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# Alternative Explanations for Inner-City Gentrification: A Canadian Assessment

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**Abstract.** Within the rapidly expanding literature on inner-city revitalization (or gentrification), there has been no attempt to assess in a comparative and systematic manner a range of explanations that have emerged from studies of single cities or even single neighborhoods. Four major explanations of gentrification are reviewed here and then made operational in a correlation and regression analysis of inner-city gentrification in the Canadian urban system between 1971 and 1981. Several of the posited explanations are not supported. Economic and urban amenity factors perform most strongly in the analysis, but demographic and housing factors have less effect. I develop an integrated model and discuss its theoretical implications, including its consistency with staple theory and the interrelatedness demonstrated between housing and labor markets.

**Key Words:** inner city, gentrification, revitalization, Canadian urban system.

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SINCE inner-city revitalization, and more specifically gentrification, was first noted on a significant scale in North American and European cities in the 1970s, a large literature has been published on the process (Smith and Williams 1986; Gale 1984; Palen and London 1984; Holcomb and Beauregard 1981; Laska and Spain 1980) and on its effects, notably the residential displacement of lower-income households (Schill and Nathan 1983; Hartman, Keating, and LeGates 1982).<sup>1</sup> These studies and others have outlined a range of possible explanations to account for middle-class resettlement in the inner city. They include: urban sprawl, escalating energy costs, and the problems of commuting—all drawing households closer to downtown work places; the spiraling cost of suburban housing—encouraging new households (in particular) to re-examine cheaper inner-city locations; the demand bulge of the baby boom entering the housing market—directing demand toward an underutilized inner-city stock; a pro-urban ethos of changing preferences—rejecting the perceived “inauthentic” homogeneity and cultural sterility of suburban landscapes in favor of inner city “character neighborhoods,” with distinctive architecture, social and cultural diversity, and proximity to downtown amenity and leisure opportunities; changing household structures, with fewer children and a higher proportion of two wage

earners—making undesirable large suburban lots and dwellings with their maintenance costs; an adult oriented life-style (in contrast to suburban familism), including the gay subculture and nontraditional living arrangements; the role of public and private institutions in promoting inner-city resettlement on underutilized land (and, in the United States, sometimes on abandoned sites) for both public and private objectives; and finally, the economic restructuring of North American cities, where the growth of white collar service activities downtown and the decentralization of manufacturing has redefined the inner-city housing market.

Most studies to date have been of a single city, and often of a single neighborhood. The result is a large number of valuable but usually noncumulative case studies, as differences in theoretical perspective, methodology, disciplinary background, geographical focus, and policy orientation tend to introduce an eclectic pluralism to the discussion. Though several review essays have recently appeared (Howell 1985; Rose 1984; Hamnett 1984), the literature offers no sense of the relative importance of or the interrelations among the various explanations. Two tasks are presented to an analysis seeking to evaluate the relative importance of the various explanations of inner-city revitalization. First, a large sample of cities (preferably from an entire urban system) is required in order to

overcome the particularities of the single case study. Several American studies have attempted a comparative approach, but each of these has methodological drawbacks: the surveys of the Urban Land Institute (Black 1980) were introductory in the questions they posed and had sampling biases; Lipton's (1977) analysis of the 20 largest cities had definitional problems and was limited to change in the 1960s. Most useful was Clay's (1979) examination of the 30 largest cities, but his findings while important were "illustrative" rather than "rigorous" (Hamnett 1984). None of these projects attempted a thorough investigation of the range of causal explanations identified here. A second requirement is that the various explanations be standardized in terms of a common methodology. Undoubtedly this will generate some difficulties in framing operational definitions and securing appropriate data. It will also orient the research design to a more formal statistical methodology, as comparative analysis of more than a few cases severely limits the range of possible methods. But the alternative is to forego a systematic analysis.

The research reported here attempts such a systematic analysis of inner-city revitalization in the 22 Census Metropolitan Areas (CMAs) in the Canadian urban system in 1971 and 1981. The research design proceeds in several stages. First, various causal accounts of middle-class resettlement in the inner city are examined and consolidated into four principal explanations; these provide the theses to be examined by comparative analysis. Second, these explanations are made operational through a set of indicators that serve as independent variables in analysis. Third, operational definitions of gentrification and the inner city for the 22 Canadian CMAs are established. Finally, correlation and regression analyses are employed, with an inner-city gentrification index for each of the 22 CMAs between 1971 and 1981 acting as the dependent variable.

### Explanations of Gentrification

Although there is certainly overlap between various arguments and few authors confine themselves to a single explanation, four major explanatory emphases of inner-city gentrification may be identified from the literature. Though documentation is most complete for American cities, findings from the U.S. should

not be transferred uncritically to Canada. Distinctive features of Canadian inner cities include the absence of significant negative externalities, the continuing presence of a substantial middle-class population, and ongoing private sector investment in the built environment (Goldberg and Mercer 1980). These characteristics correspond perhaps more closely with European and Australian patterns, so that some processes (and related explanations) identified in the U.S. might well require restatement in an examination of inner-city change in Canada.

### Demographic Change

Virtually all authors have commented on the demand surge generated by the postwar baby boom; in the U.S., for example, the 25–30-year-old age group expanded by 11 million between 1965 and 1976. Studies in Canada (Greenspan 1978), the U.S. (Grebler and Mittelbach 1979), and Britain have attributed the rapid price inflation in the housing market during the 1970s to pressure from this age cohort. This demand surge, it is held, may well have forced first-time homebuyers into the unfamiliar inner-city market.

Associated with this growth in numbers has been a sharp reduction in household size. This is a product of several factors, including more plural lifestyles in an environment of changing opportunities. More women are entering the labor force; in Canada labor force participation increased from 37 percent of women in 1971 to 52 percent in 1981, with similar figures reported for the U.S. More persons are remaining unmarried, and the divorce rate tripled in America between 1960 and 1975. The result has been an explosive growth of small households; indeed by 1978 over one-half of all American households comprised either one or two adults, and in 1981 20 percent of Canadian households consisted of one person. It might be expected that these small, childless households would introduce considerable demand pressures to medium- and high-density central city neighborhoods.

