



TECHNISCHE
UNIVERSITÄT
DRESDEN

Faculty of Environmental Sciences · Institute of Cartography

Workshop RICH-VGI

Detection, modelling and visualisation of space-related emotions from user-generated content

Eva Hauthal

Lisbon - 9th June 2015

Motivation

- event detection
- opinion mining
- urban planning
- social sciences
- social geography
- tourism

Emotions

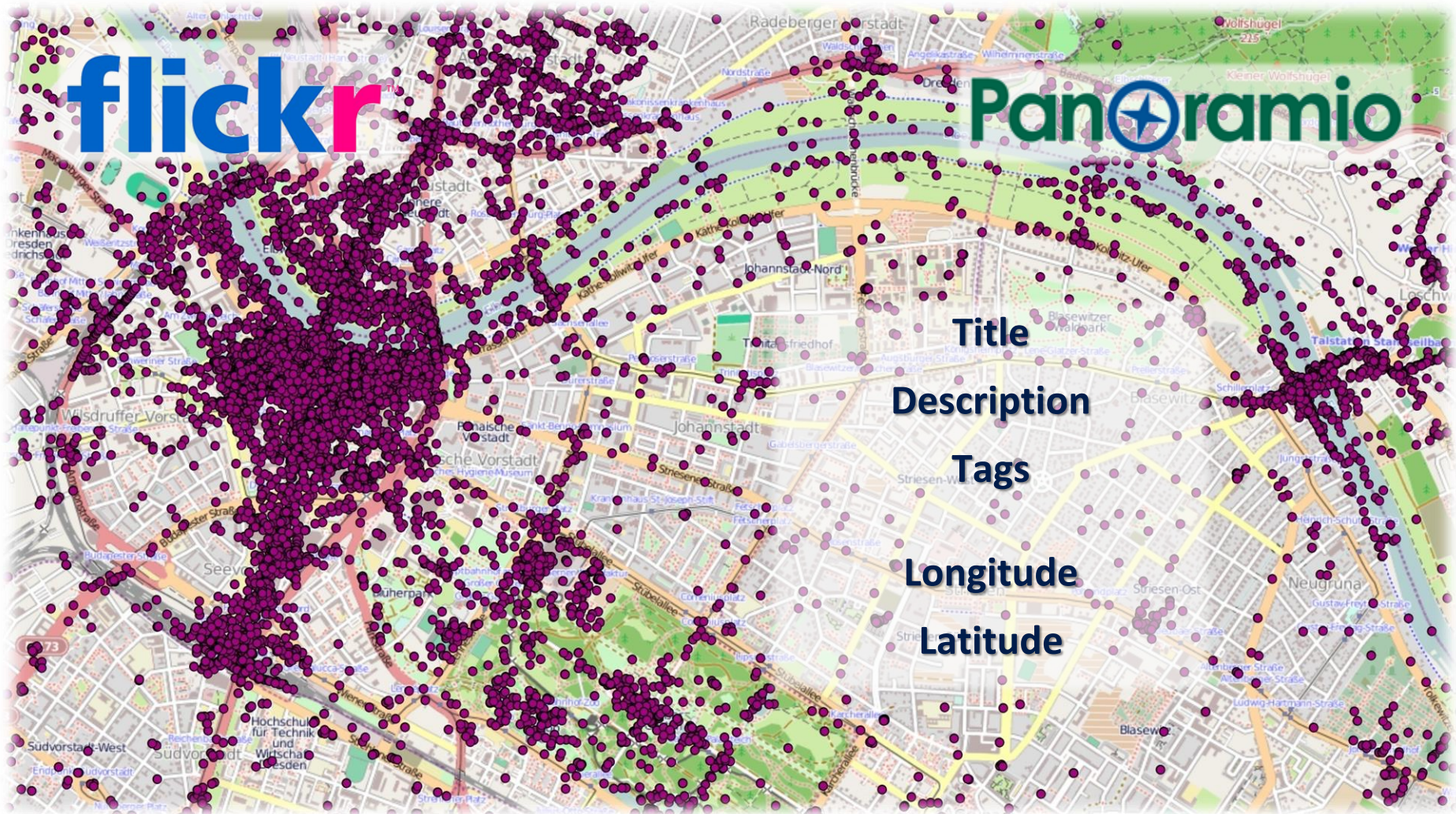
Overall emotional reaction

- physiological reactions
- tonic posture reactions
- instrumental motoric reactions
- expressive motoric reactions
- expressive linguistic reactions
- subjective experience components

Battacchi et al. (1996)

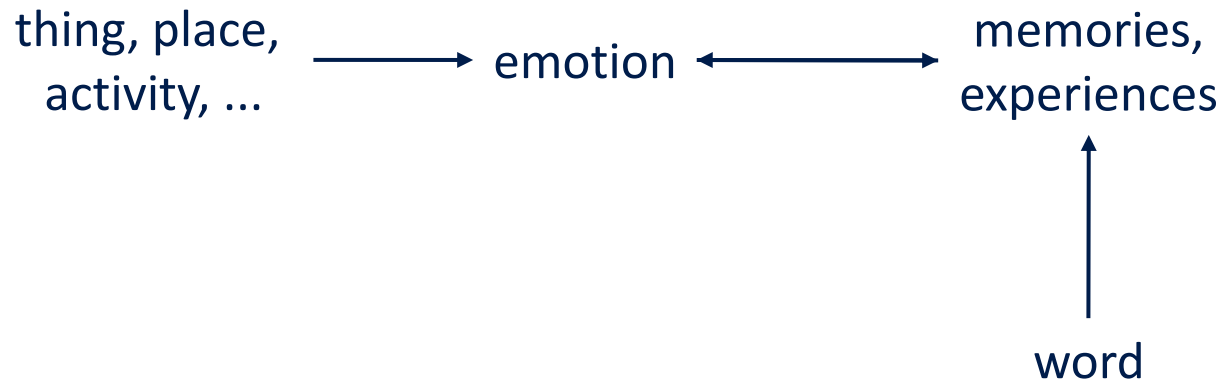
*Emotion und Sprache: zur Definition der
Emotion und ihren Beziehungen zu kognitiven
Prozessen, dem Gedächtnis und der Sprache.*

Lang, Frankfurt am Main.



