Road Networks and Land Parcel Size in Norwich Vt., 1761-1993:

Spatial Expressions of Economy and Culture

Jeremy Stephenson
Geography 20
September 8, 1993

Norwich Vermont has a core of citizens with family names descending from it's eighteenth century inhabitants. Yet, the Town has not experienced the continuity suggested by these exceptional families. Since the town was founded in 1761, long trends of population growth and decline have occured. By1830 the town's population had climbed from 0 to 2300 inhabitants in seventy years. By 1920 it had steadily dropped to 1100 after which it began to climb, reaching 2300 again in 1970. In the 20 years since 1970 the population has increased by 34% to 3093 in 1991 (figure 1).

In this paper I examined the changing relationship between land parcel size, actual acreage distribution among land parcel owners and road interconnections. Maps, tax lists or 'grand lists' and U.S. Agricultural census data were used in an attempt to quantify trends in land use. The empirical evidence gathered for this paper is analyzed in the context of the 'Mercantile Model' (Vance, 1970), the reversal of certain aspects of J.H. von Thunen's theory of agricultural land use (von Thunen 1966, Sinclair 1967), and a debate over the economic and moral underpinnings of the New England town (Henretta 1978; Hobbs Pruitt 1984; Lemon 1980; Wood and Steinitz 1992).

The history of cultural attitudes towards land use in Norwich have bearing on the kind of policy that will be acceptable to today's land owners even though actual patterns of land use have changed significantly. The idea of government controlled land use runs against the cultural grain in the United States for no small reason. The availability of land and its use by individuals for economic self improvement has been fundamental to growth and strength of the

Nation. Unless a land use policy is devised to remove 'anticipation in the air' (Sinclair, 1967), by clearly defining growth restrictions, a cycle of continued speculation and land development will continue. The resulting town service costs generated by each new residential building lot, will be higher than the tax revenue realized, insuring property tax increases and an erosion of qualities that currently attract the growing population.

An 'experiential' approach is taken here, rather than a deductive approach, in this interpretation of existing land use patterns and the economic geography of Norwich today. As defined by James Vance (Vance 1970), an experiential approach is one in which "the rational explanation of a system of activity requires concern not merely with present distributions but also with past patterns whose patterns gave a form to the system that has, even in being modified, persisted to the present" (Vance 1970, p.130). History offers valuable clues to the cultural and economic roots of current attitudes towards land use.

J.S. Wood proposed that road networks manifest functional relationships between places and that "changes in relationships over time may be identified by changes in connectivity inherent in the changing network" (Wood 1975, p. 54). Wood's analysis of road networks in early Vermont provided the conceptual spark for the road network analysis in this paper. Town maps from 1824, 1855, 1869, 1931, 1940, 1963 and 1993 were used to track the growth and decline of road networks in various parts of the town.

I began by dividing the town into a grid of sixteen sections, which were then overlaid onto each of the maps (fig. 2 illustrates

the grid pattern that was overlaid onto each map). The number of intersections in each section were then counted; a two road intersection was give a value of 1, an intersection of three roads was given a value of 2. There were no intersections of four roads in the town. These values were then totaled for each section and recorded (tables 1-4). The sections with the highest concentrations of intersections are displayed on a map to show the general clustering of the intersections and the changes in distribution that took place during the peak usage during the nineteenth century and the present day.

Grand lists and agricultural census data from 1823, 1850, 1870, 1910, 1940, 1965, 1993, were used to determine changes in the size of land holdings over time. The census and grand lists record much of the same information while farming was the main occupation in Norwich. Tabulations of both the 1850 agricultural census and the grand lists were made to show which properties were not included in the agricultural census. For all other years (except 1870 which was taken from the agricultural census) acreage amounts were taken by parcel size, from the town grand lists available at the Town Clerks Office at Tracy Hall in Norwich (tables 5-6). The town population count and other demographic information covering the last twenty years, was supplied by the Office of the Norwich Town Planner. Acreage totals for 1812 and 1823 were supplied by the Vermont State Archives branch of the Office of the Secretary of State, however, comparably detailed information for these years could be located.

The amount of acreage attributed to each parcel in the town was input onto a spreadsheet and sorted by size. The data was divided into eight parts representing acreage amounts ranging from <1-1, >1-10, >10-20, >20-50, >50-100, >100-200, >200-300, and >300 acres. These categories were chosen in order to assess the range of farms or speculative holdings as well as small parcels which could only be considered useful as residential or small industrial holdings due to economies of scale. The acreage amounts were then compared in terms of the number of landholders within each size range and the percentage of the total number of land owners in town represented within each range. A comparison of the absolute number of acres within each range was then made with a calculation of the percentage of the town's total acreage (as reported on the lists for that year), within each size range. The total acreage for each year became larger with each period covered. It is unclear why this occurs but it may be related to changes in the way that acreage was counted or estimated.

The 'mercantile model' proposed by geographer J. E. Vance (Vance 1974), was constructed to explain the appearance of economic activity in formerly virgin territory. Vance objects to the endogenous premise of classical central place theory. Central place theory assumes that the existence of economics centers is primarily a function of the friction of distance and the cost of transporting goods. However this sort of analysis does not allow for an explanation of historical and cultural factors that shape the use of space. Vance describes the central place approach as deductive rather than experiential and so, lacking a perception of depth in

time, by looking only at existing spatial relationships for an understanding of them. The 'mercantile model' attempts to explain the existence of places and their location from a historical perspective. Understanding that economic activity does not appear spontaneously or evolve strictly according to factors of distance and markets is helpful. It allows room to explore the role of enterprise on the part of individuals or groups in the use of space. "No student of location should for a moment doubt the role that the entrepreneur plays in the creation of systems of activity that ultimately become the grist for geographical activity" (Vance 1970, p138). Vance contends that an 'intelligence complex' develops among entrepreneurs with regard to virgin territory, which enables them to take advantage of opportunities by ignoring distance as a primary factor.

This sort of intelligence complex, or web of connections must have played a part in determining which individuals were to become proprietors of the king's land grants during the eighteenth century. The original investors in Norwich were "Unsuccessful for some reason in securing the coveted location at the cohorse, but "they [the proprietors] succeeded in obtaining four charters for townships some twenty-five miles further south, adjacent to each other and lying on opposite sides of the Connecticut River (Goddard 1905, p.10)". The proprietors, of Norwich, were not quite well enough connected to obtain the land that they requested in their petition for land grants, but they managed to get close.

When Norwich was chartered in 1761, by the opportunistic New Hampshire Governor, Benning Wentworth (Zea 1991), the proprietors

were instructed to divide the town into 69 equal shares (Norwich Town Charter). Once accomplished a geometric grid was lowered onto the land that carries the Town of Norwich today. In the town charter, land was put aside for the King and any trees suitable for masts were considered the Kings property. The significance of navigable waters to the late Eighteenth century settlement of Vermont is seen in an isochronic map of Vermont settlement patterns showing the earliest settlement patterns along the larger rivers (Meeks 1975). From Portsmouth, Wentworth could "sniff the wealth of the uplands as it floated beneath his nose" along the Pisquata river (Zea 1991, p. 13). These rivers were the early channels of trade and communication and consequently influenced the formation of cultural and political regions.

The force of the legal entitlements described in the town charter were likely as real in the minds of the new town proprietors as the force of the Connecticut River, which formed the only irregular boundary of the town. It was this strong sense of abstract boundary and legal ownership which necessitated well kept written records. These records enabled a quantitative look at the towns history and supply indications of economic concerns throughout the Town's history.

The original proprietors named in the Norwich town charter were predominantly from three towns (Goddard 1905) in a region approximately 15 miles east of the Connecticut river in north central Connecticut. The grantees or proprietors "were people of considerable property, well advanced in life, whose years unfitted them to endure the hardships of pioneers in a new settlement. Such

would naturally transfer their rights to their sons or to the young and enterprising among their friends or neighbors" (Goddard 1905, p.16). Others, however, must have had a purely speculative interest in the towns survival.

Hill towns, away from the Connecticut River, were the source of many early immigrants. These migrants were leaving behind them thin soil, poor roads for the transport of meager agricultural surplus and probably little or no inherited farm land (Bassett 1972). But they carried with them, along the waterways, a full compliment of cultural sensibilities that were to provide the new town with its ethical, legal, economic and esthetic assumptions (Zea 1984).

A primary goal of the settlers and investors in a grant town was to build roads for the purpose of encouraging settlement to meet the terms of the town charter, thereby increasing the value of the land investment for the proprietors (Zea, 1991). At an annual town meeting in 1769 a five-member committee was chosen "to lay out highways as they think needful (Goddard 1905, p. 6)". No doubt by this time some roads were already in existence, and by 1796 a map shows several roads traversing the town, following closely the course of some roads in the town today (fig 3).

