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The Reversal of Production and Consumption at the Minnesota State Fair

by Mark Ritson

One of the most important changes in Western society during the last millennium is the shift from a culture centered on production to one focused on consumption. The modern era, which dates roughly from the Renaissance period of the fourteenth to seventeenth centuries, was founded on the belief that progress achieved through science and production could reproduce paradise on earth. Modernist culture considered production—one's skill at a particular craft or trade—the source of an individual's social worth and identity, and dismissed consumption as a necessary but ultimately wasteful and destructive activity.¹ After World War II, some theorists contend, Western culture experienced a reversal in the relationship between production and consumption. In stark contrast to modernist culture, this so-called "postmodernist" culture de-emphasized the production process, and celebrated the consumption of goods as the source of individual value and social identity. In short, the "production ethic" of the modernist period was replaced by a "consumption ethic," and the act of consuming came to represent the quintessential activity of the postmodern consumer culture so familiar to us today.²

¹A. Fuat Firat and Alladi Venkatesh, "Postmodernity: The Age of Marketing," *International Journal of Research in Marketing* 10 (1993): 227–249.

²Mike Featherstone, *Consumer Culture and Postmodernism* (Beverly Hills, CA: Sage, 1991); and Frederick Jameson, "Postmodernism and Consumer Society," in *The Anti-Aesthetic: Essays on Postmodern Culture*, ed. Hal Foster (Port Townsend, WA: Bay, 1983), pp. 111–126.



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Despite the general acceptance that such a cultural reversal has occurred, no empirical evidence has been found to support this theory, or to demonstrate how, when, and why the reversal took place. This article attempts to provide such evidence. Using a grant from CURA, and aided by the Minnesota Historical Society and the Minnesota State Agricultural Society (MSAS), I used the Minnesota State Fair as a historical case study to investigate the relationship between production and consumption during the modernist and postmodernist periods. The results of my analysis are presented here.

Methods of Analysis

For this study, I collected and analyzed three kinds of historical data about the Minnesota State Fair. First, I analyzed premium list data for the period 1883–1995 as a measure of long-term changes in production. Premiums are the cash purses that are awarded to exhibitors who present prize-winning displays of their production skills. Historically, these premiums were advertised in advance of the fair in order to attract farmers to the event and encourage them to exhibit their products. Once inflation is controlled for, the total dollar amount of premiums offered each year provides a longitudinal index of the emphasis on production-related activities at the fair.

In order to trace parallel changes in consumption, I also analyzed concession data from the fair for the period 1883–1995. Concession stands are the commercial stalls and food tents allocated to local vendors for the sale of goods and services. From the fair's outset, side-show and refreshment vendors had to bid for the use of a concession stand in order to ply their trade. My analysis incorporated data for all such stands that engaged in the sale of any consumable goods or services. Analysis of these concession data for each year provides a longitudinal index of the rate of consumption at the fair.

The third type of data analyzed consisted of spoken or written discourse about the fair. These qualitative data were collected from a variety of sources. A primary source was the annual reports

of the Minnesota State Agricultural Society (the organizers of the fair), which contained the minutes of each meeting, debates and addresses by invited speakers from the community, and the annual speeches of the MSAS president and secretary responsible for organizing each fair. In addition, all available popular press accounts about fair activity—from the original territorial fairs of the 1850s to the 1997 Minnesota State Fair—were analyzed. These accounts were drawn from local Minneapolis and St. Paul newspapers, as well as national publications such as *Harper's* and *The Farmer*. Photographs from the state archives were another source of data, as were popular culture artifacts such as novellas, films, musicals, and cartoons. In all, over 14,000 pages of data were read and analyzed, with the goal of chronicling in human terms the relationship between production and consumption at the Minnesota State Fair.

Quantitative Measures of Production and Consumption at the State Fair

Figure 1 compares premium and concessions data for the Minnesota State Fair from 1883 to 1995, adjusted for inflation. This graph represents the respective roles of production and consumption at the fair, and demonstrates how the relationship between these two cultural activities changed throughout the fair's history.

From this data, it is possible to identify three distinct historical periods that characterized the state fair. During the production era, from 1883 to 1932, premium awards dominated concessions income. Aside from two short periods around 1910 and then again during World War I, significantly more revenue was used to reward production exhibits than was received for concession stands. From 1933 to 1946, a transition period occurred in which the dollar amount of premium awards and concessions income was relatively equal. Finally, during the consumption era, from 1947 to the present, concessions income increased steadily while premium awards initially remained constant and then began to diminish in real terms. In short, the quantitative data from these three periods seem to confirm the existence of a production-consumption reversal, which many theorists argue marks the emergence of a consumer culture in the West.

Qualitative Measures of Production and Consumption at the State Fair

Although the data cited above clearly show that the (modernist) production-oriented fairs of the early twentieth century gave way to the (postmodernist) consumption-oriented fairs of today, they do not tell the entire story. Quantitative data show us only *what* changes happened at the fair and *when* they

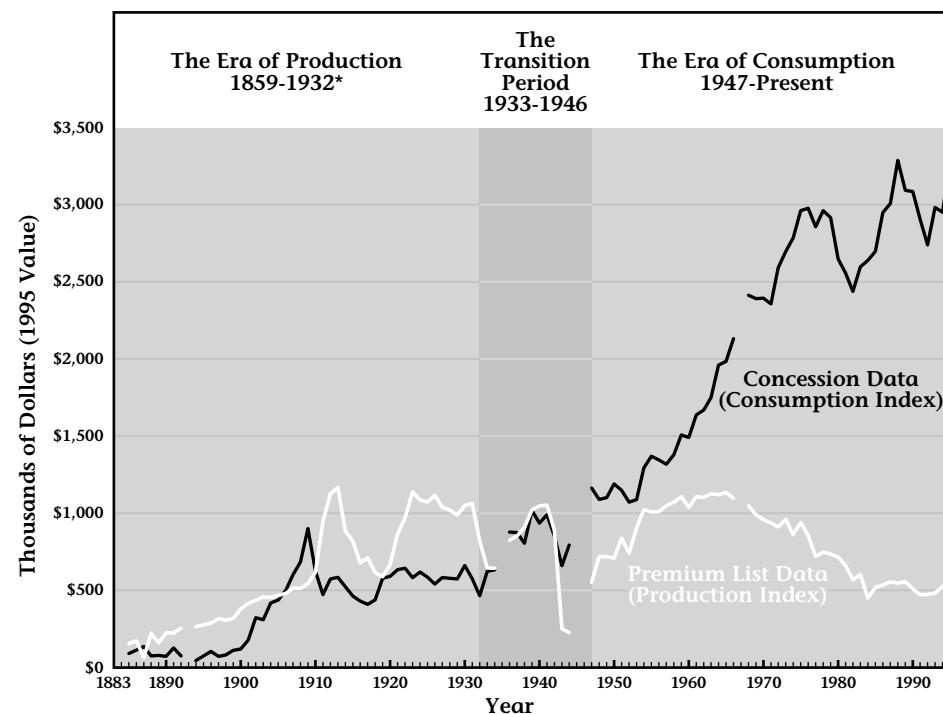


Figure 1. Premium List and Concession Data for the Minnesota State Fair, 1883–1995

* Data for the years 1859–1882 were unavailable



In the nineteenth century, agricultural exhibits at the fair served as a tangible index of progress. The annual display of agricultural products demonstrated both the fertility of the soil and the productivity of the people of the state.

happened; they do not give us a sense of *why* this production-consumption reversal occurred or, equally important, *how* this reversal came about and was actually experienced by everyday Minnesotans attending the state fair. In the following sections, I attempt to look beyond the statistics in order to understand the nature of the production-consumption transition identified above. Specifically, what did the fair mean to the people who organized and attended the event, and how did these meanings change over time? Like the quantitative data cited above, qualitative data show that the Minnesota State Fair has been characterized by three distinct historical periods: an era in which the culture of the fair was dominated by production, an era characterized by transition from a production-orientation to a consumption-orientation, and finally an era in which the culture of the fair was dominated by consumption. Each of these periods is now described in turn.

The Era of Production (1859–1932). Although the territorial fairs that preceded Minnesota's statehood in 1858 are often regarded as precursors to the state fair, most historians date the first annual Minnesota State Fair to the event held in Minneapolis in October 1859. The fair lasted three days, and was

attended by up to 3,000 people each day. The premiums awarded that year for best exhibits of production ranged from a \$4 purse for the best bull to \$2 for the finest display of wheat. Over the next 20 years, the event grew rapidly and made an important contribution to the growth of the state, the culture of Minnesota, and the production ethos of the period. These contributions were recognized in 1885 by an act of the state legislature that defined the Minnesota State Fair as:

the annual exhibition of the agricultural, stock breeding, horticultural, mining, mechanical, industrial and other products and resources of the State of Minnesota, including proper exhibition of arts, science, and all other public displays pertinent to or attendant upon exhibitions and expositions of human art, industry and skill.

As this definition suggests, the emphasis of the fair was squarely on production. In 1870, just under half of Minnesota workers were employed in agriculture, and the fair's exhibition of local products, machinery, and production methods made it the most important annual event in the state. The fair's emphasis on production was consistent with the American pioneer culture of the

mid-nineteenth century, which defined individuals by their ability to build a home, raise crops and livestock, and be productive in their new environment. Immigrants newly arrived to the Midwest confronted a world of material demands in which nothing awaited them except the land and its productive promise. Ralph Waldo Emerson observed that under such circumstances, individuals coined themselves with their labor, and the products of their labor represented the only visible sign of their power.

Reflecting this emphasis on production, the earliest state fairs served as a place for the practical study and discussion of production-related concerns characteristic of the pioneer lifestyle. Farmers could discuss livestock, observe new machines in action, and improve their productive techniques. Agricultural production itself was an index of progress. Initially this index simply confirmed that production was possible in the new territory. In describing the state's contribution to the World's Fair in 1853, for example, *The St. Anthony Express* proclaimed that the exhibit represented "tangible proof" that grains "could grow and ripen to the highest perfection in Minnesota." Over time, production came to represent triumph over the hardships of immigration and settlement. In 1860, the fair was held at Ft. Snelling, which had originally served as an important frontier base during the settlement of Minnesota. Those who attended the fair at Ft. Snelling keenly sensed the emergence of a production ethos that superseded the conflict inherent in the pioneer culture of the early settlers. In the book *History of the Minnesota State Agricultural Society*, written in 1910, local historians Darwin Hall and R.I. Holcombe were able to recall the tangible sense of progress that pervaded the 1860 fair.

The old fort never looked so attractive and the plains beyond and the lovely valley of the Minnesota never before so charming. No grim-visaged soldiers, no muskets and bayonets, no deep-mouthed cannon were to be seen on the parade grounds, but the grass was covered with peaceful and useful plows, harrows, and other farm machinery. There were cabbage heads and squashes in lieu of cannon balls and bombshells, while in the former barracks rare specimens of domestic manufacture, millinery, and other pretty things had taken the place of military

accouterments. No stern sentinels paced the ramparts, and the gateway was guarded only by Ike Conway, who charged but a quarter to let a visitor see the advent of what promised to be Minnesota's agricultural millennium.

As tangible evidence of Minnesota's agricultural millennium began to emerge, the fair and the increasingly impressive exhibits on display served as an index of production that demonstrated to fairgoers the magnitude of the Midwest's remarkable evolution. As the *Minneapolis Times* of September 15, 1890, reported:

Strolling through the crowded departments in Agriculture Hall and over the well-filled grounds, and seeing how the farmer had conscripted the laws of elements of the earth into his service, how our domestic animals have been transformed under his breeding and care until we scarcely recognize the original type in the new creation, how the coarse and common fruits have been metamorphosed into the grape, and apple, and plum, and berry, and melon, that take the palate captive with their delicious flavors, how our bleak western prairies have been made to bloom with products once thought peculiar only to more general latitudes, how every line of industry and every department of nature vie with each other in the production of rich and beautiful and helpful results, it almost seemed that the old condition of things had been repealed and we were living under a new order.

To the growing population of Minnesota, the fair also served as an annual celebration of the riches of the state. The display of goods produced by Minnesotans demonstrated the fertility of the soil and the productivity of the people of the state. It was hoped that such displays would persuade immigrants passing through to settle in Minnesota, rather than continue west. They were also an opportunity for residents to develop a sense of statehood and share in communal celebration of the fact that the gamble of immigration had paid off. As an 1890 promotional brochure for state immigration observed, Minnesota was filled with people who had "brought nothing with them to this new country except stout hands, a disposition to industry and faith in their



own future." The state fair was an ideal opportunity to present concrete affirmations of that pioneer faith.

By the end of the nineteenth century, remarkable strides were being made in manufacturing, farming, and mining, and the United States was reveling in a never-ending era of expansion that appeared to have no limit. In the final decade of the nineteenth century alone, the area of land farmed in Minnesota doubled, and agricultural productivity increased by more than 50%. The range of agricultural products also increased as different regions of the state began to specialize in particular products. With the possibilities of production confirmed, fairgoers no longer needed tangible confirmation of Minnesota's evolution from a "wilderness." Instead, the fair became a celebration and an index of the amount and diversity of production taking place in Minnesota. The MSAS secretary's report for 1895 exclaimed:

The Buildings were filled and many acres of outdoor area covered, space being at a premium everywhere. The main exposition building was so crowded that the old dining hall and two large tents were needed and utilized to accommodate the overflow. The horticultural and floricultural displays, in quantity, variety, and arrangement, have never been equaled at any previous fair. The agricultural display was great beyond description. The present year has been remarkably productive in all

branches of agriculture, and this exhibit fittingly represented the immense results of this season of unparalleled productiveness.

