23. Juni 2016, TU Dresden, Fakultät Architektur

Assessing the perceived environment through crowdsourced spatial photo content for application to the fields of landscape and urban planning

Öffentliche Disputation zur Dissertation

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EU Landscape Convention:

… landscape “as a zone or area as perceived by local people or visitors” (ELC art. 1, para. 38).

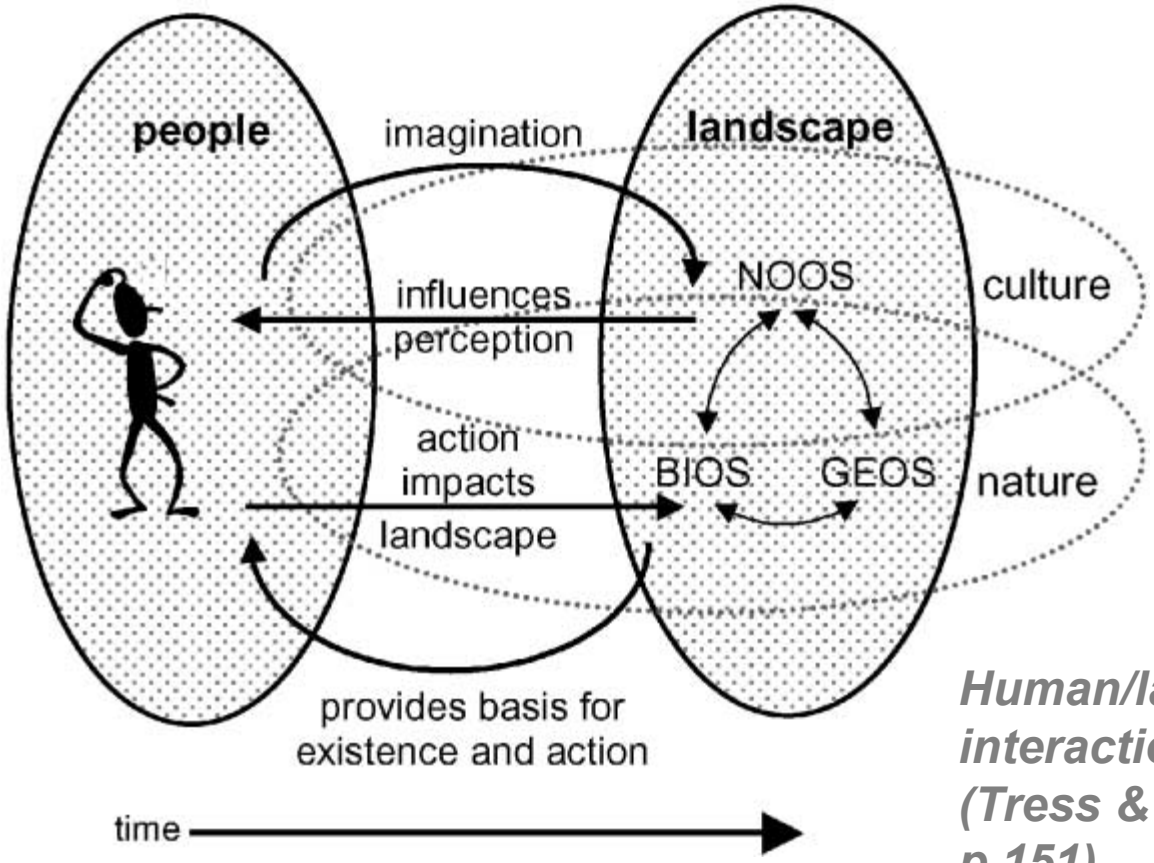
Landschaftswahrnehmung

= Wertzuschreibung

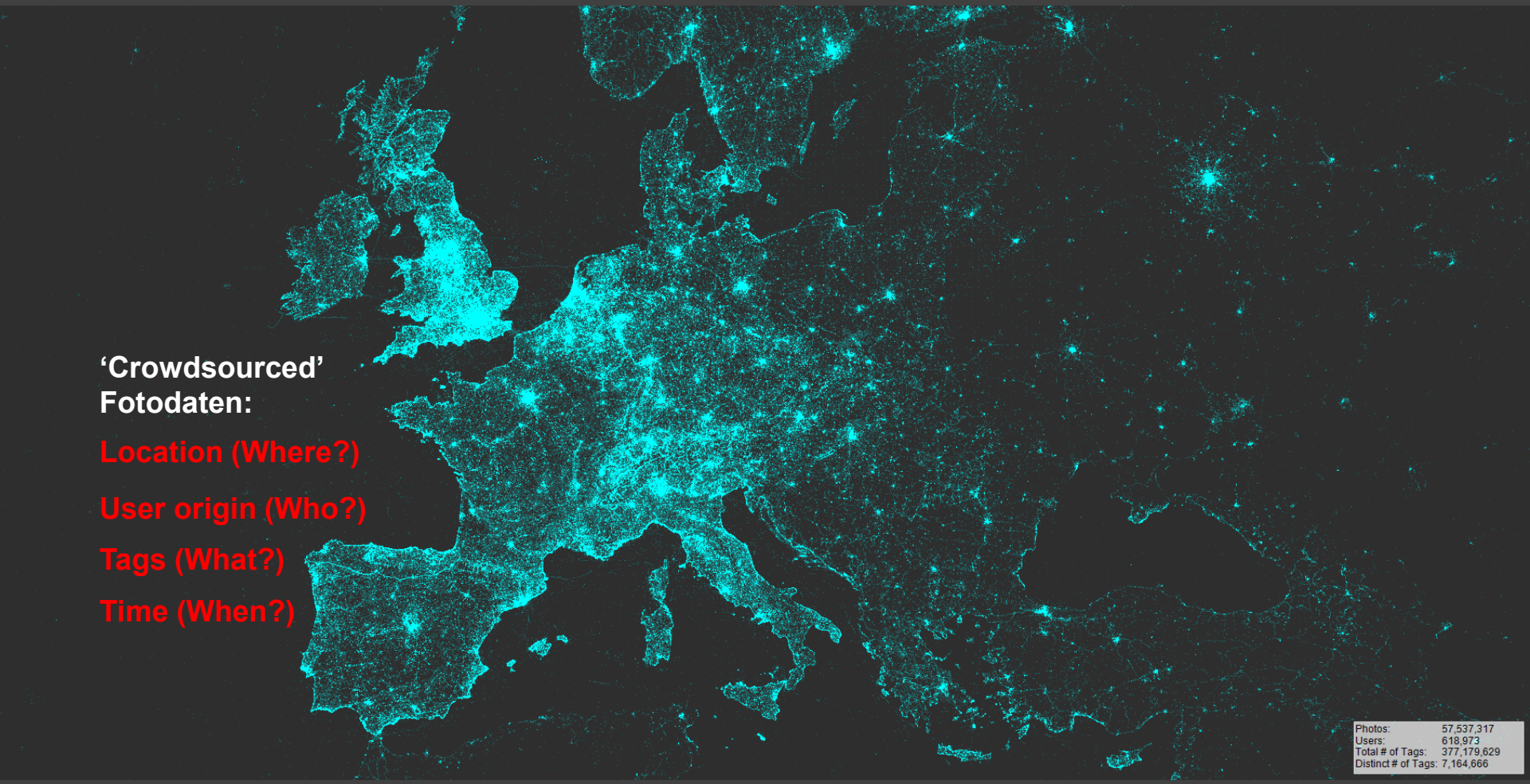
Schwerpunkt: visuell

"*We use all our senses to analyse our surroundings,* ***particularly sight, which fulfils 87 per cent of our sensory perception***." (Bell, 2012, p.16; p.40);

Problem(e):
Das Sehen und die kognitive Verarbeitung des Gesehenen sind untrennbar verbunden.