So far this picture fits very well with the mercantile model. It is a 'exogenic system', in which there is no demand at the place of activity (the new town of Norwich), but rather a set of wants or demands from afar. The King wanted masts and a share of the land; the proprietors wanted a return on their investment. Several of the earliest town residents accepted offers of land and cash in exchange for building saw mills and grist mills, which, along with roads, were

intended to speed settlement and further the economic development of the Town (Goddard 1905). The mercantile model is illustrated (fig. 4) to show an undeveloped location as it relates to a more stable (almost static) economic landscape conforming to a central place model of hierarchically spaced economic centers. Vances mercantile model holds that entrepreneurial enterprise is a decisive factor in the creation of new economic landscapes and their spatial expression.

Not all historians or historical geographers agree that the primary motivations for the establishment of settlements and their subsequent survival were entrepreneurial. That raw self interest was the reason for the founding New England Towns shakes idealized assumptions about its democratic traditions and self reliant independence. That "the maximization of profit was less important to these producers than the meeting of household needs and the maintenance of social relationships within the community" (Henretta 1978, p. 16) is one contention; that settlers were "enmeshed in the institutions and goods we identify with capitalism" (Lemon 1980, p. 115), is another. Henretta cites a tradition in Connecticut, of town sanctioned inducements offered to mechanics, in the form of land allotments, (such as the ones offered in Norwich), for the construction of saw mills and grist mills (Henretta 1978). He argues that these operations were sanctioned to serve the local market first an foremost, rather than with the ulterior motive of nurturing productivity and expanding trade beyond the local market. But the argument could be made that the meeting of household needs and having solid social relationships are pre-

requisites for entrepreneurial activity, particularly if the notion of intelligence networks is accepted.

According to Lemon, the idea of land becoming scarcer over time, and with this scarcity, the idyllic egalitarian community became 'quickly re-stratified', is specious. He argues that "*From the outset* wealth was distributed unevenly and became more so not after several decades but immediately" (Lemon 1980, p. 117).

Bttye Hobbs-Pruitt responded to these opposing views of eighteenth century New England culture, drawing on probate records, the Massachusetts Tax Valuation List of 1771 and a re-interpretation of widows portions. Pruitt concluded that the two opposing schools of thought share a faulty assumption that the farming family unit was self-sufficient to begin with. As she put it:

"Such farms were not isolated units...they could not have been. Agricultural communities were not atomistic but integrated, economically as well as socially and culturally. Studies of farmers account books invariably describe local networks of exchange involving all sorts of goods and services. Such exchanges could raise the standard of living of the prosperous farmer and his family. At the same time, they could make subsistence possible on farms that were not self-sufficient. For such families the principal exchange undoubtedly was labor." (Hobbs-Puritt , 1984, p. 338)

This view is supported by research concerned with material culture in America. For instance, the cabinet maker William Mather was a part time farmer as well as cabinet maker, housewright, mason, glazier, wheelwright, distiller, land speculator, town clerk, assessor, treasurer and captain of the militia in Whately

Massachussetts, on the Connecticut River. His estate was ranked sixteenth in wealth out of 154 individuals in 1810. His account book showed that "between 1808 and 1825 he had 230 customers, 35 of whom lived outside the town. Only 7 customers came from towns not bordering Whately, but 104 of his patrons shared their surnames with at least one other customer" (Zea 1984, p. 56).

So, individual families were not self sufficient but towns may have been. Hobbs-Pruitt insists however that the system of valuation was still tied to the larger economy of the Atlantic seaboard. Whether or not there was an exchange of cash, monetary values were still set by product flowing to or from the larger economy of New England (Hobbs-Pruitt, 1984).

Cultural and economic complexity is evident in the mixture of egalitarian ideals with those of individualism. Ira Allen, writing in 1798, expounded upon the economic prospects for an immigrant to Vermont;

"As to what you call day laborers, the number is few and if industrious they can soon emerge from that situation, the farmer does not look down on them with an eye of severity or contempt, on the contrary he holds out his hand to them and assists to raise them on a level with himself. When a new settler arrives, it is not material from what part of the world he come, industry and good character are the best recommendations," (Allen 1798, p. 260)

Allen had applied a dose of calculated land speculation to industry and good character and profited well during and after the revolution. (Jellison 1969)Ironically not long after writing this, Ira Allen, brother of Ethan, was to put his business and political career

on hold, leaving the state in exile until 1815, to avoid debtors prison (Bassett 1972). Along the same lines it is hard to imagine the slaves owned by Reverend Wheelock, across the river in Hanover, during the late eighteenth century (Dewey 1964, p. 9) as having such economic opportunity as Allen describes, though it may have been the case for some of the settlers in Norwich, (none of whom were slaves). It was not a perfect world, but one in which egalitarians were "able to join individualists whose personal networks were based on achieving more that others (Wildavsky 1991)". Wildavsky goes on to say; "In a nation of small farmers, moreover, property was viewed as part of equality. How would large landowners be countered if not by spreading the holding of property? Rights in property therefore, were commonly held to be essential to the defense of individual welfare (Wildavsky 1991, p. 122)." This balance of interests in land encouraged settlement.

As the town's population peaked in the 1830's and the road network grew, the clearing of the land for agricultural use was enthusiastic. Recalling events of his life in Hanover, Dewey wrote in 1847, that "There was so much land cleared up every summer in this and adjacent towns that oftimes for a week in succession the smoke from the burning lands in the towns to the west of us would be so dense and black by mid afternoon as to entirely obscure the sun from our view & the darkness was similar to that occasioned by a dark thunder cloud" (Dewey 1964, p. 15). The population increase of the early nineteenth century gives an impression of a town experiencing a land rush of sorts. The towns economic stability is called into

question, considering the fact that the population began to leave almost as fast as it had arrived.

But how did the image of a staid New England town come into being against a backdrop of speculation, aggressive land use and population fluctuation? An interpretation of the architectural landscape of the New England village center and its cultural ramifications by J. Wood and M. Steinitz offers one answer. In their 'invented tradition' paradigm, a strong social web and localized trade, connecting the dispersed farmsteads of the late eighteenth century are acknowledged, and the town center is seen as the social and political center, symbolizing the community (Wood, Steinitz, 1992). In these centers, conspicuous consumption, which had over the past century become acceptable for all who could afford it (McKendrick 1982), is key. The substantial homes of wealthy merchants and self-styled gentry were constructed for the purpose of "Signaling power, status, and self-conscious separation from New England's dispersed yeoman majority" as much as for shelter (Wood, Steinitz 1992, p. 109). Though an affront to egalitarianism the symbolism of a pastoral ideal had meaning. The invention of tradition and myth served to erase the memory of a 'rude pre-revolutionary landscape' of cramped cottage dwellings with a nostalgic view of the past (Wood, Steinitz, 1992). The pruning of town centers with the selective preservation of large homes, churches with steeples (as opposed to ones without) and town commons, create an illusory landscape in the mind. A sense of prodigious and dignified history was projected through the carefully tended town center. Along a parallel line, Philip Zea noted that

"Classicism demanded a stage, not a firm foundation" in referring to a gradual change in furniture construction from mortise and tenon work to the lighter dovetail technique by rural furniture makers for a fashion conscious elite (Zea 1984, p. 55). The idealized landscape at the town center symbolized an idyllic pastoral past and "enabled the nation to continue defining its purpose as the pursuit of rural happiness while devoting itself to productivity, wealth, and power" (Marx, 1964, p. 226) as the nation shifted to an industrial economy during the nineteenth century.

Most of the Norwich's town product remained agricultural through the nineteenth century. The 1850, 1870, and 1890 agricultural censuses bear this out in detail. Land parcel size and shares of acreage per parcel from 1828 to 1890 suggests a pattern of rural land use over this period.

By taking sectional views of road networks it can be seen that as many as 5 distinct activity centers existed, at the height of rural economic activity in the first half of the nineteenth century (fig. 2). Over time these centers and their interconnections diminished in importance and road connections across outlying parts of the town disappeared altogether. One center prevailed: that located at the confluence of roads leading to the Connecticut river and the bridge to Hanover N.H.. Changes in transportation technology reduced the friction of distance and combined with regional economic effects to cause the disappearance of the smaller villages within Norwich.

During this time the outlying intersection clusters were no doubt significant to a rural population for which a one way trip across town with a wagon might have taken an hour or more on a

good day. There were two railroad depots in Town along the Connecticut River with a creamery located at each one. The industrial census of 1860 records manufacturing businesses ranging from cabinetmakers, to blacksmiths, with a carriage maker producing 6 carriages and 3 sleighs in a year with 'other work' comprising 70% of his annual product (fig. 5). There were 15 manufacturing businesses and 4 service businesses in 1870 according to the industrial census.