Aside from its role as an index of production, the fair had an important cultural impact by orienting fairgoers toward the goal of increased production levels. The emphasis throughout the production era was on progress and constant improvement, and the fair stood as an annual reminder that farmers had to match the potential of the land with their productive capabilities. The *Minneapolis Tribune* of September 9, 1890 noted:

Minnesota has already a national reputation as a dairy and grazing state. To maintain this position and rise to that supremacy which natural conditions seem to indicate as easily possible, the breeding of fine stock and the production of high grades of butter and cheese must be fostered and encouraged. . . . It is to awaken and stimulate in the farming community a desire for better things that the fair was established.

Similarly, the president of the MSAS proclaimed that the goal of the 1909 state fair was to ensure that "each farmer is stimulated to learn how to produce twice as much to the acre as he now produces, and at less cost."

Given the focus on production, the quintessential activity at every fair became the award of premiums, with

the ultimate premium—the blue ribbon—reserved for the finest example of a particular product. Prize winners were then exhibited as “living exemplars” of production perfection that every farmer should emulate, and farmers were offered education in the new “scientific” methods of production that would allow them to achieve such perfection and increase their yields. Classes held in tents throughout the fairgrounds taught them how to recognize better-quality crops and livestock, and generally improve their farming techniques. Farmers were also encouraged to use the new, more technologically advanced farm machinery exhibited on the fair’s Machinery Hill. By 1909, the President of the MSAS concluded that one of the major advantages of the fair was that it enabled local farmers to “understand the benefits which science has conferred on agriculture.” Science, method, and education became the new watchwords at the fair.

Consistent with the modernist belief that consumption was a necessary but ultimately wasteful activity, a clear distinction was maintained during the production era of the fair between the celebration of the product and its consumption. In a letter to the governor of Minnesota in 1914, the president of the MSAS described the fair as “the annual assembling of the best products of the fields and orchards of Minnesota . . . for the *inspection and enlightenment* of the citizenship of the state” (emphasis added). Indeed, visitors were invited—even encouraged—to inspect and learn about the products displayed at the fair; to have consumed these products, however, would have been to engage in a form of conspicuous consumption alien to modernist culture. Competitive exhibits such as the fruit and vegetable displays were presented to fairgoers behind walls of chicken wire, while the results of the cooking, pickling, and baking competitions were exhibited in locked glass compartments. None of the displayed items were offered for sale to the visiting public.

Although concession stands were tolerated as a necessity for hungry fairgoers, their presence raised eyebrows. W. Frisbie, editor of the *Minneapolis Daily News*, complained about the “promiscuity of food at the State Fair” in an address to the MSAS in 1921.

Walking up and down the avenues of the Fairgrounds my nose and other noses have been assailed with



Because consumption was considered a wasteful activity during the production era, fairgoers were permitted to inspect and learn about the products on display, but were generally prevented from consuming them.



various flavors of cooking food, which it seems to me is too promiscuous. . . . Possibly those concessions are needed to help foot the bills, but it seems that the places where opportunities are forced upon you for eating at the State Fair are a jar upon the ensemble.

Every attempt was made to ensure that the sale of food and entertainment did not intrude on the production ethos that dominated the fair. In 1895, the MSAS president proudly declared that at no time under his management had the sale of concession space at the fair ever been made “at the expense of exhibitors.”

In 1907, the MSAS secretary admitted to a lapse in management that year because the aisles of the main exhibit building had not been "cleared of the candy counters and souvenir booths which now clutter them up and obstruct passage of the crowds and convenient inspection of the exhibits." Efforts were made to separate areas of the fair devoted to production and consumption. In 1904, all the amusement stalls were confined to a separate enclosure called The Pike where, according to the MSAS secretary, "their noise and clamor could not distract the attention of those who were interested only in the more substantial features of the fair." In 1909, odors emanating from the food concessions resulted in their being relocated to a part of the fairgrounds that became known as Hamburger Row. MSAS even created a new position—the superintendent of concessions—to police concessionaires and restrict sales activity on the part of exhibitors. In 1909, the superintendent reported that he would like to eliminate the "show business" of some exhibitors; under his supervision, "Exhibitors would be permitted to show their wares in a quiet manner but there must be no hawking of goods."

The Transition Period (1933–1946). During the transition period of the Minnesota State Fair, which coincided roughly with the Great Depression and World War II, the distinction between production and consumption began to erode, and both came to be seen as important attractions for the fair-going public. As the head of the Farm Credit Administration noted in a 1936 speech to the MSAS, "the average person's conception of a Fair is a place where one finds a combination of animals and plants and flowers and exhibits of this sort and hot dog stands, horse races, and what not—a kind of polyglot." But many senior members of the MSAS actively resisted the dual emphasis on production and consumption that emerged during this period. A stirring speech by the MSAS president in 1940, for example, concluded with a question: "As boys we went to the county fairs from county to county to see what the farmers were doing to develop better livestock and agricultural products. Do we now have to change our fairs so as to be more of an amusement and carnival spirit for the public in order to receive revenues?" Despite their attempts, the MSAS proved unable to preserve the production-oriented state fair of the previous era; the social, economic, and

cultural changes taking place in American society during this period simply proved too powerful. Four such changes made an important contribution to the transition from production to consumption at the Minnesota State Fair: commercial expansion, market orientation, urban rationalization, and the legitimization of recreation.



The social, economic, and cultural changes taking place in the United States at the turn of the century foreshadowed the eventual transformation of the state fair into a "polyglot" of agricultural and livestock displays, commercial exhibits, and entertainment.

Immediately following the Great Depression, the United States experienced unprecedented commercial expansion. The combination of rationalized production methods and a workforce buoyed by immigrant labor meant that production of consumable goods began to increase at a much greater rate than population growth. National manufacturers such as Ford and General Electric attempted to loosen modernist constraints on consumer desire in order to increase demand for material goods, and state fairs were increasingly targeted by manufacturers, advertisers, and retail sponsors who saw them as important places for consumer contact. Rather than selling food or novelties, however, commercial exhibitors displayed larger, more expensive products. At the Minnesota State Fair, the Varied Industries Building had been set up in the 1920s to accommodate such displays.

Initially this building contained only a ragtag assortment of local blanket makers, trinket importers, and phonograph companies. After the Great Depression, the number of commercial exhibitors and the income they generated at the fair increased dramatically. Between 1936 and 1941, the stall income received from commercial exhibitors more than tripled. The nature of these exhibitors also began to change. By 1941, many of the 250 commercial exhibitors at the fair were large national manufacturers selling household appliances such as vacuum cleaners and sewing machines. As the relative size and importance of the manufacturers and retailers who sponsored these commercial exhibits grew, so did their influence with the MSAS, and this became an important factor in legitimizing the role and the activities of the consumer at the fair. The president of the International Association of Fairs and Expositions noted in a 1937 address to the MSAS:

[The Fair] provides a place for the manufacturer of goods to place a new article before the public and introduce it to thousands and hundreds of thousands who can see it. . . . The fair offers the commercial man or manufacturer an opportunity to show his goods in competition with others, not in competition for prizes as the farmer does, but in competition for the favor of the public which is even more important than premiums.

Economic interests created other important changes as well. The production orientation of the fairs of the previous period contrasted sharply with the market orientation that began to emerge during the transition period. Increasing agricultural production levels, improving production methods, and attaining idealistic levels of product quality, with no reference to consumer demand or desires, were the hallmarks of the modernist production ethos. The 1920s and 1930s, however, were a time of great upheaval in the farming economies of the Midwest. As they recovered from World War I, European countries became less reliant during the 1920s on agricultural products from abroad. As a result, agricultural commodity prices in the United States decreased by over 30% in less than five years. The Great Depression of 1929 dealt another blow to U.S. farmers as domestic demand for farm goods also

decreased. The result was a gradual shift in emphasis away from an exclusively production-oriented approach to agriculture and a growing sensitivity to the market. For the first time, farmers had to look beyond the product as the culmination of all their efforts and consider its eventual consumption as well. The Minnesota State Fair became a place for explicit marketing efforts designed to increase demand for local agricultural produce, and thereby increase consumption. The 1931 MSAS president's address proclaimed:

The fairs, not only the State Fair, but all the county fairs must realize that they have a new problem to solve, and that is one of surplus. . . . Instead of stressing this point of increased production fairs must change their curriculum to include in their course of study the problem of dealing with greater consumption.

In 1920, census data revealed that for the first time, more Americans lived in cities than on farms. The growth in urban population resulted from increasing numbers of jobs on the production lines and factory floors of America's emerging manufacturing centers. During the interwar years, entrepreneurs such as Henry Ford rationalized their production lines using time and motion studies. These studies resulted in individual workers being given specific production quotas each workday and assigned mundane, fragmented, and repetitive tasks on the new production lines. The effect on the economy was revolutionary, as productivity levels soared and the quantity of consumer goods increased. The effect on American culture was equally revolutionary. Rationalized production dehumanized labor and removed all sense of creativity. No longer able to find social value or social identity in either their labor or the production process, urban workers turned for satisfaction to the consumption of the goods that they produced.

The rationalization of the American workforce also produced a heightened sense of the distinction between work time and leisure, and led to the legitimization of recreation. Nineteenth-century American culture did not encourage recreational pursuits, because to explicitly value leisure time was to question the most basic precept of the Protestant work ethic: the moral preeminence of work. With the shift from a moral to a rational basis for labor and production during the twentieth century, American

society began to embrace leisure time and recreation. This change was reflected at the Minnesota State Fair in the growing importance and increased diversity of recreational activities. By the 1930s, the fair's promotional material focused heavily on entertainment features at the event. As early as 1913, D.C. Wing, the editor of the *Breeders' Gazette*, noted in an address to the MSAS:

A modern state fair is a celebration, a festival, a vacation, a recreation, its essential spirit is entirely foreign to the morbidly serious purpose which our toiling forefathers had in mind when they brought fairs into existence. We have outgrown many of the restraints and dogmas that may have been useful in earlier days. We demand more freedom, more joy, more life, than our ancestors dared even to seek.

money in savings. After the war ended, these cash reserves, the progressive growth policies instituted by the government, the need to make household purchases delayed during the war, and a general optimism on the part of the American public combined to fuel the consumer culture. Consumer spending rose by 60% between 1945 and 1950, and a succession of new products (televisions, transistor radios, Polaroid cameras) became everyday necessities.

Figure 1 demonstrates this transition as it impacted the state fair. After a two-year hiatus caused by the war, the amount of income received from concessions at the fair steadily increased, while production premiums remained relatively constant during the 1940s and 1950s. This new emphasis on consumption was apparent throughout the fairgrounds as the production-oriented symbols of the production era,



At the end of World War II, American optimism and economic prosperity combined to fuel the consumer culture so familiar to us today. A succession of new products—many of them on display and available for purchase at the fair's commercial exhibits—became everyday necessities.

The Era of Consumption (1947–Present). Although the transition period provided many of the elements of an emerging consumer culture in the United States, it was immediately after World War II that consumerism truly exploded. The American economy had prospered during the final years of the war, but the conflict had limited the purchasing activities of Americans, many of whom chose to deposit their

such as the blue ribbon and Machinery Hill, were superseded by a series of new post-war consumption traditions, such as deep-fried cheese curds and pronto-pups. Consumption soon became the focus of descriptions of the Minnesota State Fair contained in the local press, the minutes of MSAS meetings, and popular culture, as witnessed in the following editorial in the *Minneapolis Tribune* of August 23, 1956:

Every year the Minnesota State Fair finds as many as a million people wolfing down gastronomic novelties. The pronto pup—that Ferris wheel with weenies dipped in batter then dunked in hot fat—has become a standard. The cotton candy—gooey, sickly sweet, and a wonderful decoration for car upholstery, braids and everything a child can touch. The “foot long dog” is a certainty. As are the endless griddles with weenies and hamburgers. . . . They’re just dying to be buying at the State Fair!

The economic boom of the 1950s and 1960s fostered a postmodern consumer culture in the United States—a culture in which conspicuous consumption was no longer taboo, and where the consumer was considered the essential ingredient to a healthy economy. In the 1950s, people came to the state fair to examine and purchase a wide array of new products that they had previously glimpsed in advertisements. Annual surveys of the fair-going public conducted in the 1950s revealed that approximately half the attendees either intended to “make some major purchase of equipment in the near future” or “wanted to see and hear about the machines or household items they wanted to buy.” Press descriptions annually extolled the wide array of goods now available at the fair. Such was the emphasis on consumption that, from 1950 to the present, the *Minneapolis Tribune* has published an annual guide called “What’s Free at the Fair” for those on lower incomes. By the 1990s, MSAS annual reports were variously describing the fair as a “shoppers’ Mecca” and the “ultimate shopping experience.”

During the production era, state fair visitors and organizers had used the amount and variety of production exhibited at the fair as a cultural index. This role was now replaced by consumption. Production-era descriptions of the quantity and diversity of fruits and vegetables being *exhibited* were replaced by annual accounts of the amount of goods *consumed* by fair-goers, as in this account from the *Minneapolis Star* of August 22, 1947:

A food distributor on the grounds makes this estimate as to how much food will be consumed: 23,000 pounds of hamburgers, 20,000 pounds of frankfurters, two carloads of onions, four carloads of potatoes,

50,000 pounds of beef and roast pork and a carload of chicken.

Similarly, the focus on the number of producers in attendance or products submitted for exhibition was replaced by a concern for the number of consumers who would attend the event. As an advertisement for the 1956 fair proudly declared, the event offered an opportunity to “approach fifty thousand potential customers who will view the exhibits each day.” And amazement at the ingenuity of new production techniques and machinery—which had been a source of state pride for Minnesotans of the production era—was now replaced by satisfaction at the degree of prosperity represented by hordes of consumers at the fair purchasing all the essential elements necessary for “modern” living.