Human/landscape interaction model (Tress & Tress, 2001; p.151)



57 Millionen Fotostandorte in Europa.

Datenquelle: Flickr, 2007-2015

Teil 1: **Theoretische Grundlagen**

Teil 2: **Anwendungsbeispiel (Flickr)**

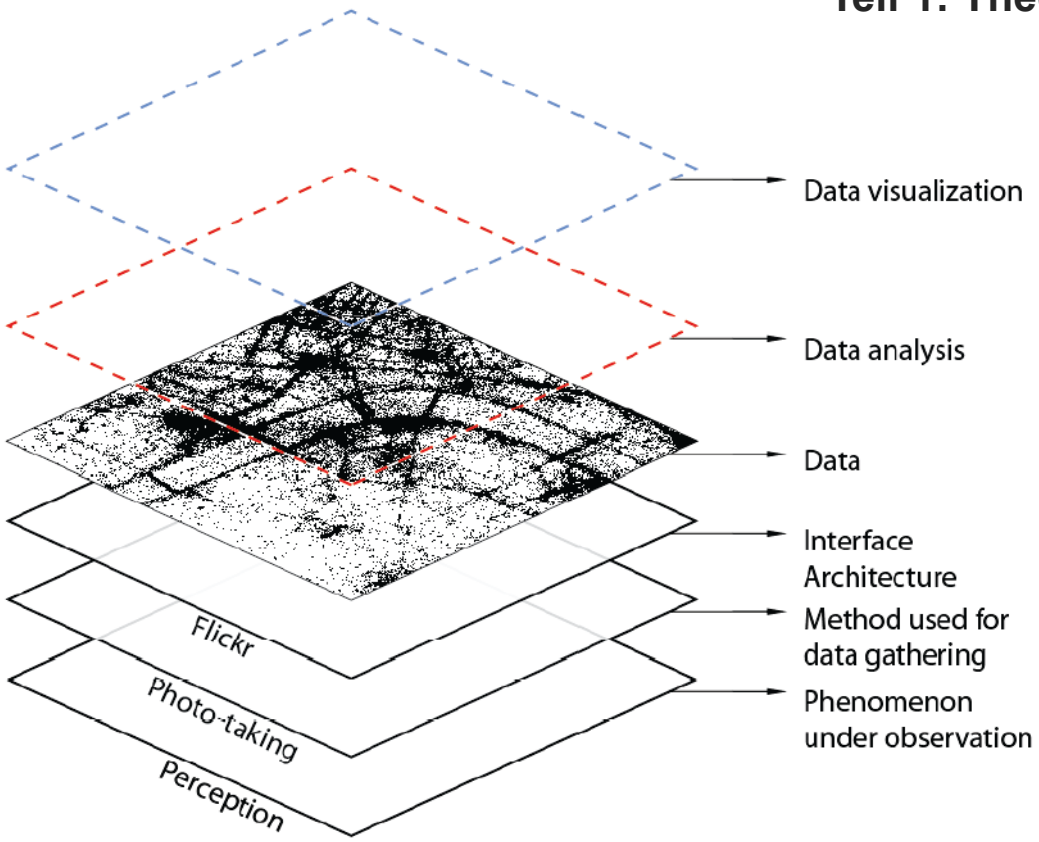


Fig. 2: Approach illustrated as a multi-layered process of analysis.

(Theoretischer Ansatz, S. 17)

Teil 2: Flickr Anwendungsbeispiel

Dataset	Measurement	Σ
1	Number of photo locations	*147 million*
	Number of users	*1.3 million*
	Number of tags	*882 million*
	Number of distinct tags	*17.1 million*
2	Number of users	*1.3 million*
	Users with location	*415,000*
3	Geocoded locations	*408,000*

Übersicht Daten (S. 88)

Grundlage:

Kontext von Fotodaten

4 Facetten: Who, Where, When and What

(Panofsky-Shatford-Matrix, Westman, 2009)

Who:

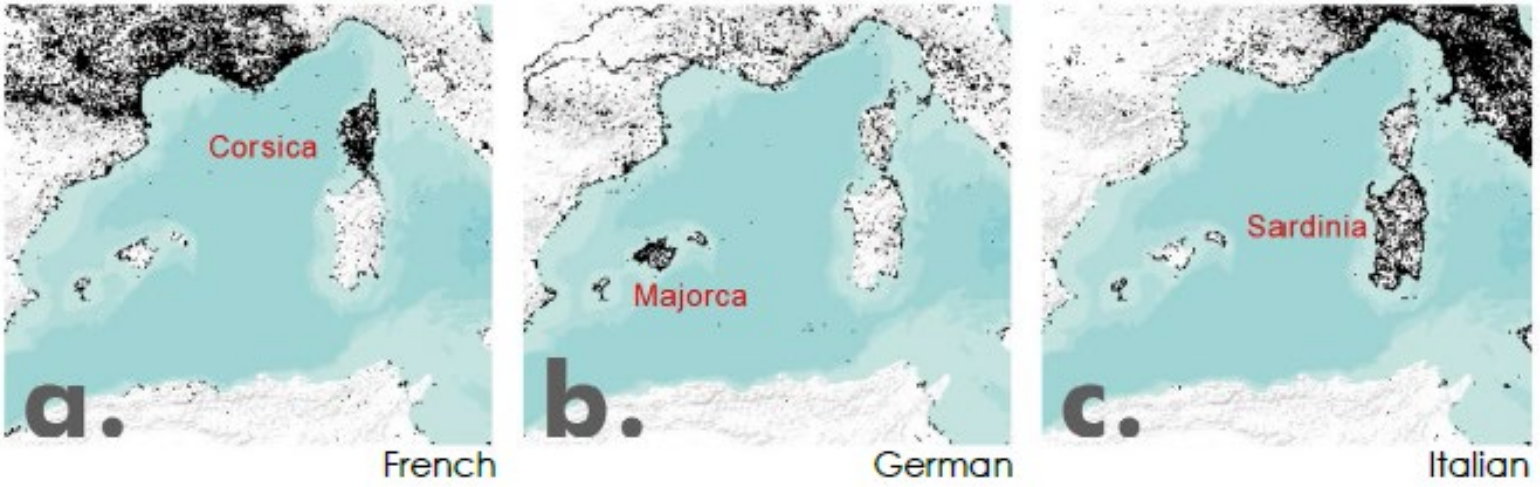
Repräsentativität

“Bias of Information”

Bias

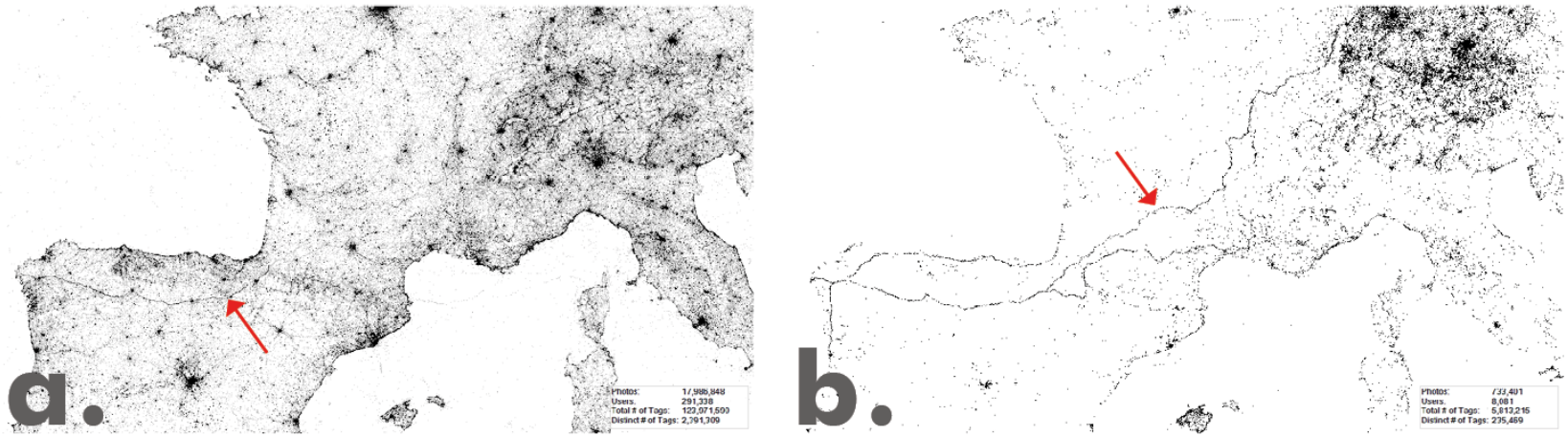
Americans

Europeans



Reisepräferenzen: Mittelmeergebiet (S. 97)

Bias



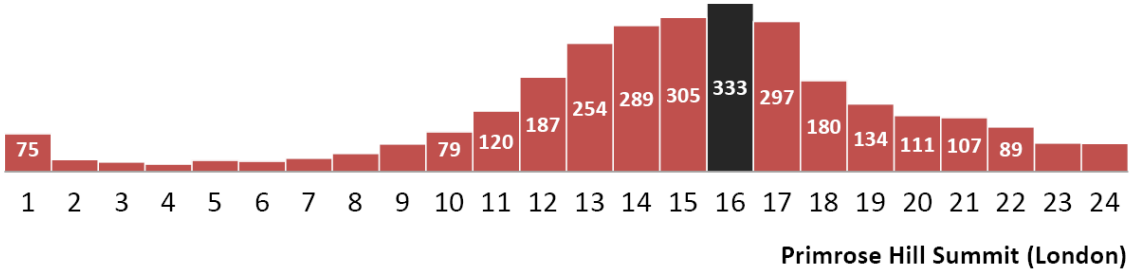
Jakobsweg (S. 98)

When: **Zeitliche Analyse**

(Photo timestamps)

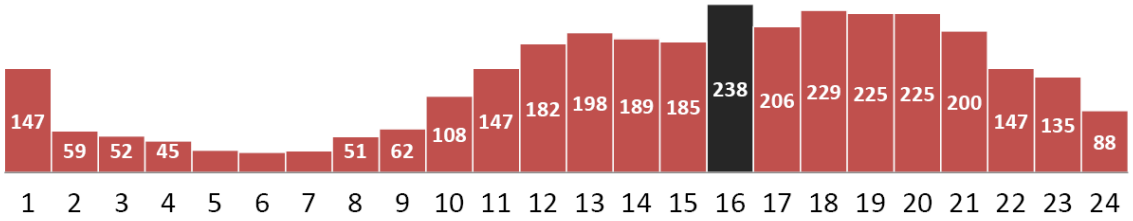
2009 - 2011
state of california
flickr data stream

Zeit

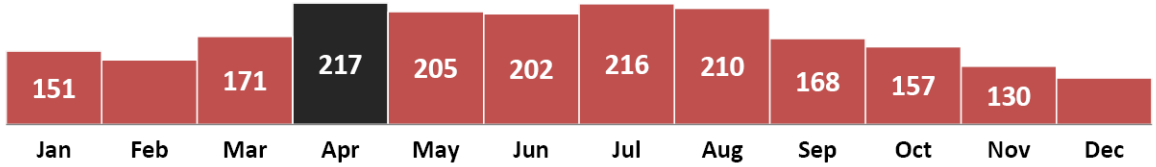


Primrose Hill Summit (London)

