

# The Cul-de-Sac Safety Myth: Housing Markets and Settlement Patterns

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In home buyer surveys, neighborhood meetings about development proposals, and critiques by architects as early as the 1920s, safety from neighborhood traffic has been a persistent source of anxiety. The cul-de-sac, literally the bottom of the bag, has been the prevalent design response in the United States.

The effect of cul-de-sacs has been like a corset. It changes appearance. The wearer, or resident, feels better superficially, but the underlying condition and danger remains. Perhaps the danger (traffic or excess weight) is worse because of a false feeling of being in control.

The dangers, after all, come from unavoidable basics—eating and leaving home. What should concern the wary is what they eat and how they move about from home to work, school, entertainment, friends' houses, shopping, cultural events, religious activities, and civic life. Corsets and cul-de-sacs do not help with these subjects. In this chapter, we will trace how this exaggerated belief in cul-de-sac safety came about. Perhaps, like the corset in its time, the cul-de-sac eventually will be a passing feature of the auto age.

## THE ISSUE

Suburban development patterns are widely blamed for traffic congestion, waste of infrastructure resources, costly housing, and a mismatch between employment and residential locations.<sup>1</sup> These frequently criticized suburban patterns remained the norm at the turn of the 21st century.<sup>2</sup> Suburban development patterns evoke occasional praise from academic planners.<sup>3</sup> Usually praise for current practices includes the belief that they respond to consumer preferences. One motivation for consumer preferences and suburban development patterns is the search for a safe refuge from danger, especially danger to small children from automobile traffic. Street networks

that terminate in cul-de-sacs are the principal means by which development patterns have provided refuge from dangerous traffic.

Patterns of suburban development reflect interactions between housing market dynamics and public policies. Developers build where they predict they can make sufficient profits. Profits depend on building and selling fast enough to limit carrying costs that occur before revenues accumulate. Sufficient buyers must be present. For buyers, the choice of purchasing a dwelling is a mega-decision—a decision with many long-lasting ramifications for household members.

The number of potential buyers is quite large. For example, assume a metropolitan area has a population of one million, an average household size of 2.6 (the national average in 2000), 385,000 households, and 258,000 home owners based on two-thirds of households being home owners (the national average in 2000). If an average of 50 percent of home owners move in eight years (the national average in 1990), then within 10 years more than 130,000 purchases would occur by home owners. The location of these purchases and sales probably will have greater social, economic, and political consequences than any explicit housing and development policies of local governments. From these numbers, it is evident that home owners' beliefs that influence locations of home buying can have enormous ramifications for settlement patterns and their consequences—suburban sprawl, income disparities, insufficient reinvestment in established neighborhoods, and poverty concentrations.

Here we examine the belief that cul-de-sac street networks are safer than connected streets that permit through traffic on more residential streets, and the history of several professional and government organizations promoting cul-de-sac street patterns because of their alleged safety. These professional perspectives can have large, cumulative impacts on development patterns, especially when several professions, which are crucial to development decisions, have compatible beliefs about how development should occur.<sup>4</sup>

### **Myths and Realities**

The shapers of, and believers in, myths think they are true in some sense. Myths simplify reality and are believed to embody its essence. Here we use the term myth as suggested by Judith I. De Neufville and Stephen E. Barton. They argued that "behind widely accepted problem definitions are myths, stories which draw on tradition and taken for granted knowledge. These myths, which may or may not be true in a factual sense, are important to the definition of problems because they link public issues to widely accepted ways of understanding the world and to shared moral evaluations of conditions, events, and possible solutions to problems."<sup>5</sup> The belief about safety on cul-de-sacs is an example of a myth that has influenced the physical pattern of cities and suburbs since the 1930s.

Bedroom suburbs, in part, represent an escape from city problems and a search for security, control, and the pleasure of a garden in nature.<sup>6</sup> The post-World War II residential development pattern is dominated by curvilinear roads terminating in cul-de-sacs. The cul-de-sac is a variation of a dead-end street, providing a bulb at the end of the street wide enough for uninterrupted forward turning space for automobiles and sometimes enough for snow-removal trucks and fire trucks. The cul-de-sac embodies desires by residents to control their physical setting. By preventing

through traffic, residents, invited guests, and delivery personnel or occasional repair personnel are the only drivers with a legitimate reason to drive on the street. Cul-de-sacs, therefore, minimize the presence of moving vehicles. They also limit the speed of the relatively few vehicles that use the street by eliminating through traffic.

This opinion about cul-de-sac street networks being relatively safe is widely shared. Not only has the cul-de-sac concept dominated development practices and been included in many guidelines and regulations, it also is believed to be safe even by critics of the development pattern that results from it. Professional planners and architects, for example, often are skeptical about the large-scale consequences of the incremental accumulation of curvilinear cul-de-sac street networks. However, these professionals are inhibited in arguing against cul-de-sac-based patterns, especially in public meetings, because they may believe that cul-de-sac networks are safer than the alternatives.

