

# Exploring the arrogance of space with

## What the Street!?

---

Senseable City Lab, MIT, June, 2017

Michael Szell

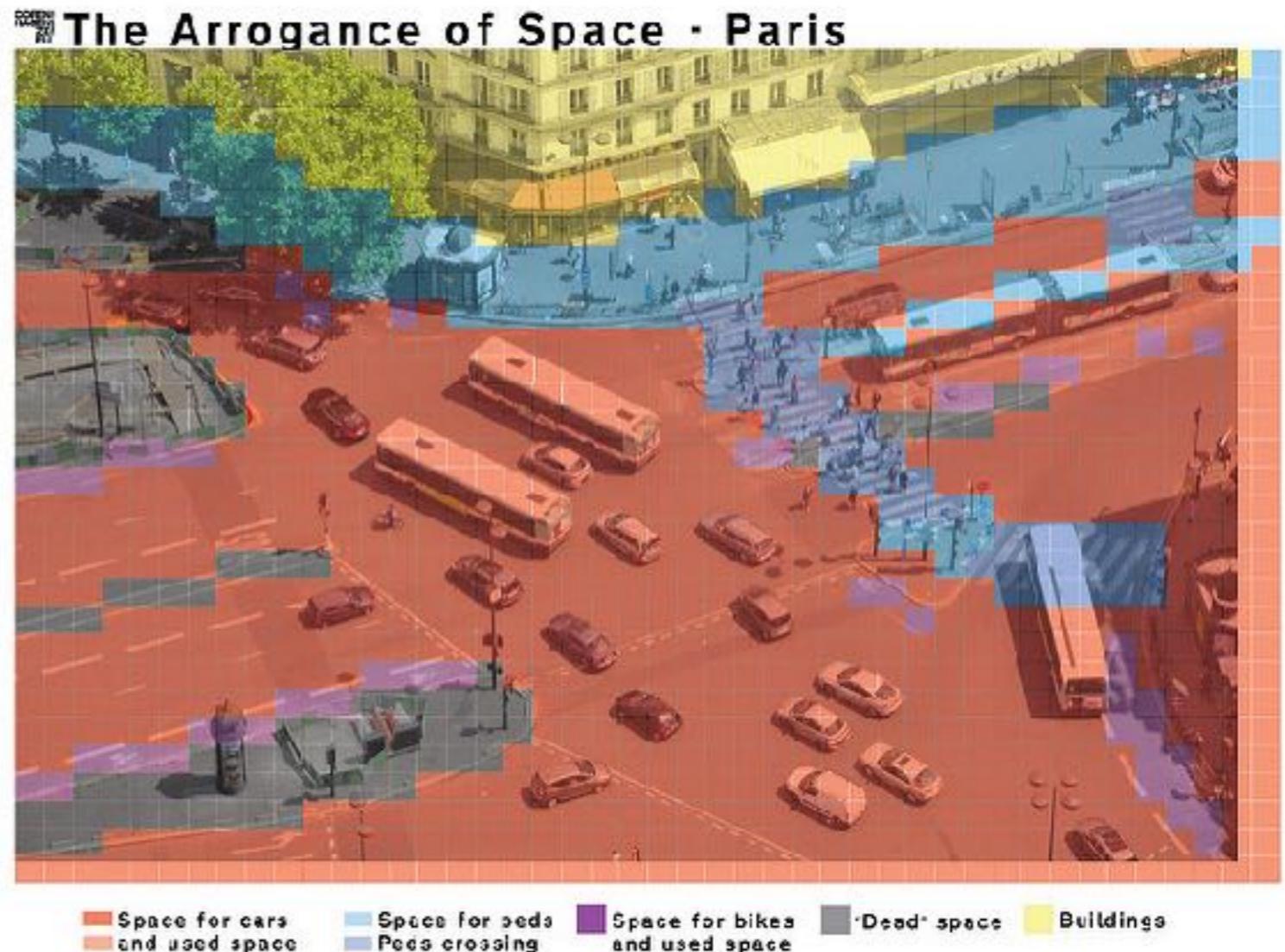
@mszell

with: Stephan Bogner, Benedikt Gross, Tobias Lauer, Anagrama, Tilman Häuser,  
Raphael Reimann, Daniel Schmid, Joey Lee, Johannes Wachs, Thibault Durand



# The arrogance of space

Space is not distributed fairly between modes of transportation



# The arrogance of space

Case study:  
Copenhagen



Arrogance of Space - Copenhagen. A Section of Hans Christian Andersen Boulevard

■ Motorized Vehicles ■ Bikes ■ Pedestrians ■ Shared Space ■ Bus ■ Non Transport Space ■ Zebra Crossing ■ Trains

And this is the  
best place in the  
world for bikes!

Modal Share for Copenhageners Commuting to Work/Education



Allocation of Transport Space in Copenhagen



COPENHAGEN  
IZE  
EU



Really!

