

A VIRTUOUS CIRCLE

How Transportation Demand Management
Transformed UBC, Vancouver

BY ANDREW E. JACKSON

TRANSPORTATION DEMAND MANAGEMENT

In the late 1950s, the American historian and urban planner, Lewis Mumford, criticized the passage of the U.S. *Interstate and Defense Highways Act*, warning that the new highway system would wreak havoc on American cities. In the years that followed, Mumford and others watched in dismay as American cities “accommodated” these new highways and sacrificed many historic buildings to create the necessary parking stations.^{1,2} Despite numerous “freeway revolts”, and growing traffic congestion, the United States and many industrialized countries continually expanded highways, claiming new highways would relieve the ever-increasing traffic congestion.

In the early 1990s, Anthony Downs, an economist at the Brookings Institution,

published the findings of his research on traffic congestion in which he suggested that highway expansion is a self-defeating strategy.³ In summary, Downs argued that building larger highways does not relieve traffic congestion because people will alter their travel patterns in accordance with the provision of transportation infrastructure. For example, Downs observed that when engineers expand a highway, people, who had traveled during off-peak times, switched to peak periods because of the increased road capacity. Working on the same problem in the early 1990s, the British government’s Standing Advisory Committee on Trunk Road Assessment (SACTRA) concluded that the construction of highways does not reduce traffic congestion, noting that larger highways “induce” more people to travel by car.⁴

“Among transport planners, there is now a broad consensus that traffic, like gas, expands to fill a void. In the academic

literature, this process is known as “induced traffic,” “induced travel,” or “induced demand”.^{5,6,7} In recent years, the statement “you cannot pave your way out of congestion” has become a rallying cry for the New Urbanist movement and other anti-highway campaigners throughout North America.⁸ In addition to this, experience suggests that highway expansion creates an urban fabric which discourages walking, cycling, and transit use. As “automobile dependence” becomes harder to bear, planners and politicians are becoming more interested in alternatives to constant highway expansion. In contrast to policies that promote greener cars, TDM addresses the vicious cycle initiated by highway expansion. As transport planner Erik Ferguson, puts it:

“[TDM] is the art of slightly and gradually modifying individual travel behavior rather than always

