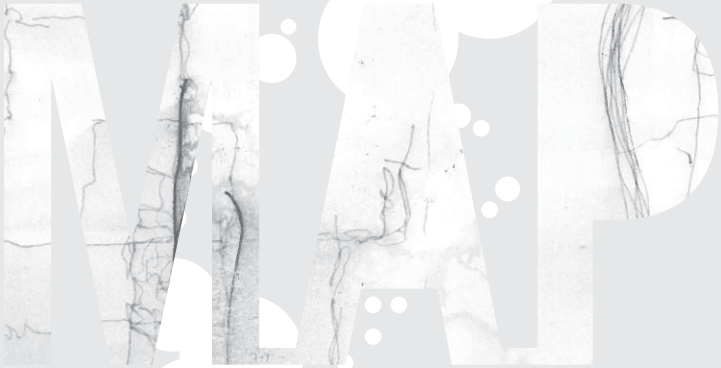
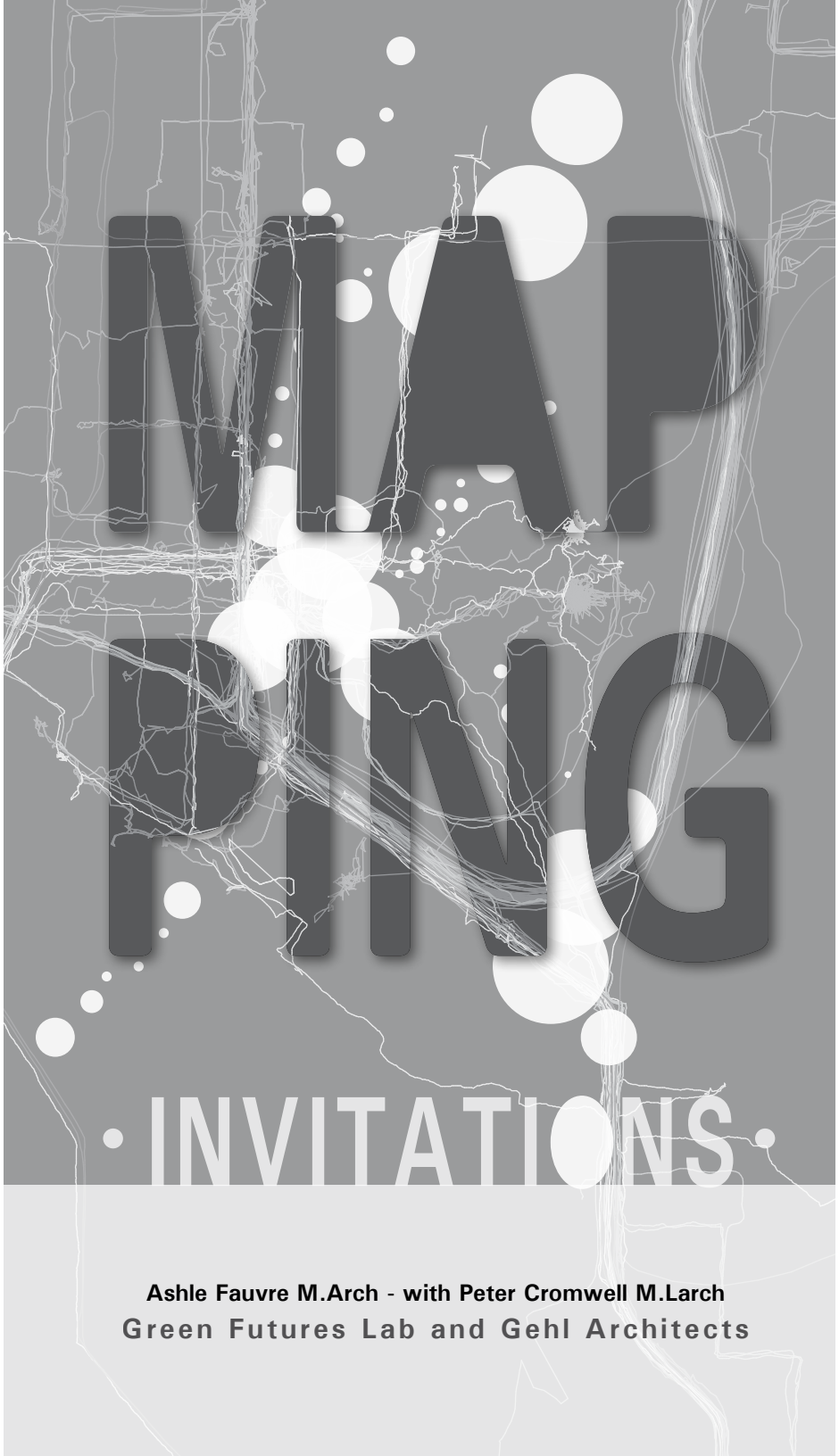