In 1828 there were 9,466 acres taxed, 43% of which fell within the >20-50 acre lot range, held by 46% of the land holding population (tables 5 and 6), while 36% fell within the >50-100 range, held by 18% of the landowners. The town population was at 2,316, and clusters of intersections had begun to grow in three sections along the river and within two sections in the west of town. In 1850, 15% of landowners were in the >10-50 range, holding 9% of the total acreage, while 33% were in the >50-100 range holding 35% of the towns acreage. By 1870 two areas of concentrated intersections reached their peak, according to an 1869 map. By 1890 the land ownership pattern shifted up a notch in size so that 26% of the land owners were in the >50-100 holding 33% of the land, with 19% of landowners holding 42% of the land. By 1890 the population had dropped to 1,304. The increase in predominant land parcel size is no doubt due in part to the departure of 34% of the population between 1850 and 1890. The shift upwards in the predominant land parcel size is in agreement with observations elsewhere, that as farming became more oriented to distant markets, prosperous farmers prevailed over farmers with more

marginal land (Hobbs-Pruitt 1984). This idea could be tested more carefully by determining parcel locations within the town as farm sizes grew and population declined.

By 1930 the land ownership pattern had changed so that the majority of land owners no longer owned a roughly equivalent proportion of the towns acreage. Parity in this respect had been the norm, certainly from 1828 through to the late nineteenth century, but it must have begun to erode in the early twentieth century. In 1930, 20% of the towns landholders were in the >50-100 range and held 31% of the acreage, with the next closest group in number of owners being 21% in the >1-1 range, holding 1.4% of the towns acreage (tables 5-6). The growth of specialized agricultural regions within the United States had gradually reduced the agricultural value of land in New England. Since 1830 farmers had been migrating to superior farmland, participating in a rearrangement of settlement patterns. Improved transportation resulted in specialized areas of production, both agricultural and industrial. Improved transportation was a double edged sword, providing access to markets but ultimately being the undoing of the New England farm. The result was a virtual evacuation of New England farmland and the Norwich population low of 1920 (Ullman 1966)

Robert Sinclair's work bears on the subject of agricultural land use near urban centers, in an atmosphere of imminent urban expansion. Sinclair alters the classical theory of agricultural land use developed by J.H. Von Thunen in nineteenth century Germany, which was re-discovered and translated relatively recently (Von Thunen 1966). Central to Von Thunen's land use theory is the concept

of economic rent; that is that land will be used at its greatest economic potential and that the highest bidder will acquire the land. Von Thunen's land use theories hold that rural land use would take place immediately around an urban center. The highest bidder who could best utilize the proximity to an urban market by reducing transportation costs would offer the highest bid. In Von Thunen's world this would have meant that products with heavy weight such as firewood or rapid perishability such as milk, would be produced immediately outside an urban center.

Sinclair observed three factors that change the usage of land surrounding an urban center in the late twentieth century; "urban and rural land price differences, the flexibility offered all land users by modern automobile transportation, and the whims and judgments of human beings" (Sinclair 1967, p. 78). The effect of these new factors is that land near urban centers loses its agricultural value due to the threat of development. (This would be especialy true if the land was not part of a specialized agricultural region as described by Ullman above.)The land surrounding an urban area becomes a poor location for investment in fixed capital such as buildings or field improvements due the impending change to non-agricultural usage. It has a much higher value to a speculator (Sinclair 1967), or an owner who may attempt hold out and sell at a high price if they can pay the increased property taxes during the wait. At this point the highest economic rent paid for the land is by speculative investors. Sinclair acknowledges that though this is a reversal of Von Thunen's theory in terms of agricultural land usage, it indicates the theoretical power of the concept of economic rent.

In the case of Norwich, the nearby towns of Hanover, Lebanon and Hartford have been growing steadily since the 1960s. With a major college, and two hospitals nearby, the supply of potential buyers for smaller parcels of land has grown. A suburban setting with a rural ambiance, and good schools add to the attractiveness. By 1962 18% of the land owners held acreage in the >1-10 range amounting to 2.5% of the total acreage in private ownership within the town. In the <1-10 acre range, 48% of the Towns land owners held 1.5% of the land. Most land in Norwich was no longer held for farming, as the re-forestation of once open pastures would tell the most casual observer. A striking shift had taken place in the larger parcel ranges as well, with 7.25% of the landowners holding 34% of the towns acreage in the >100-200 range and 1% of the land owners holding 15.5% of the acreage in the >300 range. By comparison, in 1890 .25% of the landholders held 1.8% of the towns land in the >300 range.

In 1993, 74% of the landowners hold parcels of 10 acres or less in size, representing 10% of the privately held acreage in the town. A look at the >100-200 parcel range shows that 2.59% of the land owners hold 25% of the acreage. Thus the balance of land ownership has been altered.

By the mid 1970s, Interstate 91 had been built over the intersection clusters found in sections M, N, and P. These villages had been known as Lewiston (sections M-N) and Pompanusic (section P) had been essentially covered by the interstate. The interstate, presently used at 15% of its capacity (Norwich Office of Town Planning), places Boston Massachussets within a three hour drive

which no doubt facilitated the 14% growth in non-metropolitan population between 1970 and 1980 in Vermont and the 16% metropolitan population increase over the same time period (Steahr and Luloff 1985).

If rapid growth continues in Norwich, the Town may find itself too attractive for its own good. This paradox brings to the surface issues reminiscent of the historiographical debate over individual and community values during previous centuries. Are household needs and social relationships within the town (to use Henretta's terms) of greater value to its inhabitants than the entrepreneurial drive and self determination of individuals? Those with the capital and access to an 'intelligence complex' (as described by Vance), can shape the economic geography of a place. It is a question of wether market forces and capital alone will shape the town's space in the future or wether there will be a community response to and a direction of those forces.

The contrived tradition facade of the nineteenth century townscape, enhanced by selective destruction and attention to building facades, can be considered a genuine tradition given the passage of time and its continuance today. There is an atavistic desire for expressions of the pastoral ideal in the townscape.

"The objective in theory at least, was a society of the middle landscape, a rural nation exhibiting a happy balance of art and nature. But no one, not even Jefferson, had been able to identify the point of arrest, the critical moment when the tilt might be expected and progress cease to be progress. As time went on, accordingly the idea became more vague, a rhetorical formula rather than a conception of society, and an increasingly transparent and jejune expression of the national preference for having it

both ways. In this sentimental guise the pastoral ideal remained of service long after the machines appearance in the landscape. (Marx p. 226)"

"Tradition here is not opposed to modernity as much as it is a vehicle for modernity" (Wood, Steinitz, 1992, p. 106). Speculators are well repaid today for their attempts at maintaining the traditional appearance of the town center.

One priority in Norwich over the past 15 years has been to provide a high quality schools. Education is currently the largest item on the town budget (fig. 6). This quality along with the proximity to many sources of professional employment (fig. 7), have encouraged the in-migration of families with children to Norwich (fig. 8). The 1990 census data show that married families with children make up close to 30% percent of the towns population.

As more in-migration takes place by a population with urban or suburban wants, the cost of services created by each new resident can not be covered by the newly generated property tax, without a tax increase (fig. 9). Landowners holding land with speculation in mind will be encouraged to sell or subdivide. Others, who may not have speculation in mind, particularly older residents with fixed incomes, will be forced to enter the market and sell or subdivide. The town center's facade may remain intact, but the town will no longer be small, let alone rural.

With improvements in transportation, the outlying areas have become directly focused on the town center, with no economic need for road connections. In the past the road interconnections were no doubt significant to a rural economy while today accessibility to the interstate and larger, nearby towns is more important. Services such

as police, fire and medical aid are all located at the confluence of the main town roads at the town center. The greatest effect of reconnecting outlying roads would be to encourage more land speculation and subdivision, with the new tax burden outweighing the service costs caused by these interconnections. (Though there are safetey considerations in the case of dead end roads.)

If recent trends are a good indication of the future, the town will continue to attract more families with school aged children and urban tastes, replacing those without the motivation to stay in the community due to an increasing tax burden. New residents are more likely to be from Seattle, Washington or Houston, Texas, than from Hartford, Vermont.

Continued rapid growth may result in a high turnover in the population, alienating those who are currently attracted to the 'small town' atmosphere. Yet given that 75% of the towns population seems to be invested in property that is either not currently sub-dividable or not burdensome enough to force subdivision, a majority of the towns population may have the political will to slow growth.

For a local government to control enterprising speculation in land, without the appearance of being meddlesome and overbearing will be difficult. The modification of land-use rights through stricter zoning and other regulations could only be accomplished through an informed electorate in favor of such restrictions. The possibility of tax reduction incentives for owners keeping large parcels undeveloped could meet with resistance from small parcel owners who might be required to pay more tax without an alternative revenue source. To thwart speculative enterprise, which

has been occurring in one form or another for more than 200 years of the Town's history, poses a stiff challenge for town government.