A third strand to the demographic argument involves the burgeoning population and spatial extent of metropolitan areas. In the post-1973 period, a longer journey to work and inflating fuel prices have added substantially, it is held, to the burden of commuting costs and may well

have restored a premium to an in-town residence for members of the central city workforce (see LeRoy and Sonstelie (1983) for a further twist to this argument). Encouraging this supposition are two surveys that showed considerably higher levels of central city housing renovation in larger American cities than in smaller ones (Black, Borut, and Dubinsky 1977; Black 1980). The logic of commuting costs in triggering a back-to-the-city movement has not, however, been sustained empirically (Sternlieb and Hughes 1979). Moreover, surveys of inner-city gentrifiers have shown repeatedly that only a small minority are returning suburbanites; their previous addresses are primarily in the center city or in distant metropolitan areas (Gale 1979; Hodge 1981; Vischer and Skaburskis 1980; Saint-Pierre, Chan, and Choko 1985).

The demographic arguments help explain the timing of inner-city resettlement by the middle class. But as we shall see they are incomplete in certain important features.

### Housing Market Dynamics

Several related arguments shift the explanatory emphasis of gentrification to the metropolitan housing market. As new housing stock in the suburbs inflated rapidly in price through the 1970s, and as mortgage interest rates compounded affordability problems, households turned to their second choice—either smaller and cheaper new central city apartments or renovated older single family or row housing in the inner city (Downs 1981; James 1977). In this scenario, a key ratio gauges new housing construction (primarily suburban) against the rate of new household formation; when the supply of new units falls back relative to demand, consumers will favor the inner city (Berry 1980).<sup>2</sup>

This is an attractive proposition in that it accords well with intuitive and media reports of consumer housing behavior during the 1970s; moreover, there is some survey data to support it (e.g., Gale 1979; Harrison 1983). In the Canadian context, the argument is especially feasible in that affordability has been the major component of the urban housing problem for the past 15 years.<sup>3</sup> The 1970s was also when new initiatives to provide affordable inner-city housing were undertaken by government and the private sector. There is, however, a possible flaw in this argument. Like the demographic thesis, it views

inner-city revitalization as temporary or at best cyclical. It overidentifies, perhaps, the gentrification market with the first-time homebuyer priced out of a new suburban house. But so-called empty nest households are also significant. In Canadian cities the condominium is a major housing type associated with inner-city revitalization, and a survey of nine Canadian cities showed 70 percent of condominium buyers were more than 40 years of age (compared with 20 percent in a 1970 survey) and half were older than 50 years (Skaburskis 1984). Moreover, first-time homebuyers, for whom a condominium usually was a second choice to a single-family dwelling, bought disproportionately cheaper, lower-density, *suburban* units. For this younger group the choice of a second-best housing option did not appear to lead to selection of an inner-city location. In an American context, Gale (1979, 296) has reached the same conclusion that “most resettlers’ urban locational choices are their first preferences and not a ‘second-best’ alternative to suburban living.” Moreover, if the young adult cohort of the population decreases, the empty nest component will increase over the next generation, and there are indications of a diffusion of the market beyond these ownership groups, evident both theoretically in the stage theory of gentrification and empirically (Gale 1979). Additional groups, including higher-status renters (Logan 1982) and even some families (Buchan 1985; Bunting 1984) are being drawn to the inner city, and the initial inflation and subsequent sustained prices of inner-city dwellings indicate a stable and expanding market base.<sup>4</sup>

An alternative conceptualization of the housing market thesis identifies supply rather than demand criteria as uppermost in triggering gentrification (Smith 1979). The “rent gap,” the disparity between the potential ground rent (with redevelopment) and the actual present ground rent, provides a motivation for reinvestment once the gap exceeds a critical threshold. The rent gap is but one illustration of the uneven spatial development characteristic of market societies, and thus revitalization is “a back-to-the-city movement by capital not people” (Smith 1979). There are several apparent limitations to this argument (Hamnett 1984). But the thesis does identify the role of public and private institutional actors in neighborhood revitalization.<sup>5</sup>

The housing thesis, though persuasive, may

be collapsing two processes—house price inflation and inner-city resettlement by the middle class—which though coincidental historically, nonetheless retain significant independent attributes. The temporal convergence of the baby boom, house price inflation, and inner-city revitalization appear to provide a tight causal bundle. But certain issues remain unresolved, perhaps to a greater degree in the Canadian than in the American city. The inner city has significant amenities of its own that attract residents who could well afford other locations; in Canadian cities this group included empty nesters who had paid on average \$114,000 for a predominantly high-rise in-town location (Skaburskis 1984); in the city of Toronto the average sales price of new condominiums in 1984 was almost \$172,000 (O'Reilly 1985). These groups were seeking more than affordable housing.

### The Value of Urban Amenity

A third set of factors held to be associated with inner-city reinvestment is a distinct set of values often identified with an urban lifestyle. To some extent, households choose the amenity package of the center city over that of the suburbs. It is important to remember that with small households and often two wage earners many residents will have large disposable incomes. This thesis may be seen as part of a broader argument that identifies the increasing role of environmental and cultural amenity compared with traditional accessibility measures in determining both land values and land uses in North American cities (Ley 1983). It is no accident that the early stages of gentrification may be associated with countercultural life-styles, including avant garde artists (P. Jackson 1985), gay communities (Castells 1983), and activist political associations (B. Jackson 1984). Participation in communities of greater density and social diversity is a stated objective of inner-city gentrifiers (Allen 1980). The opportunity for contacts with a wide variety of people was the reason offered in 1972 by 80 percent of a national sample of Americans who preferred to live in a large city (Fuguitt and Zuiches 1983). The next three criteria, all mentioned by over 60 percent of those preferring big cities, were the availability of recreational and cultural activities, better jobs, and high wages. This suggests that the culture of consumption is a major char-

acteristic of the big city; most commonly it is consumption expressive of personal style (Raban 1974; Ley 1980).