•INVITATIONS•

Ashle Fauvre M.Arch - with Peter Cromwell M.Larch

Green Futures Lab and Gehl Architects



Ashle Fauvre M.Arch - with Peter Cromwell M.Larch

Green Futures Lab and Gehl Architects

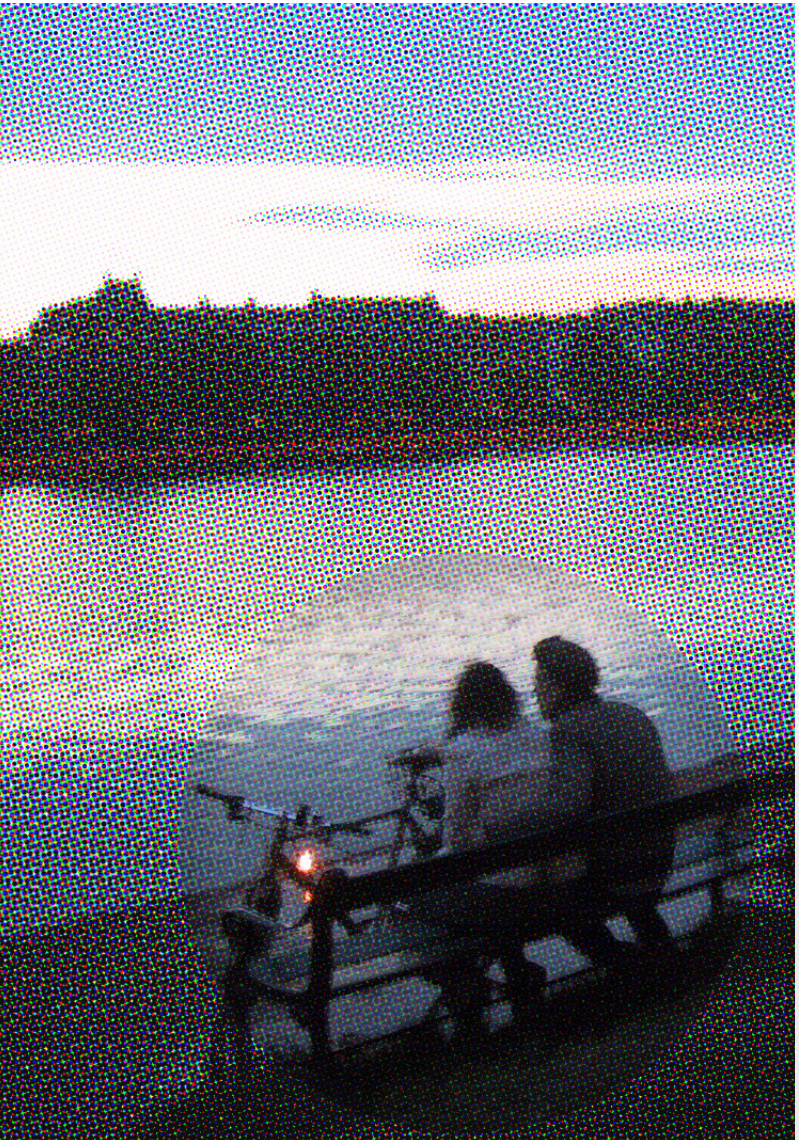
Ashle Fauvre M.Arch - with Peter Cromwell M.Larch

Green Futures Lab and Gehl Architects

Ashle Fauvre M.Arch - with Peter Cromwell M.Larch
Green Futures Lab and Gehl Architects

A project of the **Green Futures Lab**,
with the support of
the **Scan|Design Foundation**.
Developed at the offices of **Gehl Architects**
under the advisement of **Nancy Rottle**,
University of Washington
College of Built Environments.
2012-2013.

With thanks to the **UW Transportation Dept.**
for donating GPS units used in the survey
and to the students of
the 2012 BE Lab on Landscape Urbanism
for their cooperation.



Copenhagen Harbor, Lars Gemzøe, 2005

Did you ever come across a little spot in your neighborhood that you just found, by accident, and as you lingered, you found yourself leaning on a ledge or sitting on a bench under a tree? As time passed, you realized that you were meant to be there. Someone had set up this situation for you to walk along and take a break. A city lasts in one's memory due to the quality of moments like these: invitations to linger in the public realm.[1]

"People respond to the invitations they receive"

Gehl Architects is an urban quality consultancy. They offer services to **measure, test, and refine** the positive qualities of urban spaces in order to improve city life for people. Seeking to better understand not only the ways in which quality can be measured in city life but also the means by which such measurement is integrated into a business model, this project takes up the topic named by the office **"urban invitations."**

We are all participants in the making of the city. Urbanists and theorists since the 1960s including Michel de Certeau, Henri LeFebvre, Pierre Bourdieu, and Jane Jacobs, have analyzed the geographies of this co-creative project as a confluence of individual agency and social capital. How does this manifest in urban form? In the 1970s, Jan Gehl (and others of his generation) proposed a methodology for looking at the relationship of public space and public life that is easy to understand and difficult to argue with.

Today, what we define as public, as well as our ability to observe, measure, and monitor it, continues to transform. We each carry tracking devices with us in our phones and other personal devices. Together we are decentralized, moving, storehouses of data.

What Does The Digital Mapping Of People's Movement Add To Our Understanding Of Public Space?

To explore this question, we designed two surveys. We collected data from underexploited sources—specifically location data—volunteered from smartphones, cell phones and GPS units. One survey focused on where invitations in the urban built environment were perceived based on geo-location. The other focused on anecdotal markers identified by participants as inviting or drawing.

"See Something or Say Something": Istanbul, Turkey
Eric Fischer

Locals and Tourists

In the data visualization by Eric Fischer at left, the red dots correlate to the spot where a photo has been taken and posted on Flickr, while blue dots indicate the location from which someone has posted a tweet on Twitter. White dots indicate people who have done both. Fischer speculates that the people who tweeted are probably locals, while the people who posted a photo are tourists. Fischer has analyzed a sampling of major world cities using this algorithm. Istanbul in particular reveals a strong localization of either red or blue activity. Red activity dominates the historic core and sprinkles out through the greener, lusher northwest region, while blue activity is strongest over residential areas. While for the most part, it seems that the photographers give the tweeters a wide berth, there is a striking linear territory running roughly from the northeast to the southwest, where, if we are to believe Fischer's conjecture, locals and tourists meet. The graphic suggests that aspects of our behavior can be measured and mapped to reveal somewhat hidden or overlooked aspects of the city and our inhabitation of it.

Hypothesis:
the richness of a city
can be measured by
the quality of its invitations
to linger in public space.

We perceive and process space differently when we are tourists than when we are at home. As visitors, small synecdochal details emerge, filling in a growing understanding of the whole. Fischer uses Flickr photographs to sample this behavior. At home, we usually have a gestalt understanding of our place and its routes. That there is a tendency to speak, tell, and opine rather than capture is suggested in the correlation of tweet locations and residential neighborhoods.

Fischer's graphics provide a detached overview of many global cities. In the project covered in this white paper, we explore the behavioral differences of locals and tourists in two cities, from the eye level of a small group.

The survey participants were 24 students in a cross disciplinary studio at the University of Washington College of Built Environment led by Nancy Rottle and Jim Nicholls. In the first survey, the students were visiting Copenhagen, many for the first time, as part of the course. Everything they saw was novel and fresh. The survey was short, lasting about 15 minutes in duration.They perceived the world like ants, examining everything closely, and responding to invitiations that the city environment posed. In contrast, the second survey took place over the course of the rest of the semester, when the students had returned to their base in Seattle, and other destinations. The second survey was longer, and captured their daily commute to school.They perceived the world like birds, contributing to an overview of the rhythm of movement in the University District, around which their commute centered.