References Cited

Allen, Ira. The Natural and Political History of the State of Vermont: Appendix Containing Answers to Sundry Questions Addressed to the Author. London: J.W. Meyers, 1798

Bassett, T.D. Seymour. "Migration to Vermont, 1761-1836": The Vermont Geographer . No. 1, 1972

Dewey, William Worthington, Dewey's Reminiscences. Hanover: Hanover Historical Society, 1964

Goddard, M.E., Partridge, Henry V., A History of Norwich. Hanover: Dartmouth Press, 1905

Henretta, James A., "*Mentalite* in Pre-Industrial America," William and Mary Quarterly, Vol. 35, No. 1, 1978

Hobbs-Pruitt, Bettye. "Self-Sufficiency and the Agricultural Economy of Eighteenth-Century Massachusetts". William and Mary Quarterly. vol. xli, no. 3, 1984

Jellison, Charlea A., Ethan Allen Frontier Rebel. Syracuse: Syracuse University Press, 1969

Lemon, J.T., "Early Americans and their Social Environment": Journal of Historical Geography. vol. 6, no. 2, 1980

McKendrick, Neil, The Birth of a Consumer Society: The Commercialization of Eighteenth Century England. Bloomington: Indiana University Press, 1982

Marx, L., The Machine in the Garden: Technology and the Pastoral Ideal in America. New York: Oxford University Press, 1964

Meeks, Harold A., Time and Change in Vermont: A Human Geography. Chester Ct.: The Globe Pequot Press, 1986

Sinclair, Robert. "Von Thunen and Urban Sprawl": Annals of the Association of American Geographers. vol. 57, no. 1, 1967

Steahr Thomas E. and Luloff A.E., eds., The Structure and Impact of Population Redistribution in New England. University Park Pa.: Northeast Regional Center for Rural Development, 1985

Vance, James E. Jr., The Merchants World: the Geography of Wholesaling. Englewood Cliffs N.J.: Prentice Hall, 1970

Von Thunen, J.H., The Isolated State. London: Pergamon Press Ltd., 1966

Wildavsky, Aaron. "Resolved that Individualism and Egalitarianism be made Compatible in America: Political-Cultural Roots of Exceptionalism", Is America Different? A New Look at American Exceptionalism. ed. Byron E. Shafer. Oxford: Clarendon Press, 1991

Wood, J.S., "The Road Network and Interaction in Vermont" The Vermont Geographer, No. 2, 1975

Wood J. S. and Steinitz M., "A World we have Gained: House, Common, and Village in New England". Journal of Historical Geography. vol. 18, no. 1, 1992

Zea, Philip. "The Settlement of Plainfield", Choice White Pines and Good Land: A History of Plainfield and Meriden New Hampshire. ed. Philip Zea and Nancy Norwalk. Portsmouth: Peter E. Randall Publisher, 1991

Zea, Philip, Rural Craftsmen and Design, in Jobe, Brock & Kaye, Myrna. New England Furniture: The Colonial Era: Boston: Houghton Mifflin Company, 1984

Other Sources:

Maps from the Baker Map Room: 1824, 1855, 1869, 1940, 1963
Map from the Norwich Town Hall: 1791, 1931, 1991

Special help was provided by Virginia Close in providing reference sources for Norwich maps, relevant books and the agricultural and Industrial census data.

Tables of acreage amounts and parcel distribution researched and produced at the Norwich Town Hall, with the help of the Town Clerk, Karen Porter, the Town Zoning and Planning Commissioner Phil Dechert, and Town Lister Jim Jacobson.

Graphs used were supplied by the Planning Commissioner and are taken from documents prepared by Douglas J. Kennedy and Associates for the Norwich Planning Commision as noted.

TABLE 1

1824 MAP: I INTERSECTION VALUES

Section	Intersections	
	Number	Value
A	1	
B	2	2
C		
D		
E	2	2
F	1	1
G		
H		
I	6	8
J	2	
K	4	4
L	1	1
M	2	2
N	2	2
O	1	1
P	1	2
Totals	25	25

1855 MAP: I INTERSECTION VALUES

Section	Intersections	
	Number	Value
A	6	6
B	6	9
C	3	3
D	1	1
E		
F	4	4
G	3	3
H	3	3
I	4	4
J	10	11
K	4	4
L	6	7
M	9	10
N	6	6
O	3	4
P	14	14
Totals	82	25

Source: Norwich Town Maps

TABLE 2

1869 MAP: I INTERSECTION VALUES

Section	Intersections	
	Number	Value
A	6	6
B	8	10
C		
D	1	1
E		
F	2	2
G	4	4
H	2	2
I	2	2
J	14	15
K	3	3
L	5	5
M	6	7
N	9	9
O	1	7
P	13	14
Totals	77	87

1931 MAP: I INTERSECTION VALUES

Section	Intersections	
	Number	Value
A	7	7
B	7	8
C		
D	1	1
E		
F	3	3
G	3	3
H	1	2
I	5	5
J	12	13
K	4	4
L	5	6
M	6	7
N	6	6
O	5	5
P	8	10
Totals	73	80

Source: Norwich Town Maps

TABLE 3

1940 MAP: I INTERSECTION VALUES

Section	Intersections	
	Number	Value
A	2	2
B	7	11
C		
D		
E		
F	2	2
G	3	3
H	2	2
I	7	8
J	15	15
K	3	5
L	4	4
M	9	9
N	7	7
O	5	5
P	9	10
Totals	75	83

1963 MAP: I INTERSECTION VALUES

Section	Intersections	
	Number	Value
A		
B	5	6
C		
D		
E		
F		
G	2	2
H	1	1
I	2	2
J	27	27
K	4	5
L	2	2
M	5	5
N	6	6
O	4	4
P	10	11
Totals	68	71

Source: Norwich Town Maps

TABLE 4

1993 MAP: I INTERSECTION VALUES

Section	Intersections	
	Number	Value
A		
B	5	6
C		
D		
E		
F		
G	3	3
H	1	1
I	4	4
J	14	14
K	4	4
L	2	2
M	5	6
N	4	4
O	2	2
P	5	5
Totals	49	51

Source: Norwich Town Maps

TABLE 5.
Acreage by Size Range: Absolute Numbers and Percentages of Total Town Acreage

Acreage	Year 1812**	1823**	1828	1850*	1850	1870*	1890	1930	1962	1993
<1-1			5	0	45	0	113	108	383	189
%			0.05	0	0.19	0	0.45	0.42	1.51	0.6
>1-10			232	99	150	134	0	377	653	2161
%			2.45	0.53	0.63	0.66	0	1.47	2.58	7.78
>10-20			766	297	239	221	443	664	779	2738
%			8.09	1.58	1.01	1.09	1.78	2.6	3.07	9.85
>20-50			4096	2023	2195	1657	2446	2766	2668	4091
%			43.27	10.73	9.26	8.15	9.83	10.81	10.53	14.73
>50-100			3457	9034	8319	7771	8323	7944	5005	5713
%			36.52	47.92	35.1	38.23	33.44	31.05	19.75	20.57
>100-200			910	5771	6789	9032	10692	10413	8673	7224
%			9.61	30.64	28.64	44.44	42.96	40.7	34.22	26.01
>200-300				1679	4859	1510	2423	2000	3263	3154
%				8.9	20.5	7.43	9.73	7.82	12.88	11.35
>300				350	1106	0	450	1314	3918	2495
%				1.8	4.67	0	1.81	5.14	15.46	8.98
Total Acres	7495	8191	9466	18853	23702	20325	24890	25586	25342	27765
Total Population	1812	1985	2316	1978	1978	1639	1304	1371	1793	3093

Source: Grand Lists, Town of Norwich

* Data from the agricultural census. ** Data from the closest US census.

TABLE 6.
Land Parcels by Size Range: Number of Parcels and Percentage of Total Parcels in Norwich

	Year									
Acreage Range	1812**	1823**	1828	1850*	1850	1870*	1890	1930	1962	1993
<1-1			5	0	45	0	113	108	383	347
%			1.94	0	14.37	0	28	21.34	47.93	23.38
>1-10			37	18	30	25	0	87	144	644
%			14.39	7.03	9.5	10.16	0	17.19	18.02	43.39
>10-20			43	18	14	13	27	40	51	213
%			16.73	7.03	4.47	5.28	6.7	7.91	6.38	14.35
>20-50			119	52	49	43	65	79	76	126
%			46.3	20.31	15.65	17.48	16.29	15.61	9.51	8.49
>50-100			46	118	105	97	105	103	64	83
%			17.89	46.09	33.54	39.43	26.32	20.36	8.01	5.59
>100-200			7	44	48	63	79	72	58	52
%			2.72	17.18	2.55	25.61	19.8	14.23	7.25	3.57
>200-300				5	19	3	9	8	14	13
%				1.95	6.07	1.22	2.26	1.58	1.75	0.87
>300				1	3	2	1	9	9	5
%				0.39	0.95	0.81	0.25	1.78	1.12	0.33
Total Parcels			257	256	313	246	399	1305	799	1136
Total Population	1812	1985	2316	1978	1978	1639	1304	1371	1793	3093

Source: Grand Lists, Town of Norwich

* Data from the agricultural census. ** Data from the closest US census.