One manifestation is a preference for aesthetically pleasing landscapes. Environmental amenity is a major determinant in the location of revitalizing districts. A survey of 57 gentrifying American neighborhoods showed that 87 percent of them contained some distinctive landscape amenity (Clay 1979). In major Canadian cities, too, there is a consistent relationship between environmental amenity and the location of inner-city revitalization.<sup>6</sup> Among higher-income condominium dwellers in Vancouver and Victoria, disproportionately concentrated in inner city units, proximity to parkland or recreational activities was identified as being more significant than access to the place of work (Hamilton 1978). In other cities, history replaces the physical environment as a valued component of the inner-city landscape. The Victorian gables and turrets of Toronto and San Francisco, the brownstone terraces of New York, and other valued architectural elements consistently identify the first inner-city districts to experience reinvestment (Fusch 1980; Datel and Dingemans 1980). Indeed, heritage designation is commonly sought as an instrument for the preservation and status enhancement of gentrifying neighborhoods (Holdsworth 1983).

The creation of a high-amenity central city landscape has been vigorously promoted by many city administrations through the 1970s (Ley 1980). Of course such initiatives, if necessary, are not a sufficient context for inner-city reinvestment. Though many urban administrations have committed public funds to cultural amenities and environmental aesthetics as an inducement to prime both consumer demand and private sector reinvestment in the inner city, not all have been equally successful. This raises the question of what produces a differential supply of gentrifiers between one metropolitan area and another (Rose 1984).

### The Economic Base

A fourth major context of inner-city gentrification is held to be the presence of a "postindustrial" metropolitan economy, oriented toward advanced services and a white-collar employment structure.<sup>7</sup> One of the earliest studies of central city revival showed that a growth

in higher-status households in the inner city was closely associated with a service-dominated urban economic base (Lipton 1977). Looking at changes in inner-city social status between 1960 and 1970 in the 20 largest U.S. cities, Lipton found a high positive correlation between the presence of higher-status inner-city neighborhoods and the amount of office space downtown, but a negative correlation with the size of the blue-collar labor force. As other American writers have commented, "In metropolitan labor markets, services and manufacturing activities repel each other" (Burns and Pang 1977). This argument has been forwarded by several other authors more recently (Gale 1984; Berry 1985).

We noted earlier that revitalization activity in the U.S. is most marked in the largest cities, and it is also the largest cities that are overrepresented in the most rapidly growing sectors of the service economy, particularly producer services with better paying white-collar jobs (Stanback et al. 1981). Thus we might find the source of the "new urban gentry" in economic restructuring and in the growing orientation toward service employment (Ginzberg 1979; Ginzberg and Vojta 1981). In Canada the percentage job growth in the service sector between 1971 and 1981 was four times greater than job growth in resource and manufacturing industries.

These societal shifts in Canada have been transmitted directly to the urban system (Davis and Hutton 1981; Ley 1981). High-status quaternary occupations in particular are concentrated not only in national and regional service centers, but disproportionately in the downtown cores of these cities. This is reflected in the rapid growth of office space in the CBDs of service-oriented cities. In Toronto the core area accounts for 55 percent of the metropolitan office space, and there was a threefold increase in total space between 1964 and 1982. Similarly, in Vancouver 56 percent of regional office space is concentrated in the downtown peninsula, and here a tripling of core area space occurred between 1967 and 1984. A rapidly growing downtown workforce has been produced, including private and public corporate employees, professionals, university and hospital staff, and those engaged in the arts and media. Here is the labor market whose growth since 1970 has introduced a new dimension to the inner-city housing market. This group is held to be distinctive enough that some theorists

refer to it as the new middle class or more simply the new class (Moore 1982).

### An Empirical Assessment: Operational Definitions

To date, there has been no attempt to make a comparative assessment of these four explanatory accounts, with their complementary and competing interpretations. It is necessary to set out operational definitions of gentrification, the inner city, and the four explanations for the cities of the Canadian urban system. Once this is accomplished, a correlation and regression analysis permits the various explanations of inner-city change to be both contrasted and combined in a systematic manner.

The *urban system* is defined as the 22 CMAs that existed in both 1971 and 1981 (see Table 1, where CMAs are listed from east to west). Their size varied from just over 100,000 (Saint John in 1971) to 3 million (Toronto in 1981). Inevitably they range also in age, economic function, rate of growth, and inner-city-CMA differentials. Although the number of observations is small for certain types of statistical analysis, it is manageable for a complex research design where severe problems of data availability would have resulted from incorporating smaller cities into the analysis. At a theoretical level, also, U.S. evidence indicates that inner-city revitalization is far more prominent in larger urban centers than in smaller ones (Black 1980). A starting date of 1971 is convenient on theoretical as well as practical grounds. Though middle class resettlement dates back in some neighborhoods to the 1960s, across the urban system the mean level of inner-city social status change during the 1960s was small and only a quarter of the increment recorded in the 1970s.<sup>8</sup> The *inner city* within each CMA is defined from boundaries established by the Canada Mortgage and Housing Corporation (CMHC) (Brown and Burke 1979). This definition is based primarily upon census tracts' housing age (a substantial proportion of stock built pre-1946) and proximity to the CBD. There is of course, no single or best criterion for bounding the inner city (Bourne 1982), and as CMHC boundaries had been tested and proven satisfactory in an earlier study, they were retained.

