

April 25, CCA San Francisco GD/IxD

Information visualization as part of Graphic Design/ Interaction Design

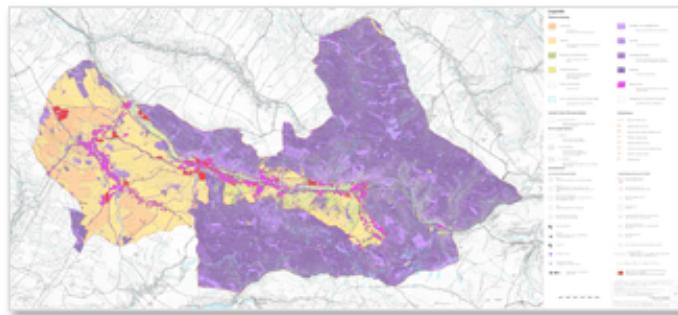
Demonstration: Visualizing human behavior patterns through crowdsourced spatial photo content

Alexander Dunkel, UT Dresden,
Landscape Architecture and Environmental Planning

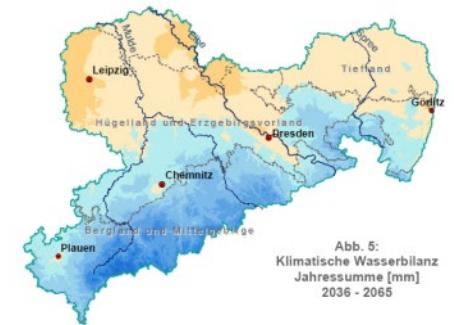
background



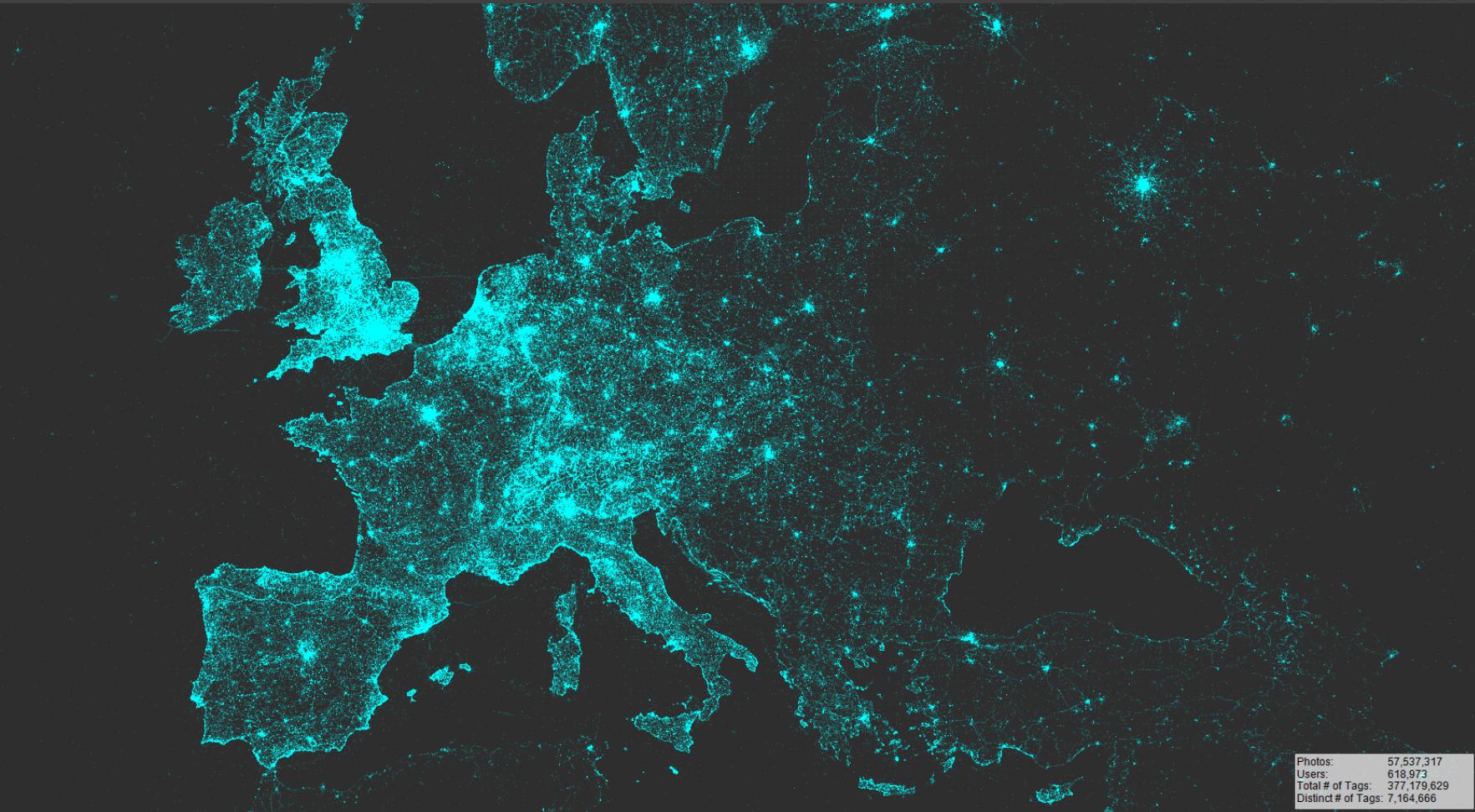
Landscape Architecture



Regional Planning



State Development



Photos: 57,537,317
Users: 618,973
Total # of Tags: 377,179,629
Distinct # of Tags: 7,164,666