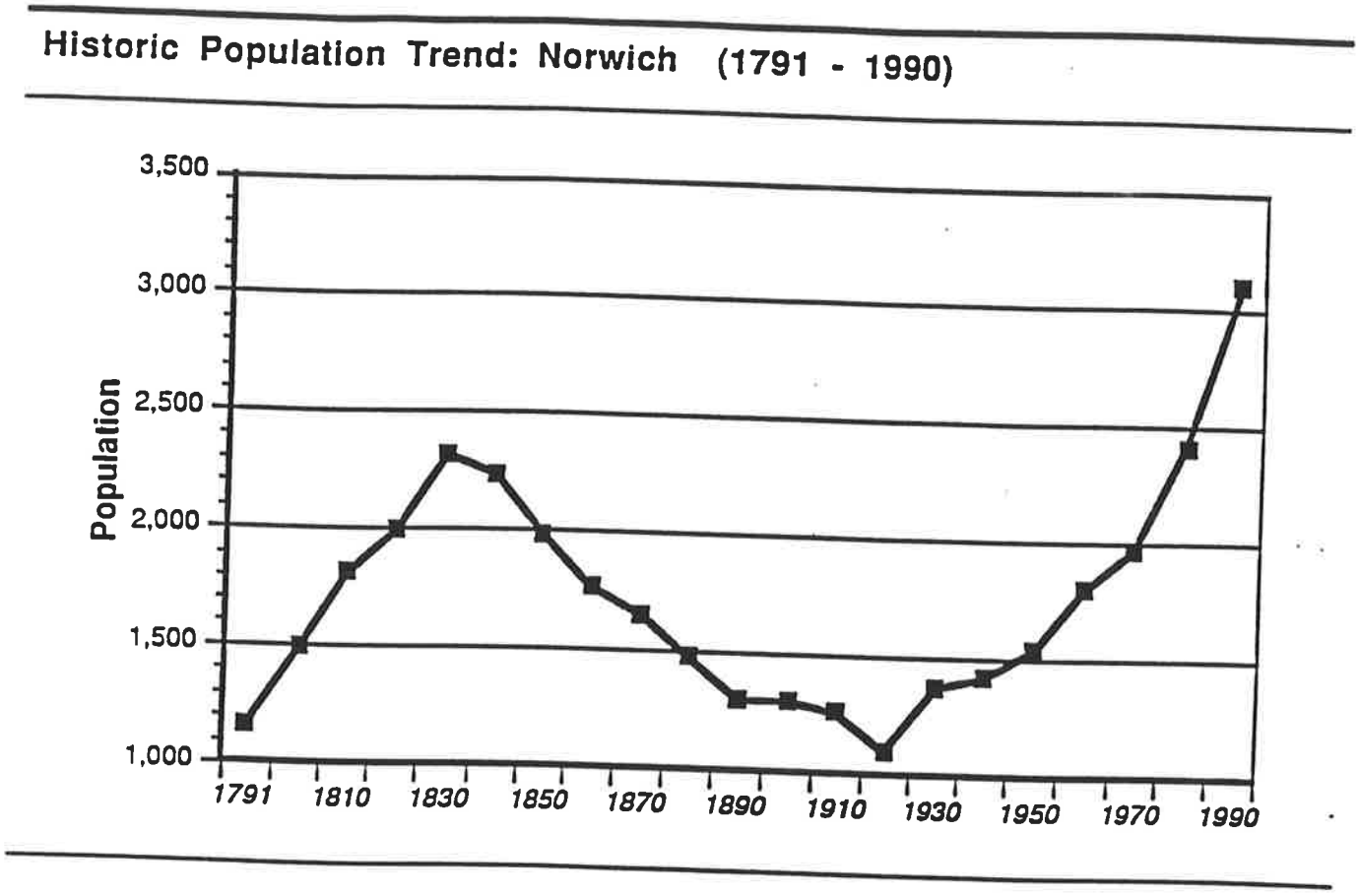
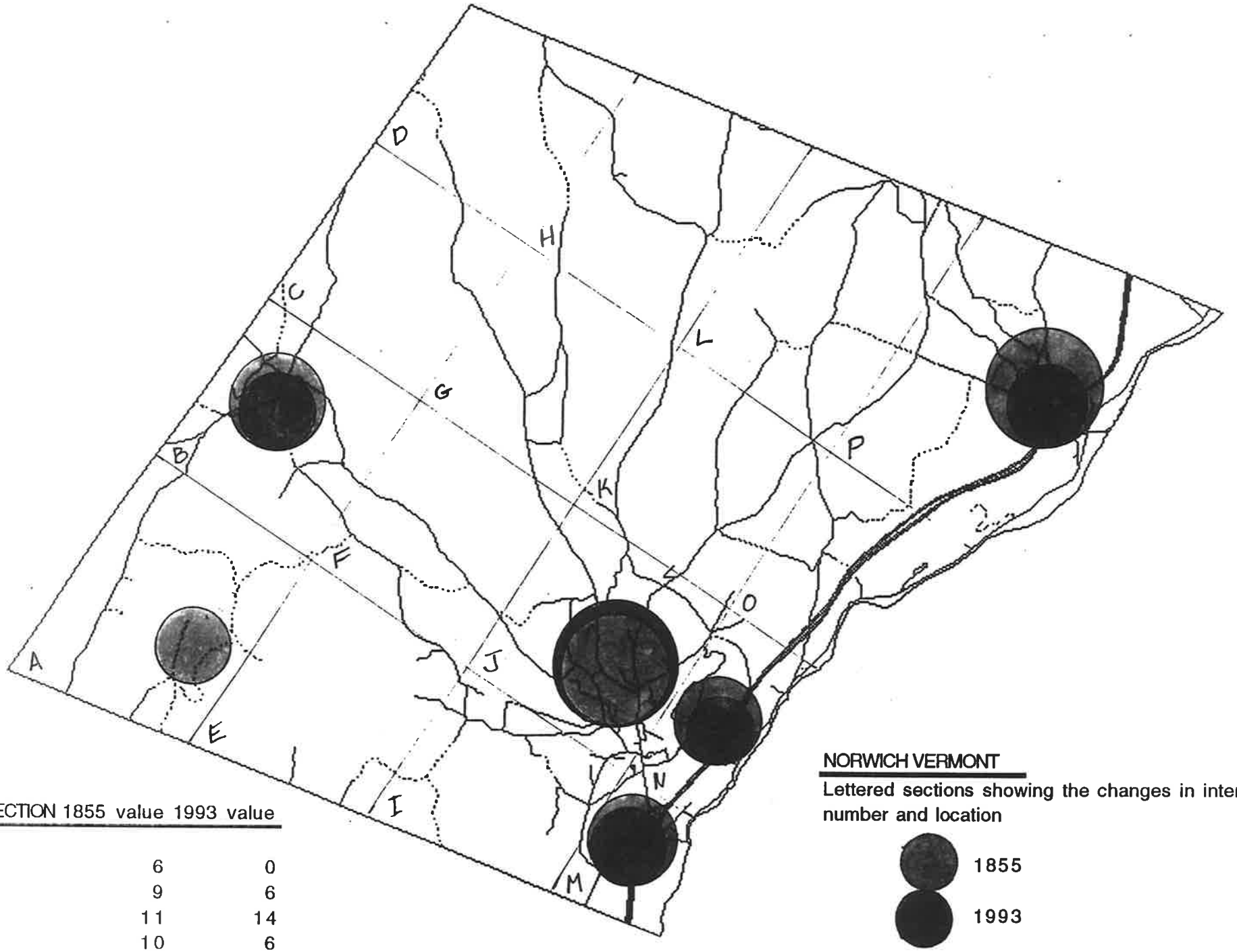

Historic Population Trend: Norwich (1791 - 1990)
Population
3,500
3,000
2,500
2,000
1,500
1,000
1791
1810
1830
1850
1870
1890
1910
1930
1950
1970
1990