Cars are used 36 min per day

Cars are not used 1404 min per day

Cars are used 36 min per day

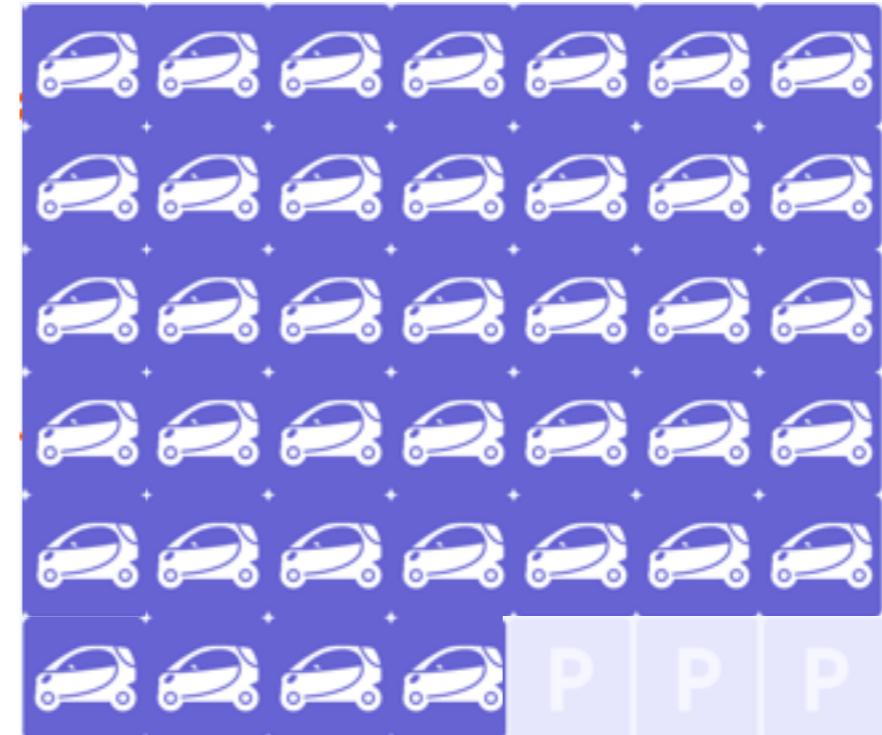
Cars are not used 1404 min per day

A typical snapshot of Berlin

30,000 cars moving



1,200,000 cars parked



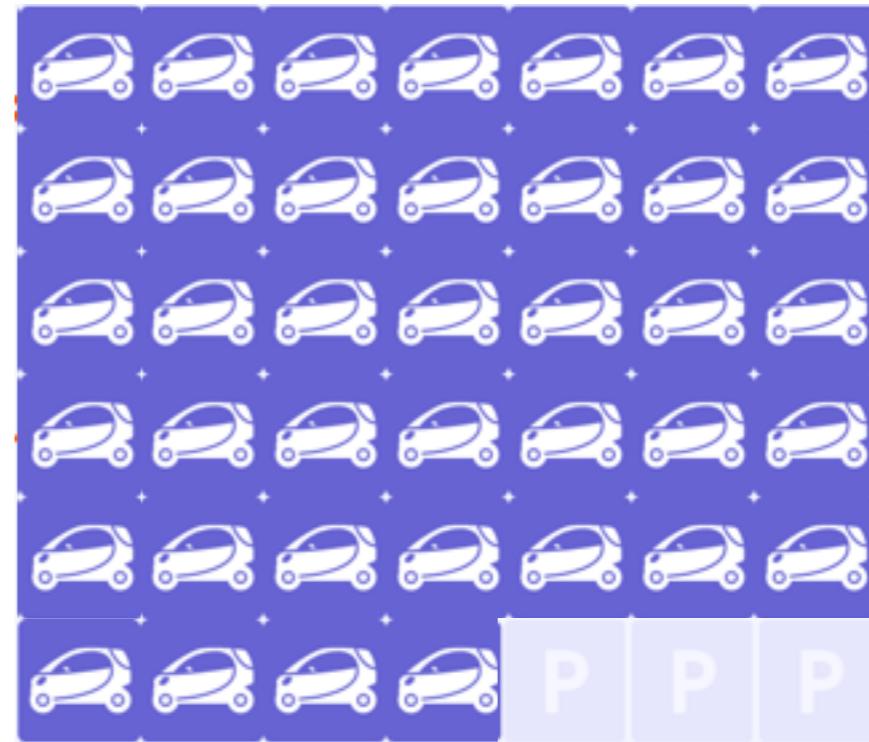
Cars are used 36 min per day

Cars are not used 1404 min per day

A typical snapshot of Berlin

1,200,000 cars parked

64,000 = 4x  
Playgrounds  
*CENTRAL PARK*

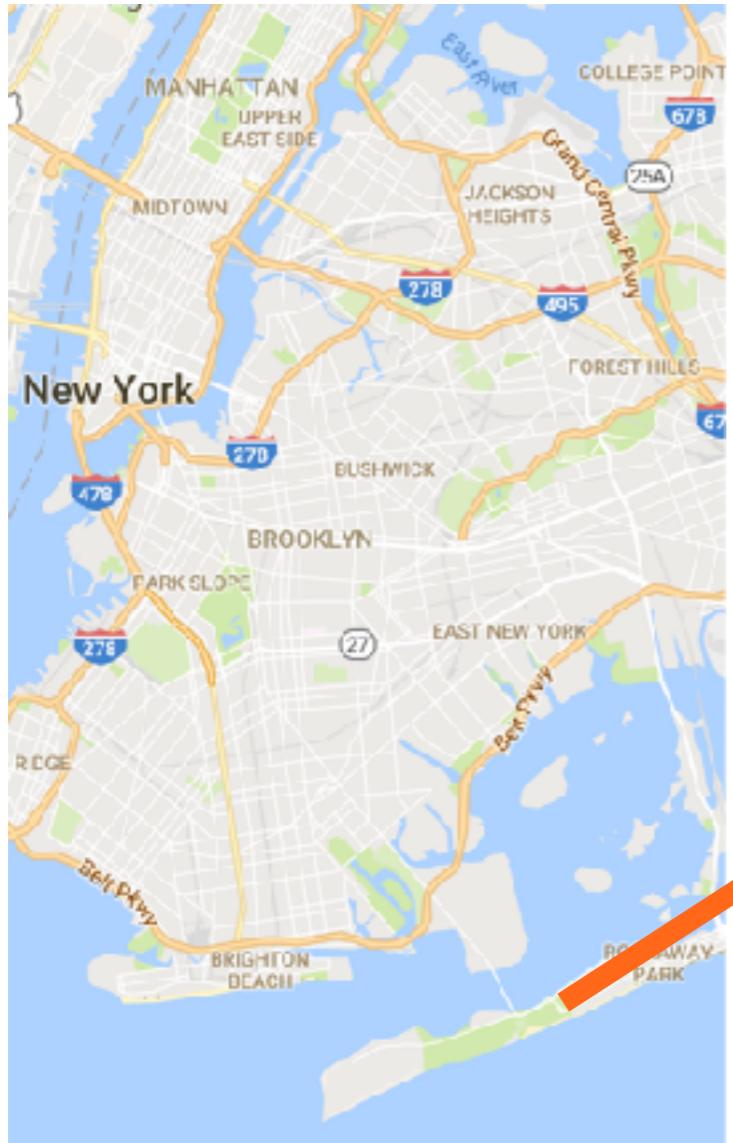


How does all of this space look like?

How can we get it back?

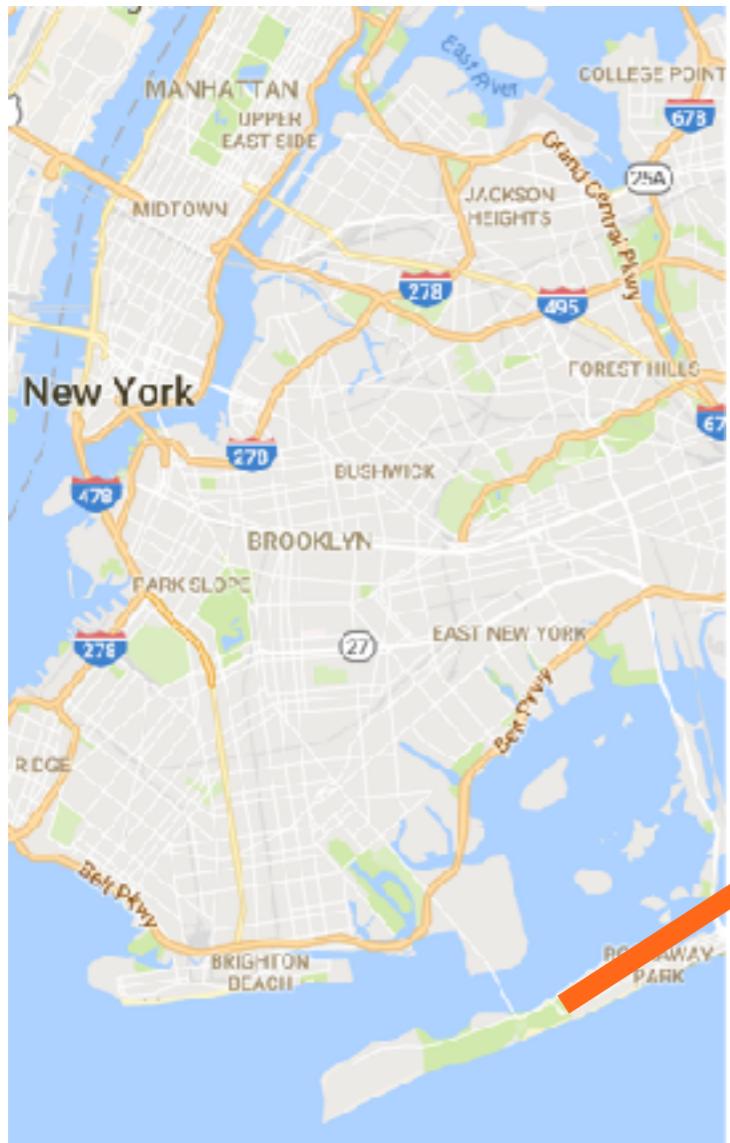


Szell, Bogner, Grož, Lauer, Hauser, Reimann, Schmid, Lee, Wachs, Durand & Anagrama



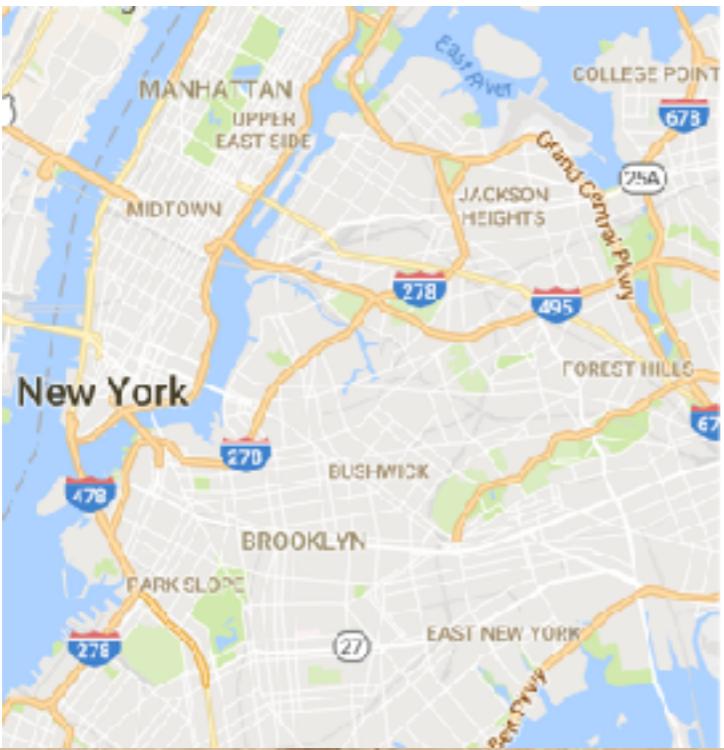
What a lovely green..



