Brendan Rahman

Tactical urbanism and transit-oriented development: Making generative connections

Supervised Research Report

Submitted to Professor Nik Luka

School of Urban Planning

McGill University

Montréal

February 2013

Abstract

Transit-oriented development (TOD) is touted as a promising alternative to low-density 'sprawl' that seeks to create compact, mixed-use, pedestrian- and cyclist-friendly nodes surrounding transit stations. Unfortunately, implementation remains difficult, inflexible, and often fruitless. This exploratory report links TOD with tactical urbanism, an emergent approach to city-building, increasingly understood as a useful way to rapidly prototype and test plans. Thirty short cases illustrate how the tactical approach has served to increase activity density, broaden the mix of land uses, and produce transit-supportive urban design—three central components of TOD. Furthermore, tactical urbanism addresses a number of commonly-cited barriers to transit-oriented development: it allows practitioners to demonstrate scenarios to stakeholders and experiment with alternatives before committing to long term investments, as well as weather unfavourable economic periods with interim uses until more permanent development can materialise. The report concludes with key-informant interviews that help to identify opportunities and challenges associated with the use of tactical urbanism to these ends.

Résumé

L'aménagement axé sur le transport en commun (TOD) est une approche stratégique portant sur de l'aménagement compact, la mixité des usages mixtes et la qualité de design afin de favoriser les transports actifs (les piétons et les cyclistes). Malgré ses aspects positifs, la mise en œuvre s'avère difficile, inflexible et souvent infructueuses. Cet essai explore les liens entre le TOD et le 'bricolage urbain', une approche émergente ainsi qu'une tactique d'urbanisme reconnu de plus en plus comme un moyen de mettre à l'essai diverses interventions urbaines. Fondé sur trente courtes études de cas, ce mémoire montre les façons par lesquels le bricolage urbain contribue actuellement à l'augmentation de la densité de l'aménagement, l'élargissement de la mixité d'usages, et la mise en place des mesures de priorité aux piétons et aux cyclistes (trois éléments essentiels au TOD). En outre, le bricolage urbain répond aux plusieurs enjeux liés à l'aménagement axé sur le transport en commun: il permet aux praticiens de démontrer aux parties prenantes des changements attendus dans le cadre bâti, et d'y expérimenter avant d'investir à long terme. Il permet aussi aux promoteurs et aux propriétaires de dépasser les conditions économiques défavorables en profitant des usages provisoires avant que l'aménagement plus permanent ne puisse se matérialiser. Le rapport résume les résultats des entrevues auprès des informateurs clés menées dans le but d'identifier les opportunités et défis qui se présentent lorsque l'on cherche à jumeler le bricolage urbain avec le TOD.

Acknowledgements

I would like to thank Professor Nik Luka for his dedication throughout the development of this report. It is immeasurably more insightful because of his input. I also owe a debt of gratitude to Michel Frojmovic, who provided me with timely and invaluable feedback on a short timeframe.

In addition, the brave individuals who agreed to be interviewed for this report deserve thanks. Your input has added considerable depth to my analysis and, frankly, has made it much more compelling.

I must also mention my gratitude for Gladys Chan and Anand Sood, who have helped to make my time at McGill a pleasure.

Lastly, I cannot forget to extend my deepest gratitude to friends, classmates, and family, who have been tremendously supportive throughout this process. In particular, Tessa Liem and Kent Rahman deserve a warm thank you, for inspiring me at times when I needed it most.

Table of contents

Abstract i
Résumé iii
Acknowledgements v
Table of contents vii
List of figures ix
List of tables xi
List of case studies xiii

Introduction 1
Chapter 1: Transit-oriented development 5
1.1 Transit-oriented development in context 7
1.2 Defining transit-oriented development 9
1.3 Characteristics of transit-oriented development 11
1.4 Summary 19
Chapter 2: Tactical Urbanism 21
2.1 Defining tactical 23
2.2 Defining tactical urbanism 25
2.3 Drivers of tactical urbanism 29
2.4 Summary 33
Chapter 3: Tactical TOD 35
3.1 Tactical density 37
Tactical density case studies 41
3.2 Tactical diversity 55
Tactical diversity case studies 59
3.3 Tactical design 73
Tactical design case studies 85
3.4 Using tactical urbanism to overcome barriers to transit-oriented development 99
3.5 Interviews: opportunities, challenges, and elements for success 103
3.6 Summary 109
Conclusion 111
Bibliography 115
Appendix 127

List of figures

Figure 1.3.1: A grid-like street pattern (left) versus a curvilinear street pattern (right) 15

Figure 1.3.2: Street with pedestrian- and cyclist-oriented improvements in Brooklyn, NY, before (left) and after (right) 15

Figure 1.3.3: Pedestrian scale architecture (left) versus car-oriented architecture (right) 17

Figure 2.2.1: Nested relationship between tactical urbanism and temporary urbanism 26

Figure 2.2.2: Street art by Roadsworth: tactical or not? 26

Figure 2.2.3: Nested relationship between tactical and guerilla urbanism 27

Figure 2.2.4: A continuum of tactical urbanism 27

Figure 2.2.5: Summary of the relationship between of temporary, tactical, and guerrilla urbanism for the purposes of this report 28

Figure 2.3.1: Per cent increase in youth unemployment rates for OECD countries, December 2007 to March 2012 30

Figure 2.3.2: Housing starts by dwelling type, 1995 to 2011, all of Canada 31

Figure 3.1.1: Before and after views of the Trinity Buoy Wharf site 43

Figure 3.1.2: Snoozebox 45

Figure 3.1.3: Free Architecture Surf Terrain 46

Figure 3.1.4: Boxpark 47

Figure 3.1.5: Station C coworking space 48

Figure 3.1.6: Collective coworking space 49

Figure 3.1.7: KwartzLab maker space 50

Figure 3.1.8: Edible Campus 51

Figure 3.1.9: Lufa Farms' rooftop greenhouse 52

Figure 3.1.10: Hayes Valley Farm 53

Figure 3.2.1: Popuphood retailer Piper and John General Goods 61

Figure 3.2.2: Camden Town Unlimited Pop-Up Shop 62

Figure 3.2.3: Spitalfields Market 63

Figure 3.2.4: Dekalb Market 64

Figure 3.2.5: Proxy 65

Figure 3.2.6: Burlington Nelson Farmers' Market activates a parking lot 67

Figure 3.2.7: Puces POP Craft and DIY Fair in 2008 68

Figure 3.2.8: Good Food Here food cart pod 69

Figure 3.2.9: Fruixi bicycle vendor 70

Figure 3.2.10: Café l'artère and Bric à Vrac boutique 71

Figure 3.3.1: Oak Cliff Better Block, before (top) and after (bottom) 73

Figure 3.3.2: Broadway before (left) and after (right) the Green Light for Midtown project 75
Figure 3.3.3: A new continental crosswalk in downtown Los Angeles 76
Figure 3.3.4: Chair-bombing initiated from the private sector 77
Figure 3.3.5: Café terrasse on avenue Masson in Montréal, Canada 78
Figure 3.3.6: Informal bike parking provided at Santropol Café in Montréal 79
Figure 3.3.7: Wooden bicycle staires 80
Figure 3.3.8: La ville en vert greening a surface formerly dominated by asphalt and grass 81
Figure 3.3.9: Example of a parklet in San Francisco 82
Figure 3.3.10: Grand Central Park under construction 83
Figure 3.3.11: San Antonio Better Block 87
Figure 3.3.12: Before (left) and after (right) the Green Light for Midtown project 89
Figure 3.3.13: Journée des bons voisins street "opening" 90
Figure 3.3.14: Roll-up crosswalk rug by 'urban hactivist' Florian Rivière 91
Figure 3.3.15: DoTank Brooklyn chair-bombing process 92
Figure 3.3.16: Walk [Your City] guerrilla sign template 93
Figure 3.3.17: Guerrilla bicycle lanes courtesy of Toronto's Urban Repair Squad 94
Figure 3.3.18: Depave guide to "freeing your soil" 95
Figure 3.3.19: The first PARK(ing) Day park by Rebar 96
Figure 3.3.20: View of Grand Central Park from above 97

List of tables

Table 1.2.1: Definitions of transit-oriented development, adapted from Cervero (2002) 9
Table 1.3.1: Theoretical framework describing the effect of the Three Ds on travel demand 11
Table 1.3.2: Characteristics of TOD found in the literature, organised by density, diversity, and design .. 12
Table 2.1.1: A relational hierarchy of tactics and strategies 23
Table 2.1.2: Tactics and strategy vis à vis power 24
Table 3.1.1: Tactical density case studies 41
Table 3.2.1: Tactical diversity case studies 59
Table 3.3.1: Tactical design case studies 85

List of case studies

3.1.1 Trinity Buoy Wharf 43
3.1.2 Snoozebox 45
3.1.3 Free Architecture Surf Terrain 46
3.1.4 Boxpark 47
3.1.5 Station C 48
3.1.6 Collective 49
3.1.7 KwartzLab 50
3.1.8 Edible Campus 51
3.1.9 Lufa Farms 52
3.1.10 Hayes Valley Farm 53

3.2.1 Popuphood 61
3.2.2 Pop-Up Shops 62
3.2.3 Spitalfields Market 63
3.2.4 Dekalb Market 64
3.2.5 Proxy 65
3.2.6 Burlington Nelson Farmers' Market 67
3.2.7 Puces POP Craft & DIY Fair 68
3.2.8 Good Food Here 69
3.2.9 Fruixi 70
3.2.10 Café l'artère 71

3.3.1 The Better Block 87
3.3.2 Green Light for Midtown 89
3.3.3 Journée des bons voisins 90
3.3.4 Passage piétons à emporter 91
3.3.5 Chair-bombing 92
3.3.6 Walk [Your City] 93
3.3.7 Guerrilla bicycle lanes 94
3.3.8 Depave 95
3.3.9 PARK(ing) Day 96
3.3.10 Grand Central Park 97

Introduction

Planners, politicians, and citizens have come to acknowledge the negative social, environmental, and economic costs associated with low-density, car-oriented urban development, or 'sprawl' in North America. Among these are: loss of habitat and prime agricultural land, greenhouse gas emissions, social isolation, physical inactivity, automobile dependency, and worsening traffic congestion across metropolitan regions (Gillham & MacLean, 2002). Transit-oriented development is a promising alternative to conventional growth patterns that seeks instead to create compact, mixed-use, pedestrian- and cyclist-friendly nodes surrounding planned or existing mass-transit facilities (Dena Belzer & Autler, 2002). In basic terms, transit-oriented development entails (1) increasing the number of people living and working near transit facilities, (2) introducing new, diverse, and complementary land uses near transit facilities, and (3) making streets and other public spaces safe, convenient, and enjoyable for pedestrians and cyclists (Calthorpe, 1993). Many cities have begun planning or implementing transit-oriented development schemes in recent years, and some, like Arlington, VA, have been doing so for decades (Dittmar & Ohland, 2004). At its base, the purpose of such development is to sustain higher levels of walking, cycling, and transit patronage than would otherwise be possible in conventional postwar suburbs.

Despite this, transit-oriented development implementation remains difficult and often fruitless (see for example California Department of Transportation, 2001; Cervero, 2004; Hess & Lombardi, 2004; Nelson & Niles, 1999). As a result, it can take years if not decades to turn transit-oriented development plans into reality (see for example Cervero et al., 2002; Curtis et al., 2009). In order to increase density and land use diversity, and to reconfigure streets and public spaces for pedestrians and cyclists, authorities face a host of economic, political, and structural challenges that add uncertainty to an already capital- and time-intensive process (Porter, 1997). It is difficult to gauge, for example, whether retail will be viable at a given location, or whether streetscape modifications will reduce pedestrian-vehicle conflicts, let alone whether a TOD site is of interest to developers. With transit-oriented development, authorities are often forced to ‘jump head first into the deep end’ in an all-or-nothing attempt to get it right. When unsuccessful, the results are underwhelming at best and detrimental at worst. It has become increasingly apparent in recent years that much work remains to be done to investigate different approaches and strategies to TOD implementation.

Tactical urbanism is an emergent approach to city-building, increasingly understood as a useful way to rapidly prototype and test plans, whether for improvements to public space, changes in the use of private land, or simply to generate interest in a site (Lydon, 2012). It is a form of intervention that makes temporary use of urban space, and is similar to and overlapping with phenomena described at certain times and contexts as temporary, guerrilla, do-it-yourself, open source, pop-up, and everyday urbanism (Bishop & Williams, 2012; Chase, Crawford, & Kaliski, 2008; Hou, 2010; Kim, Fiore, Niehm, & Jeong, 2010; Senate Department for Urban Development and the Environment & Urban Catalyst, 2007). Some of these are market-oriented (e.g. pop-up shops, Case Study 3.2.2), while others focus on public space (e.g. guerrilla bike lanes, Case Study 3.3.7). Some interventions are spearheaded by the public sector (e.g. Green Light for Midtown, Case Study 3.3.2) while others occur unsanctioned (e.g. The Better Block, Case Study 3.3.1). Regardless, tactical urbanism is characterized by ‘lightweight’ development, low costs, and short-term commitments. It is nimble, temporary, and allows for ‘failing safely’ because of its experimental nature. This report, presented as an exploratory guide for designers and policymakers, argues that tactical urbanism can—and in many cases already does—contribute to transit-oriented development.

Because transit-oriented development does not happen quickly, tactical urbanism has the potential to serve two important functions. First, the increased speed and reduced cost of temporary urbanism can be

used to bridge the gap between the immediate term, and later phases of transit-oriented development that require more substantial capital investments and longer time commitments. In essence, temporary urbanism could serve as a demonstration or piloting strategy. This is true for design treatments, land-use mixing, and even density. In other words, the use of temporary urbanism could quickly prime transit-oriented zones for fine-grained land-use mixing, increased density, and a more pedestrian- and cyclist-friendly environment. An important corollary of the speed and thrift mentioned before is flexibility and experimentation. Tactical urbanism reduces the risk associated with implementing capital- and time-intensive projects, because it allows authorities, landlords, entrepreneurs, and communities to test how well they work before moving forward. In this sense, tactical urbanism offers a rapid, low-cost demonstration, experimentation, and interim use strategy that reduces some of the risks often associated with transit-oriented development.

In this report, I draw from cases and interviews to assess whether and how tactical urbanism could assist in the early stages of transit-oriented development implementation. Tactical urbanism has gained great momentum in practice over the past five years; a diverse and growing number of sources provide case studies of tactical urbanism. This report draws on examples from a handful of publications on the subject—notably *The Temporary City* by British planners Peter Bishop and Lesley Williams, *Urban Pioneers* by the German interdisciplinary collective Urban Catalyst, as well as *Tactical Urbanism Volume 2* by American planner Mike Lydon of the Street Plans Collective. Further examples are drawn from myriad websites that report on tactical urbanism. This report presents 30 cases of temporary urban interventions that are (or could be) linked to transit-oriented development. These are supplemented with key-informant interviews in order to assess some of the opportunities, challenges, and elements necessary to employ tactical urbanism for transit-oriented development.

This work is distinct from existing literature on transit-oriented development and tactical urbanism in that it threads the two strategies together. Literature on transit-oriented development is extensive and in many ways well-developed in terms of both policy and design. Few studies, however, deal with piloting, viability, or short-term implementation. None addresses tactical urbanism. Tactical urbanism, on the other hand, does not yet benefit from a well-developed body of scholarly work. Most literature in this domain stems from political geography and as such deals primarily with activism, resistance, empowerment, and public art (see for example Hou, 2010). To my knowledge, no authors have explicitly attempted to link tactical urbanism with transit-oriented development.

The remainder of the report is structured as follows. The first chapter deals with transit-oriented development. It begins with a history of development patterns as they relate to transportation, from early transit suburbs, to automobile-oriented ‘sprawl’, to the re-emergence of development oriented around walking, cycling, and public transit. It then develops a working definition of transit-oriented development, and explains how the built environment affects transit ridership. The purpose of this chapter is to provide an understanding of the context and characteristics of transit-oriented development.

The second chapter deals with tactical urbanism. It first briefly presents the term tactical from two perspectives, and goes on to examine and disentangle the multitude of definitions that have been used to explain the phenomenon of low-cost, rapid, and lightweight urban interventions. This chapter subsequently outlines the main drivers that have led to unprecedented interest in tactical urbanism, from austerity, to demographics, to the internet. The purpose of this chapter is to provide a working understanding of the definitions and drivers of temporary urbanism.

The third chapter weaves together concepts from the first two chapters in order to answer the following question: How can tactical urbanism be used to rapidly and affordably pilot transit-oriented development plans, thereby bridging the gap between planning and implementation in a generative manner? This

chapter uses short case studies to illustrate how tactical urbanism in practice is able to quickly, affordably, and temporarily bring about activity density, mixed land uses, and transit-supportive urban design. It then explains how tactical urbanism addresses some of the often-cited barriers associated with transit-oriented development. The section concludes with key-informant interviews in order to better understand the challenges and opportunities to temporary urbanism as a catalyst in the implementation of transit-oriented development.

Chapter 1: Transit-oriented development

This chapter presents a scan of the literature pertaining to transit-oriented development as a contemporary approach and an urban phenomenon. Section 1.1 places transit-oriented development into context with roughly two centuries of land use patterns shaped by dominant transportation technology. It explains how urban development evolved from streetcar suburbs to postwar ‘sprawl’ to concepts of smart growth and transit-oriented development today. Section 1.2 scans the literature for definitions of transit-oriented development, and provides one definition for the purposes of this report. Finally, Section 1.3 describes the characteristics of transit-oriented development that will be used later in the report to organise tactical urbanism interventions.

1.1 Transit-oriented development in context

Transit-oriented development comes on the heels of two centuries of changes to urban transportation. This section describes the origins of transit-oriented development from the compact streetcar suburbs of industrial cities to the dispersed suburban patterns we are familiar with today.

Streetcar suburbs

In the century before the widespread use of private automobiles, nearly all urban development was oriented around transit of some form. Developers across the globe would build streetcar infrastructure in order to market previously inaccessible urban and peri-urban land (Smerk, 1967). A similar pattern of development emerged in streetcar suburbs across North America: Businesses would cluster along a streetcar line, with housing on upper storeys and along cross streets. Often there would be a leisure destination, such as an amusement park at the peri-urban terminus, to encourage patronage on weekends while indirectly marketing developable land along the routes (Luka, 2006; Warner, 1962). Several authors refer to early transit suburbs as development-oriented transit, because private developers would build transit infrastructure in order to market their real estate (Bernick & Cervero, 1997; Dittmar & Ohland, 2004; Gillham & MacLean, 2002).

Car-oriented 'sprawl'

Streetcar suburbs were superseded by the expansion of automobile ownership across Canada and the US in the 20th century (Harris, 2004; Muller, 2004). This was the automobile era, and car-oriented development began to take precedence over transit and walking. The resulting urban form is generally referred to as suburban sprawl: low-density development with coarsely-separated land uses (Reid Ewing, 1997; Gillham & MacLean, 2002).

Sprawl is characterised by a high degree of mobility for motorists, but also by long distances between activity nodes. For this reason, planners describe sprawl as having a low level of accessibility as measured by the ability to conveniently reach a wide range of destinations using various transport modes. By the end of WWII and for over half a century thereafter, nearly all new suburban growth in North America would take on a sprawl-like pattern.

The causes and consequences of sprawl are documented in a large and well-developed body of academic literature. This report covers only the basic elements. For further information on the causes and consequences of urban sprawl, see Ewing (1997), Ewing (2008), and Gillham and Maclean (2002). Four factors are largely responsible for the emergence and sustained popularity of sprawl-like development: (1) rising car ownership and a preference for car-oriented amenities, (2) road subsidies, (3) housing policy favouring sprawl-like development, and (4) average cost pricing of utilities, which led to artificially inexpensive suburban growth, and artificially expensive infill growth. These four factors led to the rapid expansion of suburbs in North America. This, combined with a preference for open space, large dwellings, and plentiful parking meant that more than half of North Americans were living in car-oriented urban areas by 2000 (Hobbs & Stoops, 2002; Turcotte, 2008).

Despite a long list of private benefits, sprawl generates a number of negative social consequences. Architect and commentator on sprawl Oliver Gillham (2002) describes five important categories of costs to society of sprawl: (1) high rate of conversion of agricultural land and wildlife habitat, (2) increased vehicle kilometres travelled and corresponding energy use, (3) increased environmental pollution and physical inactivity, (4) increased transaction costs (economic inefficiency) and social segregation, and (5) reduced aesthetic value and sense of community (social cohesion). Together, these caused planners and

policymakers to begin rethinking the policies and systems in place that had facilitated sprawl-like patterns of development. As early as the 1970s, a new approach to development was emerging in urban planning circles: that growth should be based not around the automobile, but transit.

In reaction to the negative consequences of urban sprawl, planners and architects began devising new ways to channel urban growth around transit. The 1970s and 1980s saw the development of myriad transit systems throughout North America, largely designed to relieve the congestion that had been generated by sprawl-like urban growth patterns (Dittmar & Ohland, 2004). Systems like San Francisco's Bay Area Rapid Transit (BART) were built in this era. Although these systems were important to provide transport alternatives to the automobile, they "[fell] short of providing the full range of benefits that transit can stimulate" (Dittmar & Ohland, 2004, p. 6). That is to say, they were not designed to spur pedestrian-friendly development near station stops. Indeed, in many cases they were explicitly designed for automobile access under the assumption that residents would drive to transit. As such, many transit agencies focused on ensuring that stations were surrounded by plentiful, free car parking.

In the 1990s a new concept was emerging fuelled by the burgeoning smart growth and New Urbanism movements, along with renewed interest in urban lifestyles among the public. It centred on the concept of mixed-use, compact, pedestrian- and cyclist-friendly development located near transit stations. The goal of this type of development was not only to sustain higher levels of transit patronage than would be possible in postwar suburban environments, but also to provide a more environmentally, socially, and economically sensible model of land use (Duany et al., 2001). The New Urbanist architect Peter Calthorpe presented the term transit-oriented development as a theoretical model for city-building in his seminal work *The Next American Metropolis* (Calthorpe, 1993). His vision of transit-oriented development was a compact, mixed use, transit-proximate alternative to sprawl. Over the subsequent two decades, this vision would spread to city plans across North American and indeed the world.

Synthesis

In the century before the widespread use of private automobiles, nearly all urban development was oriented around transit. This, however, gave way to car-oriented development, also known as sprawl, from the middle of the twentieth century through to the present day. Starting in the the 1970s, in response to mounting environmental, social, and economic concerns over sprawl-like patterns of growth, planners began to think about guiding growth around transit rather than the automobile. In the two decades since Peter Calthorpe first introduced the term 'transit-oriented development', more and more planning departments and transit agencies have begun to embrace the idea.

1.2 Defining transit-oriented development

Several expressions attempt to describe what is most commonly referred to as transit-oriented development: transit joint development, transit villages, transit-oriented design, and transit-based development, to list a few. The term transit-oriented development, however, has gained the broadest currency, and is the terminology that I use throughout this report. This section discusses the range of definitions of transit-oriented development, and settles on one for the purposes of this report.

in his influential 1993 book *The Next American Metropolis*, architect Peter Calthorpe (1993) describes transit-oriented development thus (p. 56):

> A transit-oriented development is a mixed-use community within an average 2,000-foot walking distance of a transit stop and core commercial area. TODs mix residential, retail, office, open space, and public uses in a walkable environment, making it convenient for residents and employees to travel by transit, bicycle, foot, or car.

Most definitions revolve around Calthorpe's model, although the appropriate walking distance can vary significantly from the 600m norm he proposed. In a literature review, Cervero (2002) draws on other definitions of transit-oriented development and its equivalents found in the literature (Table 1.2.1).

Table 1.2.1: Definitions of transit-oriented development, adapted from Cervero (2002)

Definition of transit-oriented development	Source
"The practice of developing or intensifying residential land use near rail stations."	Boarnet & Crane, 1998
"Development within a specified geographical area around a transit station with a variety of land uses and a multiplicity of landowners."	Salvesen, 1996
"A mixed use community that encourages people to live near transit services and to decrease their dependence on driving."	Still, 2002
"A compact, mixed-use community, centered around a transit station that, by design, invites residents, workers, and shoppers to drive their cars less and ride mass transit more. The transit village extends roughly a quarter mile from a transit station, a distance that can be covered in about five minutes by foot. The centerpiece of the transit village is the transit station itself and the civic and public spaces that surround it. The transit station is what connects the village residents to the rest of the region."	Bernick & Cervero, 1997
"Moderate to higher density development located within an easy walk of a major transit stop, generally with a mix of residential, employment, and shopping opportunities designed for pedestrians without excluding the auto. TOD can be new construction or redevelopment of one or more buildings whose design and orientation facilitate transit use."	California Department of Transportation, 2001

Beyond one broad definition of a TOD, Calthorpe (1993) distinguishes between two alternative types: the neighbourhood TOD, and the urban TOD. According to the author, the neighbourhood TOD should be more residential in character, with less retail activity, less employment space, and lower overall densities.

The urban TOD, by contrast, should exhibit more employment space, more retail mixing, and higher densities for all uses. Since then, countless subcategories of TODs have emerged to distinguish between urban and suburban, neighbourhood and core, not to mention between different forms of transit. Needless to say, no two transit-oriented developments are the same.

This report adopts the definition put forth by Calthorpe in 1993, but opts for a flexible definition of 'walking distance', rather than his suggested 600m radius. This follows empirical work demonstrating that people are often willing to walk farther than 600m for transit (see for example Burke & Brown, 2007; O'Sullivan & Morrall, 1996).

Synthesis

Several different definitions and terms are used to describe transit-oriented development exist. Transit-oriented development, however, is the most widely-used term, and the one I employ throughout this report. Definitions of TOD and its variants nearly always include three central components suggested by Calthorpe: (1) a relatively compact, high density of development, (2) a fine-grained mix of land uses, and (3) transit-supportive urban design that prioritises to pedestrians and cyclists. The subsequent section addresses each of these components in detail.

1.3 Characteristics of transit-oriented development

Several authors have attempted to provide a comprehensive list of the characteristics of transit-oriented development. This section lists some of these sets of characteristics, their similarities and differences, and why in this report I prefer to describe the transit-oriented development along three key aspects of the built environment vis-à-vis travel demand, as argued by Cervero & Kockelman (1997): density, diversity, and design.

The basics: Density, Diversity, and Design

In each definition listed in the previous section, three important characteristics stand out: sufficient population and employment density to support frequent transit service, mixed land uses, and a pedestrian- and cycle-friendly built environment. These are analogous to what transportation planning researcher Robert Cervero calls the 'Three Ds' of travel demand: Density, Diversity, and Design (Cervero & Kockelman, 1997). The theoretical framework associated with the Three Ds model (Table 1.3.1) has been confirmed by a host of observers and analysts. For a synthesis of the literature on travel demand and the built environment, see Ewing and Cervero (Reid Ewing & Cervero, 2010).

Table 1.3.1: Theoretical framework describing the effect of the Three Ds on travel demand

Dimension	Effect on walking, cycling, and transit ridership	Effect on automobile vehicle kilometres travelled (VKT)
Increase population and employment density (Density)	+	–
Increase mix of land uses (Diversity)	+	–
Improve pedestrian- and cyclist-oriented urban design (Design)	+	–

TOD characteristics according to Dittmar and Poticha, Greenberg, and Cervero

Other authors have attempted to frame the components of transit-oriented development differently. Dittmar and Poticha list five goals of TOD, which could simultaneously double as successful characteristics: (1) location efficiency, (2) rich mix of choices, (3) value capture, (4) place-making, and (5) resolution of the tension between node and place (Dittmar & Poticha, 2004). Location efficiency refers to population density, access to transit facilities, and pedestrian friendliness. A rich mix of choices corresponds to diverse uses near residents, and diverse dwelling types available to residents. Value capture means capitalising on sunk capital of transit infrastructure and the value derived from proximity to frequent transit service, whether in terms of tax revenues for governments, customers for shops, access to labour for employers, or access to a transit network for residents. Place-making consists of ensuring that the built environment near transit facilities is pedestrian- and cyclist-friendly. This includes amenities that make walking and cycling both safe and convenient. Finally, resolution of the tension between node

and place deals with the trade-off between a transit facility as a node on a network and a neighbourhood in which people live, work, and play. Together these five components are important to successful transit-oriented development.

Greenberg outlines another set of components of successful TOD: (1) Active walkable streets, (2) Building intensity and scale, and (3) Careful transit integration (Greenberg, 2004). These, she suggests, are the 'ABCs of TOD'. Active walkable streets ('A') require mixed land uses, street-oriented buildings, physical infrastructure for active transportation (*e.g.* sidewalks and bike lanes), small connective blocks, and restricted parking located predominantly behind buildings and on-street. Building density and intensity ('B') refers to a compact built environment with sufficient density to support frequent transit. Careful transit integration ('C') stipulates that the transit facility itself should be well-integrated into the urban fabric of its surrounding neighbourhood. The ABCs of TOD represent a more design-focused approach to transit-oriented development.