Emotions

Emotions in Language (Affective Connotation)

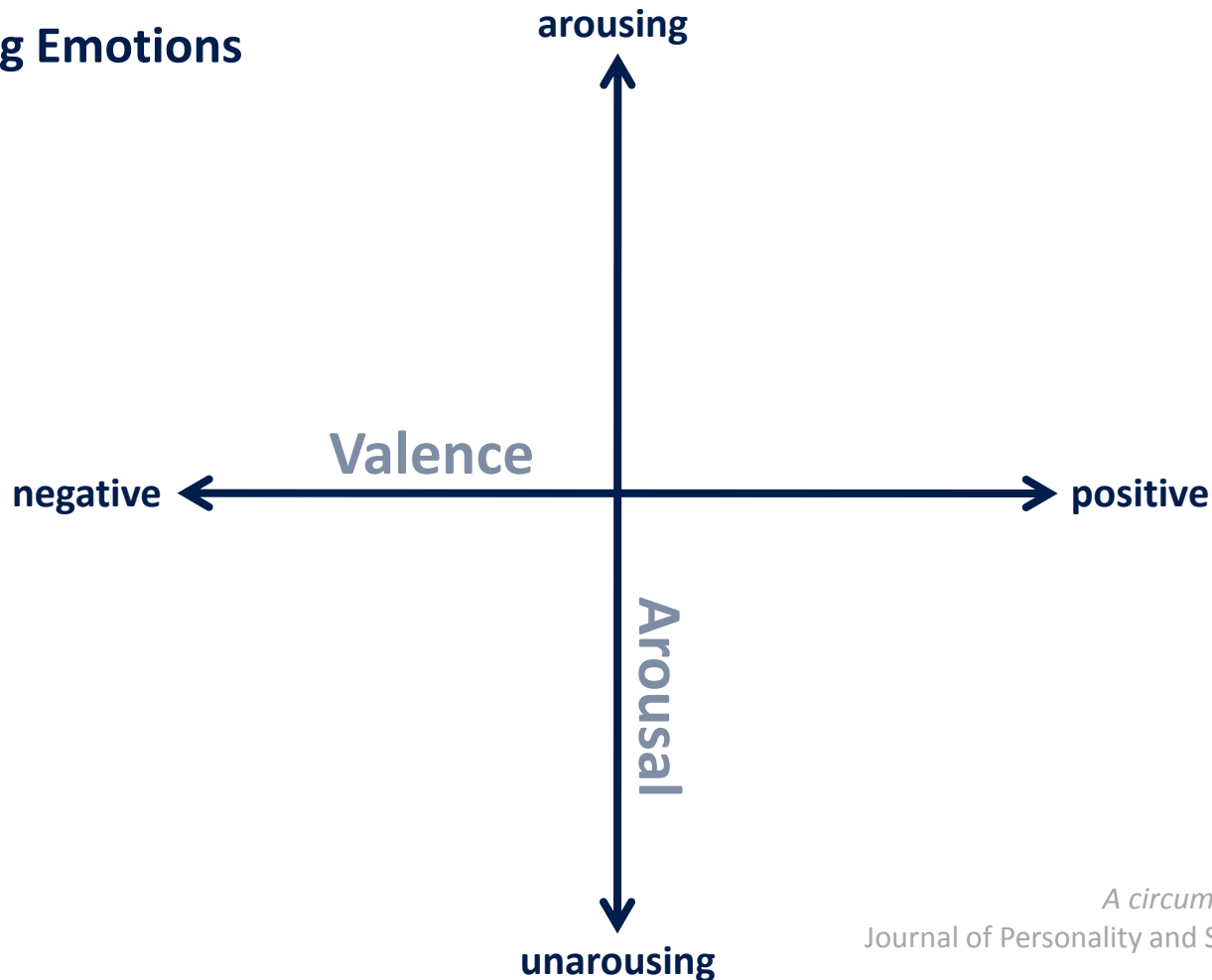


“the aura of feelings, pleasant or unpleasant, that surrounds practically all words”

Hayakawa (1952: 83)
Language in Thought and Action.
George Allen & Unwin, London.