Yet another consequence of the production-consumption reversal at the state fair was the decreasing influence of and interest in production-oriented exhibits at the event. As Figure 1 illustrates, from the 1960s on, the growth in consumption at the fair is matched by a steady decline in the real value of awards for production exhibits. The declining emphasis on production at the fair is perhaps the most significant



During the production era, the blue ribbon was the ultimate premium awarded. Prize winners were exhibited as living examples of production perfection that every person should emulate. More recently, disinterest in livestock shows and other production-oriented exhibits at the fair has led to their being significantly scaled back in size.

evidence of the presence of a new cultural order focused on consumption. As far back as 1938, an editorial in *The Farmer* had noted that the “lack of interested spectators at the ringside” for the judging of the livestock awards was a “disquieting sign.” By 1950, general disinterest in the production exhibits prompted the *Pioneer Press* to declare that although “some city slickers may not believe it, the livestock and poultry shows at the Minnesota State Fair have had a great deal to do with making it the nation’s biggest.” By 1978, the lack of interest in these exhibits led to a reorganization of the livestock exhibits, which were scaled down to reduce the number of animals on show.

The decreasing emphasis on production also manifested itself in the consumerization of many of the original production-oriented features that remained at the Minnesota State Fair. The blue ribbon, perhaps the most potent and pristine symbol of the production ethos of the past, was licensed to a national company that bought the rights to the winning pickles and preserves each year, and then mass produced them for national consumption under the brand name State Fair. Commercial exhibit spaces that had initially been limited to local manufacturers and other companies of local origin were sold to national and international manufacturers. Specific areas of the fair such as the Marlboro Country eating area, and particular days in the fair calendar such as Pepsi Day, appeared as national brands with no production-oriented relationship to Minnesota began sponsorship deals with fair organizers. Machinery Hill, which for over a century had displayed the latest farm and production machinery for the education and enlightenment of farmers, also succumbed to the new emphasis on consumption. By 1993, large manufacturers such as Ford and Case I-H had withdrawn all their products from the event. Those that remained, such as John Deere, replaced farm machinery with their latest home gardening and yard tools, which were available for sale. The remaining space was occupied by an assortment of other purchasable home appliances, such as hot tubs and spas.

The story of the Minnesota State Fair is inevitably the story of Minnesota, which is itself representative of the larger changes that took place throughout the United States during the twentieth

century. From an historical standpoint, the fair is particularly interesting because it presents a uniquely detailed longitudinal account of the emergence of a consumer culture in the American Midwest. Like all good stories, however, the story of the Minnesota State Fair is a tale without end. Just as Minnesotans who attended the first territorial fairs likely could not grasp a society in which farmers were a distinct minority and production was no longer the center of daily life, it is equally hard for us, living in the midst of a culture of consumption, to imagine a future in which consumption itself might be displaced. Still, it is plausible that 100 or 200 years from now, an historian of economics will analyze fragments from the 2000 Minnesota State Fair in an effort to understand what it must have been like for people of the previous era to live in a culture dominated by consumption.

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This research project was originally presented to CURA as a new initiative in fall 1998. CURA supported the project by providing the services of a graduate research assistant, Jennifer Gabrys, who conducted archival research at the Minnesota Historical Society and in the archives of the Minnesota State Fair.



For over a century, Machinery Hill displayed the latest agricultural production equipment for the education and enlightenment of farmers and the public. After World War II, however, the emphasis on consumption led manufacturers to begin displaying products targeted toward the average consumer. By the 1990s, manufacturers such as Ford and Case I-H had withdrawn all their products from the event, while others such as John Deere had replaced farm machinery with home gardening tools.



Spatial Data Mining: An Emerging Tool for Policy Makers

by Sanjay Chawla, Shashi Shekhar, Wei Li Wu, and Xinhong Tan

Just as the widespread use of relational databases triggered interest in classic data mining (CDM) techniques, widespread use of spatial databases has increased interest in "mining" useful but implicit spatial patterns among data. Data mining products are being successfully used as decision-making and planning tools in both the public and private sectors. Knowledge extraction from geo-spatial data was highlighted as a key area of research at a recently concluded National Science Foundation workshop on geographic information systems, and a January 20, 2000, article in the *New York Times* on spatial data mining (SDM) demonstrates that interest in this technology has spread to the public domain.

One of the corollaries of the information age is that society has become inundated with large quantities of data. The sheer size of these data sets often makes it difficult to search for meaningful patterns or relationships among data. Data mining is a technique that allows researchers to overcome this obstacle and discover potentially interesting and useful patterns of information embedded in large databases. A pattern can be a summary statistic such as the average or mean, or a statistical relationship such as a correlation between two events. A well-publicized pattern that has now become part of data mining lore was discovered in the transaction database of a national retailer: People who buy diapers in the afternoon also tend to buy beer. This was an unexpected finding that the company put to profitable use by rearranging store merchandise.

The promise of data mining is the ability to rapidly and automatically search for local and potentially high-utility patterns using computer algorithms. Data mining draws on techniques from machine-learning, database management, and statistics to rapidly search for patterns in the data. Although many data mining techniques were inspired by classic statistical techniques, there is one major difference: In statistics, data

are used to test the validity of a hypothesis, while in data mining, patterns and hypotheses are "discovered" by exploring the data. Thus, data mining encompasses a set of techniques to automatically generate hypotheses, followed by their validation and verification via standard statistical tools.

Identifying efficient tools for extracting information from geo-spatial data is important to organizations that own, generate, and manage large geo-spatial data sets. In this article, we will discuss the differences between CDM and spatial data mining (SDM) techniques, develop a model for incorporating spatial properties into both classic statistical analyses and a data mining framework, apply this model to an example from ecology involving wildlife habitat, and discuss the implications of the SDM model for policy makers.

Classic Data Mining vs. Spatial Data Mining

The difference between CDM and SDM is similar to the difference between classic and spatial statistics. One of the fundamental assumptions of classic statistical analysis is that data samples are independently generated, much like successive tosses of a coin or rolls of a die, where each toss or roll has no relationship to the previous one. When it comes to the analysis of spatial data, however, the assumption of independence is generally false because spatial data tend to be highly self-correlated. For example, people with similar characteristics, occupations, and backgrounds tend to cluster together in the same neighborhoods. The economies of a region tend to be similar. Changes in natural resources, wildlife distribution, and temperature usually vary gradually over an area.

The tendency of like things to cluster in a space is so fundamental that geographers have elevated this phenomenon to the status of the first law of geography: "Everything is related to everything else, but nearby things are

more related than distant things." In spatial statistics, an area within statistics devoted to the analysis of spatial data, this tendency is called spatial autocorrelation. Ignoring spatial autocorrelation when analyzing data with spatial characteristics may produce hypotheses or models that are inaccurate or inconsistent with the data set. Thus, CDM algorithms often perform poorly when applied to spatial data sets.

Any data set that has a spatial, locational, or geographic component can be considered a spatial database. Examples of common spatial databases include maps, repositories of remote-sensing images, and the decennial census. Spatial data mining involves the search for patterns embedded in large spatial databases. Although contemporary SDM involves the use of computers, the following well-known examples of what we now call SDM occurred long before the invention of computers:

- ▶ In 1855, when Asiatic cholera was sweeping through London, an epidemiologist marked on a map those locations where the disease had struck. The epidemiologist discovered that the locations formed a cluster, at the center of which was a water pump. When government authorities turned off the water pump, the cholera epidemic began to subside.
- ▶ In 1909, a group of dentists discovered that the residents of Colorado Springs had unusually healthy teeth. They attributed this occurrence to the high level of natural fluoride in the local drinking water. Now all municipalities in the United States ensure that their drinking water supply is fortified with fluoride.
- ▶ In 1919, an investigator discovered (using maps) that all the continents could be fitted together like a giant jigsaw puzzle. Based on this discovery, the theory of Gondwanaland—which states that all the continents once formed a single landmass—was proposed.

Over the years, information databases have grown so large that it has become both useful and necessary to automate the search for potentially meaningful patterns. For example, an interesting problem in crime analysis is the detection, explanation, and prediction of “hot spots”—locations in a community or city that experience outbreaks of increased criminal activity. The classic statistical approach to detection of such spots is for an expert to use a GIS to correlate different map-layers of attribute data available for that city. The promise of data mining is that it allows the analysis to be recast as a search problem in a database. By using high-speed computers and smart algorithms, it is possible to search the database for clusters of data that may characterize *potential* hot spots. Thus, the domain expert who earlier searched for hot spots with the aid of a GIS is now involved in setting up the correct problem, and then interpreting the output from a data mining algorithm to determine which of the hot spots are worthy of further analysis using standard statistical techniques. Data mining is a tool for generating candidate hypotheses from data on which no *a priori* information is available.

Spatial data mining holds the promise of discovering patterns within existing spatial databases with minimal human intervention. As such, SDM can be a powerful aid in policy decision making. The following areas in which SDM is already playing an important role were showcased in a January 20, 2000, *New York Times* article:

- Monitoring lending patterns of institutions. Consumer advocacy groups are using SDM to map the lending practices of banks and other lending institutions. By relating the location of banks with the demographics of surrounding neighborhoods, SDM techniques can provide more accurate information about whether poor neighborhoods are being denied fair access to credit.
- Crime mapping and hot-spot analysis. Techniques from SDM can be used to detect local patterns in crime databases and examine related databases to search for an explanation. For example, a sudden spurt in crime in a given neighborhood may be the result of an ex-convict moving into the neighborhood.
- Protecting the environment. Spatial data mining is being used to design

optimal habitat environments for birds on the endangered species list. For example, by using SDM to identify factors that influence a bird’s choice of nesting location, conservation managers can ensure that these factors are preserved.

Developing a Spatial Regression Model

In the previous section, we gave a general overview of SDM and examples of some potential applications of SDM techniques. In this section, we attempt to develop a new model for SDM by incorporating the concept of spatial autocorrelation—the idea that “Everything is related to everything else, but nearby things are more related than distant things.” The value of such a model can be illustrated by considering the case of standard regression analysis.

Regression analysis is a standard technique in statistics that is used to quantify the relationship between a dependent variable Y and an independent variable (or variables) X . For example, Y might be the number of crime incidents in different Twin Cities neighborhoods, and X might be the average house value in each of these neighborhoods. The goal of an investigator concerned with identifying crime hot-spots in the Twin Cities might be to build a model that can predict the number of crime incidents likely to occur in a given neighborhood based on the average house value in that neighborhood.

The classic statistical approach to building such a model consists of two steps. First, the investigator describes the relationship between Y and X using a linear regression equation such as the one shown in Figure 1 (a). In this equation, ϵ represents the residual error. In

Figure 1. Classic and Spatial Regression Models

$$X \longrightarrow Y = \beta X + \epsilon \longrightarrow Y$$

(a) The classic regression model to determine the relationship between variable Y and variable X .

$$X \longrightarrow Y = \rho Wy + \beta X + \epsilon \longrightarrow Y$$

(b) The classic regression model, modified to account for spatial autocorrelation in the dependent variable by inclusion of a “correcting” term.

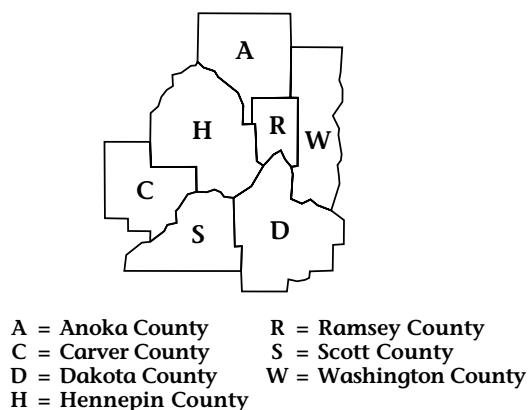
the classic approach, the value of ϵ is assumed to be generated from identical and independent distributions (for example, a standard bell-curve distribution). This assumption is based on the presupposition that an error associated with one data-sample observation is not dependent on or related to errors associated with other data-sample observations.

In the second step, the investigator uses the linear regression equation to calculate the parameter β based on the available data for X and Y . Solving for β in this equation is similar to calculating the slope and intercept of a straight line that represents, in graphic terms, the relationship between the dependent and independent variable. Theoretically, the resulting value for β could then be used as a predictive instrument. In the case of crime incidence in the Twin Cities, for example, β could be used to predict the incidence of crime for a given neighborhood based on average house values for the neighborhood.

Although useful, the classic statistical approach ignores spatial characteristics of the data used to generate the model—specifically, the spatial relationships that might exist among the different locations where the data were collected. This explains why, when classic linear regression is used to model phenomenon where the data samples have a spatial component, the value of the error term ϵ is *not* always distributed identically and independently across the data set. Instead, the value of ϵ often varies systematically over space. This is because the independent and dependent variables themselves are spatially related in ways that differentially affect the values of these variables, and in turn the value of ϵ . In short, because the classic approach ignores the first law of geography and assumes that there is no spatial autocorrelation present among the data, it cannot adequately account for such relationships.

The spatial regression approach attempts to overcome this problem by introducing into the regression equation an additional “correction” term. An investigator using such an approach to construct a model would describe the relationship between X and Y using a spatial regression equation such as the one shown in Figure 1 (b). In this equation, the correction term ρWy attempts to capture the spatial characteristics of the data. The spatial information is encoded using what is called a continuity matrix, abbreviated W . For example, Figure 2 (a) shows a map of the seven counties that constitute the

Figure 2. Map with Corresponding Contiguity Matrix



Twin Cities metropolitan area. The contiguity matrix (W) for this map is shown in Figure 2 (b). Counties whose borders touch each other are indicated by a 1 in the matrix, and counties whose borders do not touch are indicated by a 0. The contiguity matrix essentially quantifies the first law of geography—that nearby things are more related than distant things—because counties that touch each other are more “nearby” than those that do not touch. The investigator would use the available data to solve for ρ and β , where ρ signifies the degree to which the values in the dependent variable are spatially autocorrelated.