In a 2002 review of the TOD literature, Cervero et al. identified seven common elements of transit-oriented development: (1) mixed-use development, (2) development that is close to and well-served by transit, (3) development that is conducive to transit riding, (4) compactness, (5) pedestrian- and cycle-friendly environs, (6) public and civic spaces near stations, and (7) stations as community hubs (Cervero et al., 2002). These categories also articulate the characteristics of TOD.

Regardless of the interpretation, characteristics of transit-oriented development typically fall within one or more of the Three Ds of travel demand (Table 1.3.2). In this report, I describe transit-oriented development based on the following characteristics: (1) density of population and employment, or simply 'activity density', (2) land use mix or diversity, and (3) transit-supportive urban design. These characteristics are congruent with Peter Calthorpe's (1993) definition of transit-oriented development. Each characteristic is described in detail below.

Table 1.3.2: Characteristics of TOD found in the literature, organised by density, diversity, and design

Author	Density	Diversity	Design
Dittmar and Poticha	Location efficiency Value capture Resolution of the tension between node and place	Rich mix of choices	Location efficiency Placemaking Resolution of the tension between node and place
Greenberg	Building intensity and scale	Active walkable streets	Active walkable streets Careful transit integration
Cervero (review)	Development that is close to and well-served by transit Compactness Development that is conducive to transit-riding	Mixed-use development Stations as community hubs Development that is conducive to transit-riding	Development that is conducive to transit-riding Compactness Pedestrian- and cycle-friendly environs Public and civic spaces near stations

Activity density ('Density')

Activity density refers to the concentration of trip origins and destinations. As population density (trip origins) increases near a transit facility, the number of people who are able to take advantage of the transit facility should increase. Similarly, as the density of jobs, schools, and shops (trip destinations) increases, the number of people who are able to take advantage of the transit facility should also increase.

There is a large body of literature that confirms a positive relationship between population density and transit ridership, as well as a negative relationship between population density and vehicle kilometres travelled by automobile, usually referred to as VMT for vehicle miles travelled (Cervero, 1994; Dunphy & Fisher, 1996; Kuby, Barranda, & Upchurch, 2004; Pushkarev & Zupan, 1982; Rosenbloom & Clifton, 1996; Ross & Dunning, 1997; Smith, 1984). A similarly mature body of literature reveals that employment density near stations is also a significant predictor of transit ridership (Buch & Hickman, 1999; Cervero, 1991, 1994; L. D Frank & Pivo, 1994; Kuby et al., 2004; Messenger & Ewing, 1996). In general, the relationship between density and transit has been well-established.

A key goal of transit-oriented development, therefore, involves increasing activity density near stations, especially where these are low. Although no standard employment density minimums exist, authors and practitioners have established rules-of-thumb for minimum population densities required for transit to be feasible. In a literature review, authors find that basic bus service can be provided at 17 units per net hectare, premium bus service can be provided at 37 units per net hectare, and rail service can be provided at 50 to 75 units per net hectare (Cervero, 2004).

Rules of thumb for employment density are scarce: Frank and Pivo suggest that nearly 200 employees per gross hectare were necessary before there was an increase in transit and pedestrian travel for work trips (Frank & Pivo, 1994). By contrast, Cervero has argued that 61 jobs per gross hectare would support frequent, high capacity transit service, and 125 jobs per gross hectare would support light rail (Cervero, 2004).

Land-use mix ('Diversity')

Land use diversity is a second critical travel demand factor. Transit-oriented development requires a diverse and fine-grained composition of land uses. This includes a mix of different uses (e.g. residential, civic, open, commercial, office, industrial), as well as a mix of different subcategories within each use (e.g. single family homes and apartment buildings). A last but important component of diversity is the jobs-housing balance, whereby the number of working residents in any given neighbourhood roughly matches the number of jobs present in that neighbourhood (Downs, 2004).

Although the literature on land use diversity is less developed than that of density, it clearly plays an important and perhaps key role in encouraging walk, bike, and transit trips. In a study on suburban employment centres, Cervero found that non-auto mode shares were greater where retail and office uses complement one another (Cervero, 1989). In another study, he also found that transit mode shares were higher when destinations were in mixed-use and multi-storey buildings (Cervero, 1991). A Cambridge Systematics study of Los Angeles commuters similarly found that bike, walk, and transit mode shares were greater where land uses were substantially mixed within 400 metres of work sites (Cambridge Systematics, 1996). That same year Cervero found that land-use diversity was more important than density in its effect on walking, cycling, and transit ridership (Cervero, 1996).

In practical terms, land-use diversity is something of an enigma to planners. They are enthusiastic to demand greater mixing, but often have trouble prescribing the types and amounts of different uses (Grant & Perrott, 2011). One simple strategy to evaluate land use diversity on a TOD site is to generate list of desired uses for any given neighbourhood, and then to take an inventory of which ones are present or not present. This is precisely what the San Francisco Department of Public Health did by creating a Neighborhood completeness indicator for key retail and public services (San Francisco Department of Public Health, n.d.). The indicator is essentially a tally of 12 possible retail services and 11 possible public services that the Department of Public Health has deemed important for any given neighbourhood.

The quantity of retail that can be supported by a TOD will vary depending on its density and the proximity of retail outside of the TOD zone. Nonetheless, Manhattan-style densities are not necessarily required; at modest average gross densities of 40 dwelling units per hectare, a TOD with an 800m radius can accommodate over 8,000 residents—enough to support "neighbourhood" retail according to most planning standards books (De Chiara, Koppelman, & Pratt Institute School of Architecture, 1969). More recent British guidelines suggest that such a catchment area could support a primary school, secondary school, doctor's office, public house, corner store, local shopping centre, post office, and community centre (Barton et al., 1995).

Another important factor associated with diversity is the jobs-housing balance. Despite the fact that workers will not necessarily find work in their neighbourhood, one study found that neighbourhoods with a greater jobs-housing balance led to shorter commute distances (Frank & Pivo, 1994). In *The next American metropolis*, Calthorpe (1993) prescribes proportions of land uses to be used as rough guides for jobs, housing, and public space in transit-oriented developments. He states that neighbourhood TODs should have 10 to 15 percent of land dedicated to public space, 10 to 40 percent to commercial and employment uses, and 50 to 80 percent to housing. Where TODs take on a more urban character, he recommends that commercial and employment uses occupy 30 to 70 percent of developable land, whereas housing drop to 20 to 60 percent. Although he does not use empirical evidence to support these proportions, they are based on longstanding experience in the US private land-development sector.

Transit-supportive urban design ('Design')

Transit-supportive design incorporates elements of urban design that not only encourage walking, cycling, and transit ridership, but also enhance sense of place. The design component of transit-oriented development includes the following components: (1) a connective, *e.g.* grid-like, street network, (2) street design that prioritises pedestrians and cyclists, and (3) pedestrian-scale architecture and landscape architecture. The supply and configuration of parking is an important part of the latter two components, and is often addressed discretely in the literature.

Street network connectivity

Connectivity refers to the directness with which a road user can reach his or her destination via the street network. Street networks with short blocks, a high density of four-way intersections, and a more-or-less grid-like pattern, affords the highest level of connectivity to pedestrians, cyclists, and motor vehicles (Figure 1.3.1). When streets are not connected and routes indirect, they are less conducive to all modes because the distances between origin and destination are greater. Connective streets also simplify transit routes, which can often become circuitous in areas with curvilinear, non-connective street patterns.

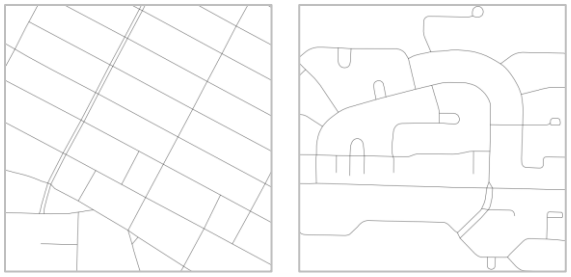


Figure 1.3.1: A grid-like street pattern (left) versus a curvilinear street pattern (right)
Source: Author

The literature on connectivity is sparser than that of density and diversity, but it is known that areas with increased street connectivity have lower motor vehicle speed profiles, while the opposite can be said for suburban environments with large arterials and widely spaced intersections. Lower speeds make for more safe pedestrian and cyclist environments (Frank & Engelke, 2005). One study suggested that intersection density needs to reach around fifty intersections per square kilometre before pedestrian travel becomes commonplace (Frank, Kavage, & Litman, 2006).

Street design that prioritises pedestrians and cyclists

Streets are not simple channels designed to facilitate smooth car traffic. They serve the dual purpose of transport link for all road users (pedestrians, cyclists, transit, and cars) as well as public space for non-transportation activities like playing, relaxing, and socialising (Appleyard et al., 1981; Gehl, 1996, 2010; Jacobs, 1961). Streets that prioritise pedestrians and cyclists have a number of common characteristics. At the most basic level, they must provide physical infrastructure for walking and cycling in the form of sidewalks and bike lanes. In addition, streets in TOD zones should exhibit the following characteristics (see for example Ewing, 1999; Ministry of Transportation, 2009): (1) trees planted at intervals of 10 metres or in order to provide a protection from rain and sun for pedestrians; (2) metered on-street parking that provides a buffer between active transportation facilities and the roadway; (3) intersections equipped with curb extensions that shorten crossing distances for pedestrians; and (4) narrow traffic and parking lanes in order to calm motor vehicle traffic. An example of appropriate retrofit measures is shown in Figure 1.3.2.

Figure 1.3.2: Street with pedestrian- and cyclist-oriented improvements in Brooklyn, NY, before (left) and after (right)

Source: http://www.nyc.gov/html/dot/downloads/pdf/20110120_ppw.pdf

A large and growing body of literature points to both the dangers of fast automobile traffic, and the benefits of pedestrian and cycling amenities. In terms of the former, Leden et al. found that in general low-speed, main street style roadways reported the lowest rates of vehicle-pedestrian collisions, while areas with wide travel lanes and higher operating speeds reported the highest rates (Leden et al., 2006). Rosén and Sander conducted a study on pedestrian fatality risk as a function of car impact speed in Sweden, and found that the risk at 50 km/h was "more than twice as high as the risk at 40 km/h and more than five times higher than the risk at 30 km/h" (Rosén & Sander, 2009). In the United States, one article found that pedestrians are 20 times more likely to be killed on a per-mile-travelled basis than motorists (Dumbaugh, 2008). Together this evidence points to the importance of traffic calming when designing roads.

Several studies also show the benefits of pedestrian and cyclist amenities on walking, cycling, and taking transit. In the landmark LUTRAQ study by Parsons Brinkerhoff Quade Douglas, the authors found that neighbourhoods with easy street crossing for pedestrians, sidewalk continuity, and grid-like street patterns had a greater share of non-auto trips than neighbourhoods without these pedestrian features (Parsons Brinkerhoff Quade Douglas, 1993). In a remarkably simple study, public health researchers Saelens et al. demonstrate that pedestrian facilities do indeed cause people to walk more, even when controlling for density and diversity (Saelens et al., 2003). Pedestrian facilities have also been shown to improve people's perception of walkability: one study found that communities with sidewalks, on-street parking, buildings set close to the sidewalk and attractive features such as art, trees and benches improved the perception of an area's safety and walkability (Frank et al., 2006).

Similar to Saelen's build-it-and-they-will-come findings on pedestrians, Dill and Carr uncover a correlation between levels of cycling and bicycle infrastructure (Dill & Carr, 2003). While the causation could run in either direction (e.g. places with more enthusiastic cyclists could be demanding more bicycle facilities), it appears as though there is a latent demand for cycling infrastructure in North America. As for what infrastructure to build, Parkin, Wardman, and Page find that perceived traffic danger of cycling is an important deterrent, particularly for women, non-cyclists, and beginners (Parkin et al., 2007). These groups prefer facilities that are off-road or adjacent to the road, instead of painted bike lanes.

In terms of transit and cycling, several authors show that integrating the two modes is mutually beneficial, because it increases the catchment area of transit (Krizek & Stonebraker, 2010; Pucher & Buehler, 2009). Furthermore, the cost of doing so is much lower than providing car park-and-rides or feeder bus services.

Pedestrian scale architecture

In transit-oriented development zones, buildings should be designed at a pedestrian scale (see for example Figure 1.3.3). A pedestrian-scale building is one: (1) that is oriented towards the street, especially in terms of entryways and fenestration; (2) that has architectural texture and variety, especially on the ground floor; (3) that exhibits public life in the private space between the front of the building and the sidewalk (whether a patio for a café, or a porch for a house); and (4) whose off-street parking, if any, is located at the rear of the building (see for example Ewing, 1999; Gehl, 1996, 2010; Ministry of Transportation, 2009). It is also important that parks, squares, and other civic spaces form an important part of the neighbourhood, rather than simply occupying leftover space.

Figure 1.3.3: Pedestrian scale architecture (left) versus car-oriented architecture (right)
Source (left to right): http://en.wikipedia.org/wiki/File:Main_Street,_Salinas_crop.jpg; http://en.wikipedia.org/wiki/File:Wal-Mart_in_Madison_Heights.jpg

The links between pedestrian scale and transit-oriented development are not as clear in the literature as with other dimensions of the built environment, in part because it is harder to measure (R. Ewing & Handy, 2009). The expectation is that architecture that makes walking and cycling more pleasant, convenient, and safe will enhance the experience of transit access and egress.

Jane Jacobs was among the first to articulate the importance of buildings that address the street, with entrances accessible from the sidewalk and windows that provide not only visual interest, but passive surveillance (Jacobs, 1961). Newman later confirmed the importance of street-oriented buildings for street safety in his work Defensible Space (Newman, 1995). Architect Jan Gehl echoes the importance of the pedestrian scale in terms of quality of life more broadly (Gehl, 2010). He describes pedestrian scale architecture (or '5 km/h architecture') as forming visually rich streetscapes and fine-grained variation. From a purely aesthetic standpoint, a visual preference survey in the United States found a nearly universal negative reaction to the visual appearance of commercial strip sprawl and a nearly universal positive reaction to traditional town-like communities, which are in turn more conducive to public transit (Urban Land Institute, 2005).

Finally, the design and availability of parking has a large impact on both the pedestrian environment and demand for transit. Off-street parking requirements create a self-perpetuating cycle in which increasing the supply of parking leads to increased demand. As such, limiting the parking supply is beneficial to non-automobile modes of transportation (Shoup, 2005). Many guides recommend that parking in transit-oriented developments be less visually obtrusive, (e.g. recessed into the basement, covered with landscaping, or located behind buildings) in order to minimise the negative impact of parking on the pedestrian realm, as well as discourage motorists from driving to destinations, including transit (see for example Dunphy et al., 2003; Miller, 1988).

Synthesis

Transit-oriented development exhibits several common characteristics, each of which typically falls within the three dimensions of travel demand: Density, Diversity, and Design. For the purposes of this report, transit-oriented development refers to the process and resulting pattern of developing near transit, characterised by (1) increased activity density, as generally measured by population and employment densities, (2) diverse or finely-grained mixed land uses, and (3) transit-supportive urban design that prioritises pedestrians and cyclists. Empirical evidence shows that each of these characteristics contributes to a reduced vehicle kilometres travelled, and an increased mode share of transit, walking, and cycling.

1.4 Summary

Chapter 1 has provided an overview of transit-oriented development. Specifically, it addressed the history, definition, and characteristics of TOD. Section 1.1 explained that before postwar, car-oriented sprawl, urban development was often oriented around transit. The negative consequences of 'sprawl' have led planners and policymakers to seek out alternative patterns of growth. Transit-oriented development is one such alternative.

Sections 1.2 and 1.3 defined and characterised the term transit-oriented development. The definition and characteristics put forth by architect Peter Calthorpe in 1993 continue to be applicable today. Congruent with his original argument, this report defines and characterises transit-oriented development by (1) high activity density, (2) diverse or mixed land uses, and (3) transit-supportive urban design that prioritises pedestrians and cyclists. Empirical evidence to date has shown that these three characteristics exhibit a negative relationship with vehicle kilometres travelled, and a positive relationship with transit ridership, walking, and cycling.

Chapter 2: Tactical Urbanism

This chapter complements the discussion of transit-oriented development in Chapter 1 by focusing on tactical urbanism. Section 2.1 discusses critical and non-critical interpretations of the word tactical, and how they relate to tactical urbanism. This is followed in Section 2.2 by a working definition of tactical urbanism, as well as the definitions of similar concepts, like guerrilla and temporary urbanism. Finally, Section 2.3 presents some key factors behind the growing interest in tactical urbanism. The purpose of this chapter is to provide a basic understanding of the emerging approach to city-building known as tactical urbanism.

2.1 Defining tactical

Before addressing tactical urbanism, it is important to understand what the word tactical means. There are two widely-used interpretations of the term. The first, non-critical version has roots in military usage, and enjoys wide currency in the domains of business and athletics. The second, critical interpretation is taken from from Michel de Certeau's seminal work, *The Practice of Everyday Life* (de Certeau, 1984). I draw primarily on the former interpretation as a basis for the definition of tactical urbanism presented in Section 2.2, but components of de Certeau's work factors into the definition as well.

Tactical work as part of a broader strategy

The most common definition of tactical has its origins in military manoeuvres. The United States Department of Defense, for example, describes the *tactical level of war* as "[t]he level of war at which battles and engagements are planned and executed to achieve military objectives assigned to tactical units or task forces" (United States Department of Defense, 2010a). This stands in contrast to what it calls the *strategic level of war*: "The level of war at which a nation, often as a member of a group of nations, determines national or multinational (alliance or coalition) strategic security objectives and guidance, then develops and uses national resources to achieve those objectives" (United States Department of Defense, 2010b). Here, tactical refers to a smaller scale of action, and specifically a subset of a broader strategy.

More broadly, the *Oxford English Dictionary* (1989) defines tactical as "the arrangement of procedure with a view to ends" while the *Merriam-Webster Dictionary* (2008) refers to the term as "relating to small-scale actions serving a larger purpose," or "adroit in planning or maneuvering to accomplish a purpose". In this sense, tactical refers not just to military manoeuvres, but to a component of any given broader strategy, regardless of the context. In addition, the use of the word "adroit" to describe tactical invokes the notion of resourcefulness. This broader definition is well-suited to entrepreneurship, sports, or any other setting that involves planning at both tactical and strategic levels.

In the non-critical interpretation of the word, tactical describes actions that address objectives, where strategies deal only with goals. Table 2.1.1 illustrates the hierarchy of strategies and tactics.

Table 2.1.1: A relational hierarchy of tactics and strategies

Scale	Outcome sought	Type of intervention
Broad	Goal	Strategy
Fine	Objective	Tactic

Tactical action according to de Certeau

Absent from the conventional usage of tactical is the action's agent. The second interpretation of tactical—this one put forth by French philosopher Michel de Certeau—suggests that the difference between tactic and strategy has little to do with scale or hierarchy. Rather, tactics refer to subversive actions taken by those somehow excluded from structures of power. Tacticians are by this definition insurgent. A tactic "is determined by the absence of power just as a strategy is organized by the

postulation of power" (de Certeau, 1984, p. 38). De Certeau goes further, describing a tactic as being disruptive (de Certeau, 1984, p. 37):

> Tactics make use of the cracks that particular conjunctions open in the surveillance of the proprietary powers. It poaches in them. It creates surprises in them.

According to this interpretation, the difference between tactical and strategic refers to the actor's position of power: tactician or strategist, authority or insurgent. Table 2.1.2 illustrates the difference in authority associated with strategies and tactics, as suggested by de Certeau.

Table 2.1.2: Tactics and strategy vis à vis power

Type of intervention	Nature of actor and action
Strategy	Authority
Tactic	Insurgency

The use of 'tactical' with respect to urbanism

In this report, tactical urbanism focuses on the former definition of tactical, although elements of the latter are often true of tactical urbanism as well. On the one hand, tactical urbanism is never strategic in the traditional sense of the word; it either informs or forms part of a broader action.

PARK(ing) Day (Case Study 3.3.9), for example, is a yearly event initiated by San Francisco-based interdisciplinary group Rebar, where individuals around the world are encouraged to creatively transform parking spaces into public spaces for a day. The intent of these small acts, however, is not only to temporarily repurpose parking spaces. More broadly, PARK(ing) Day seeks to "rethink the way streets are used and to re-imagine the possibilities of the urban landscape" (Rebar, 2011, p. 1).

De Certeau's interpretation of tactical, in which tactics are disruptive and occur outside of power, does not line up very well with tactical urbanism. Although many acts of tactical urbanism are unsanctioned and disruptive, these are certainly not necessary conditions. (Section 2.2 discusses sanction and authority further.)

Synthesis

The term tactical invokes two meanings. In military, business, sports, and popular usage, tactical refers to an action that is part of a broader strategy. Here tactical works are defined as being smaller in scale than strategies, and typically involve resourcefulness or adroit. The second meaning of tactical refers explicitly to the power of the actor vis-à-vis systems of control and management; a tactic is an act of insurgency undertaken by someone lacking authority whereas the opposite is true of strategies.

The meaning of tactical urbanism used in this report focuses largely on a widespread, conventional, and typically non-critical usage, but not that of de Certeau. Tactical urbanism is smaller in scale than conventional planning, which could in this circumstance be described as largely strategic. While tactical urbanism tends to be both disruptive and subversive—as de Certeau suggests of tactics in general—it is not by definition an act of insurgency, although this is often associated with tactical urbanism. As such, it does not accept existing institutional pathways and modes of operation as out of scope.

2.2 Defining tactical urbanism

Tactical urbanism is an emerging approach to the early implementation stages of city-making. It is characteristically lighter, quicker, and cheaper (LQC) than traditional brick-and-mortar urban interventions, making it conducive to both experimentation and demonstration. As such, tactical urbanism exhibits both an intent and propensity to generate longer term physical change through utility-generating actions (vis à vis urban planning), whether initially sanctioned or not. This section elaborates on each characteristic of tactical urbanism: (1) Lighter, Quicker, Cheaper, (2) intent to generate utility in terms of urban planning, and (3) disregard for sanction.

The approach: lighter, quicker, cheaper

Tactical urbanism is lighter, quicker, and cheaper than conventional urban development. The Lighter, Quicker, Cheaper (LQC) approach to development is "based on taking incremental steps, using low-cost experiments, and tapping into local talents (e.g. citizens, entrepreneurs, developers, and city staff)" (Project for Public Spaces, n.d.). The phrase was coined by Eric Reynolds, founder of Urban Space Management, a London-based urban development group that focuses on LQC as a means to community revitalisation (Reynolds, 2011). Although Project for Public Spaces focuses on public space, the LQC approach can be used to develop private land as well (see for example Case Studies 3.2.4 and 3.2.5).

Lighter refers to 'lightweight' development: using what is available and making small, incremental changes to the built environment. Whereas conventional development requires 'heavier' permanent materials and construction, tactical urbanism generally makes the best use of inexpensive, upcycled and found materials. In many cases these materials are explicitly temporary. In The Hague, for example, event planner Roland Verbiest established a pop-up seaside surf village using largely upcycled materials, from repurposed shipping containers for lodgings, to recycled crates for shelving (Case Study 3.1.3).

Quicker refers to both the speed and promptness of implementation. Tactical urbanism interventions occur on a short time scale, and adopt the start-small-but-start-now mantra that has become commonplace in high technology circles in recent years (see for example Ries, 2011). The first Better Block project in Oak Cliff, Texas, for example (Case Study 3.2.1), mocked up a complete street as a demonstration project, using planters, sod, patio furniture, paint, and other temporary materials. The entire process took a few weeks to plan and one day to set-up. It was intended to last for one weekend.

Cheaper refers to the low cost of implementation. It is a natural corollary to Lighter and Quicker, but bears mentioning in its own right. In tactical urbanism, the materials used are typically low-cost, and in some cases the labour and expertise are voluntary. Chair-bombing, for example, undertaken by Brooklyn-based DoTank, cost nearly nothing. The wood to build Adirondack chairs came from recycled shipping pallets, and the chairs themselves are assembled by teams of volunteers (Case Study 3.3.5).

The intent: a view to longer term change with results-based action

Temporary urbanism also uses the lighter, quicker, cheaper approach, but may differ in intent from tactical urbanism. Where temporary urbanism may be undertaken for its own sake or to engage discourse, tactical urbanism demands an increase in utility of the built environment. In other words, tactical urbanism must serve some physical function in urban planning terms, although it can and does frequently engage discourse as well. Figure 2.2.1 illustrates the nested relationship between temporary and tactical urbanism.

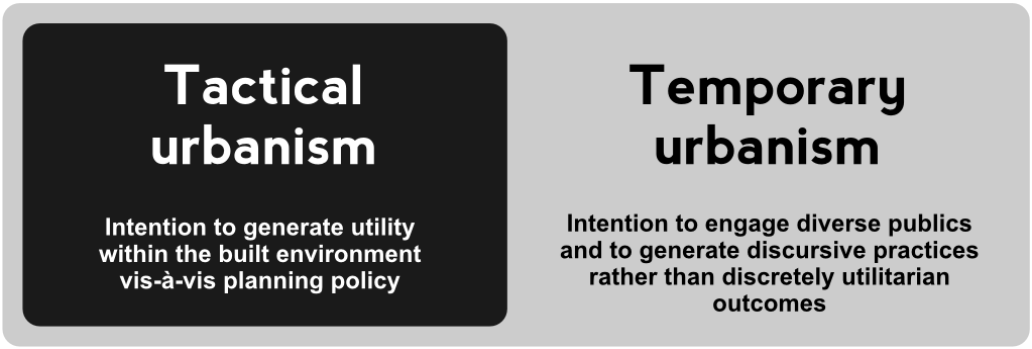


Figure 2.2.1: Nested relationship between tactical urbanism and temporary urbanism
Source: Author

In the summer of 2012, Artist Tatsu Nishi built a temporary, sixth-storey living room around the statue of Christopher Columbus at Columbus Circle in New York City. This installation has the effect of "radically alter[ing] our perceptions" (Public Art Fund, n.d.) but does not serve a functional purpose from a planning and development perspective. Consequently, while a clear example of temporary urbanism, it is not considered an example of tactical urbanism for the purposes of this report.

In an interview with The Atlantic Magazine (Berg, 2012), Mike Lydon explains the difference between tactical and temporary urbanism thus:

> When you're yarn-bombing something, it's a really cool and interesting piece of public art and it can have some social and political commentary that goes along with it, but the intent generally is not to create a longer term physical change. Most of the things that we include in the guide generally are aiming at doing something larger. They're not just for the sake of doing it.

It is worth emphasising that the line between tactical and temporary urbanism is often not clear. Much of Roadsworth's iconic street art in Montreal, for example, could be considered temporary urbanism and not tactical urbanism (Figure 2.2.2). But from a different angle, it is equally possible to argue that his art improves the experiential qualities of the street, which in turn may encourage walking, and therefore serves a physical function. The critical notion here is intent: if an act is intended to generate utility within the built environment vis-à-vis planning policy, rather than to generate discursive practices, then it is defined as tactical urbanism in this report.

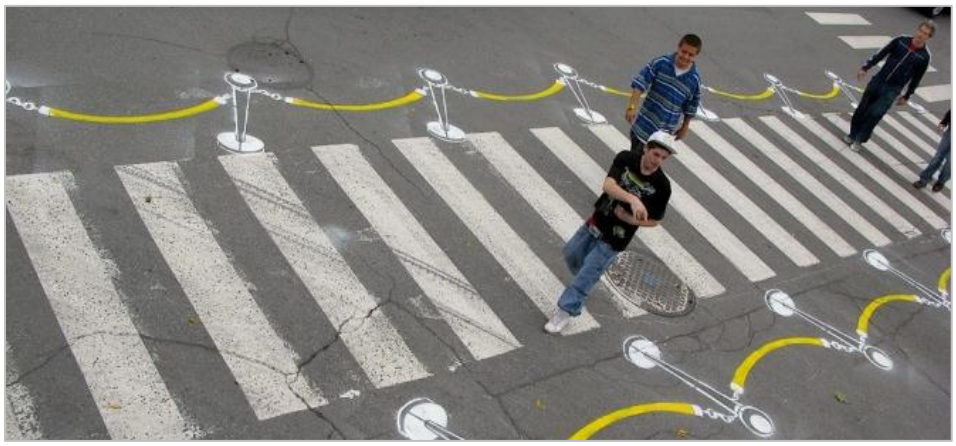


Figure 2.2.2: Street art by Roadsworth: tactical or not?

Source: http://roadsworth.com/

The authority: sanction and leadership in tactical urbanism

Unlike guerrilla urbanism wherein interventions are uniquely and explicitly insurgent (Hou, 2010), tactical urbanism includes interventions that are both sanctioned and unsanctioned. These can be spearheaded by authorities, or led by grassroots organisations. Some projects, like Depave (Case Study 3.3.8), begin without approval from authorities and continue, sanctioned, because of their initial success. Others, like Hayes Valley Farm (Case Study 3.1.10), are initiated from the highest political authority (in this case City Hall). From this perspective, guerrilla urbanism forms a subset of tactical urbanism that is always unsanctioned. Figure 2.2.3 illustrates the nested relationship between tactical and guerrilla urbanism.