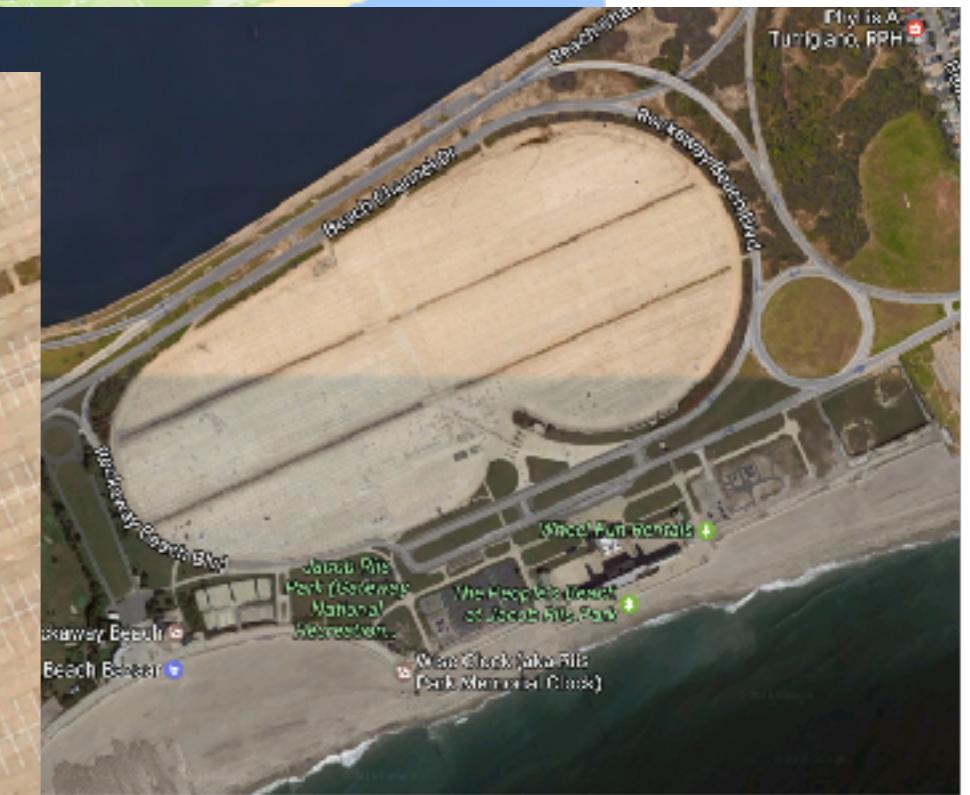
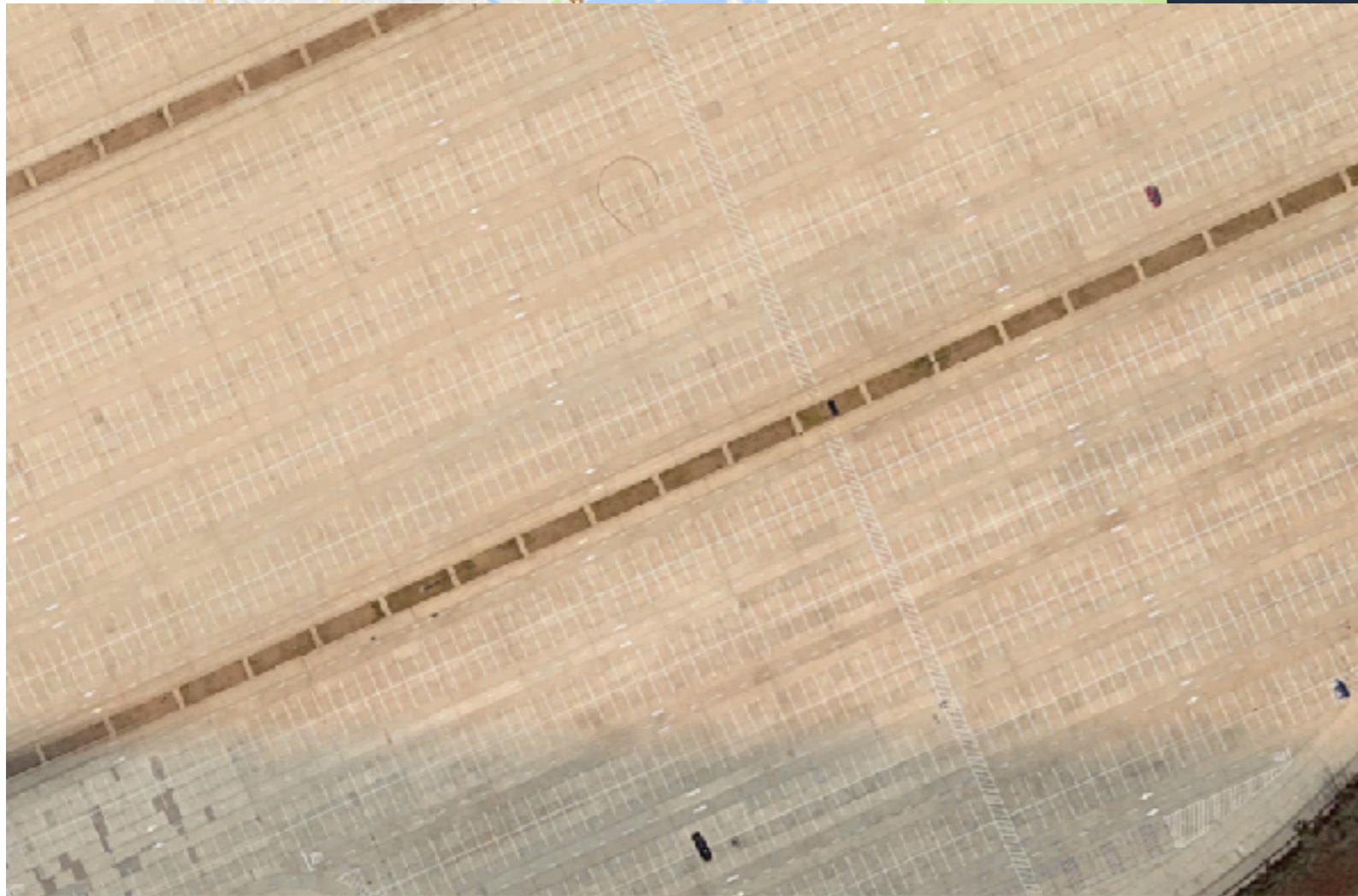
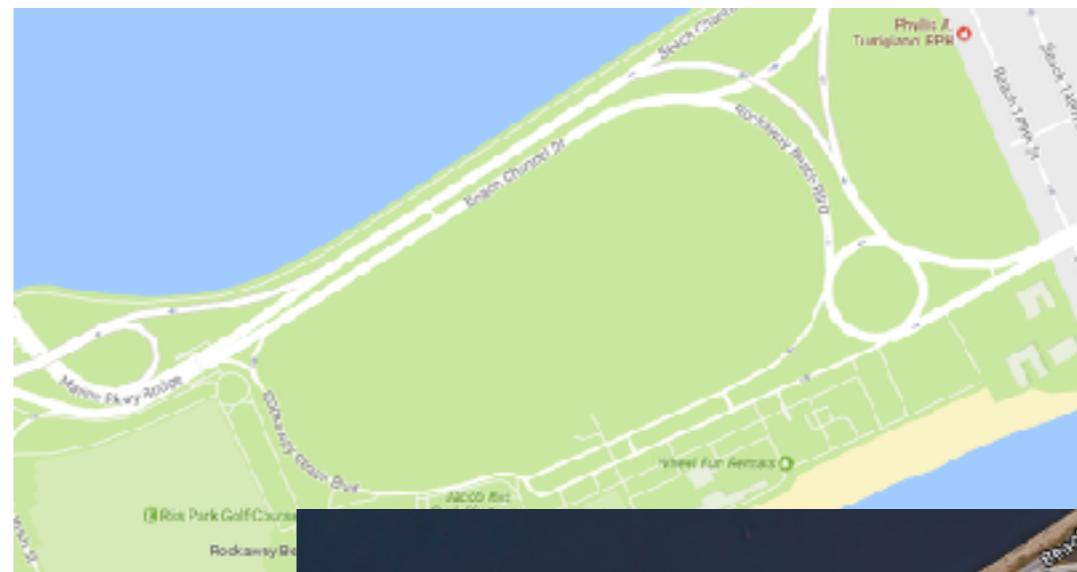


What a lovely ~~green~~..