57 M Photo locations in Europe.

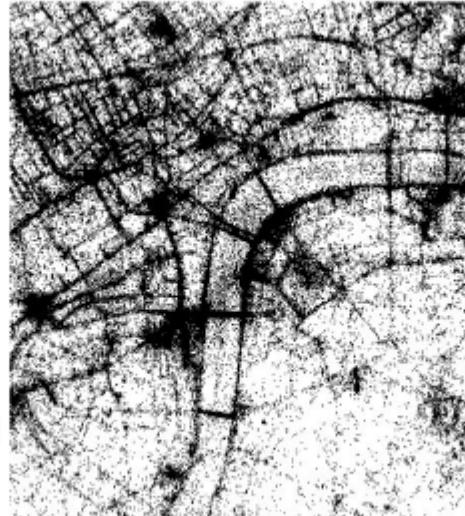
Data source: Flickr, 2007-2015

Part I (Demonstration):
**Visualizing human behavior patterns through
crowdsourced spatial photo content**

150 M Flickr Photos



California



Central London



Dresden Theaterplatz

For each photo:

Location (Where?)

User origin (Who?)

Tags (What?)

Time (When?)

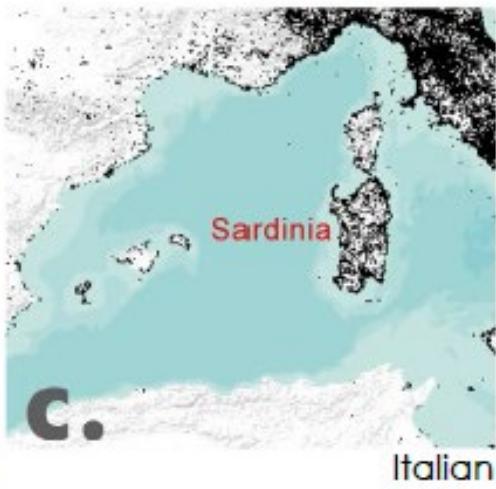
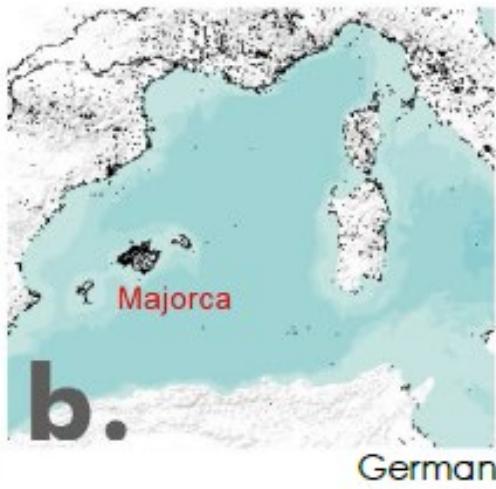
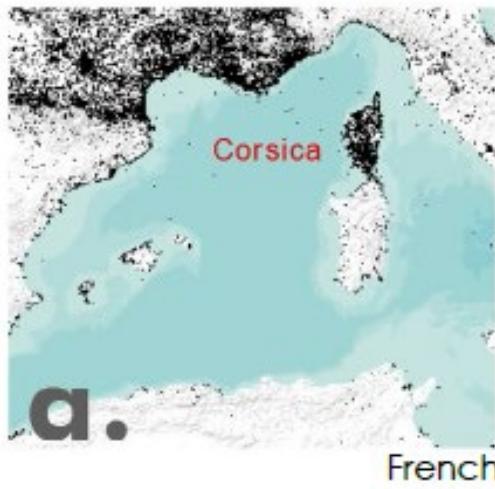
Group Behavior

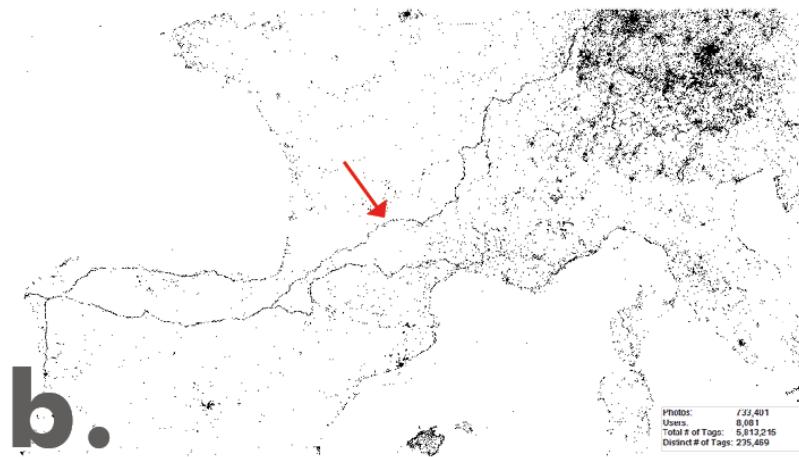
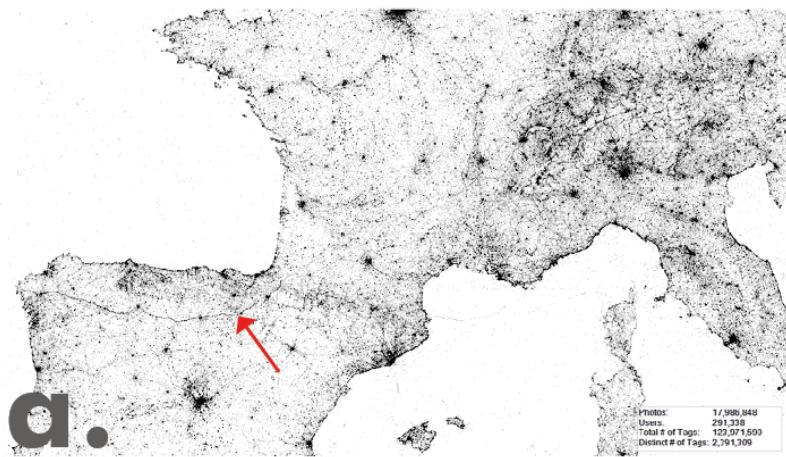


