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[See table of contents](#)

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Article abstract

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Both regionally and locally, a typical sequence of development is apparent and is discussed with examples. The evolving pattern of development has been moulded by five sets of variables: access, services, environment, socio-cultural factors, and planning. Some variables operate primarily at the regional scale (notably distance to the city centre), some at the district level (notably distance to an elementary school), and some are highly localized (e.g., the availability of road frontage). The results may be useful for anticipation and control of future development.

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Résumé

Basée sur des renseignements provenant de cartes topographiques d'archives ainsi que de cartes récentes, cette étude dresse le plan des nouveaux développements des habitations (destinés aux banlieusards qui se rendent en ville pour travailler) dans le secteur Eastern Shore, en banlieue de Halifax. Le nombre d'habitations a été calculé à partir de cartes topographiques au 1:50 000 levées en 1917–20 (avant les déplacements des banlieusards), en 1960–7 (début des déplacements des banlieusards) et en 1988 (nombreux déplacements des banlieusards), et les modèles des cartes ont été analysés visuellement et statistiquement.

Une séquence typique des développements est apparente tant au niveau régional que local, et celle-ci est expliquée et accompagnée d'exemples. Le modèle suivi par ces développements a été façonné par cinq variables : accès, services, environnement, facteurs socio-culturels et planification. Certaines variables ont une incidence principalement à l'échelle régionale (en particulier la distance entre le domicile et le centre-ville), d'autres au niveau du district (en particulier la distance entre le domicile et une école élémentaire), d'autres encore ont une incidence extrêmement localisée (par exemple l'existence d'une route en bordure de la propriété). Les résultats de cette étude peuvent être utiles pour anticiper et contrôler les développements futurs.

Though Halifax today has a metropolitan population of 330,000, its hinterland remains remarkably devoid of settlement, with considerable pockets of wilderness. The glacially-scoured hard-rock environment mitigated against early resource-based settlement, so that the population remained extremely sparse into this century. Thus, the impact of automobile-induced

commuter settlement in the last half-century has been clear and dramatic. This study uses evidence from archival and recent topographic maps to plot the developing pattern of residential commuter development within a 40 kilometre by 30 kilometre section of the Eastern Shore, one of four main corridors or sectors of exurban expansion around Halifax. The aim of the analysis is to generalize the sequence of exurban development, and gauge the relative impact of factors that have either encouraged or inhibited commuter housing development.

Each of the four main commuter corridors developed along the old post-road highway routes, which were the first to be paved and upgraded, and which were later augmented by parallel 100-series limited-access highways. In clockwise sequence from the west, the corridors follow the St. Margaret's Bay road (Highways 3 and 103), the Windsor road (2 and 102), the Truro road (1 and 101), and the Eastern Shore road (7 and 107). The Eastern Shore corridor has been most dramatically affected by commuter development, since it was least settled originally. In addition, this corridor is remote from other urban centres that might contribute to commuter development, so that distance-decay effects can be isolated with greater confidence.

Rural commuter development has been a topic of considerable interest to geographers, sociologists, and land-use planners for some time.¹ The process goes by a variety of labels, including exurbanization (coined by Spectorsky), country residential development (CRD), rural resettlement, rural sprawl, rurbanization, countryside invasion, and (more problematically) counter-urbanization.² The population group involved may be termed rural commuters, exurbanites, rurbanites, or rural non-farm residents, and their residences may be pre-existing farm or village houses, converted seasonal homes or barns, or new homes. The last, in turn, may be developed as isolated homes on large parcels of land (hobby farms, rural estates, or "acres-ages"), as trailer parks, as low-density subdivisions lacking central services, or as higher-density subdivisions with central services (often extensions to existing villages). Though a bourgeois phenomenon since the rise of cottage-villas in the early 1800s, CRD expanded greatly, both geographically and socially, only with the advent of mass automobile ownership.³ In the Maritimes, where income levels are below the national average, but rural land is also typically very cheap (being of little use for agriculture), the ability to purchase an acre of land and build a home on it, often with one's own labour, has been viewed as an affordable and attractive option by many who could not afford a decent single-family home in the city.

Data Sources

In general, exurbanites are considered to be those who have moved from the city and retain employment in the urbanized core. To identify an incoming exurban population, some studies have employed census data on population growth or growth in the non-farm population.⁴ Such data do not precisely identify the exurban population, but have the advantage of being

available for the smallest census units (in Canada, enumeration areas). Census data on commuter origins and destinations allow more precise identification of exurbanites, and have been used in several studies.⁵ Such data are not regularly available in Canada (not since 1971 in the study area), and since they are collected only for larger data areas (census subdivisions), they are appropriate for only the study of entire commuter fields.

It is possible to pinpoint the location of exurbanites by detailed surveys, for example by the use of land ownership/transaction records combined with questionnaire survey of candidate land purchasers. This time-consuming method was developed by McRae and applied to an entire county by Davies and Yeates.⁶ While highly accurate, it yields a sample only. Other researchers have used questionnaire sampling of households in individual communities or small localities.⁷

The physical impacts of commuter development have received less attention than demographic or social changes, despite their great relevance to land-use planning. The impacts may be observed through changes in land-use and land-cover, and through development of residences and roads. Fraser Hart⁸ made use of county-level land-use samples to map national patterns of development in the United States, while data from the Canada Land Use Monitoring Program have been employed by Warren and Rump and Warren et. al.⁹

In the present study, commuter development is identified by the addition of residences and roads to the landscape. This approach is surprisingly unutilized in the literature, despite the ready availability of map and air-photo data sources. Perhaps this is partly a function of scale of analysis, since most studies of physical change take a broad regional view. There are also interpretation problems: one cannot assume that all new buildings are residences, or that all residences are occupied by commuters. However, within the Eastern Shore study area these are not severe problems: almost all new development has been commuter-induced, and there are very few barns or fishing shacks to worry about (see the next section for the reasons, and specific areas of occurrence). Although there are some seasonal cottages and cabins, they are scattered and do not distort overall patterns of development. Besides, many have been converted to year-round commuter homes.

Road upgrading and extensions to the road network are also indicators of commuter development, but not prerequisites for it. Of course, roads must precede housing development, but the network of traditional resource-roads provides a vast supply of road frontage. Only in areas of high demand will this supply be augmented by new roads within rural residential subdivisions. Housing development in turn produces demands for road upgrading, shortcutting, and bypassing, and such improvements may occur at some distance from residential construction. For these reasons, the presence of new housing is regarded as a more direct, sensitive, and unequivocal indicator of commuter development than the presence of new roads.

This study was prompted by an earlier analysis of the Highway 7 portion of the Eastern Shore by Laura Beazley.¹⁰ It uses similar data sources and data collection methods, but relates to an area five times larger, considers more variables, and utilizes the capabilities of the MapInfo geographic information system. The study area is bounded by the following UTM coordinates: 6037(SW), 6067(NW), 0067(NE), and 0037 (SE). Almost all of this area is covered by the West Chezzetcook (11D/11) and Musquodoboit Harbour (11D/14) 1:50,000 topographic map sheets, with a small portion in the west lying on the Halifax sheet (11D/12).

It was decided to use topographic maps rather than air photographs for dwelling counts, though both have advantages. Air photos have larger scale and more frequent coverage, while topo maps are cheaper and pre-identify building locations (particularly useful in this highly wooded environment). Since data had to be placed on a topo map base for mapping and analysis purposes, it was considerably easier and cheaper, and probably also more accurate, to use topographic maps as the prime data source.

The most recent 1:50,000 map editions, though published in 1991 and 1992, were surveyed in 1988. Earlier editions were used to show the situation approximately one generation (twenty-five years) earlier, when widespread automobile ownership had already induced considerable close-in development. The survey dates for these editions were 1960–61 for Musquodoboit, 1966–7 for Chezzetcook, and 1967 for Halifax. Finally, a base-date or pre-commuter situation¹¹ was provided by 1:63,360 maps surveyed in 1917 (Chezzetcook) and 1920 (Musquodoboit and Halifax). Unfortunately, no intermediate edition was available to show the early post-war situation (say, 1945–50), since the earlier editions were simply reprinted in the 1940s. This is considered to be less serious than it might seem, in that car-ownership rates and road quality barely changed in the inter-war period. Evidence from air photos shows some small-scale development of recreational cabins or cottages (see later) prior to 1950, but long-distance automobile commuting remained quite impractical at that date, and exurban development had barely entered the western fringes of the study area. For these reasons, the 1917–20 situation may be taken as a strong surrogate for the 1945–50 situation.