Another shortcoming of the classic approach involves the way that the outcomes of various models are interpreted. Consider the example shown in

	A	C	D	H	R	S	W
A	0	0	0	1	1	0	1
C	0	0	0	1	0	1	0
D	0	0	0	1	1	1	1
H	1	1	1	0	1	1	0
R	1	0	1	1	0	0	1
S	0	1	1	1	0	0	0
W	1	0	1	0	1	0	0

(b) The contiguity matrix (abbreviated W) for the map shown in (a). A non-zero entry in the matrix indicates that the corresponding spatial entities on the map (in this case, counties) are neighbors.

Figure 3. Here the goal is to predict the actual location of bird nests marked by an A in Figure 3 (a). Figures 3 (b) and 3 (c) show the results of two models used to predict the location of nests, indicated by a P . Although the predictions of the model used in Figure 3 (c) are clearly closer to the actual location of the nests than are the predictions of the model used in Figure 3 (b), the classic approach would fail to distinguish between the predictions of these two models.

Having argued that there are significant drawbacks to using a classic approach to spatial data analysis, and that the introduction of a spatial regression equation can overcome these problems and lead to more accurate predictions, we now demonstrate the

Figure 3. Classic and Spatial Model Interpretation

A = actual nest in pixel P = predicted nest in pixel

		A
A		A

(a) The actual locations of nests in a grid, with locations marked by an A .

	P		
P	P		A
A			A

(b) The locations of nests predicted by Model 1, with predicted locations marked by a P .

		P	A
		P	
A		P	

(c) The locations of nests predicted by Model 2, with predicted locations marked by a P . Although the predictions produced by Model 2 are spatially more accurate than those produced by Model 1, classic measures of classification accuracy are unable to recognize this distinction.

value of a spatial regression analysis framework using the example of ecological habitat prediction.

Applying a Spatial Regression Model to Ecological Habitat Prediction

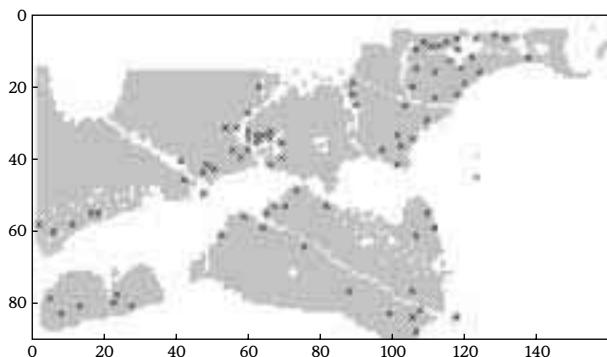
The availability of accurate spatial habitat models is an important tool for wildlife management, as well as protection of critical habitat and endangered species. Because the underlying process governing the interaction between wildlife and environmental factors is complex, statistical techniques are often used to gain insight into the process on the basis of data collected during fieldwork. Writing in the 1997 issue of *Ecological Modelling*, Uygar Ozesmi and William Mitsch developed a spatial habitat model for predicting the nesting locations of the wetland-breeding red-winged blackbird (*Agelaius phoeniceus L.*) in the Great Lakes region. We will use their model, and the accompanying data they used to generate it, to illustrate the benefits of using spatial regression analysis techniques.

The goal of the Ozesmi and Mitsch study was to create a model able to predict nest locations (dependent variable) based on several explanatory (independent) variables, including distance to open water, water depth, and dominant vegetation durability. Data were collected in 1995 and 1996 from two wetland sites—Darr and Stubble—located on the shores of Lake Erie in Ohio. The data collected at the Darr site were used to build a classic regression model. This model was then tested using the data collected at the Stubble site in order to evaluate the model’s predictive power.

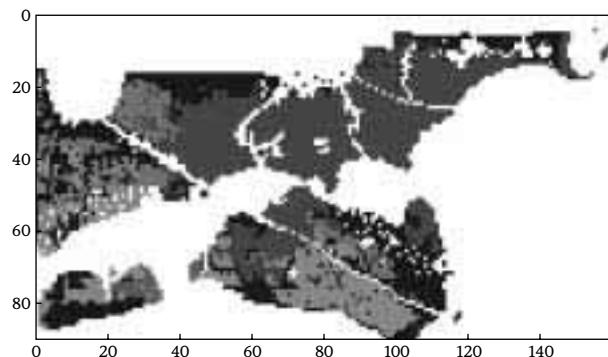
To create the model, a uniform grid was imposed on the Darr wetland, and in each cell the values of several structural and environmental factors (independent variables) were recorded. These included water depth, dominant vegetation durability, and distance to open water. For each cell, it was also noted whether or not a red-winged blackbird nest was present (dependent variable). The geometry of the Darr wetland, the locations of the nests, and the spatial distribution of the independent variables are shown in Figure 4.

When the data are mapped, it is apparent that both the dependent and independent variables show a moderate to high degree of spatial autocorrelation. For example, Figure 5 shows hypothetical random spatial distributions for an independent variable and for bird nests

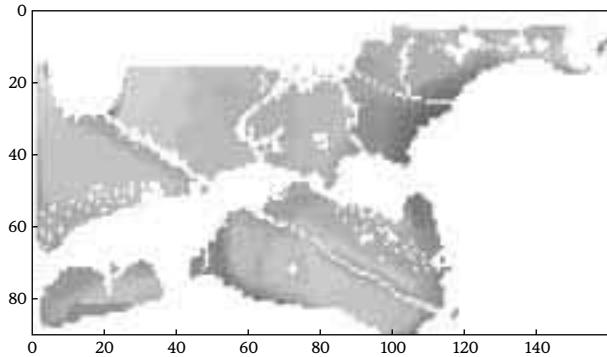
Figure 4. Learning Data Set from the Darr Wetland, 1995



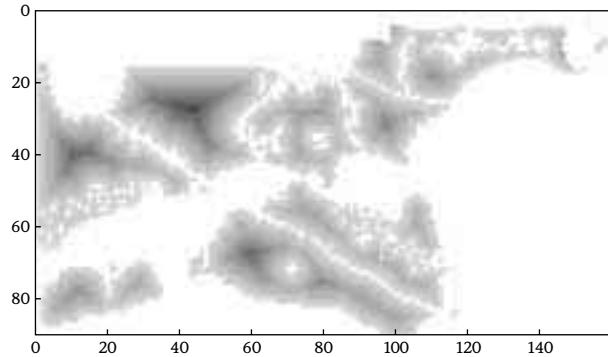
(a) The geometry of the wetland, with the locations of red-winged blackbird nests marked by an X.



(b) The spatial distribution of vegetation durability in the wetland, with darker areas indicating increased durability.



(c) The spatial distribution of water depth in the wetland, with darker areas indicating proximity to water of greater depth.



(d) The spatial distribution of distance to open water in the wetland, with darker areas indicating increased distance.

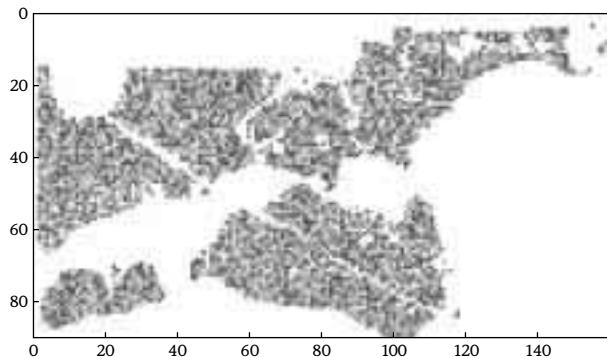
in the Darr wetland, as might be expected to occur if there were no spatial autocorrelation present among the data. If there were no spatial autocorrelation present, then the values recorded for variables at one location would have no influence on the values recorded in the vicinity of that location, and thus a random (inde-

pendent and identical) distribution such as the ones pictured here would be expected. However, as one can see from Figures 4 (b), 4 (c), and 4 (d), the distribution of independent variables reveals a gradual variation in values across space, indicating moderate to high spatial correlation among the data. As a result,

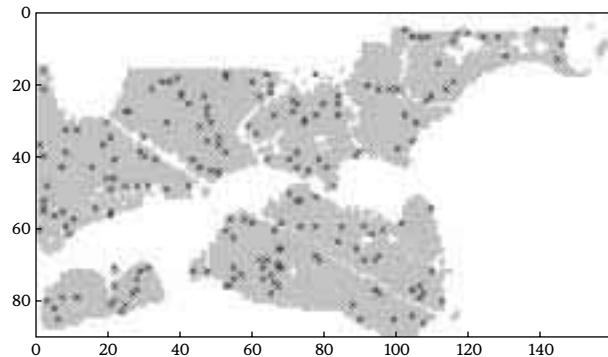
the random distribution in Figures 5 (a) and 5 (b) are quite different from the actual distribution of nests in the Darr wetland shown in Figure 4 (a).

The goal of our experiment was to evaluate the effects of including the spatial autocorrelation term ρWy in the regression model used in the Ozesmi

Figure 5. Hypothetical Spatial Distributions of an Independent Variable and Bird Nests in the Darr Wetland



(a) An independent and identical distribution for an independent variable, consistent with the random distribution assumptions underlying classic regression analysis.



(b) A random distribution of bird nests, consistent with the random distribution assumptions underlying classic regression analysis.

and Mitsch study. The 1995 Darr wetland data were used as a learning set to construct both a classic and a spatial regression model. The accuracy and predictive power of the model was then tested using the 1995 Stubble wetland data as a test set. Finally, the predictive ability of the classic and spatial regression models was compared on the basis of receiver operating characteristic (ROC) curves. ROC curves were first used in World War II to distinguish between the radar signatures of friendly and enemy ships. We used them to compare how accurately the two models predicted the location and non-location of red-winged blackbird nests. ROC curves plot the relationship between the true positive rate (TPR) and the false positive rate (FPR) for a predictive model. The TPR represents the proportion of correctly identified nest locations, and the FPR represents the proportion of correctly identified no-nest locations.

The results of these comparisons are shown in Figure 6. For either the classic or spatial model, the higher the curve is above the straight line $TPR = FPR$, the better the model is at generating accurate predictions. The spatial regression model clearly demonstrates substantial and systematic improvement over the

habitat model based on a spatial regression analysis more accurately describes the relationships between various wetland features and the presence of wildlife nesting sites than does a classic approach to this problem. Such a model could be used by the Minnesota Department of Natural Resources and other environmental agencies to improve conservation efforts for species such as the red-winged blackbird. An SDM approach could also serve as the basis for similar models in other areas of conservation ecology, such as fisheries management or wildlife population control efforts.

Spatial data mining could be applied to other environmental questions as well. For example, one of the greatest challenges currently facing the Metropolitan Council is the issue of how to balance the growth in the Twin Cities metropolitan area with the goal of protecting the remaining natural and agricultural areas in the region. Spatial data mining tools can play a crucial role because they can quickly generate "what if" scenarios regarding the effects of growth and development based on the available data.

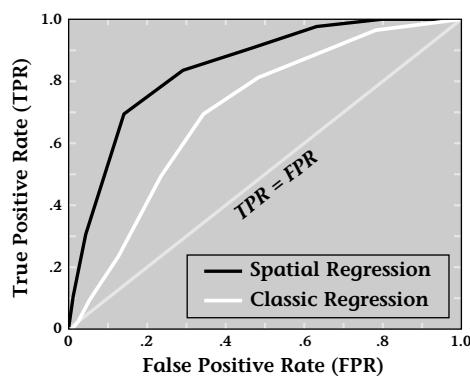
Applications of SDM are not limited to environmental issues, of course. For

future highway expansion or light-rail transit construction based on the vast amounts of data collected by traffic sensors embedded in local highways and on-ramps. The potential range of applications is nearly limitless.

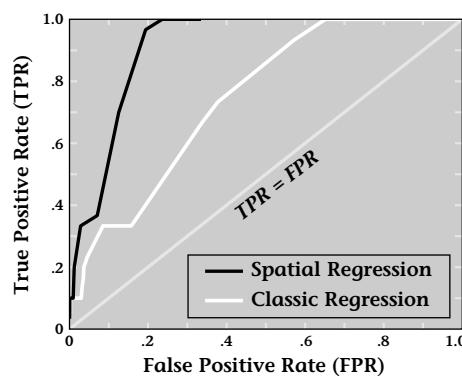
In addition, because it can be used with very large data sets, SDM also has the advantage of allowing policy makers and researchers to generate hypotheses across data sets. For example, SDM could be used to combine data from remote sensing, cartographic maps, traffic sensors, and the census in order to generate hypotheses that take into account each of these sources of data.

Spatial data mining is a relatively new term for an approach to data analysis that can be useful in many arenas, including econometrics, environmental management, regional science, geographic analysis, epidemiology, and remote sensing. The potential of SDM lies in its ability to rapidly generate interesting and potentially useful hypotheses that researchers can then verify, modify, and refine using standard statistical techniques. This technique is not a substitute for statistical analysis, but rather a tool that researchers can use to analyze large data sets that have a strong spatial component. Like spatial statistics, which has attained a distinct identity within the field of statistics, we believe SDM can carve out its own niche within the framework of CDM.

Figure 6. Receiver Operating Characteristic (ROC) Curves for Classic and Spatial Regression Models



(a) Comparison of the models' performance using the 1995 Darr wetland (learning) data set.



(b) Comparison of the models' performance using the 1995 Stubble wetland (test) data set.

classic model. This is true for both the 1995 Darr (learning) data set and the 1995 Stubble (test) data set.