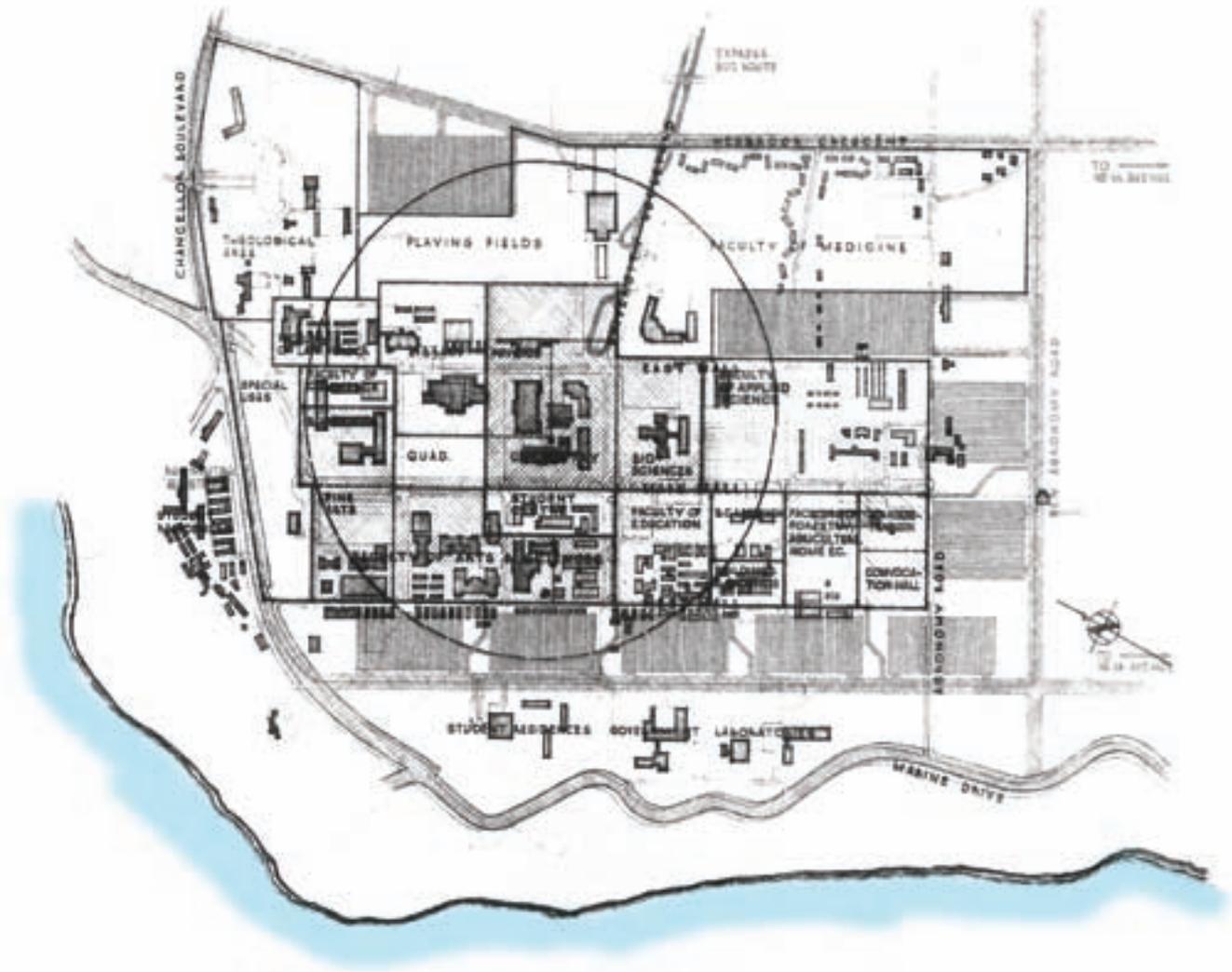


Illustration of 1959 Plan.



View of B Parking Lot in 1960.

expanding transportation capacity in response to observed or anticipated traffic congestion at the local or regional level.”⁹

Recent research suggests that TDM programs have been very popular among university administrators, who have adopted them for a couple of reasons. On the one hand, universities, facing chronic parking shortages, have turned to TDM to reduce the demand for expensive parking facilities;¹⁰ on the other hand, hoping to reduce their environmental footprint,¹¹ universities have used TDM to reduce commuting among faculty, staff, and students, which studies show is a university’s largest source of GHG emissions.^{12,13} So far, more than 50 universities and colleges in the United States and Canada have implemented a TDM program, and, according to one survey, “unlimited-access” passes (U-Pass) have increased transit ridership at participating campuses by between 71 and 200 per cent in the first year alone.¹⁴

By 1978, UBC had 31,572 full-time students, and traffic problems on campus were intolerable. In fact, one engineering study that year, commissioned by the UBC Department of Physical Plant, estimated that 51 per cent of automobiles on campus parked in “controlled spaces”, leaving a shortfall of approximately 4,700 spaces each day during the academic year.

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A “COMMUTER CAMPUS”

In 1910, the government of British Columbia announced a national competition to create a design for its new university to be located 11 kms from Vancouver on the western tip of the Point Grey Peninsula. The original brief called for “a university city in an idyllic setting.” The local architectural firm, Sharp and Thompson (later Thompson, Berwick and Pratt), won the competition and was retained as the “university architect” until 1959. Based on the Oxbridge “college quadrangle”, the winning entry combined

popular planning styles, particularly the City Beautiful and Garden City styles. Despite the long distances between Vancouver and the Point Grey campus, the design provided few transit or parking facilities, because Sharp and Thompson’s design included large student dormitories and colleges.¹⁵ With the outbreak of WWI, however, the University’s ability to borrow money was drastically reduced, and, as a result, the original plan was altered to create “a more compact campus” in 1914.¹⁶ With little or no accommodation on campus, UBC students attending classes at Point Grey, were forced to commute to

campus. This fact has dominated campus planning at UBC since the 1920s. In 1929, Harland Bartholomew and Associates produced the first city plan for Vancouver. Using a classic “predict and provide” approach, Bartholomew and Associates said increasing automobile ownership was an inexorable trend “that must be planned for.”¹⁷ Therefore, the firm recommended that Vancouver create what it called “a major street system”, to provide space for more automobiles.