An invitation to inhabit an edge,
Jordan Lewis, 2012

Copenhagen

In Copenhagen, the students huddled at a single spot in an open plaza above a train station. In groups of three, students were assigned a cardinal direction and given a set of rules. They were asked to nominate a navigator (responsible for a GPS unit and a general awareness of their position and direction), a wanderer (who chose the route by seeking quality), and a journalist (who took photos and notes). After approximately 3-5 minutes, each group was asked to settle into whatever space was available, document this space, and then return with a short qualitative description of what had attracted them to stay and linger for a while.

Student responses covered a range of spatial qualities as attractors. These included: marks of life, mutability, play, mystery, invitation, spontaneity, sensory experience, comfort, enjoyment, street life and energy, among others. The students also identified the spatial elements that captured their attention, these included: a mural, a swing set, seating along a canal, sidewalk cafe, tree canopy, a courtyard, the noise beyond a closed gate, a cemetery, a sunny window seat on a busy corner, grape vines, and a railing snugly decorated with variegated knit-work.

From their analysis, we have extracted three novel and site specific qualities for further thought: Mystey, Play, and Change. The analysis that follows is also illustrated in a short video, linked below.

Click ant to view movie

A sense of mystery: a closed door on the street with a keyhole looks into a private courtyard. Sounds of playing and shouting can be heard beyond. Emily Perchlik, 2012.

An invitation to play in a semi-public courtyard, Ivy , 2012.

These three qualities were extracted because they can be used to summarize urban practices unique to Copenhagen but translatable to Seattle.

Mystery: Some groups were attracted to semi-private spaces. In Copenhagen, at the (first) Christianshavn Station walk, one group found an open gate that leads into a courtyard. The gate is closed at night, and various boundaries prevent casual entrance. These include changes in level, a high relative degree of enclosure, and the evidence of care. The space is clean and neat, with additional touches such as potted plants or statuary. Finally, there was evidence of daily life including children's toys and laundry hanging on lines. When entering a semi-private space, one crosses multiple boundaries and therefore tends to behave as a guest. There is a sense of mystery as to whether one truly belongs there or is allowed to be there, which conditions a visitor to be on good behavior, yet also heightens curiosity and interest.

Play: Several groups found invitations in the built environment to play. These included clear signs, such as play structures or swing sets, and also more open-ended human-scaled built structures or furniture, which ask one to find or imagine a way to interact with it. These pieces are clearly public, usually installed by the municipality or with a clear intention that they be used by any passerby. They cause a change in behavior, as one transitions from moving to stopping. More generally, the transition goes from one focused on direction, goal, and the general details of the surroundings, to one honed particularly on one's own body and the physics of its interaction with the furniture. Perception of surrounding details goes from general to non-existent. In other words, invitations to play suggested by structures can be very legible and accessible. However one interacts more with the play equipment than with other people or with the surrounding context. In a way this is a kind of semi-private experience: the player can easily communicate to others that she is playing alone and is not seeking interaction. In fact, it would likely be more difficult to encourage others to interact in this scenario than to encourage them to stay away.

A quality of mutability and change along a bridge, Betsy Anderson, 2012.

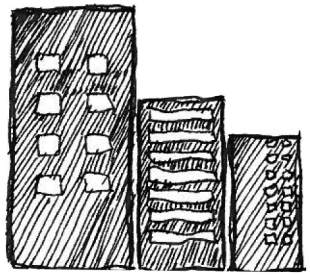
The photos in this section were captured by students as part of the survey in Copenhagen.

Change: Another common response involved spatial elements that indicate the passage of time. They included paintings on exterior walls (murals or graffiti) that could be changed easily, a temporary and un-condoned knit-work installation, a colorful fruit stand or flower stall in which the goods must be replaced every day according to perishability and demand, and outdoor seating for a sidewalk café, only in fair weather. These temporal elements are directly affected by the evidence of care. The fruit and flowers must be curated to imply freshness and variety, and they must be stacked according to their unique geometry and density. Painted murals, graffiti, or temporary and unregulated interventions tends to show wear over a short period of time and must be maintained, also these outdoor installations lose freshness as their message permeates the local subconscious, and therefore they must be changed to impart meaning or energy.

Click bird to view movie

Seattle

In Seattle, the goal of the survey was to determine how people circulate in the University District (next to the University of Washington) in order to create recommendations for the master planning and re-zoning of the neighborhood. This assessment anticipates the expansion of Seattle's light rail system, which will open a new station in the U-District in 2021. The survey was offered through an open call for participants. It was marketed as story about an invisible network of individuals using active transport. These individuals do not yet know that the network exists in their everyday actions, but nonetheless they are part of a movement that resists the status quo. The narrative plays on the desire common to the demographic (students) to belong to something cool, edgy, and technology-oriented.



We advertised in coffee shops and by visiting classrooms over the summer. We incentivized participation by offering gift certificates to shops and services popular with our targeted user group, including cafes, bike stores, and the university book store. However we received little interest. Perhaps we misunderstood the demographic available in a college town during the summer. Or perhaps the marketing outreach and budget was conceived at too small of a scale and didn't make a clear and convincing argument.

Marketing and Budget

12
Garmin GPS units

donated for first time use by UW DOT, a value of $1275

20
$5 gift cards

donated by 4 local businesses: University of Washington Bookstore, Cafe Solstice, Allegro Cafe, and Recycled Cycles. Listed in order of participant preference.

5
$20 gift cards

donated by 5 local businesses: Cafe Solstice, Allegro Cafe, University of Washington Bookstore, and Recycled Cycles and R&E Cycles.

other expenses

included printing costs, batteries for GPS units, cost of running cell phones and smart phones. Software for producing the films was also donated by Gehl Architects for the project.

20
people
were rewarded.
by recording five or more trips.

Why did they do it?

