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Modular Lotting: The Trelawny Experience

By Tom McKay

While en route to a Crime Prevention Through Environmental Design (CPTED) assessment in the north-west corner of the City of Mississauga, I stopped my unmarked police vehicle a few years back and ran to the trunk of my car. There, I retrieved a camera and began to snap pictures.

What caused a trained police officer to react in this fashion? Had I stumbled on a duty bound incident that I just couldn't drive by? The answer lies in the visual impact of a proactively designed community. The answer lies in the unique design of the Trelawny development.



What's so special?

As a Police officer who specializes in CPTED, I know that the physical environment can have a tremendous influence on the way we see and react to our surroundings yet is most often recognized at the subconscious level. Trelawny provokes a more cognitive response by strategically focusing neighbours around pockets of defensible space.

How is this done?

At the heart of the Trelawny development is the concept of modular lotting. Modular lotting distinguishes itself from conventional lotting in a number of significant ways.

On a neighbourhood scale, modular lotting provides a transition between public and private space. It accomplishes this by laying out a series of short hammerhead cul de sacs which exclusively services the residents in a way that's protective of them (outside vehicles have little incentive to enter the cul de sac as they must either turn around on a narrow street or enter a private driveway). Perceived both as a semi-public area and a mini neighbourhood, this distinctive form of cul de sac is a naturally "defended" space.

On a street scale, modular lotting acts as a system whereby the main emphasis is placed on the grouping of lots over any single component. This gives rise to an extremely powerful streetscape

whereby the lots and homes found on the cul de sacs are uniformly angled towards the common street entrance. It also maximizes the frontage of the individual lots and homes, creates a natural "gateway" formed by the position of the first two houses and is responsible for the arrangement of homes into a virtual gauntlet of "natural surveillance"--a design strategy that is directed primarily at keeping intruders under observation--the conscious recognition of which caused me to stop my car.

Benefits of Trelawny

Trelawny homes capture a maximum of space and light on all four sides of the buildings as a result of their staggered and offset nature. In the process, the homes achieve a more traditional balance between the dwelling and garage, and the side yards "appear to disappear" as "the space generally accrues to the visually common defensible or private outdoor space"¹ as indicated on the accompanying diagram

Further benefits result from the use of angled lots. This maximizes the use of outdoor space by providing all properties, even corner lots, with a proper back yard space. It also brings together the front yard spaces of the last two homes located at the end of the cul de sac.

Collectively these design features minimize the loss of privacy, as Trelawny back yard spaces are visually shared by a maximum of three neighbours versus the five found in conventional lotting. It also extends the green space in front of the homes and provides visual relief to an area that's traditionally been dominated by an asphalt circle.

Other benefits result from the use of short hammerhead cul de sacs. Their limited length and dedicated nature naturally limits the speed and traffic volumes. This greatly reduces the chance for serious pedestrian/traffic conflicts which encourages the residents to use the roadway for spontaneous neighbourhood events.

As important as these benefits are, Trelawny also manages to avoid the pitfalls characteristic of 1980's style conventional lotting. It was a strong desire to avoid these pitfalls, including small, dark, dysfunctional side yards and dominantly placed garages, that led Team Three--Mississauga based Planning Consultants, to research and develop the Trelawny subdivision modular-lotting design.

A CPTED analysis

Crime Prevention Through Environmental Design is based on the belief that the proper design and effective use of the built environment can lead to a reduction in the fear and incidence of crime as well as an improvement in the quality of life. CPTED works by helping "various disciplines do a better job of achieving their primary objective with the added by-product of improved security and loss prevention".² Put another way, crime and loss are seen as by-products of a human function that is not working properly.

Given this understanding, Trelawny was developed in a manner that's consistent with application of CPTED principles. In the process, a number of superior opportunities for natural surveillance, natural access control and territorial reinforcement were created.

This resulted in:

- homes that facilitated natural surveillance on all four sides of the buildings and maximized overlook opportunities of the street and its common entrance,
- streets that prevented flow through traffic by limiting access to a single entry point, and
- neighbourhoods that promoted an unusually strong, and perceptible, proprietary interest over the common road areas by using house numbers to label relatively short and narrow cul de sacs that lacked public sidewalks and restricted the number of units.

Collectively these factors provide residents with the ability to see and recognize strangers and resulted in the street being seen and treated as a semi-private space.

Modular lotting also proved itself in the larger context. This is readily apparent along Tenth Line West, a major collector in the city of Mississauga, where Trelawny style homes are featured on one side of the street and conventional style homes on the other.

In the Trelawny development, homes are arranged in a series of short blocks along the major collector. This creates a walkable, pedestrian friendly environment that is well overlooked by the end units.

This landscape is in direct contrast with the conventional style subdivision on the other side of the street. There the homes are laid out in a reverse frontage fashion. This creates a number of negative effects including the development of an extremely unfriendly pedestrian environment where privacy fences line long unbroken blocks and homes turn their back to the street.

