

**The Footprint of Exurban Development:
A US/UK Comparison¹
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Abstract

This paper is concerned with that type of sprawl commonly referred to in the US as leapfrog or overspill development - housing that has been constructed, usually contrary to local policy intentions and without an overall plan, in the rural area beyond a community's designated growth centers. Holding development in this rural area to 5-10% of the area's total housing supply has been demonstrated in the author's earlier research to be an attainable benchmark for containment based on what the leading US communities have been able to achieve. This paper compares the US with the UK in terms of containment as well as the footprint of exurban housing. A surprising result is discovered when containment outcomes in US communities are compared to their counterparts in England. There is actually more decentralization of housing into the English countryside than is found in the US. This contradicts the dominant image of the English countryside as a relatively undeveloped "green and pleasant land". How is this apparent contradiction possible? It is possible because a high percentage of English housing, unlike its US counterpart, is clustered in towns and villages. The footprint of rural housing is, therefore, a key variable. If, as seems likely, a significant amount of leapfrog development will continue, particularly outside US cities but also in the UK, are there patterns in which this housing would be less objectionable than conventional large lot/low density American style sprawl? Are there opportunities to create more towns and villages in the English mode and to conserve countryside open space? Do communities need to have explicit policies and plans for guiding this rural housing or is it sufficient to simply declare the area outside the urban growth centers "off limits" and hope for the best? What lessons about rural settlement patterns can be gleaned from comparing the US and the UK experience?

Benchmarking Containment in US Communities – Initial Research

In previous research, the author (Dotson 2004a and 2004b) compared his own community to twelve leading US communities using data from the 2000 US Census. Each community had established formal or equivalent urban growth boundaries. These boundaries were overlaid on Census block groups so that each block group could be classified as either inside the urban growth boundary or outside. Data were then compiled using several measures to gauge the community's success in limiting housing development beyond its urban growth boundary.

The results of five measures are shown in Table 1.

¹ Portions of this paper have been presented previously at Association of Collegiate Schools of Planning Conferences (Dotson 2005, 2006a).

Judged by the percentage of the overall area's housing units found in the rural area, several US communities performed quite effectively by holding rural area housing to under 5%. Lexington/Fayette County Kentucky, Sacramento County California, and Baltimore County Maryland perform particularly well on this measure.

The second measure targets housing units constructed during the 1990's, a period when each community's urban containment/anti-sprawl policies had been in place for at least a decade. Lexington, Sacramento and Seattle perform particularly well on this score.

The third measure is narrowed to single family detached housing units, the type of low density housing most associated with sprawl in the US. Communities doing especially well again include Lexington, Sacramento and Seattle.

Table 1: Measures of Containment

Measure	% of Area's Total Housing in Rural Area	% of Area's Housing Built in '90's in Rural Area	% of Area's Single Family Detached Housing Built in Rural Area	Rural Area Housing Units per Square Mile of Private Land	Number of Housing Units Found in the Rural Area
Location ²					
Lexington, KY	3	6	5	21	3,816
Sacramento, CA	3	7	3	26	11,916
Baltimore, MD	4	8	13	78	26,395
Seattle, WA	5	7	8	47	39,128
Montgomery County, MD	5	12	10	78	18,332
Minn/St.Paul Region, MN	5	8	7	42	51,294
Portland Region, OR	8	8	10	32	47,584
Boulder, CO	14	16	20	65	7,380
Pinelands Region, NJ	14	14	15	38	25,673
Ft. Collins, CO	15	16	19	15	15,640
Burlington, VT	19	24	28	32	10,992
Charlottesville, VA	29	27	43	24	14,654
Petaluma, CA	34	28	39	45	61,378

The fourth measure is land based. It is the number of rural area housing units per square mile of privately held land. Public lands were excluded because they are not

² Locations are identified by a familiar city name but they also include the surrounding/overlapping county, or counties in the case of the three regional programs (Portland, Twin Cities, and Pinelands).

governed by local land use regulations. Again Lexington and Sacramento perform the best with Ft. Collins also being among the leaders.

These four measures, while useful in many ways, also mask important realities as revealed in the last column in Table 1. Containing 90%, or even 95%, of a community's housing inside its urban growth boundary is a noteworthy accomplishment, however, the 5 - 10% of units finding their way into the countryside can still be a significant number of units when considered in absolute terms. Thus even where growth management is successful, there can still be a troubling amount of leapfrog development and rural sprawl³.

The Case for Anglo-American Comparisons

Looking beyond our own borders widens opportunities for benchmarking the performance of US communities. England is a logical point of comparison because it and the US share many aspects of a common heritage but also exhibit notable differences including their reputations in successfully managing growth. The possibility of learning from these differences is the topic of this paper.

England's greenbelt⁴ and new town⁵ programs in particular demonstrate that nation's long standing commitment to spatial planning. An important part of this planning legacy is strong policies aimed at controlling sprawl and protecting the countryside⁶ at the same time that development is targeted to favored urban sites.⁷ There

³ Pendall, Martin and Fulton (2002) found that "The deliberate creation of an urban containment policy will not automatically lead to high-density urban development inside the boundary and large-scale land conservation outside the boundary; residents and property owners still have considerable sway in those areas....Many urban containment systems continue to permit low-density residential development, hobby farming, and other "rural" uses that may restrict the amount of development but do not necessarily retain working landscapes or preserve natural systems." page 36.

⁴ The Greenbelt program was initiated in 1938 around London but was expanded in 1955 when the national government began encouraging local authorities to consider designating greenbelts. The purposes of greenbelts are to check the unrestricted sprawl of large built-up areas, to prevent neighbouring towns from merging into one another, to assist in safeguarding the countryside from encroachment, to preserve the setting and special character of historic towns, and to assist in urban regeneration by encouraging the recycling of derelict and other urban land. By 2003, 1,671,600 hectares, 13% of the land area in England, were contained within 14 regional greenbelts. A major debate today is whether the tight restrictions of the greenbelts should be loosened to help accommodate the 140,000 new homes per year that the Barker Report (2004) finds are needed. Current greenbelt policy is contained within a planning policy guidance document, PPG2 – Greenbelts, available at

http://www.odpm.gov.uk/stellent/groups/odpm_planning/documents/page/odpm_plan_606905.hcsp

⁵ Twenty eight New Towns have been planned and built in England. The first was Letchworth, north of London, in 1903. This was followed in the 1920's with Welwyn Garden City. Both were constructed under private initiative. The government program of New Towns began after the WWII under public corporations financed by the government. Twenty one towns were built under this program between 1946 and 1970. An estimated 2 million Britons, who might have otherwise been scattered around the countryside, now live in New Towns. The largest concentration of New Towns continues to be in the Southeast around London. Information about each new town can be found at <http://www.englishpartnerships.co.uk/newtowns.htm>

⁶ Planning Policy Statement 7: Sustainable Development in Rural Areas, states current policy as follows "To promote more sustainable patterns of development: focusing most development in, or next to, existing towns and villages; preventing urban sprawl; discouraging the development of greenfield land, and, where

is widespread citizen support for preserving those things that the English value in the countryside.⁸ Significant too is the fact that the organic planning statute in England is the Town and Country Planning Act, both city and countryside are concerns.⁹ England also has a national agency known as the Countryside Agency¹⁰ which, along with its predecessor agencies, has watched over the countryside since 1909. No equivalent high level government attention is paid to countryside issues in the US so one would not expect to find the US doing well in comparison to the UK.