Fig. 1



SECTION	1855 value	1993 value
A	6	0
B	9	6
J	11	14
M	10	6
N	6	4
P	14	5

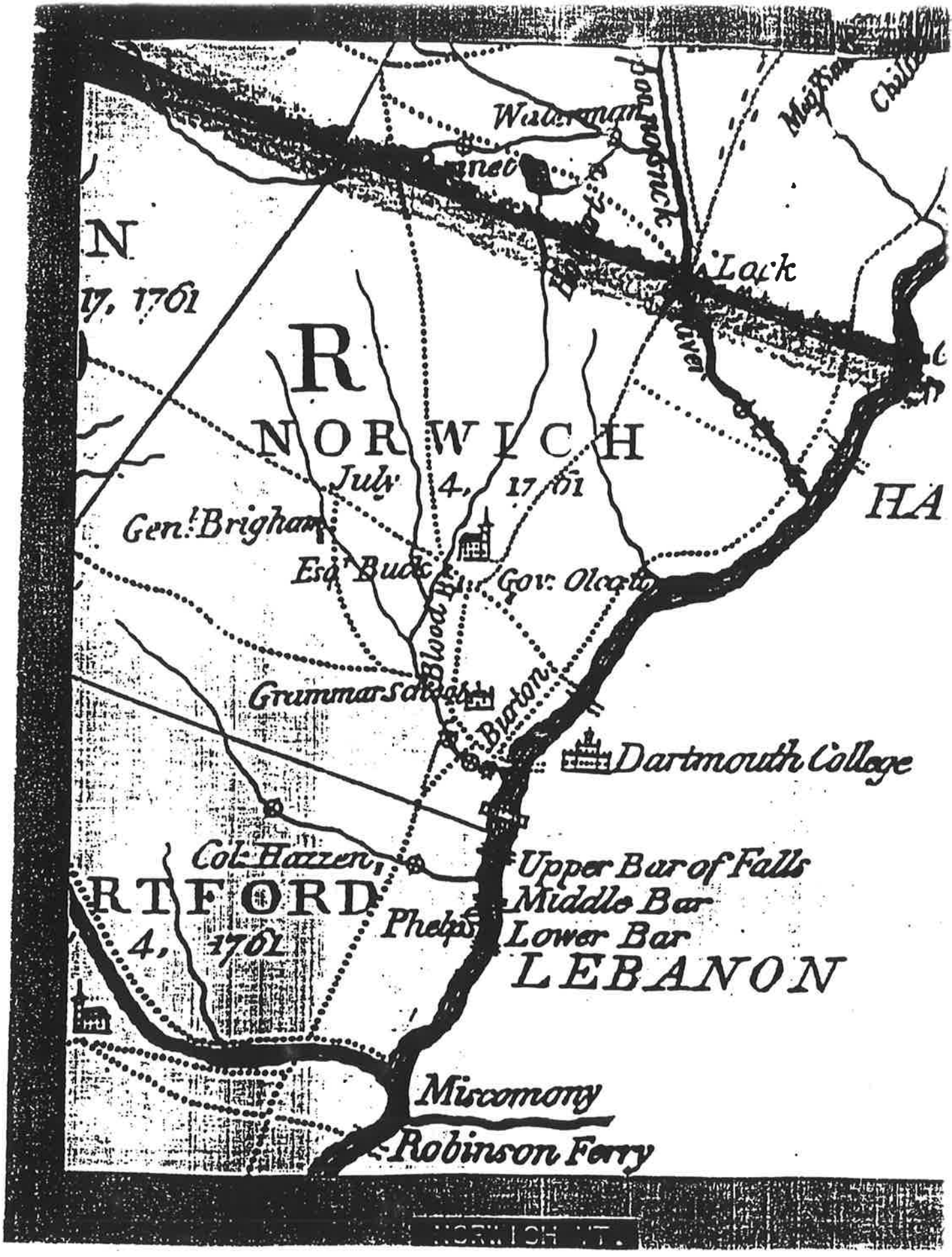
NORWICH VERMONT

Lettered sections showing the changes in intersection number and location

1855

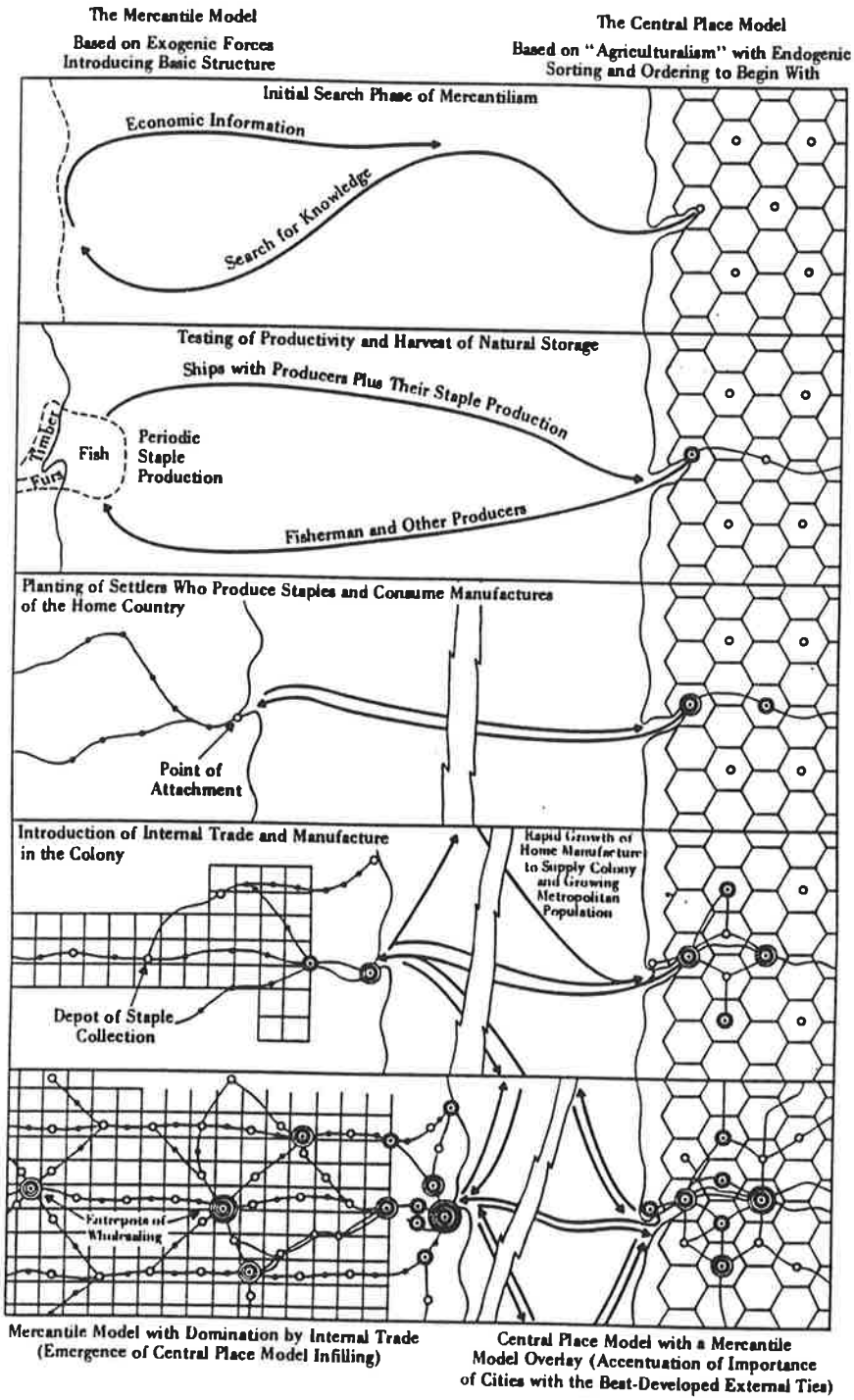
1993

Fig 2



Source: Copy of map at Norwich Town Hall

Fig. 3



Source: Vance, James E. Jr.