More problematic is the operational definition of *gentrification*. Two options are available:

Table 1. Characteristics of Canadian Inner Cities, 1971–81

	CMA population, 1981 (thousands)	Inner-city population, 1981 (% of CMA)	Inner-city: CMA social status index, 1981 ( $\times 100$ )	Inner-city social status index, 1981	Inner-city gentrification index, 1971–81
St. John's	155	8	96	21.1	+8.4 <sup>a</sup>
Halifax	278	22	139 <sup>a</sup>	31.1 <sup>a</sup>	+13.0 <sup>a</sup>
Saint John	114	22	84	14.4	+2.5
Quebec City	576	21	95	20.6	+7.4
Montreal	2828	36	96	19.0	+6.4
Ottawa-Hull	718	20	100 <sup>a</sup>	26.1 <sup>a</sup>	+10.0 <sup>a</sup>
Oshawa	154	20	71	10.4	+1.9
Toronto	2999	19	111 <sup>a</sup>	23.4 <sup>a</sup>	+8.7 <sup>a</sup>
Hamilton	542	14	94	15.8	+5.7
St. Catharines-					
Niagara	304	19	100 <sup>a</sup>	14.3	+3.8
Kitchener	288	12	98	16.0	+6.8
London	284	9	91	17.3	+6.2
Windsor	246	23	89	15.0	+4.6
Sudbury	150	24	95	14.4	+3.6
Thunder Bay	121	28	96	15.9	+4.2
Winnipeg	585	12	72	14.4	+4.0
Regina	164	19	88	18.9	+5.1
Saskatoon	154	18	122 <sup>a</sup>	27.7 <sup>a</sup>	+8.0 <sup>a</sup>
Calgary	593	18	111 <sup>a</sup>	26.0 <sup>a</sup>	+9.0 <sup>a</sup>
Edmonton	657	14	113 <sup>a</sup>	23.4 <sup>a</sup>	+6.5
Vancouver	1268	23	119 <sup>a</sup>	25.1 <sup>a</sup>	+9.3 <sup>a</sup>
Victoria	233	7	101 <sup>a</sup>	22.3 <sup>a</sup>	+9.5 <sup>a</sup>
All CMAs		22	99	21.1	+7.5

<sup>a</sup> Score above mean.

indicators of housing market activity (such as price changes, renovations, turnover rates, or building permits) or measures of changing household status drawn from the census. With 739 census tracts in 22 cities and a ten-year time period, the former option is not feasible; this study therefore follows a majority of others in using measures of changing social status at the census tract level as the basic index of inner-city gentrification.<sup>9</sup> In this study, like others, gentrification and revitalization refer to a change in household social status, independent of the housing stock involved, which might be either renovated or redeveloped units.

In measuring social status, both ecological methods (like social area analysis or factorial ecology) and social prestige scales typically employ some linear combination of occupation, income, and education. On theoretical grounds measures of occupation and education were used here. Specifically, a social status index is defined for each census tract as the mean value of (1) the percentage of the work force employed in the quaternary sector (professional, managerial, technical, and administrative jobs) plus (2) the percentage of the population with university education. Several validity tests of this index

were carried out, including correlations at the census tract scale with other measures of social status such as rent and income; in addition the top 20 percent of tracts on the index were mapped for major cities, to compare the distribution with intuitive definitions of high-status districts. The index performs well on each of these validity tests.<sup>10</sup> This social status index was computed for both 1971 and 1981 for each census tract in each city. The indices for individual tracts were combined for each CMA and weighted according to each tract's population to provide an aggregated inner-city social status index for each of the 22 CMAs. The difference between the 1971 and 1981 index, a measure of social status change, is defined as the gentrification index (Table 1) and forms the dependent variable in the analysis. A cursory examination of the index shows a pattern of high index scores for Halifax, Ottawa, Toronto, and five regional centers in the western provinces. Five of these eight cities are centers of government, and all are regional or national service centers. In contrast seven of the eight lowest-scoring CMAs are manufacturing- or resource-oriented cities.

The independent variables represent surro-

gates for each of the demographic, housing market, urban amenity, and economic hypotheses accounting for inner-city change (Table 2). These variables, assessing various dimensions of the Canadian urban system are drawn from a number of different statistical sources for 1971–81. Ten variables are associated with the *demographic hypothesis*. These explore population age structures (emphasizing the presence of the baby boom), changing patterns of family size and nonfamily status, female participation in the labor force, and city size and growth (Table 2, Variables 1–10). The *housing market hypothesis* includes several indicators of a tight metropolitan housing market to test whether the inner city is indeed a “fall back” choice for households priced out of new suburban dwellings (Variables 12, 13, 16, 17, 20, 21). The relationship between housing unit starts and household formation, deemed critical by Berry (1980) is incorporated (Variable 11), as are two indicators (Variables 14, 15) assessing the presence of an inner-city–CMA “rent gap.” Transforming a theoretical construct to an empirical variable is never easy, but the definition of rent gap adopted does seem consistent with various elaborations of the thesis (Smith 1979; Smith and LeFaivre 1984).<sup>11</sup> Finally, trends toward ownership in a revitalizing inner-city market are tested (Variables 18, 19). The *urban amenity hypothesis* is the most difficult to operationalize. Indicators that discriminate between suburban and inner-city characteristics within each CMA are not available. The variables used here assess amenities for the CMA as a whole, so that what is being tested are variations between cities on a range of measures of urban amenity. An objective social indicators index (Variable 22) is a summary statistic derived from 12 quality-of-life measures recorded in a 1975 federal government report (MSUA 1975); a number of these measures referred to metropolitan conditions in 1971. More suitable historically is a 1978 survey of resident satisfaction for each CMA (Variable 23); from this same report (CMHC 1979) it is possible to construct an index of perceived environmental quality (Variable 24) by summing evaluatory scores of the physical appearance, entertainment and cultural facilities, parks and recreation, and the natural environment. Two measures of cultural and leisure activities (art galleries and restaurants per 10,000 population) are included (Variables 25, 26). A sixth, if somewhat dated, variable is a 1972 nationwide survey of the residential preferences among Canadian

CMAs by school leavers (Variable 27; Roberts 1974). More straightforward are assessments of the *economic hypothesis* (Variables 28–35) which monitor economic performance along several dimensions for each CMA, including a measure of service orientation as indicated by office space per capita (Variable 35).