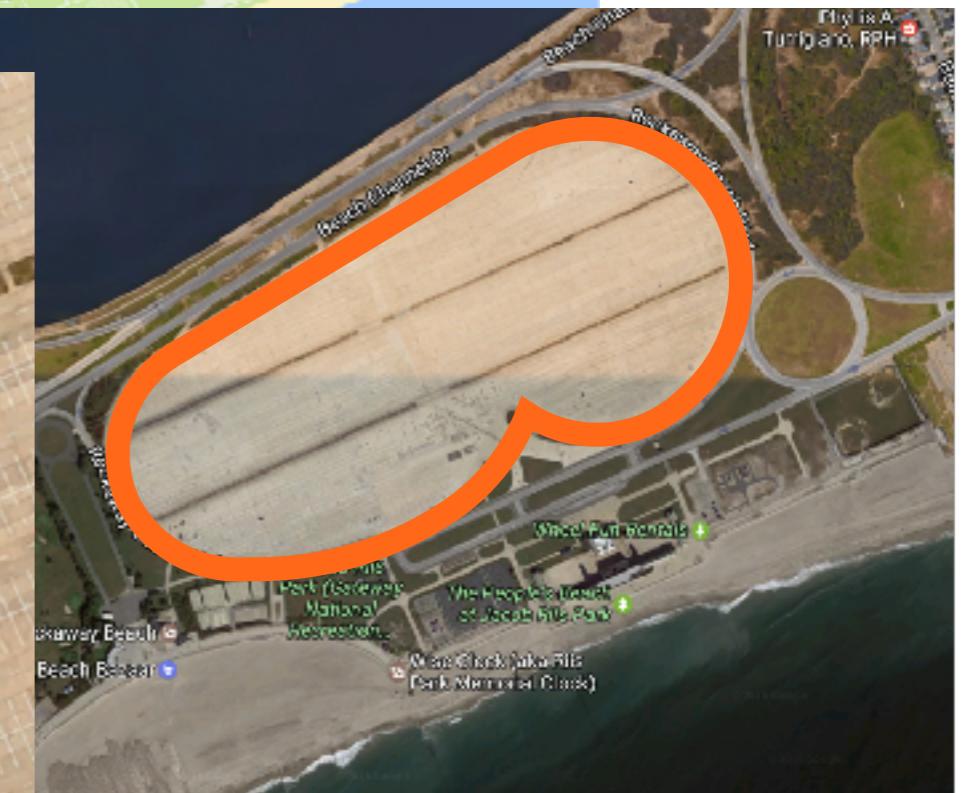
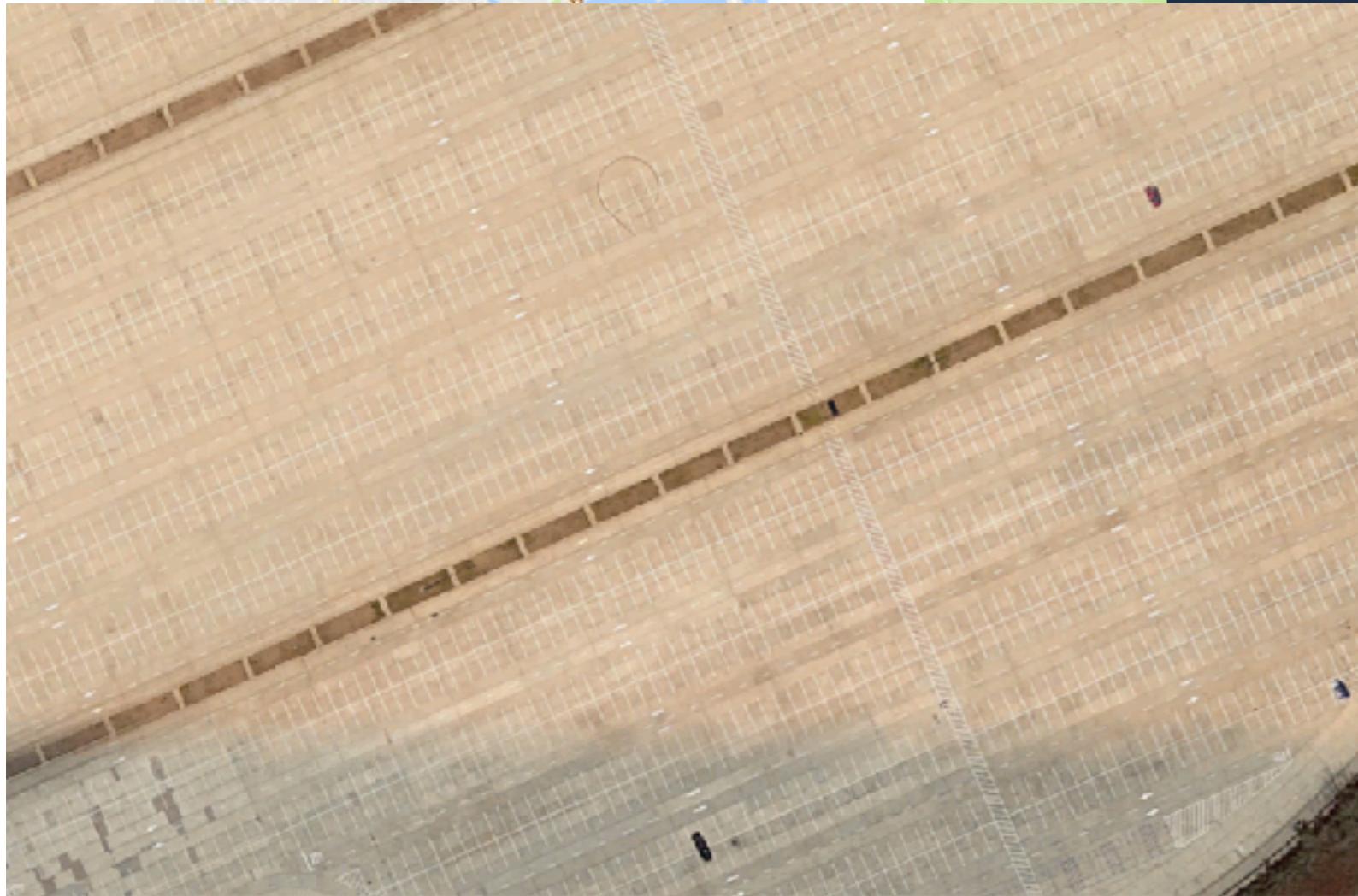
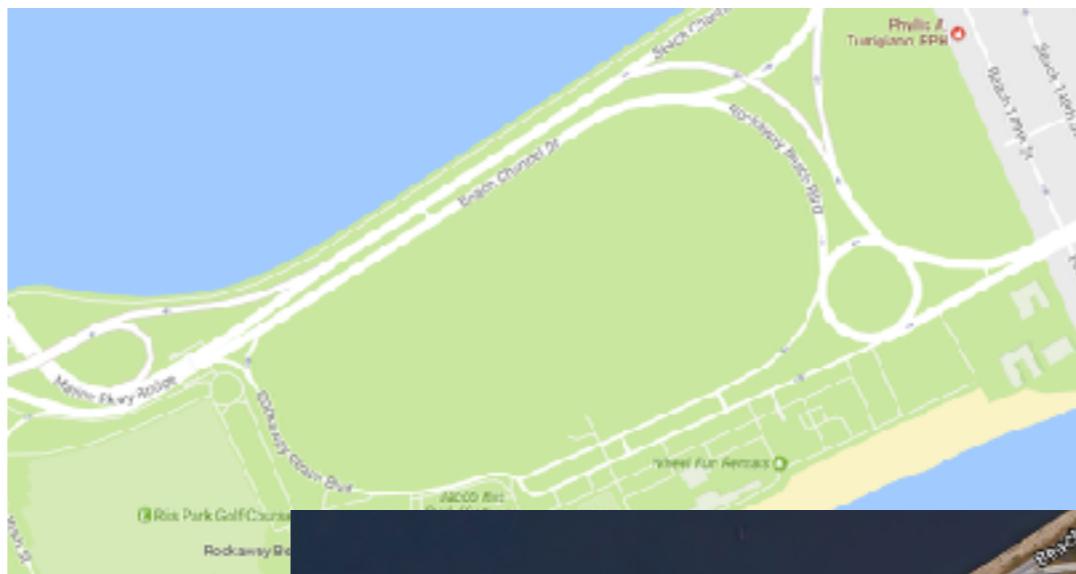




What a ~~lovely~~ green.. MONSTER



800m x 500m

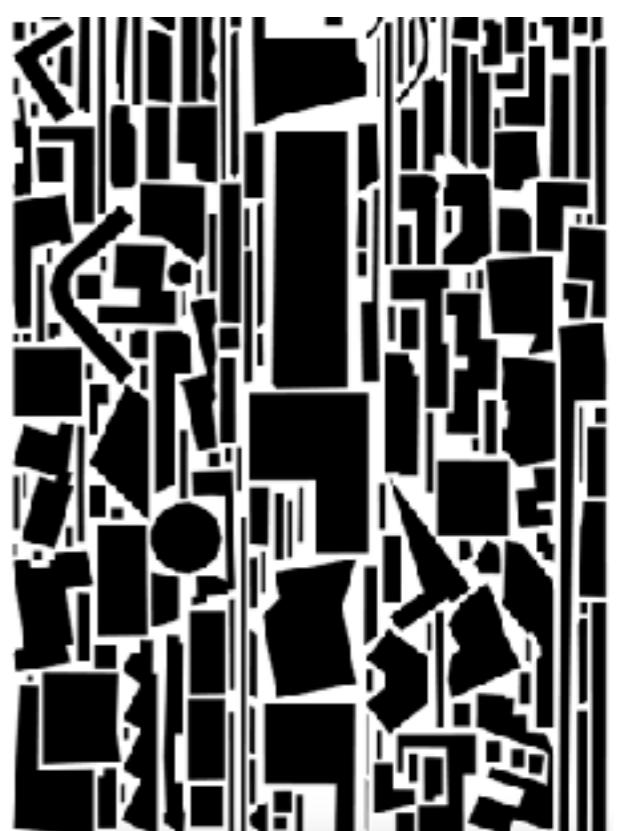
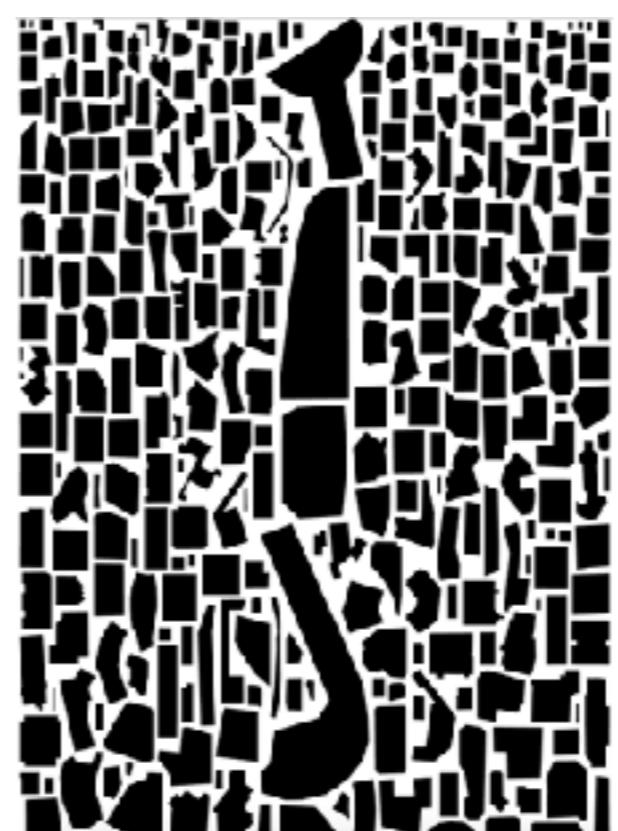