Applications of Spatial Data Mining for Policy Makers

We believe SDM can be a useful tool for researchers and policy makers, both in Minnesota and throughout the nation. As we have demonstrated, a wildlife

example, SDM techniques could be used by Twin Cities consumer groups to determine whether people of color in the metropolitan region have fair access to credit at local lending institutions. Local law enforcement agencies could use SDM to predict crime hot spots based on existing crime data for the Twin Cities. The Minnesota Department of Transportation could use SDM to plan

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groups, agencies, or organizations in Minnesota. These grants are available to regular faculty members at the University of Minnesota and are awarded annually on a competitive basis.

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Project Awards

To keep our readers up-to-date about CURA projects, each issue of the *CURA Reporter* features a few capsule descriptions of new projects underway. The projects highlighted in this issue are made possible through CURA's Communiversity Personnel Grants. The grants are awarded twice each year to grassroots organizations in the community. Each grant supports the extra personnel needed by local organizations, usually by providing an advanced graduate student who works directly with the organization receiving the award. The grants are competitive, and organizations working with people of color are favored. The projects described here are only a sampling of projects that will receive CURA support during the coming year.

■ Empowering Latino Youth. La Escuelita is a youth-serving organization that focuses on the development of Latino youth, specifically in the areas of academic enrichment, service-learning, recreation, and cultural empowerment. A graduate student will research literature on youth development and Latino youth-serving organizations, and write a report that includes a framework for evaluating such organizations.

■ Resources for American Indian Women. The Minnesota Indian Women's Resource Center in the Phillips neighborhood of Minneapolis provides services to American Indian women and their families in the Twin Cities metro region and on several area reservations. A graduate student will assist the center's staff in gathering resource material and developing new curricula in several areas, including culturally-based chemical dependency treatment, parenting, domestic violence, and sexual assault.

■ Legal Advocacy for Battered Women. Based in St. Paul, the Battered Women's Legal Advocacy Project works to eliminate oppression of and violence against women. Project staff will work with a graduate student to assess the status of battered female criminal defendants in Hennepin County and southwestern Minnesota, and to identify how many were in need of legal representation in the year prior to the project start date. The research project will document the nature of the representation provided, the defense strategies employed at trial, the length of sentences, and the adequacy of representation.

■ Services for American Indian Children at Risk. The Indian Child Welfare Law Center is a nonprofit agency that provides culturally appropriate legal services to American Indian families in the child protection system. The center serves as a community development resource for education, advocacy, and public policy, and helps connect American Indian children at risk with an existing network of service people and programs. The organization will have a graduate student update and reorganize its information database in order to assist the center in setting goals for the future.

■ Preventing Child Abuse and Neglect in the Latino Community. Unidas Para Los Ninos (United for Children) is a coalition of individuals and organizations formed to prevent child abuse and neglect in the growing metro area Latino community. A graduate student will research culturally appropriate resources on child abuse and neglect for use by social service programs and health practitioners working with Spanish-speaking families in the area.

■ Real Estate Foreclosures. This project will focus on real estate home loan foreclosures by subprime lenders throughout the Twin Cities metro area during the 1990s. A graduate student will work with Minnesota ACORN (Association of Community Organizations for Reform Now)—an advocate for low- and moderate-income families in the Twin Cities—to determine whether there is a correlation between foreclosures and non-conventional mortgages, and whether the hardest hit areas are neighborhood minority communities with a stable rate of home ownership.

■ Racial and Low-Income Housing Impact Statement. The Metropolitan Interfaith Council on Affordable Housing (MICAH) mobilizes congregations and people of all faiths to advocate for public policies that increase the supply of affordable housing in the Twin Cities metro area and promote fair housing for all residents. A graduate student will research and review existing literature on affordable housing, identify particular housing policies and practices in the Twin Cities area, and work with MICAH staff to prepare a racial and low-income impact statement regarding metro area housing policies.

■ Business Plan for Social Service Organization. Damiano is a community-based organization that provides social service programs to low-income families in the central hillside neighborhood of downtown Duluth. Using a local architectural firm's feasibility study as a foundation, the organization will work with a graduate student to develop a business plan for development of rental space in the Damiano Center, where the organization is housed.

Is the Twin Cities “Permanent Rural” Area Truly Permanent?: A Case Study on the Rural-Urban Edge

by Richard S. Bolan



This article is a case study of two communities at the urban-rural edge of the Twin Cities metropolitan area. Both have experienced important changes during the last 30 years—some that can be directly observed by changes in the physical landscape, others that are more subtle and not directly observable. One community is the city of Cottage Grove, which is split roughly in two by the Metropolitan Council's Metropolitan Urban Service Area (MUSA).¹ The second

community is the township of Denmark, which lies directly east of Cottage Grove and extends to the St. Croix River. The primary focus of this study was the period 1970–1990, a period for which complete demographic, social, and economic information is available. A limited amount of more recent data were also used in the study.

The growth of Cottage Grove during the study period was much as one might expect of a middle- and upper-income suburb. The city borders the Mississippi River and is reasonably close to job opportunities, both in downtown St. Paul and in suburban job centers. The township of Denmark, however, experienced a quite different transformation. In 1970, Denmark was a small farming

¹The council's MUSA boundary is established primarily by the extent of its sewer and wastewater treatment facilities, along with other metropolitan infrastructure systems. By limiting the extension of metropolitan systems, MUSA policies have the equivalent effect of an urban growth boundary.

community with a median family income close to the metropolitan average and considerably lower than the median income of Cottage Grove households. By 1990, however, the median household income in Denmark had surpassed the median income of Cottage Grove households and was well above the metropolitan median household income.²

In effect, Denmark from 1970 to 1990 exhibited all the hallmarks of

²Overall, the eastern sector of the metropolitan area grew more slowly than other Twin Cities suburban regions between 1970 and 1990. Since that time, however, eastern municipalities have shown strong growth, with the city of Woodbury (immediately north of Cottage Grove) experiencing one of the fastest rates of growth in Minnesota.

becoming an affluent exurban community. This phenomenon has been observed on the outer edges of most large metropolitan areas in the United States, yet there has been very little study of the demographic and lifestyle characteristics of exurbanites, their attachment to rural living, or the implications of their lifestyle for metropolitan and regional planning. This article examines the evidence of changes in Denmark and Cottage Grove during the period 1970–1990, and traces some of the social, fiscal, and transportation implications of these changes based on this evidence. This examination raises numerous questions about the challenge of maintaining the agricultural and rural character of communities on the outer edges of the Twin Cities as people who settled in exurban areas age, and begin to seek out alternative living arrangements. This article then considers regional policies and regulatory tools for retaining viable agricultural activities and assuring that designated permanent rural areas remain rural.

Development in Cottage Grove and Denmark: 1970 to 1990

The contrast between suburban and exurban change can be seen by comparing key economic, demographic, and social indicators for Cottage Grove and Denmark.

Economic Conditions. Census data pertaining to median family income highlight the most dramatic changes in community character between 1970 and 1990. Although both communities were above the metropolitan average for family income for each census year, Denmark's population had a 37% lower median family income in 1970 than

Cottage Grove. By 1990, however, the median family income in Denmark was 15% higher than in Cottage Grove. This striking change in relative wealth over 20 years is also shown by the data on persons living below the poverty line (Figure 1). In 1970, almost 12% of Denmark's population lived below the poverty line. By 1990, this number had dwindled to 2.5%. Cottage Grove also saw a decline in persons living below poverty in 1990, but its poverty levels stayed relatively stable during the 20-year period at 2-3%. Table 1 provides

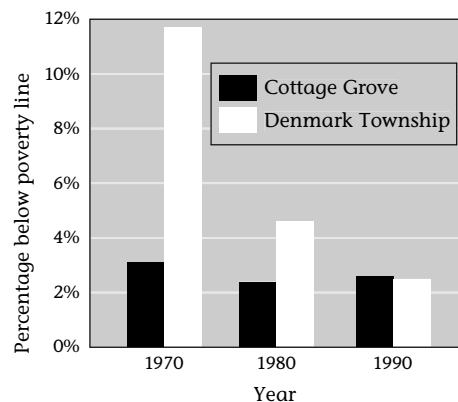


Figure 1. Poverty Rate for Cottage Grove and Denmark Township, 1970, 1980, and 1990

detailed income and poverty statistics for the two communities in both constant and current dollars.

Tables 2 and 3 show the distribution of the labor force in the two communities by economic sector and occupation based on 1990 Census data. Labor distribution in Cottage Grove was significantly different than in Denmark in that 25% of Cottage Grove's work force

was employed in manufacturing, compared with only 15% of Denmark's labor force. Denmark still retained 11% of its labor force in agriculture, but this sector employed less than 1% of Cottage Grove workers. It is noteworthy that, in 1990, 30% of Denmark's workers were in professional and related services. There were also more jobs available in Denmark than there was labor force to occupy them. With the general mismatch between the jobs available in town and the occupational profile of the labor force, it can be assumed that there were as many workers commuting into Denmark as there were going out—albeit in very small numbers each way. As with most suburbs, Cottage Grove had a much larger labor force than it had jobs available, so the net effect was considerable outward commuting to other communities as discussed below.

The primary occupations in Cottage Grove reflected a typical middle-income suburban community, with over 23% of residents in professional positions, 29% in technical and craft occupations, and 46% in sales and clerical positions. Statistics for Denmark are comparable with respect to both professional and craft occupations, but significantly fewer people in Denmark were employed in clerical and sales positions, and more people were employed in agriculture.

Demographic and Social Changes.

Overall, Cottage Grove grew from a population of 13,624 in 1970 to a population of 22,941 in 1990, an average annual change of 3.4%. The city's growth during this period can be characterized as modest, yet steady. Denmark started from a significantly smaller base in 1970 with only 818 residents. With its 1990 population at 1,178, Denmark

Table 1. Family Income, Public Assistance, and Poverty Statistics for Cottage Grove and Denmark Township, 1970, 1980, and 1990

	Cottage Grove			Denmark Township		
	1970	1980	1990	1970	1980	1990
Median family income in current dollars*	\$12,986	\$27,064	\$47,153	\$9,450	\$28,214	\$54,418
Median family income in 1982 dollars*	\$33,426	\$32,883	\$36,119	\$24,324	\$34,280	\$41,684
Families with public assistance income	76 (2.7%) [†]	196 (3.9%) [†]	248 (3.6%)	5 (2.4%) [†]	4 (1.3%) [†]	10 (2.7%) [†]
Persons below poverty line	424 (3.1%) [‡]	471 (2.4%) [‡]	601 (2.6%)	96 (11.7%) [‡]	52 (4.6%) [‡]	30 (2.5%) [‡]

Source: 1970, 1980, and 1990 Census of Population and Housing STF3

*Mean family income figures were used for the year 1970

[†]Calculated as the share of the families with positive income

[‡]Calculated as the share of the total population

Table 2. Occupation Distribution in Cottage Grove and Denmark Township by Residency and Employment Locations, 1990

Occupation	Cottage Grove		Denmark Township	
	Residents	Jobs	Residents	Jobs
Executive and professional specialty*	2,803 (23.4%)	1,059 (22.9%)	144 (22.9%)	129 (15.9%)
Technicians and craft occupations†	3,516 (29.4%)	1,367 (29.5%)	179 (28.5%)	310 (38.1%)
Sales and clerical‡	5,533 (46.2%)	2,138 (46.3%)	250 (39.8%)	289 (35.6%)
Farming, forestry, and fishing	117 (1.0%)	63 (1.4%)	56 (8.9%)	85 (10.5%)
All	11,969 (100.0%)	4,627 (100.0%)	629 (100.0%)	813 (100.0%)

Source: 1990 Census of Transportation Planning Package, 1990 Census of Population and Housing STF3

*This category includes administrative and managerial occupations

†This category includes precision production, repair, machine operators, assemblers, inspectors, transportation, material moving, handlers, equipment cleaners, helpers, and laborer occupations

‡This category includes administrative support, protective service, private household, and other service occupations

had experienced a net change of only 360 additional residents in a 20-year period (or an average of 18 new residents per year).

For both communities, the data suggest that young families with children were responsible for the growth period of the 1970s. With growth slowing in the 1980s, young children and young adults began to constitute a smaller proportion of the population, while the proportion of older adults increased. Denmark Township saw a relative decline in elderly population. The biggest increase in population for the township occurred among those aged 45 to 64, people in their prime both professionally and in terms of earning capacity. Few residents in Cottage Grove during the study period were elderly. Those aged 65 or older were slightly under 2% of the total in 1970, and by 1990 the elderly population had only grown to 2.6% of the population.

As might be expected, an overwhelming majority of homes in both communities were single-family homes. Between 1980 and 1990, multifamily housing increased in Cottage Grove from 5% to almost 9%, while such housing actually decreased in Denmark from 6% to less than 4% during the same period. Denmark exhibited the most dramatic increase in the value of owner-occupied housing with a 70% rise in value, while Cottage Grove experienced a 37% increase. This difference reflects the marked changes in household income noted above.

Impacts of Growth and Change

Key concerns arising from growth and change at the edge of urban areas include (1) the impact on productive farmland and the scenic character that distinguish rural areas, (2) the impact on congestion and air quality resulting from more frequent auto trips and increased vehicle miles traveled, (3) the impact on housing markets at the urban edge and the creation of greater levels of social-class differentiation across the metropolitan region, and (4) the impact on the fiscal viability of small local governments faced with demands for increased urban services such as schools, roads, and police and fire protection. This section summarizes the findings of studies carried out for Cottage Grove and Denmark that illustrate the distinction between suburb and exurb.