Figure 2.2.3: Nested relationship between tactical and guerilla urbanism
Source: Author

In a similar manner, Lydon uses the concept of a "tactical urbanism continuum" to describe the range of leadership and sanction associated with tactical urbanism (Figure 2.2.4) (Lydon, 2012, p. 7). Here, tactics form the horizontal axis, and tacticians form the vertical axis. Acts of tactical urbanism that have more sanction tend to be initiated by authorities, whereas the opposite is true of insurgency. The typically positive correlation between authority and sanction is therefore unsurprising. All acts, regardless of sanction or authority, are included in the definition of tactical urbanism used in this report.

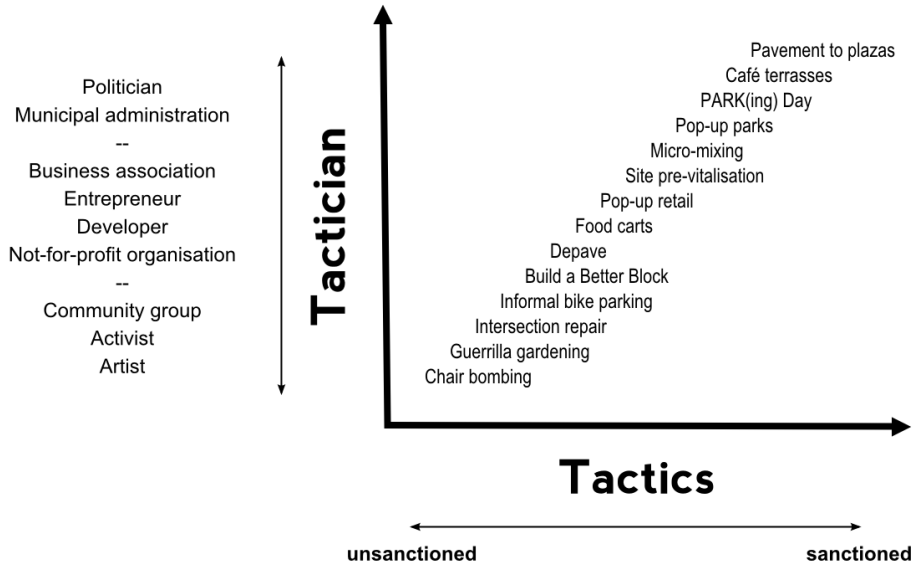


Figure 2.2.4: A continuum of tactical urbanism

Source: Adapted from Lydon, 2012, p. 7

Synthesis

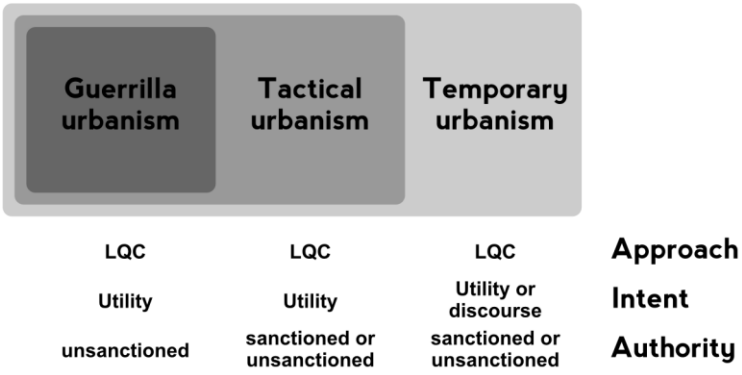


Figure 2.2.5: Summary of the relationship between of temporary, tactical, and guerrilla urbanism for the purposes of this report
Source: Author

Sanctioned or not, tactical urbanism is a Lighter, Faster, Quicker approach to city-making with a view to longer term, physical changes in the built environment. On one hand it differs from temporary urbanism in that it necessarily strives to bring about broader physical change. On the other hand, it differs from guerrilla urbanism in that it need not be subversive. In this sense, guerrilla urbanism is a form of tactical urbanism that is always unsanctioned, which is in turn a subset of temporary urbanism that is utility-oriented in urban planning terms. Figure 2.2.5 summarises the approach, intent, and authority associated with temporary, tactical, and guerrilla urbanism. The grey rectangles illustrate the nested relationship between the three concepts.

2.3 Drivers of tactical urbanism

The explosive growth in tactical urbanism in recent years can be explained by the confluence of several intersecting factors. This section discusses four important drivers of tactical urbanism: (1) economic restructuring and suburbanisation during the last quarter of the 20th century, (2) the so-called 'Great Recession' and ensuing climate of austerity, (3) renewed interest in urban lifestyles by both baby boomers and 'millennials', and (4) the rise of the internet as a tool for social action.

Economic restructuring and suburbanisation

Patterns of economic restructuring and suburbanisation during the last quarter of the 20th century have set the stage for tactical urbanism in certain ways. The combination of an increased capital-to-labour ratio and competition from abroad has reduced demand for labour and left a glut of underutilised industrial real estate in the cities of most developed nations. Lee notes that, "Increased competition from imported products and productivity gains from technological improvements have lead many employers to rationalize their production processes by displacing workers" (Lee, 2000, p. 54). In the two decades between 1976 and 1998, for example, the proportion of manufacturing jobs in Canada declined from 20.1 per cent to 14.6 per cent (Lee, 2000). In addition, improvements in technology and larger-scale infrastructure (e.g. container shipping facilities) have rendered superfluous large tracts of urban land previously used for industrial ends, not to mention the jobs previously associated with those land uses (Carter & Polevychok, 2003).

On the other hand, suburbanisation has historically had a similar effect of reducing demand for established urban neighbourhoods. (Section 1.1 lists the processes and patterns of sprawl and their effects on cities.) Indeed, population growth has been negative in many neighbourhoods of Western cities, and in some cases, regional population has declined as well (Carter & Polevychok, 2003).

The vacancy that has resulted—industrial, residential, and commercial—has created both a challenge and an opportunity for those wishing to revitalise older neighbourhoods. Property owners, citizens, and authorities alike have been forced to get creative about breathing life into otherwise underutilised space. Tactical urbanism is an important manifestation of this creativity (see for example Bishop & Williams, 2012; Lydon, 2012).

The 'Great Recession' and the new climate of austerity

Recent economic instability and austerity have been important drivers of tactical urbanism. The financial crisis of 2008 and ensuing recession has slowed economic growth outlooks worldwide (OECD, 2012). Furthermore, the fiscal and monetary stimulus that followed the crisis has left many countries in an era of austerity. At the 2010 Toronto summit, for example, representatives from the G-20 agreed to halve their respective budget deficits by 2013 (G20, 2010).

The effect of budget cuts at upper tier governments is often borne by lower-tier governments (Heuton & Girard, 2010). Reductions in spending typically begin with upper-tier funding earmarked for urban development, regeneration, infrastructure, and public works. City authorities are then left to adapt to these adjustments by cutting their own budgets or worse—in the case of Vallejo, Calif., for example—declaring bankruptcy. As journalist Ariana Eunjung Cha puts it, "Cuts at the federal level are being pushed down to the states, which in turn are passing the problems to their cities" (Cha, 2012).

The climate of austerity and apprehensiveness of traditional sources of investment have made the lighter, quicker, cheaper approach to development presented in the previous section more attractive in recent years.

Demographics: 'millennials' and an aging population

Both 'millennials' (those born roughly between 1980 and 1989) and baby boomers (their parents) are driving a renewed interest in mixed use, walkable neighbourhoods—precisely those neighbourhoods that had been facing the economic restructuring and population decline discussed above.

On one hand, millennials, who came of age during a long period of economic expansion, graduated into a deep recession. Youth unemployment in Canada, which fared well relative to OECD countries in general, was 13.9 per cent in March 2012, up from 11.0 per cent in 2007. For OECD countries on average, those numbers were 17.1 and 12.8 per cent respectively (Figure 2.3.1).

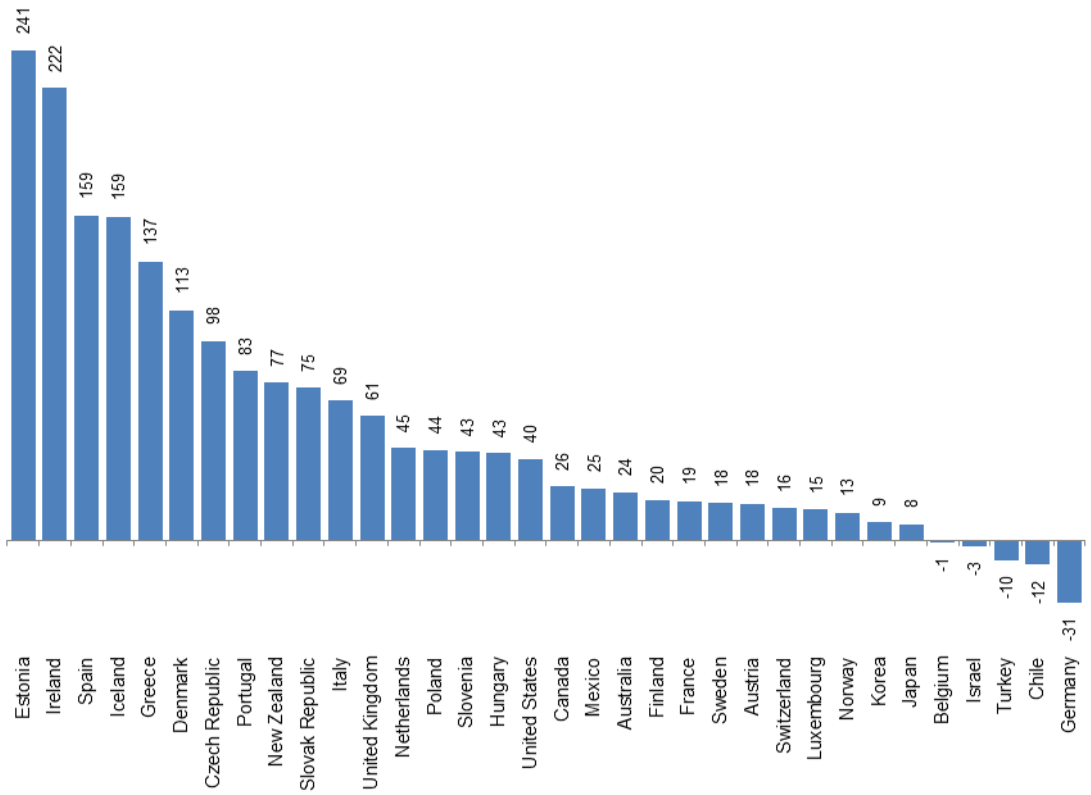


Figure 2.3.1: Per cent increase in youth unemployment rates for OECD countries, December 2007 to March 2012
Source: (OECD, n.d.)

On the other hand, millennials are at the forefront of what Richard Florida calls the creative economy. Jane Jacobs (1984) has long hailed the importance of place in enabling innovation and creativity. More recently, Florida (2003) has suggested that the creative class are important economic drivers, and they are selective in their choice of built environment. In particular, they are choosing the most diverse, tolerant, and not-so-coincidentally compact, older neighbourhoods of cities. Whether in search of these creative hotbeds, or simply to save money on the combined cost of housing and transportation, millennials are eschewing cars and suburbs in favour of walkable, prewar neighbourhoods (Pew Research Center, 2007).

At the same time, 2011 marked the first year that baby boomers (the population cohort born between 1946 and 1964) turned 65. Statistics Canada estimates that seniors aged 65 and over will grow from 14.1 per cent of Canada's population today to roughly one in four by 2036, a twofold increase from 2009 (Statistics Canada, 2010). According to the same projections, the population of adults aged 80 years and over will increase from 1.3 million today to roughly 3.3 million in 2036. The World Health Organisation suggests that walkability is an important component of age-friendly cities (WHO, 2007). As such, many of the compact, traditional neighbourhoods that boomers fled prior to the 1970s may become magnets for their return.

Data on housing starts from CMHC confirm an increase in demand for more compact development. The number of new "apartment and other" starts (including condominiums) in Canada increased from 25,928 dwelling units in 1995 to 77,121 in 2011, surpassing the number single-detached dwellings in 2008, 2010, and 2011 (CMHC, 2012) (Figure 2.3.2).

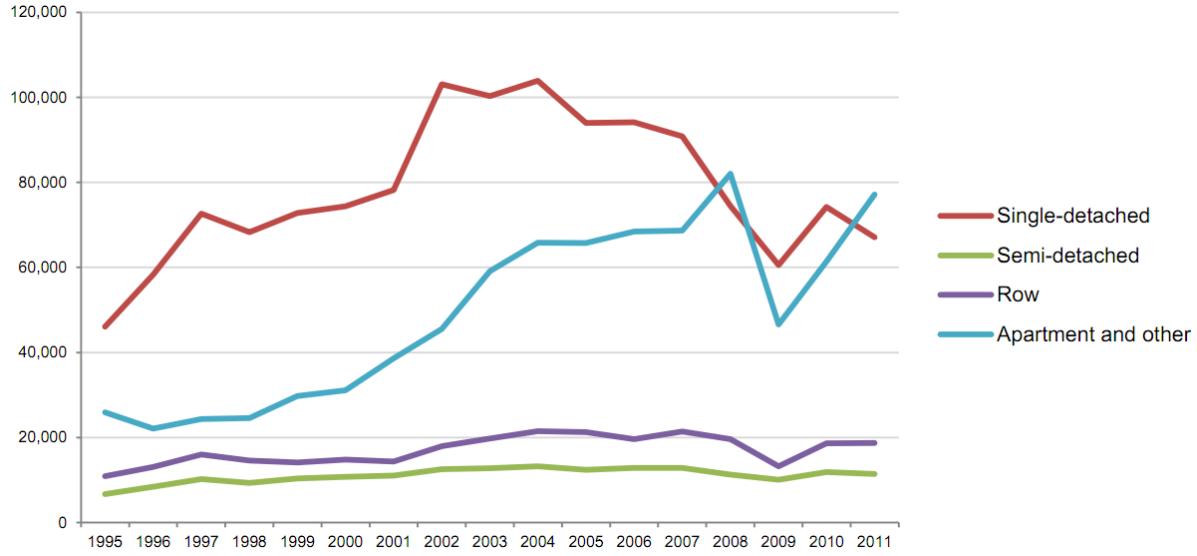


Figure 2.3.2: Housing starts by dwelling type, 1995 to 2011, all of Canada
Source: CMHC, 2012

Similarly, a US preference survey by the National Association of Realtors demonstrates a renewed interest in walkable neighbourhoods (National Association of Realtors, 2011). The majority of Americans would prefer to live in a city (19%), a mixed-use suburban neighbourhood (28%), the country (22%), or a small town (18%). Only 12% say they would prefer a single-use residential suburban neighbourhood. In addition: two-thirds (66%) of respondents consider walkability as an important factor in deciding where to live; the majority (89%) of respondents see development in existing districts or on brownfield sites as a higher priority than building anew in the countryside (7%); and four out of five (80%) of respondents believe improved public transportation and building walkable areas are the best solution to traffic congestion (50%), as opposed to 18% who wish to see more roads.

According to planner Christopher Leinberger, the results of the changing preferences represent "a profound structural shift—a reversal of what took place in the 1950s, when drivable suburbs boomed and flourished as center cities emptied and withered" (Leinberger, 2011). This renewed interest in the city—whether because of demographics, the knowledge-based economy, or broad-based changes real estate preferences—has been cited as a factor in the rise of tactical urbanism (Bishop & Williams, 2012; Lydon, 2012).

New technology and the social economy

Tactical urbanism has been marked by the open and enthusiastic sharing of ideas, which has in turn resulted in rapid spread and uptake. One important reason tactical urbanism has caught on so quickly in recent years is the advent of the internet as a tool for social change. The internet allows resources, people, and ideas to mobilise much more quickly than was previously possible. Cases of tactical urbanism could be found in San Francisco as early as 1970 (Hager, 1970; Pacific Standard Time, n.d.)., as well as in Berlin following unification (Senate Department for Urban Development and the Environment & Urban Catalyst, 2007) to name a few examples. These never boasted the kind of quasi-mainstream popularity that tactical urbanism enjoys today.

The present collaborative spirit and combination of entrepreneurship and civic purpose is a fundamental characteristic of what authors refer to as the social, civic, and/or sharing economy (Ahrensbach et al., 2011; Gansky, 2012; Mendell & Neamtan, 2010). The use of the internet as a tool for social change has been a necessary, but by no means sufficient, factor in the rise of tactical urbanism (Bishop & Williams, 2012; Lydon, 2012).

Synthesis

Four factors have been cited as drivers of the current growth in tactical urbanism. First, economic restructuring and suburbanisation that took place during the second half of the 20th century have rendered unnecessary large swaths of industrial land, as well as reduced investment in many older working-class neighbourhoods. At the same time, the belt-tightening climate of post-crisis austerity has forced many local governments to get more creative about improving their built environments. In addition, the growing interest in cities by both millennials and their boomer parents has renewed interest in ‘once-forlorn’ neighbourhoods. Finally, the internet as a tool for social action has facilitated the spread of tactical urbanism ideas and actions in a way that was not previously possible.

2.4 Summary

This chapter has presented definitions, characteristics, and drivers of tactical urbanism. Section 2.1 examined two definitions of *tactical*, and how the word is used for the purposes of this report. Specifically, the non-critical definition better describes the fact that tactical urbanism is smaller in scale, and not necessarily insurgent.

Section 2.2 provided a definition of tactical urbanism based on three characteristics. First, tactical urbanism is characterised as being lighter, quicker, and cheaper (LQC) than conventional development, based on the expression coined by British developer Eric Reynolds of Urban Space Management. Second, tactical urbanism intends to bring about broader scale change in the form of physical utility vis à vis urban planning. This differentiates it from temporary urbanism, which may occur for its own sake, or purely to engage discourse. And finally, tactical urbanism can either be sanctioned or unsanctioned. This last point stands in contrast to guerrilla urbanism, which by its definition is subversive.

Section 2.3 outlined four major drivers of tactical urbanism: (1) the vacancy and neglect of certain inner city neighbourhoods that resulted from economic restructuring and suburbanisation, (2) the post-crisis political climate of austerity that has forced authorities, entrepreneurs, and citizens alike to find creative ways to do more with less, (3) the increased demand for urban lifestyles by two cohorts—millennials and baby boomers, and (4) the ability to share civic ideas and disseminate information using the internet.

Chapter 3: Tactical TOD

This chapter 3 links key elements of the previous two to introduce the concept of tactical transit-oriented development. It also demonstrates the effects that existing cases of tactical urbanism have had on the Three Ds of travel demand. If acts of tactical urbanism are capable of increasing activity density, enriching the land-use mix, or providing transit-supportive urban design in general, then there is a possibility that these same kinds of interventions can have a similar effect near transit. Indeed, many cases do occur near transit, and as such are examples of de-facto transit-oriented development, if perhaps unknowingly so.

The potential for tactical urbanism to contribute to transit-oriented development is can be broadly seen as twofold. First, it can physically alter the built environment in any of the three ways identified above (the Three Ds). Sections 3.1 through 3.3 deal with tactical density, tactical diversity, and tactical design respectively. Each is illustrated with real world examples of tactical urbanism that—if located near transit (and many are located within walking distance of transit)—could have a positive impact on ridership based on the literature discussed in Section 1.3.

Section 3.4 discusses how tactical urbanism may be able address some of the barriers and challenges associated with transit-oriented development, in addition to physical changes in the built environment. Specifically, the section deals with the potential for tactical urbanism in three ways: (1) to demonstrate new ideas before making long-term commitments, (2) to accommodate more experimentation than conventional development, and (3) to induce interim use of property while the real-estate market cannot absorb heavier, longer-term development.

Finally, Section 3.5 uses key-informant interviews to develop an overview of opportunities, challenges, and elements necessary for tactical urbanism to successfully contribute to transit-oriented development.

This chapter is not about uncovering the precise ridership impacts or cost savings associated with tactical urbanism over conventional development for TOD. Although this type of investigation would be valuable in the future, the purpose of this chapter is instead (1) to demonstrate *how* tactical urbanism can affect density, diversity, and design, and (2) to discuss *why* tactical urbanism is useful for addressing certain barriers and challenges to transit-oriented development.

3.1 Tactical density

Trinity Buoy Wharf is an historic waterfront site in the London borough of Tower Hamlets. Once the location of an important warehouse and workshop complex at the confluence of the Rivers Lea and Thames (Institution of Civil Engineers, 2001), it fell into disuse in 1988 when it was acquired by the London Docklands Development Corporation, an agency responsible for the redevelopment of underutilised docklands in inner London (London Docklands Development Corporation, 1998). The 1.4ha property remained more-or-less unused for a decade, at which point developer Urban Space Management won a design competition to convert the aging site as a hub for the arts and creative industries.

USM employed its signature Lighter, Quicker, Cheaper model to begin development immediately with low-risk, low-cost activities. “The growth in activity and value across the 3.5 acre site has been achieved without either wholesale demolition or major capital investment” (Bishop & Williams, 2012, p. 55) The project grew by reinvesting surpluses into new activities. Trinity Buoy Wharf is now an important cultural and arts destination, playing host to elements of the English National Opera, University of East London, and Faraday School, along with several creative businesses, vendors, venues, workshops, studios, and eateries. Presently the site employs 515 people. Urban Space Management has invested £4 million (CAD $6.4 million) in the site (Urban Space Management, n.d.-a).

As an employment, commercial, and cultural destination (with several people actually living in repurposed shipping containers on site as well), Trinity Buoy Wharf has had a measurable impact on activity density. It is also an example of tactical urbanism by the definition used in this report: rapidly implemented, inexpensive, incremental, and purpose-driven. At the same time, Trinity Buoy Wharf is located within less than one kilometre from East India Station (Docklands Light Rail, part of Transport for London). This makes it a de-facto transit-oriented development project despite the fact that it was never labelled as such.

(Text drawn from Case Study 3.1.1.)

Trinity Buoy Wharf is a good example of what can be described as tactical density: density that has come about by means of tactical urbanism. In the context of transit-oriented development, tactical density is about using tactical urbanism to increase the activity density near transit stations.

Admittedly, tactical urbanism has a greater potential to increase the non-residential component of density than the residential component. Apart from certain exceptional cases like Trinity Buoy Wharf, the marriage between tactical urbanism and population density typically elucidates one of two possibilities: temporary or portable dwellings (e.g. camps, mobile homes), or squatting in vacant buildings. Neither is particularly beneficial to transit-oriented development for reasons that are more-or-less evident.

Despite this, tactical urbanism has shown tremendous potential to boost activity density near transit stations. This section discusses three categories of density-affecting interventions that fall within the definition of tactical urbanism used in this report: shipping container development, coworking spaces and maker spaces, and urban agriculture. Short case studies are provided for each.

Shipping containers

Shipping containers can be used on vacant lots to temporarily increase activity density in a TOD zone until longer term development can materialise.

Recycled shipping containers are an inexpensive, modular, and portable form of architecture that can be used for myriad purposes (see for example Slawik & Bergmann, 2010). As such, many examples of container architecture fit the description of tactical urbanism. Specifically, containers can boost both

population and employment densities in areas surrounding transit stations, without the need to use existing brick-and-mortar buildings or develop new ones.

The case of Trinity Buoy Wharf shows that containers can be developed using the LQC approach for use as dwellings (Case Study 3.1.1). The second container 'city' at Trinity Buoy Wharf, for example, includes 22 live-work studios. Developer USM describes their brand of container architecture as "modular technology enables construction time to be reduced by up to half those of traditional building techniques while minimalising [sic] on site disruption and remaining significantly more environmentally friendly" (Urban Space Management, n.d.-b). In an interview with the Telegraph, Eric Reynolds notes that the total costs of building a shipping container dwelling "work out at £850-£950 per square metre" (Middleton, 2012). As such, shipping containers can increase population density at a lower cost and in a shorter timeframe than conventional development.

Shipping containers can also provide lodging for tourists. Several examples of hospitality pop-ups that have emerged in recent years serve to illustrate this point. These portable hotels could serve to increase population density over a short period of time, such as a visitor staying for a few days or weeks in an area. Examples of pop-up hotels emerged at the 2012 Olympic Games in London (Case Study 3.1.2). These modular containers could be shipped and erected on any site with relatively flat terrain, turning an otherwise vacant space into a fully-functional hotel. In another example, one entrepreneur used shipping containers and other recycled materials to build a pop-up surfers' village on vacant industrial land on the North Sea coast in The Hague (Case Study 3.1.3). He activated the site with a campground, a hostel, and a number of other off-beat uses. The result is a tourist destination that the founder admits is a temporary project, to be eventually replaced with more permanent development. Both cases show how the LQC approach can be used to increase population density, if only in the short-term.

Finally, shipping containers can serve as market stalls, boosting activity density as both a source of jobs for vendors and destinations for consumers. One example is Boxpark—a pop-up container "mall" in the East London neighbourhood of Shoreditch (Case Study 3.1.4). Boxpark provides retail spaces in 60 recycled shipping containers to both new and established clothing brands. Dekalb Market (Case Study 3.2.4) in Brooklyn is a similar concept, albeit with more mixed uses. Dekalb, along with markets in general, is discussed further in Section 3.2.

Coworking spaces and makerspaces

Coworking spaces and makerspaces can quickly and affordably make use of vacant buildings in TOD zones (where available), until heavier development takes place.

As the name suggests, urban agriculture involves the cultivation of food in human settlements. The UNDP defines urban agriculture as, "an industry that produces, processes and markets food and fuel, largely in response to the daily demand of consumers within a town, city, or metropolis, on land and water dispersed throughout the urban and peri-urban area, applying intensive production methods, using and reusing natural resources and urban wastes, to yield a diversity of crops and livestock" (Smit et al., 1996, p. 1).

Rooftops—residential or industrial—can be used to grow both crops and livestock under certain conditions. Although urban agriculture is old hat in much of the developing world, several cities in Europe and North America are beginning to embrace it for reasons of food security, local economic development, and general wellbeing. In addition, urban agriculture has the potential to increase activity density near transit stations by rendering productive otherwise idle land.

This concept may seem far-fetched, but three initiatives in Montréal and San Francisco, show that urban agriculture can have an impact on activity density. The Edible Campus project successfully used a paved surface on McGill's campus to grow food for a meals-on-wheels program (Case Study 3.1.8). From the private sector, Montréal-based Lufa Farms grows roughly four hundred kilograms of produce per day on a 3,000m^2 roof. Their design can be dismantled if necessary, and deployed on other roofs (Case Study 3.1.9). Hayes Valley Farm in San Francisco shows how a large vacant site can be populated in the interim with a fully-operational farm that engages local stakeholders in the production process (Case Study 3.1.10). Each of these examples demonstrates how the use of otherwise leftover space for urban agriculture can increase the activity density of an area.

Urban agriculture

Urban agriculture can convert unproductive land and rooftops into productive space relatively quickly and affordably, especially until longer term development can materialise.

As the name suggests, urban agriculture involves the cultivation of food in human settlements. The UNDP defines urban agriculture as, "an industry that produces, processes and markets food and fuel, largely in response to the daily demand of consumers within a town, city, or metropolis, on land and water dispersed throughout the urban and peri-urban area, applying intensive production methods, using and reusing natural resources and urban wastes, to yield a diversity of crops and livestock" (Smit et al., 1996, p. 1).

Rooftops—residential or industrial—can be used to grow both crops and livestock. Although urban agriculture is old hat in much of the developing world, several cities in Europe and North America are beginning to embrace it for reasons of food security, local economic development, and general wellbeing. In addition, urban agriculture has the potential to increase activity density near transit stations by rendering productive otherwise idle land.

This concept may seem far-fetched, but two initiatives in Montréal, Qué, and one in San Francisco, Calif., show that urban agriculture can have an impact on activity density. The Edible Campus project successfully used a paved surface on McGill's campus to grow food for a meals-on-wheels program (Case Study 3.1.8). From the private sector, Montreal-based Lufa Farms grows roughly four hundred kilograms of produce per day on a 3,000 sq m roof. Their design can be dismantled if necessary, and deployed on other roofs (Case Study 3.1.9). Hayes Valley Farm shows how a large vacant site can be populated in the interim with a fully-operational farm that engages local stakeholders in the production process (Case Study 3.1.10). Each of these examples demonstrates how the use of otherwise leftover space for urban agriculture can increase the activity density of an area.

Tactical density case studies

This subsection presents the cases cited in Section 3.1. Each case contributes to activity density, and some also contribute to the diversity and design components of transit-oriented development. Table 3.1.1 lists the cases presented in this subsection, along with their location, years, and the components of transit-oriented development that they affect.