Americans

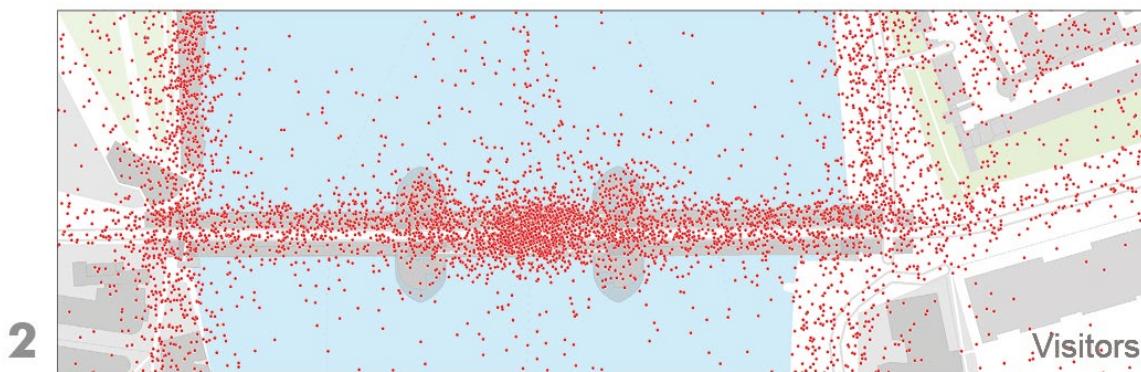
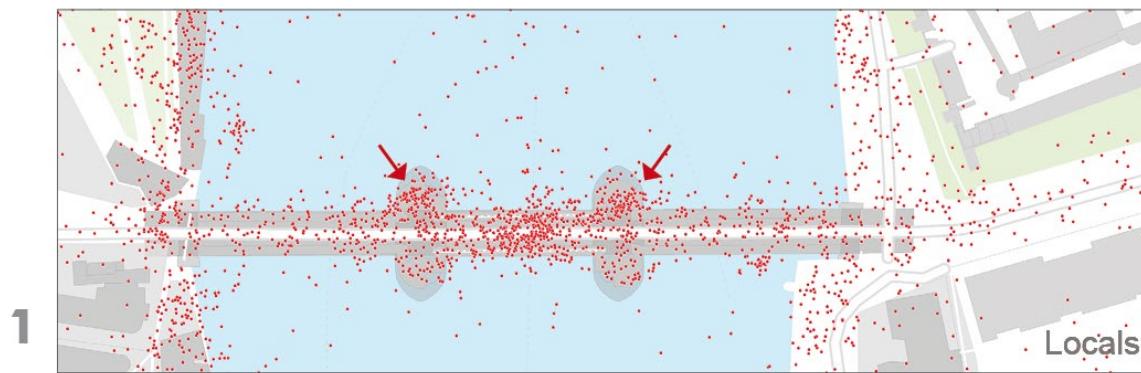