Emotions

Structuring Emotions

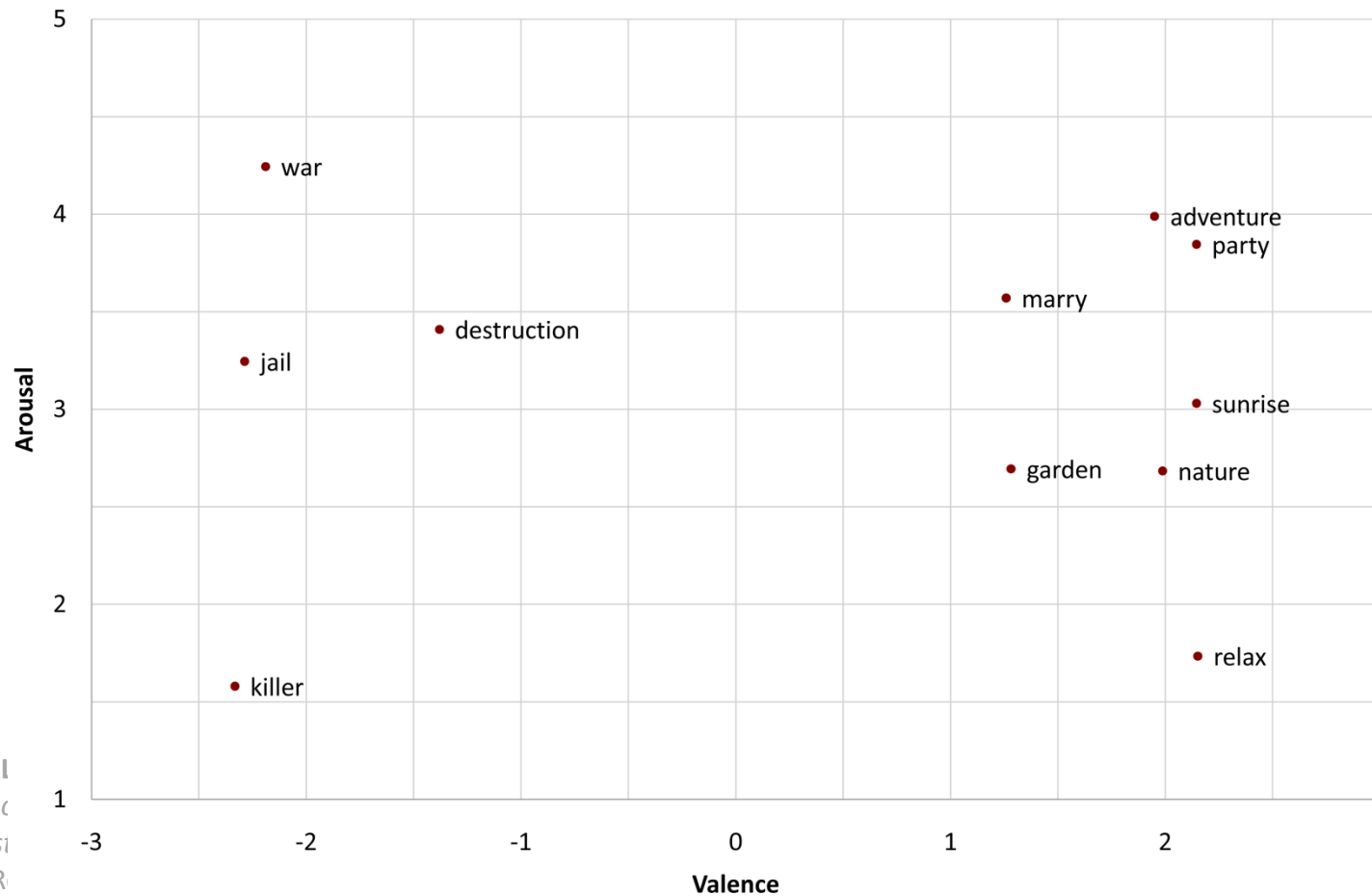


Russell (1980)
A circumplex model of affect.
Journal of Personality and Social Psychology 39.