Table 3.1.1: Tactical density case studies

Case	Place	Year(s)	Density	Diversity	Design
3.1.1 Trinity Buoy Wharf	London (UK)	1998 to present	✓	✓	✓
3.1.2 Snoozebok	London (UK)	2012 to present	✓		
3.1.3 Free Architecture Surf Terrain (F.A.S.T.)	The Hague (Netherlands)	2010 to present	✓	✓	✓
3.1.4 Boxpark	London (UK)	2011 to present	✓	✓	✓
3.1.5 Station C	Montréal, QC	2008 to present	✓		
3.1.6 Collective	London (UK)	2010	✓		
3.1.7 KwartzLab	Kitchener-Waterloo, ON	2009 to present	✓		
3.1.8 Edible Campus	Montréal, QC	2007 to present	✓		✓
3.1.9 Lufa Farms	Montréal, QC	2011 to present	✓		
3.1.10 Hayes Valley Farm	San Francisco, CA	2011 and 2012	✓		✓

3.1.1 Trinity Buoy Wharf

Figure 3.1.1: Before and after views of the Trinity Buoy Wharf site
Source: http://www.urbanspace.com/projects/trinity-buoy-wharf

London, UK, 1998 to present

Trinity Buoy Wharf is 8350 m^2 historic waterfront site in the London borough of Tower Hamlets. Once the location of an important warehouse and workshop complex at the confluence of the Rivers Lea and Thames (Institution of Civil Engineers, 2001), it fell into disuse in 1988 when it was acquired by the London Docklands Development Corporation, an agency responsible for the redevelopment of underutilised docklands in London (London Docklands Development Corporation, 1998). The 1.4 ha property remained more-or-less unused for a decade, at which point developer Urban Space Management won a design competition to convert the aging site as a hub for creative industries and the arts.

USM employed its signature Lighter, Quicker, Cheaper model to begin development immediately with low-risk, low-cost activities. "The growth in activity and value across the 3.5 acre site has been achieved without either wholesale demolition or major capital investment" (Bishop & Williams, 2012, p. 55) The project grew by reinvesting surpluses into new activities. Trinity Buoy Wharf is now an important cultural and arts destination, playing host to elements of the English National Opera, University of East London, and Faraday School, along with several creative businesses, vendors, venues, workshops, studios, and eateries. Presently the site employs 515 people. Urban Space Management has invested £4 million in the site (CAD $6.4 million) (Urban Space Management, n.d.-a).

As an employment, commercial, and cultural destination (with several people actually living in repurposed shipping containers on site as well), Trinity Buoy Wharf has had a measurable impact on activity density. It is also an example of tactical urbanism by the definition used in this report: rapidly implemented, inexpensive, incremental, and not formalist. At the same time, Trinity Buoy Wharf is located within less than one kilometre from East India Station (Docklands Light Rail, part of Transport for London). This makes it a de facto transit-oriented development project despite the fact that it was never labelled as such.

Sources: http://www.urbanspace.com/projects/trinity-buoy-wharf; Bishop & Williams, 2012; Reynolds, 2011

Density
- Over 500 jobs
- Students from educational institutions on site
- Cultural and commercial destination

Diversity
- Vendors
- Workshops
- Workspaces
- Art galleries
- Opera
- Educational institutions
- Eateries

Design
- Placemaking

3.1.2 Snoozebox

Figure 3.1.2: Snoozebox
Source: http://inthralld.com/2012/08/portable-shipping-container-hotel-snoozebox/

London, UK, 2012 to present

Snoozebox is a portable, modular hotel made from shipping containers. It can be set up and taken down within 48 hours, and was launched at the 2012 Olympic Games in London. Snoozebox can accommodate between 40 and 400 people according to its website, in rooms outfitted with wireless internet, bathrooms, power sockets, and climate control. It is a good example of private sector tactical urbanism.

Sources: http://www.snoozebox.com/

Density
- Short term accommodation for 40 to 400 individuals

3.1.3 Free Architecture Surf Terrain

Figure 3.1.3: Free Architecture Surf Terrain
Source: http://www.fastthehague.com/

The Hague, Netherlands, 2010 to present

Free Architecture Surf Terrain (F.A.S.T.) is a pop-up village that caters to the surfing community. It was developed in 2010 on vacant waterfront land in The Hague by event planner Roland Verbiest. The village, made largely out of shipping containers and other recycled materials, houses a campsite, a fifty-person capacity hostel, a theatre, and a restaurant. It primarily hosts surfers, but also artists-in-residence as well as hostel residents who pay for their accommodation in labour.

The project, which uses inexpensive upcycled materials for construction, is fully sanctioned by local authorities. It anticipates five years of operations, with a hotel planned to be built in its place in the thereafter. As such, it is a good example of a meanwhile use of space that is much larger in scale than typical temporary projects.

Sources: http://www.fastthehague.com/; Schreiner, 2012

Density
- 50-person capacity hostel, campsite, trailer site, and some shipping container residences
- Recreo-tourist destination

Diversity
- Hostel
- Theatre
- Restaurant

Design
- Placemaking

3.1.4 Boxpark

Figure 3.1.4: Boxpark
Source: http://www.boxpark.co.uk/

London, UK, 2011 to present

According to founder Roger Wade, Boxpark is the “first pop-up mall in the world.” The development uses 60 upcycled shipping containers on a four-hectare goods yard in the East London neighbourhood of Shoreditch. Boxpark is a five-year temporary project that opened in 2011. It expects to be proceeded by more permanent development on its current site, but move to a new location when the lease expires. The inexpensive temporary materials allow Boxpark is to provide retail space at affordable rates, which in turn allow retailers to experiment more than could traditionally be possible. In addition, “some ‘box-shops’ will be offered to local creative industries and organisations at preferential rates to ensure BOXPARK always involves and enhances every community it joins” adding a community development angle to the project. Boxpark also programs the site with regular events. A 120-unit Boxpark is currently being planned for Amsterdam. Boxpark is an interesting example of temporary use and tactical urbanism.

Sources: http://www.boxpark.co.uk/about/; Silva, 2012

Density
- 60 retailers

Diversity
- Clothing stores
- Food vendors
- Cultural event venue

Design
- Placemaking

3.1.5 Station C

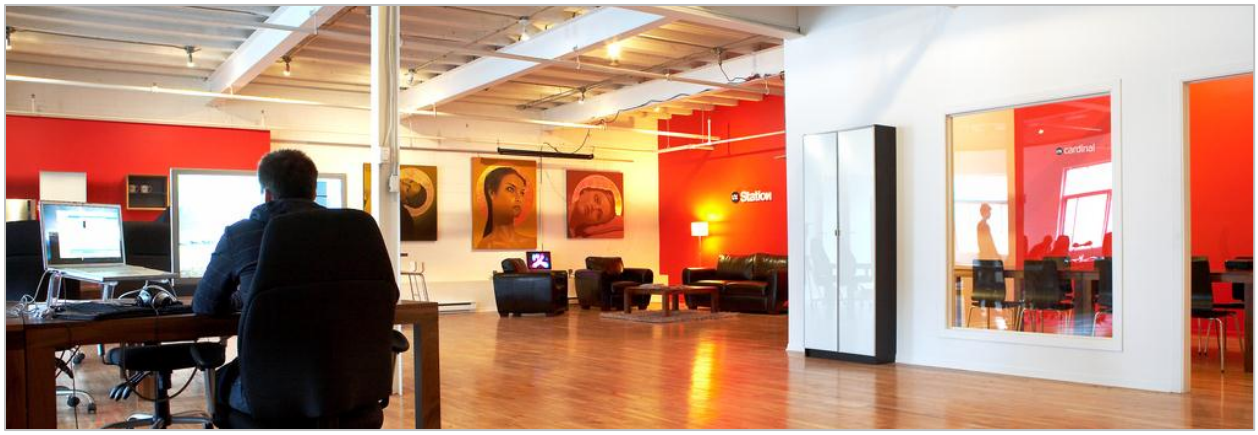


Figure 3.1.5: Station C coworking space
Source: http://www.station-c.com/

Montréal, Canada, 2008 to present

Station C is a 230m^2 coworking space in Montréal, Canada. It houses workspaces for self-employed and independent workers, and caters especially to those working in the professional services sector. The space was established by a group of independent workers who became fed up with working from cafes (Faguy, 2007). According to manager Jonathan Brun, the group of founders acquired a CAD $25,000 bank loan using amortised rent payments as collateral late in 2007. By early 2008, the space was ready to be occupied. It houses 16 desks, a lounge area, board room, kitchen, and full bathroom. By sharing overhead costs, not unlike micro-mixing (Case Study 3.2.10), coworking spaces like Station C provide a better working environment for independent workers than they could afford on their own.

Sources http://www.station-c.com/; J. Brun, personal communication, 20 December 2012

Density
- 16 workspaces

3.1.6 Collective

Figure 3.1.6: Collective coworking space
Source: http://www.camdentownunlimited.com/projects/collective-0

London, UK, 2010

Collective was a temporary workshop, coworking space, and gallery located in a former bakery. The property owner had intended to convert it into a private art gallery. In light of the economic downturn, however, the owner decided to activate the space with temporary uses using inexpensive materials, until the economics became more favourable for long term development. Collective's workspace could accommodate 30 businesses, with portable desks to allow for different space configurations. Businesses did not pay rent to operate in the premise, but had to be start-up enterprises in the creative industry. The landowner was willing to forgo profits under the assumption that business incubation would contribute to local economic development, and in turn make the property more valuable in the future.

Sources: http://www.camdentownunlimited.com/projects/collective-0; Bishop & Williams, 2012, p. 58

Density
- Space for 30 start-up businesses

3.1.7 KwartzLab

Figure 3.1.7: KwartzLab maker space
Source: http://www.kwartzlab.ca/2012/06/tuesday-open-night-pictures-2012-06-26/

Kitchener-Waterloo, Canada, 2009 to present

Kwartzlab is a 280m^2 makerspace in Kitchener-Waterloo, Canada. Its organisers describe the space as “a physical location where like-minded people get together in a cooperative environment to pool their knowledge, experience, and physical resources with a goal to bringing into reality the projects about which they’ve been dreaming.” From conception to completion, KwartzLab came about in six months. Shared amenities include soldering stations, laundry sinks, library, printers, and a plotter for drafting.

Sources: http://www.kwartzlab.ca/about/

Density
- 3,000 sq ft of industrial workspace and shared amenities for makers

3.1.8 Edible Campus

Figure 3.1.8: Edible Campus
Source: http://www.mcgill.ca/architecture/sites/mcgill.ca.architecture/files/images/EdibleCampus.jpg

Montréal, Canada, 2007 to present

The Edible Campus is a roughly 120m^2 container garden on McGill University's downtown Montréal campus. The goal of the project was to convert a concrete surface on the campus into an agriculturally productive and aesthetically interesting space. Additional objectives of the project include promoting urban agriculture education, and encouraging voluntarism and stewardship. The Edible Campus is a collaboration between the university's School of Architecture, a meals-on-wheels community group, and a social-justice advocacy group. In 2007, the space yielded 28 varieties and 177 kg of crops. By 2010 that number had increased more than five-fold to one metric ton of produce. The overall result has been a space that is more pleasant to passersby and more productive, as well as helping to mitigate urban heat-island. Moreover, it has considerable value as a demonstration project for urban agriculture.

Sources: http://www.mcgill.ca/mchg/sites/mcgill.ca.mchg/files/MakingtheEdibleCampus.pdf

Density
- Food production on previously underutilised space

Design
- Public greenspace

3.1.9 Lufa Farms

Figure 3.1.9: Lufa Farms' rooftop greenhouse
Source: https://lufa.com/en/node/493

Montreal, Canada, 2011 to present

Lufa Farms is a social economy enterprise in Montréal that uses the rooftops of large industrial buildings to grow fruit and vegetables. Mohamed Hage started Lufa Farms in 2011 in search of a business model that would reduce the heat island effect, reduce greenhouse gas emissions associated with food transportation and, most importantly, grow “tastier” vegetables. The Lufa Farms greenhouse is roughly 3,000 m^2, and produces roughly 1,000 pounds of fruits and vegetables per day, with a paid staff of 10 people.

Although it took four years to develop the first greenhouse, Hage asserts that future installations will be faster and easier to install: “We’ve pioneered the key issues in doing this type of project including zoning, national and local building codes, and all the engineering, legal, leasehold, and taxation issues. By comparison, the next projects will be much simpler”. In addition, the greenhouse was designed to be able to take down and set up elsewhere, as the Lufa Farms model involves leasing, not buying, rooftop space.

Sources: https://lufa.com/en/about_lufa; Lufa Farms, 2010; Y. Plante, personal communication, January 14, 2013

Density
- Food production on previously underutilised space

3.1.10 Hayes Valley Farm

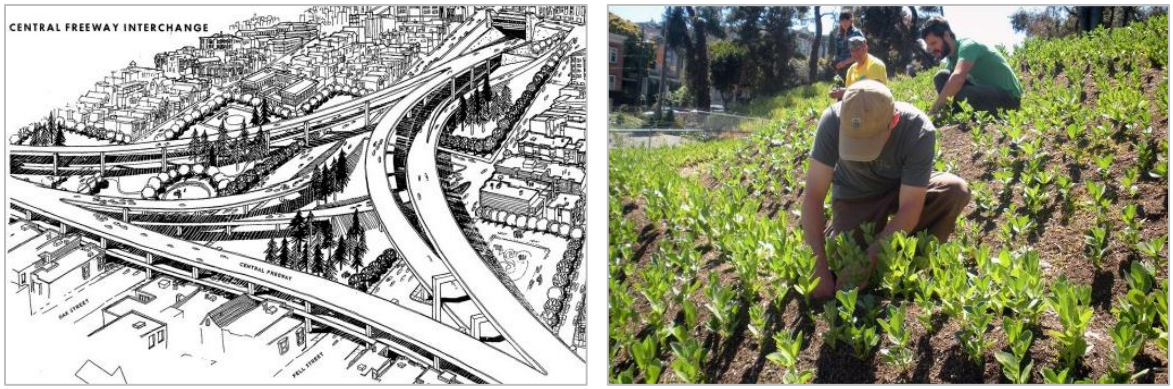


Figure 3.1.10: Hayes Valley Farm
Source: http://rebargroup.org/hayes-valley-farm/

San Francisco, 2011 to 2012

Hayes Valley Farm was a fully functional temporary farm operating during 2011 and 2012 from the site of a demolished freeway ramp in San Francisco, CA. The idea to activate the vacant area with a farm came from a call for proposals for temporary use from City Hall in 2009. The farm was subsequently designed by a group of urban agriculture advocates including Rebar, S12 Architects, and HVF. It has since been managed by a team of community volunteers. For two years, the farm produced vegetables and honey. Late in 2012, a condo project was announced to replace the temporary farm on the site.

Sources: http://rebargroup.org/hayes-valley-farm/; Koskey, 2012

Density
- Food production on previously underutilised space

Design
- Public greenspace

3.2 Tactical diversity

Old Oakland, as the name suggests, is an historical neighbourhood within the City of Oakland. It seemed to have all the right ingredients for urban retail: a relatively high population density, walkable streets, attractive heritage architecture, and great access to transit. Yet certain blocks could not seem to sustain independent retail.

For this reason, enterprising residents Sarah Filley and Alfonzo Dominguez set out to activate vacant storefronts at the intersection of Broadway and 9th Streets, towards the eastern end of the neighbourhood. Their plan, dubbed Popuphood, was to curate the startup of five retailers in five vacant store fronts. By negotiating with property owners, the duo was able to provide entrepreneurs with free rent for six months. The purpose of the grace period was to (1) lower barriers to entry and encourage experimentation, (2) provide a better chance for the landlord to secure long term leases thereafter, and (3) breathe life and activity into a main street facing widespread vacancy (Filley & Dominguez, n.d.).

Following the six-month trial period, three of the five retailers had arranged long term leases (Institute for Urban Design, n.d.). The other two have been filled by new entrepreneurs selling different products. In light of its success, Popuphood plans to expand to 15 additional Oakland storefronts in 2013.

(Text drawn from Case Study 3.2.1.)

Popuphood illustrates how tactical urbanism in the form of pop-up retail can contribute to land use diversity. Like Trinity Buoy Wharf, it is located very close to transit. Indeed, their website boasts that their 9th Street and Broadway location has a Transit Score of 95.[1] It is within easy walking distance of the Oakland Ferry Terminal (900 m), Oakland Jack London Square Train Station (1 km), and the 12th Street Oakland City Center BART Station (350 m), not to mention dozens of bus lines. As such, in a small but important way, Popuphood contributes to transit-oriented development. Again, however, it was never marketed as such.

Popuphood (or pop-up retail in general) is an example of what I call tactical diversity. Others include public markets, street vendors, and micro-mixing.

Pop-up retail

In TOD zones with vacant storefronts, pop-up retail can increase land use diversity where conventional retail might not be able to survive, or else test its viability.

Pop-up retail is a phenomenon rooted in “experiential marketing” whereby retailers—most commonly but not always in the clothing industry—promote a brand or product line for a short period of time to create a sense of exclusivity and excitement (Kim et al., 2010). For example, Japanese clothing retailer Uniqlo opened temporary stores throughout New York City to generate hype leading up to the opening of its flagship SoHo store (Gogoi, 2007).

The concept has since evolved to include any form of retailing that makes temporary use of space. In recent years it has begun to be used as a community revitalisation and business incubation strategy as well. Popuphood, as well as the formalised Pop-Up Shops program run by the Camden Town Unlimited business improvement district in London, UK (Case Study 3.2.2), are examples of using pop-up retail to breathe life into vacant retail space, or to provide a stopgap in anticipation of future use. The result is

[1] Transit Score is a proprietary measure of how well a location is served by public transportation (Walk Score, n.d.).

typically a win-win for property owners who were earning no income on their property prior, as well as entrepreneurs seeking affordable space to experiment with their concept.

Pop-up retail can be used to boost the diversity of land uses near transit stations. This is especially promising in older, less affluent neighbourhoods where, as Hess and Lombardi (2004) note, attracting investment is an important barrier to successful transit-oriented development.

Public markets

Public markets can increase land use diversity in TOD zones much like pop-up retail. In addition, the clustering of vendors allows consumers to chain different shopping trips together.

The term public market has come to mean several different things. For the purposes of this report, they are defined as spaces where vendors sell their products from more-or-less open stalls to consumers. Typically, public markets are synonymous with farmers' markets, where fresh food is sold in this way, often directly from producers themselves. I extend this definition to markets that sell other types of goods, as well as to settings that are not technically operated by the public sector.

According to Project for Public Spaces (2002), public markets are distinguished by (1) having some kind of public or civic purpose beyond trade, (2) creating public *space* (whether publicly-owned or not), and (3) fostering local ownership. Because they are both inexpensive to provide and quickly become community destinations out of otherwise vacant or underutilised space (see for example Gerend, 2007), they can represent an important tool for community and economic development (Morales, 2009). In this sense, they are a form of tactical urbanism according to the definition proposed in this report. Specifically, they are capable of increasing the mix of land uses at a given place, making them an important form of tactical diversity.

Spitalfields Market in London shows how vendors can be accommodated quickly and inexpensively in a heritage building (Case Study 3.2.3). In the case of Dekalb Market in Brooklyn no existing buildings were present, so shipping containers were used for vendor stalls (Case Study 3.2.4. And in many suburban and rural locations, farmers' markets spring up in parking lots during the summer (Case Study 3.2.6). Montréal-based Puces POP demonstrates how an underutilised church basement can be converted inexpensively into a mecca of locally produced goods (Case Study 3.2.7). Each of these examples illustrates the effect that markets can have on land-use diversity.

Street vendors

Because of its low overhead costs and portability, street vendors can increase land use diversity in TOD zones where no other retail could be viable.

Street vendors are persons who sell goods and services to the public without having a permanent built-up structure from which to sell (Bhowmik, 2005). Street vendors may be either stationary (*e.g.* stalls) or mobile (*e.g.* food trucks).

With low overhead costs, street vendors can provide a market function more affordably than conventional retail (Bhowmik, 2005; Cross, 2000). Moreover, from a social perspective, street vendors help to activate the public space around them. On food carts, sociologist William Whyte comments, "[i]f you want to seed a place with activity, put out food. Food attracts people who attract more people" (Whyte, 1980, p. 52).

Furthermore, street vendors tend to mask surface parking lots, and “activate otherwise harsh street edges that repel human activity” (Lydon, 2012, p. 26).

Street vendors are ubiquitous in cities across the world, with the exception of places where they are explicitly banned. In Portland, OR, food vendors mimic public markets by clustering into pods that occupy underutilized lots and vacant land (Case Study 3.2.8). In Montréal, a new mobile vendor system called Fruixi is making fresh produce available in parks and areas lacking stores that sell produce, by selling from carts mounted on bicycles (Case Study 3.2.9). The name is a play on words with reference to the city’s recently-implemented public bike-sharing system called BIXI. These are but two examples of a phenomenon that occurs in nearly all every city across the globe.

In terms of transit-oriented development, providing space and basic fit-out for street vendors is a remarkably fast and cost-effective way to experiment with a range of retail land uses near transit stations, especially where brick-and-mortar retail and food service seems unviable.

Micro-mixing

In TOD zones with existing retail, micro-mixing can increase land use diversity and test the viability of new retail, where conventional retail might not be viable.

Micro-mixing is the use of one retail unit for more than one complementary land use (Lydon, 2012). It allows shopkeepers to split the burden of overhead costs, while attracting more customers than they could otherwise attract individually. The same author describes micro-mixing as, “a ‘buddy system’ economic development strategy that helps small businesses grow incrementally” (p. 39). The mutual support mechanism can help to both incubate new businesses that couldn’t afford a standalone space, and sustain existing businesses. Fundamentally, micro-mixing introduces more land uses in less space than would be necessary for multiple independent establishments.

One promising example of micro-mixing is the cooperative Café l’artère in Montréal (Case Study 3.2.10). The space is divided into two sections: a store called ‘Bric à Vrac’ that sells books and ecologically-friendly products, as well as a café and performance venue called Café l’artère. The store also serves as a drop-off point for community-supported agriculture. The combination of uses function well in tandem: shoppers can stop for coffee, while users of the café can patronise the store. Together, they increase the diversity of activity in a space that would otherwise be rather coarse-grained in use.

The capacity of micro-mixing to increase the intensity of land uses within a given area makes it useful for transit-oriented development. Micro-mixing represents a rapidly-implementable and low-cost alternative to conventional retail development.

Tactical diversity case studies

This subsection summarises key aspects of the cases presented in Section 3.2. Each case contributes to land-use diversity, and some also contribute to the density and design components of transit-oriented development. Table 3.2.1 lists the cases presented in this subsection, along with their location, years, and the components of transit-oriented development that they affect.

Table 3.2.1: Tactical diversity case studies

Case	Place	Year(s)	Density	Diversity	Design
3.2.1 Popuphood	Oakland, CA	2011 to present		✓	✓
3.2.2 Pop-Up Shops	London (UK)	2010 to present		✓	✓
3.2.3 Spitalfields Market	London (UK)	1992 to 1998	✓	✓	
3.2.4 Dekalb Market	Brooklyn, NY	2011 and 2012	✓	✓	✓
3.2.5 Proxy	San Francisco, CA	2011 to present		✓	✓
3.2.6 Burlington Nelson Farmers' Market	Burlington, ON	1960 to present		✓	✓
3.2.7 Puces POP Craft & DIY Fair	Montréal, QC	2004 to present	✓	✓	
3.2.8 Good Food Here	Portland, OR	2010 to present		✓	✓
3.2.9 Fruixi	Montréal, QC	2012 to present		✓	
3.2.10 Café l'artère	Montréal, QC	2011 to present		✓	

3.2.1 Popuphood

Figure 3.2.1: Popuphood retailer Piper and John General Goods
Source: http://www.popuphood.com/index.html

Oakland, 2011 to present

Old Oakland, as the name suggests, is an historical neighbourhood within the City of Oakland. It seemed to have all the right ingredients for urban retail: a relatively high population density, walkable streets, attractive heritage architecture, and great access to transit. Yet certain blocks could not seem to sustain independent retail.

For this reason, enterprising residents Sarah Filley and Alfonzo Dominguez set out to activate vacant storefronts at the intersection of Broadway and 9th Streets, towards the eastern end of the neighbourhood. Their plan, dubbed Popuphood, was to curate the startup of five retailers in five vacant store fronts. By negotiating with property owners, the duo was able to provide entrepreneurs with free rent for six months. The purpose of the grace period was to (1) lower barriers to entry and encourage experimentation, (2) provide a better chance for the landlord to secure long term leases thereafter, and (3) breathe life and activity into a main street facing widespread vacancy (Filley & Dominguez, n.d.).

Following the six-month trial period, three of the five retailers had arranged long term leases (Institute for Urban Design, n.d.). The other two have been filled by new entrepreneurs selling different products. In light of its success, popuphood plans to expand to 15 additional Oakland storefronts in 2013.

Sources: http://www.popuphood.com/index.html; Institute for Urban Design, n.d.

Diversity
- Five new retail uses (bicycle store, art gallery, jewellery store, home accessories store, and vintage shop)

Design
- Activating ground floor architecture

3.2.2 Pop-Up Shops

Figure 3.2.2: Camden Town Unlimited Pop-Up Shop
Source: http://www.creativereview.co.uk/images/uploads/2010/10/pop_up_shop_0.jpg

London (UK), 2010 to present

Camden Town Unlimited is a business improvement association that sponsors a pop-up shop program for vacant storefronts in the London neighbourhood of Camden. CTU pays for insurance and property taxes (levied to the tenant in the UK), while rents are kept low for six- to twelve-month leases. The program acts as a retail incubator for the neighbourhood, while simultaneously reducing the negative impact of vacancy on streetscapes.

Source: http://www.camdentownunlimited.com/projects/pop-shops

Diversity
- New retail uses

Design
- Activating ground floor architecture

3.2.3 Spitalfields Market

Figure 3.2.3: Spitalfields Market
Source: http://www.urbanspace.com/projects/spitalfields-market

London (UK), 1992 to 1998

Spitalfields Market is an old market in the Tower Hamlets borough of London. In 1992, following the departure of the longstanding fruit and vegetable market, developer Urban Space Management won a design competition to manage the quarter million square foot space. With only £300,000, the developer used inexpensive materials and made as few modifications as possible in order to reprogram the space. Using the LQC approach, Spitalfields was able host "a 200 stall market, a unique “food village” with chalet units sharing common eating space, arts and fashion events, sports pitches, a swimming pool, even an opera house." The interim uses generated over 1,000 jobs. Some of the uses transitioned into more permanent ones when the building was redeveloped in 1999.

Sources: http://www.urbanspace.com/projects/spitalfields-market; Bishop & Williams, 2012, p. 54; Reynolds, 2011

Density
- Place of work for over 1,000 individuals
- Cultural and commercial destination

Diversity
- Vendors
- Food stalls
- Sports facilities
- Opera house
- Venue for cultural events

3.2.4 Dekalb Market

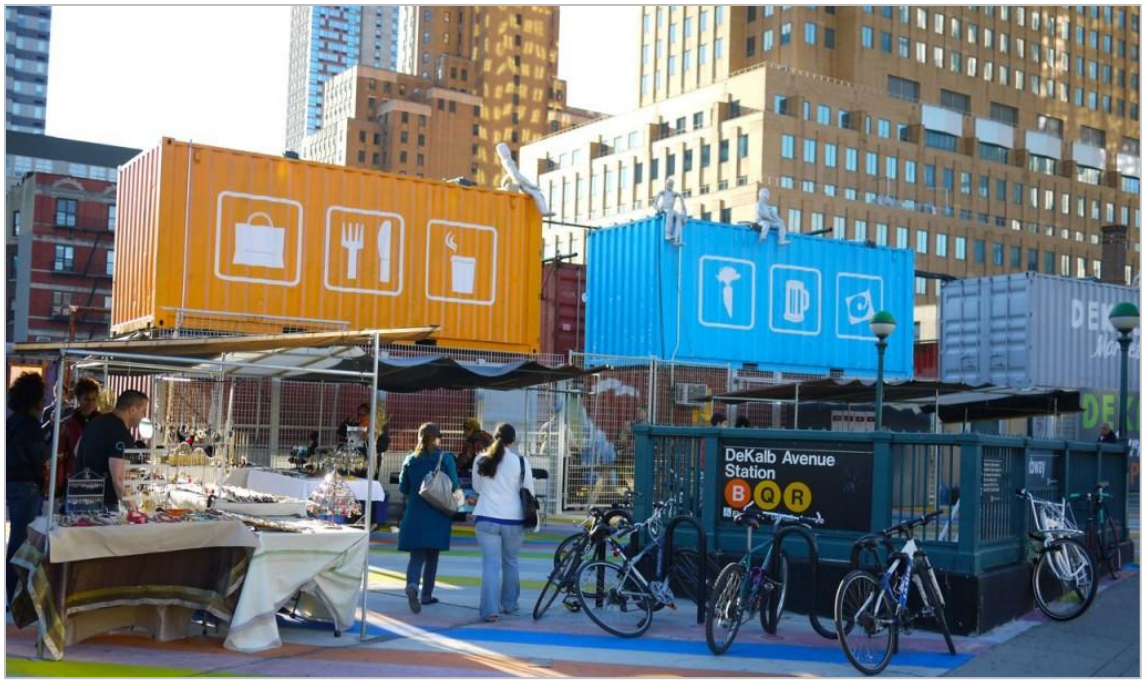


Figure 3.2.4: Dekalb Market
Source: http://www.marketsofnewyork.com/2012/04/weekend-market-picks-for-april-14-15-2012-the-markets-are-in-full-swing/

Brooklyn, NY, 2011 to 2012

Dekalb Market was a Brooklyn, NY market built from 22 salvaged shipping containers. In addition to work-sell market spaces, Dekalb housed a venue, a demonstration farm, and restaurant containers. The venue and demonstration farm were the site of several community workshops and events. Dekalb Market was developed by visionary developer Urban Space NYC as a meanwhile use before a permanent, mixed-use project could be built. Its cheap, temporary materials, short lifespan, and community enhancements make it an important example of temporary use and tactical urbanism.