Some see US/UK cross-national comparisons as a missed opportunity.¹¹ Others have seized the opportunity to organize on-going exchanges between US and UK planners in the belief that there is mutual benefit from exchange and collaboration.¹² Still other writers have looked to the US as an example of what the UK should not do in planning because the UK system is far superior.¹³ These different views all point, however, to the UK as a potential source of benchmarks and inspiration for US planners.

such land must be used, ensuring it is not used wastefully; promoting a range of uses to maximize the potential benefits of the countryside fringing urban areas; and providing appropriate leisure opportunities to enable urban and rural dwellers to enjoy the wider countryside” page 4,

<http://www.planningportal.gov.uk/england/professionals/en/1020432885091.html>

⁷ The government’s national target is that by 2008, 60% of new dwellings will be built on “previously developed land” or through conversion of existing buildings. In 2004, provisional estimates are that 67% of new dwellings were of these two types (Office of the Deputy Prime Minister, 2005).

⁸ “The five most mentioned positive features of the countryside were tranquility (58%), scenery (46%) open space (40%), fresh air (40%), and plants and wildlife (36%).” (DEFRA 2001)

⁹ available at http://www.opsi.gov.uk/acts/acts1990/Ukpga_19900008_en_1.htm

¹⁰ for a description of this agency and its function see <http://www.countryside.gov.uk/>

¹¹ “European influence on American planning has a rich history dating back at least to the visionary work of Frederick Law Olmsted in the late 1800’s. In more recent times, however, little has been done to capitalize on Europe’s evolving efforts to accommodate and control modern development. Because of the localized nature of context (in this case political and legal), the relevance of European achievement has been undervalued by contemporary American society. ...In contrast to European actions, the vast majority of smart growth programs in the United States ‘lack a real spatial planning element that could delineate and map growth centers and growth corridors, conservation areas and infrastructure strategies’. ...Much can be learned from how the British system has reinforced local control and why it is now regarded as a logical vehicle for pursuing sustainable development in the UK.” (Siy 2004) page 4,6, & 12

¹² The North American/United Kingdom Countryside Exchange is a joint program that stands as evidence of mutual interest in comparing and seeking insights from planning experience on each side of the Atlantic. The Countryside Exchange brings working professionals and academics from communities in each country into host communities in the other country to offer fresh perspectives and advice about common issues. Since 1987, more than 100 teams involving nearly 1,000 members have participated in week long exchange visits. In the UK, the program is organized by that nation’s Countryside Agency. In the US, it is managed by the Glynwood Center (<http://www.glynwood.org/programs/exchange.htm>).

¹³ Tristram Hunt, a leading British historian and a former visiting professor at Arizona State University warns “Traditionally, British policy makers are all too easily drawn to American innovations. But, my time in Phoenix has shown the United States pursuing a model we desperately need to avoid: depopulating downtowns, ravaged countryside, unsustainable energy consumption, social and racial segmentation and a sprawling exurbia that is retreating unrelentingly into the future.” “The sprawling of America makes recent British debates on planning all the more peculiar. For it appears that we are on the verge of jettisoning our historic safeguards and pursuing an equally disastrous route.” “Britain could, of course, have opened up its fields a long time ago and gone the way of Phoenix or Atlanta. It certainly looked that way during the inter-war years, as house building churned up the country at alarmingly low densities. But in 1947 the Atlee administration initiated what has rightly been termed ‘one of the most powerful systems of land use planning ever introduced in any country’. The Town and Country Planning Act saved our cities and

Compared to English communities with their strong traditions of planning, how are US communities doing in protecting the countryside from sprawl? A show of hands would likely reveal that many/most/possibly all observers would see the UK as clearly the more successful? Is this the case? What can be learned from the English?

Research Methodology

Both the US and the UK have regularly prepared population and housing censuses, the US in 2000 and the UK in 2001. In launching a joint program between the Brookings Institution and the London School of Economics based on the census data from these two countries, Tunstall (2005, page 1 and vi) observes “The United States and the United Kingdom are ... enticing targets for comparative study. The two nations share many broad economic, social and political similarities. ... And yet, the countries also retain many important and fascinating differences in the characteristics of their populations and also in some aspects of their censuses.” She goes on to observe, “In broad terms, the US and UK censuses resemble each other. Despite betraying traces of their divergent original rationales and users, both of these long-running canvasses have over time substantially converged. In recent decades, the two censuses have been carried out similarly. What they ask, the response rates, forms of analysis, and the way data are presented are generally comparable now. ... In sum, the US and UK censuses - despite their idiosyncrasies – are more similar than different and furnish valuable information for comparative research. By employing a little ingenuity, researchers, policy makers, and practitioners will find in the two censuses a rich resource for future inquiry into the similarities and differences of the two countries”. This paper takes advantage of these two data sources to examine questions related to urban containment and the footprint of exurban development.

CD's containing the UK census data and reporting area boundaries were generously provided by Office for National Statistics (www.statistics.gov.uk) for purposes of academic research. This study is focused on England and does not actually examine Wales, Scotland or Ireland though the research here is described, for brevity, as a US/UK comparison. Thirteen English counties were selected for analysis.

The 2001 UK census reports data for Digital Output Areas or OA's. These are the smallest units for data reporting and have been targeted to contain approximately 125 households. OA's geographic area varies considerably from quite compact OA's in cities to fairly extensive areas in the countryside. The OA lies somewhere between the US block and block group. Block group is the unit utilized in the previous research. The block, however, was chosen for the US portion of the current research because it is the smallest geographic unit available from the US Census and is more appropriate than a larger unit for carefully examining the fine grain of settlement patterns around cities.

countryside from the prospect of never-ending sprawl. City limits were defined by greenbelts and extra growth was channeled into New Towns. It was this pioneering legislation that carved out the perimeters of our modern rural-urban divide. And now fashionable voices want to do away with it.” (Hunt 2005)

The previous study defined block groups and housing units as being either inside or outside the community's urban growth boundary. Data were then presented for the rural area, the area outside that boundary, and compared across communities. Counties provided the overall geographic framework. If an independent city was within the county area, city figures were combined with county figures to generate consistent area-wide totals. This approach is also taken in the current research since several English cities are "unitary" authorities and exist independently of their surrounding counties and must be combined to achieve area-wide housing counts.