ANEW & BAWL-R

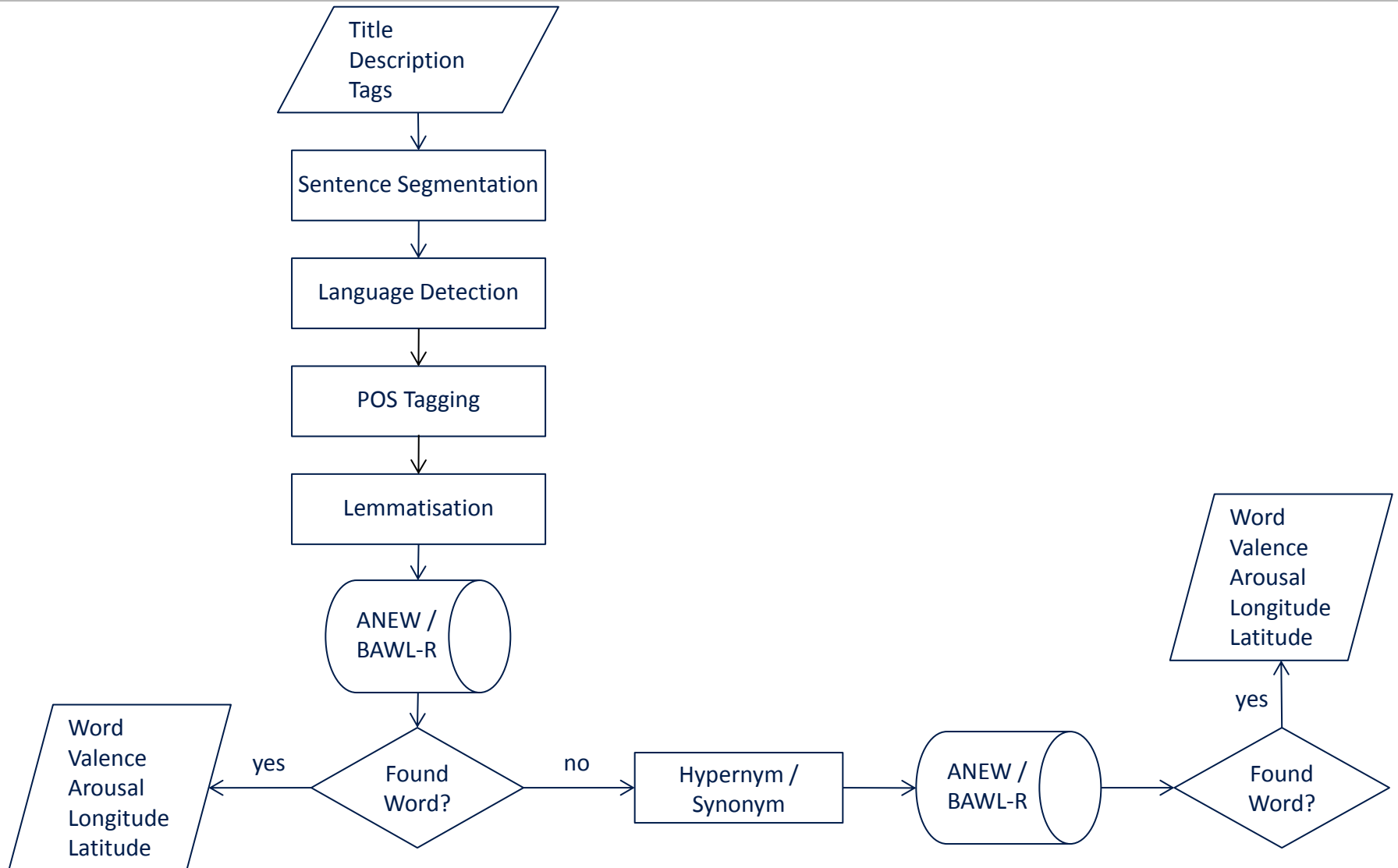
Affective Norms for English Words

Berlin Affective Word List - Reloaded



Bradley & Lang (1999)
Affective Norms for English Words (ANEW)
Stimuli, instructions, and technical details

Lang et al. (2009)
The Berlin Affective Word List (BAWL-R)
Methods 41(2).



Grammatical Special Cases

happy

Maximum	Amplification	Attenuation	Minimum	Negation	Amplified Negation
<i>absolutely happy</i>	<i>very happy</i>	<i>a bit happy</i>	<i>hardly happy</i>	<i>not happy</i>	<i>not happy at all</i>
Superlative <i>happiest</i>	Comparative <i>happier</i>			Prefixes <i>unhappy</i>	

based on

Biedermann (1969)

Die deutschen Gradadverbien in synchronischer und diachronischer Sicht. Dissertation, Heidelberg.

Quirk et al. (1985)

A comprehensive grammar of the English language. Longman, London.

van Os (1989)

Aspekte der Intensivierung im Deutschen. Narr, Tübingen.

Grammatical Special Cases

→ degree words

Maximum	Amplification	modifying the intensity of...		Negation	Amplified Negation
<i>absolutely</i>	<i>deeply</i>	<i>a bit</i>	<i>barely</i>	<i>neither</i>	
<i>completely</i>	<i>enormously</i>	<i>a little</i>	<i>hardly</i>	<i>never</i>	<i>absolutely not</i>
<i>entirely</i>	<i>highly</i>	<i>fairly</i>	<i>in the least</i>	<i>no</i>	<i>not at all</i>
<i>extremely</i>	<i>pretty</i>	<i>kind of</i>	<i>in the slightest</i>	<i>nobody</i>	<i>not by any means</i>
<i>fully</i>	<i>really</i>	<i>merely</i>	<i>scarcely</i>	<i>none</i>	<i>not in any respect</i>
<i>too much</i>	<i>so</i>	<i>not really</i>	<i>slightly</i>	<i>nor</i>	<i>no way</i>
<i>totally</i>	<i>strongly</i>	<i>somewhat</i>	<i>... nouns</i>	<i>not</i>	<i>really not</i>
<i>utterly</i>	<i>truly</i>			<i>nothing</i>	
<i>...</i>	<i>very</i>			<i>without</i>	
	<i>...</i>			<i>...</i>	<i>...</i>

adjectives
It was absolutely good.

adverbs
They love their dog very dearly.

verbs
He denied it strongly.