Changes in Rural Land Use. In the Twin Cities metropolitan area as a whole, recent data from the U.S. Department of

Table 3. Economic Sector Distribution in Cottage Grove and Denmark Township by Residency and Employment Locations, 1990

Industry	Cottage Grove		Denmark Township	
	Residents	Jobs	Residents	Jobs
Manufacturing	3,005 (25.1%)	1,134 (24.5%)	93 (14.8%)	61 (7.5%)
Finance, insurance, and real estate	1,033 (8.6%)	163 (3.5%)	25 (4.0%)	35 (4.3%)
Professional and related services*	3,306 (27.6%)	1,466 (31.7%)	191 (30.4%)	191 (23.5%)
Wholesale and retail trade	2,363 (19.7%)	1,242 (26.8%)	107 (17.0%)	143 (17.6%)
Personal and related services†	437 (3.7%)	169 (3.7%)	29 (4.6%)	78 (9.6%)
Construction, transportation, communication, and public utilities	1,722 (14.4%)	363 (7.9%)	114 (18.1%)	198 (24.4%)
Agriculture, forestry, fisheries, and mining	103 (0.9%)	89 (1.9%)	70 (11.1%)	107 (13.2%)
All	11,969 (100.0%)	4,627 (100.0%)	629 (100.0%)	813 (100.0%)

Source: 1990 Census of Transportation Planning Package, 1990 Census of Population and Housing STF3

*This category includes business and repair services, health services, educational services, and public administration

†This category includes entertainment and recreation services



Single-family home construction in Cottage Grove increased 29% between 1980 and 1990, nearly double the rate in Denmark Township. However, the mean value of housing in Cottage Grove declined during the same period.

Agriculture indicate that farmland or vacant land has been lost to urban development at a rate of 3.1% per year from 1982 to 1992, while annual rates

of population growth during that period were only 1.5%. These data indicate the trend toward lower population densities for the region, trends that are also

evident in Cottage Grove and Denmark. Table 4 shows changes in the use of land in both communities. Overall, the city of Cottage Grove contains about 24,000 acres of land, of which about 6,000 acres lie within the MUSA line delineated by the Metropolitan Council. Denmark is slightly smaller in size with about 19,000 acres. Denmark Township has been designated by both Washington County and the Metropolitan Council as either permanent agricultural land (mostly the western portion of the township) or permanent rural land (mostly the eastern portion of the township along the St. Croix River).

From information provided by the Land Management Information Center of Minnesota Planning for 1984 and 1990, it can be seen that both communities lost considerable agricultural and vacant land to development in just six years. Cottage Grove saw a net 6% decline in such land (almost 1,000 acres, or roughly 164 acres lost per year). During this same period, Cottage Grove issued 1,558 building permits for residential construction on 617 acres of land. Thus, new residential development

Table 4. Changes in Land Use in Cottage Grove and Denmark Township, 1984–1990

City of Cottage Grove	1984 area (acres)	1990 area (acres)	Absolute change (acres)	Percent change	Mean annual change (acres)
Residential	2,481	3,098	+617	+24.9%	+102.8
Commercial and industrial	792	1,048	+256	+32.3%	+42.7
Parks and public, semi-public	898	914	+16	+1.8%	+2.7
Agricultural and vacant	17,007	16,025	-982	-5.8%	-163.7
Water	2,653	2,708	+55	+2.1%	+9.2
Other	476	514	+38	+8.0%	+6.3
Total	24,307	24,307	0	—	0
Denmark Township	1984 area (acres)	1990 area (acres)	Absolute change (acres)	Percent change	Mean annual change (acres)
Residential	225	442	+217	+96.4%	+36.2
Commercial and industrial	45	83	+38	+84.4%	+6.3
Parks and public, semi-public	1,020	1,081	+61	+6.0%	+10.2
Agricultural and vacant	16,518	16,030	-488	-3.0%	-81.3
Water	1,207	1,298	+91	+7.5%	+15.1
Other	209	290	+81	+38.8%	+13.5
Total	19,224	19,224	0	—	0

Source: Land Management Information Center of Minnesota Planning

occurred at a typical suburban density

of roughly 2.5 dwellings per acre.

Almost all of this development took place within the MUSA boundary.³

Denmark was less impacted by the loss of agricultural or vacant land with 3% of all such land lost to development (nearly 500 acres, or roughly 80 acres per year). During the period in question, Denmark issued building permits for 61 new dwellings. Thus, the mean density of new development for the township was one dwelling per 12 acres.

Traffic Generation. When people express concern about urban sprawl, a key issue is traffic congestion. This phenomenon is clearly evident when we look at the commuting patterns for residents of Cottage Grove and Denmark. Special tabulations from the U.S. Bureau of the Census permit comparison of commuting-pattern characteristics for the two communities. Residents of both localities rely heavily on automobiles in their journey to work. In both communities, the growth in the number of commuting trips is quite dramatic. Equally dramatic is the geographic distance of such trips. A few residents of Denmark, for example, commute from the easternmost edge of the seven-county metropolitan area all the way to Maple Grove in the furthest northwest corner. Some residents of Cottage Grove also commute east to west across the entire urban region to Minnetonka or Eden Prairie. The maps in Figures 2 through 5 portray how commuting trips that originate from these two communities are dispersed throughout the entire metropolitan area.

In Cottage Grove, the proportion of commuting trips by residents driving to jobs within Cottage Grove declined slightly from 12% in 1980 to 11% in 1990. A major shift occurred in the number of commuting trips between Cottage Grove and the central city of St. Paul. In 1980, 41% of all commuting trips by Cottage Grove residents had as their destination St. Paul; by 1990 the percentage had dropped to 30% (commuting trips to Minneapolis remained steady during the period at 5-6%). In 1980, Cottage Grove residents commuted to 45 other cities in the metropolitan area to get to work. By 1990, that number had grown to 95 other cities, including 13 in Wisconsin.

Similarly, commuters residing in Denmark drove to 22 other cities in

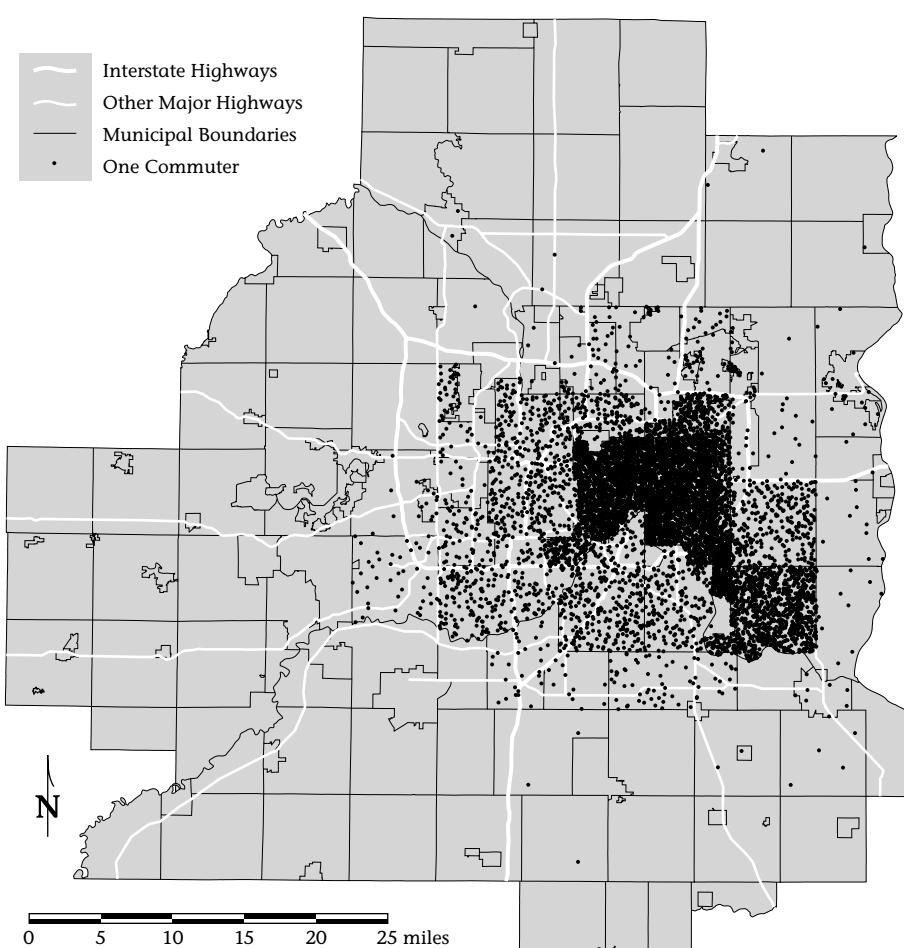


Figure 2. Commuting Patterns of Cottage Grove Residents, 1980

Source: 1980 U.S. Census Urban Transportation Planning Package

Note: Includes workers aged 16 or over who did not work at home

1980 to get to work. By 1990, that number had increased to 56 other cities. Commuting trips to St. Paul also declined, but not as dramatically as they did in Cottage Grove (20% in 1980 to 18% in 1990).

The data strongly indicate the association of even modest growth in suburban and exurban development with dramatic increases in the amount and average distance of commuter travel throughout the metropolitan area.

Housing Values. A general problem associated with the urban growth patterns of the past three decades has been a dearth of affordable housing, as private developers targeted almost all new construction to middle- and upper-income markets while relentlessly pushing to expand the outer edges of the urban region.

In the case of Cottage Grove and Denmark, however, a distinctly new pattern appears. With virtually all housing construction taking place

within the MUSA line in Cottage Grove, the mean value of owner-occupied housing rose from about \$66,000 per unit in 1980 to \$91,000 per unit in 1990. However, when adjusted for inflation, the mean value of such housing (expressed in constant 1982 dollars) actually declined from \$80,000 to \$70,000 (see Table 5).

The pattern in Denmark was very different. The mean value of an owner-occupied dwelling went from \$78,000 in 1980 to \$134,000 in 1990. When adjusted for inflation, dwelling-unit values (expressed in constant 1982 dollars) rose from \$95,000 in 1980 to \$102,000 in 1990.⁴ Thus, Denmark's housing values continued to increase in real dollar terms, even as Cottage

³According to the most recent Cottage Grove comprehensive plan, as of 1999, about 80% of land within the MUSA boundaries had been developed.

⁴The striking difference between 1980 and 1982 is important to note. Extremely high inflation marked the early part of the decade, and then leveled off later in the decade. As a result of high inflation during the period 1978-1983, home mortgage rates were well above 10%.

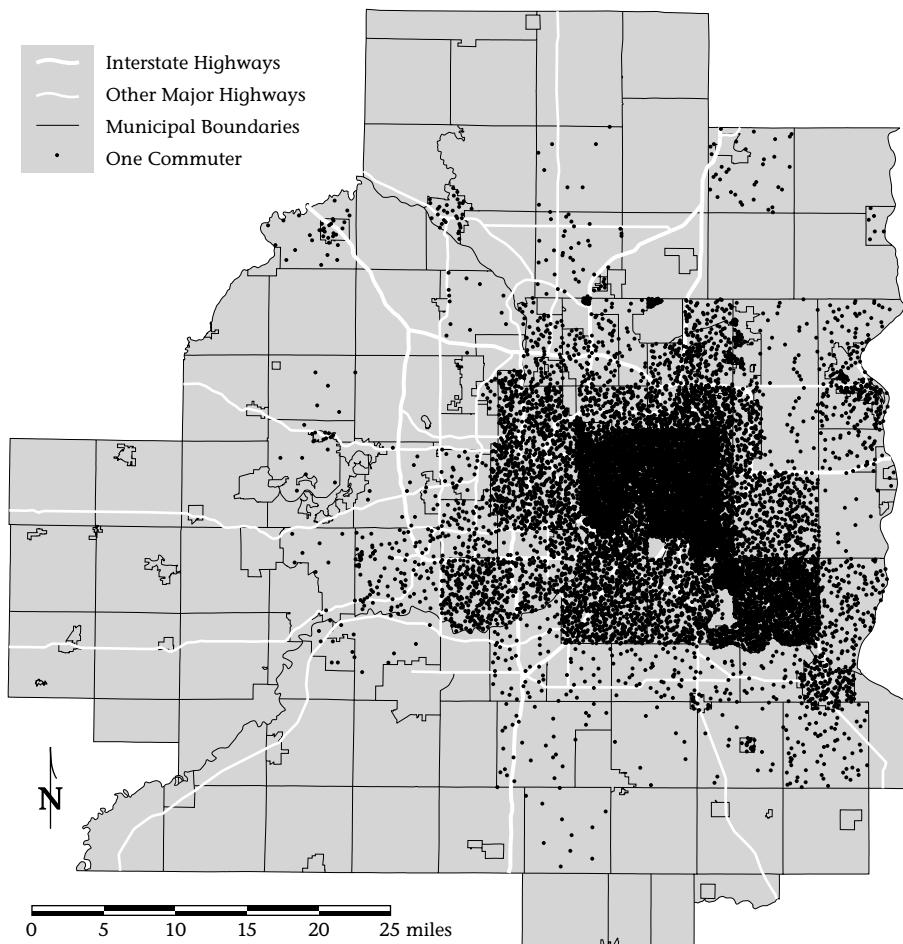


Figure 3. Commuting Patterns of Cottage Grove Residents, 1990

Source: 1990 U.S. Census Urban Transportation Planning Package
Note: Includes workers aged 16 or over who did not work at home

Grove's were declining. This evidence further indicates the transformation of Denmark from a rural to an exurban community.

Fiscal Impacts. Urban sprawl is also associated with growing strain on state, county, and local government budgets. Cottage Grove, with all the marks of a growing suburb, had significant fiscal problems during the period studied. Denmark, in contrast, experienced virtually no financial strain.

Tax rates can vary considerably, even within the same municipality. This proved to be true in Cottage Grove, a city affected by taxing jurisdictions beyond its control. Within Cottage Grove, tax rates differ not only because of differences between urban and rural taxing districts, but also because of differing tax rates of school districts and other taxing jurisdictions within city boundaries. In 1995, the difference between the highest and lowest overall tax rates in Cottage Grove translated

into a tax differential of \$165 per year on a \$100,000 house.