3 *for* **duty**

5 *for* goal setting

instant 12 *for*

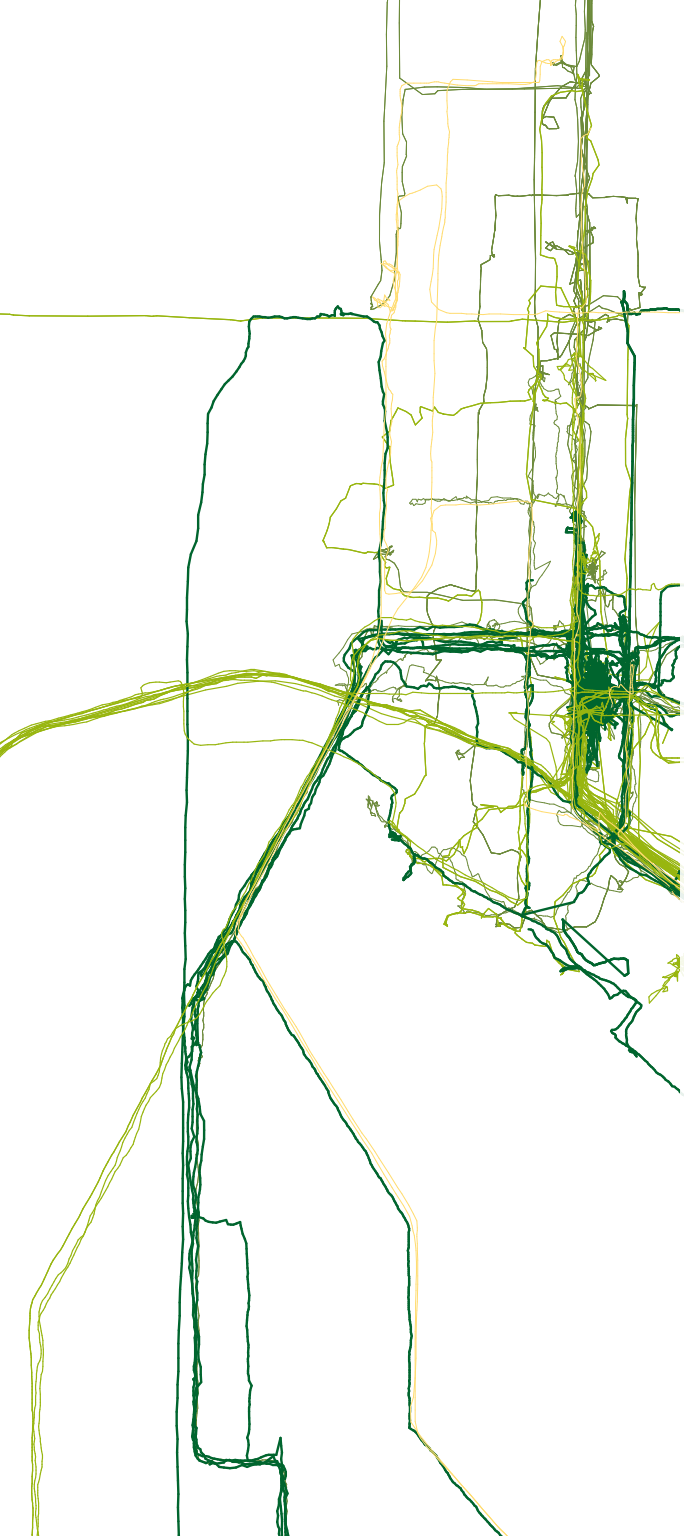
gratification

GPS or smartphone?

With few signed up as smartphone survey participants, we focused on mobilizing the students in the multidisciplinary studio. We petitioned for and received a donation of GPS units from the University of Washington Transportation Department. With the help of the students, we conducted a GPS and smartphone survey for two months. Students were asked to download an app[4] and to record their commute to and from school, or any directional movement that they predicted would last longer than 1 minute. The GPS units assuaged the issue of barring potential participants through non-smartphone ownership. In the end, the best data was recorded on the donated units: it seems it was easier to remember to use them. Additionally, data was uploaded all at one time, rather than in the case of the app, where participants had to choose whether to upload periodically or after every recording. Even those who used smartphones tended to record in large batches (ie once a month), so the flexibility of the app actually seemed to offer too many choices. The app selected for the survey hosted multiple platforms (iPhone, Android, etcetera). Although it was advertised to work on cell phones, no one used this option successfully. [5]

Motivation factors

Student participation was roughly pyramidical. A few (3) commited completely to the survey, likely motivated by altruism or a sense of diligence and duty, and submitted data from almost every day of the two months. Several (5) completed the task requisite for minimum reimbursal, which was 5 commutes for one $5 gift card. The rest (12) downloaded the app but registered few or sporadic data. As it turned out, people are much more difficult to motivate than we originally predicted.[6]



5 Lessons for an Effective Survey

1. **Find a captive audience**
   and eliminate initial barriers to participation
2. **Create a collection**
   of participants. The demographics of the participants should reflect the site.

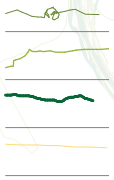
Distribute

3. **GPS units.**
   Those who borrowed a GPS units reported more than those who used their own device.
4. **Continuously motivate**
   participants: keep people involved in the process by connecting with them often and showing them results.

Understand the

5. **grain and scale**
   of the technology, and use it to frame the study question.

Results of a 2 month survey: higher speeds produce straighter lines.