Fig. 4

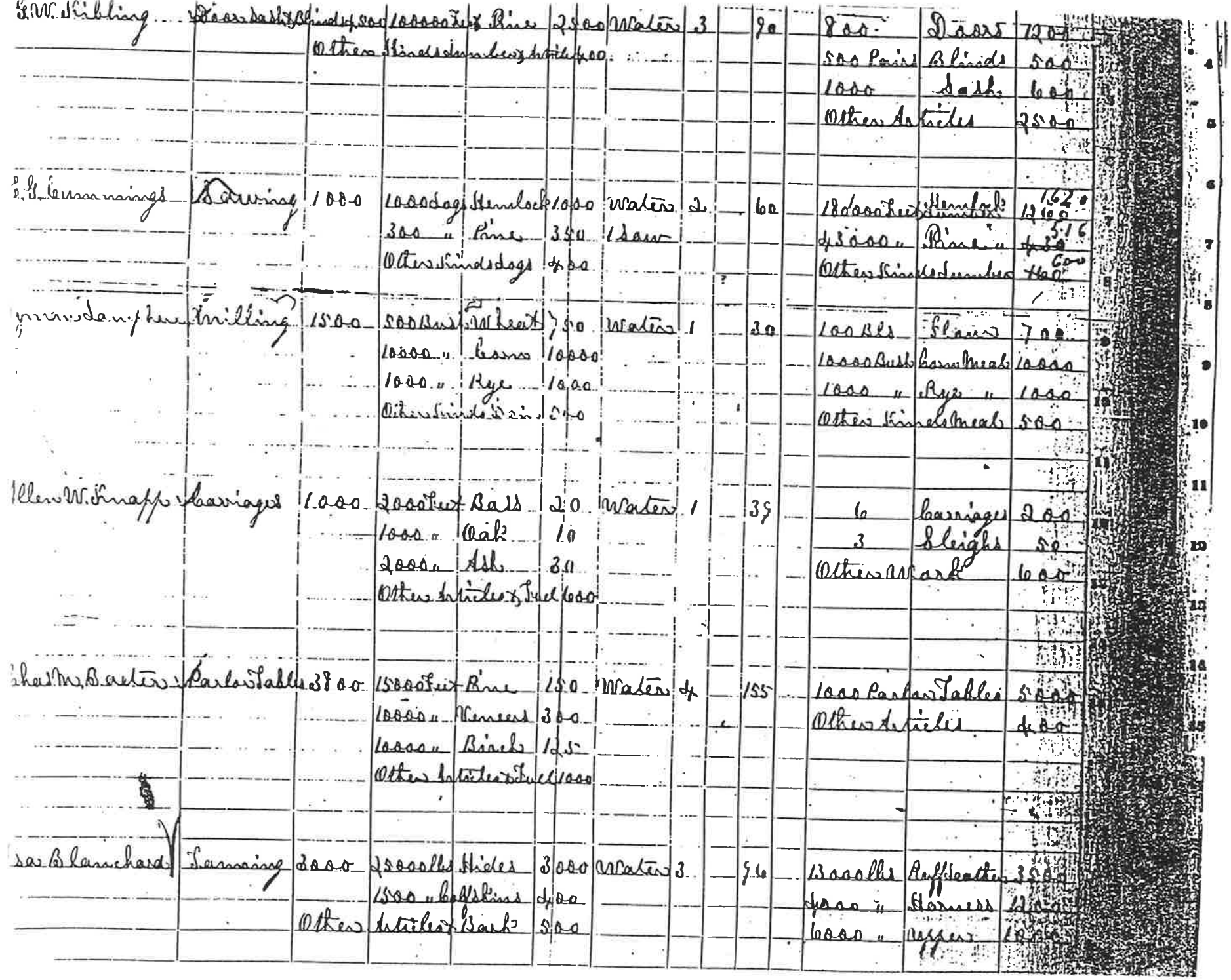
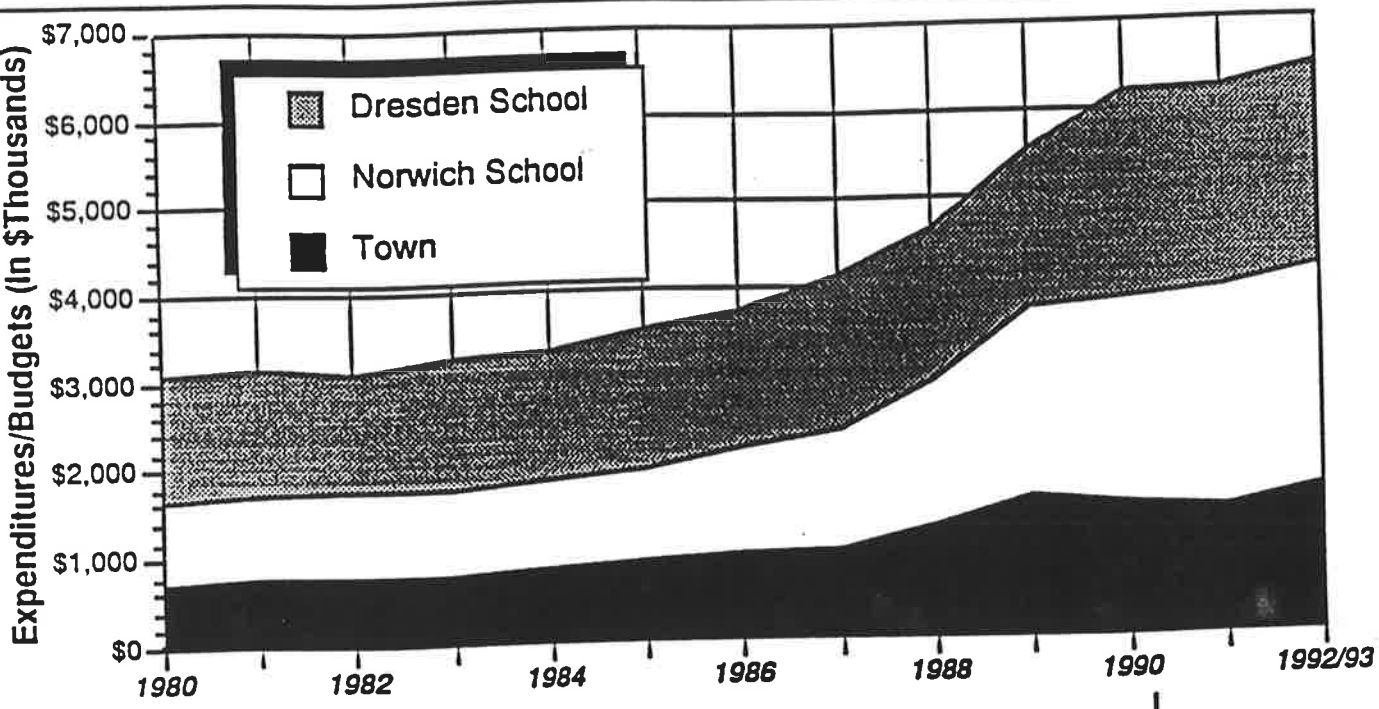


Fig. 5

Source: 1850 U.S. Industrial Census

Town and School Budget Trends: Norwich (1980 - 1993) (Adjusted)



	Adjusted Budgets ($Thousands)							% Increase
	1980	1984	1985	1989	1990	1991	1992/93	1980 - '93
Town	$736	$838	$896	$1,597	$1,493	$1,426	$1,660	126%
Norwich School	$927	$1,016	$1,054	$2,124	$2,350	$2,509	$2,483	168%
Dresden School	$1,419	$1,478	$1,583	$1,821	$2,318	$2,259	$2,340	65%
Totals	$3,081	$3,332	$3,534	$5,542	$6,161	$6,194	$6,483	110%