In the previous research a dozen US communities were chosen for comparison to my own community. These were selected based on their general reputation as leaders in the field of growth management planning. These same communities are examined in the current research. For the UK communities, the selection criterion was the adoption of a greenbelt program. This was taken, *prima fascia*, as indicating a strong commitment to spatial planning and countryside protection. Counties were chosen also to provide a representation of several regions in England. Together, these twenty six communities could be considered the "best" that the two countries have to offer.

Delineated urban growth boundaries were not easily obtainable for counties in England. Cost prohibited obtaining these boundaries from the one commercial vendor who had digitized them. Compiling them from each local authority was infeasible. Data were readily available, however, for census delineated "urban areas", defined as settlements with 10,000 or more population. OA's are classified as either urban or rural using this threshold. The focus here is rural areas defined as all areas not "urban".

In the US census, "urban" consists of "urbanized" areas of at least 50,000 population plus "urban clusters" between 2,500 – 49,999 population. For comparability to the UK, US urban areas were adjusted to exclude "clusters" below 10,000. For this study US areas below 10,000 inhabitants are considered rural as they are in the UK. This provides substantial comparability.

Because of the adjustment in methodology to make this comparative research possible, the attentive reader will note some differences between a US location's performance in the initial growth boundary and block group based research and the current research based instead on the urban/rural classification and the finer geographic grain of blocks.¹⁴

The conceptual starting point for the current work is a study performed by the English Office of National Statistics (2004) that resulted in a new set of rural settlement sub-categories. Rural OA's are classified as reflecting either "Town", "Village" or

¹⁴ It is interesting to note the rationales sometimes used in establishing urban growth boundaries in relation to areas already urbanized. One rationale, where considerable sprawl has already taken place, is to keep the urban growth boundary relatively compact rather than including each area already urbanized. Part of this is to avoid legitimating what has already taken place because doing so might encourage still further sprawl. Other communities use a rationale that is more expansive so that the urban growth boundary includes not only lands already urbanized but also an additional supply of land to accommodate future growth within the boundary. Mixtures of both rationales probably exist in any given community.

“Dispersed” settlement patterns. This was the final result of a very detailed analysis that began with individual house addresses converted to a one hectare grid, and an analysis of core area densities combined with the rate of fall-off of that density as distance from the core was increased. This classification is the basis for Table 4 in this paper but for the other analysis reported in this paper a more approximate measure needed to be developed.

No comparable sub-classification of US rural areas exists and the possibility of literally replicating the UK methodology was deemed infeasible for current purposes. Instead, a cruder measure has been developed based simply on block and OA housing densities. Through trial and error experimentation it was found that two densities yield results somewhat comparable to towns and villages. There is a rough correspondence between OA’s classified as containing towns and the density of 300 or more dwelling units per square mile. Likewise there is a rough correspondence between OA’s classified as containing villages and areas containing 100-299 units per square mile. Even though this correspondence is not perfect, as long as this method is consistently applied both to the UK counties and to the US counties, a valid basis of comparison is created. These two densities are also roughly equivalent to the US Census thresholds for defining blocks as having “urban” densities (blocks with at least 1,000 people per square mile and surrounding blocks that have an overall density of at least 500 people per square mile). The density of 300 housing units per square mile, if occupied by 3.33 persons per house, yields a population density of 1,000. The density of 100-299 housing units per square mile yields a population range of 333-997 using the same occupancy rate.

Anglo-American Comparison Results

Containment of Housing

How do the leading communities in England compare to leaders in the US in terms of containing housing and conserving the countryside?

Before examining the data, let’s ask, isn’t the answer obvious - given England’s well deserved reputation for spatial planning? Don’t all visitors to rural England bring back memories of poet William Blake’s “green and pleasant land”? The answer is actually surprising.

Among the US case study communities, 8 of the 13 have contained 90% or more of their housing inside urbanized areas with only 10% or less of their area’s housing escaping to the rural area. By contrast, in the thirteen English counties, the percent of housing located in the rural area ranges from a low of 12% all the way up to 57% with a median of 34%. The UK actually has a significantly higher share of their area-wide housing in the area classified as rural than their US counterparts. A side by side comparison is provided below in the Tables 2 and 3.

Table 2 – Percent of Area Housing Located in the Rural Setting

UK Location	% of Housing in Rural Setting
Hertfordshire	12
Staffordshire	18
Lancashire	18
Nottinghamshire	20
Kent	25
Dorset	25
Gloucestershire	34
Bedfordshire	36
Buckinghamshire	36
Oxfordshire	40
Cambridgeshire	50
Northumberland	50
North Yorkshire	57

US Location	% of Housing in Rural Setting
Montgomery County, MD	2
Sacramento, CA	3
Baltimore, MD	3
Seattle, WA	4
Lexington, KY	4
Minn/St Paul Region, MN	6
Portland Region, OR	7
Pinelands Region, NJ	8
Boulder, CO	11
Ft. Collin, CO	17
Petaluma, CA	17
Burlington, VT	27
Charlottesville, VA	31

How do the two countries compare when the actual number of housing units found in the rural area is examined? Table 3 contains these figures.

Table 3 – Number of Housing Units Located in the Rural Setting

UK Location	# in Rural Setting
Hertfordshire	53,493
Bedfordshire	56,512
Northumberland	69,520
Buckinghamshire	70,658
Dorset	80,034
Staffordshire	81,269
Gloucestershire	82,768
Nottinghamshire	90,466
Oxfordshire	99,349
Lancashire	108,656
Cambridgeshire	115,975
North Yorkshire	143,830
Kent	168,735

US Location	# in Rural Setting
Lexington, KY	4,324
Montgomery County, MD	8,054
Sacramento, CA	11,703
Boulder, CO	13,561
Charlottesville, VA	15,856
Burlington, VT	16,156
Ft. Collins, CO	18,223
Baltimore, MD	18,731
Seattle, WA	26,545
Petaluma, CA	31,874
Portland Region, OR	45,212
Minn/St.Paul Region, MN	59,251
Pinelands Region, NJ	87,990

Again there is significant contrast. With the exception of the multi-county New Jersey Pinelands area, the US community with the greatest number of rural housing units is roughly comparable to the English community with the least number of rural housing units. This result is not what was anticipated given the English reputation for a green countryside.

Does this mean that England actually has more sprawl than the US? Not necessarily.

What it does mean is that it is important to examine the spatial dimension of housing, in combination with its quantity, in order to understand the apparent paradox of more English housing coexisting with more green space in the rural area.

While as many as half of the housing units in English counties are located in rural areas, a very high proportion of these units are clustered in towns or villages as shown in Table 4. Towns and villages occupy a small percentage of the land but contain the majority of the rural housing units. This pattern of “concentrated decentralization” is consistent with the spatial development policies of a number of EU countries. The US lacks any such policy at the federal level and also at the state and local level in most instances. US communities have operated as if declaring the rural area “off limits” will be sufficient to make it so and have not developed policies to guide inevitable rural development.