Europeans





Tower Bridge



BASED ON PHOTO DATA FROM FLICKR, © 2015 YAHOO! INC.,
BASE MAP OPENSTREETMAP CC-BY-SA

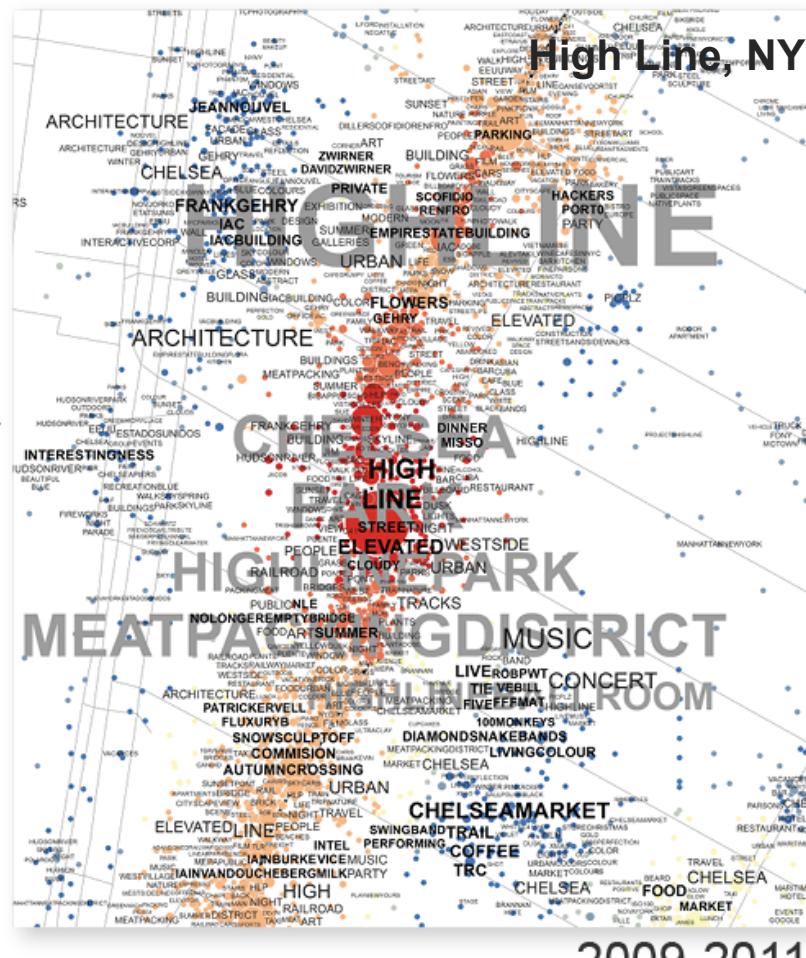
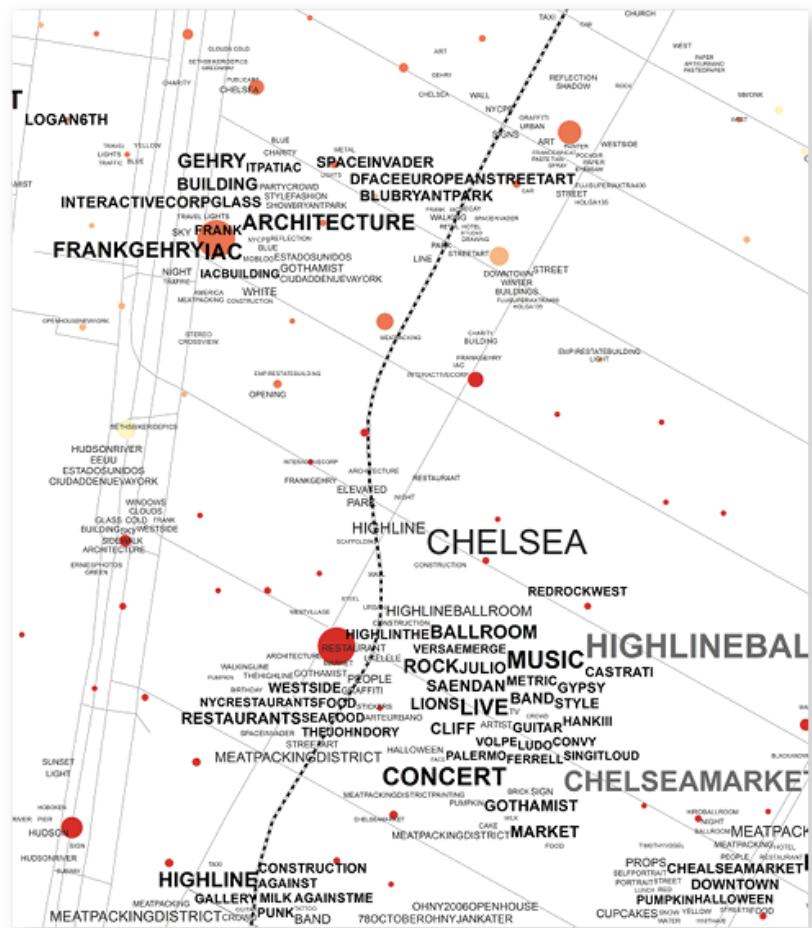
Spatio-temporal Tag Clouds