Figure 1 shows extracts of topographic maps for three dates for the Cow Bay area, with the 1917 map enlarged to the same scale as the 1967 and 1988 maps. The three panels show a typical sequence and timing of development. In 1917, the loose cluster of Cow Bay village was still separated from the next village to the west (Eastern Passage) by several kilometres of undeveloped road frontage. By 1967, the road linking the two villages was paved and had attracted considerable ribbon development, along with infill development in the old-village area. By 1988, ribbon development along paved rural routes was almost continuous, and some subdivisions were being developed back

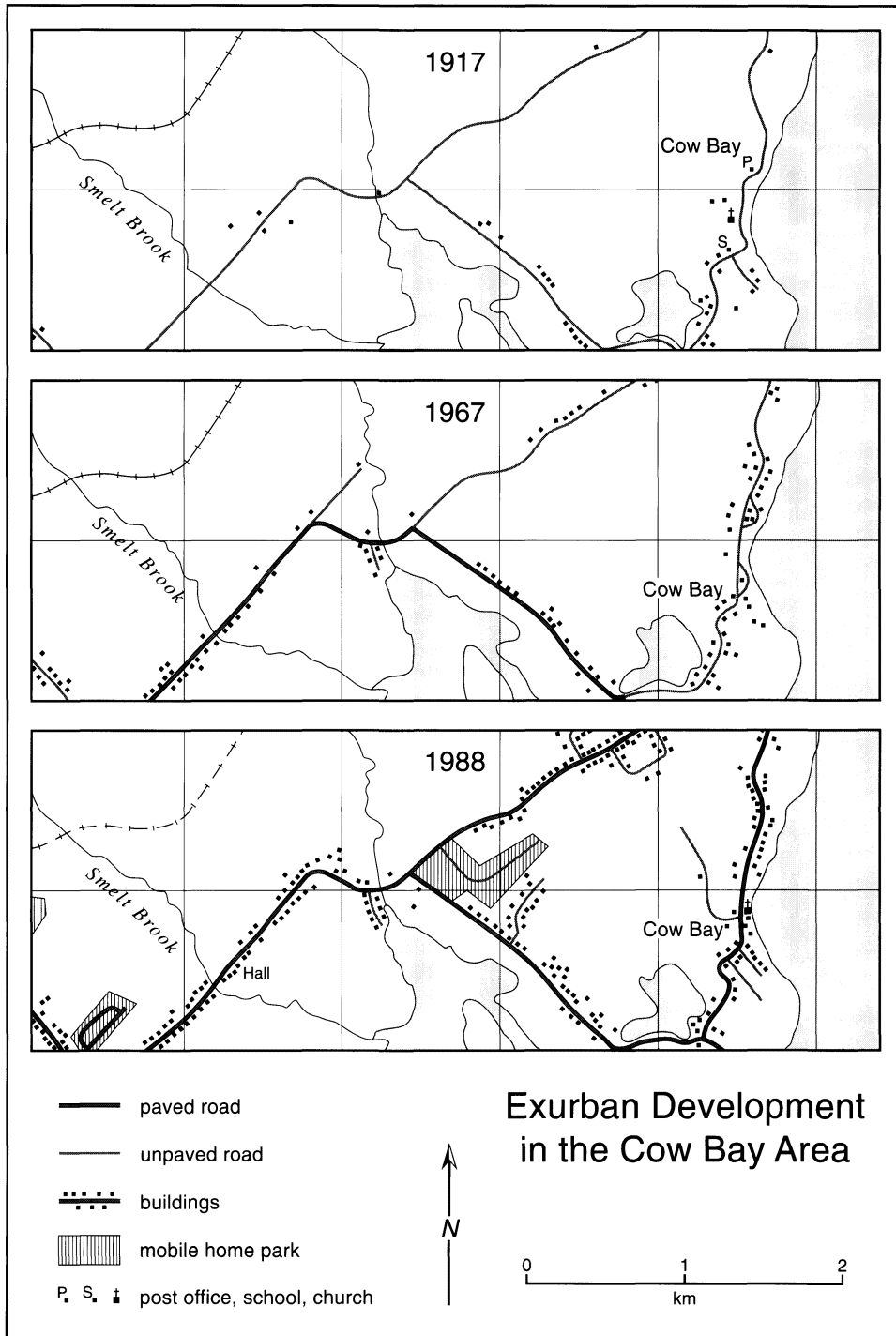


Figure 1: The Cow Bay area. Extracts from NTS topographic maps surveyed in 1917, 1967, and 1988, redrafted at the same scale to show roads and buildings only.

from these roads (we will term this “backfill development”).

As mentioned, the dwelling counts were actually building counts, since barns and larger sheds were not differentiated from residences on the 1917–20 maps, and only barns were differentiated on the later maps. To retain consistency, all buildings were counted at all three dates (with obvious exceptions, such as schools, churches, and fire halls). For trailer parks and built-up areas, individual buildings are not shown on the topo maps, and estimates had to be made: field survey and air-photo interpretation suggested typical densities of four per gross hectare in unserviced subdivisions, twelve in serviced subdivisions, and sixteen in mobile home parks. The total 1988 building count produced by these methods was 16,149. This compares very well with an expected figure for occupied residences of approximately 15,400 (based on figures of 50,000 people and 3.25 per dwelling, estimated from UMA Engineering),¹² and suggests that 95 per cent of buildings in 1988 were residences. The building counts for 1960–7 and 1917–20 were 4,470 and 1,684 respectively, indicating increases of 165 per cent (1920–67) and 261 per cent (1967–88). Population increases would have been at lower rates, however, since people per dwelling has declined.¹³

In order to map and analyze variations in residential densities and growth rates, some aggregation was necessary, and the building counts were therefore tallied by quadrats. To balance the need for both detail and generalization, a quadrat size of one square kilometre was selected. Quadrat boundaries were defined by the UTM grid, and only those quadrats with at least fifteen hectares of mainland land area (865 of them) were included in the analysis. The use of quadrats allowed a marriage of GIS mapping capabilities (in this case, provided by MapInfo) with a full-function statistical analysis package (Statview), and its use is considered an innovative and important contribution of this research project.

The Pre-Commuter Situation, 1917–20

The study area was only sparsely settled in 1917–20, as figure 2 shows. Extensive areas remained unroaded and unsettled, owing primarily to geologic factors. The entire area is underlain by glacially-scoured hard bedrock (metamorphic or granitic), most of which has little or no soil cover. Only small areas in the south and west had sufficient glacial till to support farming, and even these were suitable only for semi-subsistence (i.e., marginal) livestock farms (the till areas shown are those areas in which most of the land area has CLI soil capability of four or better). Even in the farming areas, livelihoods were supplemented by forestry and fishing wherever possible.

Most settlement was situated around Chezzetcook Harbour and in the Eastern Passage/Cow Bay area, with smaller concentrations at Lawrencetown, Preston, and Musquodoboit Harbour (see figure 3 for place names). In the Chezzetcook area, the Acadian-French population was long-standing (present since

the 1740s), and characterized by high birth-rates and low out-migration; hence the area was overpopulated relative to the resource base. The more agriculturally viable Cole Harbour area, by contrast, had larger farms and smaller population. The only well-settled area inland from the coast, around Preston, had little suitable agricultural land. The anomaly occurs because the Prestons and Cherry Brook were set aside in the 1780s for the settlement of Black Loyalists on ten-acre hardscrabble lots.¹⁴ Even more than for the Acadians, social isolation had worked against outmigration, and the population in 1917–20 was sizeable, poor, and almost all black or mixed race.