Table 4 – Rural Housing Units in Towns and Villages in England

UK Location	Total Rural Housing Units	% in Towns	% in Villages	Combined Villages and Towns
Nottinghamshire	90,466	64	29	93
Cambridgeshire	115,975	57	36	93
Bedfordshire	56,512	53	40	93
Oxfordshire	99,349	45	46	90
North Yorkshire	143,830	40	46	86
Hertfordshire	53,493	47	38	85
Dorset	80,034	46	39	85
Lancashire	108,656	53	29	83
Gloucestershire	82,768	38	46	83
Buckinghamshire	70,658	42	41	82
Kent	168,735	45	36	81
Northumberland	69,520	54	26	80
Staffordshire	81,269	44	35	79

Density of Housing

As noted above in the Research Methodology section of this paper, no US agency has classified blocks as containing towns or villages the way the English have. In this paper, therefore, density is used as a surrogate for such a classification. 100 - 299 dwelling units per square mile will be described as “village-like” density and 300 or greater dwelling units per square mile as “town-like” density. Table 5 reveals some significant differences between the US and the UK.

Considering the combined percentage of rural housing units found at town or village densities, all US location are lower than the lowest UK location. The lowest UK percentage is 57% while the highest US percentage is 53%. Among the US locations, with the one exception of Boulder, the percentage at village densities is greater than the percentage at town densities. Even when there is some clustering of housing units, in the US the lower village densities are favored over the higher town densities. In the UK by contrast, town densities consistently dominate village densities. What is the exception among the US locations is the rule among the UK locations.

Table 5 – Percent of Rural Dwelling Units at “Village” and “Town” Densities

UK Location	Gte 300 du/mile “Town”	100-299 du/mile “Village”	Combined
Lancashire	64	14	78
Bedfordshire	61	16	77
Nottinghamshire	66	10	76
Kent	59	17	76
Cambridgeshire	61	13	74
Buckinghamshire	56	17	73
Hertfordshire	60	12	72
Northumberland	62	9	71
Staffordshire	57	13	70
Dorset	54	14	68
Oxfordshire	52	16	68
Gloucestershire	50	12	62
North Yorkshire	48	11	57

US Location	300 du/mile “Town”	100-299 du/mile “Village”	Combined
Seattle, WA	20	33	53
Petaluma, CA	15	31	46
Pinelands Region, NJ	21	25	46
Boulder, CO	23	17	40
Sacramento, CA	17	22	39
Baltimore, MD	11	26	37
Ft. Collins, CO	16	21	37
Portland Region, OR	12	24	36
Lexington, KY	17	18	35
Montgomery County, MD	3	31	34
Minn/St. Paul Region, MN	12	22	34
Burlington, VT	5	23	28
Charlottesville, VA	3	18	21

The Footprint¹⁵ of Housing

Since much of the interest in settlement patterns around US and UK cities is focused on what is left of the rural countryside after housing development has taken place, it is instructive to examine how much of the rural land in each community is actually used for housing¹⁶. To examine this topic a potential policy scenario is traced out. If the goal were to concentrate housing in the rural area such that 80% of this housing could be kept to the least amount of land area, how large a land area would be required?¹⁷

To operationalize this policy scenario the following procedure is employed. For each US Census block or UK Census output area, housing density is calculated. Blocks/OA's are then ranked from densest to least dense. The 80% figure (dwellings x .8) is then calculated for each county's rural area. Starting with the densest, blocks or OA's are accumulated until the 80% number is reached. The percentage of the rural land area

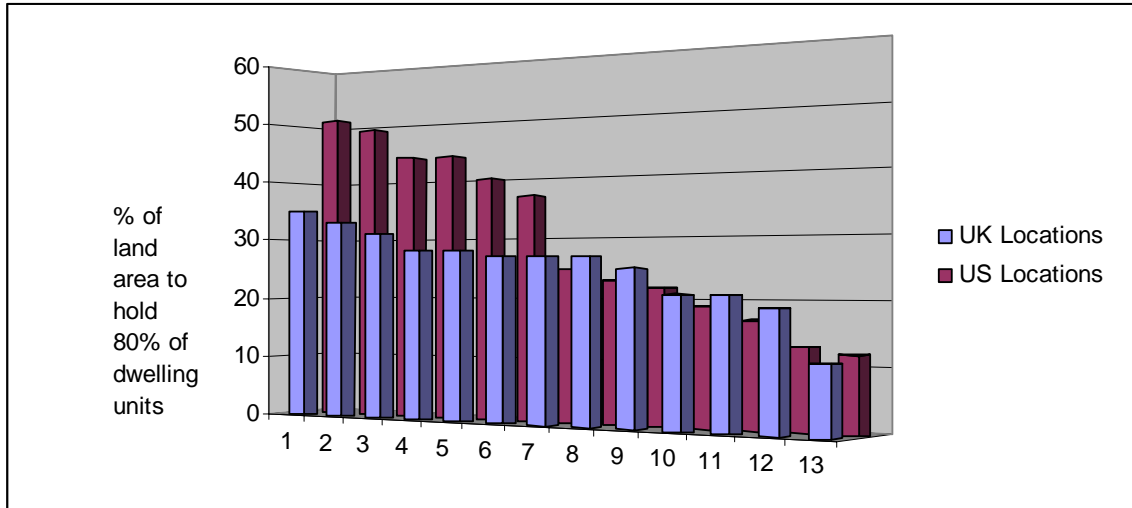
¹⁵ A similar approach to “footprints” is taken in Travis 2007, see especially Chapter 3, “Footprints of Development”.

¹⁶ It should be remembered that the geographic unit of analysis in the paper is the block or the output area. To include an area as being in the footprint of development does not mean that every part of that block or OA is developed. It means simply that relative to other blocks or OA's, that a particular area contains more development than others for its size.

¹⁷ This scenario imagines that 20% of the rural housing is related to economic activity rooted in the rural area and is appropriately scattered in order to be near the place of work.

represented by these blocks or OA's is then calculated and mapped. This approximates the "footprint" required to hold 80% of the community's rural dwelling units.

Figure 1: Development Footprint of 13 US and UK Locations



**Table 6 – Footprint of Development:
Land Area Required To Hold 80% of the Rural Dwellings**

UK Location	% of land area
Gloucestershire	35
Buckinghamshire	33
Oxfordshire	31
Kent	28
Dorset	28
Hertfordshire	27
Staffordshire	27
North Yorkshire	27
Bedfordshire	25
Nottinghamshire	21
Cambridgeshire	21
Lancashire	19
Northumberland	11

US Location	% of land area
Burlington, VT	51
Baltimore, MD	49
Minn/St. Paul Region, MN	44
Lexington, KY	44
Charlottesville, VA	40
Montgomery County, MD	37
Boulder, CO	25
Pinelands Region, NJ	23
Petaluma, CA	22
Portland Region, OR	19
Sacramento, CA	17
Ft. Collins, CO	13
Seattle, WA	12

Several observations can be drawn from this table and graph. On the right side of the graph, in approximately half of the comparisons, the US and UK communities are very similar, generally requiring 25% or less of their rural land to host 80% of the rural dwelling units. But, examining the full spectrum of values, there is a great deal more variability among US communities. While the UK locations tend to clump in the 20%-35% range, US communities involve as much as 51% of their rural land as part of the development footprint. One wonders if this is not a reflection of the presence of a more explicit national spatial development policy in England and the absence of national leadership in the US that leaves development goals and performance largely to be determined by local governments which vary significantly in the vigor and/or success of their efforts.