Sources: http://dekalbmarket.com/about/; http://citypointbrooklyn.com/about/dekalb-market/

Density
- 52 vendors (food and retail)
- Commercial and cultural destination
- Food production on underutilised space

Diversity
- Vendors
- Restaurants
- Venue for cultural events
- Urban farm

Design
- Placemaking

3.2.5 Proxy

Figure 3.2.5: Proxy
Source: http://www.envelopead.com/proj_octaviakl.html

San Francisco, 2011 to present

Proxy is a two-block pop-up market made from salvaged shipping containers and other temporary materials in the Hayes Valley neighbourhood of San Francisco. It came about in response to a request for proposals for temporary uses on city-owned land previously occupied by an elevated expressway (demolished following extensive damage in the 1989 earthquake). The temporary market has an expected lifespan of five years, at which point more permanent development will take its place. The space houses “retail, restaurant, art gallery, garden, and community-based uses that add to the richness and diversity of Hayes Valley”. The market also attempts to improve the urban fabric by framing and activating the previously vacant parcel of land. The materials used to build the retail units will be dismantled and reused where possible following the market’s closure.

According to the Envelope A+D architect responsible for proxy, Douglas Burnham, the relatively small project has broad scale goals:

> Our hope is that the project can change both public and bureaucratic perceptions of what’s possible in San Francisco. We feel that this city—and perhaps all cities—can benefit from the ability to re-interpret its underutilized spaces with vital temporary inhabitations. Urban design doesn’t just have to operate at the 100-year interval of time, but can be more responsive to the possibilities of the present through short-term uses. Our goal would be to effect positive change on the planning, building, and health codes to allow thoughtful proposals for temporary uses to be more easily implemented.

Sources: http://www.envelopead.com/files/envelopeAD_ON_SITE_IN_THE_CITY.pdf;
http://www.envelopead.com/files/envelopeAD_proxy_pamphlet.pdf;
http://www.envelopead.com/proj_octaviakl.html

Diversity
- Food carts
- Retail vendors
- Venue for cultural events
- Community space

Design
- Increase in supply of greenspace
- Placemaking

3.2.6 Burlington Nelson Farmers' Market

Figure 3.2.6: Burlington Nelson Farmers' Market activates a parking lot
Source: https://picasaweb.google.com/burlington.mall.farmers.market/BurlingtonMallFarmersMarket2011

Burlington, Ontario, 1960 to present

The Burlington Nelson Farmers' Market is a seasonal farmers' market that operates in the parking lot of a shopping centre in the Toronto suburb of Burlington. The market is managed by local Lions Club chapter. It is emblematic of the countless farmers' markets in suburban locations peppered throughout Ontario and across North America. It has operated since 1960 at various locations and houses 44 vendor stalls as of 2011. The market is open from May to October on Wednesdays, Fridays, and Saturdays.

The Burlington Nelson Farmers' Market exhibits several of the characteristics associated with tactical urbanism. Like most suburban farmers markets, the stalls typically consist of inexpensive tents that are easy to set up. Also, the market activates a space that would otherwise not be appealing to pedestrians: the parking lot. In terms of impermanence, the market is designed to be erected and dismantled three times per week, and the location may also change as needed.

Sources: https://sites.google.com/site/burlingtonmallfarmersmarket/home

Diversity
- Fresh produce vendors
- Food carts
- Craft vendors

Design
- Render parking lots more appealing to pedestrians

3.2.7 Puces POP Craft & DIY Fair

Figure 3.2.7: Puces POP Craft and DIY Fair in 2008
Source: http://spacing.ca/montreal/2008/10/06/photo-du-jour-puces-pop/

Montreal, 2004 to present

Puces POP is a recurring market for artists and craftspeople in Montréal. It began as a craft fair in 2004, in order "to bring together the extremely talented scene of designers, crafters and artists that Montreal harbours in one marketplace." Since then Puces POP has expanded to host fashion, vintage, and record fairs; the original market now occurs three times per year, up from once yearly in 2004. The event typically occurs in a church basement in the Plateau-Mont-Royal borough of Montreal, and operates for one weekend at a time. In 2006, each Puces POP market saw roughly 6,000 visitors per weekend.

Despite its growing popularity, Puces POP remains a temporary event (organisers refer to it as a "pop-up style storefront setting") that can be quickly set up and dismantled for a weekend. Vendors use little more than the facilities within the church basement. The market's thrift, speed, and time-exclusivity make it a good example of tactical urbanism.

Sources: http://popmontreal.com/puces-pop-about/

Density
- More than 70 vendors
- Roughly 6,000 destinations per weekend

Diversity
- Variety of craft vendors
- Food carts

3.2.8 Good Food Here

Figure 3.2.8: Good Food Here food cart pod
Source: http://www.portlandmonthlymag.com/eat-and-drink/eat-beat/articles/may-18-good-food-here

Portland, Oregon, 2010 to present

Many of Portland's food carts are organised into clusters referred to locally as pods. Good Food Here is one such pod that was established in 2010 on a vacant lot near 43rd and SE Belmont Streets. The pod provides water, electricity, waste disposal, and a central eating area, with spaces for 18 vendor carts. Good Food Here has also decorated the parking lot with planters that hold uniquely edible plants, and sets up a heated six-by-six metre tent for the winter months. The pod not only serves local residents and workers, but acts as a magnet for people interested in the food cart culture of Portland. Good Food Here is a good example of how clustered food carts can benefit one another, occupy an otherwise underutilised urban space quickly and cheaply, and provide a neighbourhood amenity.

Sources: http://www.goodfoodherebelmont.com/vendor-info/;
http://www.udplp.com/properties_good-food-here.php

Diversity
- 18 different food carts

Design
- Public seating
- Public greenspace

3.2.9 Fruixi

Figure 3.2.9: Fruixi bicycle vendor
Source: http://www.marchefrontenac.com/node/2/gallery/images

Montréal, 2012 to present

Fruixi is a bicycle fruit and vegetable vendor project conceived by a multidisciplinary trio in Montreal, Canada. The vendor sells fresh local fruit and vegetables from a cart rigged to the back of a bicycle. The project is reminiscent of popsicle vending bikes, but offers healthier food choices. Being on bicycles, Fruixis are capable of vending from any location accessible on two wheels. As well, it can also be deployed quickly to meet demand, *e.g.* from a festival or event.

Sources: http://www.marchefrontenac.com/fruixi

Diversity
- Fruit and vegetable vendor

3.2.10 Café l'artère

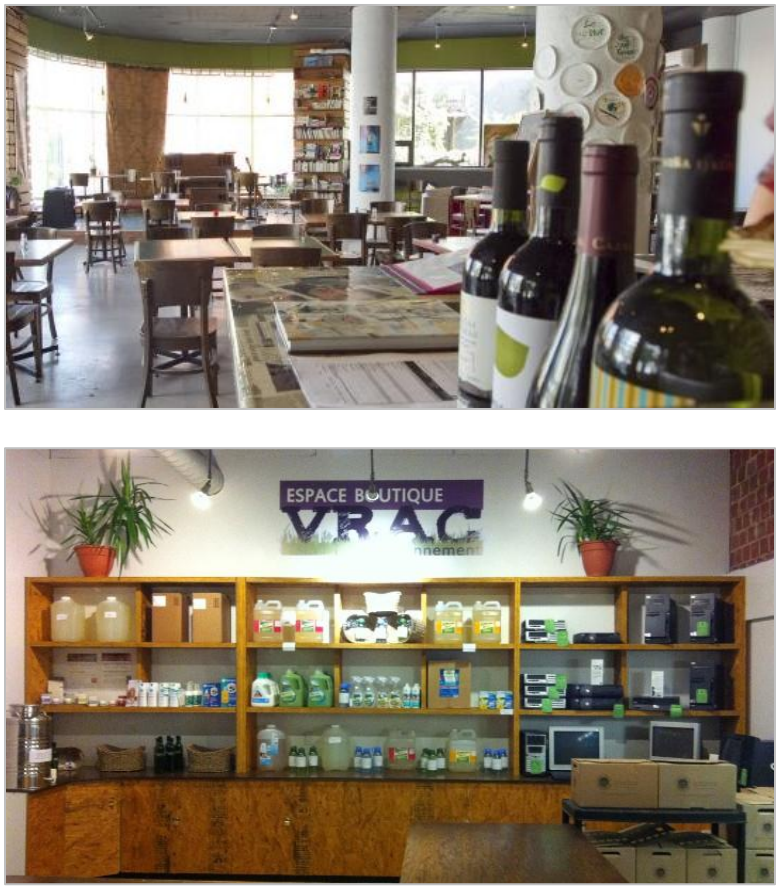


Figure 3.2.10: Café l'artère and Bric à Vrac boutique
Images (top to bottom): http://maison.lapresse.ca/habitation/201109/02/01-4431188-vivre-dans-parc-extension.php; http://vracenvironnement.org/nouvelles/boutik/page/2

Montréal, 2011 to present

Café l'artère is a café and venue that shares its floor area with three not-for-profit community organisations that had been seeking space to set up shop. According to café founder Estelle Tison, both the café and the organisations benefit from each other's presence. "Their clientele will come to the café, and our clientele will see what they're up to."

Café l'Artère is an example of what tactical urbanist Mike Lydon calls micro-mixing (Lydon, 2012). Micro-mixing occurs when a business uses part of its space for another, typically complementary use. The sharing of costs provides an opportunity for the three not-for-profit groups to occupy a retail space—something they likely could not have afforded on their own. Micro-mixing is also a clever way to increase the mix of land uses.

Sources: http://artere.coop/; Ouimet, 2011

Diversity
- Increase land use mix with complementary land uses

3.3 Tactical design

In April of 2010, Jason Roberts wanted to revitalise the local main street in his Dallas neighbourhood of Oak Cliff. Instead of waiting for the local government to build the costly infrastructure associated with complete streets—wide sidewalks, bicycle lanes, street furniture, and lighting, to name certain examples—he took the matter into his own hands.

Without sanction and over the course of one weekend, Roberts temporarily transformed one block at West 7th and North Tyler Streets into a “walkable, bikeable neighborhood destination for people of all ages complete with bike lanes, cafe seating, trees, plants, pop-up businesses, and lighting” (Figure 3.3.1; The Better Block, n.d.). To make it happen, he used little more than a group of volunteers and a few hundred dollars for cheap, temporary materials. The rest of the inputs were either donated or borrowed for the weekend. The process was intended to demonstrate in a tangible way the kinds of longer-term improvements that his community wanted to see happen. The project, called The Better Block, has since spread to 28 blocks in 21 cities throughout the United States.

Figure 3.3.1: Oak Cliff Better Block, before (top) and after (bottom)
Source: http://gooakcliff.org/

The lighter, quicker, cheaper techniques used in The Better Block make them well-suited to both demonstrate and pilot urban design strategies, which in turn can inform longer term infrastructure investments. Indeed, this is what's happening in Oak Cliff: the pop-up business turned into a permanent fixture, and authorities have since begun work on a streetcar extension into Oak Cliff from downtown Dallas.

(Text drawn from Case Study 3.3.1.)

The Better Block illustrates how tactical urbanism can contribute to transit-supportive urban design (Case Study 3.3.1). Tactical design seeks to rapidly and affordably prototype components of transit-supportive design in order to demonstrate the effect of a more permanent change to the built environment, as well as to experiment with different design alternatives. Tactical design interventions include pedestrian facilities, bicycle facilities, and greening.

Tactical urbanism is perhaps best known for improving the pedestrian realm of the built environment. Using planters, paint, shipping pallets, string lights, and patio furniture, tacticians around the world have managed to transform rights of way from car oriented roads to pedestrian-oriented complete streets. In some cases, they go so far as to create pedestrian-only plazas. In addition to The Better Block, pedestrian-oriented tactical urbanism has historically involved temporary pedestrianisation, intersection repair, chair-bombing, do-it-yourself wayfinding, and parking space patios. Each of these contributes to the design component of transit-oriented development by making walking more convenient, calming car traffic, and reducing the supply of car parking.

As well, certain bicycle facilities can be installed using the LQC approach. This report presents three examples: guerrilla or DIY bike lanes, informal bike parking, and bicycle stairs. Each one contributes to the design component of transit-oriented development by making transit access and egress by bicycle more convenient.

Finally, tactical design can introduce greenspace where it previously did not exist. Examples listed in this report include pavement removal group Depave, guerrilla gardening, parking space parks (or parklets), and entire pop-up parks. Greenspace-generating tactical interventions contribute to transit-oriented development by providing space for active transportation and recreation. Greenspace also contributes to the quality of place near transit stations.

Pedestrian-oriented tactical design

Temporary pedestrianisation

Lydon (2012) refers to projects that convert roadway space into public space for pedestrians, cyclists, and public activities, as "Pavement to Plaza" programs (p. 19). Such projects generally use inexpensive and temporary materials like paint and planters. The use of such materials means Pavement to Plaza programs can rapidly pilot and inform longer term capital investments. As such, they are typically not only sanctioned, but undertaken by authorities including municipalities and merchant associations.

The highest profile example of a Pavement to Plaza program is New York City's Green Light for Midtown project, undertaken between 2008 and 2009 (Figure 3.3.2; Case Study 3.3.2). The project focused on two stretches of Broadway in Midtown Manhattan: Columbus Circle to Times Square, and 35th Street to 26th Street. Using primarily paint, patio furniture, and planters, the New York Department of Transportation converted the two sections of Broadway into pedestrian plazas, along with pedestrian, cyclist, and other streetscape improvements in the area. The Green Light for Midtown project cost roughly USD $1.5 million (Office of the Mayor, 2009).

A follow-up report by the New York City Department of Transportation (2010) has shown an increase in pedestrian volume (+11%) and in staying activities (e.g. reading, eating, taking photographs) (+84%), a drop in pedestrian-car collisions (-35%), and an overall perceived improvement in Times Square (74% of respondents). The same report goes on to recommend "that the new network changes be made permanent and built upon for the continued vibrancy of West Midtown" (p. 37).

Figure 3.3.2: Broadway before (left) and after (right) the Green Light for Midtown project
Source: http://www.flickr.com/photos/nycstreets/4173689335/in/set-72157622973444484/

Smaller scale interventions like Green Light for Midtown can be found across North America. Montreal's Aires Libres project, for example, saw the pedestrianisation of several blocks of roadway on Sainte-Catherine Street East in Montreal's East End (Lazarovic, 2009). Block parties like Journee des bons voisins in Montreal, Canada (Case Study 3.3.3) fit into this category, because they help people re-imagine street space.

Intersection repair

Intersection improvements have also been undertaken in various contexts using tactical urbanism. These typically involve elements of traffic calming, including reduction in the pedestrian crossing lengths. Empirical findings confirm that crosswalks reduce the risk of pedestrian-vehicle collisions on narrow, low-speed roads, but that without accompanying signals, crosswalks can actually increase the risk of pedestrian-vehicle collisions on wide and high-speed roads (Zegeer, 2002). On wider roads, crosswalks should be accompanied by traffic signs (e.g. stop or yield signs) or signals (traffic lights and pedestrian signals).

Several examples of tactical urbanism use temporary pedestrian crossings to increase pedestrian connectivity. The most tongue-in-cheek example is self-proclaimed French urban “hacktivist” Florian Rivière’s €10 pedestrian crossing carpet that rolls up into a tube (Case Study 3.3.4). The crosswalk rug is unabashedly subversive, making it suitable for use by grassroots individuals and groups. This, however, does not preclude the concept of a temporary fabric crosswalk from use by authorities as a more top-down form of tactical urbanism.

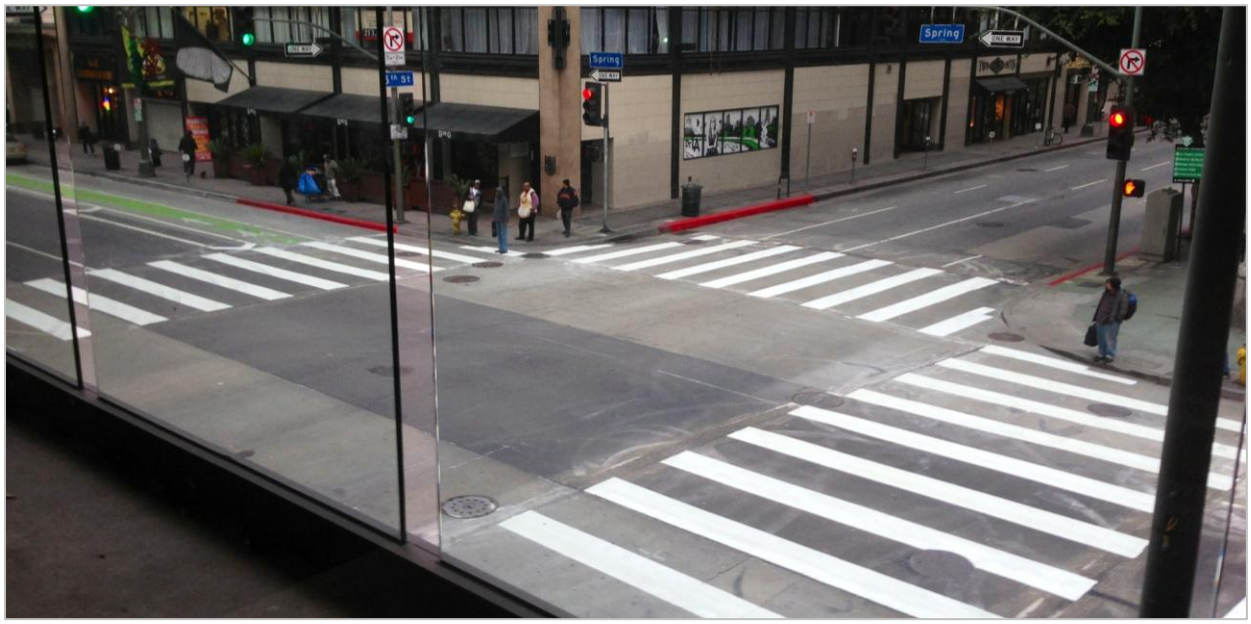


Figure 3.3.3: A new continental crosswalk in downtown Los Angeles
Source: http://la.streetsblog.org/wp-content/uploads/2012/12/ladot.jpg

Painted or spray chalk crosswalks are another common means to quickly improve pedestrian connectivity. DIY crosswalks are not uncommon interventions made by community activists. For example, Baltimore community group ArtBlocks painted a “guerrilla crosswalk” at the corner of 36th and Elm Streets (ARTblocks, n.d.). The DIY job has recently been converted by authorities into a permanent pedestrian crossing. This phenomenon is not uniquely bottom-up: sanctioned crosswalks and crosswalk

improvements are becoming more widespread as well. For example, fifty improved pedestrian crossings are planned for Los Angeles (Los Angeles Department of Transportation, 2012), at a cost of roughly USD $2,500 each. Whether sanctioned or not, painting crosswalks is an affordable and fast way to improve pedestrian connectivity.

Chair-bombing

According to Brooklyn-based urban activists DoTank, chair-bombing means building seating from found materials, and placing it in public spaces that lack places to sit, "in order to improve [the place's] comfort, social activity, and sense of place" (DoTank Brooklyn, n.d.). DoTank builds Adirondack chairs from used shipping pallets and places them, unsanctioned, in public spaces (Case Study 3.3.5).

Because chair-bombing does not require expensive materials and can be set up and taken down virtually anywhere, it is a popular form of tactical urbanism. It is also a very fast process, taking only as long as it takes to gather and construct the chairs. In the case of DoTank, this process took one day. Also, given the open nature of the project, it has spread rapidly to other cities. Other examples include San Francisco urban collaborative Rebar placing used tree stumps on a pedestrianised street (Roth, 2009), and Montreal community group Rue Publique using upcycled recycling bins as seating during a block party (Case Study 3.3.3). Businesses as well can participate in chair-bombing by providing seating in the public space outside of their establishments. Montréal's Café Brooklyn, for example, places used lawn chairs outside of its storefront to act like a stoop (Figure 3.3.1).

Figure 3.3.4: Chair-bombing initiated from the private sector
Source: http://brooklyn-mtl.com/Brooklyn-Mtl/Welcome_files/shapeimage_1.png

Guerrilla wayfinding

Guerrilla wayfinding is an unsanctioned, bottom-up way for ordinary citizens to provide signage that is insightful to passers-by. Examples of guerrilla wayfinding are range from posters directing pedestrians to a nearby garage sale to signs pointing invitees to an event could be considered guerrilla wayfinding.

One example is Walk [Your City]. Walk [Your City] is an online platform spearheaded by Matt Tomasulo that "allow[s] anyone to auto-magically create their own guerrilla wayfinding sign to export, print and install" (Tomasulo, n.d.) (Case Study 3.3.6). The signs typically point pedestrians in the direction of a point of interest (e.g. market, park, cinema), and describe the amount of time required to reach that point of interest on foot.

The concept need not be unsanctioned. It could also be used by authorities to install low-cost signs for interim use, before longer term capital is invested. Indeed, transit agencies already do this to inform riders when bus stops are rerouted. It may not be too much of a stretch, therefore, to enhance wayfinding near transit stations using such techniques.

Guerrilla (or sanctioned, temporary) wayfinding can also contribute to the design component of transit-oriented development. Where transfers, waiting areas, or the direction and distance to nearby points of interest are not available, guerrilla wayfinding is an affordable, fast way to provide this kind of information to transit users.

Parking space patios

The conversion of on-street parking spaces into patios for adjacent businesses is another form of tactical design. In Montréal, these spaces are called "café-terrasses"; they serve to simultaneously calm traffic, reduce the supply of parking, increase social life in outdoor semi-public spaces, and provide seating for business patrons (Figure 3.3.5; Arrondissement du Plateau Mont-Royal, 2012). (See Case Study 3.3.9 for other uses of parking spaces.)

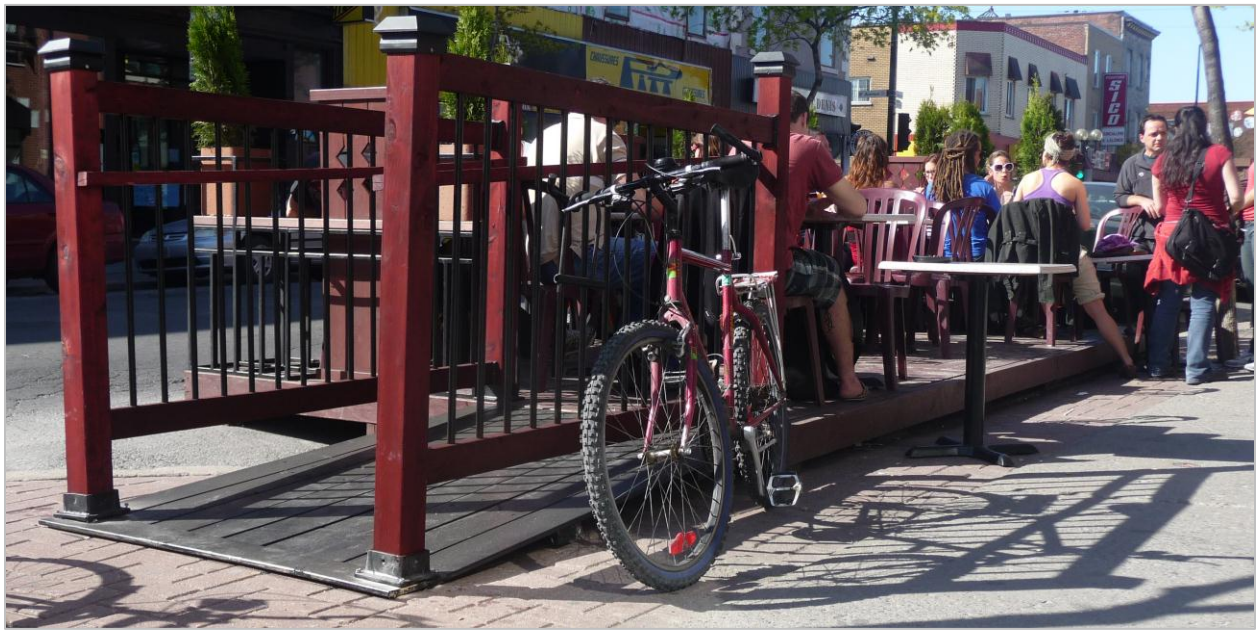


Figure 3.3.5: Café terrasse on avenue Masson in Montréal, Canada
Source: http://www.rapliq.org/2012/02/22/adoptioncadrenormatifterrasses12/

Bicycle-oriented tactical design

Guerrilla or do-it-yourself bike lanes

Creating bike lanes does not necessarily require concrete barriers, steel bollards, or grade separation from the roadway. Do-it-yourself bike lanes involve painted or spray-chalked lanes, stencilled bike symbols and signs, and in some cases plastic bollards for additional protection from motorists (Prichard, 2010). Tactical or not, bike lanes contribute to transit-oriented development by improving access to and from transit for cyclists.

Whether DIY or as a pilot test, tactical bike lanes have become a common occurrence in Canada, the US, and elsewhere in recent years. Posing as city workers, the Urban Repair Squad has famously painted over six thousand metres of unsanctioned bike lanes in Toronto since 2005 (Case Study 3.3.7). Similar interventions are taking place in cities like Mexico City and New York (Fried, 2012; Veloz, 2011). In the New York example, the bike lane included homemade plastic bollards to separate vehicular traffic from bike traffic.

Authorities too can use the same techniques to rapidly pilot test bike lanes in cities. Indeed there are several examples of bike lane detours and pilot tests that use LQC techniques on the part of municipalities (City of Vancouver, 2012; Ville de Montréal, 2012).

Informal bike parking

Informal bike parking is another form of bike-related tactical design. This occurs when business and property owners install bike parking on their land. These generally take the form of a horizontal metal bar approximately 60cm high that can be used to lock several bikes in a row. The Santropol Café in Montreal, Canada, for example, uses one such sort of metal bar to provide additional bike parking for its customers (Figure 3.3.6).

Figure 3.3.6: Informal bike parking provided at Santropol Café in Montréal
Source: http://www.flickr.com/photos/luba_m/3762437740/

Bicycle stairs

Lastly, bicycle stairs help cyclists climb and descend stairs with a bicycle. Bicycle stairs consist of a narrow channel or ramp designed for wheeling bicycles (Figure 3.3.7). When built using cheap materials, *e.g.* two-by-four wood planks, bike channels can be an affordable way to improve bike accessibility in stations with staircase access or egress.

Figure 3.3.7: Wooden bicycle staires
Source: http://www.millermicro.com/020822BicycleStairs.jpg

Greenspace tactical design

Depave

Converting excessive urban pavement is a relatively simple way to increase the amount of green open spaces. The conversion of pavement to greenspace not only makes the built environment more physically attractive, but also reduces the amount of stormwater runoff that reaches surface waterways and aquifers. The conversion of pavement to greenspace is a common manifestation of tactical urbanism. Near transit stations, it can also contribute to the design component of transit-oriented development.

The most successful example of pavement-to-green-space conversion is the Portland, Ore.-based not-for-profit Depave. Depave "promotes the removal of unnecessary pavement from urban areas to create community greenspaces and mitigate storm water runoff" and grew out of an unsanctioned grassroots neighbourhood initiative in 2007 (Depave, n.d.). Since then it has become not only sanctioned, but funded by the City of Portland, as well as the United States EPA, as well as other local, state, and national authorities (Case Study 3.3.8).

Guerrilla gardening

Reynolds (2009) defines guerrilla gardening as, "the illicit cultivation of someone else's land" (p. 5). The term was first coined by New York City environmental activist Liz Christy in 1973 (Wilson & Weinberg, 1999). According Lydon (2012), guerrilla gardening is often intended to raise awareness about sustainable food systems, urban stormwater management, improving neighbourhood aesthetics, and the power of short-term, collaborative local action.

In light of growing environmental concerns, however, many examples of guerrilla gardening have evolved into fully-sanctioned acts. Montréal not-for-profit group Sentier urbain is one such example. They convert alleys and idle lots into urban gardens (Sentier Urbain, n.d.). In a similar vein, the Montréal Urban Ecology Centre helps to green mineral surfaces in areas with low-income housing, as part of its La ville en vert project (Figure 3.3.8; CEUM, n.d.). These kinds of initiatives are examples of tactical urbanism that can increase the quality and connectivity of open and greenspace.