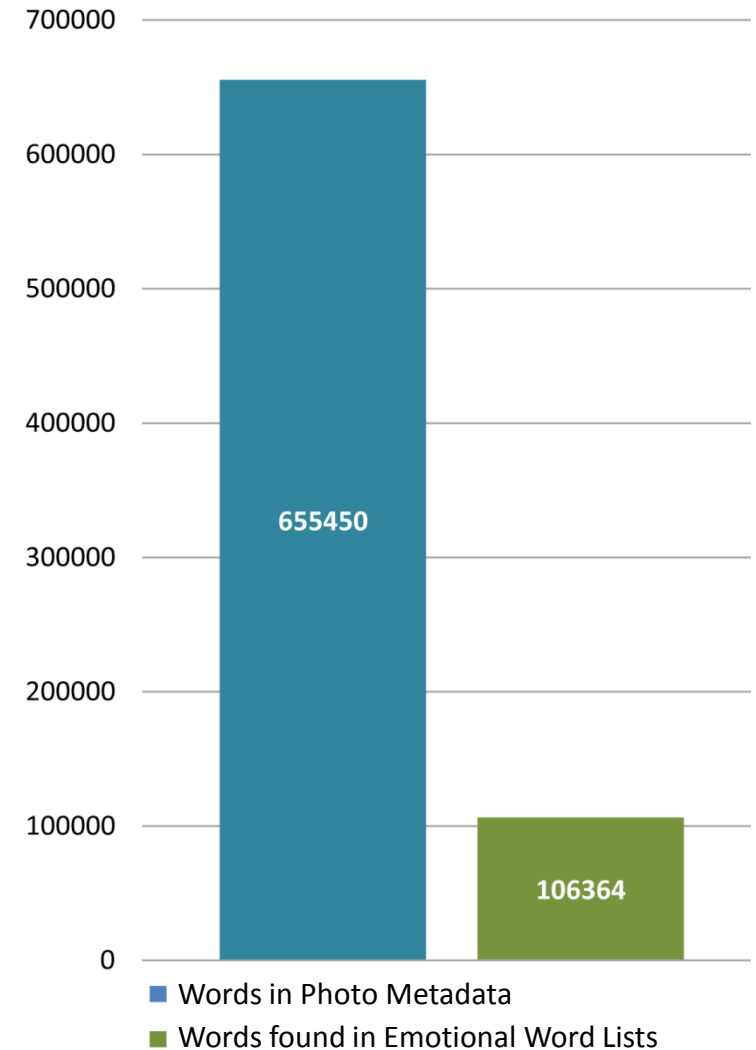
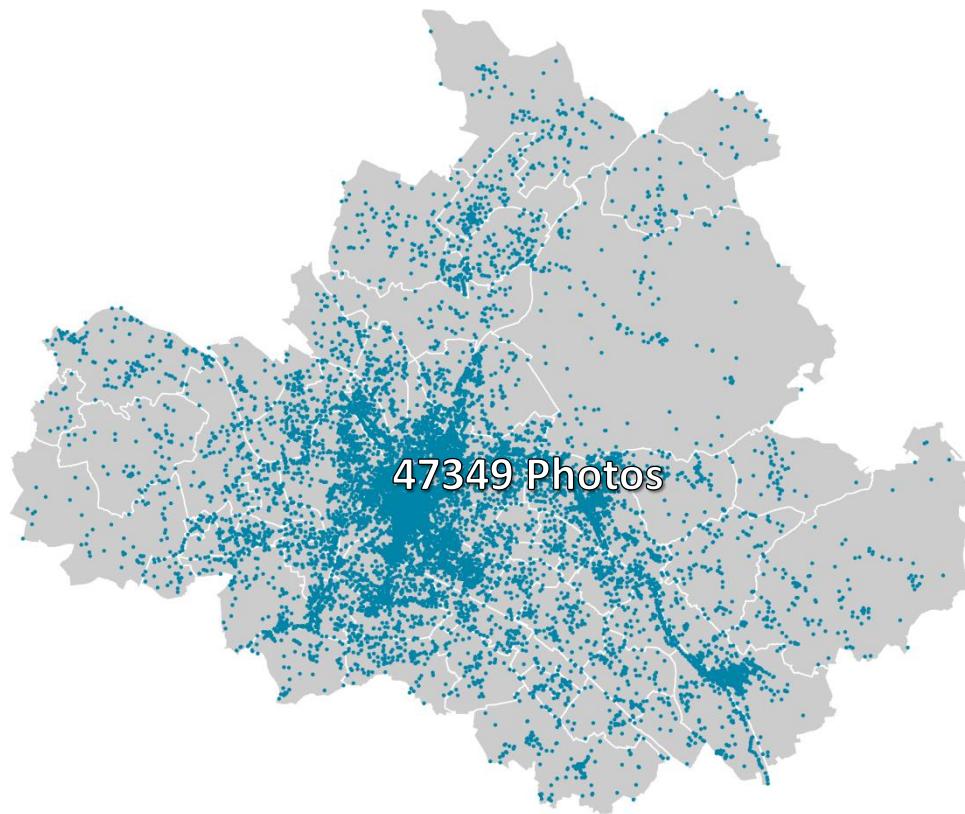
nouns
It was really an adventure.