Confronted by such beliefs at public meetings, professionals who criticize cul-de-sacs may feel defensive and insecure about advocating alternative patterns with more connected streets they believe are more dangerous. If they share a belief in the cul-de-sac safety myth, they must argue that other land development goals outweigh the merit of arguments about safety. Developers and lenders, as well as buyers and residents, are likely to share this belief in the cul-de-sac safety myth. They also may predict that cul-de-sac developments will sell faster at higher prices, so they may resist plans for alternative patterns. As stated by Ted Danter, a real estate consultant in the Columbus, Ohio, area: "The reality is people still pay a premium to get a lot on a cul de sac."<sup>7</sup> While evidence for this view rarely is presented, it often is stated adamantly, as by Danter, as though it is indisputable.

The belief that cul-de-sac street networks are safer than the alternatives is a myth in the sense that it was advocated without a demonstration that such networks were safer. There was also no recognition by advocates of cul-de-sacs for safety reasons about how cul-de-sac networks would work in reality, after they emerged in the ad hoc, incremental land development processes that dominate land development practices. The absence of empirical and theoretical justification for cul-de-sac-based networks continues to the present. There are some conceptual reasons to believe that cul-de-sac networks actually may be more dangerous, or at least as dangerous, as grid networks and other modified grid street patterns, which emphasize connections among streets that facilitate vehicular and pedestrian access for residents in every direction.

The gridiron street pattern of rectangular or square blocks in which streets are aligned at right angles was claimed as far back as the 1920s to be the most dangerous street pattern. The antigrid argument had taken root by the 1930s among many experts. Then it was incorporated into federal housing guidelines and other sources of official influence. After World War II, the belief that cul-de-sac street networks were safer and settings for sounder housing investments became the conventional wisdom.

The conventional wisdom is buttressed by ethical concerns. Potential residential buyers may believe that personal ethics require them to consider buying on cul-de-sacs. If cul-de-sacs are safer, especially for children, then many parents feel a moral obligation to weigh that factor in making location decisions. For example, talking with a mother of a young child about the family's potential move from the central

city to a suburb for a cul-de-sac location, we informed the mother that, for several reasons, cul-de-sacs also can be dangerous. The mother burst out, without waiting for an explanation, "I'm so glad to hear that. I thought it was my moral responsibility to move to a cul-de-sac." If parents believe other parents are making this calculation, then potential buyers also will consider whether any location other than a cul-de-sac will provide as much security for their financial investment.

This chapter sketches the historical path of arguments and actions that contributed to the cul-de-sac becoming the dominant element in the post-World War II pattern of land development. Then we explore why cul-de-sac street networks may be as, or more, dangerous than grid street systems. In doing this, we will emphasize the risk of death and serious injuries in traffic accidents rather than the number of traffic accidents.

## HISTORY

Rectangular street networks dominated early settlements. Christopher Tunnard wrote in *The Modern American City* that ". . . there was one national characteristic of cities making for an almost standardized product. This was the right-angled or orthogonal plan. There is something recognizable and persistent in American use of the gridiron plan, which was employed from the very beginning in Anglo-America. The little mercantile towns were built on grids, exceptions like New Amsterdam (now the lower part of Manhattan), Boston, and Annapolis being rare. Later Thomas Jefferson thought that the grid was the best method of laying out a city, and it was he who enshrined it in the national settlement pattern by the Land Ordinance of 1785."<sup>8</sup>

As early as 1841, landscape architects, such as Andrew Jackson Downing, had criticized gridiron street networks, which then were omnipresent in cities and towns. These writings, predating the automobile by several decades, were not addressed to safety issues. They had aesthetic interests in mind. Downing believed that "all sensible men gladly escape, earlier or later, . . . from the turmoil of cities."<sup>9</sup> In designing his ideal suburb, Downing advocated single-family dwellings with street frontages of 100 feet or more and curvilinear roads rather than roads crossing at right angles. Downing's partner, Calvert Vaux, also disdained the grid pattern, bemoaning that "the plans of country towns and villages are so formal and unpicturesque. They generally consist of square blocks of houses, each facing the other with conventional regularity; . . . in many new villages that are being erected the same dull, uninteresting method is still predominant."<sup>10</sup>

The best-known landscape architect in the years following the Civil War was Frederick Law Olmsted, designer of Central Park in New York City. Olmsted designed 16 suburbs with Vaux as his partner. The first was Riverside, outside Chicago, in 1868. In Riverside, wrote Kenneth Jackson, "Curved roadways were adopted to 'suggest and imply leisure, contemplativeness, and happy tranquility;' the grid, according to Olmsted, was 'too still and formal for such adornment and rusticity as should be combined in a model suburb.'"<sup>11</sup>

These opinions constituted a ready-in-waiting tradition when the opportune moment arrived to combine aesthetic arguments with other concerns. Concern for quiet and tranquility was one linking opportunity. Raymond Unwin, for example, sought to change a law in Great Britain that prevented construction of cul-de-sacs. "This action," he wrote, "has, no doubt, been taken to avoid unwholesome yards; but