

Traffic Calming: An Equivocal Concept

September 2011

Introduction

The work on traffic calming that we are publishing includes two series of documents and an evolving index of traffic-calming measures and strategies, also to be posted on a section of our website. The first series of documents allows us to present the results of our review of the literature on the effects of traffic calming on certain population health determinants. The second series is intended to provide some conceptual background and policy references.

In this document, belonging to the second series, we introduce the concept of traffic calming by examining the various historical perspectives that have been proposed of interventions designated by this concept.

First, the expressions chosen for the translation into English and French of the concept originating from the German “*verkehrsberuhigung*” will be presented. Then, an overview of some of the ways it has evolved historically will allow for a description of the diverse goals, objectives and means associated with this concept.

Choice of expressions

Today, the terms most frequently used in English and in French to designate interventions related to traffic calming are heavily inspired by the German notion of “*verkehrsberuhigung*.” In the English literature, the expression “traffic calming” has, for several years now, been given precedence over the terms “traffic mitigation,” “traffic management,” “traffic control” and “traffic abatement.” On the other hand, two expressions are still fairly widely used in the French literature, namely “*apaisement de la circulation*” and “*modération de la circulation*” (Ewing, 1999; Transportation Association of Canada & Canadian Institute of Engineers, 1998; Sergerie et al., 2008).

In our French documents, the expression “*apaisement de la circulation*” will be favoured, whereas “traffic calming” will be used in English. This is first because the German notion is evocative of calm and safety, powerful ideas which are at the heart of this type of policy intervention and which are present in the semantic networks of the two expressions chosen. Second, one of the expressions selected has already taken precedence in the English literature and the other seems to be gaining precedence in the French literature.

Diverse historical perspectives and interventions

A clear majority of authors trace the origin of traffic calming to the late 1960s or early 1970s in Delft, in the Netherlands, citing, respectively, the creation of the first *woonerf* (literally, the term means “living area”—we describe the *woonerf* below) or the first speed hump. However, three more or less distinct definitions of traffic calming can be found. Each allows a different history to be traced. These are presented here chronologically, in order of emergence.

A NEW CALMED NEIGHBOURHOOD TO SERVE AS A MODEL

For some, the concept of traffic calming encompasses efforts to design the street network in a new neighbourhood such that traffic volume and speed are minimized. Hummel, Mackie, & Wells (2002), adopting this meaning, trace its origin to 1928, with the experimental design of a calmed neighbourhood in Radburn, in the United States. The sector in question can be referred to as calmed because the residential streets are short and end in *cul-de-sac*, which discourages speeding and through traffic. The latter is, in this way, directed to designated non-residential streets. This way of thinking and of organizing the city led to a hierarchization of the street network, with some types of streets, such as main arteries and highways, being henceforth devoted mainly to the circulation of motorized vehicles.





Figure 1 The plan for a new “calmed” neighbourhood in New Jersey, designed toward the end of the 1920s

The neighbourhood is blocked to through traffic, which is confined to major arteries on the periphery. This neighbourhood became the predominant model for the development of new sectors in North American urban agglomerations as of the 1940s.

Source: Stein, 1949, p.225.

This manner of organizing the street network was, in fact, what inspired the development of most of the new peripheral extensions of North American urban centres after the Second World War. Since then, the mass development of this type of street network has engendered a certain amount of criticism. Thus, it has been noted that, in at least four ways, such networks have discouraged active and collective transport and encouraged travel in individually owned vehicles. First, by being as impenetrable to bicycle and pedestrian traffic as it is to motorized traffic, this type of street network extends travel distances, which consequently makes it easier to traverse in individually owned motor vehicles than by bike or on foot. Second, this type of street network has almost always been accompanied by zoning that separates residential from commercial, business and recreational functions, which has also contributed to the lengthening of travel distances, and thus to

making it easier to traverse by motor vehicle. In addition, streets organized in this way have usually produced residential density levels that are too low to make it viable to service these areas with public transport, which again encourages individual modes of travel. Lastly, it is thought that this type of street organization discourages travel by bicycle or on foot because streets are generally not equipped with any infrastructure (sidewalks or cycle tracks) that would ensure the safety of persons travelling by means other than by motorized vehicle. Today, some new developments (still a minority) based on this type of street network attempt to integrate sidewalks and cycle tracks, to incorporate a certain amount of mixed usage, and to be at once impassable to through traffic, close to major public transport infrastructure, and accessible to active modes of transport. “Transit-Oriented Development”¹ is the best known example of this.²

IMPROVE STREET SAFETY WITH INDIVIDUAL MEASURES: THE “BLACK-SPOTS” APPROACH

Some authors view traffic calming as a series of engineering measures intended to improve street safety at specific points on a street network that are thought to present a high risk for crashes. This usage of the concept refers to intervention strategies applying what is referred to as the “black-spots” —or targeted—approach. Authors who conceptualize calming in this manner point to one of two different origins. The majority of authors, who mostly focus only on speeding and are European, trace the concept's origin to the beginning of the 1970s, in the city of Delft, in the Netherlands. It was during these years that a team of technicians in this municipality built the first speed hump at one end of a street to reduce the speed of traffic there (Schlabach, 1997). Those authors, fewer in number, who include among calming measures certain interventions designed to affect the volume of traffic on a given street are generally North American and trace the origin of traffic calming to the end of the 1940s or the beginning of the 1950s. It was at this time that the American cities of Montclair, New Jersey, and Grand Rapids, Michigan, transformed existing

¹ Note that these are not developed exclusively in peripheral areas.