### Explaining Gentrification: Simple Correlations

Simple correlations between the gentrification index and the 35 independent variables representing the four hypotheses are shown in Table 2. By and large the  $r$  values are modest. If the 22 observations formed a random sample (which of course they do not), the .01 significance threshold would be  $r = 0.54$ , the .05 threshold would be  $r = 0.42$ , and the .10 threshold would be  $r = 0.36$ . Only 10 variables have correlations in excess of  $r = 0.42$  with the gentrification index, and only 16 exceed  $r = 0.36$ . Clearly these indicators yield no single dominant explanation of inner-city revitalization in Canada.

The variables representing the *demographic hypothesis* have only modest correlations with the gentrification index, though they are in the predicted direction. Gentrification has positive associations with a metropolitan concentration of the 20–35 year age group, with female participation in the workforce, and with nonfamily status. It is negatively, if weakly, associated with family size. Unlike the American results, the relationship with CMA population size, though positive, is quite weak, although there is a more substantial positive correlation against CMA population growth between 1971 and 1981. Part of the reason for the narrow range in the correlation coefficients is the pattern of intercorrelations among the independent variables themselves. We shall return to this issue later.

Correlations are even more modest for the *housing market hypothesis*. The “housing squeeze” argument receives some support, for inner-city revitalization is indeed associated with a tight metropolitan housing market, where rental vacancies are low, where renters and homeowners are spending a higher proportion of their income on housing, and where house prices are high and have been inflating disproportionately. Moreover, the relationship between housing starts and new household formation is confirmed, as revitalization is asso-



Table 2. Independent Variables and Correlations for Inner-City Gentrification Across 22 CMAs

	Source	Variable name	Correlation
<b>Demographic hypothesis</b>			
1. Percent CMA population aged 20–35, 1981	1	<i>YOUNG</i>	0.47
2. Absolute change in % CMA population aged 20–35, 1971–81	1	<i>YOUNG7181</i>	0.25
3. Mean CMA family size, 1981	1	<i>FAMSIZE</i>	–0.26
4. Percent change in CMA family size, 1971–81	1	<i>FAMSIZE7181</i>	–0.21
5. Female participation rate in CMA labor force, 1981	1	<i>FEMPART</i>	0.39
6. Absolute change in % female participation rate, 1971–81	1	<i>FEMPART7181</i>	0.38
7. Percent nonfamily households in CMA, 1981	1	<i>NONFAM</i>	0.39
8. Absolute change in % nonfamily households, 1971–81	1	<i>NONFAM7181</i>	0.45
9. CMA population in 1981	1	<i>CMAPOP</i>	0.24
10. Percent change in CMA population, 1971–81	1	<i>CMAPOP7181</i>	0.40
<b>Housing market hypothesis</b>			
11. Dwelling unit starts in CMA, 1971–81 as % of household growth in CMA, 1971–81	1,2	<i>STARTS</i>	–0.38
12. Mean CMA rental vacancy rate, 1971–81	2	<i>VAC7181</i>	–0.29
13. Rental vacancy rate in CMA, 1981	2	<i>VAC81</i>	–0.35
14. Inner-city: CMA house-value ratio, 1971	1	<i>PRICEGAP</i>	0.33
15. Inner-city: CMA rental-cost ratio, 1971	1	<i>RENTGAP</i>	–0.07
16. Percent renters in CMA spending more than 25% income on housing, 1974	2	<i>RENT74</i>	0.21
17. Percent owners in CMA spending more than 25% income on housing, 1974	2	<i>MORTG74</i>	0.26
18. Percent owner-occupied households in inner city, 1981	1	<i>OWNERS81</i>	–0.29
19. Absolute percent change in owner-occupied households in inner city, 1971–81	1	<i>OWNERS7181</i>	–0.08
20. Mean CMA dwelling value, 1981	1	<i>AVVA81</i>	0.46
21. Percent increase in CMA dwelling value, 1971–81	1	<i>AVVA7181</i>	0.34
<b>Urban amenity hypothesis</b>			
22. Objective CMA social indicators index, 1971	3	<i>OBJIND</i>	0.45
23. Resident satisfaction, 1978	4	<i>SATISFACT</i>	0.54
24. CMA perceived environmental quality, 1978	4	<i>ENVIRON</i>	0.54
25. Art galleries per 10,000 population in CMA, 1981	5	<i>ARTNO</i>	0.46
26. Restaurants per 10,000 population in CMA, 1981	5	<i>RESTNO</i>	0.20
27. CMA residential preference by school leavers, 1972	6	<i>SCHOOL</i>	0.39
<b>Economic hypothesis</b>			
28. Provincial growth of GDP, 1971–81 (%)	7	<i>GDP7181</i>	0.20
29. Metropolitan job growth, 1971–81 (%)	1	<i>JOBS7181</i>	0.46
30. Mean unemployment rate of CMA, 1976–81	8	<i>JOBLESS</i>	–0.08
31. Change in CMA household income, 1971–81 (%)	1	<i>INCOME7181</i>	0.14
32. Inner-city: CMA household-income ratio, 1981	1	<i>INCOMEGAP</i>	0.33
33. Inner-city: CMA household-income ratio, 1981, as % of 1971 inner-city: CMA household-income ratio	1	<i>INCOMEGAP7181</i>	0.43
34. Mean household income of CMA, 1981	1	<i>CMAINCOME</i>	0.30
35. CMA office space per capita of population, 1981	9	<i>OFFICE</i>	0.65

Sources: 1. Census of Canada; 2. CMHC 1971–81; 3. MSUA 1975; 4. CMHC 1979; 5. Telephone Yellow Pages; 6. Roberts 1974; 7. Statistics Canada 1971–81; 8. Statistics Canada 1976–81; 9. A. E. Lepage 1982–83, and personal communications with officials in St. Johns, Quebec City, Montreal, Windsor, Saskatoon, Edmonton, and Victoria, various dates 1984

ciated with a shortfall of new starts relative to increasing household demand. A demand-led argument of the inner city as a second-choice housing market could be supported from these results, but only subject to the severe qualification of generally weak relationships. There is no support for the postulated relationship between revitalization and owner occupancy. Though correlations are weak, they are consistently negative, in agreement with Logan's (1982) study in Melbourne that identified the role of renters in gentrifying areas. The rent gap thesis is not supported by the results. There is no association between revitalization and the metropolitan rent gradient, and a positive correlation between revitalization and the metropolitan house price gradient. Gentrification between 1971 and 1981 was associated with inner cities that had higher (not lower) house prices relative to the metropolitan average.