Measuring Success

In 1989, the City of Mississauga commissioned a Goldfarb report "to develop a thorough understanding of the attitudes and opinions of people living in the Trelawny development".³ The study was undertaken to check public opinion prior to the release of a later phase of the project.

The report was very encouraging. It found that "93% are very or somewhat satisfied with the Trelawny development and the cul de sac concept, and would prefer to live on a Trelawny street than on a conventional street". In addition, "almost nine in ten say that compared to other conventional subdivisions, the Trelawny development is safer for their children".⁴

Among the majority of Trelawny residents who prefer the Trelawny development over other more conventional developments, the main reason given is the amount of privacy provided. Other reasons in order of frequency included the look of the street, more social interaction, neighbourhood preference, less traffic/no congestion, shape of lots, overall concept, original/unique and limited number of people.

When asked for dislikes or disadvantages, the greatest single percentage of people, 29%, had no dislikes or disadvantages to report. This was followed by 24% who said that the houses were either too close or the lots were too small, a number which is partially offset by 14% of people who said that they either liked the lot lines or its unique shape and a further 4% who liked the space and didn't feel close in.

Reductions in Crime

With the development now largely established, a comparative crime analysis was undertaken by Mark Howard, a graduate student at the University of Guelph, Master of Landscape Architecture program. Howard conducted exhaustive research on the Trelawny development and a comparable, conventionally designed subdivision that completely surrounded the development. Using 1995 as a base year, Trelawny style homes were found to represent 17% of the housing stock in this area.

Comparing break and enter, theft of and theft from motor vehicle statistics for the area, Trelawny style homes accounted for 9% of the break-ins, 4% of the theft from motor vehicles and 0% of the theft of motor vehicles in 1995. Put another way, the conventionally styled subdivisions accounted for a disproportionate 91% of the break-ins, 96% of the theft from motor vehicles and 100% of the theft of motor vehicles as compared to 83% of the housing stock.

The results for 1996 through 1998 continued to be impressive. During 1996, Trelawny style homes accounted for 4% of the break-ins, 5% of the theft from motor vehicles and 5% of the theft of motor vehicles. In 1997, Trelawny style homes accounted for 4% of the break-ins, 4% of the theft from motor vehicles and 9% of the theft of motor vehicles. And in 1998, Trelawny style homes accounted for 7% of the break-ins, 3% of the theft from motor vehicles and 0% of the theft of motor vehicles.

While the Goldfarb report and statistical analysis quantify and substantiate the benefits associated with Trelawny, anecdotal evidence is needed to substantiate the reaction I spoke of earlier.

The Trelawny Experience

Confirmation of people's strong response to the physical layout of the Trelawny development, comes from a variety of sources. I first noted a significant reaction when two police officers who, after seeing pictures of the Trelawny development in a CPTED class, decided to take a first hand look at the development. When asked for their reaction the very next day, they advised their classmates that they felt as if they were walking into private space when they entered the cul de sac. I have since witnessed this reaction a number of times, as I regularly conduct tours of the site with planners and police officers.

In the most noteworthy example, I conducted a mobile bus tour for a group of planners from the Association of Collegiate Schools of Planning (ACSP) and Association of European Schools of Planning (AESOP) Joint International Congress held in the City of Toronto during the summer of 1996. The tour of neighbourhoods and CPTED sites remained on schedule until we reached the Trelawny development at which time an unscheduled photo opportunity was requested. This

resulted in the remainder of the trip having to be cancelled as congress participants wished to remain on site for the balance of the tour.

On yet another noteworthy occasion, I projected an image of the Trelawny development to demonstrate a point at the International CPTED Association conference in Orlando, Florida. I subsequently received a number of requests for a copy of the slide, the most notable of which was from Randy Atlas, a renowned architect and criminologist.

Some Final Thoughts and Comments

Despite its success, the Trelawny development is unlikely to be repeated in its present form. This principally results from the introduction of large, one-man recycling and garbage trucks that make it difficult to manoeuvre within the 10 metre cul de sacs without regularly backing up. As this manoeuvre is awkward and can be potentially dangerous, future developments in the Trelawny style will undoubtedly require modification of the turning radii or perhaps the evolution of the concept towards the accommodation of more grid pattern streets.

Regardless of what future form developments take, the important aspects of the Trelawny experience should be encouraged to evolve as a model for CPTED planning into the next millennium.

1. Modular Lotting Building Envelope Handbook, 1984 -- Trelawny Project Team & First City Development Corp. Ltd., p. 5.
2. Crime Prevention Through Environmental Design, 1991, T. Crowe, p. 48.
3. The Trelawny Development - A Summary Report, 1989, Goldfarb Consultants, p. 2 (Residents' Survey).
4. Ibid, p. 13.