Use polygon packing to visualize ALL parking spaces





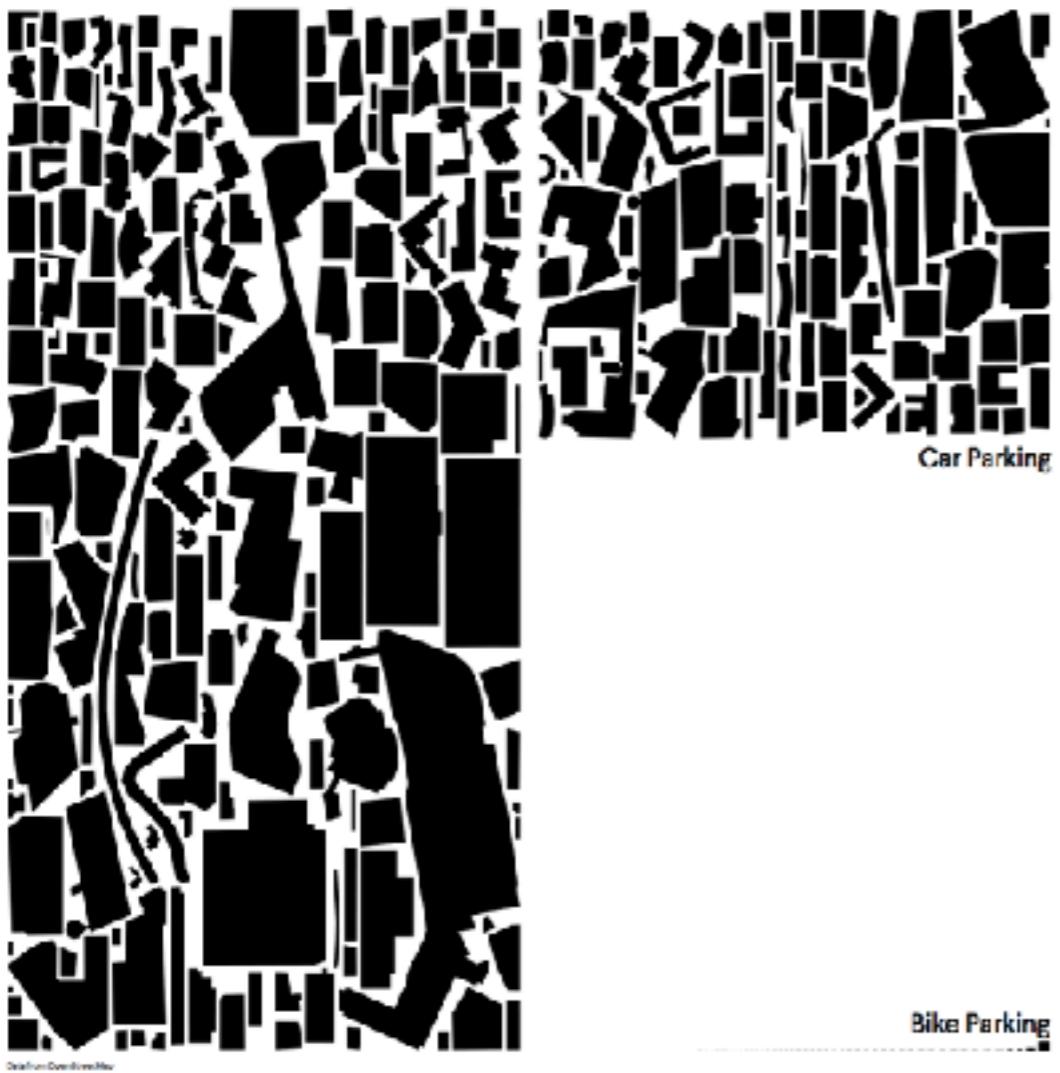
# Cities have unique patterns



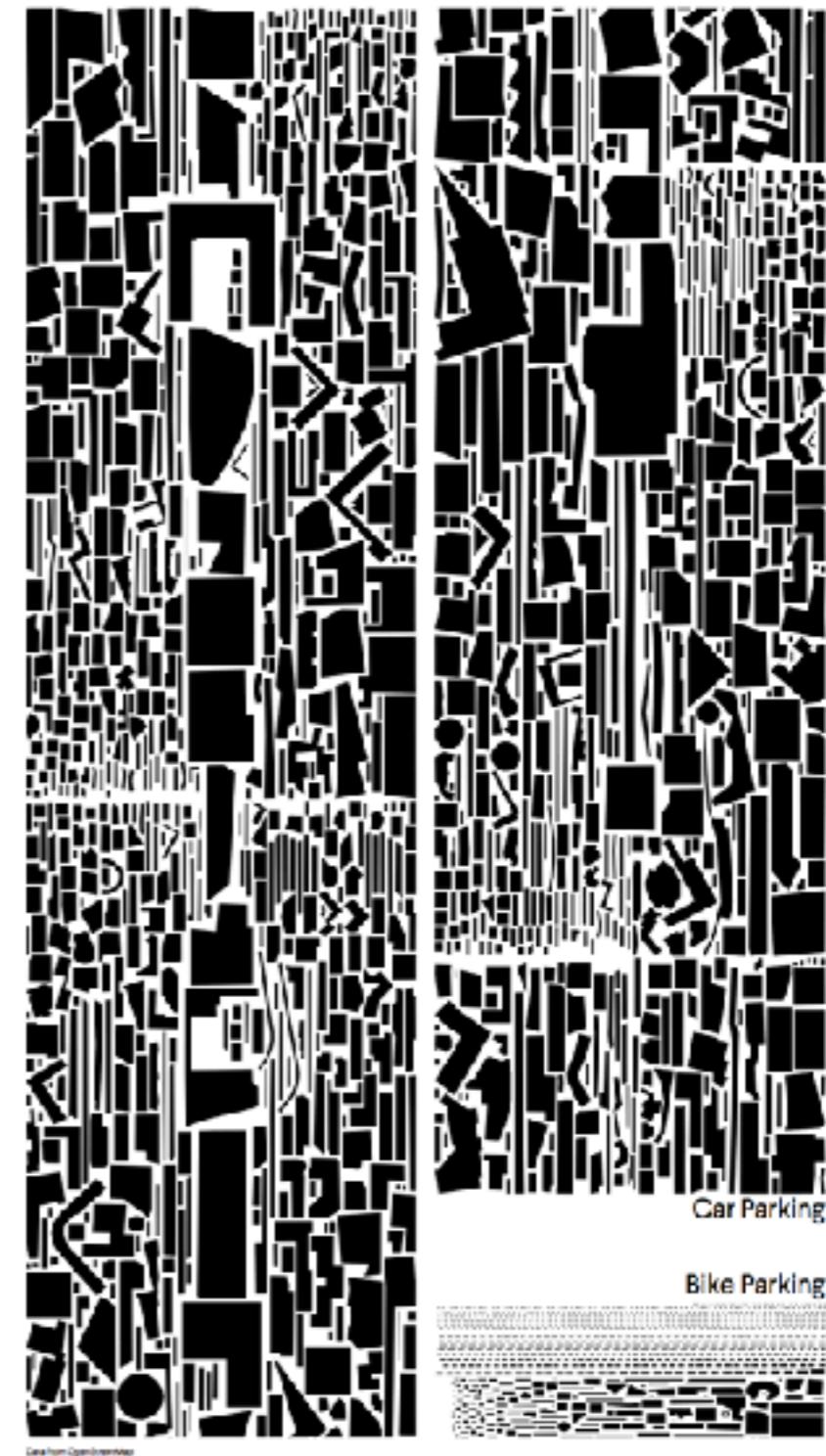
Porta, Crucitti, Latora, Physica A 369: 853-866 (2006)  
Barthelemy, Flammini, PRL 100:138702 (2008)

# Cities have unique distributions

Boston

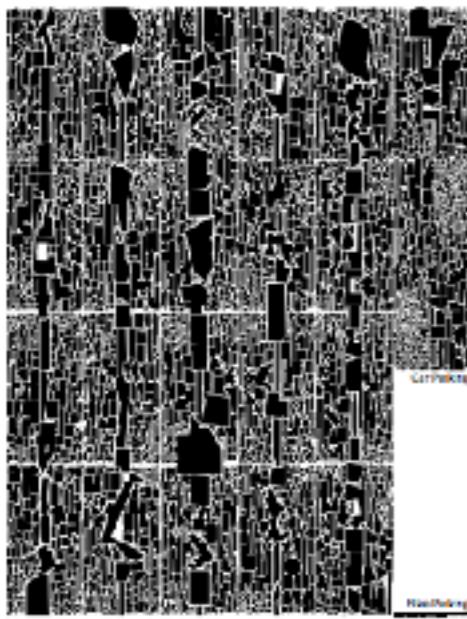


Copenhagen



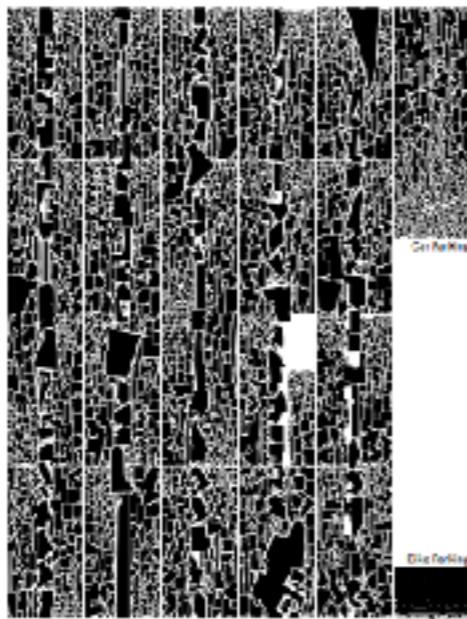
# What the Street!? covers 23 world cities