Fishing was the economic mainstay in certain coastal areas, but there are surprisingly few suitable harbours even for inshore vessels; the submergent coast has many long, shallow inlets, with shoals, tidal races, and barrier beaches near their mouths. The main fishing settlements historically were Eastern Passage, and East and West Jeddore, with tiny fishing hamlets occurring also at Lower East Chezzetcook, Petpeswick Harbour, and Three Fathom Harbour.

Forestry was a supplementary resource industry throughout the entire area in 1917–20, with most of the cut going to local saw mills, which in turn supplied the Halifax urban market. There were seventeen saw mills scattered through the settled portions of the study area, plus one at the head of Porters Lake. Only the village of Musquodoboit Harbour had a concentration of this activity, with four mills nearby. A few small gold and silver mines remained in 1917–20, though production was minimal. Most lay between East Chezzetcook and West Petpeswick.

The resource-based landscape just described was only poorly linked to the city. A car ferry crossed Halifax harbour, and paved roads ran to Eastern Passage and Westphal, just inside the study area. Beyond that, the main improved (all-weather) road was the bay-head post road (today's Highway 7, see figure 3). In addition, there was an improved loop to Lawrencetown and West Chezzetcook (Highway 207), and a spur inland towards Middle Musquodoboit (Highway 357). All other roads were in poor condition, often no more than tracks. The recently opened (1916) Eastern Shore railway provided slow and infrequent passenger service, and was quite impractical for commuting to the city.¹⁵ Almost without exception, people lived and worked in their own communities (some of which were too small or loosely scattered to merit the term *village*). The social nucleus of each community was its church, but most also had a school, post office, and general store. Figure 3 shows the nuclei of all settlements possessing a school in 1917–20. Based on building counts, there were only five village nucleations of any size: Eastern Passage (122 buildings), West Chezzetcook (96), East Chezzetcook (82), Grand Desert (82), and Musquodoboit Harbour (70). Assuming 85 per cent of buildings were dwellings (based on early air photos and current field evidence), and 6.5 people per dwelling, their populations ranged from 400 to 700, with the total population of the study area at approximately 9,300.

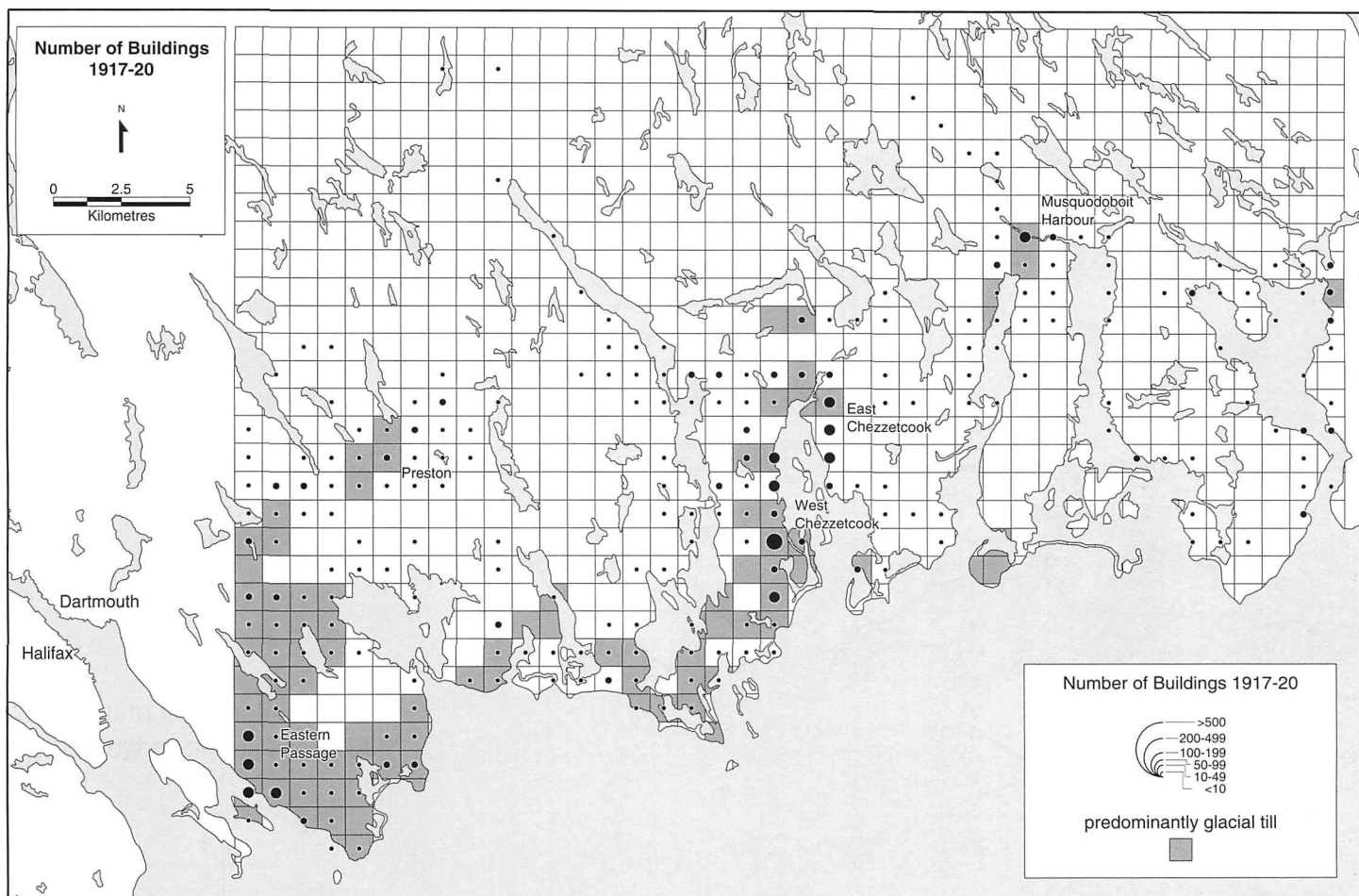


Figure 2: 1917–20 building count, by square-kilometre quadrats

The Spread of Commuter Development

As mentioned earlier, the situation in 1917–20 may be taken as highly indicative of the situation in 1945–50. The only small differences would be very limited commuter encroachment in Cole Harbour, Eastern Passage, and Westphal, and a sprinkling of cottage development on the shores of Cole Harbour and Porters Lake (some of these cottages being later converted to commuter homes). In comparing figures 2 and 4, then, almost all building development between 1920 and 1967 is assumed to have occurred after 1950. Such development occurred in all parts of the study area, though it does not follow that all areas experienced population increase. Owing to declining numbers per dwelling (to approximately 4.7), and assuming 90 per cent of buildings were now dwellings, the total population increased 103 per cent to 18,900, while the building count increased 165 per cent to 4,470. With declining numbers employed in resource industries, both the pre-existing and incoming residents became overwhelmingly dependent on employment in Halifax-Dartmouth.