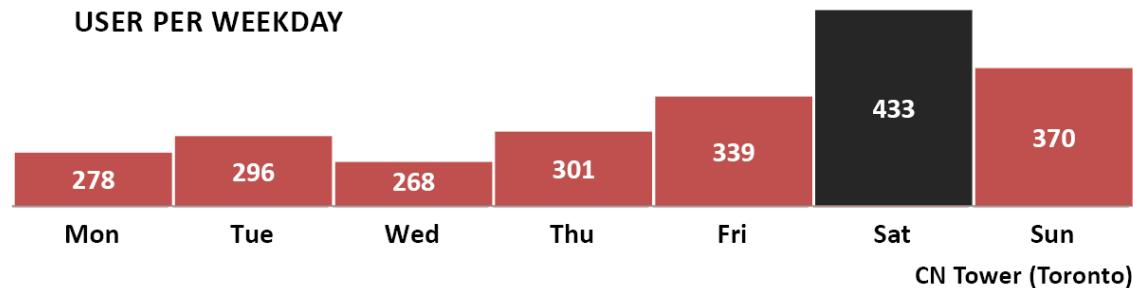
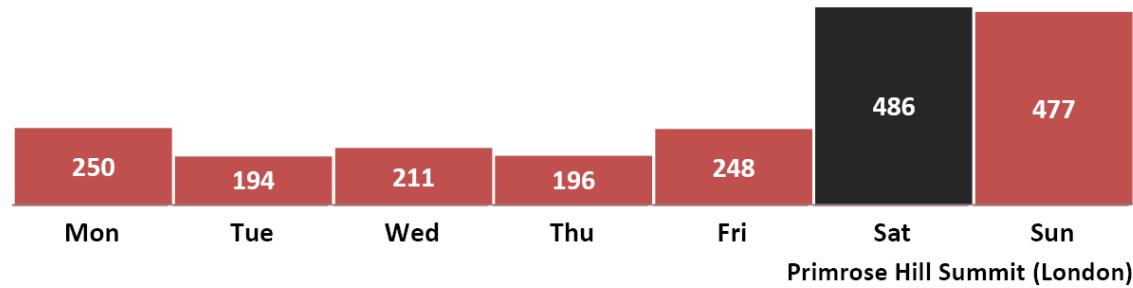
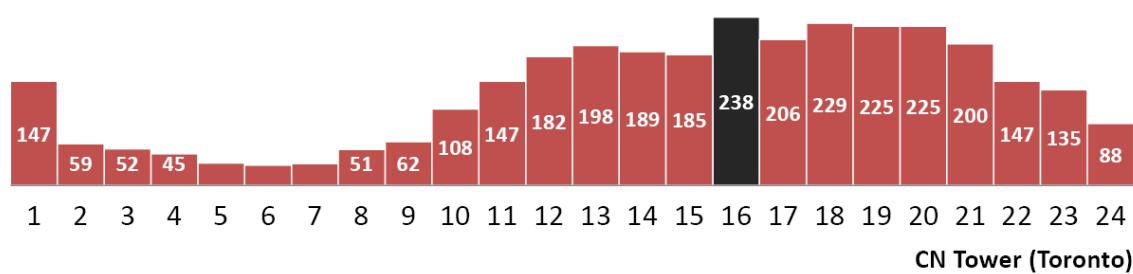
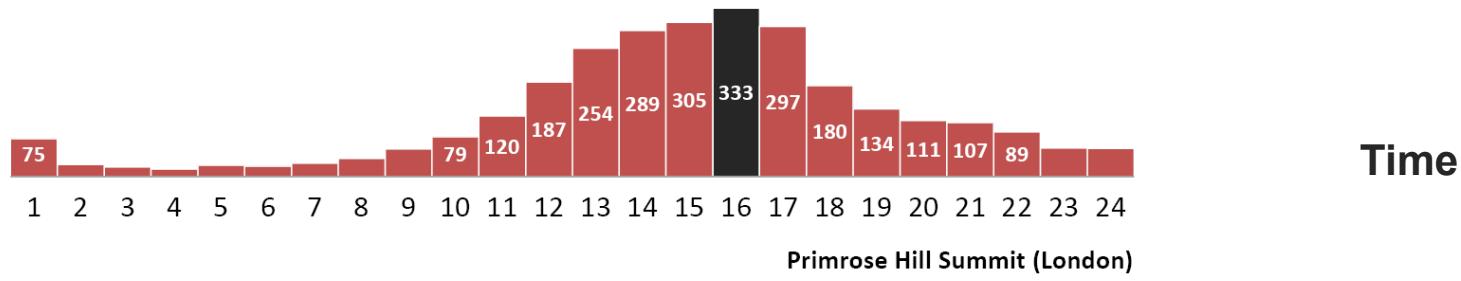


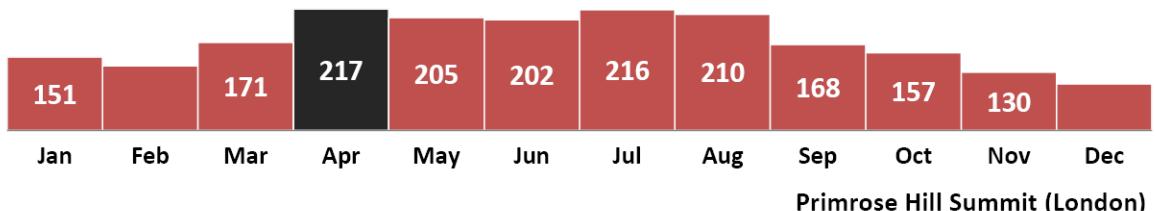
Interactive Online Maps

maps.alexanderdunkel.com

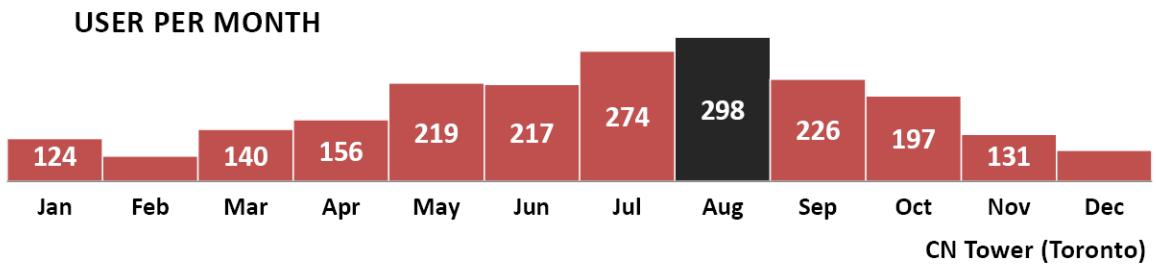
Temporal Analysis



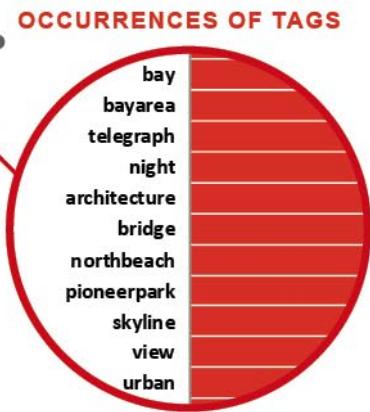




Primrose Hill Summit (London)