An important point to also keep in mind when comparing the US and UK in terms of the footprint of development is that the number of dwelling units is much larger in the case of the UK (see Table 3 to be reminded of this fact). It is especially remarkable, therefore, that UK communities have been able to retain such a significant proportion of their countryside.

Table 7 below brings these two dimensions together and classifies communities both by the number of dwellings found in their rural area and by the footprint of that development. UK is in red, US in blue. In each cell, in parentheses, is the number of rural dwellings followed by its footprint.

The striking thing in this table is that all the UK communities are in the high or very high category with respect to the number of units in their rural areas and all are, at the same time, in the medium to low category when it comes to the development footprint.

Table 7 - Development Footprint and Amount of Rural Housing

Development Footprint	# of DU in the Rural Area			
	Very High (gte 70,000)	High (40,000 – 69,999)	Medium (12,001 – 39,999)	Low (lte 12,000)
High (gte 40%)		Twin Cities (59,521/41%)	Albemarle (15,856/40%) Burlington/Chitenden (16,156/51%) Baltimore (18,731/49%)	Lexington/Fayette (4,324/44%)
Medium (26-39%)	Buckinghamshire (70,658/33%) Dorset (80,034/28%) Staffordshire (81,269/27%) Gloucestershire (82,768/35%) Oxfordshire (99,349/31%) North Yorkshire (143,830/27%) Kent (168,735/28%)	Hertfordshire (53,493/27%)		Montgomery (8,054/37%)
Low (lte 25%)	Pinelands (87,990/23%) Nottinghamshire (90,446/21%) Lancashire (108,656/19%) Cambridgeshire (115,975/21%)	Portland Metro (45,212/19%) Bedfordshire (56,512/25%) Northumberland (69,520/11%)	Boulder (13,561/25%) Larimer (18,223/13%) Seattle (26,545/12%) Sonoma (31,874/22%)	Sacramento (11,703/17%)

Another way to examine the question of rural land utilization is presented in Table 8. It shows the percentage of the footprint in each jurisdiction which is at a density of 100 or greater dwellings per square mile. The higher the percentage, the more efficient is the utilization of land that has been committed to development.

Table 8 – Percent of Footprint (greater or equal to 100 dwellings per square mile)

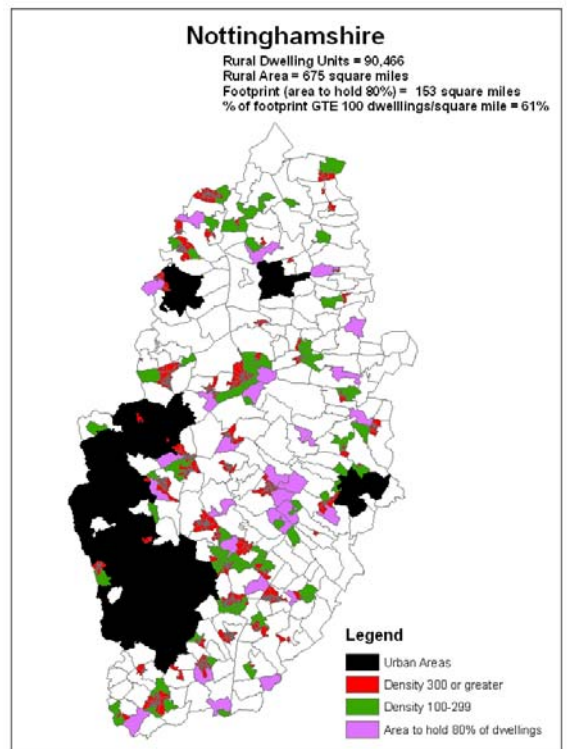
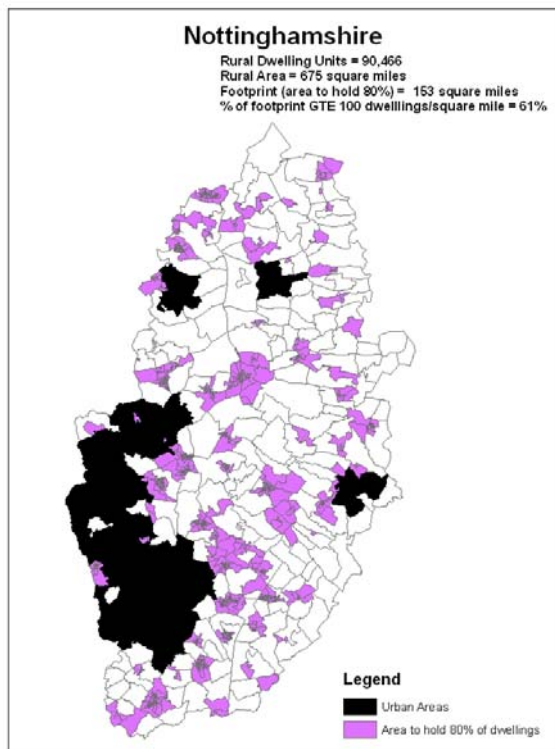
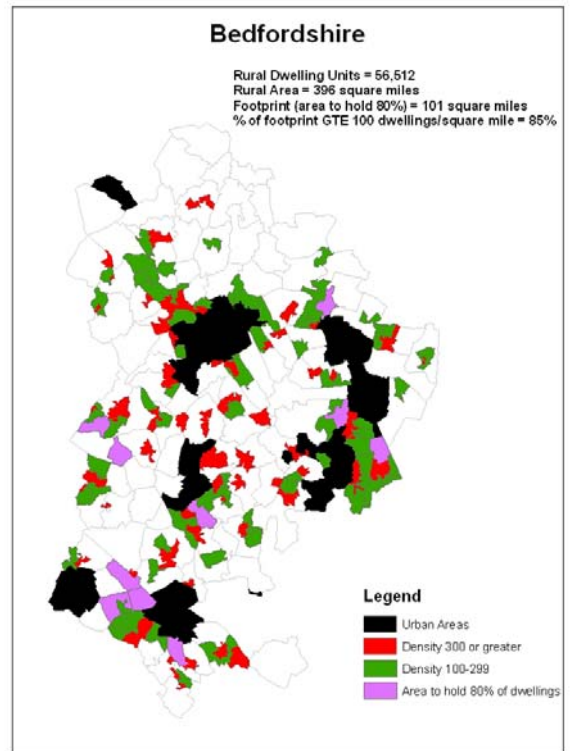
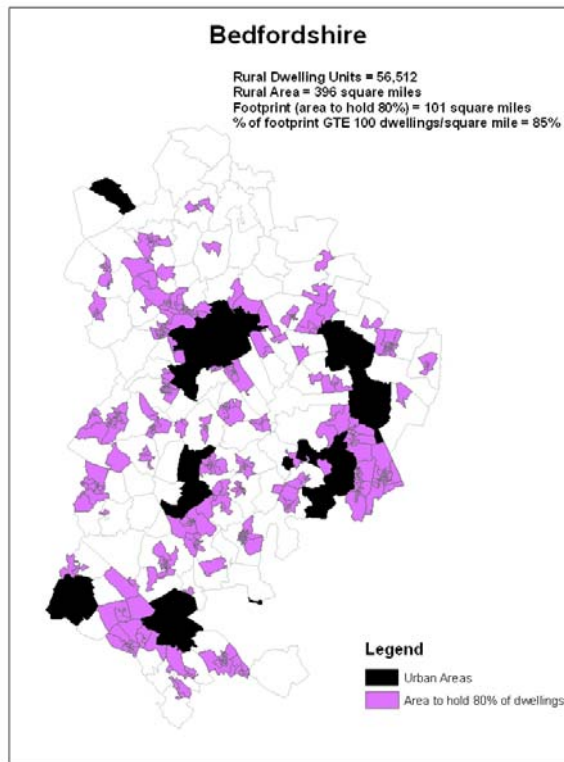
UK Location	% of footprint	US Location	% of footprint
Bedfordshire	85	Seattle, WA	37
Lancashire	84	Pinelands Region, NJ	26
Kent	75	Montgomery County, MD	25
Buckinghamshire	66	Petaluma, CA	24
Cambridgeshire	65	Baltimore, MD	23
Nottinghamshire	61	Sacramento, CA	17
Hertfordshire	54	Portland Region, OR	15
Oxfordshire	48	Burlington, VT	12
Staffordshire	47	Minn/St. Paul Region, MN	12
Dorset	38	Boulder, CO	12
Gloucestershire	31	Ft. Collins, CO	10
Northumberland	31	Charlottesville, VA	8
North Yorkshire	17	Lexington, KY	7