The preponderance of new building took place on the extreme western margin, in the form of discontinuous suburban rather than exurban development. The impetus here was the opening of the Macdonald bridge across Halifax Harbour in 1955 (see figure 3), allowing rapid suburban development on the Dartmouth side. The communities of Westphal, Cole Harbour, and Eastern Passage, though outside the city limits of Dartmouth, now lay within fifteen road-kilometres of downtown Halifax, yet were unfettered by planning controls. They were developed with semi-urban services (central water supply, and in some areas central sanitary sewers) and thus semi-urban densities. Some partly serviced subdivisions were also developed in Upper Lawrencetown and at Lake Echo in the 1960s, though significantly the intervening Preston area received no influx of exurbanites (growth in this black area being internally generated). Figure 5, based on detailed subdivision records, provides an alternative view of the exurbanization process for this portion of the study area, and confirms the above points. Legal subdivision of properties into smaller lots is a necessary

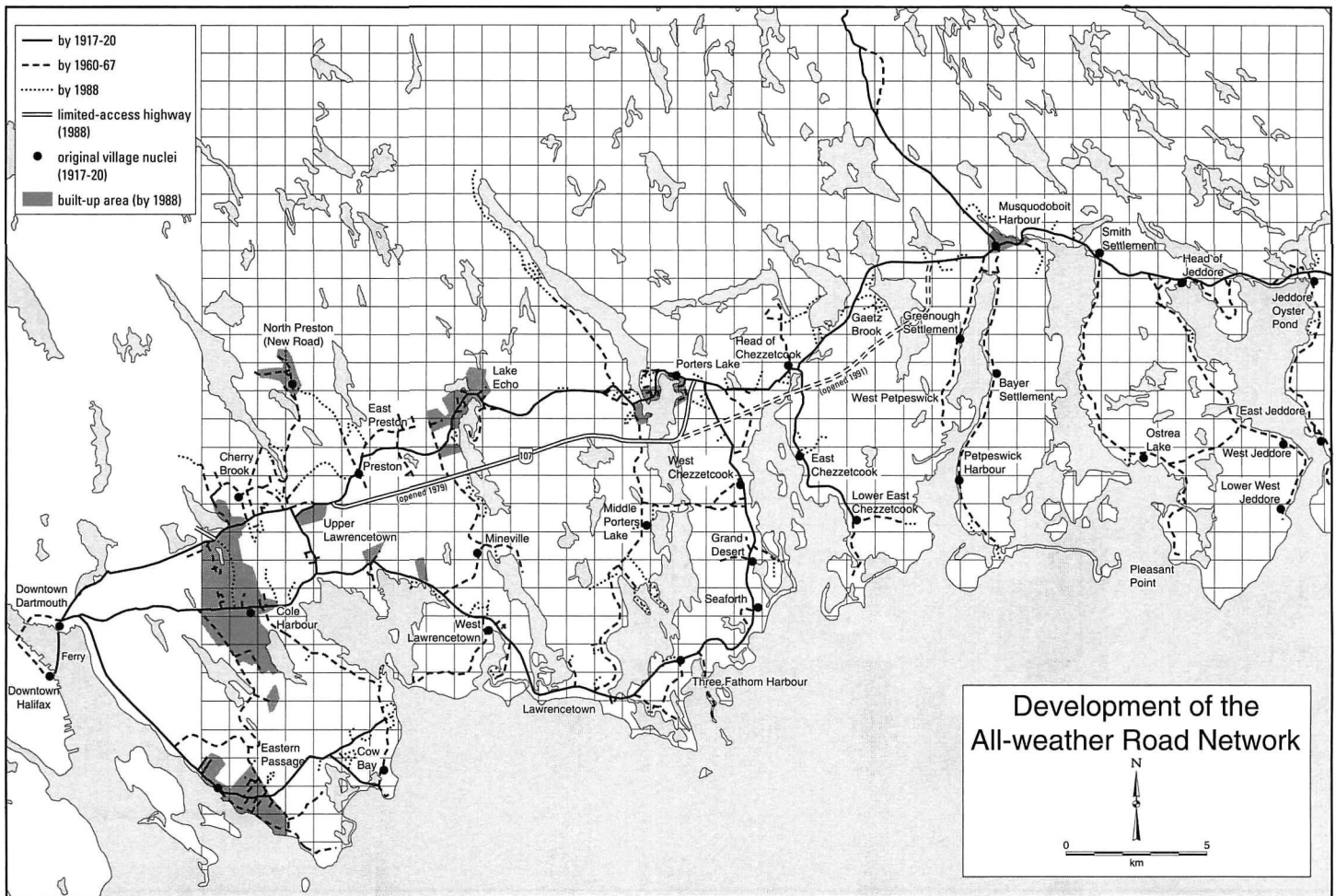


Figure 3: Development of the all-weather road network, 1920 to 1988, showing locations of original village nuclei (1920) and extent of built-up area in 1988.

precursor to housing development, though not all new lots are developed immediately, and some remain vacant for decades. Two features are striking in figure 5: (1) the degree to which early (1960s) subdivision remained tied to the two paved roads (Highways 7 and 207), and (2) the very small area of land affected.

Beyond Lawrencetown and Lake Echo, the only notable areas of development were along the bay-head highway, at Porters Lake, Head of Chezzetcook, Gaetz Brook, Musquodoboit Harbour and, to a lesser extent, Head of Jeddore. While some of this new housing—particularly at Porters Lake (see figure 5)—accommodated commuters, other causes may be suggested. One is the process of school rationalization/consolidation, which saw the closure of schools in most smaller communities during the 1960s, and their replacement with new consolidated schools at bayhead locations, to which students were now bussed. This favoured migration from more remote bayside communities to the bayheads, as did the similar concentration of retail service.

Both processes were enabled and driven by increasingly ubiquitous automobile ownership coupled with a spreading network of all-weather roads, which now connected all bayside communities to Highway 7 (figure 3).

The pace of development increased between 1960–7 and 1988. An additional 11,679 buildings brought the total to 16,149, a growth of 261 per cent (and equivalent to a growth rate of 5.5 per cent per year). With an estimated 95 per cent of buildings now being residences, and 3.25 per residence, the population had increased to 50,000, a rate of 4.1 per cent per year. A comparison of figures 4 and 6 shows the bulk of the increase in just three localities: Cole Harbour-Westphal, Eastern Passage, and Lake Echo. In the first two, almost all new dwellings in this period were on centrally serviced lots in suburban-style subdivisions; though these communities remained part of the “rural” Municipality of Halifax County until 1996 (when Halifax, Dartmouth, Bedford, and the County merged as Halifax Regional Municipality), they had their own development plans,

