant regions and their city-centers. These concentrations are partly a result of agglomeration effects, which are stronger in service than industrial economies (Scott, 2000).

Several reasons explain the economic competitiveness of regions with strong city-centers. Regions with weak inner-cities maintain low investment in public infrastructure – such as transportation (transit, airports, ports, and rail), communications, and education – reducing the operating capacities of commerce, retail, and manufacturing. In a high-tech and specialized services economy, investment in education is particularly relevant, training local labor and providing R&D support for local firms. The break-down of public education in Detroit is common in cities with declining cores, reducing the competitiveness of local labor. Ultimately, infrastructure is critical for effective corporate performance (Vojnovic, 2007). In 2007, for instance, Volkswagen decided to move its headquarters from the Detroit area to Herndon, Virginia, because of “Virginia's high-quality schools, skilled workforce and proximity to the airport”, all infrastructure related factors (Goldfarb, 2007).

Urban regions with weak inner-cities also lose the advantage of agglomeration economies, realized with the concentration of firms in a single, or in different industries, at one location. Finally, a loss in

Table 4

Comparison of metropolitan and inner-area densities and urban activities and functions.

Table derived from: [Newman and Kenworthy \(1999\)](#). Sustainability and cities: Overcoming automobile dependence. Island Press, Washington DC.

City	Population density (pop./ha)		Gasoline use per capita	CO ₂ emissions per capita	Ann. travel in private cars	Ann. travel in public trans.	Total ann. travel	Road supply	CBD parking spaces
	Metropolitan density	Inner-area density ^a	Private Transportation (MJ)	Total transportation (kg)	(Passenger km. per capita)	(Passenger km. per capita)	(Passenger km. per capita)	(Meters per person)	(Per 1000 CBD jobs)
American average	14.2	35.6	55,807	4683	16,045	474	16,519	6.9	468
Sacramento	12.7	19.4	65,351	5524	19,239	117	19,356	8.8	777
Houston	9.5	18.4	63,800	5193	19,004	215	19,219	11.7	612
San Diego	13.1	32.1	61,004	4846	18,757	259	19,016	5.5	688
Phoenix	10.5	16.4	59,832	4654	15,903	124	16,026	9.6	906
San Francisco	16.0	59.8	58,493	5122	16,229	899	17,129	4.6	137
Portland	11.7	23.7	57,699	5094	14,665	286	14,951	10.6	403
Denver	12.8	16.3	56,132	4961	13,515	199	13,714	7.6	606
Los Angeles	23.9	28.7	55,246	4476	16,686	352	17,037	3.8	520
Detroit	12.8	28.6	54,817	4518	15,846	171	16,018	6.0	706
Boston	12.0	43.1	50,617	4238	17,373	627	18,000	6.7	285
Washington	13.7	38.1	49,593	4403	16,214	774	16,988	5.2	253
Chicago	16.6	47.3	46,498	4069	14,096	805	14,902	5.2	128
New York	19.2	91.5	46,409	3779	11,062	1334	12,396	4.6	60
Canadian average	28.5	43.6	30,893	2764	9290	998	10,288	4.7	408
European average	49.9	86.9	17,218	1887	6601	1895	8496	2.4	230
Asian average	161.9	291.2	6311	944	2772	2587	5359	1.1	144

^a The inner-area density refers to the pre-World War II city area developed mostly before the emergence of automobile-dependent lifestyles.

competitiveness of regions experiencing disinvestment is associated with image. Regions characterized by decline develop a poor image, and this reduces local capital investment. During the 1970s and 1980s, major urban centers in the US – like New York City – also experienced declining urban cores as industries closed due to market deregulation and globalization. With focused reinvestment, these cities rebuilt their cores, increasing their residential and business concentrations ([Vojnovic, 2009](#)).

4.2. Social Distortions

Where a person lives is important in defining opportunities. It is, in part, the reduced access to amenities in decaying inner-cities that

perpetuates poverty. For instance, Detroit's low in-class educational spending plays a significant factor in the city's 25% high school graduation rate ([Swanson, 2008](#)). Within the region, access to employment, public services and even competitively priced goods are all dependent on where one lives, with the least opportunities offered to Detroit's low-income, black population ([LeDoux and Vojnovic, 2013](#)).