Correlations for the *urban amenity hypothesis* are somewhat stronger. Residential satisfaction and perceived environmental quality have the strongest associations, followed by the density of art galleries and the index of objective social indicators. The independent variables employed here do show, as the literature suggests, that the presence of urban amenities is associated with revitalizing inner cities. It does not of course necessarily untangle the complex question of causality. Once again there are indications of substantial intercorrelations between the independent variables.

Among the eight variables representing the *economic hypothesis*, the amount of CMA office space per capita has the strongest relationship with gentrification of all 35 independent variables ( $r = 0.65$ ). This result parallels Lipton's (1977) finding and strengthens the argument for the importance of the effects of a postindustrial, office-based economy upon urban spatial structure. It forces a more integrated perspective that recognizes the interdependence of labor markets and housing markets. We shall see later that this integration needs to proceed further, to incorporate also an interconnected system of demographic and amenity variables. The remaining economic variables do not perform as strongly. The rate of job creation is significantly associated with inner-area revitalization, as is a narrowing of the inner-city-CMA household income gap between 1971 and 1981. Both the income and unemployment variables, however, are unconvincing predictors of gentrification.

Inspection of the scatter diagrams showing the relationship between the gentrification index and each variable revealed that certain cities were repeatedly outliers, with gentrification scores far above or below the simple regression line. In almost every pairwise regression, Halifax was an extreme positive outlier. Although Halifax is part of the generally depressed economy of the Atlantic provinces, its central area has an almost unique combination of local factors favoring gentrification. Despite its modest size, the city is the major nodal center for Atlantic Canada, and its downtown contains a high density of white-collar employers. The inner city contains a stock of attractive heritage houses and generous environmental amenities, including park and water access and view sites. In addition, the downtown is located on a peninsula, which creates bottlenecks impeding commuter traffic from the suburbs. At the other extreme, Oshawa less consistently was a negative outlier, with a gentrification index far below that predicted. Most likely the city's buoyant economy in the 1970s, fueled by its automobile industry, created local demographic and housing characteristics not typical of other industrial and resource-based cities. Experimentation with several correlations without these extreme positive and negative outliers showed an appreciable increase in the strength of the relationships between the gentrification index and the independent variables.

There are, therefore, grounds for supposing that the modest correlations uncovered in the analysis may be in part a product of a few anomalous cities that depress a stronger set of relationships that hold for the majority of cities. Though this is a tantalizing probability, there is no justification for eliminating cities from the analysis simply because they are confounding cases; consequently this line of investigation was not pursued further, though its implications should be borne in mind.

The evidence from simple correlation clearly favors the economic and urban amenity explanations of inner-city revitalization. Because intercorrelations exist among the independent variables, however, the above results must be qualified; the relative success of the four hypotheses could be misleading if their independent variables are accounting for the same variation. Moreover, the intercorrelation occurs between independent variables *across* the four explanatory hypotheses, indicating that the

theoretical fragmentation of the four explanations might well sever a more appropriately integrated system of variables.

### Explaining Gentrification: Regression from Principal Components Analysis

Multicollinearity among the 35 predictor variables should be respected and perhaps might be turned to theoretical advantage. Principal components analysis isolates the underlying structures in a correlation matrix and allows independent components to replace the original intercorrelated variables in a correlation-regression analysis (Hauser 1974). This strategy not only eliminates multicollinearity but might also provide a more theoretically relevant integration of the original variables by allowing an alternative grouping of them that might vary from the four initial hypotheses. The variables selected for principal components analysis are the eight with the highest partial correlations with the gentrification index; they are drawn from all four hypotheses.

Three independent components, accounting for about three-quarters of the variance, dominate the solution, with the first component alone comprising 40 percent of the variance. The first component does indeed show an interesting integration of variables from all four of the explanatory hypotheses, indicating that to separate them is a false fragmentation of an interconnecting system (Table 3). It has high loadings on *ARTNO*, *OFFICE*, *AVVA81*, and *ENVIRON* and a moderately high loading on *YOUNG*. With high positive component scores on Calgary, Victoria, and Vancouver, and the highest

negative scores on Windsor, Sudbury, and St. Catharines, we interpret this component as indicating the presence or absence of postindustrial city status. Component 2 loads highly on *STARTS* (the relationship between housing starts and new household formation) and *INCOMEGAP* (the inner-city-CMA household-income ratio). In the form they take in the table, with *STARTS* negative and *INCOMEGAP* positive, they point to the classic housing squeeze situation suggested by Berry (1980), where unsatisfied demand for new housing in the metropolitan market leads to inner-city reinvestment (and subsequent higher incomes). Component scores identify the maritime cities of Halifax and St. John's as experiencing these conditions, whereas London has the opposite circumstances of abundant supply and a broader inner-city-CMA income gap. Finally, Component 3, dominated by *OBJIND*, is simply interpreted as representing the level of objective social indicators for each CMA.