² Peter Calthorpe invented the expression “transit-oriented development” to refer to “...moderate and high density housing, along with complementary public uses, jobs, retail and services...concentrated in mixed-use developments at strategic points along the regional transit systems.” (Calthorpe, 1993, p.41, cited by the Canada Housing and Mortgage Corporation, 2009, p.1).

streets into *cul-de-sac* and installed forced-turn islands to eliminate through traffic on these streets (Ewing, 1999).



Figure 2 A partial road closure

The road becomes impassable to cars and trucks but allows circulation of bicycles and pedestrians.

Source: www.pedbikeimages.org.

Photographer: Dan Burden.

ENHANCE THE LIVING ENVIRONMENT BY MODIFYING THE STREET NETWORK TO BENEFIT OTHER USERS OF STREETS AND URBAN SPACES: TOWARD AN AREA-WIDE APPROACH

Traffic calming is also often defined (sometimes implicitly) as an integrated intervention strategy applied to a street network, whose overall goal of improving the living environment comprises a series of objectives, such as street safety, the promotion of active and collective transport, the reduction of noise and air pollution, and so on. Street network design is thus viewed as being systematically biased in favour of motorized traffic, to the detriment of other modes of travel and other uses of urban space. Reference is made to interventions whose aim is to adapt the traffic patterns of motor vehicles on streets such that they do not interfere with other modes of travel and other uses of urban space (particularly its residential function and the associated social activities). The example of the *woonerf*, developed in the same city of Delft, in the Netherlands, is often cited as the point of origin for the notion of traffic calming that refers to the reappropriation of streets for the benefit of residents and those not using motor vehicles, accomplished through the installation of various physical devices. It was, indeed, in Delft, in the 1960s that residents transformed a street into an urban courtyard, or living area (from whence the

term “*woonerf*”), by installing tables, benches and play areas. The idea was to complicate the landscape of the street, thus forcing drivers to slow down, and to reduce the area devoted to motorized traffic, to create a more pleasant living environment for those living along the street (Eriksson, Janssen, & Wittink, 2003; Sergerie et al., 2008).

It is in the light of this understanding of traffic calming, as a way of contributing to the overall improvement of the living environment of residents in a given area, that Seattle, in the United States, and several cities in Germany as well as the German state became the first to develop the area-wide approach; that is, an approach that focuses on a sector rather than on isolated points. However, these cities, like many others subsequently, developed area-wide interventions using various combinations of engineering measures, such as speed humps or raised crosswalks, instead of complete rearrangements, such as the *woonerf*. London, in the United Kingdom, and Lyon, in France, are two cities that have been very active on this front in recent years. Since the late 1990s, London has implemented 399 area-wide interventions on its territory. Lyon, for its part, designated, in the mid-2000s, a zone including 87 km of streets as the target of an area-wide intervention. This constitutes the largest zone in Europe, and installation of the



Figure 3 A Dutch woonerf

In the Netherlands, one form taken by *woonerfs*. Of note are the urban landscaping and the trees placed on either side of the road to create a peaceful environment, along with the chicane, which horizontally deflects motorized traffic.

Source: Hamilton-Baillie Associates.
Photographer: Ben Hamilton Baillie.

measures is still underway.

All this has led some authors to observe that traffic calming has evolved toward increasingly integrated area-wide approaches, applied on an increasingly large geographic and temporal scale (Ewing, 1999; Ewing & Brown, 2009). Toward the end of the 1990s, some even expanded the concept to include efforts aimed at calming entire cities, referred to as “city-wide” interventions (Ewing, 1999; Brindle, 1997). Such broadening of the concept of traffic calming makes it roughly equivalent to that of “demand management,” frequently used by street network authorities. Indeed, included in this understanding are a group of strategies aimed at reducing the number of kilometres travelled by car in a given city. These strategies clearly extend beyond the framework defined so far, including, variously, efforts to increase public transport service, reduce highway capacity, control parking availability for motor vehicles, and so on. Although they sometimes include calming measures such as those described above, demand management strategies do not necessarily include measures such as speed humps or curb extensions.

As can be seen, the concept of traffic calming in reality encompasses interventions associated with different goals, objectives, principles and ways of viewing the street network and its problems. It is thus important to be clear about what we are referring to when evaluating, critiquing, or promoting traffic-calming interventions. For this reason, we define, in each of our publications, the working definitions being used.

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