Urban planners and designers have identified a series of necessary qualities for a public place to be considered good:
- density
- legibility
- mix of uses
- diversity of users
- public realm quality
- etc…
Some public places are better than others. Better means… used by more people? Enjoyed by more people?
Why did William H. Whyte, Jan Gehl, Lofland, Appleyard and others observed the public realm?

To document and learn if there is a relationship between the built environment and the way people use it.
Calgary as our case study

Eras of development correspond to types of neighbourhood design

Eras of development

Private Vehicle/Auto Oriented
- 1990-2000
- 1981-1986
- 1976-1980
- 1971-1974
- 1962-1969
- 1952-1960
- 1940-1950

Transit+Pedestrian Oriented
- 1923-1932
- 1904-1914
- 1884-1900
Eras of development and neighbourhood block pattern

Private Vehicle/Auto Oriented
- 1990-20
- 1981-19
- 1976-1980
- 1971-1974
- 1962-1969
- 1952-1960
- 1940-1950

Transit+Pedestrian Oriented
- 1923-1932
- 1904-1914
- 1884-1900
We have discovered walkable neighbourhoods are more conducive to a higher degree of physical activity.

Self-reported health questionnaire
Self-reported health questionnaire

And more potential social interactions
3.3.5 Chaparral

Spatial Structure Synthesis - Chaparral was designed around a central lake and was marketed as a unique neighbourhood. It is bordered on two sides by highways and wide buffers, and on another side by the Bow River valley. The south edge has potential for additional development. The block pattern is curvilinear and hierarchical, subdividing into a series of primarily laneless “loops and lollipops”. Each of the loops forms a semi-private enclave of single family houses, most with front garages dominating the street. Two very small commercial strip developments are found near the neighbourhood entry points. There are only two ways into/out of Chaparral by car, and no practical pedestrian connections to adjacent areas. The largest green spaces are associated with the two schools and lake recreation centre (a private amenity), and other parks and tot lots are dispersed throughout. There are no churches or other cultural facilities.

Residents Mapping - Chaparral’s block structure concentrates vehicular traffic on the internal collector, with pedestrian circulation on only a few of the local roads. Destinations are the commercial centres, and the recreation centre. The school green spaces and a few parks were identified as being important. The large buffer green space to the north was not identified as having any use, neither was the green space parallel to the Bow River. Respondents frequently identified neighbours’ houses as destinations.
Residents Mapping

- The grid block pattern provides a range of choices for residents through the neighbourhood. Residents identified numerous destinations, mostly spread along 10th Street and Kensington Road. Other destinations are dispersed through the neighbourhood.

3.2 Urban Form and Social Interaction

This section compares the spatial structure maps completed by the study team (in each case on the right hand side) and the mapping exercise submitted by residents as part of the survey (on the left hand side). It shows the relationship between the structure of each neighbourhood (land uses, block structure, amenities, and community nodes) and how the residents actually use the neighbourhoods for social interaction. In all cases there is a strong correlation between the spatial structure as mapped by the study team and the activity patterns as reported by the survey respondents.

3.2.1 Hillhurst

Spatial Structure Synthesis

- Hillhurst is well connected to its surroundings. Major streets, the LRT, and the river path system provide linkages for many modalities of travel. Hillhurst has a permeable grid block pattern and most blocks are laned, further increasing the range of choice of routes. Commercial development follows the main street model, and is concentrated along 10th Street, Kensington Road, and 14th Street. These have become destination streets and 10th and Kensington are known for their pedestrian quality and unique retailers. These streets are situated within the neighbourhood, not on the perimeter, and there are good linkages to them. Schools, churches, and other community facilities are spread throughout the neighbourhood. There are several additional nodes of activity, including the Safeway grocery store, the Plaza Theatre, Riley Park, the Community Centre, and the Recreation Centre and swimming pool.
The student walkshed

Smartphone data for a year

Over 230 participants with years-worth of location data

Billions of points with metadata

Speed filter

Measuring movements
Using the GPS in our pockets
How can we observe and analyze the interaction of people and the street-wall?
How can we observe and analyze the interaction of people and the street-wall?

Stephansplatz, Vienna
Photo by Francisco Alaniz Uribe

Stephansplatz, Vienna
Photo by ViennaGIS
Computer vision and video tracking

Video tracking of a mouse showing linear movement patterns and heat map using EthoVision XT. Photo by Noldus
Video recorded at an altitude of 140m using a UAV DJI Mavic Pro
Ethical questions arise:

Privacy    Safety    Misuse of research tools (government, others)
Next Steps

Virtual Reality and modelling

New technologies…
THANK YOU

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