Scores from the three independent components may now be regressed against the gentrification index (Table 4). The results show a coefficient of determination ( $R^2$ ) of 0.67, with an adjusted  $R^2$  of 0.61. Component 1, postindustrial city status, is by far the most significant in explaining intercity variation in gentrification. As has been shown consistently through the analysis, economic and urban amenity variables together account most effectively for inner-city gentrification, though in this instance they are joined by 1981 housing values and, more moderately, by the young adult proportion of the population. Component 2, a component measuring housing squeeze, has a correlation in the direction predicted, but if inferential limits were

**Table 3.** Component Loadings for Variables with the Highest Partial Correlations with Inner-City Gentrification

	Component 1 (Postindustrial city)	Component 2 (Housing squeeze)	Component 3 (Objective indicators)
<i>YOUNG</i>	.61	.10	.22
<i>STARTS</i>	-.16	-.78	-.06
<i>AVVA 81</i>	.80	.13	-.40
<i>ARTNO</i>	.89	-.23	-.11
<i>OBJIND</i>	.03	.12	.93
<i>ENVIRON</i>	.79	.02	.01
<i>INCOMEGAP</i>	-.11	.86	.07
<i>OFFICE</i>	.81	.14	.45
Cities with highest scores on each component	Calgary Victoria Vancouver	2.05 1.77 1.74	London St. John's Halifax
		-2.55 1.85 1.78	Ottawa Vancouver Halifax
			2.13 -2.01 1.60

**Table 4.** Multiple Correlation and Regression of Gentrification against Components Derived from Variables with the Highest Partial Correlations

No. of components in solution	$R^2$	Adjusted $R^2$	Beta values	Residual outliers
3	0.67	0.61	Component 1 .63	Saint John -1.81
			Component 2 .39	Oshawa -1.79
			Component 3 .35	Halifax 1.67

used, it would fall between the .05 and .10 significance levels.

### Conclusion: Empirical and Theoretical Relationships

In conclusion, one should caution that the methodology and the data employed here, like any methodology, do not answer all questions equally well. Some issues concerned with gentrification remain unsettled, many others remain unasked, requiring other types of data and other research designs. The objective of this research was to develop an analysis that would be both comparative and systematic, refining our understanding of possible causes of inner-city gentrification and providing an explanatory context for the "thick description" of neighborhood case studies.

Explanatory accounts of gentrification have not generally been formalized but may be grouped into four categories. The most systematic are housing market hypotheses, where both demand- and supply-led arguments have been developed. Three other explanations underlie various accounts of inner-area revitalization, representing the effects of demographic, urban amenity, and economic factors. All four of these explanations have some utility in accounting for inner-city gentrification in urban Canada between 1971 and 1981. The strongest relationships from simple correlation exist between the gentrification index and variables representing the urban amenity and economic dimensions; the highest simple correlation is with office space per capita. Housing and demographic variables have modest correlations with the gentrification index. Although there is support for arguments that relate inner-city reinvestment to a housing squeeze, the associations are not strong. Evidence is entirely lacking in Canadian cities for the rent gap thesis; indeed, if anything, gentrification has occurred in inner cities with

higher inner-city-CMA house-price ratios. Nor (unlike the U.S.) is there a significant association between gentrification and population size among the 22 largest CMAs in Canada. This relationship in particular cautions any indiscriminate extrapolation of these results to the American urban system.

Further relations between demographic variables and inner-city reinvestment may be teased from the analysis. As we have seen, the demand surge represented by the entry of the baby boom generation into the housing market in the 1970s shows associations with gentrification which, though present, are not as strong as might have been expected ( $r = 0.47$ , *YOUNG* vs. gentrification index). In fact the distribution of young adults aged 20–35 in 1981 is most strongly related to patterns of new job creation ( $r = 0.84$ , *YOUNG* vs. *JOBS7181*). Though the baby boom generation has certainly sustained lively housing demand, the inner city has not necessarily received inordinate impact from it. This argument is reinforced when one looks at the housing variables. Both average house value and proportional growth in the ratio of inner-city to CMA income levels (a measure of rising inner-city purchasing power), have negligible correlations with the size of the 20–35 year-old age cohort ( $r = 0.25$ , *AVVA* vs. *YOUNG*;  $r = 0.11$ , *INCOMEGAP7181* vs. *YOUNG*). Nor is the relation between housing starts and new household formation linked meaningfully to the young adult age cohort ( $r = -0.21$ , *STARTS* vs. *YOUNG*). Thus we cannot identify a consistent association between the baby boom generation and the housing market. Indeed as in the American case, it is quality-of-life variables that show the highest correlation with housing values ( $r = 0.71$ , *AVVA* vs. *ENVIRON*). We have also seen repeatedly that the housing variables do not have strong correlations with inner-city revitalization, ( $r = 0.46$  between *AVVA* and the gentrification index is the strongest), in part because the posited relationship between a housing

squeeze (housing starts vs. new household formation) and housing values cannot be shown ( $r = -0.04$ , *STARTS* vs. *AVVA*).

Principal components analysis was undertaken to resolve the problem of intercorrelations among the independent variables themselves. A theoretically interesting principal component, identified as indicating the presence or absence of postindustrial city status, emerged from the analysis. Incorporating to varying degrees variables from all four explanations, this component has a moderately strong correlation ( $r = 0.63$ ) with inner-city revitalization. The regression model based upon this analysis was quite successful in accounting for the variation in gentrification through the urban system ( $R^2 = 0.67$ , adjusted  $R^2 = 0.61$ ).

What causal as opposed to statistical relationships might be suggested from this analysis? It would seem that the orientation of Canadian cities toward an office-based service economy is a fundamental dimension. The causes of this orientation need not detain us here, though consistency with a staple theory of regional and national development should be noted, and staple theory has become perhaps the leading explanation of Canadian economic history and settlement patterns (McCann 1982). In a staple-led economy nodal cities assume a trading and administrative function for surrounding resource hinterlands. The service economies of nodal cities include both private and public sector office and institutional employment; appropriately, inner-city revitalization is clearly associated with provincial and national centers of government and public services, as well as with private sector service employment. Growth in the resource economy of the hinterland relays job growth to the white-collar complex of downtown head offices, producer services, and, indirectly, to public institutions and agencies in the nodal centers (Hutton and Ley 1985). Such a process leads to the "production" of professionals, managers, and other quaternary employees working downtown, who then provide the demand base for housing reinvestment in the inner city. Implicit in this argument is a close linkage between metropolitan labor markets and housing markets.