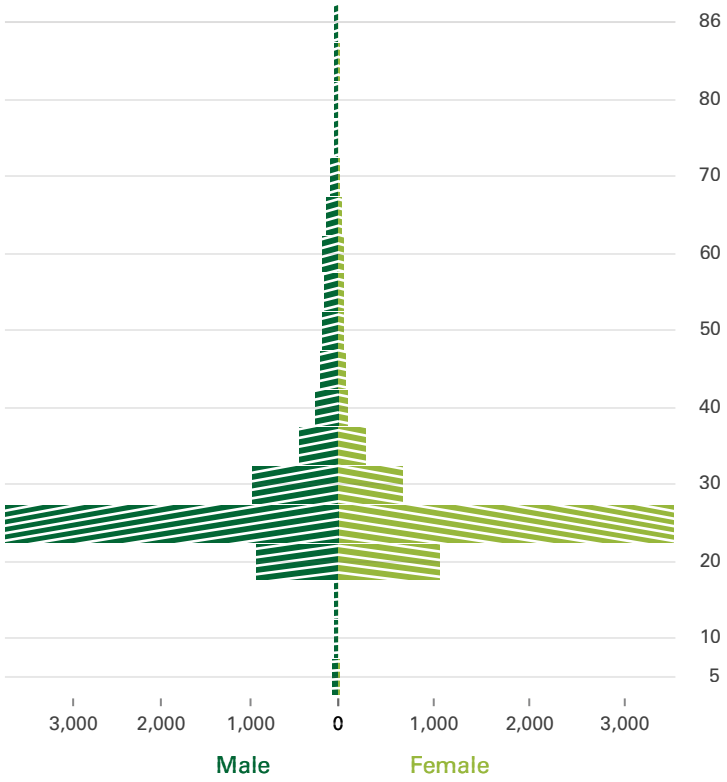


Bus

Bike

Walk

Car



Age and Gender in the University District

- *80% of residents between 19 and 29 years of age*
- *2% are under the age of 18*
- *2% are 65 years and older*

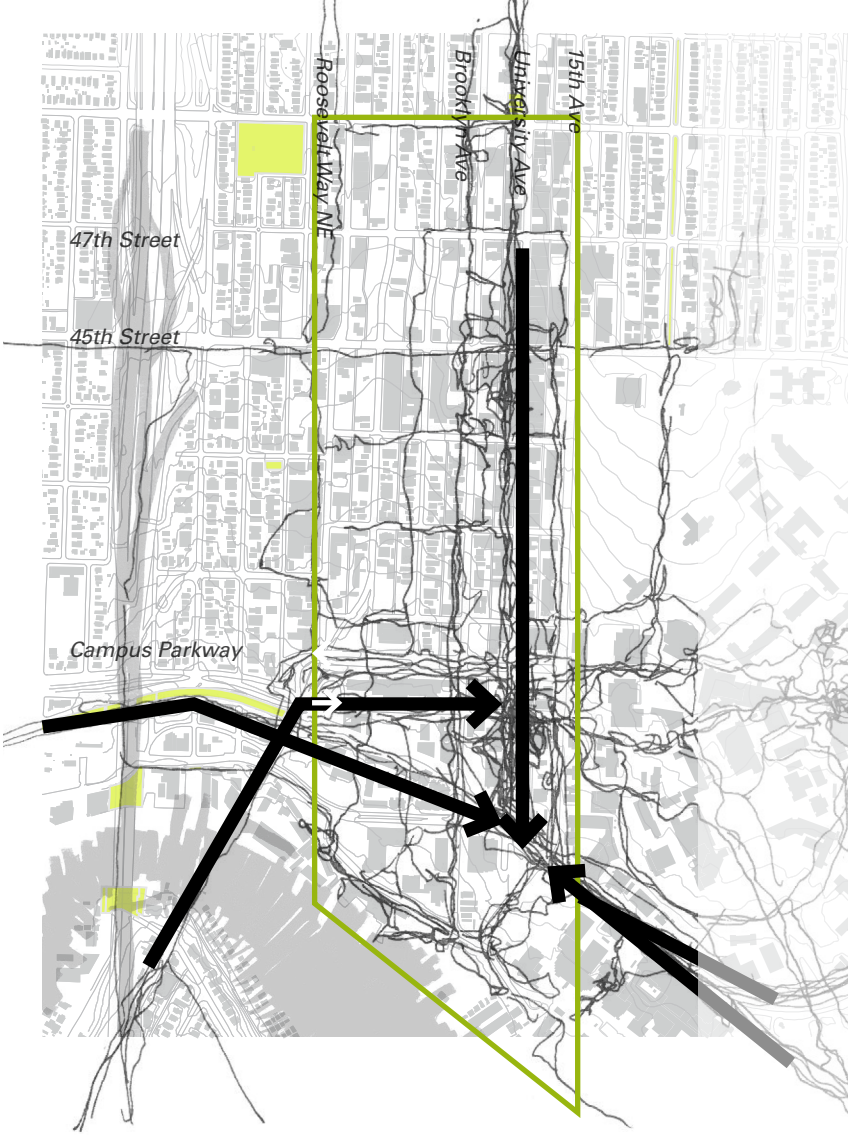
From DPD University Existing Conditions Report

Was the survey inclusive? Of whom?

This survey was initially designed to rely on smartphones for gathering data. But who owns smartphones? Are smartphones only accessible to the young, the educated, and the elite? Does a smartphone survey limit the demographic of participants, misrepresenting movement patterns?

In this case, the answer is no. Reviewing market penetration statistics gathered from both consumer reports and a national survey,[3] in general those who own smartphones are under 50, earn more than $30,000 a year, and are likely to live in an urban or suburban area. However, in this particular case the demographics of smart phone users spanned a broader age range than that of the site residents, which was dominated by these ages 19-29.Therefore, it was reasoned that the smartphone survey was not likely to exclude significant numbers of potential participants.

Though the site is dominated by college aged students, neighborhood advocates tend to belong to the smaller 29-59 age group. They may own a house and be raising children, and their main destination may be different than that of the students. To this end it must be noted that the urban fabric should accomodate a wide range of modal types and speeds.



Natural boundaries (Lake Union and I-5 freeway)