USER PER TIME OF DAY

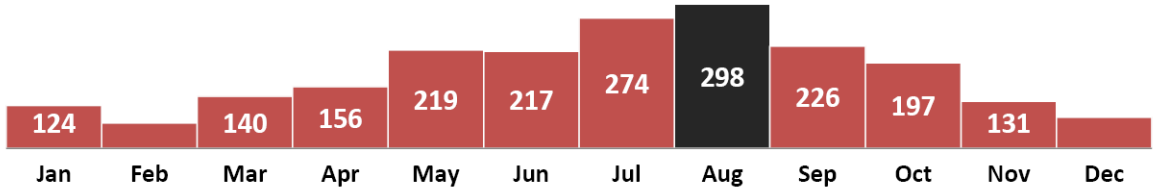


CN Tower (Toronto)



Primrose Hill Summit (London)

USER PER MONTH



CN Tower (Toronto)

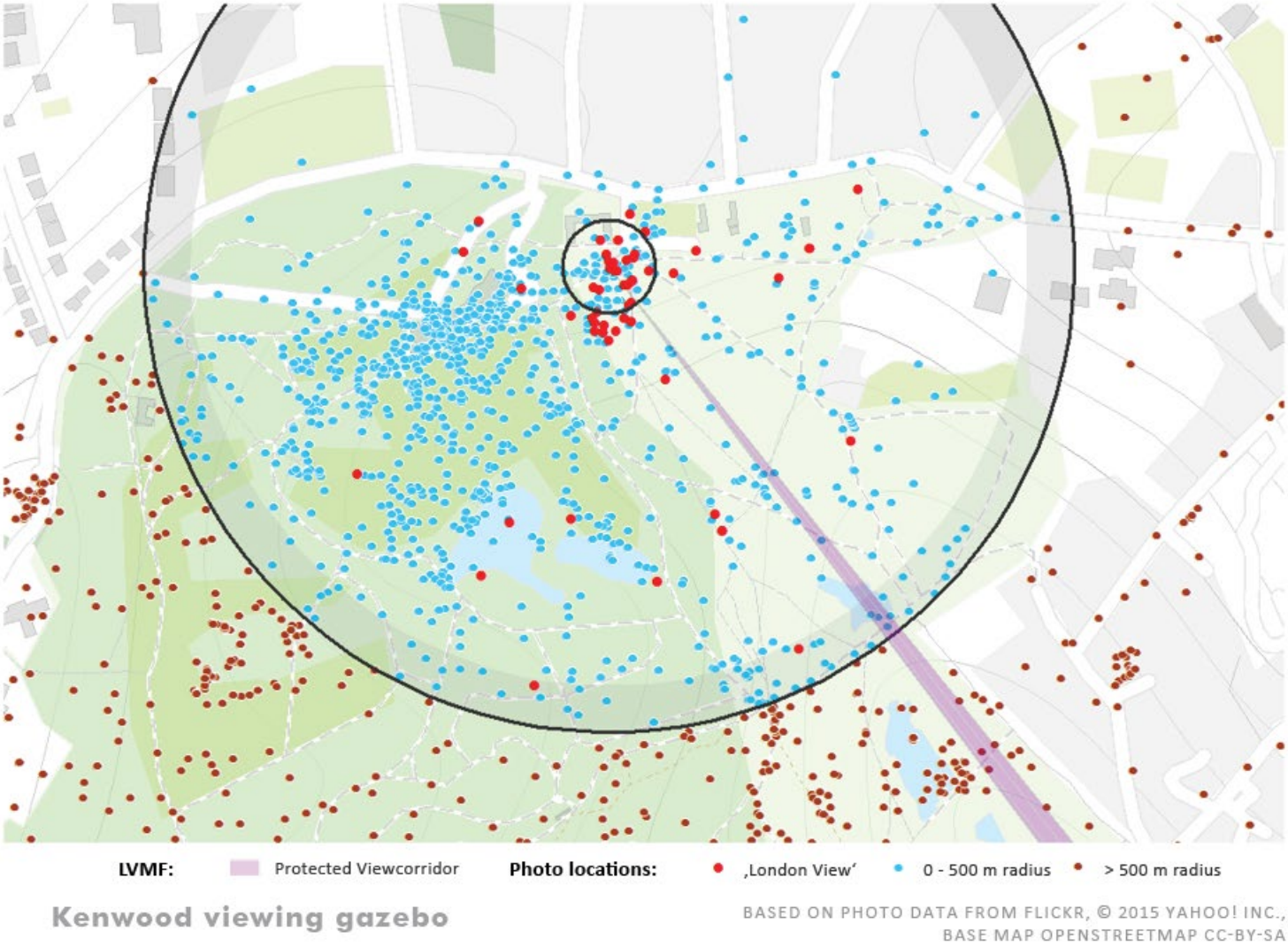
Bedeutungszuschreibungen:

Tags

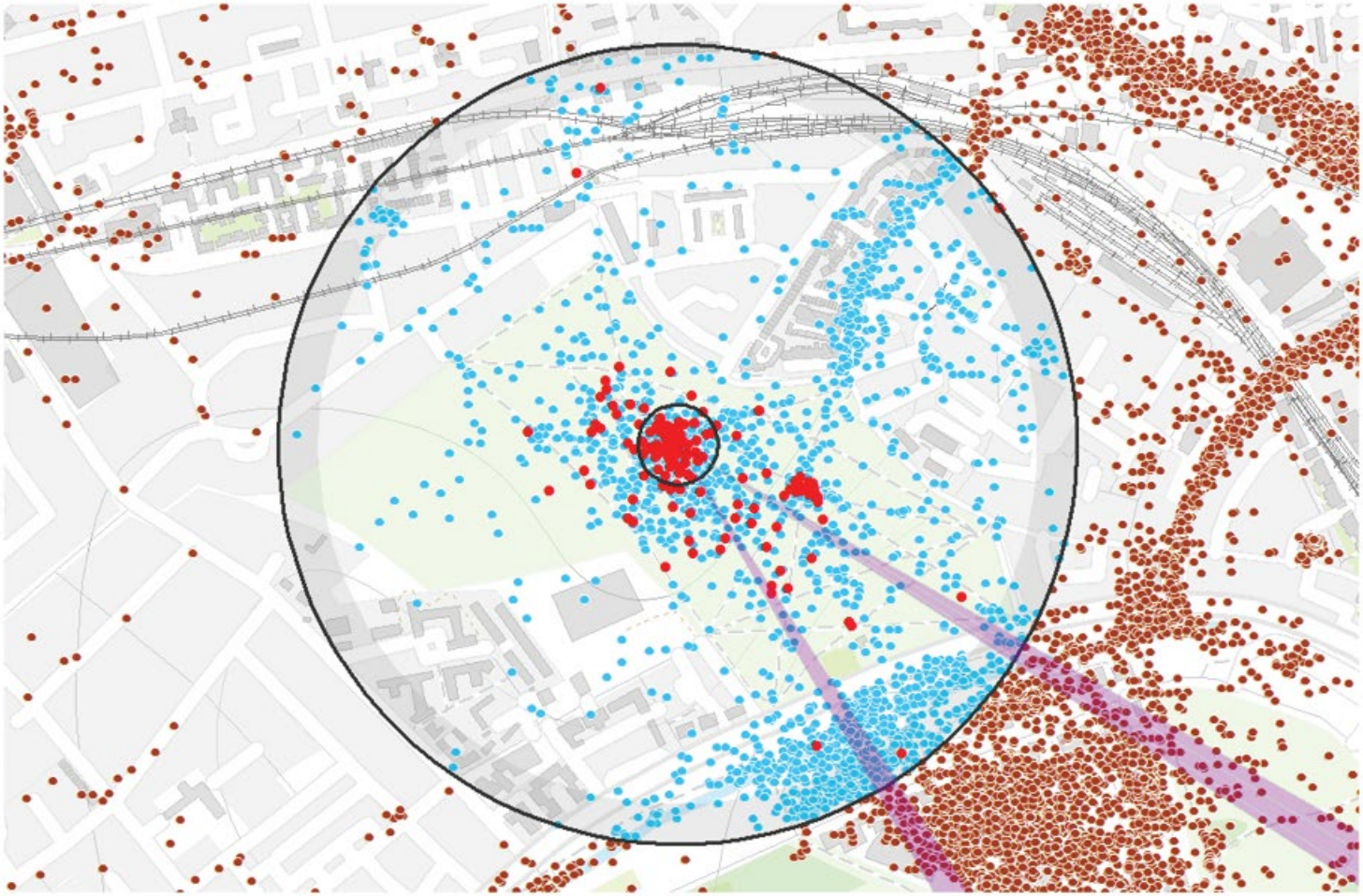
‚Tagging‘

a.

ocean, california, blue, sunset, red, sea, sky, bird, colors, sunglasses, silhouette, grey, bay, bravo, hills, albany, sanfranciscobay, hdr, trilogy, gonewiththewind, goldengatefields, albanyca, flopper, interestingness27, i500, explorefrontpage, photomatrix, bonzag, p1f1, explore20



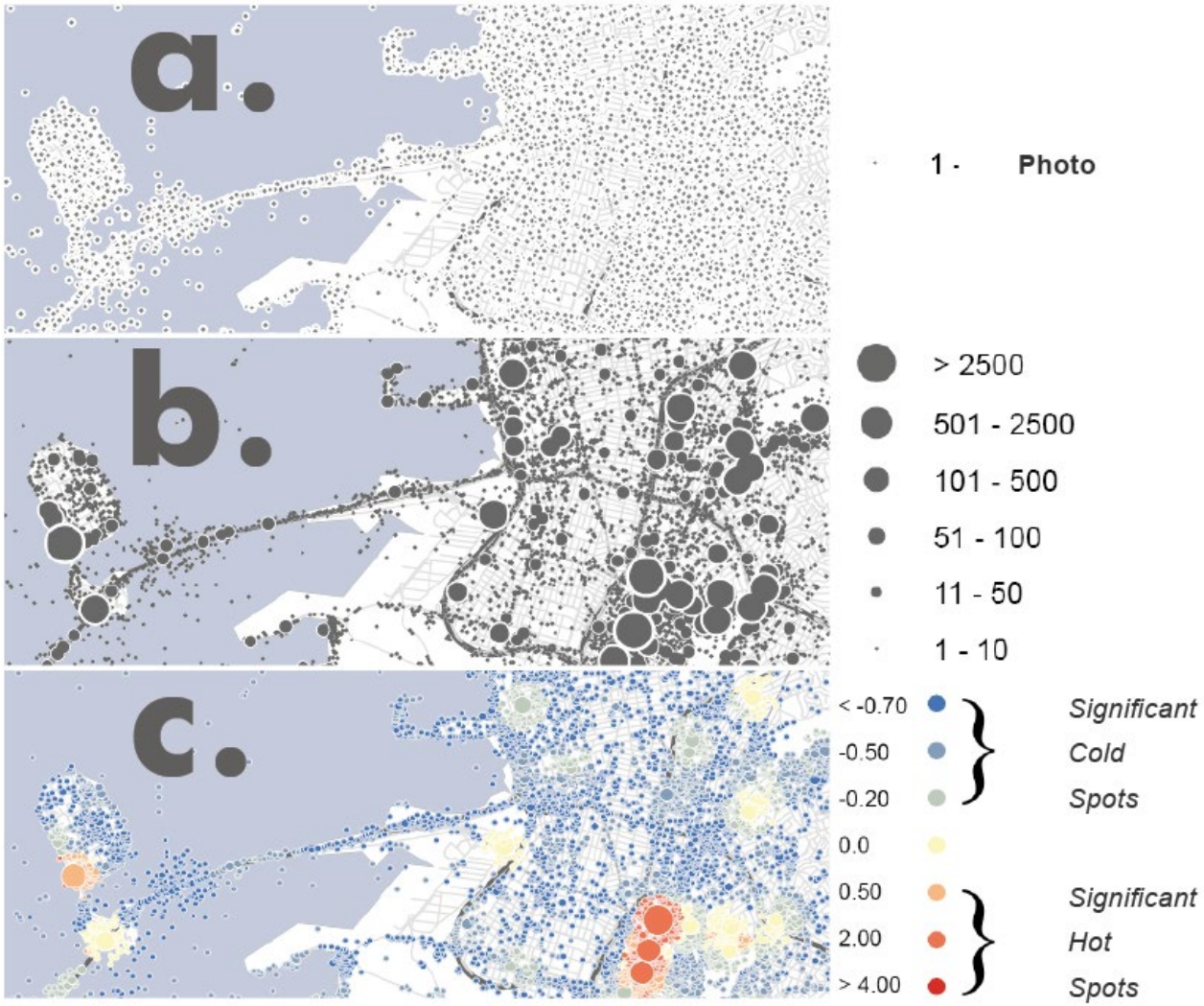
(London View Implementation Example, S. 195)