Fig. 6

15. Norwich's Role in the Regional Economy: Comparative Employmer Population Ratios for Area Communities (1990)

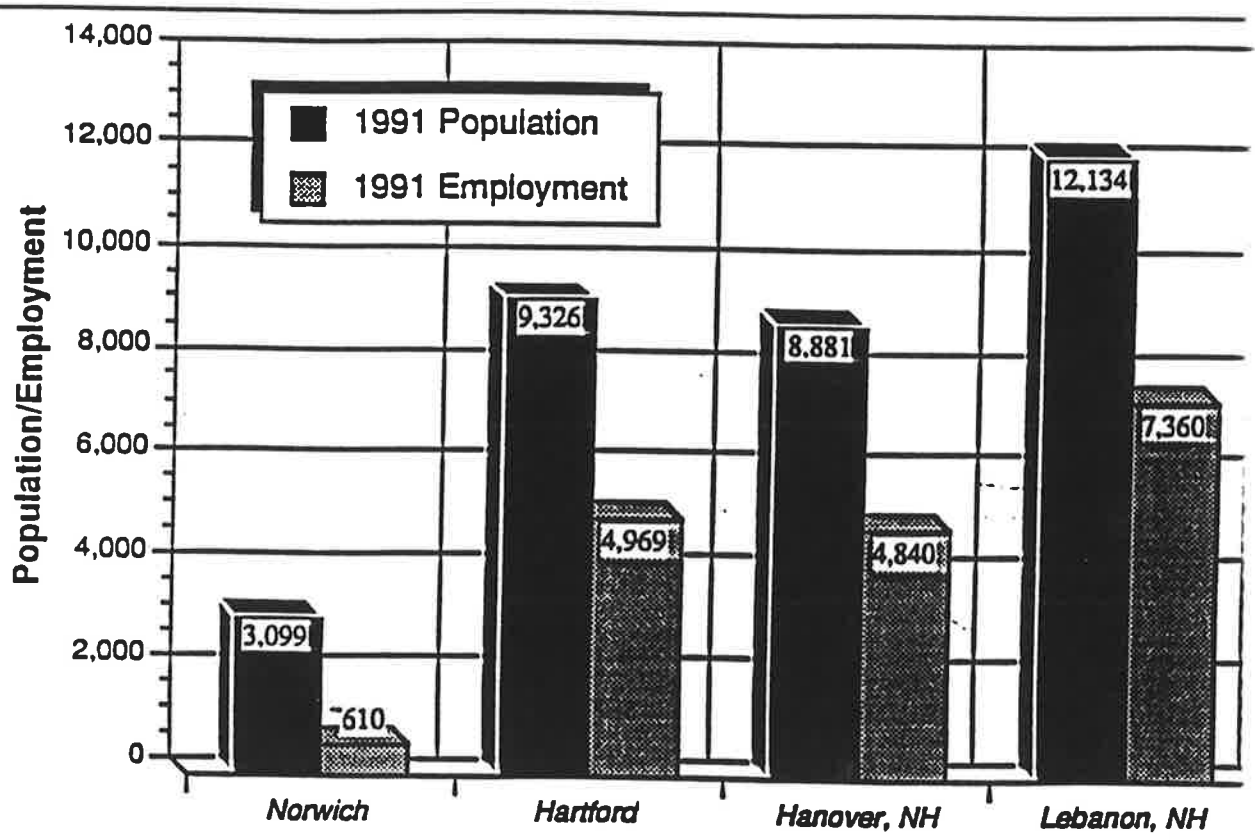


Fig. 7

Source: Preliminary Report by Douglas J. Kennedy and Associates for the Norwich Planning Commission

6. **Married Families with Children as Percentage of All Households: Norwich, Windsor County, Vermont (1980, 1990)**

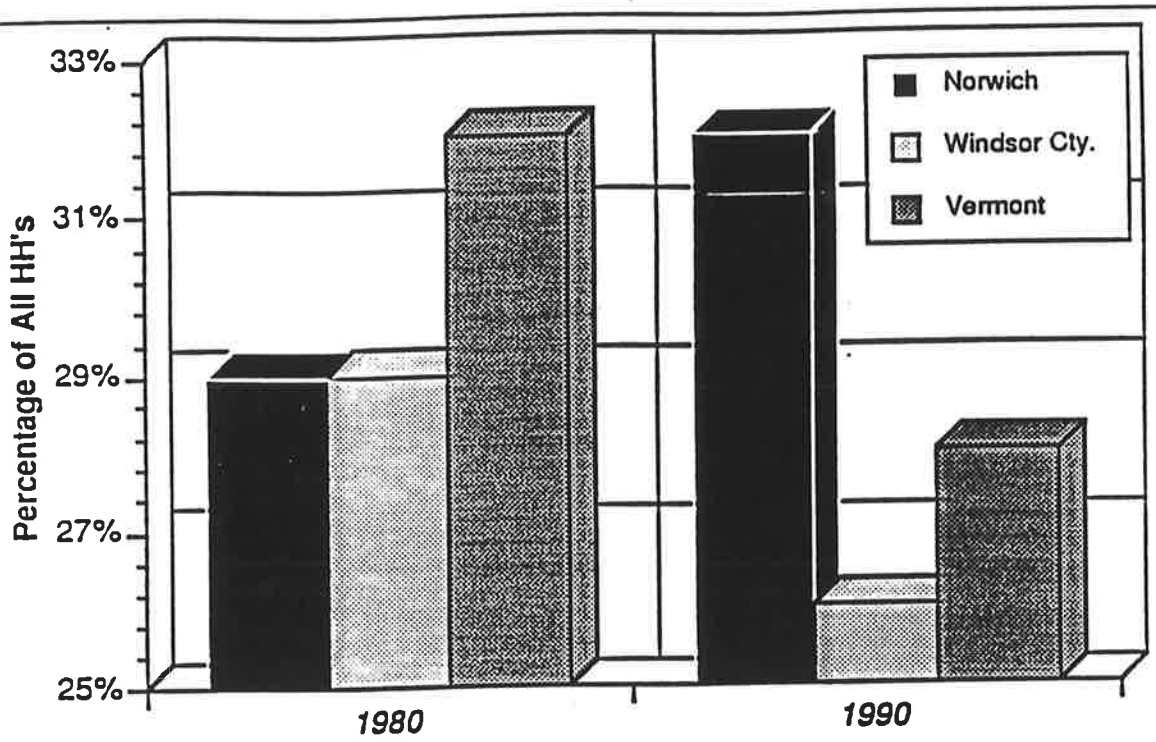
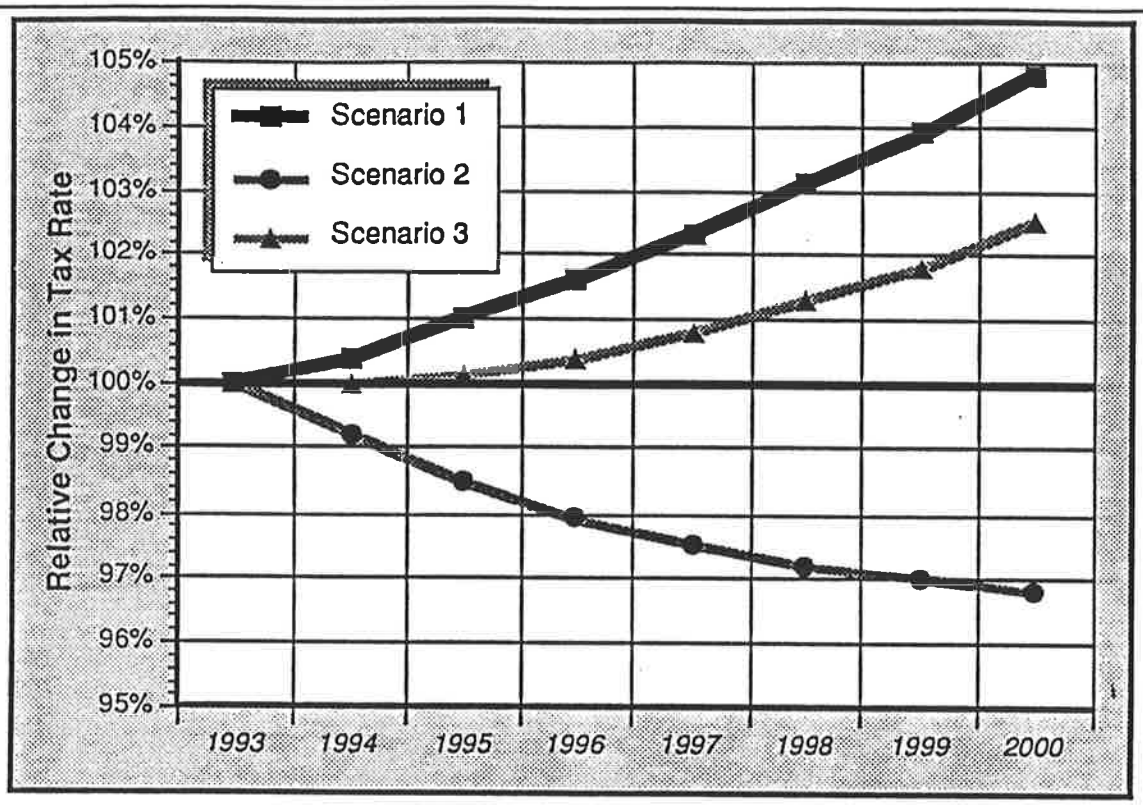


Fig.8

Source: Preliminary Report by Douglas J. Kennedy and Associates for the Norwich Planning Commission

2. Project Tax Rate Trends Under Three Development Scenarios: Norwich (1993 - 2000)



In relative terms, Scenarios 1 (Current Trends) and 3 (Increase in Non-Residential) would both result in increases in the tax rate. However, an increase in Non-Residential property (Scenario 3) would modify this increase. Scenario 2 (Decrease Residential Trend) would result in a relative decrease in the tax rate. While it unlikely that the tax rate will actually decrease, the analysis does show the comparative effects of the three scenarios.

Overall, the analysis indicates that a strong rate of residential growth will tend to increase tax rates in Norwich, as this type of growth generates new residents and school children, both of which generate service costs. However, even a moratorium on residential growth would not necessarily keep school enrollment from increasing. Enrollments have increased strongly in recent years even though housing development has fallen off. In many instances, families with children are moving into housing units which formerly had no school children.

Goals and Policies

Recently, Norwich has had a respite from the fast paced growth of the 1980's. Even a cursory review of town and school finance makes it clear that the cost of providing services and facilities increased dramatically during those growth years. These increased costs resulted not only from growth, but from the desire of Norwich residents to improve the level of services available. Given Norwich's popularity as a residential location, it is reasonable to anticipate that a resurgence in the regional economy

Figure 9