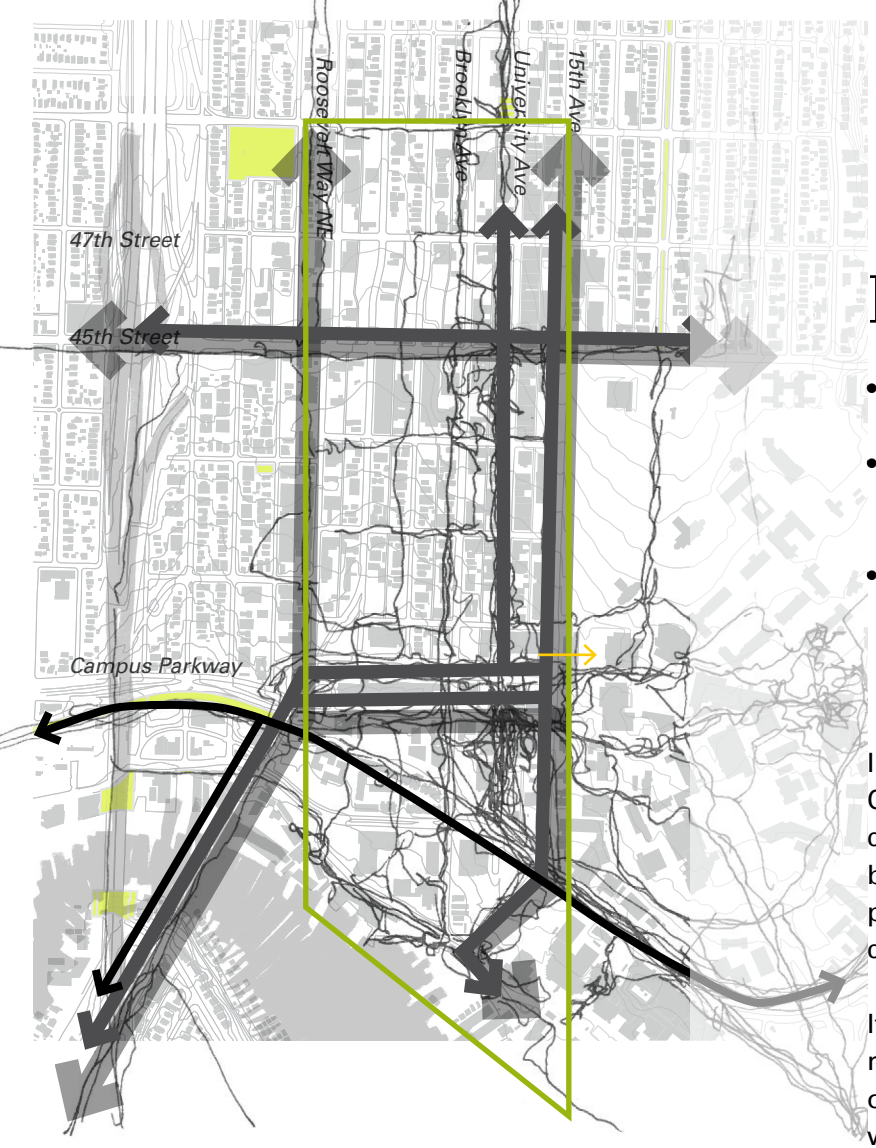
Study area

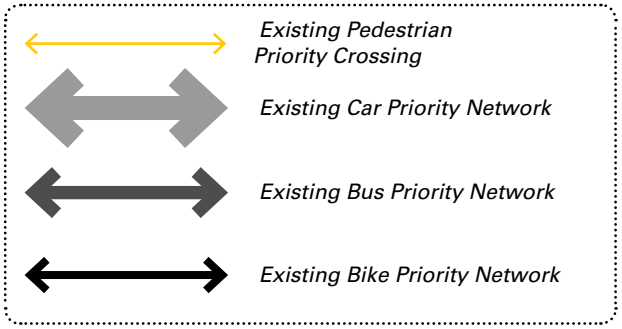
Main access patterns of survey participants.

For further analysis of the relationship of age and gender to active mobility, please see Peter Cromwell's research on cycling and passive social interaction, here.

As it turns out, our survey roughly reflects a proportional representation of the district's demographics related to age and gender. The district is dominated by 80% between the ages of 19-29, with around 13% aged 29-39 and 4% aged 39-59. The majority of participants, who were in the 18-29 age range, navigated to school by bike, bus, or foot. Those in the 29-39 range cycled, and the student in the 39-59 range used all four modes, occasionally parking on campus.

This survey suggests that while cars still have a limited role in the U-District, the majority of the users in the district would benefit from improved biking and walking infrastructure.



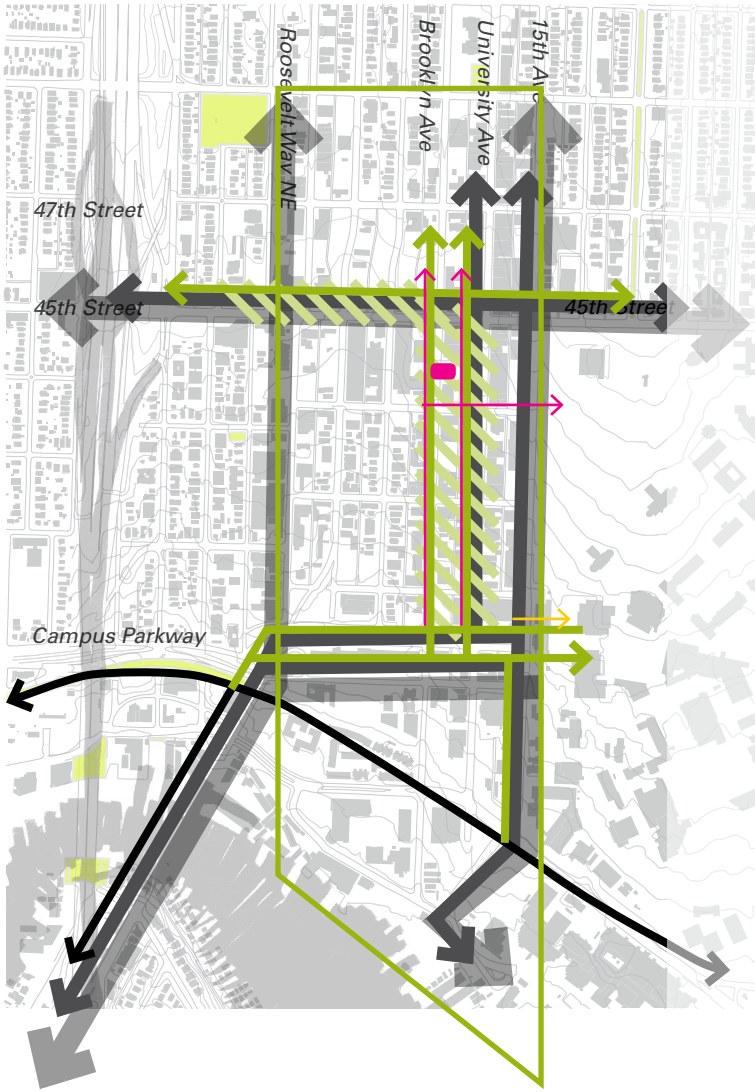


Findings

- Although the busiest and widest streets are 15th Ave and 45th St, few transitted in these arterials on their daily commute.
- Those living west of the freeway typically filter down to the Burke Gilman Trail because there are few bridges over I-5 freeway.
- Although the residential neighborhood between the I-5 freeway and Brooklyn Ave is shady and pleasant, only one person recorded walking through the neighborhood in the 2 month survey.