By the end of WWII, there were still only two permanent buildings on the Point Grey campus. As a consequence, most students attended classes in semi-permanent “army huts”.¹⁸ After WWII however, construction on campus increased to accommodate returning servicemen, servicewomen and their cars. In 1942, the Government of Canada estimated that only 10 per cent of

Canadian households owned a car; by 1965, that figure would increase to 75 per cent.¹⁹ In the academic year 1959/60, with no significant increase in student housing, and with 15,616 full-time students, automobiles choked the Point Grey campus.²⁰ That year, the university architect revised the campus plan for the first time since 1914. This new Development Plan predicted that student enrolment would continue to grow and the demand for parking would grow, accordingly. To accommodate these trends, the Plan called for the construction of nine large surface parking lots around the “academic core”.²¹

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campus parked in “controlled spaces”, leaving a shortfall of approximately 4,700 spaces each day during the academic year.²² A short time later, UBC president, Douglas T. Kenny, convened an Ad Hoc Committee on Transportation and Parking Needs. In its report, the committee observed that UBC devoted more than 75 acres of its campus to surface parking and that, despite constant expansion, parking problems grew worse each year.²³ While most of the committee’s recommendations were ignored, the university built the parkades Kenny’s committee recommended. In fact, between 1980 and 1994, UBC built five multi-storey parkades to house an additional 5,767 cars on its Point Grey campus.²⁴ It was during this period that history professor George Woodcock published his history of the university, describing UBC as a commuter campus isolated from the population it served.²⁵

Table 1: Weekday Person Trips* Across UBC/UEL Screenline, 2008 vs 1997

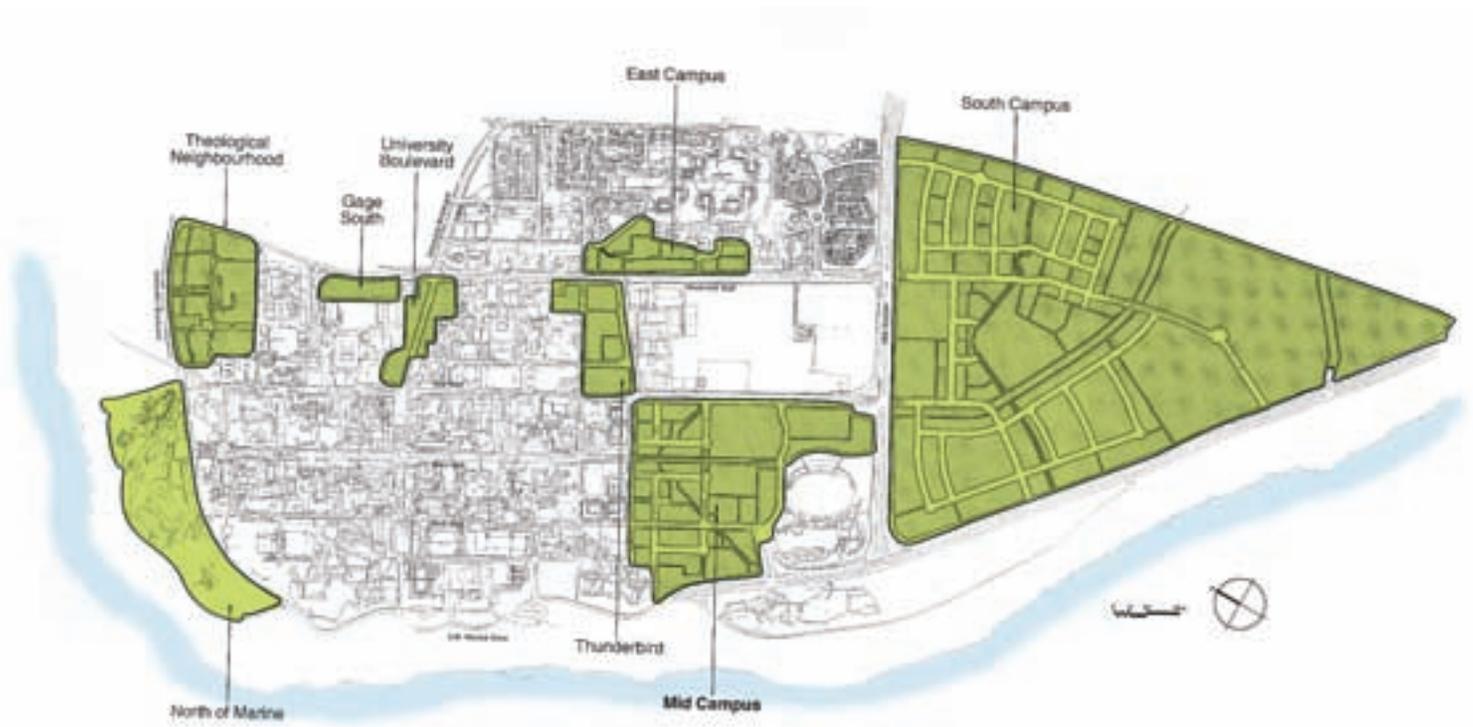
	FALL 1997	CHANGE FROM FALL 2008	1997 TO 2008	% CHANGE
Single occupant vehicle	46,000	43,100	-2,900	-6%
Carpool and vanpool	36,100	17,900	-18,200	-50%
Transit	19,000	51,000	32,000	168%
Bicycle	2,700	1,600	-1,100	-41%
Pedestrian	1,400	1,000	-400	-29%
Truck and motorcycle	900	1,600	700	78%
Totals	106,100	116,200	10,100	10%