Numerous social benefits are recognized in cities with strong cores and compact regions. As [Table 5](#) shows, higher-densities, with less land and infrastructure used in development, reduce costs of construction. With units maintained at the same size and standard, cost savings from using less land and infrastructure amount to about 7%, average savings of \$11,407 per housing unit in the Detroit region ([SEMCOG, 1997](#)). By being resource efficient both economic and social

Table 5

Annual impacts of current versus compact growth in Michigan in the year 2020.

Source: [SEMCOG \(1997\)](#). Fiscal impacts of alternative land development patterns in Michigan. Southeast Michigan Council of Governments, Detroit.

	Current			Compact				
Community	Added costs (\$)	Added revenues (\$)	Cost revenue impact (\$)	Added costs (\$)	Added revenues (\$)	Cost revenue impact (\$)	Cost differences (\$)	Hectares of land saved
Southeast Michigan municipalities								
Harrison	\$1,542,388	\$861,076	−\$681,312	\$1,490,966	\$820,540	−\$670,426	\$10,886	61.5
Macomb	5,091,515	4,379,449	−712,067	4,053,520	3,969,190	−84,330	627,737	−27
Bedford	996,846	1,134,165	137,319	965,328	1,121,665	156,337	19,018	41
Novi	14,769,424	11,766,829	−3,002,594	14,653,446	11,807,116	−2,846,331	156,264	288
Pittsfield	3,719,980	7,490,948	3,770,967	3,734,848	7,514,031	3,779,183	8216	209
Canton	9,275,327	5,419,323	−3,856,004	7,924,363	4,942,195	−2,982,168	873,836	737
Grand Rapids/Muskegon region								
Kentwood	3,572,526	1,998,102	−1,574,424	3,390,741	1,962,729	−1,428,012	146,413	231
Allendale	912,787	1,113,150	200,363	845,180	1,058,339	213,159	12,796	397
Montague	339,440	330,129	−9311	327,076	309,401	−17,675	−8364	15
Muskegon	1,632,708	2,505,778	873,070	1,585,668	2,409,922	824,254	−48,816	20
Traverse City region								
Bear Creek	221,193	274,641	53,448	215,853	271,439	55,586	2139	35
Petoskey	452,279	161,444	−290,835	430,191	153,176	277,015	13,819	4
Resort	271,442	119,814	−151,628	265,515	121,504	144,011	7617	108
Garfield	1,925,993	1,998,648	72,655	1,776,888	1,925,961	149,073	76,418	688
Communities in other regions								
Portage	6,006,245	6,086,134	79,889	5,611,165	5,603,079	−8086	−87,975	196
Hartford	82,057	79,616	−2441	81,236	77,675	−3561	−1120	2
Meridian	1,920,088	1,582,411	−337,677	1,843,368	1,509,790	−333,578	4099	253
M. Pleasant	2,697,763	3,740,532	1,042,769	2,548,033	3,575,147	1,027,113	−15,656	45
Totals	\$55,430,002	\$51,042,190	−\$4,387,812	\$51,743,387	\$49,152,900	−\$2,590,487	\$1,797,326	8164 ha

benefits can be realized. Less resource uses lower costs, allowing greater affordability, at least if builders pass some cost savings to consumers. This illustrates the inherent environmental, economic, and social integration in policies advancing sustainability.

Inequities in public funding allocation, disproportionately favoring wealthy suburbanites, are an added socioeconomic distortion and cost of suburbanization. Excessive suburbanization is supported by public infrastructure subsidies that reduce the costs of suburban homeownership. However, inequitable subsidies distort local markets and urban form (Vojnovic, 2000a). In Michigan, the Unrestricted Revenue Sharing Program transfers billions of dollars from the state to municipalities – \$1.4 billion in just the 1999–2000 fiscal year – favoring suburban infrastructure investment over inner-cities and the urban poor (Taylor and Weissert, 2002). The program encourages decentralization, and disproportionately benefits white, upper-income suburban homeowners, challenging basic equity principles in infrastructure financing.

Social costs of excessive decentralization are also associated with mobility among those that do not drive. The elderly, children, and poor are disproportionately affected by suburbanization. Many retirees move into suburbs, becoming automobile dependent. Since one can walk longer into their life than they drive, they lose their independence sooner. Social isolation of the elderly, in fact, is considered a national public health concern (Mullins et al., 1996). If retirees move into pedestrian-oriented neighborhoods, with walkable access to shopping and leisure, they would engage in healthier lifestyles and maintain greater independence.