Where then does the urban amenity dimension fit in? While enhanced amenity, an improved quality of life, is a central pursuit of a postindustrial society (Bell 1976; Ley 1983), this does not necessarily specify the detailed lines of

determination. For example, the finding that housing price levels in the U.S. are most satisfactorily predicted by the level of solar radiation (Stutz and Kartman 1982) does not identify the causal process that lies between this measure of environmental amenity and the housing market; the correlation might be spurious. There is at least one line of reasoning that might tie an office-based economy with urban amenity. Service cities, as a result of their "clean employment" are likely to have more attractive urban environments. Furthermore, the continued enhancement of those environments commonly becomes a political imperative, both of politicians and of articulate residents of inner-city neighborhoods who are employed in downtown offices and white-collar institutions. There is, in this fashion, a reciprocal and cumulative revitalizing effect from the interaction of downtown service employment and the inner-city quality of life. If downtown employment opportunities draw populations to the inner city, this population, as it gives political and economic expression to its own predilection for urban amenity, will restructure the built environment and accelerate the gentrification process.<sup>12</sup> Furthermore, office employment downtown is a necessary but not sufficient requirement of inner-city gentrification. The amenity bundle offered by the inner city in terms of character districts, heritage dwellings, view and waterfront sites, and existing high-status areas will influence the extent of gentrification. For example, one reason for the overprediction of revitalization activity in Calgary and Edmonton in the regression model is the more limited amenity offered by inner-city districts in those cities. There are few distinctive natural amenities in the inner city, and fast and relatively unplanned growth has led to the demolition of inner-city heritage and status areas and a rapid and rather characterless apartment redevelopment. In Edmonton, "a perception prevails that the Downtown and some of the adjacent transitional neighborhoods have lost much of their former vitality, or, in the main are less desirable places in which to reside, work, and shop" (City of Edmonton 1983). Thus while economic conditions may permit inner-area gentrification, it is nonetheless limited in these cities by modest amenity levels.

The objective of this paper has been to specify, from a set of competing and complementary arguments, the relevant contexts of inner-city revitalization in a national urban system. These

contexts provide a set of outer bounds which, in combination with local factors, form the particular configuration of gentrification in any individual city. From these systemwide effects it is then a logical step in a research program to return to an interpretation of the diversity of inner-city change in particular cities and particular neighborhoods, with a better understanding of the general processes of which any single case is in part an expression.

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### Notes

1. The Canadian literature on displacement is limited. See, however, City of Ottawa (1979), Lessard (1983), and Phipps (1982). These and other findings are reviewed in Ley (1985).
2. For a revision of this position, see Berry (1985).
3. See for example, City of Ottawa (1981), City of Toronto (1982), City of Vancouver (1981). From the 1981 Census, we see that close to 20 percent of rental households in Vancouver and Edmonton were spending over 50 percent of their income on rent.
4. Studies in Toronto and Vancouver have shown that over the past decade inner-city price increases (relative and absolute) in a number of gentrifying neighborhoods have exceeded by some measure increases in the suburbs (Ley 1985). In the U.S., DeGiovanni (1983) has noted sustained demand in gentrifying districts, including an early recovery following national recession.
5. Important inner-city revitalization projects initiated by local and senior levels of government include the restoration of Old Town (Montreal), the St. Lawrence and Harbourfront developments (Toronto), LeBreton Flats (Ottawa), and False Creek (Vancouver). In each instance (and notably in False Creek) private sector reinvestment has followed later.
6. For 462 inner-city tracts in six major cities, a correlation of  $r = -0.38$  was found between the gentrification index and distance to the nearest regional environmental amenity (Ley 1985).
7. The term postindustrial does not of course sever the link between services and manufacturing. For the status of producer services, see Noyelle and Stanback (1984), and in a Canadian context, Hutton and Ley (1985).
8. A mean increment of 1.8 on the gentrification index during the 1960s compared with 7.5 during

the 1970s across the system of metropolitan areas.

9. Other studies using these indicators of gentrification include Hamnett and Williams (1980), Maher (1979), and Badcock and Urlich-Cloher (1981). The semantics of gentrification are confusing; B. Jackson (1984) has found 14 more or less comparable terms. For a fuller discussion of definitional issues, see Ley (1985).
10. Over 462 inner-city tracts, the 1971 social status index showed a correlation of 0.77 with 1971 monthly rents and 0.63 with 1971 mean household income. In addition, the gentrification index accurately demarcated such well-known gentrified districts as Don Vale (Toronto), south Centretown (Ottawa), False Creek-Fairview Slopes (Vancouver), and Old Town (Montreal). Each of these districts had high index scores, some three to four times greater than the national inner-city mean.
11. The rent gap thesis argues that the more depreciated the inner-city land market, the higher the probability of reinvestment and gentrification. But this reinvestment is likely to occur only when the alternative suburban market is high priced and property is in short supply relative to the inner city. Otherwise, investors will have no incentive to leave the safe returns of the suburbs for the high risks of the inner city. As property investors make choices between competing locations, the relative status of inner-city-suburban land value gradients, as well as the absolute status of the inner city will be significant to them. Thus, according to the rent gap thesis, the shape of the metropolitan land value gradient at time  $t$  (here 1971) should be a predictor of the extent of gentrification by  $t + 1$  (1971-81). This inference coincides with the original presentation of the rent gap thesis: "The [inner-city] valley which Hoyt detected in his 1928 observation of [Chicago] land values can now be understood in large part as the rent gap. Only when this gap emerges can redevelopment be expected. . . . Gentrification occurs when the gap is wide enough. . . . If this rent gap theory of gentrification is correct, it would be expected that rehabilitation began where the gap was greatest and the highest returns available" (Smith 1979, 545-46). Thus the ratio of inner-city to CMA rent and price levels represents one valid measure of the rent gap.
12. This has been a major, if unintended, outcome of reform politics and policies of neighborhood preservation and enhancement in Canadian cities since 1970. See Province of Ontario (1984) and Ley (1985, 144-94).

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