* Person trips are the number of people crossing a screenline or passing a specified point and includes trips by all modes of transportation. A person trip is a one-way trip made by one person.
Source: University of British Columbia Fall 2008 Transportation Status Report. Available at: www.trek.ubc.ca/research/status/index.html

MODE-SHIFT

In 1997, the Greater Vancouver Regional District (GVRD) adopted an Official Community Plan bylaw for UBC, which mandated a TDM program for UBC.²⁶ In the subsequent Memorandum of Understanding between the GVRD and UBC, the university committed to three transportation targets over a five-year period. Using 1997 as a baseline, UBC agreed that it would reduce solo driving by 20 per cent and increase transit ridership by 20 per cent. For its part, Translink—the regional transit provider—agreed that it would increase transit service to the Point Grey campus, especially on limited-stop express routes. In addition to this, UBC agreed that it would increase parking fees to discourage driving, thereby creating additional funds with which to subsidize the U-Pass. On top of this, UBC has staggered its class times to reduce peak-hour overcrowding and committed itself to building more housing for students on campus. Writing in *Business in Vancouver*, local expert, Gordon Price, thought that the ridership targets were unrealistic, because Translink was spending millions each year simply to maintain current ridership levels in the Vancouver region.²⁷ Five years later, after drawn out negotiations, the U-Pass program went to a student referendum, in which a majority of students voted for a mandatory U-Pass. As a result,





UBC Campus Plan show eight local areas for neighbourhood planning.

transit ridership to and from the Point Grey campus increased by 168 per cent between 1997 and 2008.²⁸

It is important to note that during this period, UBC's daytime population increased from 42,300 in 1997 to 57,650 in 2008. Because of the increase in the daytime population, solo driving to and from campus has declined by only 6 per cent, which is well below the projected 20 per cent. As this suggests, the majority of mode-shift has come from students who carpooled in the past. In fact, at UBC, car-pooling has declined by 49 per cent since the implementation of U-Pass.^{28 (p.12)} This is not surprising, because "car poolers" represent "low-hanging fruit" for TDM initiatives. And yet, this reduction in driving has had a remarkable impact on UBC's campus.²⁹ Thanks to student participation in the U-Pass program, UBC has removed 3,000 parking spaces from its Point Grey campus, which the University has replaced with residential developments.

FROM PARKING LOT TO PLAYGROUND

Since the late 1950s, the largest surface parking lots at UBC have been located in

Today, the Mid-Campus Neighbourhood bears little resemblance to the wind-swept, surface parking lots which dominated the site only seven years ago.

the southern section of campus, which is a considerable distance from the university's academic core. When the TDM program reduced the demand for parking, UBC converted these parking lots into a residential neighbourhood, which includes a guaranteed portion of student housing. As one campus plan put it:

"The phasing of the Mid-Campus Neighborhood and changeover of surface parking lots will reflect the reduction of commuter vehicles as transportation demand policies of the STP (Strategic Transportation Plan) are implemented over time."³⁰