With suburbanization, commercial activity and jobs also decentralize. The separation between minority, low-income populations and their potential jobs is known as spatial mismatch. Such development patterns place marginalized populations at a further disadvantage, increasing their costs, temporal and/or monetary, of reaching employment (Kain, 1968). Table 6 shows the relationship between residential segregation, black suburbanization, black spatial mismatch, and black/white income disparity. Compared to similar metropolitan areas, blacks in Metropolitan Detroit are more residentially segregated, least represented in the suburbs (where most jobs are located), and have a higher spatial mismatch index.

5. Discussion: Urban Form and Regional Cooperation

Citybuilding in the Detroit region has been shaped by racial and class discrimination, distorting the regional spatial structure, and increasing resource demand and waste flows. Not only have these development processes unnecessarily degraded natural ecosystems, but they have also encouraged a decline in regional economic performance, undermining sustainability objectives. There are extensive benefits in accommodating a more compact urban region, and a more integrated population, in ensuring advancement toward sustainability.

If the Detroit area is to encourage compactness, policymakers and city and suburban populations must engage in less conflict

and more cooperation. Policymakers and residents need to embrace pluralistic ideals, and accept racial/ethnic and class integration as a principal strategy in pursuing urban sustainability. Promoting intra-generational equity – including social justice, racial equality, and equal opportunity – is the only option in the region if it is to end its excessive decentralization and environmentally and economically inefficient development patterns.

There is considerable evidence that the recruitment and incorporation of immigrants, and learning from other cultures, are a means of fostering socially productive societies. Evident nationally (New York and Miami) and globally (Toronto and London), by utilizing the intellectual richness of ethnic diversity, cities can improve their economic well-being while becoming more culturally and socially robust. This has been evident historically, as with medieval Cordoba and ancient Rome, where ethnic diversity fostered prosperity (Briggs, 2004). In fact, the Detroit region has little choice but to embrace pluralistic ideals and racially/ethnically diverse populations if it is to ensure its own stability and competitiveness. The pursuit of greater racial and class integration within the region will be a prerequisite for attaining a more compact and sustainable urban form.

Urban regions across the US (including in Maryland, Washington, and California) have introduced urban growth boundaries. Cities have also initiated other measures to curtail suburbanization – including infrastructure charges – and many have been effective (Shen and Zhang, 2007). Regional cooperation is considered vital in the success of initiatives curtailing excessive suburbanization (Carruthers and Ulfarsson, 2002).

With regard to regional form, Detroit needs to redevelop from a dispersed to a polycentric spatial structure, which will necessitate suburbs changing zoning ordinances in order to become mixed-activity nodes. Such built environments are not only rare in the region, but local zoning ordinances make them illegal. Over the past six decades, Metro Detroit has been built emphasizing travel by automobile, as defensible space – keeping-out ‘the unwanted’ – was a central feature of local development. New design standards, in contrast, should emphasize grid street systems, mixed land-uses (commercial and residential), and higher-densities.

Governments can facilitate the shaping of the new urban environment by strategically guiding infrastructure investment. Investment in public transit, schools, and higher education (such as university hospitals) in the urban core will facilitate inner-city revitalization by increasing urban amenities and employment opportunities. Concentrating amenities in the core is considered critical to bringing private investment back into cities, as evident in New York City.

Urban decentralization has been a key advocacy of 20th century American planners, as reflected in housing policies, infrastructure investment, and zoning. These decentralization policies were partly a response to hyper-intensification and over-crowding in large, early-20th century industrial cities. These initiatives also facilitated homogenous urban environments. Over-crowding is not an issue in Detroit, yet policies encouraging decentralization persist, likely driven by the lack of regional ethnic/racial tolerance. Current stresses in Detroit, however, are a result of urban decline and excessive suburbanization, requiring the exact opposite policy direction, public reinvestment in the urban core.

6. Conclusion

Detroit's suburbanization has been driven by technological innovations, reduced energy prices, increased incomes, consumer preferences, and policy. Racial and class conflicts in the region – accommodated by municipal fragmentation and minimal inter-jurisdictional cooperation – have also accelerated suburbanization. The decaying core, however, has facilitated a decline in the competitiveness of the region. Like a perfect storm, the combination of variables facilitating suburbanization has produced a unique

Table 6

Relationship between residential segregation, black suburbanization, black spatial mismatch, and black–white income inequality in Metropolitan Detroit, 2000.