Figure 3.3.8: La ville en vert greening a surface formerly dominated by asphalt and grass
Source: http://www.ecologieurbaine.net/node/953/photo

Parklets

Parklets are small parks, public spaces, or patios derived by temporarily converting parking spaces for these ends (Figure 3.3.9). The UCLA parklet toolkit (Loukaitou-Sideris et al., 2012) defines parklets as the outcome of "low-cost conversion of small and underutilized residual spaces originally devoted to cars into spaces for the passive or active recreation of people" (p. 5). Typically, parklets consist of a deck-like surface raised to the height of the sidewalk, thereby increasing its width. They are most commonly populated with chairs, tables, and planters.

Transit-oriented development can benefit from parklets in two ways. First, the addition of small open spaces—whether park or plaza or private patio—provides pedestrians and cyclists with a place to sit, relax, or park a bike. In this sense, it improves the pedestrian and cyclist environment. At the same time, by virtue of occupying space previously used by cars, parklets incrementally reduce the supply of parking. Near transit stations, reducing the supply of parking is often an important component of transit-oriented development.

Figure 3.3.9: Example of a parklet in San Francisco
Source: http://www.refinery29.com/best-parklets-san-francisco/

The idea of a parklet has its roots in 1970 when Bonnie Ora Sherk unveiled an art installation called Portable Architecture (Hager, 1970; Pacific Standard Time, n.d.). Portable Architecture was an attempt to bring elements of rural and natural settings into the spaces under elevated expressways, and other parts of the city commonly associated with the automobile. In 2005, the San Francisco urban art collective Rebar established PARK(ing) Day, where people all over the world convert parking spaces into miniature parks for one day (Case Study 3.3.9). Parklets of countless varieties are now common features of the built environment in cities across North America (Loukaitou et al., 2012).

Pop-up parks

In addition to parklets, tactical techniques can be used to quickly create parks that are larger than parking spaces by reclaiming vacant land and underutilised parking lots. The highest profile example of popup park-making is Grand Central Park. Grand Central Park is a two-hectare park in central Miami that was built using low-cost, mostly temporary materials and rapid construction techniques in 2012 (Figure 3.3.10; Case Study 3.3.10). Brad Knoefler of the Omni Parkwest Redevelopment Association created the park over an existing blighted parking lot in response to the lack of active greenspace in downtown Miami (Brad Knoefler, n.d.).

Figure 3.3.10: Grand Central Park under construction
Source: http://grandcentralpark.org/gcparkmiami/

Grand Central Park was built with a USD $200,000 (CAD $200,000) grant from a community redevelopment agency in order to lease the space and pay for inputs. It took 30 days to turn the site into a park, and Knoefler expects to maintain the space with funds generated from events held on the site. The temporary materials, speed, cost of construction, and positive impacts on the urban environment make Grand Central Park a clear example of tactical urbanism. Near transit facilities, these kinds of projects could be used to improve the aesthetic quality of public space, to encourage active transportation, and for recreational purposes.

Tactical design case studies

This subsection summarises the cases cited in Section 3.3. Each case contributes to transit-supportive urban design, and some also contribute to the density and diversity components of transit-oriented development. Table 3.3.1 lists the cases presented in this subsection, along with their location, years, and the components of transit-oriented development that they affect.

Table 3.3.1: Tactical design case studies

Case	Place	Year(s)	Density	Diversity	Design
3.3.1 The Better Block	Dallas, TX	2010 to present		✓	✓
3.3.2 Green Light for Midtown	New York, NY	2009		✓	✓
3.3.3 Journée des bons voisins	Montréal, QC	2010		✓	✓
3.3.4 Passage piétons à emporter	Strasbourg (France)	2012			✓
3.3.5 Chair-bombing	Brooklyn, NY	2010			✓
3.3.6 Walk [Your City]	Raleigh, NC	2012 to present			✓
3.3.7 Guerrilla bicycle lanes	Toronto, ON	2005 to present			✓
3.3.8 Depave	Portland, OR	2007 to present			✓
3.3.9 PARK(ing) Day	San Francisco, CA	2005 to present			✓
3.3.10 Grand Central Park	Miami, FL	2012 to present		✓	✓

3.3.1 The Better Block

Figure 3.3.11: San Antonio Better Block
Sources (left to right): http://betterblock.org/wp-content/uploads/2012/12/IMG_0757.jpg; http://betterblock.org/wp-content/uploads/2012/12/IMG_20121208_081603-1024x768.jpg

Dallas, 2010 (ongoing in other cities)

In April of 2010, Jason Roberts wanted to revitalise the local main street in his Dallas neighbourhood of Oak Cliff. Instead of waiting for the local government to build the costly infrastructure associated with complete streets—wide sidewalks, bicycle lanes, street furniture, and lighting, to name certain examples—he took the matter into his own hands.

Without sanction and over the course of one weekend, Roberts temporarily transformed one block at West 7th and North Tyler Streets into a "walkable, bikeable neighborhood destination for people of all ages complete with bike lanes, cafe seating, trees, plants, pop-up businesses, and lighting" (Figure 3.3.1; The Better Block, n.d.). To make it happen, he used little more than a group of volunteers and a few hundred dollars for cheap, temporary materials. The rest of the inputs were either donated or borrowed for the weekend. The process was intended to demonstrate in a tangible way the kinds of longer-term improvements that his community wanted to see happen. The project, called The Better Block, has since spread to 28 blocks in 21 cities throughout the United States.

The lighter, quicker, cheaper techniques used in The Better Block make them well-suited to both demonstrate and pilot urban design strategies, which in turn can inform longer term infrastructure investments. Indeed, this is what's happening in Oak Cliff: the pop-up business turned into a permanent fixture, and authorities have since begun work on a streetcar extension into Oak Cliff from downtown Dallas.

Source: http://betterblock.org/how-to-build-a-better-block/

Diversity
- Pop-up café
- Pop-up art gallery

Design
- Chalk paint bike lanes
- Curb extensions delimited with planters
- Temporary street lights
- Seating

- Enhanced bus shelters and waiting areas
- Narrowed and removed traffic lanes

3.3.2 Green Light for Midtown

Figure 3.3.12: Before (left) and after (right) the Green Light for Midtown project
Source: http://www.nyc.gov/html/dot/html/about/broadway.shtml

New York, 2009

New York City's Green Light for Midtown project is a pilot project to improve the pedestrian and cyclist environment, and to reduce congestion in Midtown Manhattan. The New York Department of Transportation converted the two stretches of Broadway into pedestrian plazas using little more than paint, patio furniture, and planters. The Green Light for Midtown project cost roughly USD $1.5 million to undertake. A follow-up report by the New York City Department of Transportation (2010) has shown an increase in pedestrian volume (+11%) and in staying activities (e.g. reading, eating, taking photographs) (+84%), a drop in pedestrian-car collisions (-35%), and an overall perceived improvement in Times Square (74% of respondents). The report goes on to recommend "that the new network changes be made permanent and built upon for the continued vibrancy of West Midtown" (New York City Department of Transportation, 2010, p. 37). Since 2010, the plaza has allowed both street vendors and food carts.

Green Light for Midtown is an example of a sanctioned tactical urbanism intervention. Despite formal authority, the project used inexpensive materials to rapidly prototype two public plazas. Lydon (2012) refers to projects that convert roadway space into public space for pedestrians, cyclists, and public activities, as "Pavement to Plaza" programs (p. 19).

Sources: Lydon, 2012, p. 19; New York City Department of Transportation, 2010; Office of the Mayor, 2009

Diversity
- Street vendors
- Food carts

Design
- Increased space for pedestrians
- Street furniture including patio tables and chairs
- Planters
- Programmed activities

3.3.3 Journée des bons voisins

Figure 3.3.13: Journée des bons voisins street "opening"
Sources (left to right): http://www.ruepublique.org/uploads/7/4/3/7/7437330/5680335_orig.jpg; http://www.ruepublique.org/uploads/7/4/3/7/7437330/9946394_orig.jpg

Montréal, 2010, 2011, 2012

Journées des bons voisins was a set of three street “openings” in 2010, whereby three blocks of Saint-Viateur Street West in Montreal’s Mile End neighbourhood were blocked to motorised traffic. The events were organised by complete streets advocacy group RuePublique. In addition to the street opening, there were several supporting activities, including public yoga sessions, a pop-up bike shop, and a splash pool. Shopkeepers were encouraged to sell their goods outside of their stores, and some residents took the opportunity to hold garage sales. As well, RuePublique provided street furniture for the three-block site in the form of upcycled decommissioned recycling bins. Beyond a block party, Journée des bons voisins was part of a broader re-imagining exercise for Saint-Viateur Street West that involved citizen participation.

Source: Veres, 2010

Diversity
- Pop-up bike shop
- Pop-up craft market
- Live music

Design
- Seating made from upcycled, decommissioned recycling bins
- Children's splash pool
- Parking space parks (Parklets)

3.3.4 Passage piétons à emporter

Figure 3.3.14: Roll-up crosswalk rug by 'urban hactivist' Florian Rivière
Source: http://www.florianriviere.fr/index.php?/ssaur/

Strasbourg (France), 2012

In 2012, self-described urban hacktivist Florian Rivière developed a prototype passage piétons à emporter, or portable zebra crosswalk. As with his other projects, Rivière uses only found materials to create the crosswalk carpet—in this case a black rug and white acrylic paint. The tongue-in-cheek intervention is advertised as a crosswalk can be rolled out “so you can cross wherever [it] pleases you” for only 10 euros.

Sources: http://www.florianriviere.fr/partage/portfolio_florianriviere.pdf

Design
- Improve pedestrian connectivity

3.3.5 Chair-bombing

Figure 3.3.15: DoTank Brooklyn chair-bombing process
Sources: http://dotankbrooklyn.org/22

Brooklyn, NY, 2010

According to Brooklyn-based urban activists DoTank, chair-bombing means building seating from found materials, and placing it in public spaces that lack places to sit, "in order to improve [the place's] comfort, social activity, and sense of place". DoTank builds Adirondack chairs from used shipping pallets and places them, unsanctioned, in public spaces.

Because chair-bombing does not require expensive materials and can be set up and taken down virtually anywhere, it is a popular form of tactical urbanism. It is also a very fast process, taking only as long as it takes to gather and construct the chairs. In the case of DoTank, this process took one day. Also, given the open nature of the project, it has spread rapidly to other cities.

Sources: http://dotankbrooklyn.org/22

Design
- Increased supply of public seating

3.3.6 Walk [Your City]

Figure 3.3.16: Walk [Your City] guerrilla sign template
Source: http://walkyourcity.files.wordpress.com/2012/07/wyc_public_sign_base.pdf

Raleigh, North Carolina, 2012 to present

Walk [Your City] began as a guerrilla wayfinding project called Walk Raleigh. The project, spearheaded by urban planner and activist Matt Tomasulo, saw the insertion of unsanctioned street signs throughout downtown Raleigh, as a way to inform pedestrians of nearby points of interest. The signs most often included one point of interest, a directional arrow, and the length of time it takes to reach that location on foot. The project quickly spread to other cities, and Walk [Your City] was born—an open source platform for designing and installing guerrilla wayfinding in any city.

Sources: http://walkyourcity.org/about/

Design
- Wayfinding

3.3.7 Guerrilla bicycle lanes

Figure 3.3.17: Guerrilla bicycle lanes courtesy of Toronto's Urban Repair Squad
Source: http://cca-actions.org/actions/illicit-stencil-saves-cyclists

Toronto, 2005 to present

Toronto-based Urban Repair Squad regularly paints guerrilla bicycle lanes in their city. Their manual for "do-it-yourself infrastructure" asserts that their interventions are aimed to "encourage bicycling as an antidote to the poison that is car culture". The manual goes on to read that immediate action is necessary, as bureaucrats can't be relied on to act. Since 2005, the Urban Repair Squad has painted over six kilometres of bike lanes in the city, its volunteers disguised as city public works employees. The lanes are typically removed promptly by city officials, but they nonetheless serve as a form of peaceful protest against the lack of bicycle facilities in Toronto.

Sources: Urban Repair Squad, n.d.; CCA, 2008

Design
- Increase the supply of bike lanes

3.3.8 Depave

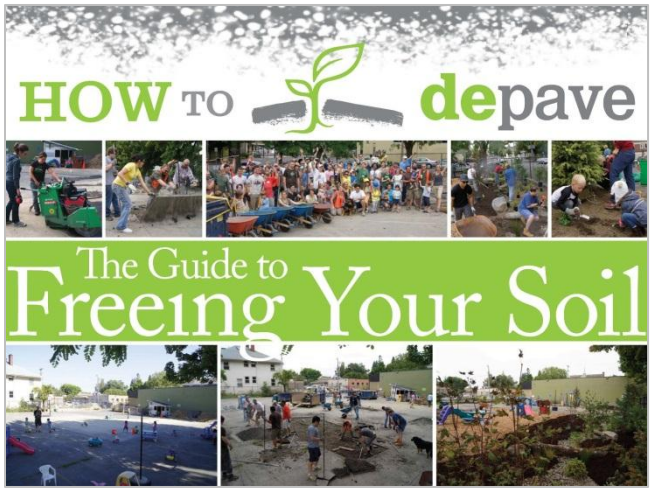


Figure 3.3.18: Depave guide to "freeing your soil"
Source: http://depave.org/about/mission/

Portland 2007 to present

The Portland-based not-for-profit Depave “promotes the removal of unnecessary pavement from urban areas to create community greenspaces and mitigate storm water runoff”. It grew out of an unsanctioned grassroots neighbourhood initiative in 2007 to reduce pavement cover and increase greenspace. Since then it has become not only sanctioned, but funded by the City of Portland, the United States EPA, and various other local, state, and national authorities. In 2011, Depave engaged over 450 volunteers, converting 36,000 sq ft of pavement into eight greenspaces, fifty community gardens, three greened schoolyards, and six rain gardens.

Depaving surfaces is a process that is both inexpensive and fast to accomplish. To illustrate these points, Depave’s annual budget is $70,000, and their projects require approximately one week to undertake on average. Depave volunteers use basic tools. As well, Depave publishes a free guide explaining how to depave a surface, making the project open source. Indeed, community groups in other regions have followed suit, including Toronto’s greening advocacy group LEAF. In addition, depaving has led to policy changes that support the reduction stormwater runoff by means of converting pavement into more pervious organic surfaces.

Sources: http://www.spontaneousinterventions.org/project/depave; http://depave.org/; http://www.yourleaf.org/junction-depave-paradise

Design
- Increased greenspace
- Reduced supply of parking (when depaving involves parking spaces)

3.3.9 PARK(ing) Day

Figure 3.3.19: The first PARK(ing) Day park by Rebar
Sources: http://parkingday.org/about-parking-day/

San Francisco and elsewhere 2005 to present

In 2005, San Francisco urban art collective Rebar established PARK(ing) Day, a global event that reconfigures the common metered parking space into “a site for creative experimentation, political and cultural expression, and unscripted social interaction” for one day. The UCLA toolkit on parklets defines them as the outcome of “low-cost conversion of small and underutilized residual spaces originally devoted to cars into spaces for the passive or active recreation of people” (Loukaitou-Sideris et al. 2012, p. 5). Typically, parklets consist of a deck-like surface raised to the height of the sidewalk or simply turf. They are most commonly populated with chairs, tables, and planters. In 2011 there were 975 parklets in 162 cities around the world. Projects in 2012 ranged from teeter-totters to dance floors.

PARK(ing) Day is a commonly-cited form of tactical urbanism (Hou, 2010; Lydon, 2012). Not only does PARK(ing) day use cheap materials to temporarily improve the built environment, it has also informed policy changes in San Francisco, where parklets are now encouraged by local authorities. Furthermore, because it is easy to reproduce almost anywhere in the world, PARK(ing) Day is considered an open-source prototype for urban design interventions.

Sources: http://parkingday.org/src/Parking_Day_Manual_Consecutive.pdf; http://sfpavementtoparks.sfplanning.org/parklets.html; http://popupcity.net/2012/07/new-ideas-for-parking-spots/; Lydon, 2012

Design
- Temporary open space for public use
- Reduced supply of parking

3.3.10 Grand Central Park

Figure 3.3.20: View of Grand Central Park from above
Source: http://grandcentralpark.org/gcparkmiami/

Miami, 2012 to present

Grand Central Park is a two-hectare park in central Miami that was built using low cost, mostly temporary materials and rapid construction techniques in 2012. Brad Knoefler of the Omni Parkwest Redevelopment Association created the park on an existing blighted parking lot in response to the lack of active greenspace in downtown Miami. It is similar to other pop-up parks, but much larger in scale. The park has a capacity of 8,000 people, and both programmed and non-programmed space. In terms of ecological features, it uses low-maintenance, non-toxic clover lawn and tree species native to Southern Florida.

Grand Central Park was built with a $200,000 grant from a community redevelopment agency in order to lease the space and pay for inputs. It took 30 days to turn the site into a park, and Knoefler expects to maintain the space with funds generated from events held on the site. The temporary materials, speed, cost of construction, and positive impacts on the urban environment make Grand Central Park a clear example of tactical urbanism.

Sources: http://grandcentralpark.org/; (Lydon, 2012)

Diversity
- Venue for social and cultural events

Design
- Increased supply of public greenspace

3.4 Using tactical urbanism to overcome barriers to transit-oriented development

If tactical urbanism can contribute to the density, diversity, and design of transit-oriented development, there then remains one important piece of the puzzle: Why would we want to do this in the first place, in lieu of conventional development? In tandem with contributing to Density, Diversity, and Design, tactical urbanism also addresses some of the barriers commonly associated with transit-oriented development. Where the previous section explained the “What” and “How”, this section elaborates on the “Why”.

The obvious response to the question above is: We should want to use tactical urbanism because it is faster and more affordable to implement, and more adaptable once in place. After all, tactical urbanism takes a very long time to materialise, and faces myriad barriers and challenges to implementation.

Underlying this response, however, we can see tactical urbanism as having three distinct advantages over conventional processes of development. First, the tactical approach makes it possible to demonstrate what a planned change will not only look like, but *feel* like. This tactile demonstration helps to address some of the political obstacles to transit-oriented development. Second, the tactical approach allows stakeholders to experiment before making longer-term commitments. This is as true for retail viability testing as it is for bicycle infrastructure planning. And third, the tactical approach helps transit-oriented development zones to weather unfavourable economic periods by allowing interim uses to occupy space until more permanent ones materialise. This interim use may inform future uses, but it may also simply be an unrelated stopgap. Together, demonstration, experimentation, and interim use, make tactical urbanism a useful tool for both authorities and other civic stakeholders looking to make transit-oriented development a reality.

Demonstration

Tactical urbanism can help stakeholders—whether community members, politicians, city staff, or transit agencies—not only visualise but *experience* future changes to the built environment. It does so by providing a temporary and tangible demonstration, rather than a description or visualisation. This kind of demonstration can help to mitigate opposition, inspire action, or both.

In cases where authorities have taken a leadership role in planning and implementing transit-oriented development, these efforts are often stalled by community opposition to density increases, new land uses, and reductions road and parking capacity. Porter (1997) describes not-in-my-backyard attitudes as one of many political barriers to TOD. The most commonly cited example of not-in-my-backyard attitudes towards transit-oriented development is from the neighbourhoods surrounding Bay Area Rapid Transit (BART) stations slated for mid-rise residential and high-rise office construction, in the 1990s. Here, communities successfully pressured their local politicians to down-zone station areas place a halt on issuing building permits (Cervero & Landis, 1997). Belzer and Autler (2002) refer to this as the tension between node and place. On the one hand, stations are nodes within a broader transit network. As such, they require a certain level of land use intensity near stations in order to support ridership. On the other hand, station areas are places in their own right. Whereas density can be described as a more-the-merrier situation for a transit node, this is certainly not the case when trying to create a high quality sense of place. Transit agencies and property developers tend to think more along the lines of transit stations as nodes, whereas publics tend to consider stations as places—in particular contexts where they live.

The benefits of broad community engagement in planning are widely documented (see for example Sanoff, 1999). Engagement creates realistic expectations among stakeholders, builds trust, and

increases user satisfaction. In Co-Design: A Process of Design Participation, King (1989) suggest that visualization is the key to effective public participation because it is the only common language to which all technical and non-technical participants can relate.

Using tactical urbanism, we may be able to take visualisation one step further, from digital to reality. Instead of using renderings and 3D models, tactical urbanism allows authorities and citizens alike to experience long term investments using short term, inexpensive, temporary ones. New York City's Green Light for Midtown project, for example, illustrates how authorities used the tactical approach to demonstrate the effects of public plazas and complete streets along Broadway in Midtown Manhattan.

The pilot initiative—conceived by the Times Square Alliance business improvement district with support from City Hall, and undertaken by the New York City Department of Transportation—sought to increase the amount of public space in Midtown Manhattan, as well as to improve the pedestrian and cyclist environment. NYDOT converted two stretches of Broadway into pedestrian plazas, and added bike lanes, pedestrian refuges, and street furniture to nearby intersections. They accomplished this using little more than paint, patio furniture, and planters. The total cost of the pilot was estimated to be roughly USD $1.5 million (Office of the Mayor, 2009).

A follow-up report by the New York City Department of Transportation showed a dramatic increase in pedestrian volumes and in staying activities (e.g. reading, eating, taking photographs), a drop in pedestrian-car collisions, and an overall perceived improvement in Times Square. The report goes on to recommend "that the new network changes be made permanent and built upon for the continued vibrancy of West Midtown" (New York City Department of Transportation, 2010, p. 37).

Green Light for Midtown shows how tactical urbanism was used to demonstrate the effect of a proposed change to the city without making longer term, higher risk investments. In terms of transit, Midtown Manhattan happens to be one of the best-served areas in the world. Nevertheless, similar efforts could be implemented near transit stations elsewhere, under the guise of transit-oriented development.

Conversely, in cases where pent-up demand exists for compact, walkable, transit-supportive development, a lack of leadership on the part of authorities—political or administrative—can result in missed opportunities for transit-oriented development. Car-oriented zoning and traffic standards typically serve to exacerbate this problem, which Porter (1997) defines as a barrier in their own right. As Belzer et al. (2004, p. 49) put it, "if the local government does not play a leadership role, then the development program surrounding the transit station is unlikely to be of sufficient scope to be truly effective as TOD."

The Mockingbird Station transit-oriented development initiative in Dallas, TX, for example, was driven largely by the private sector. Mockingbird developer Ken Hughes concedes that public sector leadership and a station-area plan would have made the development process much easier (Ohland, 2004).

In cases where political or institutional leadership is not present, bottom-up tactical urbanism can serve to spur action among authorities. In the case of the Oak Cliff Better Block Project, local community group Go Oak Cliff spent one day to temporarily transform one block into a complete street. Their interventions included bike lanes, parklets, planters, lighting, and pop-up businesses in vacant storefronts, with a total budget of less than one thousand dollars.

The process was intended to demonstrate in a tangible way the kinds of longer-term improvements that his community wanted to see happen. Build a Better Block founder Jason Roberts was tired of inaction by the city and elected officials and his initiative speaks to the lack of public sector support for transit-oriented development around Dallas Area Rapid Transit stations suggested by Ohland (2004). Indeed, the community's efforts seem to have been worthwhile: since the Oak Cliff Better Block took place,

authorities have begun work on a streetcar line into Oak Cliff from downtown Dallas. Better Block illustrates how community-driven tactical urbanism can spur action by authorities on issues that are not a high priority at City Hall, in transit agencies, or among administrations.

Experimentation

In addition to demonstration, tactical urbanism can help to reduce the risks associated with mixing uses. Specifically, it can provide an opportunity for entrepreneurs to experiment and test the viability of business models—typically retail—before having to make longer-term commitments.

A central component of mixed land uses is retail (Cervero et al., 2002). By its very definition, transit-oriented development plans nearly always include a retail component. Even Peter Calthorpe's residentially-focused neighbourhood TOD was envisioned to include a certain amount of commercial land use (Calthorpe, 1993). In practice, making retail viable is easier said than done. From a developer's perspective, mixing uses within individual buildings is difficult to understand. In light of its higher complexity and costs, almost no mixed-use development industry exists (Cervero, 2004). In addition, from a retailer's perspective, retail is primarily market driven; transit proximity is secondary: "it is misguided to believe that just because there is transit, if you build retail, 'they will come'" (Dunphy et al., 2003). This is exacerbated by the fact that failing retail can stigmatize an entire development.

In Long Beach, CA, for example, the Pacific Court transit-oriented development included too much retail with no short-term parking adjacent to shops, meaning that retailers had to rely on walk-in traffic. Being in a relatively car-oriented area, this well-meaning arrangement was not commercially viable. Its layout also did not take advantage of the movie theatre as an anchor tenant. As a result, the project struggled to attract and retain retail tenants, and faced foreclosure in 2000 (Cervero, 2004).

Similarly, experiences from new urbanist style developments with planned rapid transit connections in the economically booming Canadian cities of Calgary and Markham (a Toronto suburb) show that mixed-use retail is often economically unviable (Grant, 2002). Half a century ago, Jane Jacobs (Jacobs, 1961) suggests that this phenomenon was the result of the prohibitively high cost of new development. As a result, she suggested, new development can only accommodate uses that could generate high profits, or those that are highly-subsidised.

Tactical urbanism can help to address the issue of making mixed use work by providing low cost, low risk platforms available to retail entrepreneurs. Several such interventions are oriented towards making retail work in the very short term. Micro-mixing allows multiple complementary retailers to share space and distribute their costs and risk. Street vendors are a mobile, low-overhead form of retail that can survive in locations and times where conventional brick-and-mortar development would not be commercially viable. Public markets and food cart pods are effective for reasons similar to street vendors, but have the added advantage of being destinations in and of themselves by virtue of clustering. Finally, pop-up shops allow entrepreneurs to test retail strategies for short periods of time and at reduced or waived rent, in storefronts that would otherwise sit vacant. (See Section 3.2 for details on these retail strategies.) Located near transit—as several examples in this report are—these strategies can simultaneously contribute to transit-oriented development.

Interim use

Transit-oriented development is heavily dependent on business cycles. Although publicly-funded transit can be built under a variety of circumstances, private development is more constrained the economic climate of the time and place. This is perhaps the most fundamental and widely-cited obstacle to transit-

oriented development in the literature. Porter (1997) refers to this barrier as real-estate market cycles, which can delay station-area development, and in turn prevent transit agencies from boosting ridership. Furthermore, transit alone does not drive real-estate investment when market conditions are not supportive (Belzer & Autler, 2002). Commenting on the inability of many inner cities to attract transit-oriented development, Hess and Lombardi (2004, p. 4) note that "a strong local economy is seen as a key ingredient offers some insight into why the TOD trend is strongest in high-growth metropolitan areas—and why it seems to skip struggling neighborhoods within them."

Market realities make transit-oriented developments virtually unfeasible in less desirable neighbourhoods like Overtown, Miami, and Silver Spring, Montgomery County (Cervero, 2004). Meanwhile, on the 'good' side of the tracks, broader-scale real estate market downturns have been responsible for a lack of development. Assessing cases of transit-oriented development across North America, Porter (1998, p. 479) noted that the recession of the late 1980s and early 1990s had "significantly slowed development activity, including that around rail stations, in all 19 regions studied." Although by no means sufficient, a market for development is a necessary condition for transit-oriented development.

Tactical urbanism interventions can make temporary use of space as a stopgap during unfavourable economic periods, until more permanent development materialises. Spitalfields Market in East London offers a suitable case in point (Bishop & Williams, 2012; Reynolds, 2011; Case Study 3.2.3). In the mid-1980s Spitalfields Market came up for office redevelopment. The covered building had historically been a fruit-and-vegetable market, with roots in 17th-century Huguenot silk manufacturing. The redevelopment project stalled in the economic slump of the early 1990s and, in 1992, developer Urban Space Management won a design competition to manage the 240,000 square foot space with interim uses. The understanding then was that permanent development would occur in four years. With only GBP £300,000 (CAD $470,000) the developer used inexpensive materials and made as few modifications as possible in order to reprogram the space. Spitalfields Market played host to a 200-stall market, food vendors, cultural events, and sports facilities. This translated to over 1,000 jobs. Although it was redeveloped more permanently in 1999, many of the interim uses remain as a testament to their economic success.

Spitalfields market is but one example of a temporary use that served to activate a site in the interim, while more permanent development was not feasible. Other examples include PROXY, a five-year temporary market in San Francisco (Case Study 3.2.5), and Dekalb Market, a two-year shipping container market that was replaced with a more permanent condominium project in 2012 (Case Study 3.2.4). Using the lighter, quicker, cheaper approach, these tactical interventions breathed economic life into otherwise vacant properties until longer term development could become viable.