Moscow



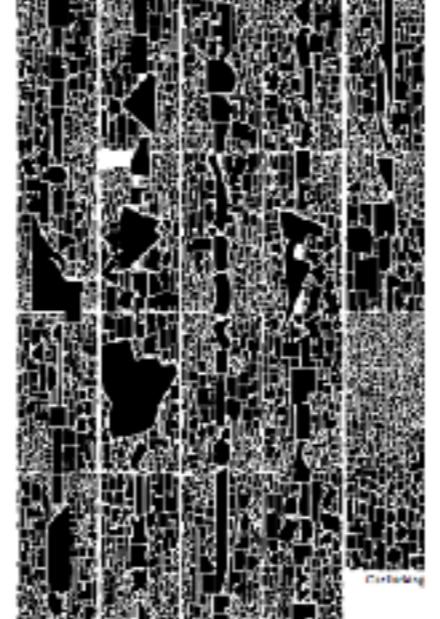
What the Street?  
<http://whatthestreet.moscow.com>

London



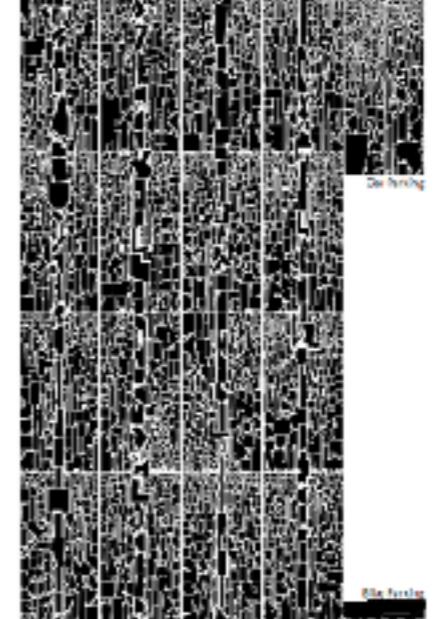
What the Street?  
<http://whatthestreet.london.com>

Chicago



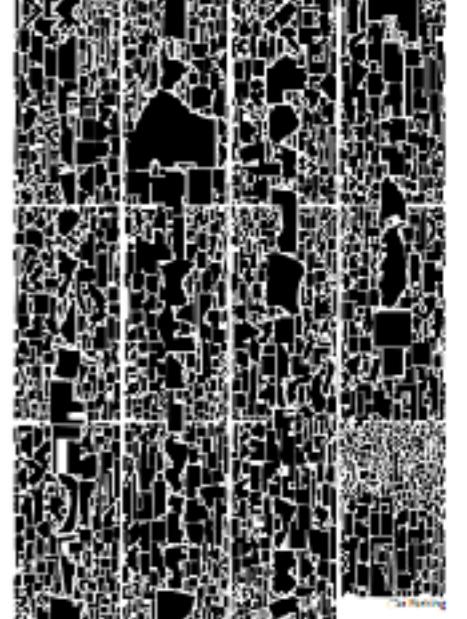
What the Street?  
<http://whatthestreet.chicago.com>

Berlin



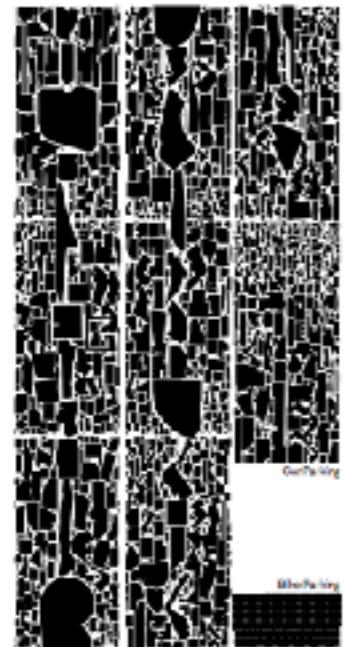
What the Street?  
<http://whatthestreet.berlin.com>

Los Angeles



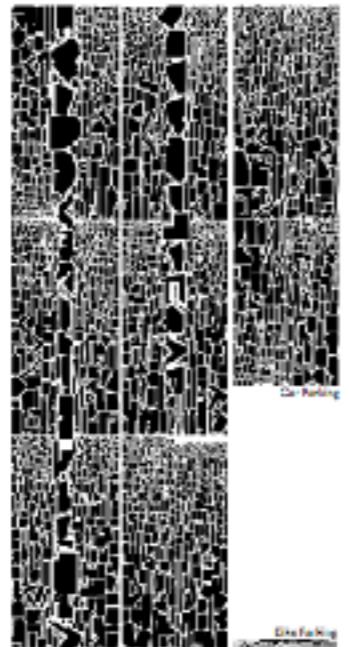
What the Street?  
<http://whatthestreet.la.com>

New York



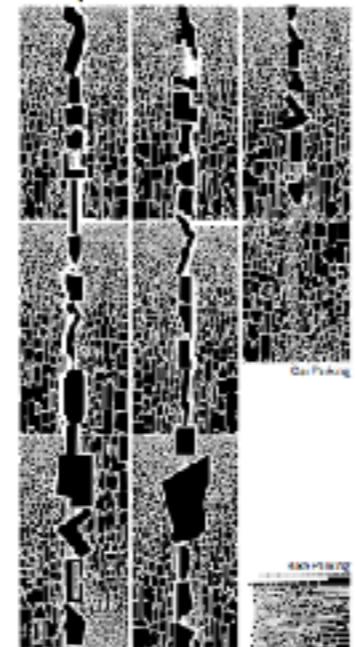
What the Street?  
<http://whatthestreet.ny.com>

Helsinki



What the Street?  
<http://whatthestreet.helsinki.com>

Tokyo



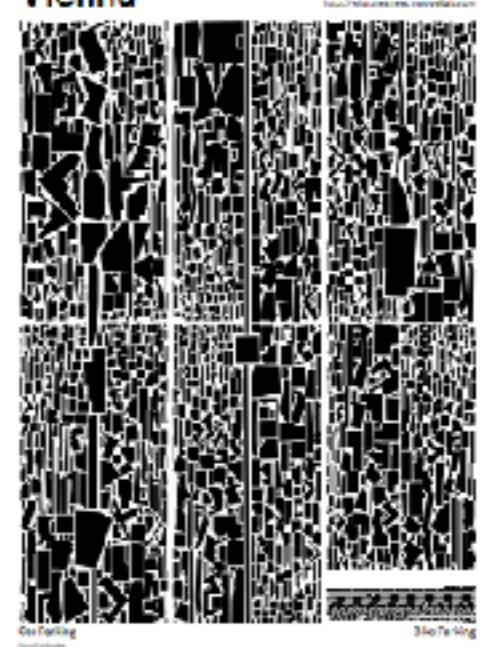
What the Street?  
<http://whatthestreet.tokyo.com>