Sources: Raphael and Stoll (2002). Moderate progress in narrowing spatial mismatch between blacks and jobs in the 1990s. The Brookings institution: Washington, DC; and Logan, 2000. Separate and unequal: The neighborhood gap for blacks and Hispanics in metropolitan America.

	Dissimilarity index	Percent blacks in suburbs	Spatial mismatch index	Black/white income disparity ^a
Detroit	85.0	6.6	71.4	.599
Mean ^b	72.1	8.7	63.0	.576

^a A ratio of 1.00 = equality of income; a ratio <1.00 = inequality in favor of whites.

^b Based on 18 metropolitan areas.

regional structure, with extreme decentralization and inner-city decline, facilitating a highly resource-inefficient urban form.

Low-density suburbanization is generally explained as a rational outcome of market forces, shaped by consumer preferences (Bowman and Thompson, 2009; Gordon and Richardson, 1997). While preferences inevitably do shape citybuilding processes, discrimination in the housing market remains critical in driving urban decentralization, resource consumption, and ecosystem degradation. Despite its significance, discrimination as a variable facilitating resource-use and environmental degradation is seldom discussed in the sustainability or wider ecology literature.

Excessive suburbanization, driven by racial and socio-economic conflicts, exacerbates both socio-economic and environmental pressures. This inherent coupling between social and environmental processes reinforces the pursuit of equity among existing generations – including addressing discrimination and oppression – as a pre-condition for achieving equity between generations and promoting sustainability.

Within this context, the article advances an approach for defining sustainability policies. Since sustainability initiatives focus on the coupling of socio-economic and environmental processes, they need to simultaneously promote intra- and inter-generational equities, that is, advance both equity and efficiency. For instance, limiting state finances that favor infrastructure investment in newer suburbs at the expense of older cities would curtail suburbanization and resource-use, while also ending infrastructure financing disproportionately favoring upper-income groups. Similarly, more compact developments, by using less land and infrastructure, could reduce house prices – if developers pass some cost-savings to homebuyers – facilitating more affordable housing and less resource-use. In a context where little is known about the mechanisms for designing sustainability policies, this is a legitimate starting-point, pursuing policies that simultaneously promote intra- and inter-generational equities.

The US experience shows that depending on political interest, local and state governments have taken different positions on suburbanization. Some regions have been active in curtailing inefficient decentralization, while other local and state governments have little interest in such policies. In Michigan, it is perhaps the extreme racial and class conflicts that have limited policies curtailing suburbanization.

If the Detroit region does pursue greater compactness and urban revitalization, it must be understood that due to the supra-durable nature of urban form, any change in the built environment will be a long-term process. It took over six decades to produce this dispersed metropolis, and it will likely take longer to produce a more compact region.

In Detroit, an important issue will also be the integration of any new population with the existing black community. Recently, cities across America have been celebrating a new urban renaissance. Detroit has also been attempting to engage in such revival efforts. A consistent theme with these revival initiatives has been the esthetic necessary to attract wealthier populations back into the city. Celebrated projects in Detroit, such as the Merchant Row Lofts, are similarly marketed to upper-income groups. In this celebration of urban, however, there has been little interest focused on marginalized populations (Podagrosi and Vojnovic, 2008; Podagrosi et al., 2011). The poor and minorities are not part of this new urban celebration. If the rebuilding of Detroit is achieved by merely removing the poor and minorities from one neighborhood and concentrating them in another, these initiatives will do nothing to advance sustainability.

Ultimately, the Detroit region needs a paradigm shift from racial and class conflicts to racial and class cooperation. In addition, addressing social and racial inequities and pursuing regional compactness will not enable Detroit to achieve sustainability. This will simply be a step to alleviate critical socio-economic and environmental stresses in the region. It will enable advancement toward sustainability by generating non-trivial improvements in social welfare and environmental well-being. Socio-economic and environmental advantages would be

realized if Detroit could achieve a profile (in terms of land, energy, and material use) similar to its neighbor Chicago. However, without the pursuit of basic intra-generational equity – committing to racially and socially just societies – inter-generational inequities, and excessive ecological degradation, will persist and the Detroit region will continue to move away from the sustainability condition.

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