Synthesis

This section describes the three advantages tactical urbanism has over conventional approaches to development. First, the tactical approach makes it possible to demonstrate not only how a planned change will look, but also how it *feels*. This tactile rendering helps to address some of the political obstacles to transit-oriented development. Second, the tactical approach allows stakeholders to experiment before making longer term commitments. This is as true for retail viability testing as it is for bicycle infrastructure planning. And third, the tactical approach helps transit-oriented development sites to weather unfavourable economic periods by allowing interim uses to occupy space until more permanent ones materialise. This interim use may inform future uses, but it may also simply be an unrelated stopgap measure. Together, demonstration, experimentation, and interim use, make tactical urbanism a useful tool for both authorities and communities looking to make transit-oriented development a reality.

3.5 Interviews: opportunities, challenges, and elements for success

As of yet, this report has spelled out the potential for tactical urbanism to contribute to transit-oriented development. Noticeably absent has been commentary from practitioners in domains relating to transit-oriented development and tactical urbanism. It is worth asking key informants what opportunities and challenges they see for tactical urbanism as a component of transit-oriented development implementation, and what elements need to be in place to make it happen. These questions will help to identify areas for further research and action.

Nine specialists were interviewed, all active in fields that have some relationship with either tactical urbanism or transit-oriented development, or both (Table 3.5.1). They need not have necessarily participated in either transit-oriented development or tactical urbanism. The interviewees include an entrepreneur, a developer, and representatives from two transit agencies, two municipalities, an urban design community group, and a business improvement area. All parties were familiar with transit-oriented development, and had at least some understanding of tactical urbanism. One individual wished to remain anonymous.

Table 3.5.1: List of interviewees

Name	Title and organisation	Field
Angela Brinklow	Transportation Planning Analyst, Metrolinx	Transportation planning
Jonathan Brun	Co-Founder, Nimonik.ca	Entrepreneur
Cameron Charlebois	Vice President, Real Estate, Québec, Canada Lands Company	Property development
David Cooper	Senior Transit Planner, Calgary Transit, City of Calgary	Transportation planning
Michel Frojmovic	Board Member, Wellington West Business Improvement Area	Community group
Benjamin Gillis	Analyst, Communauté métropolitaine de Montréal	Urban planning
Suzy Peate	Urban Planner, Communauté métropolitaine de Montréal	Urban planning
Owen Rose	President, Montréal Urban Ecology Centre	Community group
Anonymous	Ville de Montréal	Urban planning

The interviews consisted of a brief explanation of tactical urbanism and transit-oriented development, as well as examples of tactical urbanism that could be used to support transit-oriented development. This was followed by three open-ended questions:

1. What opportunities do you see tactical urbanism presenting for transit-oriented development?

2. What threats or challenges do you see tactical urbanism presenting for transit-oriented development?
3. What elements or conditions do you see as necessary for tactical urbanism to successfully contribute to transit-oriented development?

The purpose of the interviews was to elucidate some of the challenges and opportunities associated with tactical TOD, and to understand what elements needed to be in place for tactical urbanism to have a positive and meaningful impact on transit-oriented development. This section discusses the themes that emerged from each question, and is therefore organised into three sections: opportunities, challenges, and necessary elements.

Opportunities

Unsurprisingly, many of the opportunities brought up by interviewees echo Section 3.4. Respondents opined that tactical urbanism presented three primary opportunities: (1) improve the experiential quality of station access and egress, (2) assuage not-in-my-backyard (NIMBY) related fears associated with changes to the built environment, and (3) provide an opportunity for station-proximate retail experimentation that would not be possible with brick-and-mortar construction.

Experiential quality

That temporary design interventions could be used to enhance the built environment near stations was a common notion. Michel Frojmovic suggested that temporary streetscape improvements have a big impact on the experience of transit access and egress.

> … a long walk from home to transit can feel very short and pleasant, compared to a much shorter walk that you won't do simply because of the quality of the built environment. [Tactical TOD] seems to be at one level making the experience of transit and transit stations more appealing to the user. … if Holland avenue and Tunney's Pasture [OC Transpo] Station were made to be more colourful and animated, then the ten minute walk all of a sudden doesn't feel so long.

Similarly, David Cooper provided some logistical support for a group of students who wanted to temporarily animate Brentwood C-Train Station in Calgary by turning it into an art gallery. He was pleasantly surprised by its impact on customer experience and pride, as well as the relative ease with which it occurred.

> If it shows that you care for your station space, we'll support it. Calgary Transit is huge on partnership building. It's good public relations. It's good community stewardship. In all honesty, there were very few headaches with this.

Addressing NIMBYism

Nearly all interviewees agreed that using lighter, quicker, cheaper techniques was a good way to assuage not-in-my-backyard (NIMBY) related fears. Owen Rose, architect and member of the non-profit Montréal Urban Ecology Centre, made it clear that using tactical urbanism to help residents visualise proposed changes to the public realm is a more effective strategy than rendered images or animations.

> … so that when the real project is proposed, people say, "yeah, we've seen this." The reaction becomes, "it's about time" rather than "they're doing what to my street?" … So it helps introduce ideas softly. And make people to open to them as well.

Cameron Charlebois, Vice-President of Real Estate for the Canada Lands Company, agrees. He suggests that tactical urbanism can change attitudes towards proposed interventions in a way that renderings cannot.

> I think the idea of tactical urbanism is two things. First it can have the immediate benefit of changing an urban space and making it better. But it also has the much more strategic versus tactical benefit of changing mentalities. It can actually change the way people can perceive a space. Because most people can't imagine what a space could be. They can only see what it is.

Retail experimentation

In addition to demonstrating or piloting a design intervention, respondents agreed that tactical urbanism presents a way to make retail more viable because of its lower costs and potential for experimentation. Angela Brinklow, for example, suggested that mobile food vendors—which can set up and dismantle according to demand—were an apt match for commuter rail stations surrounded by parking, where little activity occurs outside of peak hours.

> … there aren't a lot of food opportunities. … [food carts] would be a good opportunity to have something that could pop up, that might be temporary, that could only be open during peak hours. Infrastructure of a coffee shop or restaurant is a pretty big investment. But if you just have a little cart, it's much easier to just close down after a couple of hours, and then open up later in the afternoon.

Speaking of an area in the midst of a condo boom, but with little land use mix or transit-supportive urban design, the urban planner at the Ville de Montréal who wished to remain anonymous suggested that this area may be ripe for pop-ups as a means of experimenting the right configuration and composition of retail, because the density is already there.

> … you could easily bring your pop ups there, because what is missing is the pop-ups. Not the density. It's already there. Or it's in the process of construction. You could go to the borough and say, "By the time your project is finished, temporarily, what could we be doing to improve the situation?

On inserting precisely the kind of retail that is lacking in a transit-served neighbourhood, Owen Rose cited a successful pop-up market that has added some community life and activity to a parking lot surrounding Frontenac Métro Station.

> … it's the Marché solidaire Frontenac. They opened up a public market on a piece of empty lot, a couple of years ago, and it was every Sunday afternoon. … Now they've institutionalised it, and it's on the side of the metro station every Sunday.

In addition to retail viability and effectively engaging community, several respondents made the simple observation that tactical urbanism—through temporary use of vacant or underutilised real esate—increases activity density by making better use of space. "Fundamentally," says Jonathan Brun, speaking of coworking spaces, food carts, and pedestrian streets, "it's about better utilising space, and therefore increasing density, and therefore encouraging people to use transit."

The opportunities mentioned by interviewees echo previous sections of Chapter 3. They confirm the potential for tactical urbanism to add density, diversity, and design around stations. They also corroborate the way in which tactical urbanism can address barriers to transit-oriented development.

Challenges

Like with opportunities, most of the challenges associated with Tactical TOD were raised by multiple interviewees. These included poaching, entitlement, exploitation, and developer fears.

Poaching

Poaching consists of low-overhead vendors taking away business from brick-and-mortar competitors by virtue of their price advantage. Jonathan Brun cautioned that food trucks are fine, but that they should take care not to steal customers away from restaurants. “Food trucks hurt restaurants that have a physical space, that are renting space, that are employing people.”

Entitlement

A temporary use can be mistaken for a permanent one, resulting in a sense of entitlement among residents. On private land, this can result in conflict between the community and property owners. Suzy Peate refers to this as a sort of appropriation. “People tend to believe that if there’s nothing on the land, and if we use it, well then we kind of own it.” Owen Rose referred to a specific case where a low-rise condo was slated to fill in a vacant lot:

> … you have for instance the guerrilla gardening movement. They say, “Let’s plant trees, and make [the vacant lot] into a temporary park.” And what happens is the new redevelopment takes a few years to happen, and the park grows. All of a sudden the bulldozers arrive, and the people say, “My god the trees!” And so the city is sometimes scared of planting trees.

Most respondents said that good communication and being extremely clear about intent is critical to preventing people from feeling resentful when something they expect to be permanent is removed or modified.

Exploitationf

Exploitation is another concept that came up occasionally. This is the idea that tactical urbanism employed by authorities is an excuse to pay virtually nothing to have creative work undertaken that might otherwise be prohibitively expensive. “Usually,” said Owen Rose, “it means they make these well-meaning local organisations work really hard for little money, and give the city good credit.” For bottom-up initiatives, this was not as much of a concern.

Developer fears

Finally there are developer fears. These fears emerge because private developers, whose properties must be insured, and who have to please investors, tend to be risk averse. It’s often less risky for the bottom line to do nothing than to make even modest returns or recover costs in the interim. Speaking of the temporary use of vacant property, Suzy Peate reiterates this point:

> When you’re not in the public domain, then the owner could be problematic. He has insurance. Doing something for fifteen minutes, okay. But if you stay longer, then all of a sudden you’re occupying something, and it’s not as simple.

Necessary elements

The final question asked about elements and conditions, from a policy standpoint or otherwise, that respondents see as necessary to facilitate the use of tactical urbanism for transit-oriented development.

As with other questions, groups of similar themes emerged. Not surprisingly, these were similar to the barriers identified by Porter, Cervero, and Hess and Lombardi, listed in Section 3.4. The elements for success that came up more frequently included: solid empirical evidence, dedicated public sector liaisons, changes to zoning and permitting and, most importantly, leadership.

Empirical evidence

Angela Brinklow noted that a change in attitude was necessary before many North American transit agencies would begin to eschew surface parking and embrace more activity-intense development near commuter rail stations. Empirical evidence, she added, is a necessary component of changing attitudes.

> … if you don't make the case for it, then people won't buy into it. If you can prove that having one of these things pop up at a station area increases ridership, or increases the likelihood of development, then this is the type of thing that people who don't normally buy into this kind of stuff … like to hear. It's not just about being a good idea and being great for the community. That's not really a solid argument. It's just an opinion. And so you need something a bit more concrete to say here are the specific benefits.

The empirics are admittedly thin. Without any cases of pop-up transit-oriented developments labelled as such, it is difficult to measure their benefits. At the same time, cases of tactical urbanism near transit tell us that it can improve the density, diversity, and design associated with travel demand. The theoretical framework is available, but true case studies are simply not yet available. This is certainly an area of further research and action.

Dedicated public sector liaisons

In cases where interventions are community driven, several interviewees suggested the need for public sector liaisons to provide technical assistance and facilitate the permitting process. Michel Frojmovic noted that this is standard practice in the City of Portland, where the Office of Neighbourhood Involvement's Neighbourhood Program provides a link between the City and community groups. Owen Rose offered a similar concept:

> … how do you make these things happen more? You dedicate someone at the city as a community organiser. And that person at each [borough] is responsible for making these things work and liaising and convincing. And you give that person enough support either politically or administratively, so that they can get these things done.

Changes to zoning and permitting

Nearly all interviewees reported that zoning and approvals make it difficult for sanctioned tactical urbanism to occur in general, no less as part of a transit-oriented development scheme. Without specifying how, Jonathan Brun said that something needs to be done to allow vacant space to be used quickly.

> Now I'm not in urban planning, but I think the one thing that governments could do would be to reform zoning laws to allow for quicker use of vacant spaces.

Cameron Charlebois offered a specific suggestion. He pointed to the use of performance measures instead of conventional zoning at the “Two Kings” neighbourhoods in Toronto (King and Spadina, and King and Parliament). Nearly any commercial, residential, or light industrial use was permitted with significantly reduced parking requirements. Fuelled by a buoyant economy, the two areas saw a flurry of development, in many cases involving heritage restoration, and were labelled a success story for flexible, performance-based zoning (City of Toronto, 2002).

Leadership

In a broader sense, the clearest position taken by interviewees was that leadership—whether from elected officials or administrations—was vital to making tactical urbanism contribute to transit-oriented development. Speaking of interim use in vacant industrial properties, Cameron Charlebois asserted, “You’re going to have to have some kind of champion or ally somewhere in the apparatus.”

Michel Frojmovic echoed this, describing community-driven streetscape improvements: “For this to work you want it to be at a minimum endorsed by municipal government. … You want council support.”

David Cooper, speaking of the Brentwood Station pop-up art gallery, noted, “the reason they got relations with us is because of me. I trust them and I liked their mandate. I knew what they were trying to achieve.”

Synthesis

This section has summarised the results of key-informant interviews to better understand some of the opportunities, challenges, and elements necessary for tactical TOD. Interviewees identified similar opportunities to the advantages listed in Section 3.4. In particular, they suggested that tactical urbanism could: (1) improve the experiential quality of station access and egress, (2) assuage not-in-my-backyard (NIMBY) concerns associated with changes to the built environment, and (3) provide an opportunity for station-proximate retail experimentation that would not be possible with brick-and-mortar construction.

The challenges that came up in multiple interviews included (1) the poaching of business from brick-and-mortar businesses to low-overhead businesses, (2) nervousness about giving residents a sense of entitlement despite the intentionally temporary nature of many tactical urbanism interventions, (3) exploiting labour for the benefit of local governments, and (4) fears of risk among developers.

Finally, the elements seen as necessary for tactical urbanism to contribute to transit-oriented development include (1) empirical evidence to show that a given intervention will have a given impact on ridership, (2) dedicated public sector liaisons to facilitate the process, (3) relaxing the zoning and permitting processes in order to allow for interim and flexible land uses, and most importantly (4) leadership among either business associations, community, elected officials, transit agencies, or local administrations—preferably among all vested parties.

3.6 Summary

Chapter 3 has illustrated the potential link between tactical urbanism and transit-oriented development. Sections 3.1 through 3.3 showed how real-world examples of tactical urbanism have increased activity density, broadened the mix of land uses, and improved the built environment for pedestrians and cyclists. Although being near transit was not a necessary component for the examples, many of them do exist in close proximity to transit, making them de facto examples of transit-oriented development. For the cases that were not close to transit, there was nothing preventing them functioning just as well near transit stations.

Section 3.4 described the three advantages that tactical urbanism has over conventional approaches to development. First, the tactical approach makes it possible to demonstrate how a planned change will both look and *feel*. This tactile rendering helps to address some of the political obstacles to transit-oriented development. Second, the tactical approach allows stakeholders to experiment before making longer-term commitments. This is as true for retail viability testing as it is for bicycle infrastructure planning. And third, the tactical approach helps transit-oriented development sites to weather unfavourable economic periods by allowing interim uses to occupy space until more permanent ones materialise. This interim use may inform future uses, but it may also simply be an unrelated stopgap. Together, demonstration, experimentation, and interim use, make tactical urbanism a useful tool for both authorities and communities looking to make transit-oriented development a reality.

Section 3.5 provided a glimpse into what key informants think about tactical TOD. Specifically, they listed the opportunities and challenges associated with tactical TOD, as well as the elements necessary for it to become a reality. Many of the opportunities cited by interviewees echoed the advantages of tactical urbanism over conventional approaches to development in Section 3.4: namely, providing low-cost transit-supportive urban design, addressing NIMBYism through tactile demonstrations, and allowing for retail experimentation near transit stations. Challenges included poaching of brick-and-mortar business, (2) issues of entitlement, (3) labour exploitation for the benefit of local governments, and (4) fears of increased risk among developers. Finally, the elements seen as necessary for tactical urbanism to contribute to transit-oriented development included empirical evidence, dedicated public sector liaisons, relaxed zoning, and most importantly leadership.

Conclusion

Recapitulation

This report began by describing transit-oriented development (Chapter 1) and tactical urbanism (Chapter 2) in isolation, and subsequently explained how the latter can contribute to the former (Chapter 3).

Chapter 1 explained the history, definitions, and characteristics associated with transit-oriented development. It began by explaining that development-oriented transit was commonplace until the emergence and uptake of the automobile in the middle of the twentieth century. The patterns of development that resulted from car-oriented policies and preferences ('sprawl') began to exhibit negative social, environmental, and economic consequences, which led in from 1970s through 1990s to the birth of smart growth movement. One component of this was the concept of orienting development around transit. Transit-oriented development, first defined by Peter Calthorpe in 1993, still exhibits three core characteristics: (1) increased activity density, as generally measured by population and employment densities, (2) diverse land uses, and (3) transit-supportive urban design. Empirical evidence to date has shown that these three characteristics of the built environment have a measurable impact on VMT and transit ridership.

Chapter 2 described the definition, characteristics, and drivers of tactical urbanism. Section 2.1 assessed two common interpretations of tactical. The first—with currency in military and business usage—refers to a tactic as an action or plan that fits within a broader strategy. The second—established by de Certeau—suggested that a tactic was defined by insurgency on the part of the tactician. This report focuses largely on the former, non-critical interpretation. Section 2.2 suggests that tactical urbanism exhibits three characteristics. First, tactical urbanism is lighter, quicker, and cheaper (LQC) than conventional development, based on the expression coined by British developer Eric Reynolds of Urban Space Management. Second, tactical urbanism creates utility vis à vis urban planning. And finally, tactical urbanism can either be sanctioned or unsanctioned. Section 2.3 goes on to discuss the four primary drivers of tactical urbanism: (1) the vacancy and neglect of certain inner city neighbourhoods that resulted from economic restructuring and suburbanisation, (2) the post-economic crisis austerity that has forced authorities, entrepreneurs, and citizens alike to find creative ways to do more with less, (3) the increased demand for urban lifestyles by both millennials and baby boomers, and (4) the ability to share civic ideas and disseminate information using the internet as a tool.

Chapter 3 weaved together concepts from the first two chapters to illustrate the link between tactical urbanism and transit-oriented development. Sections 3.1 through 3.3 showed how real-world examples of tactical urbanism have increased activity density, broadened the mix of land uses, and improved the built environment for pedestrians and cyclists. Although being near transit was not a necessary component for the examples, many of them do exist in close proximity to transit, making them de facto examples of transit-oriented development. Section 3.4 describes the three advantages that tactical urbanism has over conventional approaches to development. First, the tactical approach makes it possible to demonstrate what a planned change will not only look like, but *feel* like. This tactile rendering helps to address some of the political obstacles to transit-oriented development. Second, tactical approaches allow stakeholders to experiment before making longer-term commitments. This is as true for retail viability testing as it is for bicycle infrastructure planning. Third, tactical urbanism can help transit-oriented development sites to weather unfavourable economic periods by making interim use of space until more permanent development can materialise. Together, demonstration, experimentation, and interim use, make tactical urbanism a useful tool for both authorities and communities looking to make transit-oriented development a reality. Section 3.5 went on to summarise input from key informants vis-à-vis tactical TOD. Specifically,

the interviewees identified opportunities, challenges, and elements necessary to make tactical TOD happen. Many of the opportunities that were brought up echoed the advantages of tactical urbanism over conventional approaches to development in Section 3.4: namely, providing low-cost transit-supportive urban design, addressing NIMBYism through tactile demonstrations, and allowing for retail experimentation near transit stations. On the other hand, challenges that came up included poaching of brick-and-mortar business, issues of entitlement, the exploitation of labour by local governments, and (4) fears of increased risk among developers. Finally, the elements seen as necessary for tactical urbanism to contribute to transit-oriented development included empirical evidence, dedicated public sector liaisons, relaxed zoning, and most importantly leadership.

Discussion and recommendations

Given the slow progress on transit-oriented development to date, the findings of this report suggest that tactical urbanism can and indeed should form an important component of transit-oriented development implementation. The opportunities that tactical urbanism present for transit-oriented development are twofold. On one hand, in situations where station areas lack density, diversity, design, or any combination thereof, tactical urbanism can contribute, in small, incremental ways, to the these components of TOD. Perhaps more importantly, the tactical approach that I have described in this report has the potential to do so more lightly, quickly, and cheaply than conventional development. Virtually stakeholder, from activists to business associations, transit agencies to city officials, can take tangible steps towards making TOD a reality. On the other hand, tactical urbanism addresses several of the commonly-cited challenges to making transit-oriented development a reality. It can demonstrate planned and alternative changes to the built environment; test the viability of retail (or any other) land uses; and make interim use of property that cannot, for whatever reason, attract development.

The case studies demonstrate that tactical TOD is more than a theoretical, unrealistic concept. Rather, it is a de-facto reality for several of the interventions cited in this report that took place—and in many instances continue to take place—in close proximity to transit. Both Trinity Buoy Wharf and Dekalb Market, for example, made important contributions to activity density, land use diversity, *and* the experiential quality of the urban environment. Both cases used extensive experimentation to provide interim uses for space. The former went on to become permanent, while the latter attracted precisely the kind of development associated with TOD. Both occurred within walking distance of rail transit.

Despite these success stories, the tactics presented in this report cannot be discussed without considering certain caveats and challenges. Those undertaking tactical TOD should be careful to address the issues brought up in interviews: poaching business from brick-and-mortar establishments, a sense of entitlement for temporary use on the part of the public, exploitation of community groups for labour that should in some cases be paid for by local governments, and fears associated with uncertainty that developers understandably grapple with. In part to address these challenges, and in part to simply make transit-oriented development happen, local authorities should take steps to both initiate and facilitate tactical TOD. These steps should attempt to incorporate the elements cited in interviews as being necessary for success: changing zoning to allow for interim use of space, dedicating time and money to public sector liaisons who can serve to facilitate neighbourhood-initiated action, and measuring the results of strategies that make use of the lighter, quicker, cheaper approach to development. Most importantly, tactical TOD as a concept requires leadership. It will take motivated activists, progressive business associations, bold transit agencies, and daring politicians to put tactical urbanism on the radar of transit-oriented development.

Because tactical urbanism is a terminal field of study, it enjoys neither a rich body of academic literature from which to draw, nor a wide variety of professional good practice upon which to base decisions. As

such, the approaches to city-building described in this report warrant further research. Fortunately, the lighter, quicker, cheaper characteristics of tactical urbanism make it exceptionally conducive to natural experiments. It allows researchers, policymakers, and citizens alike to create control and test groups in the built environment, and to receive immediate, measurable feedback from them.

The lack of empirical evidence available to practitioners makes tactical urbanism a venturesome endeavour, as mentioned in a number of interviews. This report identifies three priority areas for future research. First, research is needed on the capacity of tactical urbanism to engage diverse publics in order to improve the design process in TOD zones. This will allow practitioners to more effectively and tangibly communicate with communities vis à vis planning objectives associated with transit-oriented development. Second, studies that provide and understanding of the ridership and VMT impacts that tactical interventions can generate, will be useful for stakeholders who are not convinced that tactical approaches can have a measurable impact on TOD. Third, more research is needed on zoning policies that allow for interim land uses in TOD zones. This will enable developers and property owners to take advantage of tactical urbanism as a stopgap solution to unfavourable economic cycles, and avoid the deleterious effect that vacancy can have on neighbourhood vitality.

It is important to remember, when dealing with tactical urbanism, that the typical barriers associated with inaction are in many cases invalid. The time and money necessary to employ tactical approaches to city-building are orders of magnitude less onerous than conventional development, not to mention more adaptable to change. This paper suggests that the time is right for creative, tactical action to spark transit-oriented development, and in turn disrupt the car-oriented patterns of development that have shaped Western cities for more than half a century. And if you want creativity, asserts former mayor of Curitiba Jaime Lerner in the spirit of tactical urbanism, "cut a zero off your budget" (Lerner, 2011).

Bibliography

Ahrensbach, T., Beunderman, J., & Johar, I. (2011). *Compendium for the Civic Economy*. National Endowment for Science, Technology, and the Arts.

Appleyard, D., Gerson, M. S., & Lintell, M. (1981). *Livable streets, protected neighborhoods*. University of California Press.

Arrondissement du Plateau Mont-Royal. (2012). *Cadre normatif des cafés-terrasses pour l'émission de permis d'occupation périodique du domaine public*. Montreal: City of Montreal. Retrieved from http://ville.montreal.qc.ca/pls/portal/docs/PAGE/ARROND_PMR_FR/MEDIA/DOCUMENTS/CADRE_NORMATIF_CAFES-TERRASSES_2012.PDF

ARTblocks. (n.d.). News: The Latest with ARTblocks. *ARTblocks*. Retrieved February 3, 2013, from http://www.artblocks.org/News.html

Barton, H., Davis, G., & Guise, R. (1995). *Sustainable settlements : a guide for planners, designers and developers*. Bristol: Severnside Research and Consultancy Unit, University of the West of England.

Belzer, D., & Autler, G. (2002). *Transit oriented development: moving from rhetoric to reality*. Brookings Institution Center on Urban and Metropolitan Policy Washington, DC. Retrieved from http://www.china-up.com:8080/international/case/case/810.pdf

Belzer, Dena, & Autler, G. (2002). Countering Sprawl with Transit-Oriented Development. *Issues in Science & Technology*, *19*(1), 51.

Belzer, Dena, Autler, G., Espinosa, J., Feigon, S., & Ohland, G. (2004). The Transit-Oriented Development Drama and Its Actors. In *New Transit Town: Best Practices in Transit-Oriented Development* (pp. 41–56). Washington, DC: Island Press.

Berg, N. (2012, March 2). The Official Guide to Tactical Urbanism. *The Atlantic Cities*. Retrieved from http://www.theatlanticcities.com/neighborhoods/2012/03/guide-tactical-urbanism/1387/

Bernick, M., & Cervero, R. (1997). *Transit villages in the 21st century*. New York: McGraw-Hill.

Bhowmik, S. K. (2005). Street vendors in Asia: a review. *Economic and Political Weekly*, 2256–2264.

Bishop, P., & Williams, L. (2012). *The temporary city*. London; New York: Routledge.

Boarnet, M., & Crane, R. (1998). Public finance and transit-oriented planning: New evidence from southern California. *Journal of Planning Education and Research*, *17*(3), 206–219.

Brad Knoefler. (n.d.). About Grand Central Park. *Grand Central Park*. Retrieved February 3, 2013, from http://grandcentralpark.org/gcparkmiami/index.php?option=com_content&view=article&id=88&Itemid=110

Buch, M., & Hickman, M. (1999). The link between land use and transit: recent experience in Dallas. In *78th Annual Meeting of the Transportation Research Board*.

Burke, M., & Brown, A. L. (2007). Distances people walk for transport. *Road & Transport Research: A Journal of Australian and New Zealand Research and Practice*, *16*(3), 16.

California Department of Transportation. (2001). *Factors for Success in California's Transit-Oriented Development*. Sacramento: Technical Advisory and Policy Steering Committee.

Calthorpe, P. (1993). *The next American metropolis: Ecology, community, and the American dream*. Princeton Architectural Pr.

Cambridge Systematics. (1996). *The effects of land use and travel demand management strategies on commuting behavior*. US Department of Transportation, Technology Sharing Program.

Carter, T., & Polevychok, C. (2003). Comprehensive neighbourhood studies: Characterizing decline. *Winnipeg: Canada Research Chair in Urban Change and Adaptation, Institute of Urban Studies, University of Winnipeg*. Retrieved from http://www.uwinnipeg.ca/faculty/ius/iusweb_backup/CRC/CharacterizingDecline1.pdf

CCA. (2008). Illicit Stencil Saves Cyclists. *CCA Actions*. Retrieved February 3, 2013, from http://cca-actions.org/actions/illicit-stencil-saves-cyclists

Certeau, M. D., & Rendall, S. (1984). *The Practice of Everyday Life*. University of California Press.

Cervero, R., & Kockelman, K. (1997). Travel demand and the 3Ds: density, diversity, and design. *Transportation Research Part D: Transport and Environment*, *2*(3), 199–219.

Cervero, R., & Landis, J. (1997). Twenty years of the Bay Area Rapid Transit System: Land use and development impacts. *Transportation Research Part A: Policy and Practice*, *31*(4), 309–333.

Cervero, Robert. (1989). *America's suburban centers : the land use-transportation link*. Boston: Unwin Hyman.

Cervero, Robert. (1991). Land uses and travel at suburban activity centers. *Transportation Quarterly*, *45*(4), 479–491.

Cervero, Robert. (1994). Transit-based housing in California: evidence on ridership impacts. *Transport Policy*, *1*(3), 174–183. doi:10.1016/0967-070X(94)90013-2

Cervero, Robert. (1996). Mixed land-uses and commuting: evidence from the American Housing Survey. *Transportation Research Part A: Policy and Practice*, *30*(5), 361–377.

Cervero, Robert. (2004). *Transit-Oriented Development in the United States: Experiences, Challenges, and Prospects*. Transportation Research Board.