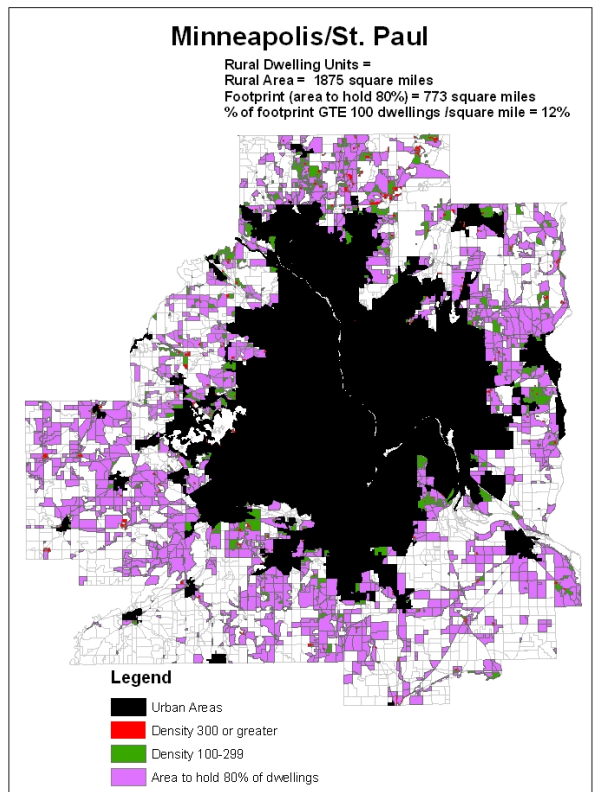
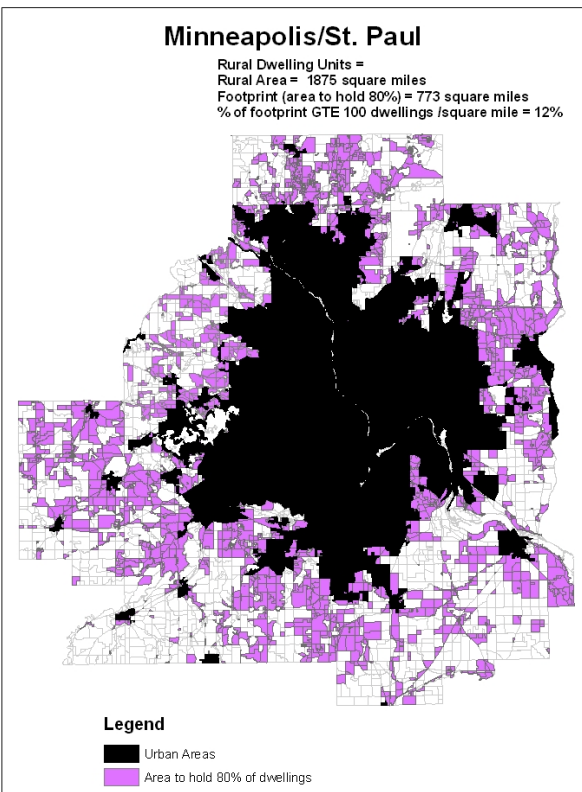
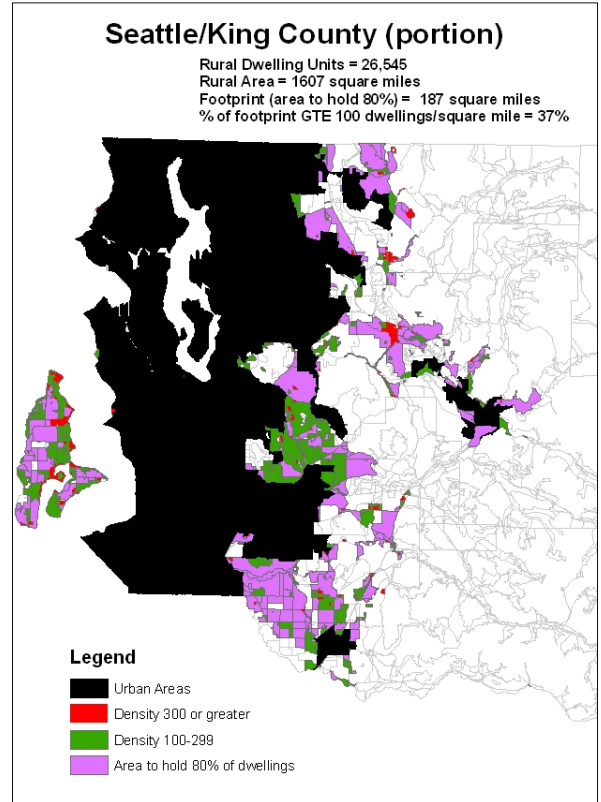
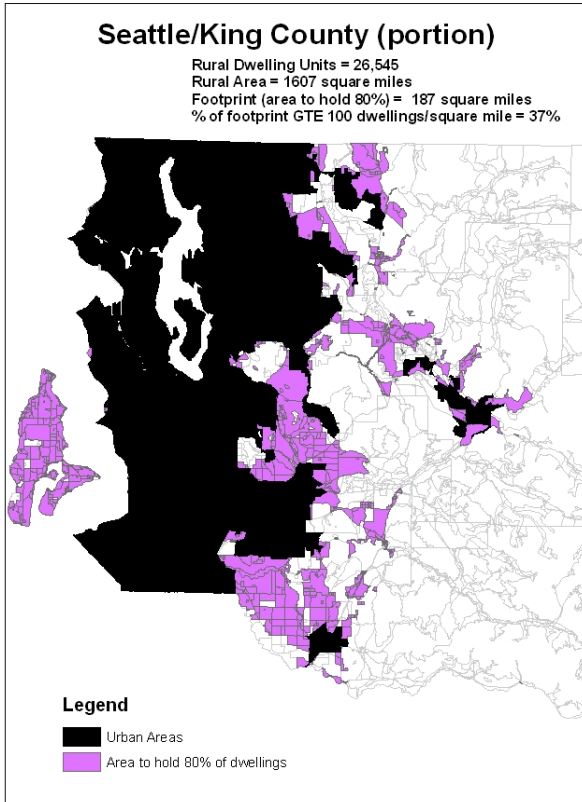
These figures underscore, from a somewhat different perspective, the finding that UK counties are able to accommodate more housing on less land leaving a greater amount of rural land as countryside.