Cottage Grove belongs to two separate school districts. The first—which encompasses most of the city—experienced rapidly increasing student populations, even though Cottage Grove itself experienced only moderate growth. However, the school district also services the city of Woodbury, which is one of the most rapidly growing municipalities in the Twin Cities area.⁵ The second school district is slower growing, and only a small part of it lies within Cottage Grove. The part of Cottage Grove in the rapid-growth school district required 19% of the local levy for debt service in 1995, whereas the part in the low-growth district required only 6% for debt service.

Denmark Township has, for the most part, escaped the problems experienced by Cottage Grove, in part because of the different services that are provided by cities and townships. Townships are unincorporated. Consequently, a good deal of local services in Denmark are provided by Washington County. Traditionally, local roads and bridges have been the focus of

⁵ According to the State of Minnesota demographer, between 1990 and 1995, the city of Woodbury grew from 20,075 to 31,258. This reflects a growth rate of 6% per year, or approximately 2,300 new residents per year. Building permits have been in the range of 650 to 700 per year, as opposed to an average of 385 units per year in Cottage Grove, whose estimated population for 1995 is 27,726. This reflected a 2% annual rate of growth for Cottage Grove, or approximately 950 new people per year since 1990.

Table 5. Housing Characteristics in Cottage Grove and Denmark Township, 1980 and 1990

	Cottage Grove		Denmark Township	
	1980	1990	1980	1990
Occupied housing units	5,127	6,856	319	364
Single-family occupied housing units (one unit in structure, detached)	4,851	6,261	300	350
Multifamily occupied housing units	276	595	19	14
Owner-occupancy rate	94.5%	93.5%	91.2%	91.2%
Mean housing value of owner-occupied units (non-condominium, in current dollars)	\$66,265	\$90,740	\$77,774	\$133,518
Median gross rent for renter-occupied housing units (in current dollars)	\$423	\$610	\$275	\$463

Source: 1980 and 1990 Census of Population and Housing STF3

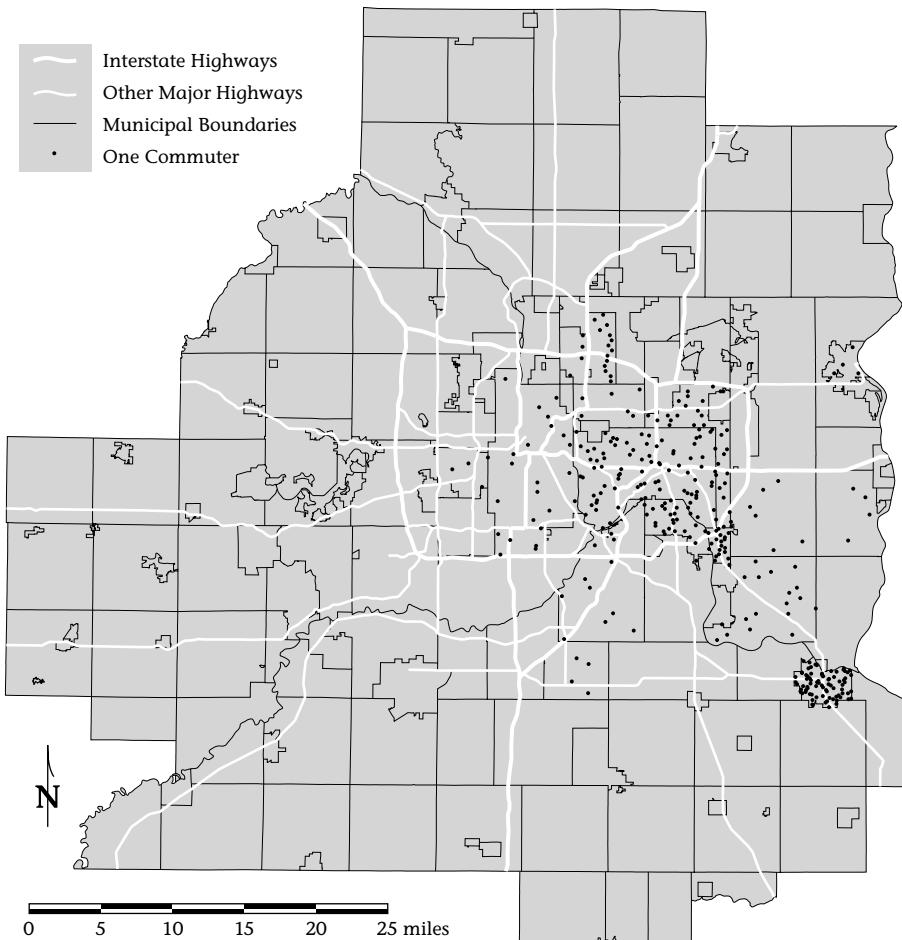


Figure 4. Commuting Patterns of Denmark Township Residents, 1980

Source: 1980 U.S. Census Urban Transportation Planning Package
Note: Includes workers aged 16 or over who did not work at home

township budgets. In Denmark, the percentage of the local township levy dedicated to roads and bridges has been consistently higher than the township levy for general government services.⁶ However, townships provide very few other services. Typically, law enforcement, libraries, planning, and other services are provided by the county, and township debt is kept at a minimum.

Low populations, slow growth rates, and access to county services allow townships to maintain minimal budgets. All other county residents pick up the tab for whatever growth occurs in these areas, and township tax rates and budgets rarely reflect the full costs of providing local services.

The Overall Context of Development. Overall, both Denmark and Cottage Grove have experienced slow to moderate rates of growth, yet the type

of growth and its relation to the urban context has continually changed. Because part of Cottage Grove is within the MUSA line, its growth is more typical of a suburban community. However, as the analysis of public finance documents illustrates, the rapid growth of neighboring communities can drastically affect suburbs. A moderately growing community can be overburdened with debt and taxes if it shares a school district with a rapidly growing community. Although Denmark may seem immune to these conflicts, its relationship to the MUSA line clearly drives the type of growth that occurs there as well. If the MUSA line determines the rate of growth that can occur, then communities outside the line can attempt to increase their tax base through the development of high-income homes. This limited, high-end development within a high-amenity rural area is typical of exurbia. Both of these examples illustrate how the local

⁶In 1988, township road and bridge needs consumed nearly 70% of the local levy in Denmark.

and regional context influence quality and quantity of growth.

Implications for Regional Growth

There has been surprisingly little research on the exurban phenomenon. One assumption of existing studies that has served to constrain research about the exurban phenomenon is the idea that exurban development is basically an extension of suburban development. However, the most detailed studies—carried out in Portland, Oregon, and in the Sierra region of California⁷—suggest that the sociological and economic implications of exurban development are more complex. In many respects, exurbanites appear to be escaping not only the city but also the suburbs in search of a lifestyle typical of the landed gentry.

A key finding of both the Oregon and California studies was that the new exurbanites have distinctly different lifestyles than traditional rural residents. Traditional rural residents develop a sense of small-town community through participation in local churches and community organizations. Incomes tend to be relatively low, with little money for discretionary or luxury spending. Exurbanites, on the other hand, retain close ties with central urban and suburban job centers, and have very high incomes and relatively flexible work schedules. As the authors of the Oregon study suggest, "While rural households depend on resource exploitation for a living, exurban households flee the city to enjoy unexploited resources."⁸ Traditional rural residents seek outlets for socializing through churches and clubs, while exurbanites prefer their quiet and privacy.

Indeed, the term *hobby farm* is often used to describe the land occupied by exurbanites. One observer referred to new developments in the eastern borders of Washington County along the St. Croix River as "horse subdivisions." Raising wine grapes, engaging in small-scale vegetable farming, and

⁷Judy Davis, Arthur Nelson, and Kenneth Dueker, "The New 'Burbs: The Exurbs and Their Implications for Planning Policy," *Journal of the American Planning Association* 60 (Winter 1994): 45–59; Timothy P. Duane, *Shaping the Sierra: Nature, Culture and Conflict in the Changing West* (Berkeley, CA: University of California Press, 1999).

⁸In economic terms, this represents the classic distinction between exchange value and use value. An exchange value perspective views natural resources as they might be sold as commodities in a market place. A use value perspective attributes value to natural resources as they exist *in situ* and undisturbed.

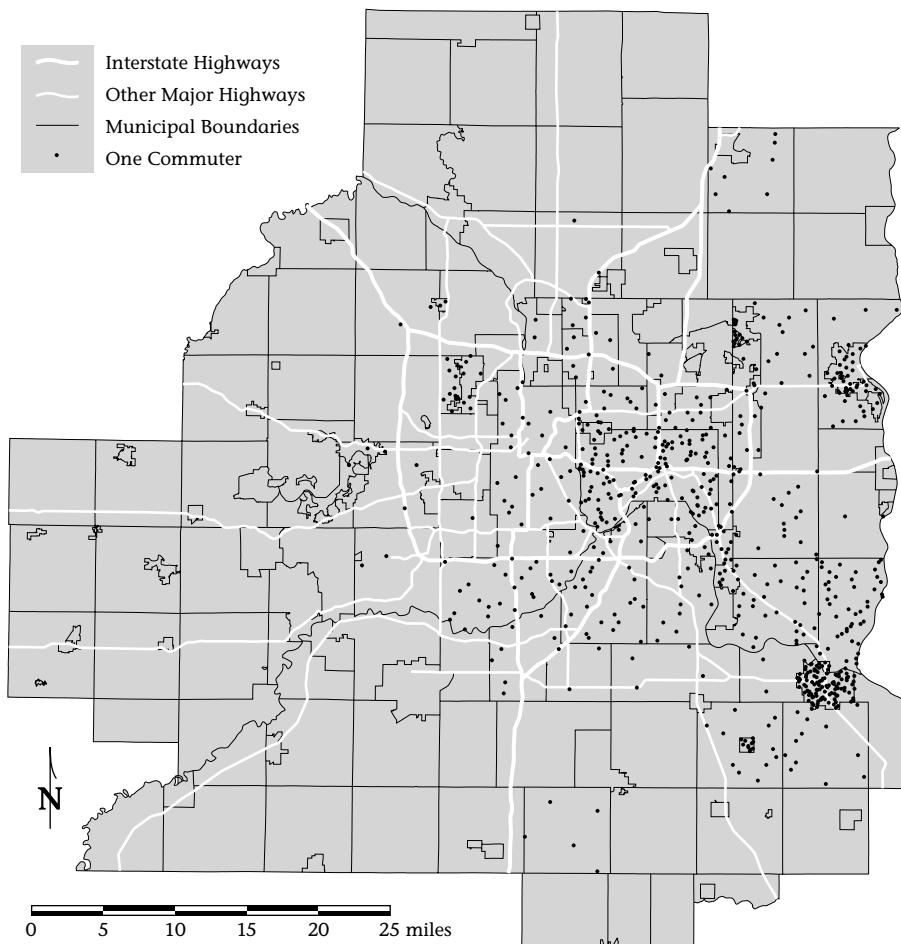


Figure 5. Commuting Patterns of Denmark Township Residents, 1990

Source: 1990 U.S. Census Urban Transportation Planning Package
Note: Includes workers aged 16 or over who did not work at home

pursuing nursery or horticultural interests are also characteristic of hobby farmers. Thus, land can be said to remain in agricultural use, but the exurbanite farms part-time as an avocation and not to earn a living. In short, the exurban "farm" is not a commercial enterprise, and it is not intended to be.

Some exurbanites may be pursuing lower taxes, but this does not seem to be a primary motive for taking up the exurban life style. The pursuit of a Jeffersonian lifestyle means a greater willingness to incur any inconveniences inherent in exurban living. Because they rely on private wells and septic tanks, the primary public infrastructure demand of the exurbanite is access to freeways. With sufficient income for private schools, personal libraries, and other replacements for urban services, exurbanites have a sense of independent self-sufficiency. In short, exurban residents seek a truly country lifestyle,

much in the manner of English country estates, but with all of the advantages of urban opportunities. Overall, it appears that exurban development requires not only the addition of a further geographic distinction, but also the addition of a new urban socio-economic class. A "landed gentry" has emerged for whom even the suburb poses dissatisfaction. Between 1970 and 1990, Denmark Township appears to have become one home for this new social class.

Exurban development does raise questions about policies to maintain permanent agricultural and rural land. These distinctions are set forth in the Regional Blueprint of the Metropolitan Council, and are carried forward in the comprehensive plans for Washington County and the city of Cottage Grove. The major policy tool available is the imposition of large-lot zoning for both agricultural and rural areas. For permanent agricultural areas, the Metropolitan

Council indicates that it will support a density of no more than one housing unit per 40 acres. In permanent rural areas, the recommendation is a threshold of one unit for 10 acres gross density (although cluster development is encouraged as another means of protecting environmentally sensitive areas).

One additional tool employed by the Metropolitan Council is the Metropolitan Agricultural Preserves Program. Started in 1980, this program offers incentives for farmers to keep their land in agricultural use. Protection and benefits continue for 8 years following the date an expiration notice is filed, so participation is time-limited. In 1997, approximately 38% of agricultural land eligible for the program was actually enrolled, according to the 1998 *Metropolitan Agricultural Preserves Status Report*. In Washington County, 69% of land certified as eligible was enrolled. In Cottage Grove, 41% of eligible land (5,400 acres) was enrolled. In Denmark Township, 92% of eligible land (2,800 acres) was enrolled. However, it should be noted that only 17.5% of Denmark's 16,000 acres of agricultural land was certified as eligible for the program.⁹

Given the unusual character of exurban development, many issues need to be addressed if current policies aimed at protecting permanent agricultural and rural areas are to be effective. First, it is important to note that at stake in these policies is not only the protection of commercial agricultural enterprise, but also the protection of wildlife habitat, wetlands, forested areas, flood zones, areas prone to erosion, and areas susceptible to groundwater contamination. Husbandry of land thus entails more than good farming practices. When exurbanites own and occupy more land than they need, will they be motivated and able to properly manage it if they work the land on only a part-time basis?