CN Tower (Toronto)

d.**C.****b.****POPULAR MONTH****INFLUENCING PERCEPTION****a.**

2700m
baybridge
131 Sightings

5686

4270m
treasureisland
16 sightings

1633m
lombard
51 Sightings

8004m
goldengatebridge
117 Sightings

3776m
alcatraz
16 sightings

1115m
transamerica
16 sightings

41 sightings
chinatown

distance and direction
to densest cluster

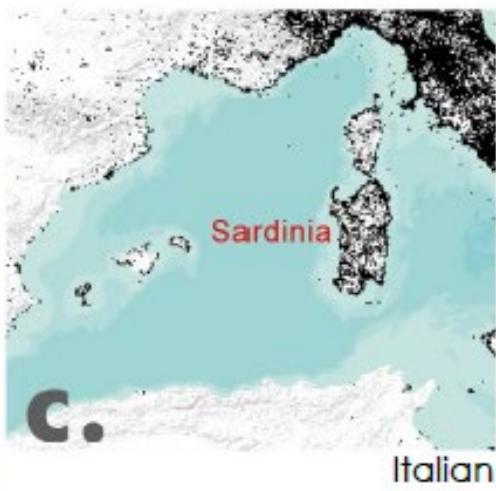
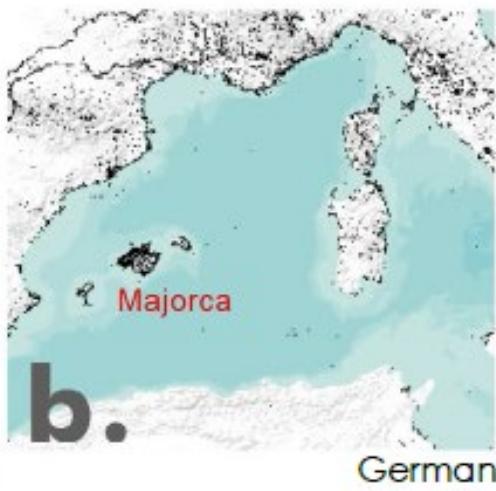
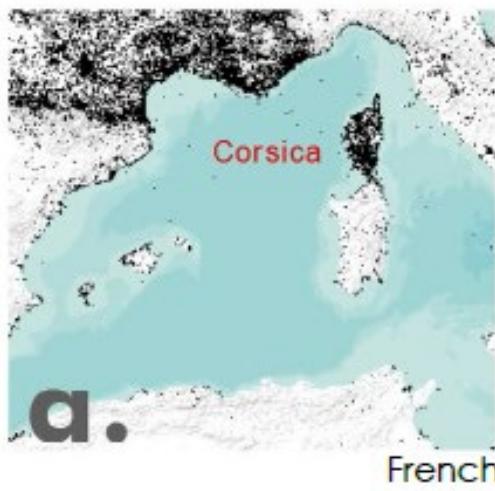
Part II (Discussion):

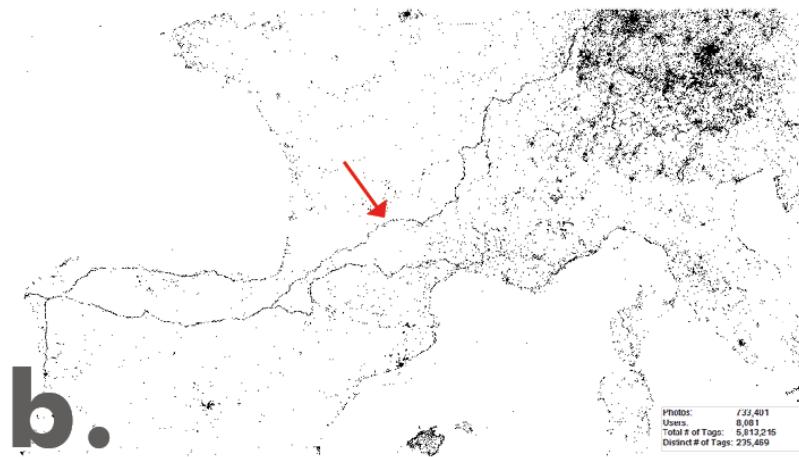
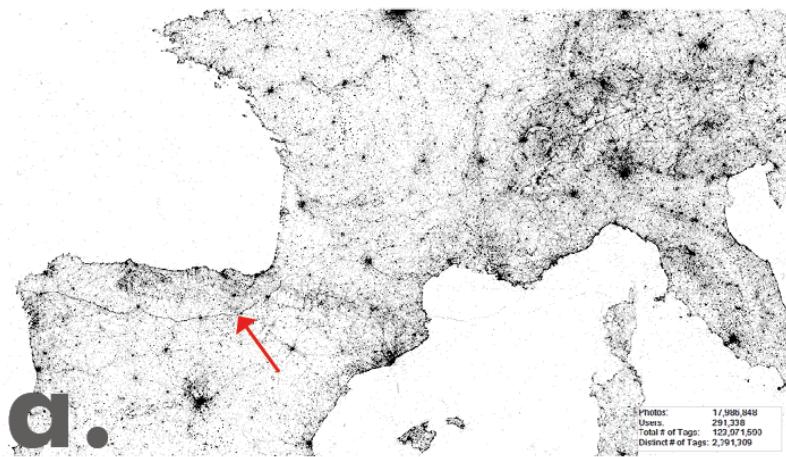
How does this relate to Graphic Design/ Interaction Design?

„[...] Human behavior is 93 percent predictable [...]”