The following maps make visible the different patterns found in the UK and the US. The maps on the left indicate the footprint of rural housing. The maps on the right indicate the areas within this footprint where density is at 100-299 and 300 and above dwellings per square mile.

In Bedfordshire there is 85% coincidence between the footprint and these higher densities. In Nottinghamshire, the figure is 61%. In the US, the highest figure of 37% is found in Seattle while Minneapolis/St. Paul has a relatively low, but not uncommon, figure of 12%. The English pattern of relatively distinct towns and villages is also implied in these maps as is the more common US pattern of little discernable edge between the urban center and surrounding development.

Figure 2 – Examples of Footprint Utilization: UK then US





Conclusions and Implications

What has been learned from this comparative study of the US and England? What is the significance of these differences? What can be learned to assist US and UK planners concerned with managing growth?

Based on this research, it is evident that these thirteen English counties generally perform well on the eight dimensions of sprawl proposed by Galster et al (2001). Because of the number of towns and villages, English settlement patterns perform particularly well on the dimensions of “concentration” and “clustering”. They also perform well on “density” and “continuity” of development within settled areas. From personal knowledge, it can also be said that “mixed uses” and “proximity” of these mixed uses to each other are also common characteristics in English settlements though less so with the more recent English development that is beginning to take on more of a suburban look. These thirteen counties perform less well on the dimensions of “centrality” and “nuclearity” because of the dispersed locations of many towns and villages. Overall the thirteen counties perform well and certainly better than many of the best US communities.

Deurkson and Van Hemert (2003) describe “authentic” development patterns in the US West and encourage communities to employ planning principles that are based on historic patterns and unique local environments. Much of the English countryside today is still “authentic” despite the beginnings of “Americanization” appearing on the outskirts of many urban areas. Towns and villages have been less affected thus far. For US communities it should be noted that simply copying the English village and town nomenclature (e.g. calling a shopping mall a “Towne Centre”) does not achieve authenticity. In the US, many of our authentic small town and villages have disappeared or gone into decline and deterioration.

English development patterns have largely avoided those typical of the US identified by Campoli et al (2002) “Look at the rural landscape from above and you will see our attitudes toward land revealed in the patterns on the ground” p197. The authors also point out that the typical sprawled US pattern was not a deliberate choice but a result of incremental changes, each of which seemed innocent enough at the time. Looking at the two landscapes from above reveals a significant contrast between English and US patterns.

Is the English pattern superior? Yes, in many regards, but the answer depends to a degree on a choice among objectives. There are several possible attitudes toward development patterns in the rural area. One, held by a number of conservationists, emphasizes protection of the land and natural resources. Programs are successful to the extent that they keep acreage in farming and forestry and out of development. Containing rural populations in English towns and villages achieves this objective leaving large areas of open countryside. In this way the English are successful.

The other perspective, perhaps held more by farmers, is that the most important thing is to avoid conflicts between "normal agriculture" and ex-urban residents. They point not only to issues such as odor, dust, use of agricultural chemicals, hunting, dogs, children, and vandalism but also to conflicts on rural roads between farm vehicles and commuters.¹⁸ There are also conflicts over attitudes toward government, taxes and spending priorities. The more numerous are new residents, perhaps regardless of how they are located, the greater are the chances for occurrence of these types of off-site conflicts. To the extent that English towns and villages are increasingly characterized by commuters and to the extent that town and village newcomers become active in politics, growth in the number of rural residents would be expected to increase potential conflicts. The English acceptance of larger numbers of rural area residents may not provide a desirable model for the US if the primary concern is not land preservation but conflict avoidance.

Clustering of rural housing immediately comes to mind as one response that US planners could make to what seems like an inevitable desire on the part of many to reside outside the city. Could it be argued that the English have shown that more housing can actually be accommodated outside the major urban centers without deleterious effect? The English have succeeded in clustering rural populations in towns and villages, would not a policy of clustering also work in the US?

Clustering rural development to provide local open space is an idea strongly associated with Randall Arendt (1994 and 1999) and being publicized by a number of US university extension services¹⁹ and even the National Association of Home Builders (2005). Several studies have shown positive attitudes on the part of residents toward cluster subdivisions especially if they provide a feeling of closeness to nature and include places to walk or hike (Ryan 2002). Other studies have found that protected open space has a positive impact on house value and that this "transcends even a significant reduction in house lot size (Lacy 1990). Daniels (1999) however cautions, "It is important to recognize that 'rural cluster' or 'open space zoning' is not a solution to rural sprawl. In fact, many cluster developments in the countryside can simply create 'clustered sprawl'... These developments are auto-dependent ... in short, cluster development is a suburban style that will hasten the conversion of rural areas to suburbs."

The other consideration in comparing English towns and villages is scale. Towns can be up to 10,000 in population and contain a range of land uses in close proximity enabling at least some residents to work/shop locally. This is true of villages to a somewhat lesser degree. A US style rural cluster subdivision is in many cases fewer than

¹⁸ Daniels (1999) points out that the courts may in the future disallow right to farm laws. "The irony here is that many farmers have resisted land use controls claiming that the controls were a 'taking' of the private property rights. Now, courts may rule that farm operations are taking the rights of neighbors to enjoy their own property. Again, the bottom line is that farms and non-farms should be separated as much as possible."