In fact, the preferred streets for circulation in the district were Campus Parkway and University Avenue. Campus Parkway carries buses to and from downtown. University Avenue is the business corridor of the neighborhood. It is accesible for bikes, pedestrians, and buses, unlike 15th Avenue, where travel can be freeway paced.

If this study were to continue, the next step would compare numbers of cyclists counted on the Burke Gilman to numbers of transit riders deboarding on the site, to see the extent to which investment in cycling and walking infrastructure (such as improved sidewalks, designated, protected, well-branded bike lanes, bike parking, or pedestrian priority streets) would be preferrable to investment in bus-related infrastructure (this could include waiting places, increased service, wayfinding tools, or bus-priority streets).



Brooklyn Light Rail (2021)

Recommended Extended Bike Network

Recommended Pedestrian Priority Network

Recommended Business District

Recommendations for Improving the University District

- Many people are using bikes, and of these many use the Burke Gilman.
- Those cyclists who do not use the Burke Gilman likely live in the northwest quadrant of the site, yet east of the freeway.
- The streets most in need of great bike infrastructure are 15th St, University Ave, 45th St, and 50th St.
- The place to start are the streets already preferred by pedestrians and cyclists, Campus Parkway and University Ave.
- University Avenue has an opportunity to become a limited car access street, increasing slow movement and retail vitality.
- Currently 15th Ave forms a strong boundary to what should be a permeable campus. Consider strategies directing cars to Roosevelt.
- 45th St is dangerous and unattractive yet provides connectivity to neighborhoods further west. Providing infrastructure for bikes and business incentives to encourage the east-west retail corridor could be a game changer for the District.
- Create pedestrian priority streets on axials to transit station to improve street hierarchy. A direct, safe, and convenient link to campus from the light rail station would really make an impact.
- There is an opportunity to create a bike parking and light repair facility in the proposed transit station to make it a truly multi-modal hub.
- With the coming lightrail station, University Ave and Brooklyn could form a pair of bikeable, walkable streets, drawing the public life of the campus from east to west.

Measuring Success

215
people
heard about
it first hand.
from speaking to the surveyors, seeing a flier, or receiving an email or facebook invite.

42
people
responded.
by downloading the app and signing up on the web site.

38
people
participated.
by recording at least one trip.

5
people
won big.
receiving a $20-$25 gift certificate

Least miles
for reward
2.46 mi

Davis Hammer *logged the minimum for a gift card, 5 trips.*

Most individual
trips
13 trips

Natalia Chetverina *is a dedicated pedestrian*

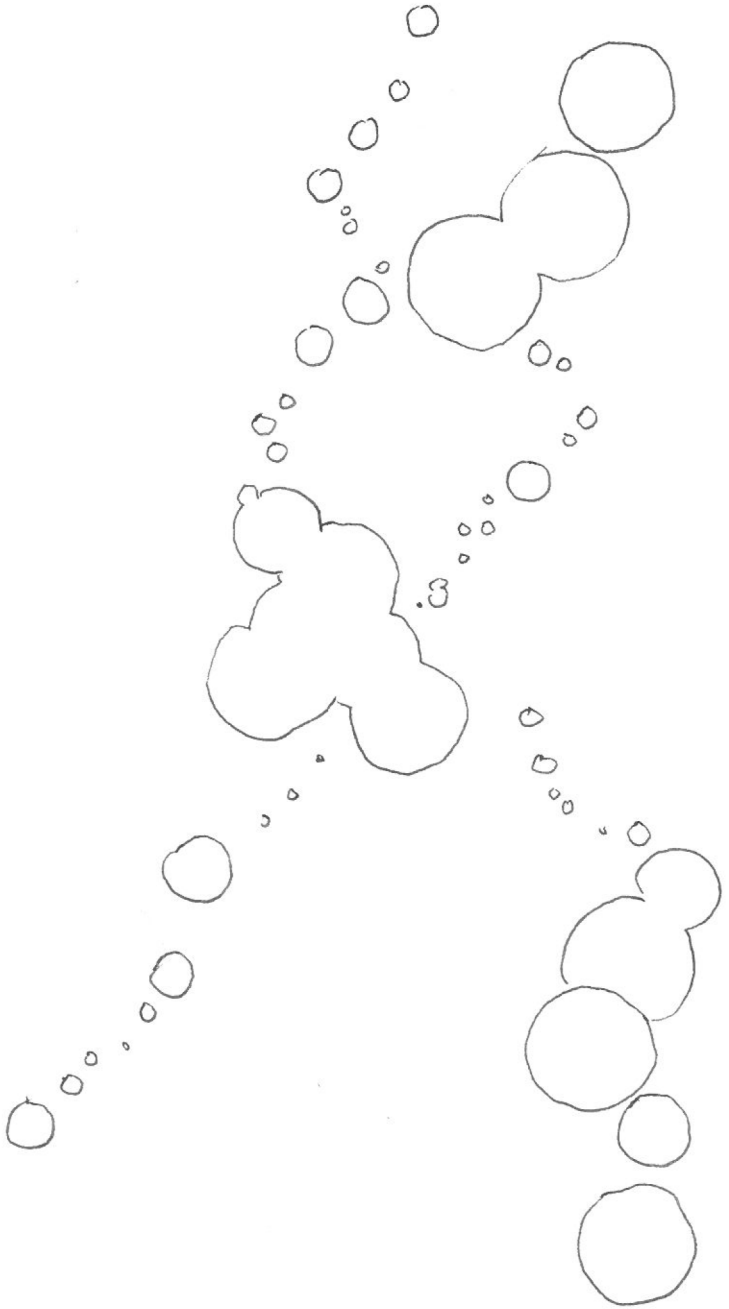
Most miles
logged
448.16 mi

Mike Schwindler *is a semi-professional cyclist.*

Biggest impact
9080
data points
Leann Andrews *logged the most data points within the site boundary, using a GPS unit.*