Second, after the initial honeymoon period of peaceful, exurban living, how much more prominent will the inconveniences of rural living become, giving rise to a demand for enhanced urban services? Third, as the recent influx of residents between 45 and 65 begin to

⁹On February 2, 2000, Washington County adopted a voluntary transfer-of-development-rights program. Because of its voluntary nature, one critic has suggested that not many farmers are likely to participate because many see their farmland as "their 401(k) retirement program."



New single-family housing in Denmark Township. Hobby farms on which horses, wine grapes, nursery plants, or specialty vegetables are raised are characteristic of the exurban development found in Denmark.

age, and their children move away from home, to what extent will the empty-nesters return to urban settings closer to healthcare facilities, cultural events, etc.? To the extent that this happens, will there be pressure to split up the acreage that is part of their estate? One house on 10 acres of land can easily be converted to five or more houses on the same plot of land in 10 or 15 years time. Despite the very low densities associated with exurban development, exurbanites nonetheless convert "productive" agricultural land to "consumptive" residential land. Over time, this means that formerly productive land becomes either idle or underproductive—a situation that past evidence suggests may portend suburban sprawl such as that seen in Cottage Grove.

Fourth, the arrival of high-income exurbanites creates upward pressures in the agricultural and rural land markets. The presence of exurban estates clearly can drive up the market value of surrounding farmland—even that enrolled in the Agricultural Preserves Program. Thus, not only does pressure from large-scale developers impact land prices on the urban edge; so too does

the kind of market pressures created on a plot-by-plot basis by exurbanites. The market dynamics in each situation would appear to be identical.

Other issues of concern include the following:

- In areas with sensitive soil and bedrock conditions (such as Cottage Grove and Denmark), the proliferation of private on-site water and waste-treatment systems may cause the systems to fail over time, creating pressure to replace them with public systems.
- Exurban development can encourage even further dispersal of jobs and employment centers away from major urban areas.
- Exurban development increases pressure to subsidize expensive expanded highway networks, which in turn significantly increases overall vehicle miles traveled by residents with access to the highway.

As the authors of the Oregon study note, "Without planning and coordination of government services attuned to the special challenges of exurban devel-

opment, the result may be exurban sprawl that could make suburban sprawl seem a highly desirable alternative."

Overall, this case study has highlighted the threats to maintaining a firm urban growth boundary in the Twin Cities metropolitan area through 2040. Particular attention to the socio-economic dynamics of a community that, on the surface, shows little change in population or land use highlights the emergence of this new sociological phenomenon. By comparing Cottage Grove and Denmark, the distinctions between a suburban community and an exurban community become evident. From this examination, it is clear that the policies aimed at preserving "permanent" agricultural and rural areas can in no way guarantee their preservation over the next 40 years. Zoning alone is not likely to be an effective tool in such a cause, nor does it seem that the Agricultural Preserves Program can be effective in the long run. Transfer of development rights is a recent tool that may help, but the current Washington County program for Cottage Grove and Denmark Township is only voluntary. It would appear that the time is appropriate



Although exurban development is usually low density, it still converts productive agricultural land to consumptive residential land. In addition, the presence of exurban estates can drive up the market value of surrounding farmland. Over time, these factors can lead to suburban sprawl.

to consider more vigorous public action in the form of easements, land trusts, and outright purchase of critical areas on the urban fringe. Indeed, with only the tools that are presently at our disposal, the loss of "permanent" rural and agricultural areas may be closer than we imagine.

■ Richard S. Bolan is professor emeritus of planning and public affairs at the Hubert H. Humphrey Institute of Public Affairs. Before joining the Institute in 1985, he was a professor of social planning at Boston College, and edited the *Journal of the American Institute of Planners*. Previously he was on the staff of the Joint Center for Urban Studies at Massachusetts Institute of Technology (MIT) and Harvard University, and was director of

renewal planning for the Boston Redevelopment Authority.

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John Adams Appointed to Fesler-Lampert Chair in Urban and Regional Affairs

John S. Adams, professor of geography, planning, and public affairs and chair of the Department of Geography, has been named to the first Fesler-Lampert Chair in Urban and Regional Affairs. Adams' appointment, which was announced this past June, was made by the Dean of the Graduate School and Vice President for Research Christine Maziar, based on recommendations from CURA.

"I'm highly honored and gratified to be associated with [the Fesler family's] generous support . . . of the University," Adams replied when asked for his reaction to the announcement. "Urban and regional analysis is often unfashionable among social scientists, but I've always felt that our land-grant university has a special mission to help Minnesotans understand our state and its place in the region, the nation, and the world." This endowment, he says, demonstrates that the Fesler family "understands the crucial role of philanthropy in making certain work possible that otherwise would remain undone."

The Fesler-Lampert Chair in Urban and Regional Affairs is one of four endowed chairs and two named professorships made possible through a generous contribution to the University of Minnesota by David R. and Elizabeth P. Fesler. The Fesler-Lampert Endowment in Interdisciplinary and Graduate Studies was initially established in 1985 through a \$1 million grant from the David R. Fesler Fund of the Saint Paul Foundation, Inc. The gift was matched by a \$1 million allocation from the Permanent University Fund, and the combined endowment and matching funds have now grown in value to over \$9.5 million. The endowment is intended to stimulate interdisciplinary research and teaching through the appointment of distinguished, broadly learned scholars to endowed faculty positions at the University of Minnesota.

Tom Scott, director of the Center for Urban and Regional Affairs, called Adams "the logical and obvious choice



John S. Adams

to be the first holder of the Fesler-Lampert Chair. The quality and quantity of his contributions to our understanding of urban affairs—through his research, teaching, and community outreach—are unmatched by anyone else at this or most other universities." Scott noted that Adams' "entire academic career as a student, teacher, and researcher has been focused on urban and regional change," and praised his "extensive contributions to the University, to professional geographers, and to the broader Minnesota community."

David Fesler also was pleased when he learned of Adams' appointment. "I took a course from Professor Adams many years ago on the geography of the Twin Cities," he explained, "and I enjoyed him very much as a teacher. Even though I'm a native of the Twin Cities and have lived here all my life, I learned a tremendous amount from that course. So when he was selected as the chair, I was elated." In addition, Fesler noted that Adams is a good choice for the honor because he has "always been involved in the community" and has been "very active in University affairs, above and beyond his contributions

[in the Humphrey Institute and Department of Geography]."

John Adams has been a professor of geography at the University of Minnesota for the last 30 years. He received his bachelor's degree at the University of St. Thomas and his master's degree at the University of Minnesota before completing his Ph.D. in economic geography at the University of Minnesota in 1966. Adams took a position as assistant professor at the Pennsylvania State University before returning to the University of Minnesota in 1970 as associate professor in the Department of Geography. During his career, Adams has also taught as a Fulbright Professor at Moscow State University and at the Economic University of Vienna, and has been a visiting professor or lecturer at literally dozens of colleges and universities throughout Europe, Asia, and North America.

In addition to his many teaching accomplishments, Adams served as the first director of the Hubert H. Humphrey Institute of Public Affairs from 1976 to 1979. He has also directed the Urban Studies Program in the College of Liberal Arts, coordinated the Humphrey North-South Fellowship Program (a Fulbright Exchange program for officials from developing countries), and served a term as president of the Association of American Geographers.

Through his research, Adams has contributed significantly to knowledge and understanding of urban and regional affairs. He has written, edited, or co-authored over 100 articles, books, and reports on the American city, regional economic development, intra-urban migration, housing markets, urban transportation, and urban development. His publications include the four-volume *Contemporary Metropolitan America* (Ballinger, 1976), *A Comparative Atlas of America's Great Cities* (with Ronald Abler and Ki-Suk Lee; University of Minnesota Press, 1976), *Housing America in the 1980s* (Russell Sage Foundation, 1987), and *The Path of Urban Decline* (with Barbara VanDrasek and

Laura Lambert; Center for Urban and Regional Affairs, 1995). In addition, Adams has been a regular collaborator with CURA as well as a frequent contributor to the *CURA Reporter* over the past 25 years.

Currently, Adams is engaged in research with the University of Minnesota Center for Transportation Studies on land-use and transportation issues in Minnesota's major urban areas. He says he plans to use the resources provided by his appointment to revise and update *Minneapolis-St. Paul: People, Place and Public Life*—a book he co-authored with Barbara VanDrasek and published (with help from the Fesler family) with the University of Minnesota Press in 1993—based on population and housing data from the 2000 Census. "Much has changed since the first edition of that book," Adams explained. "[T]he number of households in our area has expanded faster than the housing stock, raising house prices and rents, and encouraging reinvestment in areas that had been deteriorating for several decades. Meanwhile, our first-ring suburbs are showing signs of aging, and property tax collections often are rising more slowly than what communities would like to spend on maintenance and improvement. At the outer edges of the greater Twin Cities region, low-density development adds to congestion on the region's trunk highway system, fraying nerves and challenging legislators and planners to figure out better ways to foster growth and guide change. These are just a few of the topics and issues facing us as we plan our revision." Adams added, "Our earlier book helped

many local citizens and leaders understand the way this area works. I hope that the revision will do the same."

The Fesler-Lampert Endowment is intended as a tribute to David Fesler's grandfathers, Bert Fesler and Jacob Lampert. Despite very different educational backgrounds, David Fesler noted, "they were both extremely interested in education." Bert Fesler graduated from Indiana University with a degree in ichthyology, became a self-taught lawyer, and then served as a district court judge in Duluth for nearly 30 years. In contrast, Jacob Lampert was an immigrant from Switzerland who Fesler said "never finished fifth grade. But he was very concerned that his children and grandchildren receive a good education." Lampert bought a retail lumber mill in 1887 that eventually grew into Lampert Yards, Inc., with lumber yards throughout the Midwest.

In addition to the chair in urban and regional affairs, the Fesler-Lampert endowment will be used to fund three other endowed chairs and two named professorships: The Fesler-Lampert Chair in Ecological/Environmental Economics (Steven Polasky, Applied Economics), The Fesler-Lampert Chair in Humanities (Madelon Sprengnether, English), The Fesler-Lampert Chair in Aging Studies (LaDora Thompson, Physical Medicine & Rehabilitation), The Fesler-Lampert Professor in Humanities (Anatoly Liberman, German, Scandinavian, & Dutch), and another professorship in an area of study yet to be determined.

The Fesler-Lampert Chair in Urban and Regional Affairs will be funded for a minimum of three years, with each

chairholder appointed for a one-year period. The position will be funded initially by \$1 million of the Fesler-Lampert endowment which, at the current rate of payout, will provide the chairholder with approximately \$55,000 for research, salary, and logistical support. The funds will be jointly administered by the University of Minnesota Foundation and the University of Minnesota.

Credits

Photos on cover, pages 3, 4, 5, 6, 7, and 8 appear courtesy of the Minnesota Historical Society.

Photos on pages 16, 19, 24, and 25 by Bob Friedman.

Photo on page 26 courtesy of John S. Adams.

All figures prepared by the Cartography Laboratory, Department of Geography, University of Minnesota.

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Meet CURA's New Editor and Communications Coordinator

This past June, CURA welcomed aboard Mike Greco, our new publications editor and communications coordinator. He takes over the position of editor from Judith Weir, who retired in January after 23 years at CURA.

Mike has been a freelance writer and editor for the past eight years, and started Dire Wolf Publishing Services in 1994. He has also taught communication studies at the University of North Carolina at Chapel Hill (where he earned a masters degree), the University of Illinois (where he was a doctoral candidate), the General College at the University of Minnesota, and most recently St. Olaf College.

In addition to editing the *Reporter* and other CURA publications, Mike will be responsible for public outreach, media relations, and website development. He can be reached by phone at (612) 625-7501, or by e-mail at greco002@tc.umn.edu.

Shirley Bennett Retires

Shirley Bennett, who started with CURA some 33 years ago and for quite a while was CURA's only staff member, retired from her position as Departmental Administrative Director at the end of July. For many years and for many people, CURA and Shirley Bennett were synonymous. There is no way to describe adequately the importance of her role with CURA, nor to express fully our appreciation for her years of faithful and dedicated service.

Shirley came to the West Bank from West Concord, Minnesota as a teenager, and although she leaves CURA, her heart will remain in the vicinity. Years ago she rode with the West Bank Motorcycle Club; her more recent riding has been confined to a chair in the local coffee shop.

Her long-term plans are indefinite at the moment, but she plans to visit friends in Ireland this fall. Shirley is part of CURA's heritage, and we will miss her!

Conference on Natural Capitalism and Eco-Industrial Development, October 4–5

"The Greening of Economic Opportunity: At the Firm, Industry, and Community Level," a conference on natural capitalism and eco-industrial development, will be held October 4–5, 2000, at the Earle Brown Center on the St. Paul campus of the University of Minnesota. The conference will feature a keynote address by Hunter Lovins, pioneer in sustainable development, and workshops by staff of the Rocky Mountain Institute. Also included will be workshops and presentations on eco-industrial development by staff of the Work and Environment Initiative at Cornell University. The conference is co-sponsored locally by CURA, the Green Institute, the Minnesota Pollution Control Agency, and the Office of Environmental Assistance. For more information, visit the Green Institute website at <http://www.greeninstitute.org> or call (612) 278-7100.



REPORTER

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CURA connects University faculty and students with the people and public institutions working on significant community issues in Minnesota. CURA helps:

- faculty and students produce more relevant research on critical issues
- students strengthen their education through practical experience
- government agencies and community organizations get the assistance they request
- the University of Minnesota fulfill its land grant and urban missions

The *CURA Reporter* is published quarterly to provide information about CURA projects and programs. This publication is available in alternate formats upon request.

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