*Despite the common perception that our actions are random and unpredictable,
human mobility follows surprisingly regular patterns.*

(Song, C., Qu, Z., Blumm, N., & Barabási, A. L. (2010). Limits of predictability in human mobility. *Science (NY)*, 327, 5968, 1018-21)





Understanding the audience is critical

1



2

User Data

Statistics

Last User Current User

Map

GetGeo

Profile

Area

Additional Settings

Clip Data

Map Data

PhotoView (sorted by popularity)

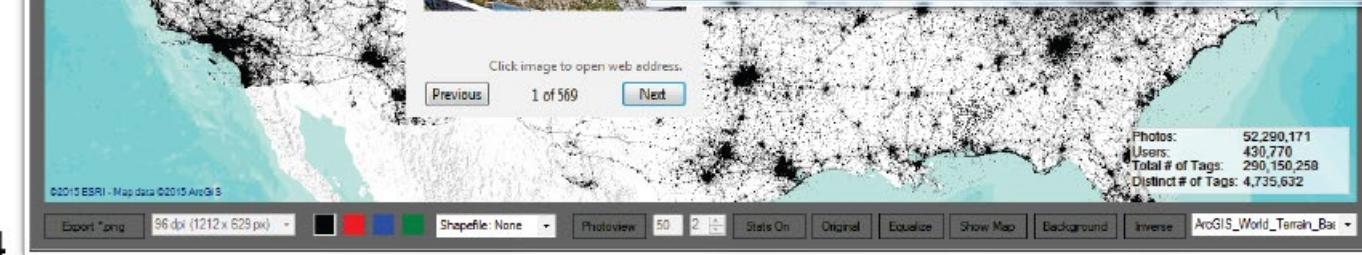
Click image to open web address.

Photos: 52,290,171
Users: 430,770
Total # of Tags: 290,150,258
Distinct # of Tags: 4,735,632

Export *png 96 dpi (1212x 629 px) Shapefile: None Photoview 50 2 Stat On Original Equivalents Show Map Background Inverse ArcGIS_World_Terrain_Basemap



3



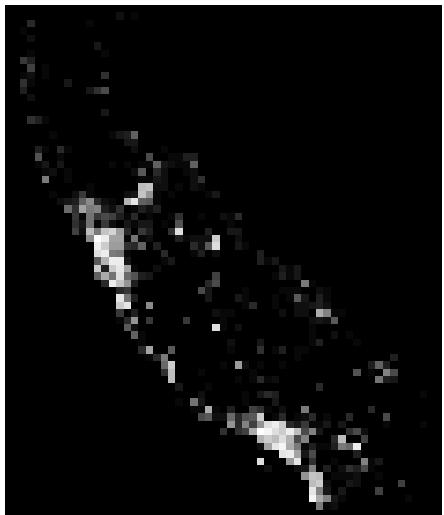
4



Augmented Reality Interface for Interactive
Exploration of user-generated Flickr data

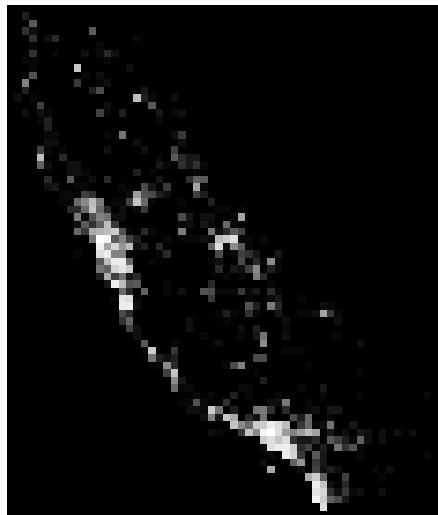
**Adaption of final product output
based on audience/purpose**