Rome



What the Street?  
<http://whatthestreet.rome.com>

Vienna



What the Street?  
<http://whatthestreet.vienna.com>

Use graph algorithms to roll up  
ALL streets, bike lanes, and rails

<https://github.com/gboeing/osmnx>

Home Search Streets

No Parking Selected



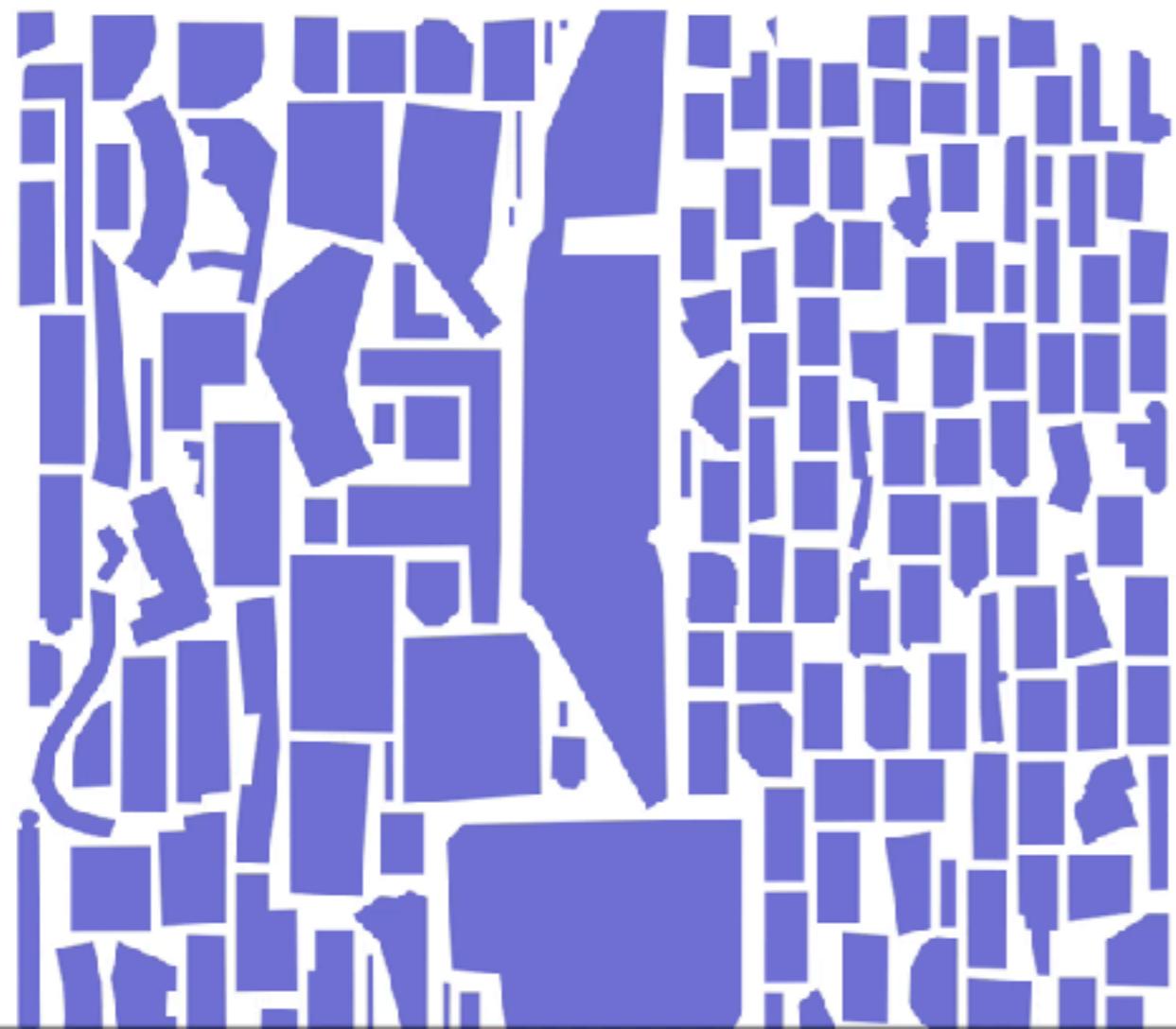
0 m<sup>2</sup>

0.0 m<sup>2</sup>

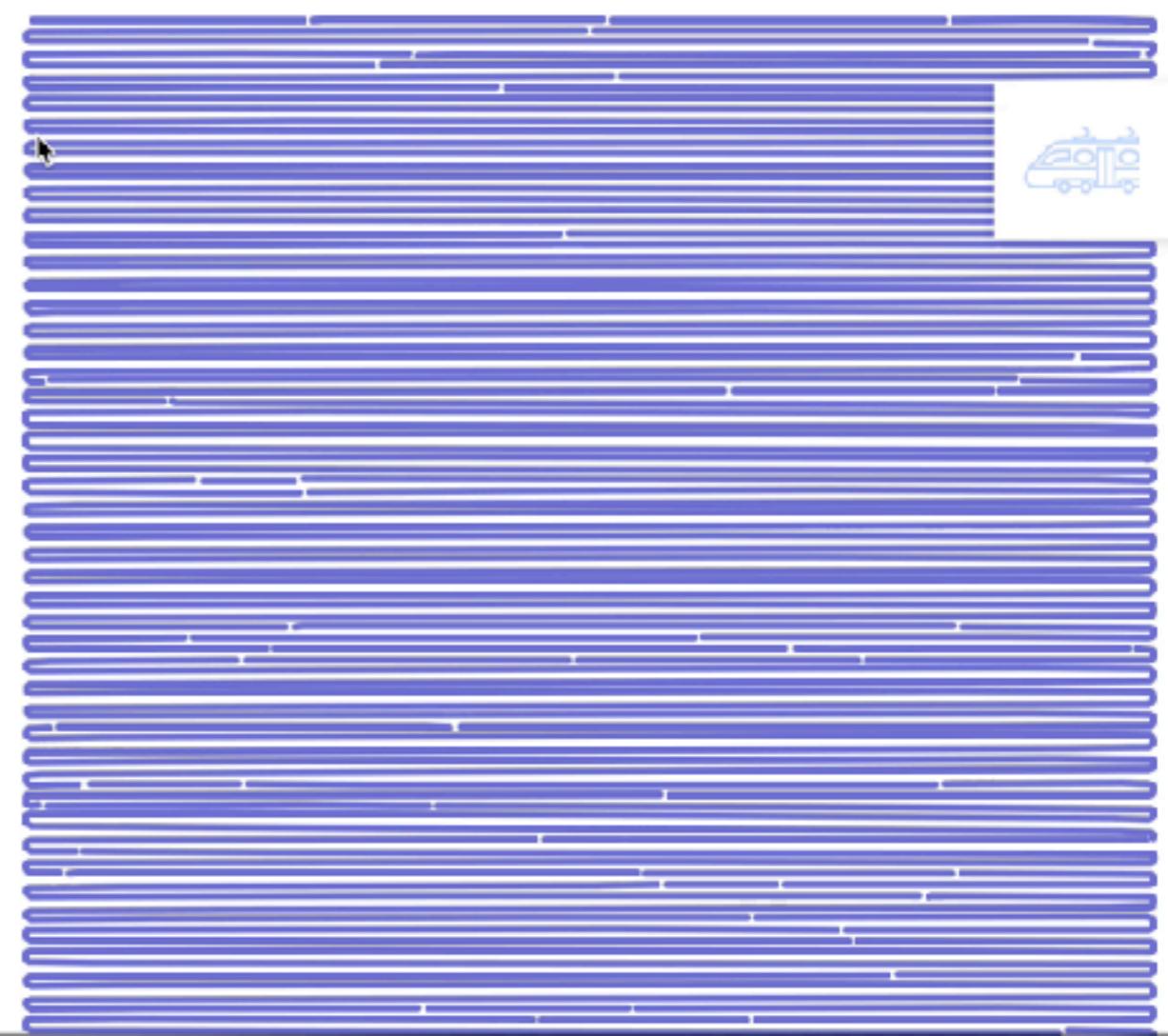


No Lane Selected

Car Parking



Car Lanes



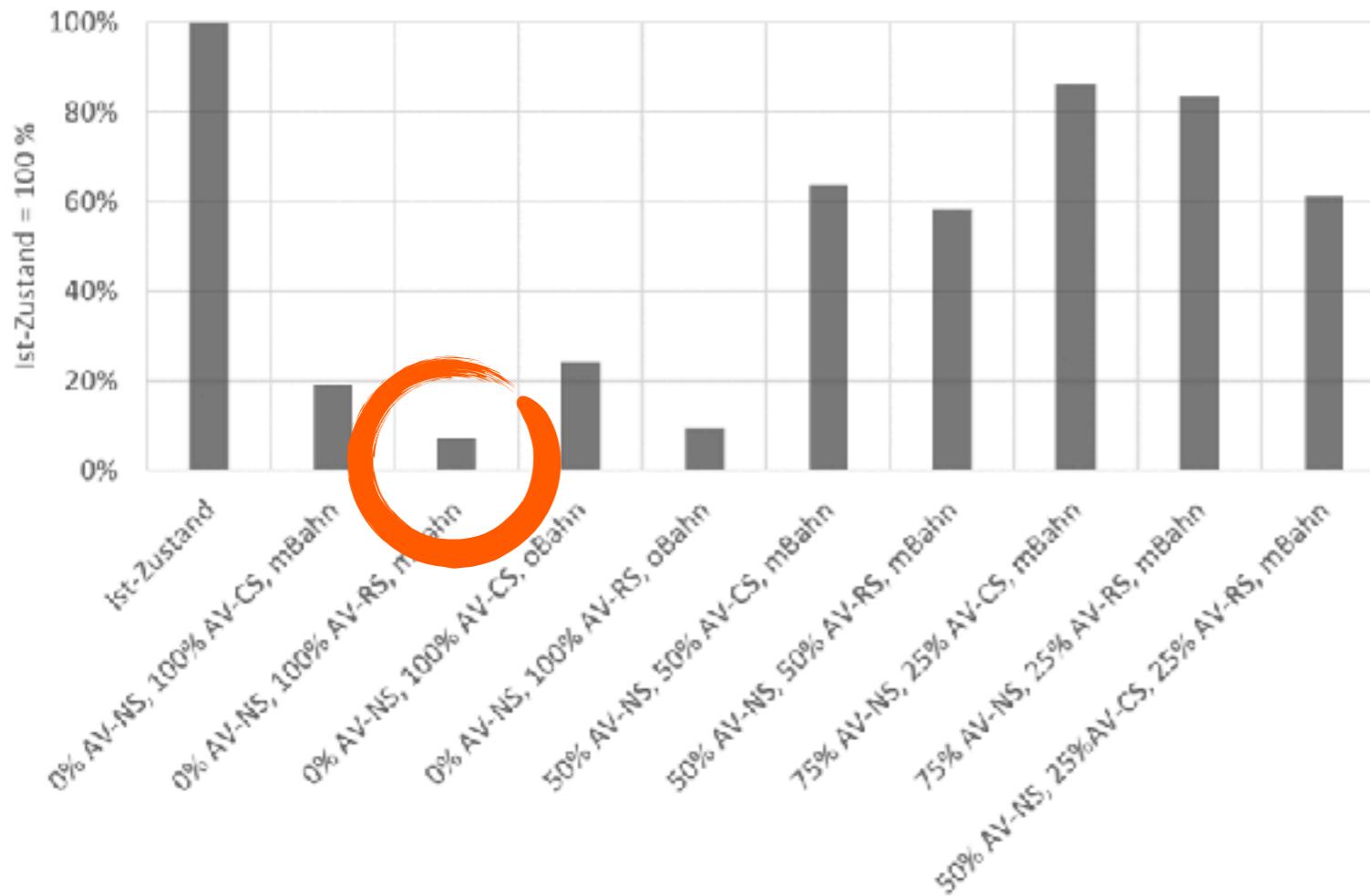
↑ Scroll to next →

How can we get back the space?