LVMF:
Protected Viewcorridor
Photo locations:
‚London View'
0 - 500 m radius
> 500 m radius
Primrose Hill Summit
BASED ON PHOTO DATA FROM FLICKR, © 2015 YAHOO! INC.,
BASE MAP OPENSTREETMAP CC-BY-SA

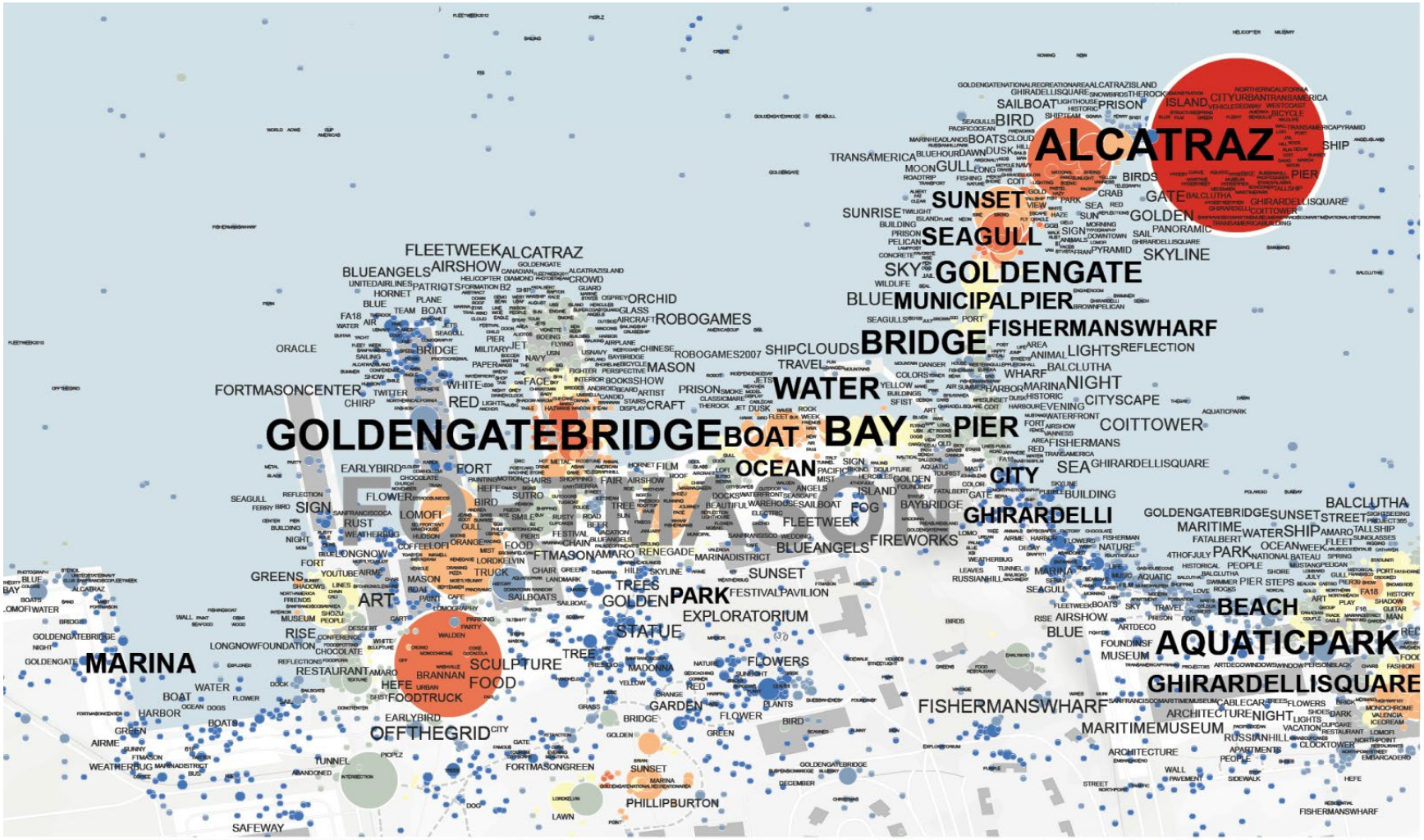
Visualisierungstechniken für die Anwendung in Landschafts- und Stadtplanung

Spatio-temporal Tag Clouds

Aggregation



Clustering of Photo Locations (S. 114)



Second Level Clustering:
Color
Hot-Spot-Analysis

Distribution of Photos

Z-Score Range*	
< -0.80	Significant Cold Spots
-0.80 - -0.40	
-0.39 - 0.0	
0.1 - 2.0	
2.1 - 4.0	Significant Hot Spots
4.1 - 6.0	
> 6.0	

First Level Clustering:
Size
Number of Photos*

1
5
10
20
> 50

Distribution of Tags

Font Size:	Number of occurrences:*
fortmason	1
fortmason	10
fortmason	50
fortmason	100
fortma	> 200

Font Weight/ Color:

Light-grey color/ shown in background for most used tags:
fortmason

Bold font weight for the densest area for each tag used:
fortmason

Normal font weight for all other values:
fortmason

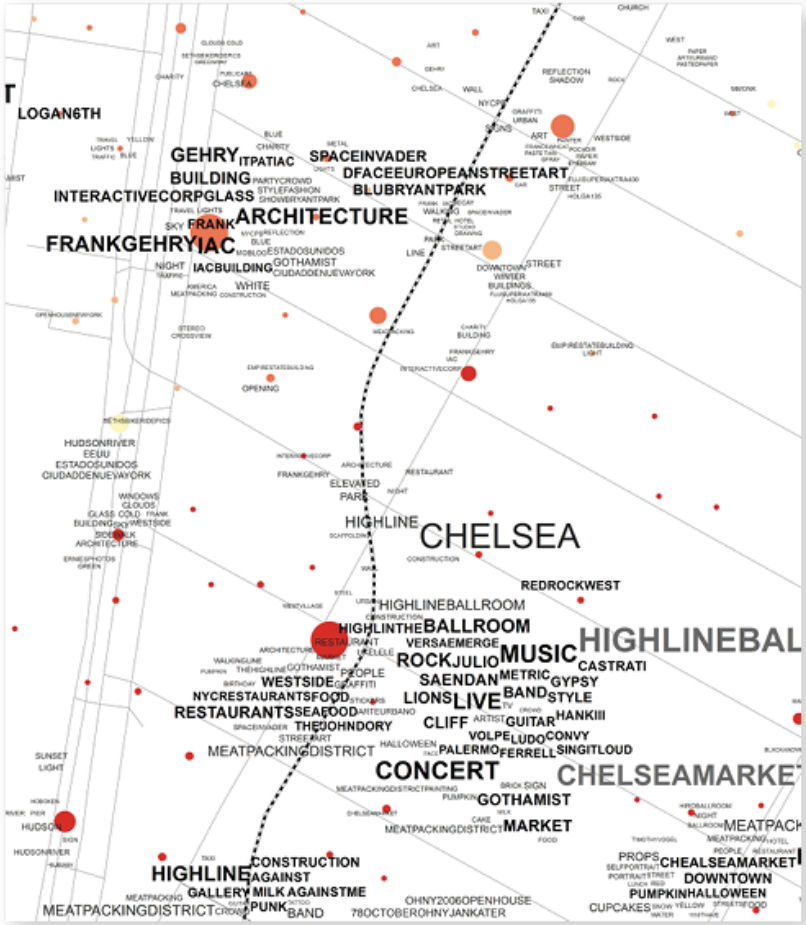
** Values vary*

Interaktive Online Karten

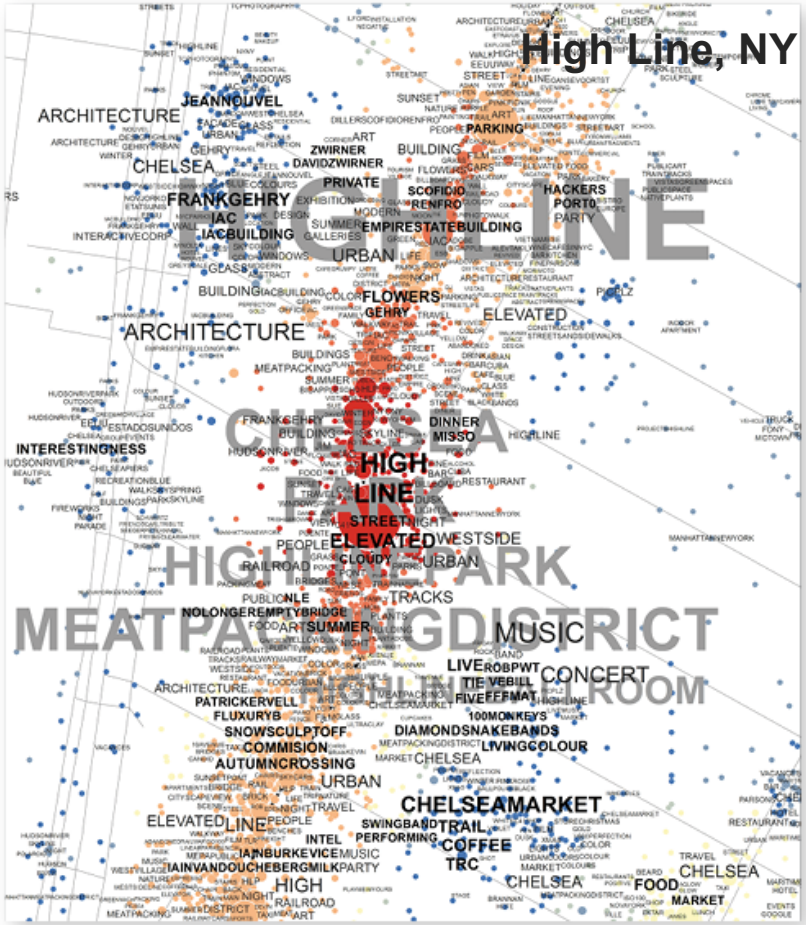
maps.alexanderdunkel.com

Vorher/Nachher Vergleich:

Monitoring

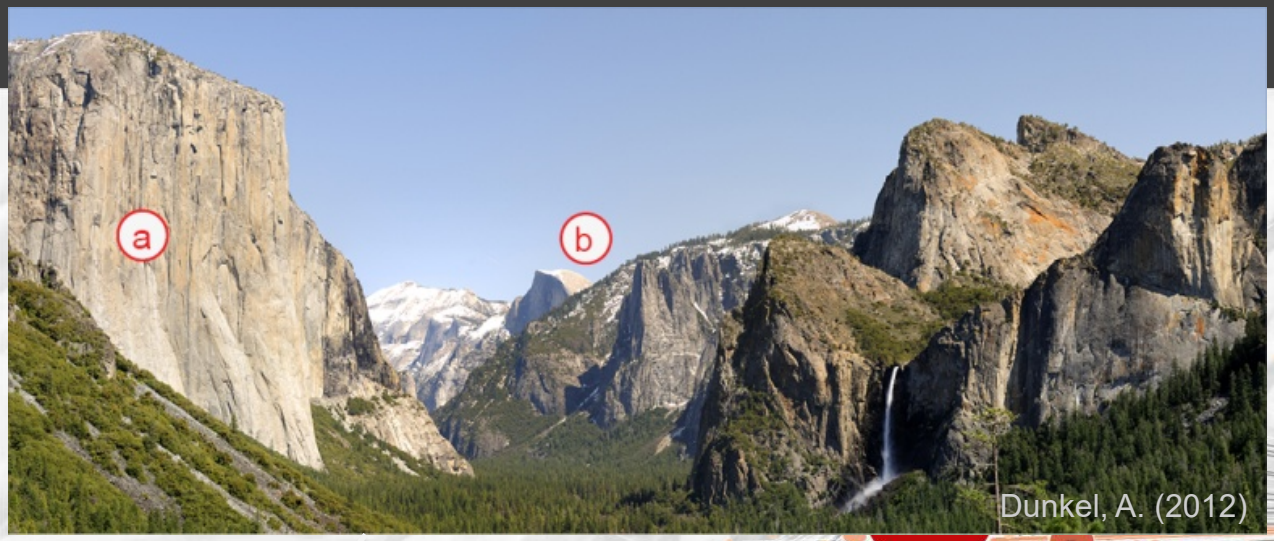


2006-2009



2009-2011

Wahrnehmungsgewichtete Sichtachsen



Yosemite Valley

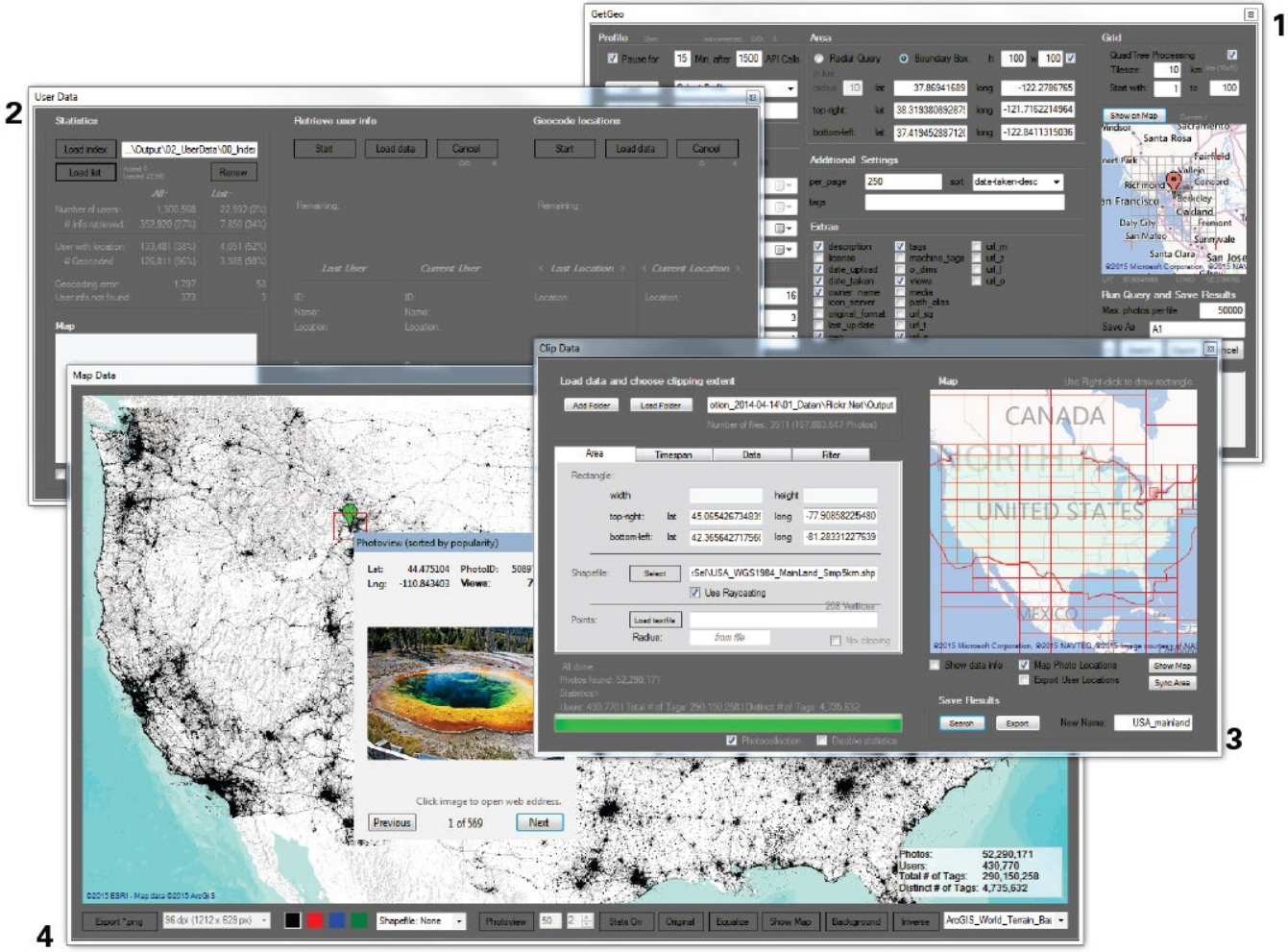
HALF DOME
3188
ELCAPITAN
994
GLACIER POINT
279
5%
11%

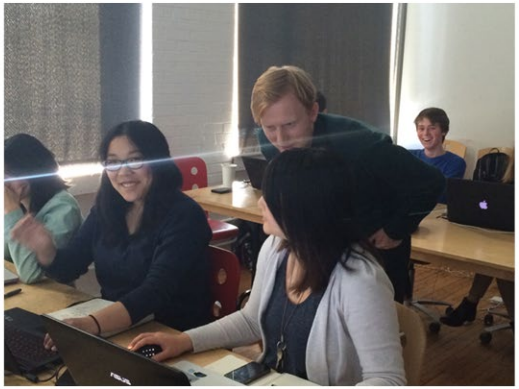
→ Bedeutung eines Ortes als Aussichtspunkt im Vergleich zur Bedeutung als wahrgenommener Landschaftsbestandteil

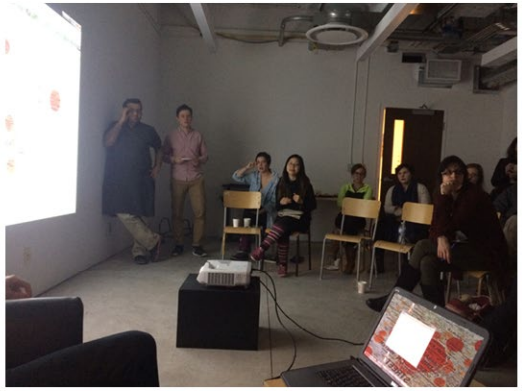
Hürden:

- Flickr: Copyright
- Schutz der Privatsphäre
- Software Entwicklung

Software-Entwicklung







Workshop/Diskussion
University of Waterloo, Canada (S. 206)

Vielen Dank