based on

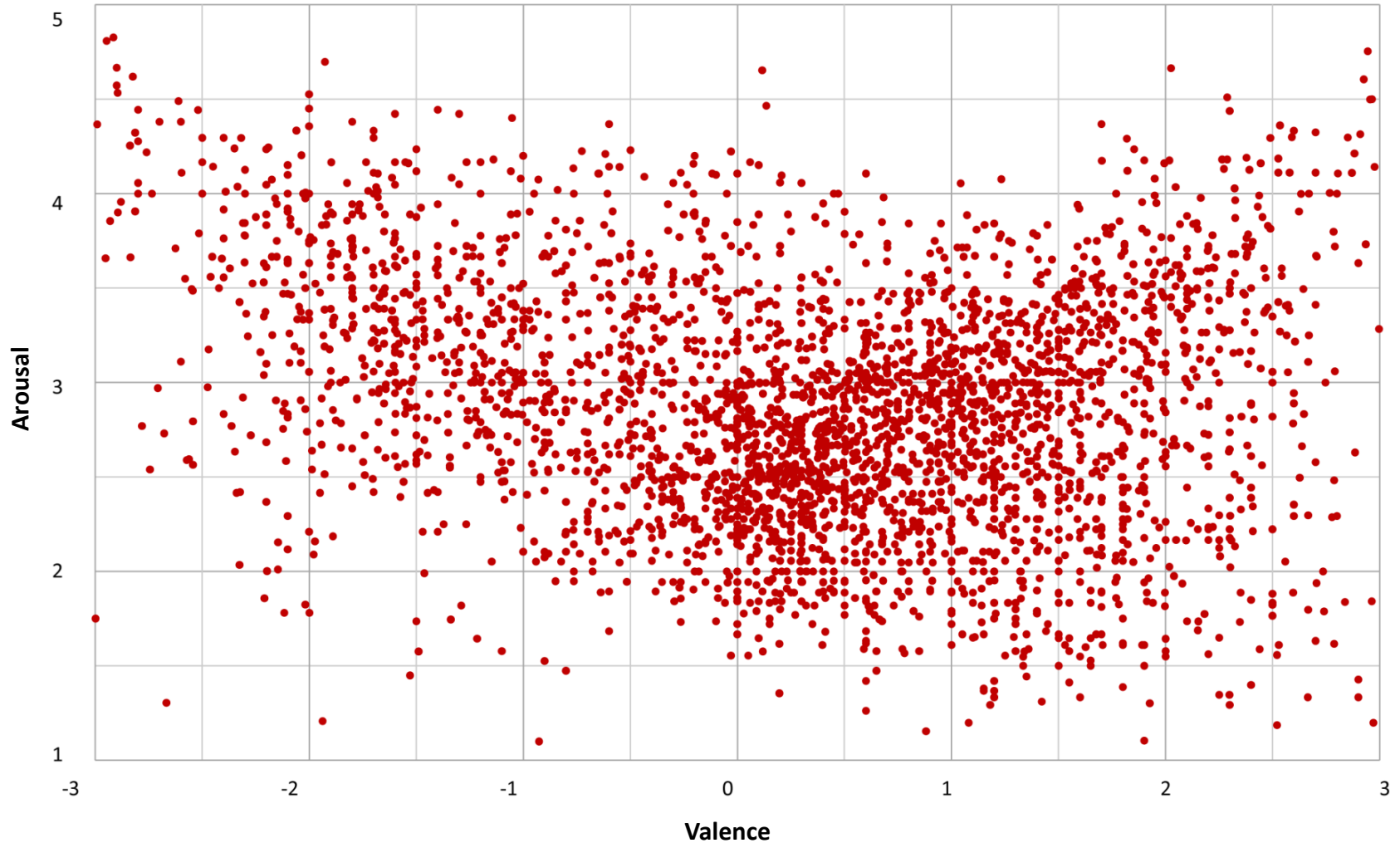
Quirk et al. (1985)

A comprehensive grammar of the English language. Longman, London.

Visualisation and Analysis



Visualisation and Analysis



Considerations

1 place \neq 1 emotion

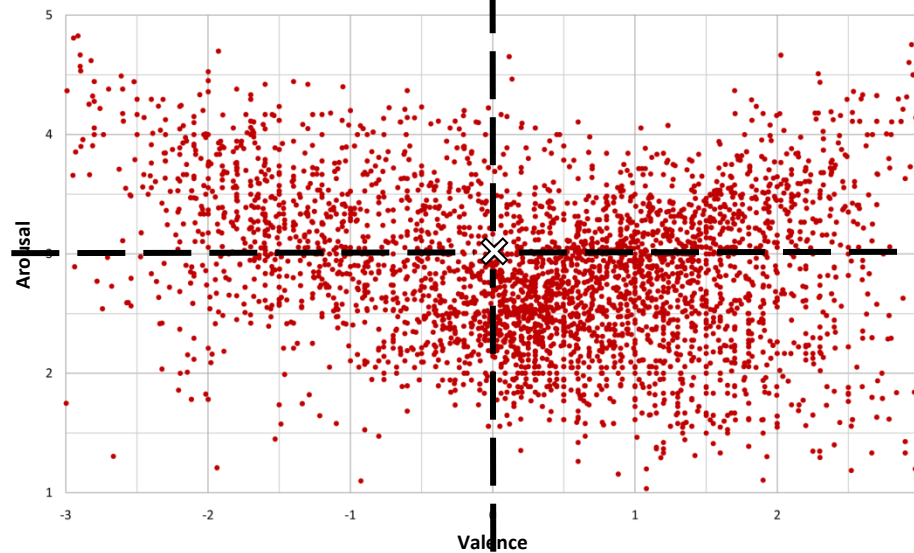
→ personal preferences/experiences/memories