Cervero, Robert, Ferrell, C., & Murphy, S. (2002). *Transit-oriented development and joint development in the United States: A literature review*. Washington, DC: Transportation Research Board. Retrieved from http://trid.trb.org/view.aspx?id=726711

CEUM. (n.d.). La Ville en vert. *Montreal Urban Ecology Centre*. Retrieved February 3, 2013, from http://www.ecologieurbaine.net/node/953/about

Cha, A. E. (2012, May 24). Vallejo, Calif., once bankrupt, is now a model for cities in an age of austerity. *The Washington Post*. Retrieved from http://www.washingtonpost.com/business/economy/vallejo-calif-once-bankrupt-is-now-a-model-for-cities-in-an-age-of-austerity/2012/05/23/gJQAjLKglU_story.html

Chase, J., Crawford, M., & Kaliski, J. (2008). *Everyday urbanism*. New York: Monacelli Press.

City of Toronto. (2002). *Regeneration in the Kings: Directions and Emerging Trends*. Toronto: City of Toronto City Planning Division. Retrieved from http://www.toronto.ca/planning/pdf/kingsmonit.pdf

City of Vancouver. (2012, August 14). Separated bicycle lanes. *City of Vancouver*. text/xml. Retrieved February 3, 2013, from http://vancouver.ca/streets-transportation/separated-bicycle-lanes.aspx

CMHC. (2012). *CHS: Residential Building Activity - Dwelling Starts, Completions, Under Construction and Newly Completed and Unabsorbed Dwellings*. Ottawa: Canadian Mortgage and Housing Corporation. Retrieved from http://www.cmhc-schl.gc.ca/odpub/esub/64681/64681_2012_A01.pdf

Cross, J. (2000). Street vendors, and postmodernity: conflict and compromise in the global economy. *International Journal of Sociology and Social Policy*, *20*(1/2), 29–51.

Curtis, C., Renne, J., & Bertolini, L. (2009). *Transit Oriented Development: Making it Happen*. Farnham, England; Burlington, VT: Ashgate. Retrieved from http://public.eblib.com/EBLPublic/PublicView.do?ptiID=438277

De Chiara, J., Koppelman, L., & Pratt Institute School of Architecture. (1969). *Planning design criteria*. New York: Van Nostrand Reinhold Co.

Depave. (n.d.). Depave. From Parking Lots to Paradise: Mission. *Depave*. Retrieved February 3, 2013, from http://depave.org/about/mission/

Dill, J., & Carr, T. (2003). Bicycle commuting and facilities in major US cities: if you build them, commuters will use them. *Transportation Research Record*, *1828*, 116–123.

Dittmar, H., & Ohland, G. (2004). *The new transit town : best practices in transit-oriented development*. Washington, DC: Island Press.

Dittmar, H., & Poticha, S. (2004). Defining Transit-Oriented Development: The New Regional Building Block. In *The New Transit Town: Best Practices in Transit-Oriented Development* (pp. 19–40). Washington, DC: Island Press.

DoTank Brooklyn. (n.d.). Chair-bombing. *DoTank*. Retrieved February 3, 2013, from http://dotankbrooklyn.org/22

Downs, A. (2004). *Still stuck in traffic : coping with peak-hour traffic congestion*. Washington, D.C.: Brookings Institution Press.

Duany, A., Plater-Zyberk, E., & Speck, J. (2001). *Suburban Nation: The Rise of Sprawl and the Decline of the American Dream*. Farrar, Straus and Giroux.

Dumbaugh, E. (2008). Designing Communities to Enhance the Safety and Mobility of Older Adults A Universal Approach. *Journal of Planning Literature*, *23*(1), 17–36. doi:10.1177/0885412208318559

Dunphy, R., & Fisher, K. (1996). Transportation, congestion, and density: new insights. *Transportation Research Record*, (1552), 89–96.

Dunphy, R., Myerson, D., & Pawlukiewicz, M. (2003). *Ten Principles for Successful Development Around Transit*. Washington, DC: Urban Land Institute. Retrieved from http://trid.trb.org/view.aspx?id=661372

Ewing, R., & Handy, S. (2009). Measuring the unmeasurable: urban design qualities related to walkability. *Journal of Urban Design*, *14*(1), 65–84.

Ewing, Reid. (1997). Counterpoint: Is Los Angeles-Style Sprawl Desirable? *Journal of the American Planning Association.*, *63*(1), 107.

Ewing, Reid. (1999). *Pedestrian-and transit-friendly design: a primer for smart growth*. Smart Growth Network. Retrieved from http://fta.dot.gov/documents/ptfd_primer.pdf

Ewing, Reid. (2008). Characteristics, Causes, and Effects of Sprawl: A Literature Review. In J. Marzluff, E. Shulenberger, W. Endlicher, M. Alberti, G. Bradley, C. Ryan, … C. ZumBrunnen (Eds.), *Urban Ecology* (pp. 519–535). Springer US. Retrieved from http://www.springerlink.com/content/v8522178lm8g7370/abstract/

Ewing, Reid, & Cervero, R. (2010). Travel and the built environment. *Journal of the American Planning Association*, *76*(3), 265–294.

Faguy, S. (2007, December 21). A gathering of geeks. *The Gazette*. Montreal. Retrieved from http://www.canada.com/montrealgazette/news/business/story.html?id=de5d3f2b-7aae-42ee-8230-a70c92a8a753&k=44586

Filley, S., & Dominguez, A. (n.d.). Popuphood. *Popuphood*. Retrieved February 3, 2013, from http://www.popuphood.com/

Florida, R. (2003). Cities and the Creative Class. *City & Community*, *2*(1), 3–19. doi:10.1111/1540-6040.00034

Frank, L. D, & Pivo, G. (1994). Impacts of mixed use and density on utilization of three modes of travel: single-occupant vehicle, transit, and walking. *Transportation research record*, 44–44.

Frank, L., Kavage, S., & Litman, T. (2006). *Promoting Public Health through Smart Growth: Building Healthier Communities through Transportation and Land Use Policies and Practices*. Vancouver: SmartGrowthBC. Retrieved from http://trid.trb.org/view.aspx?id=798593

Frank, Lawrence D., & Engelke, P. (2005). Multiple Impacts of the Built Environment on Public Health: Walkable Places and the Exposure to Air Pollution. *International Regional Science Review*, *28*(2), 193–216. doi:10.1177/0160017604273853

Fried, B. (2012, July 19). Guerrilla Bike Lane Separation on Bergen Street. *Streetsblog New York City*. Retrieved February 3, 2013, from http://www.streetsblog.org/2012/07/19/eyes-on-the-street-guerrilla-bike-lane-separation-on-bergen-street/

G20. (2010). *G20 Toronto Summit Declaration*. Toronto: G20. Retrieved from http://www.g20.utoronto.ca/2010/to-communique.html

Gansky, L. (2012). *The Mesh: Why the Future of Business Is Sharing* (Reprint.). Portfolio Trade.

Gehl, J. (1996). *Life between buildings: using public space*. Copenhagen: Arkitektens Forlag.

Gehl, J. (2010). *Cities for people*. Island Press. Retrieved from http://books.google.ca/books?hl=en&lr=&id=lBNJoNILqQcC&oi=fnd&pg=PR3&dq=cities+for+people&ots=hDrdnSXbgo&sig=gzLZofPJQGpW_V1tdg4DKf0V9ZE

Gerend, J. (2007). Temps Welcome-Jennifer Gerend describes how temporary uses can revitalize neighborhoods–In Planning Practice. *Planning*, *73*(11), 24.

Gillham, O., & MacLean, A. (2002). *The limitless city : a primer on the urban sprawl debate*. Washington, DC: Island Press.

Gogoi, P. (2007). Pop-Up Stores: All the Rage. *Bloomberg Businessweek*. Retrieved from http://www.nodproject.com/thesisWIKI/images/5/53/Mobility_POP_UP_STORES.pdf

Grant, J. (2002). Mixed use in theory and practice: Canadian experience with implementing a planning principle. *Journal of the American Planning Association*, *68*(1), 71–84.

Grant, J., & Perrott, K. (2011). Where Is the Café? The Challenge of Making Retail Uses Viable in Mixed-use Suburban Developments. *Urban Studies*, *48*(1), 177–195. doi:10.1177/0042098009360232

Greenberg, E. (2004). Regulations Shape Reality: Zoning for Transit-Oriented Development. In *The New Transit Town: Best Practices in Transit-Oriented Development* (pp. 57–82). Washington, DC: Island Press.

Hager, P. (1970, June 26). Award Winning Idea - Artist Creates Portable Park For Downtown SF Freeways. *Los Angeles Times*, p. 3.

Harris, R. (2004). *Creeping Conformity: How Canada Became Suburban, 1900-1960*. Toronto: University of Toronto Press.

Hess, D., & Lombardi, P. (2004). Policy support for and barriers to transit-oriented development in the inner city: Literature review. *Transportation Research Record*, *1887*, 26–33.

Heuton, R. A., & Girard, B. (2010). Fiscal Austerity and Urban Innovation: The Challenges Facing Canadian Cities. *Municipal World*, *120*(5), 27–29.

Hobbs, F., & Stoops, N. (2002). *Demographic trends in the 20th century* (Vol. 4). Washington, DC: US Census Bureau. Retrieved from http://books.google.ca/books?hl=en&lr=&id=eaRdXX66Bb4C&oi=fnd&pg=PA1&dq=Demographic+Trends+in+the+20th+Century&ots=Zd3lHTi-dC&sig=8Dw17yll10KdHzkol3uUARsZhGA

Hou, J. (2010). *Insurgent public space : guerrilla urbanism and the remaking of contemporary cities*. New York: Routledge.

Institute for Urban Design. (n.d.). popuphood. Spontaneous Interventions. Retrieved February 3, 2013, from http://www.spontaneousinterventions.org/project/popuphood

Institution of Civil Engineers. (2001). *Civil Engineering Heritage*. ICE Publishing. Retrieved from http://www.abebooks.com/servlet/BookDetailsPL?bi=9180323630&searchurl=isbn%3D0727728768

Jacobs, J. (1961). *The death and life of great American cities*. Vintage. Retrieved from http://books.google.ca/books?hl=en&lr=&id=P_bPTgOoBYkC&oi=fnd&pg=PA7&dq=death+and+life+of+great+american+cities&ots=JV_SW4Gpf3&sig=ofSafU6PNz1RwKILIHbZw4O114k

Jacobs, J. (1984). *The Nature of Economies* (Reprint.). Vintage.

Kim, H., Fiore, A. M., Niehm, L., & Jeong, M. (2010). Psychographic characteristics affecting behavioral intentions towards pop-up retail. *International Journal of Retail & Distribution Management*, *38*(2), 133–154.

King, S., Conley, M., Latimer, B., & Ferrari, D. (1989). *Co-design: a process of design participation*. Van Nostrand Reinhold.

Koskey, A. (2012, June 18). Development push Hayes Valley Farm to multiple city locations. *San Francisco Examiner*. San Francisco. Retrieved from http://www.sfexaminer.com/local/2012/06/development-push-hayes-valley-farm-multiple-city-locations

Krizek, K., & Stonebraker, E. (2010). Bicycling and Transit. *Transportation Research Record*, *2144*, 161–167. doi:10.3141/2144-18

Kuby, M., Barranda, A., & Upchurch, C. (2004). Factors influencing light-rail station boardings in the United States. *Transportation Research Part A: Policy and Practice*, *38*(3), 223–247. doi:10.1016/j.tra.2003.10.006

Lazarovic, R. (2009). *The economic effects of pedestrianization: a case study of Ste. Catherine Street, Montreal*. Presented at the Transportation Seminar, McGill University School of Urban Planning. Retrieved from http://tram.mcgill.ca/Teaching/seminar/presentations/Economic_effects_of_pedestrianization.pdf

Leden, L., Garder, P., & Johansson, C. (2006). Safe pedestrian crossings for children and elderly. *Accident Analysis & Prevention*, *38*(2), 289–294.

Lee, K. (2000). *Urban poverty in Canada: A statistical profile*. Ottawa: Canadian Council on Social Development. Retrieved from http://www.ccsd.ca/pubs/2000/up/

Leinberger, C. (2011, November 25). The Death of the Fringe Suburb. *The New York Times*. Retrieved from http://www.nytimes.com/2011/11/26/opinion/the-death-of-the-fringe-suburb.html

Lerner, J. (2011, April 18). Urban Acupuncture. *Harvard Business Review Blog*. Retrieved from http://blogs.hbr.org/revitalizing-cities/2011/04/urban-acupuncture.html

London Docklands Development Corporation. (1998, March). Regeneration and the Arts in London Docklands. *LDDC History Pages*. Retrieved February 3, 2013, from http://www.lddc-history.org.uk/art/index.html#Trinity

Los Angeles Department of Transportation. (2012, December 17). Continental Crosswalks Fact Sheet. Los Angeles Department of Transportation. Retrieved from http://la.streetsblog.org/wp-content/pdf/ContinentalCrosswalkFactSheet121312.pdf

Loukaitou, A., Brozen, M., & Callahan, C. (2012). *Reclaiming the Right-of-Way: A Toolkit for Creating and Implementing Parklets*. UCLA Luskin School of Public Affairs.

Lufa Farms. (2010, November 2). Lufa Farms: World's 1st Commercial-scale Production Greenhouse-on-a-roof Rises in Montreal. Market Wire. Retrieved from http://www.marketwire.com/press-release/lufa-farms-worlds-1st-commercial-scale-production-greenhouse-on-roof-rises-montreal-1345427.htm

Luka, N. (2006). From summer cottage colony to metropolitan suburb: Toronto's Beach district, 1889–1929. *Urban History Review/Revue d'histoire urbaine*, *35*(1), 18–31.

Lydon, M. (2012). *Tactical Urbanism Volume 2: Short-term Action, Long-term Change*. Street Plans. Retrieved from http://issuu.com/streetplanscollaborative/docs/tactical_urbanism_vol_2_final

Mendell, M., & Neamtan, N. (2010). The social economy in Quebec: Towards a new political economy. In *Researching the Social Economy* (pp. 26–63). Toronto: University of Toronto Press. Retrieved from http://sec.oise.utoronto.ca/english/project_outputs/project33_February09Report.pdf

Merriam-Webster. (2008). tactical. *Merriam-Webster's Collegiate Dictionary*. Merriam-Webster.

Messenger, T., & Ewing, R. (1996). Transit-Oriented Development in the Sun Belt. *Transportation Research Record*, (1552), 145–153. doi:10.3141/1552-20

Middleton, C. (2012, May 3). Container living: a home for under £50,000. *Telegraph.co.uk*. Retrieved from http://www.telegraph.co.uk/property/9243318/Container-living-a-home-for-under-50000.html

Miller, C. (1988). *Carscape: A Parking Handbook*. Washington St Pr.

Ministry of Transportation. (2009). *Transit-Supportive Guidelines*. Government of Ontario. Retrieved from http://www.mto.gov.on.ca/english/transit/supportive-guideline/index.shtml

Morales, A. (2009). Public markets as community development tools. *Journal of Planning Education and Research*, *28*(4), 426–440.

Muller, P. (2004). Transportation and urban form: stages in the spatial evolution of the American metropolis. In *The Geography of Urban Transportation* (3rd ed., pp. 59–85). New York: The Guilford Press. Retrieved from http://trid.trb.org/view.aspx?id=756060

National Association of Realtors. (2011). *2011 Community Preference Survey*. Washington, DC: National Association of Realtors. Retrieved from http://www.realtor.org/reports/2011-community-preference-survey

Nelson, D., & Niles, J. (1999). Market Dynamics and Nonwork Travel Patterns; Obstacles to Transit-Oriented Development? *Transportation Research Record: Journal of the Transportation Research Board*, (1669), 13–21. doi:10.3141/1669-02

New York City Department of Transportation. (2010). *Green Light for Midtown Evaluation Report*. New York City Department of Transportation. Retrieved from http://www.nyc.gov/html/dot/downloads/pdf/broadway_report_final2010_web.pdf

Newman, O. (1995). Defensible Space: A New Physical Planning Tool for Urban Revitalization. *Journal of the American Planning Association*, *61*(2), 149–155. doi:10.1080/01944369508975629

O'Sullivan, S., & Morrall, J. (1996). Walking distances to and from light-rail transit stations. *Transportation Research Record*, (1538), 19–26.

OECD. (2012). *OECD Annual Projections: Economic Outlook No 92*. Organisation for Economic Cooperation and Development. Retrieved from http://stats.oecd.org/Index.aspx?DataSetCode=EO92_INTERNET

OECD. (n.d.). Key employment statistics. *Organisation for Economic Cooperation and Development*. Retrieved January 30, 2013, from http://www.oecd.org/els/employmentpoliciesanddata/keyemploymentstatistics.htm

OED. (1989). tactical. *Oxford English Dictionary*. New York: Oxford University Press.

Office of the Mayor. (2009, February 26). Mayor Bloomberg and Commissioner Sadik-Khan Announce Pilot "Green Light for Midtown" Program to Reduce Congestion. Retrieved from http://www.nyc.gov/portal/site/nycgov/menuitem.c0935b9a57bb4ef3daf2f1c701c789a0/index.jsp?pageID=mayor_press_release&catID=1194&doc_name=http%3A%2F%2Fwww.nyc.gov%2Fhtml%2Fom%2Fhtml%2F2009a%2Fpr095-09.html&cc=unused1978&rc=1194&ndi=1

Ohland, G. (2004). The Dallas Case Study: Mockingbird Station and Addison Circle. In *New Transit Town: Best Practices in Transit-Oriented Development* (pp. 155–174). Washington, DC: Island Press.

Ouimet, M. (2011, November 16). Le Café Artère : s'enraciner dans la diversité culturelle de Montréal. *Journal Ensemble*. Montréal. Retrieved from http://www.journalensemble.coop/article/2011/11/le-caf%C3%A9-art%C3%A8re-senraciner-dans-la-diversit%C3%A9-culturelle-de-montr%C3%A9al/148

Pacific Standard Time. (n.d.). Portable Parks IV: Past, Present, Future. *Pacific Standard Time Festival*. Retrieved January 6, 2013, from http://pacificstandardtimefestival.org/events/portable-parks-iv-past-present-future-a-l-l-by-bonnie-ora-sherk/

Parkin, J., Wardman, M., & Page, M. (2007). Models of perceived cycling risk and route acceptability. *Accident Analysis & Prevention*, *39*(2), 364–371.

Parsons Brinkerhoff Quade Douglas. (1993). *The pedestrian environment* (pp. 29–34). Portland: 1000 Friends of Oregon.

Pew Research Center. (2007). *A Portrait of Generation Next*. Washington, DC: Pew Research Center. Retrieved from http://www.pewsocialtrends.org/2007/01/09/a-portrait-of-generation-next/

Porter, D. (1998). Transit-Focused Development: A Progress Report. *Journal of the American Planning Association*, *64*(4), 475–488. doi:10.1080/01944369808976006

Porter, D. R. (1997). *Transit-focused development*.

Prichard, J. (2010, May 14). Better Bikeways: Guerrilla Improvements and DIY Signage. *GOOD*. Retrieved January 6, 2013, from http://www.good.is/posts/better-bikeways-guerrilla-improvements-and-diy-signage/

Project for Public Spaces. (2002). *Public Markets as a Vehicle for Social Integration and Upward Mobility*. Project for Public Spaces. Retrieved from http://www.pps.org/pdf/Ford_Report_2002-3.pdf

Project for Public Spaces. (n.d.). Lighter, Quicker, Cheaper: A Low-Cost, High-Impact Approach. *Project for Public Spaces*. Retrieved January 24, 2013, from http://www.pps.org/reference/lighter-quicker-cheaper-a-low-cost-high-impact-approach/

Public Art Fund. (n.d.). Discovering Columbus. *Public Art Fund*. Retrieved January 30, 2013, from http://www.publicartfund.org/view/exhibitions/5495_discovering_columbus

Pucher, J., & Buehler, R. (2009). Integrating bicycling and public transport in North America. *Journal of Public Transportation*, *12*(3), 79–104.

Pushkarev, B. S., & Zupan, J. M. (1982). Where transit works: Urban densities for public transportation. *Urban transportation: Perspectives and prospects*, 341–344.

Rebar. (2011). *PARK(ing) Day Manual*. San Francisco: Rebar. Retrieved from http://parkingday.org/src/Parking_Day_Manual_Consecutive.pdf

Reynolds, E. (2011). Interwhile uses. *Journal of Urban Regeneration and Renewal*, *4*(4), 371–380.

Reynolds, R. (2009). *On Guerrilla Gardening: Gardening Without Boundaries*. Bloomsbury Publishing.

Ries, E. (2011). *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses*. Crown Business.

Rosén, E., & Sander, U. (2009). Pedestrian fatality risk as a function of car impact speed. *Accident Analysis & Prevention*, *41*(3), 536–542.

Rosenbloom, S., & Clifton, K. (1996). The puzzle of income, race, and density: preliminary evidence on transit use from the 1991 American Housing Survey. *Journal of Public Transportation*, *1*(1), 87–102.

Ross, C. L., & Dunning, A. E. (1997). *Land use transportation interaction: An examination of the 1995 NPTS data*. Georgia Institute of Technology.

Roth, M. (2009, August 9). Poof! San Francisco's Mason Street Has Become a Temporary Park. *Streetsblog San Francisco*. Retrieved February 3, 2013, from http://sf.streetsblog.org/2009/08/03/poof-san-franciscos-mason-street-has-become-a-temporary-park/

Saelens, B., Sallis, J., Black, J., & Chen, D. (2003). Neighborhood-based differences in physical activity: an environment scale evaluation. *American Journal of Public Health*, *93*(9), 1552–1558.

Salvesen, D. (1996). Promoting Transit-Oriented Development. *Urban Land*, (July), 31–35.

San Francisco Department of Public Health. (n.d.). Neighborhood Completeness Indicator. San Francisco Department of Public Health. Retrieved from http://www.sfphes.org/elements/24-elements/tools/104-neighborhood-completeness-indicator

Sanoff, H. (1999). *Community Participation Methods in Design and Planning*. John Wiley & Sons.

Schreiner, D. (2012, May 28). It's a F.A.S.T. way of Chillin'. *The Underground Magazine*. Retrieved from http://www.theunderground.nl/2012/05/its-a-f-a-s-t-way-of-chillin/

Senate Department for Urban Development and the Environment, & Urban Catalyst. (2007). *Urban pioneers : Berlin : Stadtentwicklung durch Zwischennutzung = Temporary use and urban development in Berlin*. Berlin: Jovis.

Sentier Urbain. (n.d.). Sentier Urbain: Accueil. *Sentier Urbain*. Retrieved February 3, 2013, from http://www.sentierurbain.org/

Shoup, D. C. (2005). *The high cost of free parking*. Planners Press, American Planning Association. Retrieved from http://www.connectnorwalk.com/wp-content/uploads/The-High-Cost-of-Free-Parking.pdf

Silva, T. (2012, September 18). Boxpark NDSM by Brinkworth. *Dezeen Magazine*. Retrieved from http://www.dezeen.com/2012/09/18/boxpark-ndsm-by-brinkworth/

Slawik, H., & Bergmann, J. (2010). *Container Atlas: A Practical Guide to Container Architecture*. Prestel Pub.

Smerk, G. M. (1967). The Streetcar: Shaper of Americian Cities. *Traffic Quarterly*, *21*(4), 569–584.

Smit, J., Nasr, J., & Ratta, A. (1996). Urban Agriculture Food, Jobs and Sustainable Cities. *New York, USA*. Retrieved from http://www.jacsmit.com/book/AppC.pdf

Smith, W. (1984). Mass transport for high-rise high-density living. *Journal of Transportation Engineering*, *110*(6), 521–535.

Statistics Canada. (2010, May 26). Population projections: Canada, the provinces and territories. *Statistics Canada*. Retrieved January 27, 2013, from http://www.statcan.gc.ca/daily-quotidien/100526/dq100526b-eng.htm

Still, T. (2002). Transit-oriented development: Reshaping America's metropolitan landscape. *On Common Ground*, (Winter), 44–47.

The Better Block. (n.d.). How to Build a Better Block. *The Better Block*. Retrieved February 3, 2013, from http://betterblock.org/how-to-build-a-better-block/

Tomasulo, M. (n.d.). Walk [Your City]: About. *Walk [Your City]*. Retrieved February 3, 2013, from http://walkyourcity.org/about/

Turcotte, M. (2008). The city/suburb contrast: How can we measure it? *Canadian Social Trends*, *85*, 2–19.

United States Department of Defense. (2010a). Tactical level of war. *DOD Dictionary of Military and Associated Terms*. United States Department of Defense. Retrieved from http://www.dtic.mil/doctrine/dod_dictionary/data/t/7465.html

United States Department of Defense. (2010b). Strategic level of war. *DOD Dictionary of Military and Associated Terms*. United States Department of Defense. Retrieved from http://www.dtic.mil/doctrine/dod_dictionary/data/s/7287.html

Urban Land Institute. (2005). *Higher Density Development: Myth and Fact*. Washington, DC: Urban Land Institute. Retrieved from http://www.uli.org/sitecore/content/ULI2Home/ResearchAndPublications/Reports/Affordable%20Housing/Content/Higher%20Density%20Development.aspx

Urban Repair Squad. (n.d.). Do-it-yourself infrastructure: a practical manual. Retrieved from http://web.net/~lukmar/UrbanRepairSquadManual.pdf

Urban Space Management. (n.d.-a). Trinity Buoy Wharf. *Urban Space Management*. Retrieved February 3, 2013, from http://www.urbanspace.com/projects/trinity-buoy-wharf

Urban Space Management. (n.d.-b). Overview About. *Container City*. Retrieved February 2, 2013, from http://www.containercity.com/about

Veloz, J. (2011, November 11). WikiLane – How Citizens Built their own Bicycle Network. *This Big City*. Retrieved February 3, 2013, from http://thisbigcity.net/wikilane-how-citizens-built-their-own-bicycle-network/

Veres, D. (2010, October 6). *Iterative public design development: using new technologies to enhance planning and design processes* (Supervised Research Project). McGill University, Montréal.

Ville de Montréal. (2012, May). Déviation de la piste cyclable du boulevard De Maisonneuve. Direction des transports de la Ville de Montréal. Retrieved from http://ville.montreal.qc.ca/pls/portal/docs/PAGE/TRANSPORT_V2_FR/MEDIA/DOCUMENTS/2012-05-25_AVIS%20AUX%20R%C9SIDANTS%20PR%C9SIDENT-KENNEDY%20FINAL.PDF

Walk Score. (n.d.). Transit Score® Methodology. *Walk Score*. Retrieved February 7, 2013, from http://www.walkscore.com/transit-score-methodology.shtml

Warner, S. B. (1962). *Streetcar suburbs: the process of growth in Boston, 1870-1900.* Cambridge: Harvard University Press.

WHO. (2007). *Global age-friendly cities: A guide*. Geneva: World health organization (WHO). Retrieved from http://books.google.ca/books?hl=en&lr=&id=4uWtQy6rGywC&oi=fnd&pg=PP6&dq=Global+Age-friendly+Cities:+A+Guide+-+World+Health+Organization&ots=XVH6Z5lmTK&sig=n9NW7xoATAcgKHsNeBk3s-KWthQ

Whyte, W. H. (1980). *The social life of small urban spaces*. Conservation Foundation.

Wilson, P., & Weinberg, B. (Eds.). (1999). *Avant Gardening: Ecological Struggle in the City & the World*. Autonomedia.

Zegeer, C. (2002). *Pedestrian Facilities Users Guide: Providing Safety and Mobility*. DIANE Publishing.

Appendix

Appendix: Certificate of ethical acceptability of research involving humans

McGill

Research Ethics Board Office
James Administration Bldg, room 429
845 Sherbrooke St West
Montreal, QC H3A 0G4

Tel: (514) 398-6831
Fax: (514) 398-4644
Ethics website:www.mcgill.ca/research/researchers/compliance/human/

Research Ethics Board I
Certificate of Ethical Acceptability of Research Involving Humans

REB File #: 273-1212

Project Title: Pop-Up TOD: How tactical urbanism can contribute to transit-oriented development

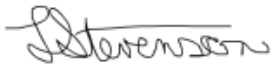
Principal Investigator: Brendan Rahman

Department: School of Urban Planning

Student Status: Master's Student

Supervisor: Prof. N. Luka

This project was reviewed by delegated review.



Lisa Stevenson, Ph.D.
Delegated Reviewer, REB I

Approval Period: 21 Jan. 2013 **to** 20 Jan. 2014

This project was reviewed and approved in accordance with the requirements of the McGill University Policy on the Ethical Conduct of Research Involving Human Participants and with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.

---

* All research involving human participants requires review on an annual basis. A Request for Renewal form should be submitted 2-3 weeks before the above expiry date.
* When a project has been completed or terminated a Study Closure form must be submitted.
* Should any modification or other unanticipated development occur before the next required review, the REB must be informed and any modification can't be initiated until approval is received.