Commuter Development in Halifax, Nova Scotia, 1920–1988

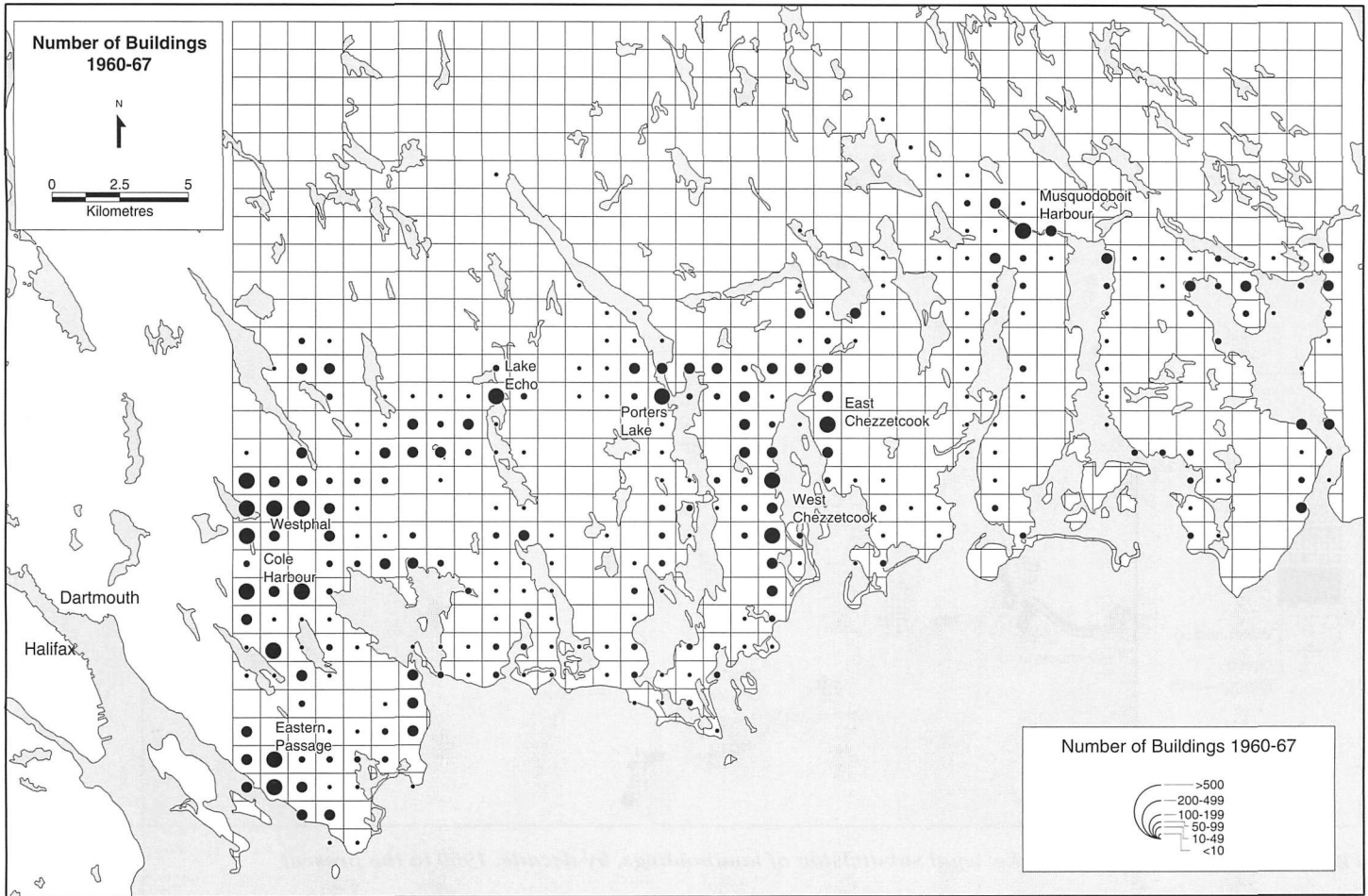


Figure 4: 1960–7 building count

service districts, and community councils and were effectively urban rather than rural.¹⁶ Lake Echo was different, however, in being a leapfrog development that was partly suburban, partly exurban, which developed into a large village in this period. The number of buildings grew from 154 to 921, and the estimated population from 650 to 2,850. Almost all of this development took place before the opening of the limited-access Highway 107 to Porters Lake in 1979, and does not appear to have occurred in anticipation of its construction (the new highway being of only modest benefit to Lake Echo commuters).

Outside the three nodes just mentioned, absolute growth was greatest at Porters Lake, the next bayhead location beyond Lake Echo, which grew to 431 buildings and approximately 1,350 people. In relative terms, there was also rapid development in the close-in Cow Bay and Upper Lawrencetown areas, mostly along existing road frontages, but also in the initial phases of large “backfill” subdivisions (see figure 1, where backfill was in the form of mobile home parks, and figure 5, where large backfill subdivisions also occurred in the 1990s).

In the eastern half of the study area, only the bayhead communities of Musquodoboit Harbour and Gaetz Brook grew much in either absolute or relative terms, the new community of Gaetz Brook crystallizing between two large lakes and beside the area’s new junior high school. Note that neither of these villages benefited from the 107 extension until its opening in 1991, although anticipation of the highway’s benefits may have promoted growth in the late 1980s. Elsewhere in the east, there was barely any building development in the Acadian-heritage Chezzetcooks, or at remote baymouth settlements along Jeddore, Musquodoboit, and Petpeswick harbours. Given the declining population per household, all these communities are estimated to have declined in population (East Chezzetcook, for example, increased from 139 to 176 buildings, but it is estimated that the population declined from 590 to 540).

Attractive and Inhibitive Factors

The preceding appraisal of development trends suggests the influence of a variety of variables, some attracting or promoting

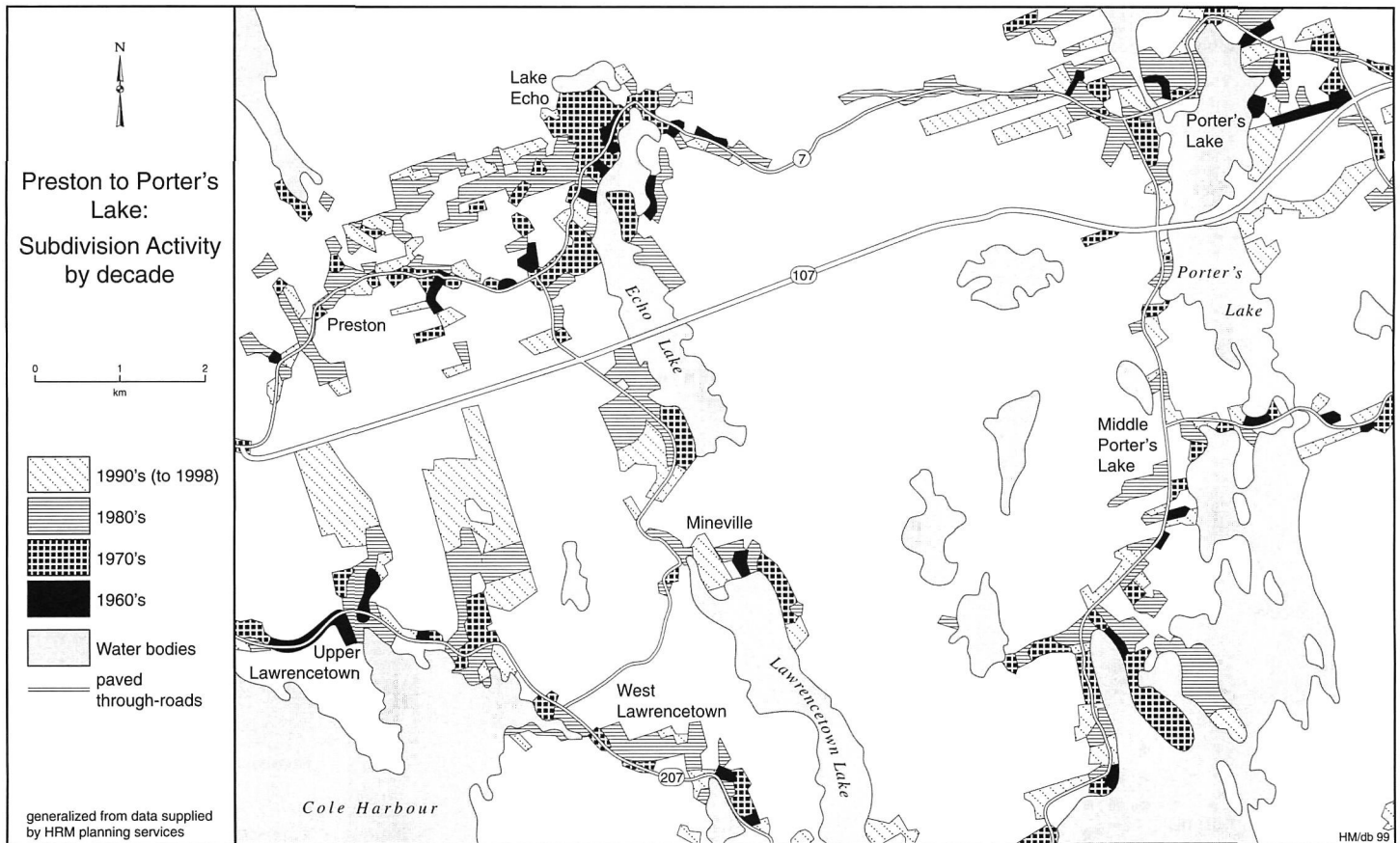


Figure 5: Preston to Porters Lake: legal subdivision of landholdings, by decade, 1960 to the present

growth, and some inhibiting it. These variables may be grouped under the five broad headings of access, services, environment, socio-cultural factors, and planning.

Access

While it is understood that exurbanites seek the rural advantages of large lots at low prices, they also wish to maintain easy contact with their jobs in the city. The relationship between exurbanization and access, whether measured by airline distance to the city centre, or by travel time, has received considerable attention in the literature,¹⁷ and is certainly important to the broader picture. The author has reported elsewhere on a statistical analysis of relationships between change in building counts and access variables,¹⁸ but the salient points are apparent on the figures already presented. Pre-existing paved, or at least all-weather unpaved, roads have strongly attracted subdivision activity and building development, as both figures 1 and 5 show. Furthermore, today's paved road network reflects yesterday's network of unpaved roads and tracks. That is, as figure 3 shows, there has until recently been very little development of new roads into the backcountry, since private developers will only invest in

road construction if forced to do so by the lack of existing road frontage.