Creative software combination

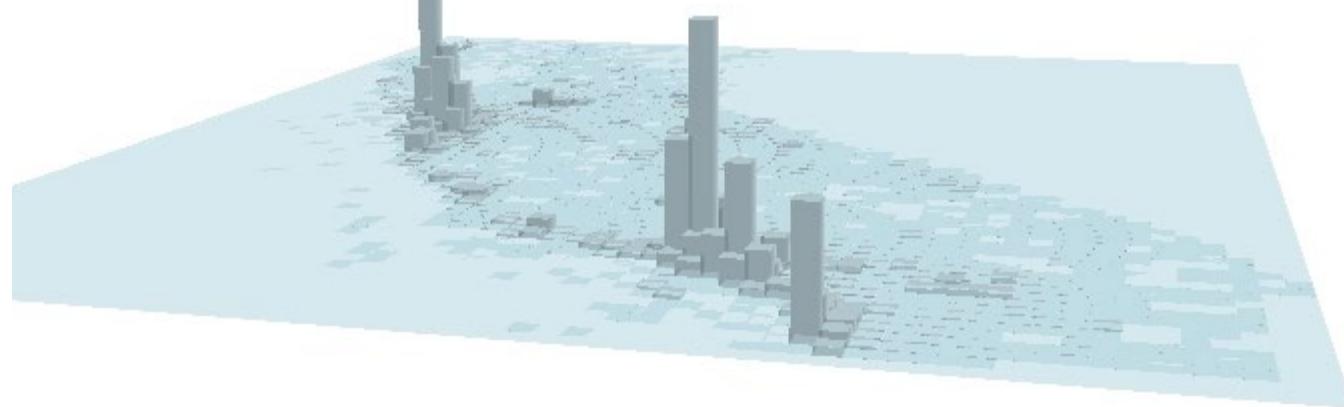


April 2009

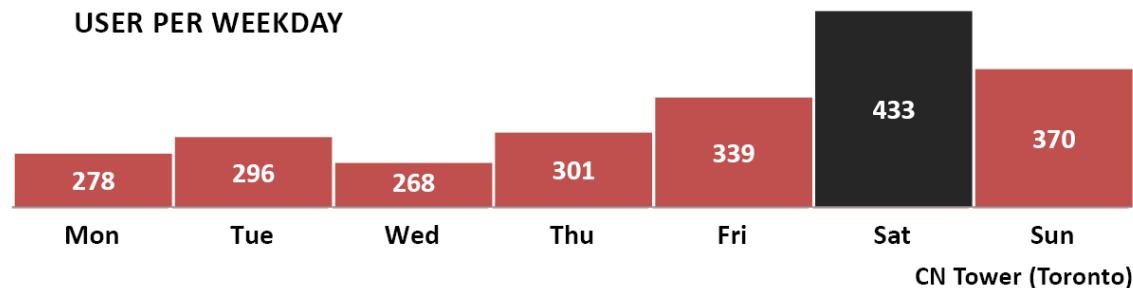
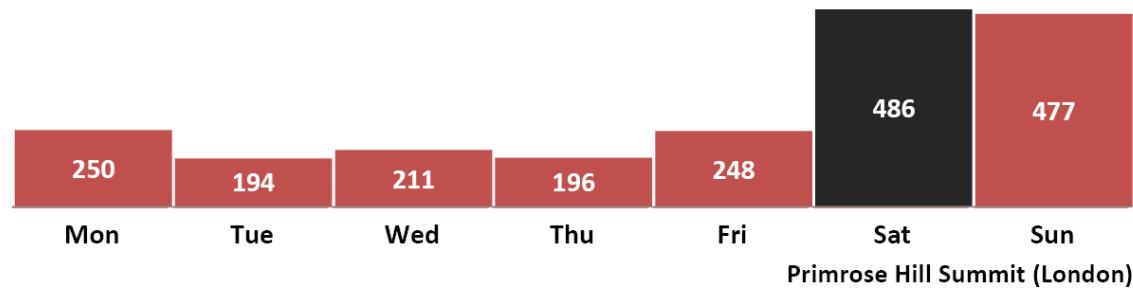
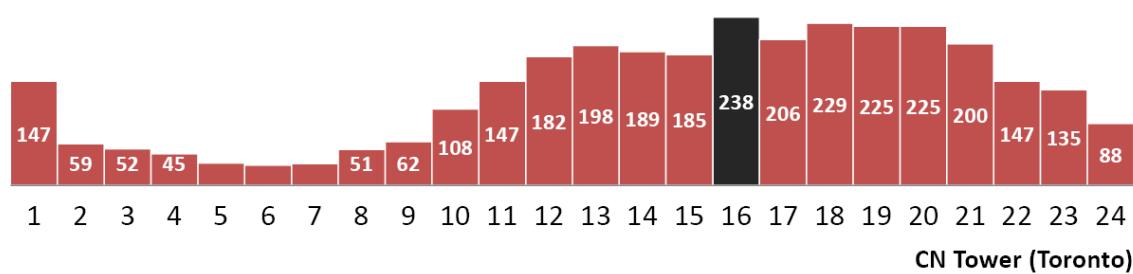
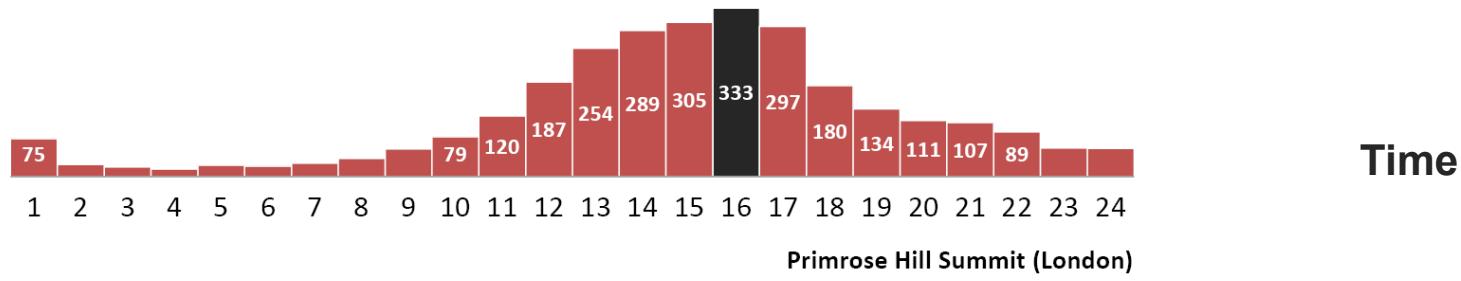
→ ... →



August 2009



Applying universal Graphic Design Concepts to Information Visualization



d.

13178

goldengatebridge
117 Sightings

8004m

C.**OCCURRENCES OF TAGS**

- bay
- bayarea
- telegraph
- night
- architecture
- bridge
- northbeach
- pioneerpark
- skyline
- view
- urban

11797

IMPORTANT ELEMENTS

lombard
51 Sightings

alcatraz
148 Sightings
3776m

INFLUENCING PERCEPTION

AT COIT TOWER
treasureisland
16 Sightings
4270m

baybridge
131 Sightings
2700m

5686

POPULAR MONTH**a.****COITOWER**

2218 Photos

Apr - Sep

3943 Sightings

Chinatown
41 Sightingstransamerica
1115m
pyramid
22 Sightings

1188

distance and direction
to densest cluster

overall number
of sightings in the bay area

Thank you