The *Official Community Plan* said UBC would create a comprehensive community plan and individual neighbourhood plans to guide development on campus. Spanning 78 pages, the *UBC Comprehensive Community Plan*³¹ established the framework with which all development applications at UBC were processed. The sophistication of these plans deserves

attention. Aside from the conventional setbacks, plot ratios, and height restrictions, the *UBC Comprehensive Community Plan* contains guidelines for different features, including bicycle facilities, sustainable building materials, recycling and garbage facilities, street lighting, street landscaping, parking access, community facilities, and transportation choice. For example, the *Mid-Campus Neighborhood Plan* states, "a primary element of this neighborhood will be its reduced reliance on automobile use."³² To accomplish this goal, the plan stipulates the parking places allocated to each housing type. Specifically, the plan states that "market residential townhouses" have two parking spaces per unit, whereas "faculty and staff townhouses" have only one space per unit as well as 0.1 spaces per unit for visitors. In addition, each apartment has one space per unit as well as 0.1 spaces per unit for visitors.

"For all buildings where parking is provided in a common parking garage or area . . . a second parking

space may be made available to building residents for an additional payment or fee . . . a second space shall not be included in the base purchase price.”³² (p. 24)

As a result, some residents now buy apartments without a parking space.³³ Today, the Mid-Campus Neighbourhood bears little resemblance to the wind-swept, surface parking lots which dominated the site only seven years ago. At the moment, a greenway divides this medium-density, “neo-traditional” neighbourhood. At the northern entrance are a playground, community centre, and coffee shop. Across the street is a bus stop for the “community shuttle” that takes residents to the main transit exchange. From a planning perspective, this TDM program and the developments it facilitated represent an impressive achievement, which further enhances Vancouver’s reputation as a model of good planning practice.³⁴

UNIVERSITY CITY

By reducing the demand for parking on campus, this TDM program is transforming UBC campus into a “university city” similar to the one its founders envisaged in 1910. On the other hand, it seems UBC planners now face a new challenge, specifically the expansion of its TDM program to include new campus residents. At the moment, UBC’s new neighbourhoods resemble

islands of transit-oriented developments (TODs) surrounded by a sea of wide roads and sprawling land uses. Even though there are plans for a new 6,000 m² shopping complex in the South Campus neighbourhood,³⁵ there are no significant retail facilities in most new neighbourhoods. As a matter of fact, most new residents remain “automobile-dependent”, according to the technical definition of that term. Steve Briggs, a senior employee at UBC Parking, says he receives many requests for institutional parking permits from neighbourhood residents. When asked why they want a parking permit, UBC’s new residents say they often “have appointments on and off campus during the course of a day.”³⁶

By far, the largest new neighbourhood is in the South Campus area, which is a 2 km walk from the main transit exchange. The *Comprehensive Community Plan* estimates that 3,978 of the estimated 6,798 new UBC residents will live in the South Campus neighbourhood.³¹ Given the high annual rainfall and the limited transit service in that area, it is unlikely that South Campus residents will walk the 2 km to the existing transit exchange.³⁷ If UBC fails to integrate this housing into the transit system, the new residents will undermine the existing TDM program by driving to, from, and around campus. The *UBC Comprehensive Community Plan* states that the university may “consider a secondary transit exchange at the South

(right) View of Hawthorne Place/Mid-Campus Neighbourhood, UBC .

Campus Village Centre once demand for transit through campus increases.”³⁵ Unfortunately, research suggests that TODs must set aside land for future transit facilities or face large challenges in the future.³⁸

In spite of these challenges, this research suggests that UBC’s TDM program provides an important example for other “commuter campuses” and “commuter suburbs”. In the academic literature, some critics argue that universities possess unusual powers over transportation and land use, which, in normal cities, reside with many different institutions. This fact, critics argue, makes such TDM programs inapplicable in normal cities.³⁹ First of all, this is an argument for more planning rather than less planning; and, moreover, this argument ignores the fact that universities are among the biggest industries in the developed world. In their book, *Planet U: Sustaining the World, Reinventing the University*, Michael M’Gonigle and Justine Starke point out that university educations are one of the largest exports that developed countries produce. At the very least, these authors believe that universities provide an experimental space in which architects and urban planners can demonstrate what is possible. With effective regional governance, this research suggests that a TDM program, consisting of unlimited transit passes, increased transit service, and expensive parking, can transform parking lots into residential neighbourhoods. This “virtuous circle” is presently transforming UBC Vancouver from a “commuter campus” into a “university city”. ■

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