At the broad regional level, there is an exponential distance-decay relationship, such that, on average, close-in areas have experienced many times more development than remote areas, in both time periods. However, while distant areas were highly unlikely to experience growth, inner areas were by no means assured of it. Even with the encroachment of fully suburban development on the western edge in the later period, extensive tracts of close-in land saw little or no growth, owing to lack of road access and/or the operation of other inhibitors.

Services

The local availability of retail, governmental, and institutional services has often been cited as promoting country residential development.¹⁹ It is reasonable to suppose that exurbanites want proximity to at least a convenience store, a gas station (these first two often now combined), an elementary school, and a fire hall. Also important to many, if not most, is the church of their choice, and some form of community hall (again, these two

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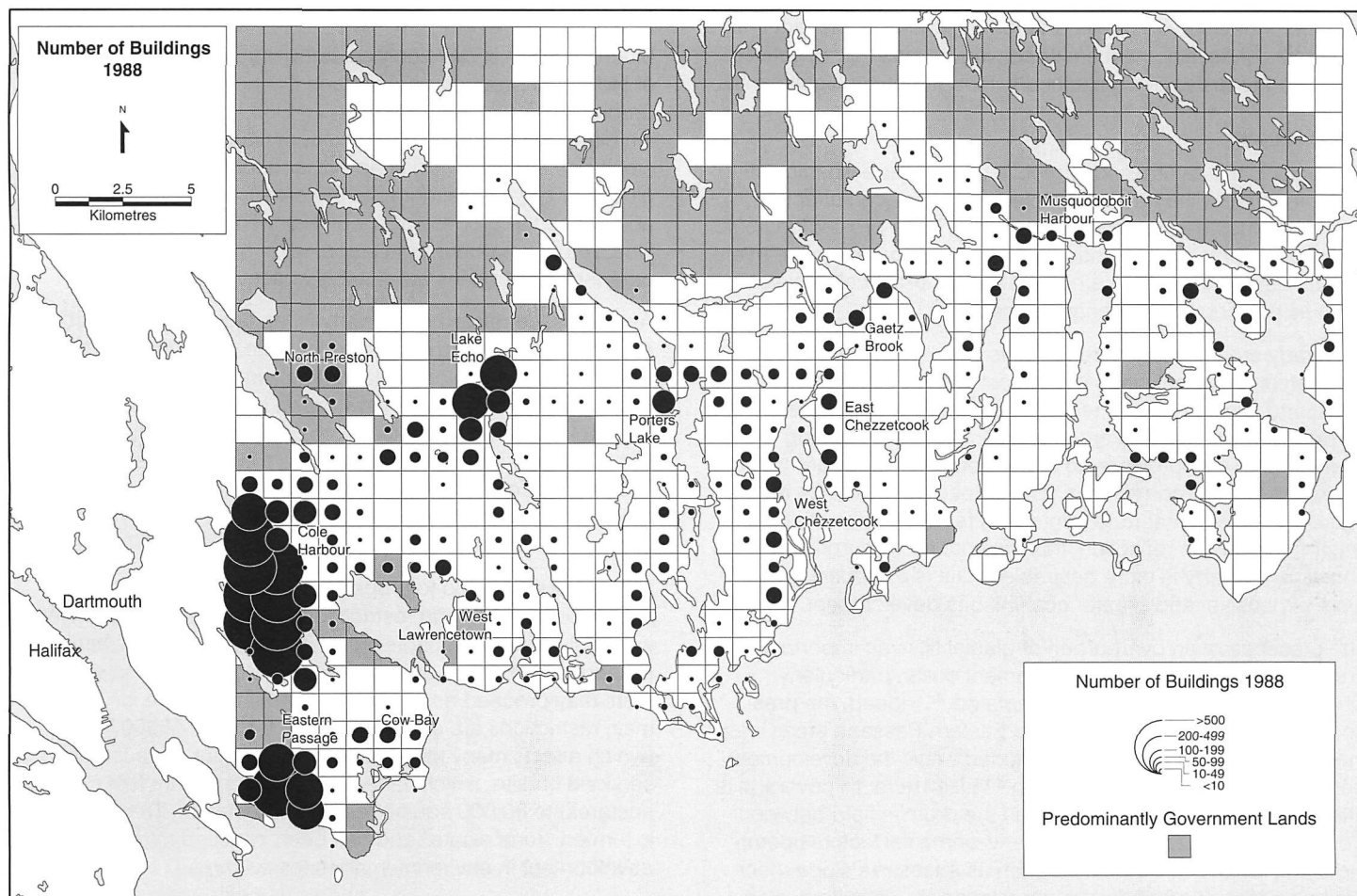


Figure 6: 1988 building count

are often combined). However, given that rural households increasingly have two vehicles, we should not expect the tie to these community services to be too constraining, especially in the later period.

Again, statistical relationships between residential development and the location of certain services have been reported elsewhere,²⁰ but the findings can be summarized as follows. From the 1917–20 base date, village nuclei (normally containing at least one church, a church hall, a school, a general store, and a post office) were identified, as shown on the figures. In the period 1920–67, there was a moderately strong negative linear relationship between distance to a nucleus and change in building count. However, this declined to a correlation that was weak (but still highly significant) in the 1967–88 period. The inference is that in the early period development remained confined to existing settlements (with the major exception of the new community of Lake Echo), while by 1967–88 this constraint (or preference) had largely disappeared. People could now drive to

services, and in any case smaller communities were losing the few services they had. It is worth noting that *rates* of development increased exponentially away from village nuclei in both periods, owing to the relative lack of available lots in the village cores.

Elementary schools ought to constitute an exceptional form of service, in that parents strongly wish to minimize daily travel times for small children. To test this idea, elementary schools were mapped for 1917–20, 1960–7, and 1988. In the 1920–67 period, before school consolidation, the variable of distance to an elementary school was almost equivalent to that of distance to a village nucleus, since all nuclei contained schools. Following 1967, we might expect the loss of elementary schools in smaller communities to inhibit commuter development, and this seems to have been the case. The distance-decay relationship between new development and distance to a school strengthened, and it is noteworthy that all quadrats exceeding an increase of 100 buildings lay within three kilometres of a school.

A further indication of the importance of schools is the fact that even *rates* of development are becoming increasingly negatively correlated to distance from schools, though not yet significantly.

Environment

Variations in the natural and/or modified landscape—particularly that intangible will-o'-the-wisp called scenery—can affect amenity values derived by exurbanites.²¹ More prosaic geologic and topographic factors, though, often not apparent to the eye, can be equally important, since they affect practical matters such as building or maintenance costs.

The study area has high scenic value wherever the ocean or lakes are in view, but since it is almost entirely covered with forest and is also quite muted in topography, water vistas are surprisingly rare. An attempt to statistically relate building development with proximity to major bodies of water produced unexpectedly low correlations, and indeed the evidence of figure 5 suggests that road frontage is far more influential than water frontage. On reflection, this may not be so surprising: shoreline property is more desirable, but it is also therefore more expensive, and greater cost inhibits development.

The presence of an overburden of glacial till is an important consideration for lowering development costs, particularly where central services are contemplated.²² Indeed, the presence of till in the Cole Harbour and Eastern Passage areas was the major reason that they were included within the development boundary in the 1975 regional plan.²³ Elsewhere, till coverage is often highly localized, particularly in the drumlin field between Cow Bay and Chezzetcook. Other environmental factors operating at the lot level are inhibitors such as excessive slope, poor drainage, lack of groundwater percolation for wells, and even excessive exposure to wind in coastal areas.