→ individual vs. collective emotions

→ temporal aspects

**negative Valence &
high Arousal**

**positive Valence &
high Arousal**

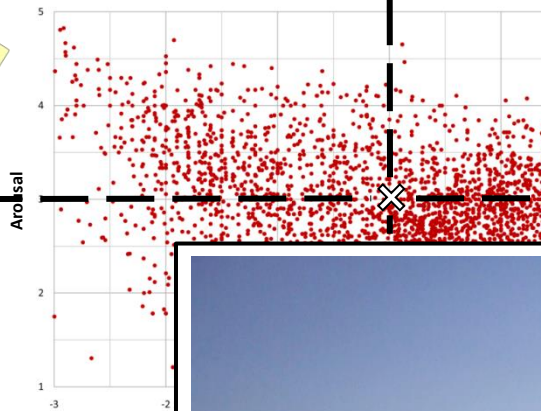
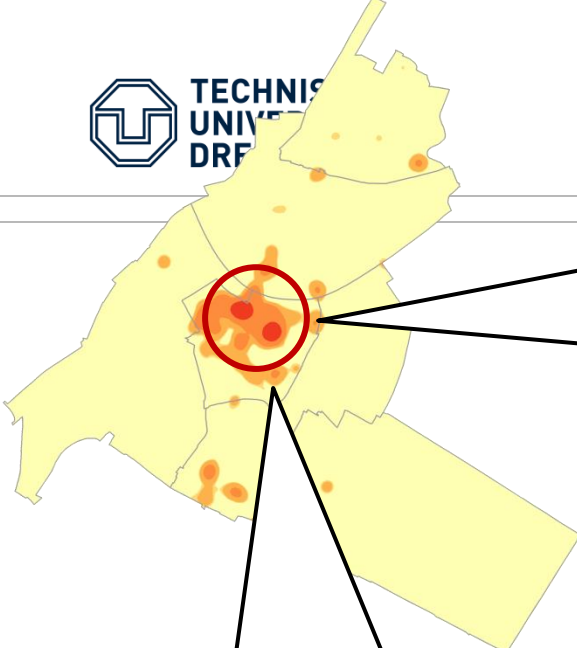
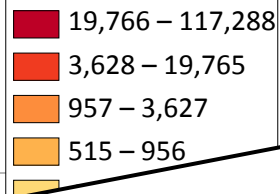


**negative Valence &
low Arousal**

**positive Valence &
low Arousal**



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attack compel court damage difficult fire
government **grab** grenze krieg ruin sarg **schaden**
tod **war** weltkrieg **work** zeugnis



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<http://de.wikipedia.org/wiki/Dresden>



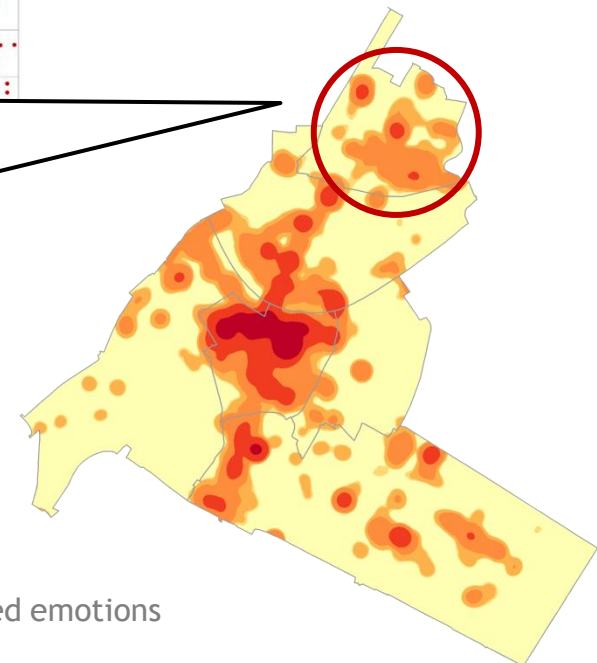
9,766 – 117,288
,628 – 19,765

442 words/km²

art building bunt change concert fest garten
kirche konzert kunst licht machen
musik party
mensch music strasse travel unit passage



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Visualisation of space-related emotions
from user-generated content