¹⁹ University of Illinois Extension, Cluster/Conservation Development, <http://www.urbanext.uiuc.edu>; Municipal Research and Services Center of Washington, Rural Land Use and Development, <http://www.mrsc.org>; Ohio State University Extension, Cluster Development Fact Sheet, <http://ohioonline.osu.edu/cd-fact/1270.html> .

100 lots, often considerably fewer, and contains only residential uses. There is also the issue of water and wastewater. Individual wells and septic systems are the norm in rural America, which necessitates a minimum lot size, whereas in England, much of the countryside is on the “mains” which supports compact town and village development. US communities considering a towns and villages strategy should look carefully at the water/wastewater issue and consider public provision of this infrastructure as an important community building investment. Cluster subdivisions of the type most commonly seen in the US do not appear to be viable tools for resolving problems that exist at the scale of sprawl.

One of the lessons of this study for US communities might be a need to look to their former rural towns and villages, or new appropriately sized equivalents, as anchors for rural development to avoid land consuming sprawl. The examples of the English towns and villages suggest that successful growth management requires places for growth to take place and that these places must be of a sufficient size and land use/service diversity that they can become significant concentrations of population and housing. This shift to positive planning for how the rural area develops may require a new mindset on the part of US communities who have until now comforted themselves that the rural area has been declared “off limits”. The data on US communities presented at the beginning of this paper, however, show that such an attitude is one of denial about the reality of the number of units continuing to develop in a piecemeal way in the American countryside.

In assessing US/UK comparisons it may also be instructive to note several challenges facing England, challenges which threaten in some ways to make it more like the US. Auto usage and VMT are on the increase.²⁰ Land for housing and affordability are national issues (Barker 2004). The countryside too is facing challenges (DEFRA, English Heritage and Natural England 2007). Surveys find an increasing interest in visiting and living in the countryside which poses the question of how to develop the countryside without damaging the value it represents. The inflow of wealth brought on by newcomers adds to local housing affordability issues. There is an out-migration of young people. Commuting and reliance on the private auto are on the increase. The age of those owning farms is now to the point where 60% of farms are owned by individuals over 55 (Countryside Agency 2005). Governments at all levels are aware of these challenges and no doubt changes will take place as they have in the past but hopefully the basic premise of countryside conservation will persist. Pointing out the US pattern of countryside scatteration may provide motivation to do so.

²⁰ “The National Travel statistics for the United Kingdom indicate a 60% growth in the average distance traveled per week from 133 km in 1973 to 213 km in 2002 (DfT, 2004). There has been a continuing growth in travel by car, which has increased by more than 50% in the last two decades. These rates of growth for total distance traveled have continued everywhere in the UK, except in London, where it is fairly stable at 8000km/person/year. In other metropolitan areas the total rises to 8,800km/year and the car proportion rises from 66% to 79%, despite incomes being lower. Over the rest of the country where settlements are smaller and less dense and public transport services more limited, car use is even higher with about 85% of travel by car and averaging around 11,200km/year” (Hull 2004)

Centrifugal pressures are powerful and growth continues to spread outward despite best efforts with urban growth boundaries, green belts or other tools.²¹ When we look at the results of the efforts of the communities examined here, we realize that thousands of new homes continue to be built in the countryside each decade. It is not a matter of whether there will be outward spread, it is a matter of how this will take place on the land and whether the current result is what we would envision and intend.

Postscript: Options for US Communities

In the US in recent years, in our cities and suburban areas, we have learned that we can't simply set general zoning standards and leave the design of development to the developers. Today, inside the urban growth boundary, we find widespread interest in master planning, form based codes, mixed uses, walkability and other design related concerns. The public is becoming a more active player in the form of urban development. The same should be true outside the urban growth boundary in the rural area. There is a need to be more proactive based on a vision of what we want the area surrounding our urban centers to be. Simply setting general zoning expectations and leaving the rest to developers and land owners may not be sufficient to create the type of rural landscape we would desire if we planned it.

Denser groupings of development have a smaller footprint and preserve more of the land as we have seen from England. One wonders if many homebuyers would not prefer a lot in the range of two acres or smaller to one of ten or twenty acres. Initial cost would be somewhat less, infrastructure would need to be less extensive and maintenance/upkeep would be less a challenge. One wonders if the romantic/nostalgic appeal of the village format might not attract buyers. Creating standards and design templates for locations within the rural area would be better than simply entrusting the development of the countryside to fragmented developers and land owners. There is a larger public interest in how these lands develop paralleling the public interest in how suburban and urban lands develop.

If we in the US were to plan for development in our rural areas, what development pattern would be best (see Jabareen 2006).

First, a caveat noting that there are concerns with any development pattern. To address rural development at all may be like sleeping with the devil. There is a fear that to address development may actually encourage it beyond what is experienced today. There is also concern with the high capital and maintenance costs of decentralizing infrastructure sufficient to support town and village densities. There is the apprehension of existing neighbors and their reactions to focusing change on their area. There is also a concern that any steps to encourage better rural development will compete with infill goals and higher density inside the urban growth boundary? Each of these issues applies

²¹ If measure 37 in Oregon spreads to other parts of the nation as it may (Sightline Institute 2006), then urban growth boundaries will become even less effective containment barriers and the issues raised here about the density and pattern of development will become even more significant.

to policies that facilitate any pattern of rural development. Each pattern of development also has its own benefits and risks.

A distributed centers pattern would be consistent with the English villages and towns pattern. Such settlements could play some local service role as small scale commercial and service hubs. They could help revive and rebuild historic settlements that would otherwise continue to decline. They could help retain the general store, the post office, the fire house, the school. From the negative standpoint, scattered villages and even towns would depend heavily on commuting, an alarming trend underway in England as well. Infrastructure would be expensive for freestanding centers. A large village or town could lead to subsequent incorporation and political fragmentation.

A contiguous pattern of development could be a logical extension of existing urban centers. Transportation and utility systems exist nearby and could be extended. The closer the contiguous development to planned growth areas, the more feasible would be higher densities and more compact development. In these locations the economic pressure on farming is already the greatest and continued farming is less viable than at more distant locations. From the negative standpoint, contiguous development threatens to erode aspirations for a “hard edge” on the developed area. Being close by, it may be more competitive with sites inside the urban growth boundary than would be more distant sites. Being close may also not satisfy the desire of home buyers for something more rural. One is reminded of Dubbink’s (1984) wonderful article title “I’ll have mine medium rural please.”

A corridor pattern is one likely to happen anyway and would require little encouragement. This pattern addresses the commuting issue by being located along transport axes. Higher densities may be possible based on accessibility and this could also support transit if density were sufficient. Creation of nodes along the corridor could provide a series of focal points/centers. From the negative standpoint there is a tendency to “strip develop” the highway so means to steer new development to locations just off the highway and to protect frontage may be necessary. Noise and traffic can conflict with long term residential appeal.

There are many issues to consider if US communities are to take a more active role in shaping settlement patterns outside their urban areas. Comparing the US to the UK highlights many of these.

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