Socio-cultural Factors

Newcomers to established rural communities are often perceived as outsiders, and tensions can develop between longtime residents and incoming city folk.²⁴ In the study area, traditional communities that were larger and/or more remote may have been perceived by exurbanites as more ingrown and less welcoming. This is one reason that growth in established communities has been at a rate lower than in the intervening areas. In the Chezzetcooks and the Prestons, the “closed” nature of these communities has been augmented by solidarity born of long-standing racial and ethnic heritages. In the case of the Prestons, too, we should also recognize the possibility of racial prejudice as inhibiting exurban development. We have noted already how development in both periods appeared to leapfrog over the Prestons, to produce an entirely new community at Lake Echo. Associated with, though not necessarily equatable to, prejudice are incomer concerns about perceived levels of crime and perceived quality of schools. The author has undertaken preliminary “key-informant” investigation of this interwoven group of perceived factors, but they are highly sensitive, and few people are willing to discuss them.

Properties and Planning

Much variation in development activity takes place at the level of individual property parcels, and it is notoriously difficult to predict individual decision making. One factor that surely inhibited development in certain communities, however, is the small size and awkward shape of landholdings, which precludes or greatly discourages the process of land assembly, and hence the process of subdivision. The long-lots of the Chezzetcook harbour area stand out in this regard, and developer land assemblies are notably absent in this area.

Another issue related to property is the fact that large sections of uncultivable land in the interior were never granted to settlers, and remain crown land (i.e., owned by the provincial government) to this day.²⁵ Few crown lands have roads, and their lack of development therefore partly reflects lack of access. But even road frontage on government lands is effectively frozen from development, especially when the land also has a protective or recreational designation (e.g., as a provincial park or game sanctuary).

A third issue specific to property is development control by subdivision and zoning restrictions. Until the early 1980s there were only minimal controls on the creation of new lots through property subdivision, and even today subdivision and development may proceed as-of-right on almost all private lands. The main restrictions are a minimum road frontage of 100 feet (which affects many long-lots), and a minimum size for lots serviced on-site, which varies from 20,000 square feet (0.19 hectares) to 80,000 square feet (0.74 hectares). The latter zone is termed “rural estate” and has been imposed to deter or slow development in environmentally sensitive areas.

Summary and Prognosis

This case study used building counts from topographic maps to trace the evolving pattern of countryside residential development in one sector of the metropolitan Halifax commuter belt. The commuter situation before 1920 showed a thinly settled landscape of resource-based communities, linked by a sparse network of unpaved roads. In the post-1945 era, much of the study area has been transformed by suburban and exurban development, with the main features of this development pattern already evident by 1970. Continuous suburban extensions of the urban area have encroached into the western fringe, dormitory villages have developed in favoured nearby localities, and more discontinuous country residential development has sprawled like a ribbon along most roads within thirty kilometres of the city centre. Beyond thirty kilometres, baymouth areas have experienced declining or static dwelling counts, and only those bayhead villages that benefited from retail and service consolidation have recorded much growth.

The evolving pattern of development has been moulded by five sets of variables: access, services, environment, socio-cultural factors, and planning. Within each of these groups is a variety of factors, some operating primarily at the regional scale (such

as distance to the city centre), some at the district level (e.g., distance to an elementary school), and some with highly localized effects (e.g., the presence of road frontage, or the shape of a landholding). Given a modest level of spatial aggregation (by square-kilometre quadrats), the most useful objective predictors of building development were distance to the city centre (negative), proximity to an elementary school (positive), the existing amount of development (positive), and distance to an original village nucleus (negative). That is, most growth has occurred on the margins of those larger villages that retain an elementary school and lie close to the city. The main exceptions to this generalization are the black communities of Preston and North Preston, which highlight the localized importance of socio-cultural factors.

Locally, the sequence and patterning of development is best depicted and analyzed at the building or property level, rather than through aggregate units. As demonstrated by figures 1 and 5, the scale and pattern of development tends to follow a predictable sequence, with close-in areas progressing through the sequence earlier and more rapidly. The earliest phase is one of pre-commuter isolation, with a scattering of loosely nucleated hamlets, and very little dispersed development (owing primarily to a lack of farms). The next phase, beginning in the 1950s in the more accessible west, is one of piecemeal ribbon development along improved portions of pre-existing rural roads, combined with some intensification or infill in the old village cores. In stage 3, infill development produces continuous ribbons along the old road-frontages, and developers begin to open up the backcountry areas with small "backfill" subdivisions, starting first in the vicinity of the old villages. In stage 4, the scale of backfill subdivisions increases, and they begin to coalesce within the interstices of the original road network. At the same time, centrally serviced (and hence higher density) subdivisions—including mobile-home parks—develop close to a few favoured (or designated) village cores. In stage 5, exemplified by Cole Harbour, the landscape becomes dominated by development and is viewed as suburban rather than exurban.

The prognosis for development under current planning controls (or rather, lack of them) is continued rapid build-up adjacent to the close-in larger villages. The largest amounts of development will occur on remaining lands within the central-service development boundary (i.e., Cole Harbour, Westphal, and Eastern Passage), and adjacent to the larger bayhead villages of Lake Echo and Porters Lake. Higher *rates* of growth, however, will occur in more lightly settled intervening areas, such as Cow Bay, Upper Lawrencetown, West Lawrencetown, and Middle Porters Lake. The Prestons will see much less development than adjacent communities, while growth in the Chezzetcooks will be hampered by the long-lot landholding system.

As the municipality's planning staff are well aware, continued exurban development at current rates will eventually lead to broad swathes of low-density development, which are inefficient and costly in terms of municipal and emergency services, can

destroy the very amenities that exurbanites are seeking, and may foreclose options for future urban development.²⁶ It would be preferable to identify "key villages"²⁷ that already possess a range of desired services (including an elementary school and grocery store), where central services might be instituted or extended to promote suburban-style development at moderately high densities. Elsewhere, as-of-right development should be severely restricted, in order to avoid unsightly ribbon development, and to promote appropriate backfill development. Such proposals were contained in the ill-fated Municipality of Halifax County draft plan of 1978, which provoked strong landowner resistance and was voted down by council.²⁸ Uncompensated infringements on landowners' development and land-use rights are still strongly opposed, and it may remain politically impossible to implement development controls even in the context of a coherent regional plan.

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Notes

1. For reviews, see James McRae, *The Influence of Exurbanite Settlement on Rural Areas: A Review of the Canadian Literature* (Ottawa: Lands Directorate, Environment Canada, Working Paper No. 3, 1980); Alun Joseph and Barry Smit, "Implications of Exurban Residential Development: A Review," *Canadian Journal of Regional Science* 4, (1981), 207–224; Chris Bryant et. al., ch. 5 in *The City's Countryside: Land and Its Management in the Rural-Urban Fringe* (London: Longman, 1982); Chris Bryant and Philip Coppack, "The City's Countryside," ch. 9 in *Canadian Cities in Transition*, ed. Trudi Bunting and Pierre Filion (Toronto: Oxford University Press, 1991), 209–35; Guy Robinson, "The City Beyond the City," ch. 14 in *A Social Geography of Canada*, ed. Guy Robinson (Toronto: Dundurn Press, 1991), 302–29; Arthur Nelson, "Toward a Definition of Exurbia," *Journal of Planning Literature*, 6 (1991), 350–68; Judy Davis et al. "The New 'Burbs': The Exurbs and Their Implications for Planning Policy," *Journal of the American Planning Association*, 94 (1994), 1, 45–9.
2. See Auguste Sectorsky, *The Exurbanites*, 1st ed. (Philadelphia: Lippincott, 1955); Lorne Russwurm, "Country Residential Development and the Regional City Form in Canada," *Ontario Geography* 10 (1976), 79–96; and Gerald Walker, "Social Perspectives on the Countryside," *Ontario Geography* 10 (1976), 54–63.

The various terms are approximately interchangeable, in that they all refer to "metropolitan spillover," or commuter-induced development in the urban fringe (see Nelson, "Toward a definition"). The exception is counter-urbanization, a term often (but not always) restricted to growth beyond metropolitan commuting fields. See Anthony Champion, "Counterurbanization: The Conceptual and Methodological Challenge," ch. 2 in *Counterurbanization: The Changing Pace and Nature of Population Deconcentration*, ed. Anthony Champion (London: Edward Arnold, 1989), 19–33; and Anthony Champion, "Studying Counterurbanization and the Rural Population Turnaround," ch. 2 in *Migration into Rural Areas: Theories and Issues*, eds. P. Boyle and K. Halfacree (Chichester: John Wiley, 1998), 21–40.