Greatest variety
of modal choice
4 modes

Stephanie Farrell *moves through the city in many ways*



Visualization

Data was captured via GPS or smartphone. Every 5 seconds, the device sent a signal to a satellite, which sent back a coordinate set (latitude and longitude) which was recorded by the device in a file. Upon receiving the data, it was converted (from a .gpx file to comma separated values) into a format legible by Microsoft Excel. From here, the data could be checked for correct formatting, and imported into Grasshopper, the parametric modelling plug-in for Rhinoceros (a CAD based 3D modelling program). In Grasshopper, the data was cleaned (erasing error points occuring in improbable locations due to inaccuracies in the communication between satellite and device). Latitude and longitude data was visualized to give an impression of speed. Points were analyzed for their proximity, and assigned an inversely proportionate radius, such that large circles and small circles centered around each data point. Points that were closer together appeared larger, and overlapped, while points that were further apart appeared smaller.

When the points were animated, the varying sizes simulated the way ink flows from a pen. Using Grasshopper and MovieMaker in Processing, short stop-motion animations of each route were created. These animations were batch imported into AdobePremiere where they were set against a green screen filter (to erase the native background environment of the Rhinoceros software) and overlaid to create an impression of a starburst in the case of the Copenhagen survey, and an invisible network in the case of the Seattle survey.

By overlaying data captured from a variety of modes, we were able to illustrate a "rhythmanalysis." This term was coined by Henri Lefebvre in an essay added posthumously to his well known book *Space, Time and Everyday Life*, and offers a metaphor to understand the city both as a series of unrelated parts, and as something more than the sum of its parts.

Click to view movie

Conclusions

When we started this research, the idea of "invitations" was understood as occurring primarily in the physical built environment. In the case of the survey we conducted in Copenhagen, we were able to study the perception and qualification of eye-level invitations in the medieval city. The hope was that the Seattle survey would be parallel enough to be able to compare the two. The initial goal was to compare invitations in the medieval city versus invitations in the grid city. However, there were many base level variables that complicated the comparison. Besides the city fabric, the length of time differed, and with it the level of engagement varied wildly. Having a captive audience (the students enrolled in the studio) ensured that the survey could actually happen. Perhaps the true mode of comparison is this: while the Copenhagen survey occurred mainly in the physical world, much of the Seattle survey occurred in the digital realm.

Although it was intended to measure baseline movement in the University District before the coming of the transit station, in reality the survey became a narrative about our relationship with the digital realm in everyday life.

How might digital devices add to our experience of public life?

Each time we use a smart phone, cell phone, credit card, et cetera, we are constantly producing and exchanging data. This data is a waste product that could be used to reveal insights of human behavior. “Big Data” is a resource, however, we lack methods to make this data tangible, meaningful, and accessible. We empathize with the natural process of a flower growing from a seed, blossoming, wilting, and dying. We can see it, we understand that the same happens to our own bodies in their way, and so the knowledge is practically intuitive. Could our sensibility for the digital world and the data we produce become available to us? Could it become as intuitive, tangible, and perceptible as our sensibility for the physical world? In this study, the visualization method related speed to the way ink flows from a pen. When the pen moves quickly, the line is thin and straight. When it moves more slowly, the line become fat and wobbly. The intent is to create an experience with which the viewer can empathize. Although the animation is highly processed and relies on technology whose use requires special training, the visual metaphor represents an experience shared by any who has held a pen.

Can digital devices provide new types of invitations to engage with the built environment?

As smartphones gain ubiquity, drop in price, and spread through the population, people will continue to use their devices as a way to check in with an abstract world of their own construction: connecting with friends and family over great geographical remove. While the scale of a city may feel isolating, or the number of its inhabitants feel crowded, understanding invisible relationships within the city and to one another builds a kind of community, a specific social capital of connectedness.[7]

When people in the public realm check in with friends online, do they check out of public life? If everyone were on their device for the entire time that they were in the physical public realm, public life may well suffer. Are there ways of being in public space that are positively mediated by online networking and socializing?

The rhythmanalysis illustrated in this study proposes one possibility. It posits that the construction of social capital relies on intuitive and empathetic design both in the built environment and in the services and invitations that wind through it, entertaining, cajolling, or inviting us to observe, wonder, or even engage.

Links to additional analyses

1. For a longer description of "natural gravity" click here
http://glf-scandesign-internship.tumblr.com/post/37326326187/natural-gravity

2. For a more detailed analysis of the student responses to their urban encounters in Copenhagen, visit here
http://glf-scandesign-internship.tumblr.com/post/56067511547/student-responses-to-natural-gravity-survey-in

3. For a selection of current market statistics on smartphone usership and demographics, click here for the Edison consumer report, here for the Pew Survey, and here for the Nielsen consumer report.

4. For our survey of the best and worst GPS apps to install on your smartphone, visit our project blog here
http://glf-scandesign-internship.tumblr.com/

5. For more details on the survey click here.
http://glf-scandesign-internship.tumblr.com/post/27577330379/why-help-us-track-circulation-in-the-u-district

6. For further analysis of this survey in Seattle, visit here
http://glf-scandesign-internship.tumblr.com/post/56067910023/tracing-the-university-district

7. These insights were developed in conversation with Interaction designer and scholar Isabel Froes.
For more on Froes, visit here
http://glf-scandesign-internship.tumblr.com/post/56068346616/gehl-architects-and-interactive-design

For 10 things Seattle can learn from Copenhagen about cycling visit here
http://glf-scandesign-internship.tumblr.com/post/34631926689/copenhagen-takeaways-a-work-in-progress

For a list of resources for further study, click here.
http://glf-scandesign-internship.tumblr.com/post/56067332706/mapping-invitations-resources-for-further-study

View the video, Invisible Rhythm, here
http://www.youtube.com/watch?v=aaskee5msxo&feature=youtu.be

View the video, Tracing Copenhagen here
http://www.youtube.com/watch?v=34utq_bwNzI&feature=youtu.be

"We will prioritize daily urban life highly while at the same time creating the possibility for the secret, the eccentric, and the temporary to flourish."

-Gehl Architects,
A Metropolis for People