# 10% of self-driving cars can deliver same mobility



# 93% of parking spaces can be saved by autonomous, shared vehicles



## Future berlin

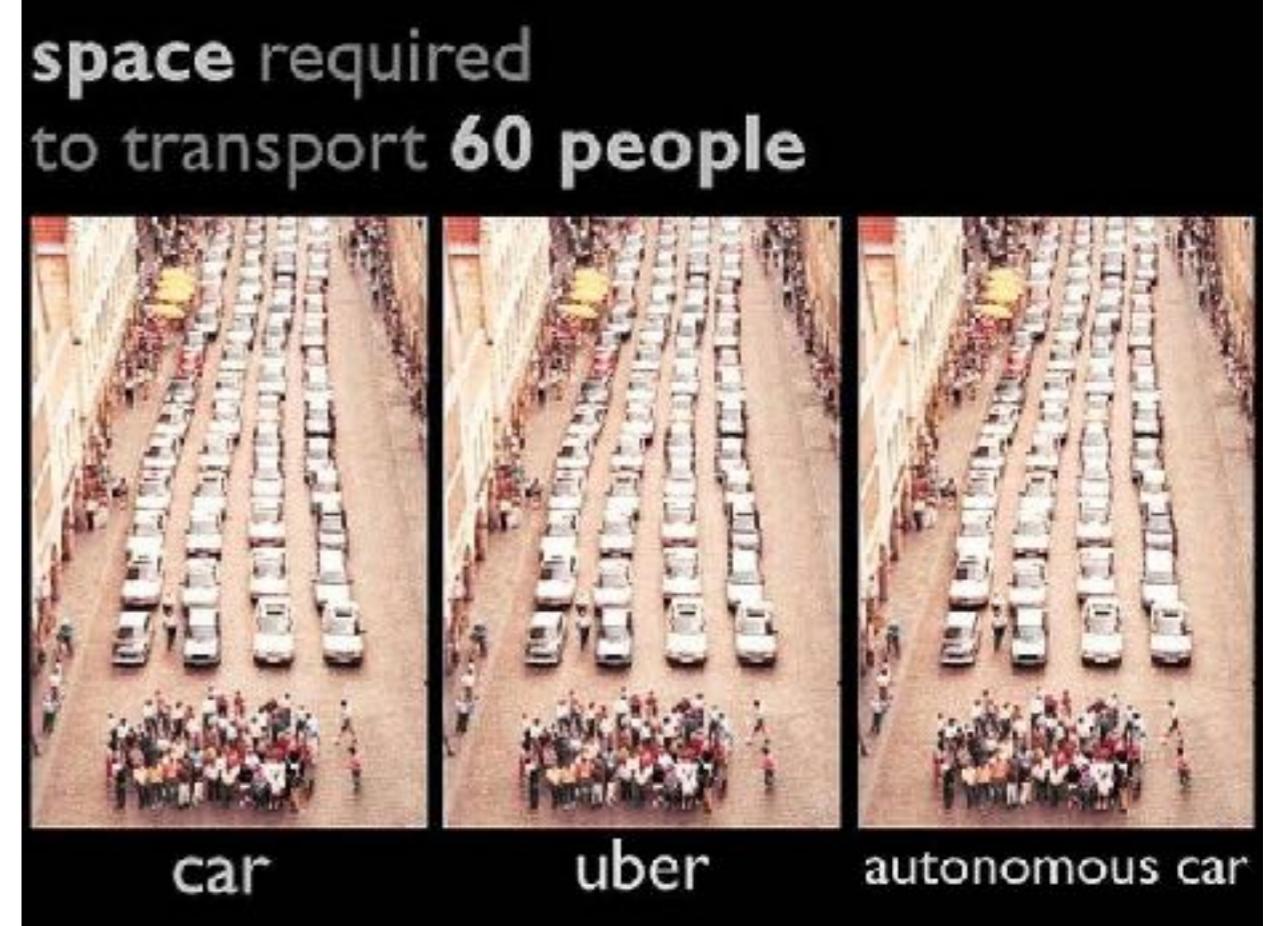
Autonomous cars on the road



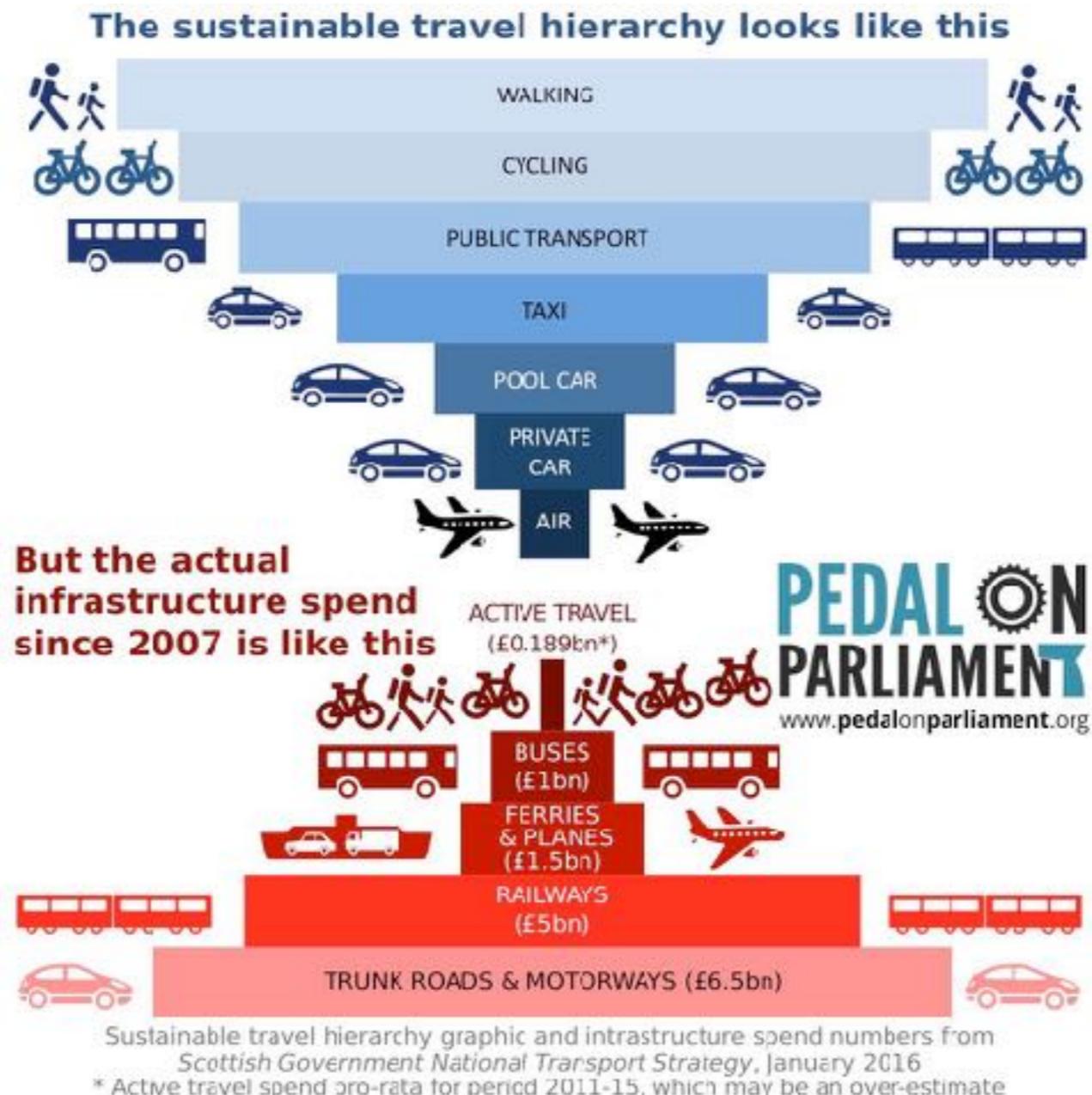
Parking



# Autonomous, shared cars are nice, but NOT the ultimate solution



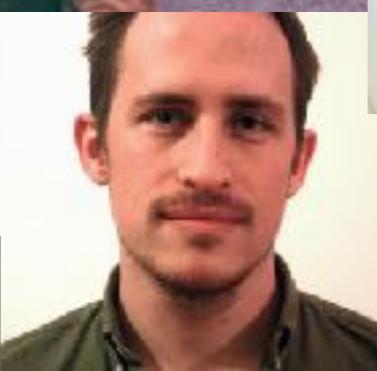
# Let us prioritize + incentivize what works best for society



Good scaling arguments why car-centric cities are not sustainable

Gossling and Choi, Ecol Econ 113 (2015)  
Louf and Barthelemy, PRL 111.19 (2013)

# [whatthestreet.moovellab.com](http://whatthestreet.moovellab.com)



Thx to OpenStreetMap for all the data!