Exurban development may be viewed as part of a spatial sequence, with intense urban development giving way to lower-density suburban development, then exurban development, and finally the truly rural landscape (with or without counter-urbanization). There are no generally

Commuter Development in Halifax, Nova Scotia, 1920–1988

- accepted criteria for distinguishing these zones on the ground; however, the author considers *suburban* to refer to centrally serviced areas predominantly developed in non-resource land uses (i.e., "built up").
3. See James Kunstler, *The Geography of Nowhere: The Rise and Decline of America's Man-made Landscape* (New York: Touchstone, 1993), 42–7, 158–66; Robert Fishman, *Bourgeois Utopias: The Rise and Fall of Suburbia* (New York: Basic Books, 1987); and James Flink, *The Automobile Age* (Cambridge, Mass.: MIT Press, 1988).
 4. Studies using population growth are exemplified by John Holmes, "External Commuting as a Prelude to Suburbanization," *Annals, Association of American Geographers*, 61 (1971), 774–90; and Maurice Yeates, *Land in Canada's Urban Heartland*, Land Use in Canada Series, no. 27 (Ottawa: Environment Canada, Lands Directorate, 1985). Studies using growth in non-farm population include Russwurm, "Country residential"; and Ralph Krueger, "Urbanization in the Niagara Fruit Belt," *The Canadian Geographer* 22 (1978), 179–94.
 5. See Edward Taaffe et al., "Extended Commuting and the Intermetropolitan Periphery," *Annals, Association of American Geographers* 70 (1980), 313–29; James Fisher and Ronald Mitchelson, "Extended and Internal Commuting in the Transformation of the Intermetropolitan Periphery" *Economic Geography* 57 (1981), 189–207; Ronald Mitchelson and James Fisher, "Long-distance Commuting and Population Change in New York State," *Urban Geography* 8 (1987), 193–211.
 6. James McRae, *The Impact of Exurbanite Settlement on Rural Areas: A Case Study in the Ottawa-Montreal Axis*, Working Paper no. 22 (Ottawa: Environment Canada, Lands Directorate, 1981); Suzanne Davies and Maurice Yeates, "Exurbanization as a Component of Migration: A Case Study in Oxford County, Ontario," *The Canadian Geographer* 35 (1991), 177–86.
 7. E.g., Gerald Walker, *An Invaded Countryside: Structures of Life in the Toronto Fringe*, Geographical Monograph no. 14 (Toronto: York University, Atkinson College, 1987); Jan Nystrom, "From the City to the City's Countryside" *Geografiska Annaler* 71B (1989), 183–200; Kenneth Beesley and Gerald Walker, "Residence Paths and Community Perception: A Case Study from the Toronto Urban Field" *The Canadian Geographer* 34 (1990), 318–30.
 8. John Fraser Hart, "Urban Encroachment on Rural Areas," *Geographical Review* 66 (1976), 1–17.
 9. C. Warren and P. Rump, *The Urbanization of Rural Land in Canada: 1966–1971 and 1971–1976*, Land Use in Canada series, no. 20 (Ottawa: Environment Canada, Lands Directorate, 1981); C. Warren et al., *Urbanization of Rural Land in Canada, 1981–86*, State of the Environment Fact Sheet, no. 89–81 (Ottawa: Environment Canada, 1989).
 10. Laura Beazley, "The Impact of Highway Improvements on Rural Settlement and Growth" (B.A. thesis, Saint Mary's University, 1993).
 11. An even earlier base-date could be employed, since the Amos Church maps of the 1860s and 1870s also show the location of all roads and buildings. However, such a backward extension of the study would be inappropriate, given the focus on automobile-induced commuter development.
 12. UMA Engineering Ltd. 1995 *Metropolitan Area Transportation Plan (GoPlan), Module 3: Development of Growth Scenarios* (Dartmouth, N.S.: Metro Transit, 1995).
 13. Census subdivision data were employed by UMA Engineering (*Metropolitan Area*), but their figures had to be modified to account for the mismatch between boundaries of the study area and the census subdivision. Census data are of little use at the level of individual communities, because of the subjectivity and notorious inaccuracy of census population figures for unincorporated places (recently discontinued), and the temporally variable boundaries of enumeration areas.
 14. B. Pachai, *Beneath the Clouds of the Promised Land: The Survival of Nova Scotia's Blacks*, 2 vols. (Halifax: The Black Educators' Association of Nova Scotia, 1987–90).
 15. Passenger service on the line was discontinued in 1960. Owing to the circuitous route, the lack of a harbour rail bridge, and the slow, infrequent service, this transport route afforded virtually no possibilities for commuting, except perhaps for the Eastern Passage to Dartmouth segment.
 16. See Hugh Millward, "Greater Halifax: Public Policy Issues in the Post-1960 Period," *Canadian Journal of Urban Research* 5 (1996), 1–17, particularly 12–14.
 17. See, for example, Russwurm, "Country residential"; G. Michie and W. Found, "Rural Estates in the Toronto Region," *Ontario Geography* 10 (1976), 15–26; Taaffe et al., "Extended commuting"; Fisher and Mitchelson, "Extended and internal"; Mitchelson and Fisher, "Long-distance commuting"; Richard Morrill, "Population Redistribution within Metropolitan Regions in the 1980s: Core, Satellite, and Exurban Growth," *Growth and Change* 23 (1992), 277–303.
 18. Hugh Millward, "Factors Affecting Growth in Rural Commuter Housing: A Case Study East of Halifax, Nova Scotia," *Proceedings, New England–St. Lawrence Valley Geographical Society* 29 (2000).
 19. See, for example, Hart, "Urban encroachment"; Russwurm, "Country residential"; Walker, "Social perspectives"; Dinker Patel, *Exurbs: Urban Residential Developments in the Countryside* (Washington, DC: University Press of America, 1980); Arthur Nelson and Kenneth Dueker, "The Exurbanization of America and its Planning Policy Implications," *Journal of Planning Education and Research* 9 (1990), 2, 91–100; Davis et. al., "The new 'burbs.'"
 20. Millward, "Factors affecting."
 21. See Michie and Found, "Rural estates"; Philip Coppack, "Reflections on the Role of Amenity in the Evolution of the Urban Field," *Geografiska Annaler* 70B (1988), 353–61; Nystrom, "From the city"; Davis et. al., "The new 'burbs.'"
 22. See H. L. Cameron, *Lands Suitable for the Economic Development of Planned Communities* (Halifax: Halifax Region Housing Survey, 1963).
 23. See Metropolitan Area Planning Committee, *Halifax-Dartmouth Regional Development Plan* (Halifax: N. S. Dept. of Municipal Affairs, Community Planning Division, 1975); Millward, "Greater Halifax," 3–6.
 24. See Walker, *Invaded Countryside*; Paul Cloke et. al., "Inside Looking Out, Outside Looking In: Different Experiences of Cultural Competence in Rural Lifestyles," in *Migration Into Rural Areas*, eds. Paul Boyle and Keith Halfacree (Chichester, UK: Wiley, 1998), 134–50; Jonathan Murdoch and Graham Day, "Middle Class Mobility, Rural Communities and the Politics of Exclusion," in Paul Boyle and Keith Halfacree, eds., *Migration into Rural Areas* (Chichester, UK: Wiley, 1998), 186–99.
 25. Halifax Regional Municipality, *Map of Paths, Trails, and Abandoned Rail Lines* (Halifax: HRM, File DT_JD, 1:78:500, 1997).
 26. See Nelson and Dueker, "Exurbanization of America"; Davis et. al., "The new 'burbs.'"
 27. For discussions of the key village planning concept, see Paul Cloke, *Key Settlements in Rural Areas* (London: Methuen, 1979); and Paul Cloke, "An Introduction to Rural Settlement Planning," ch. 7 (London: Methuen, 1983).
 28. See Municipality of Halifax County, *Draft Municipal Development Plan, Technical Report No. 2: Principles of Community Development* (Halifax, 1978).