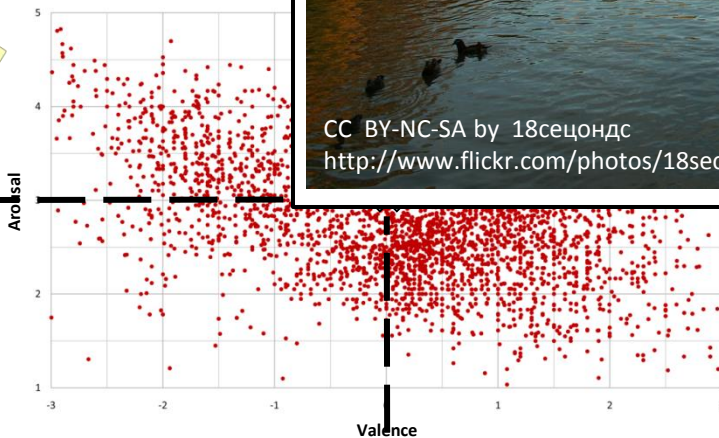


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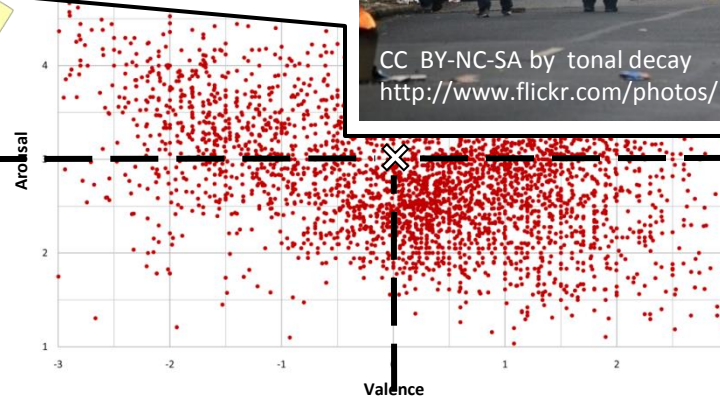
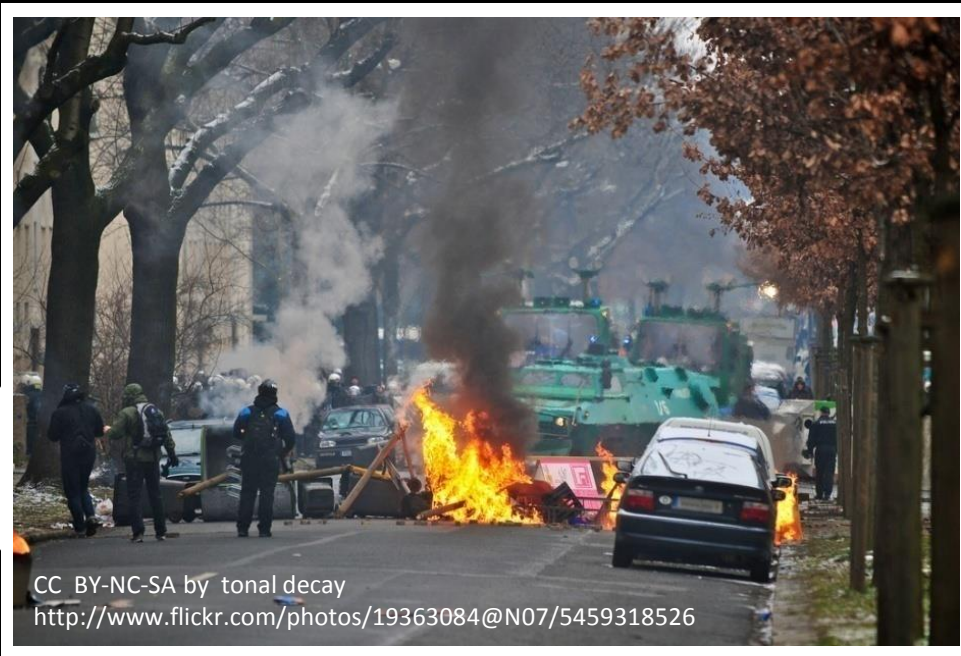
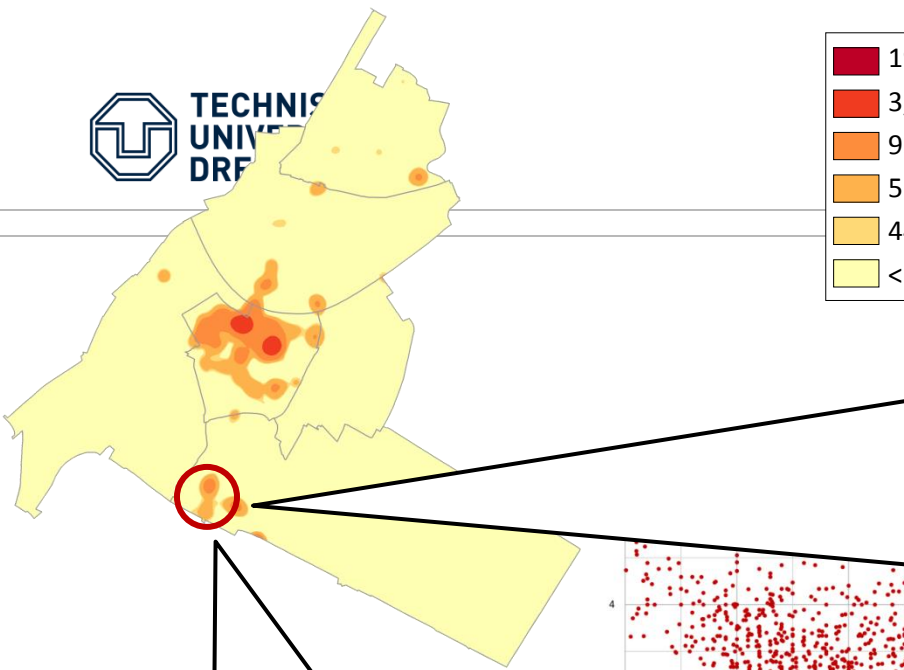
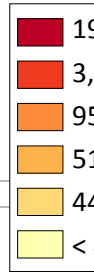
aufnahme bild black blume building color diary farbe flower
garten herbst licht palast plant
schloss train tree unit water winter

-related emotions

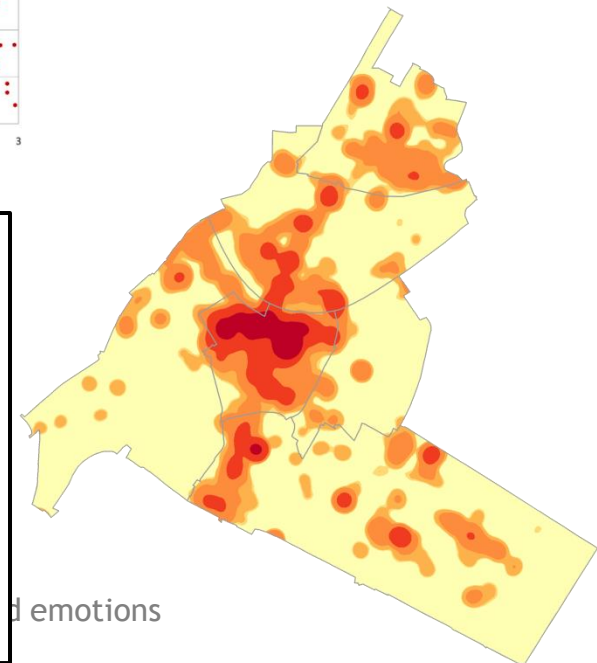
from user-generated content



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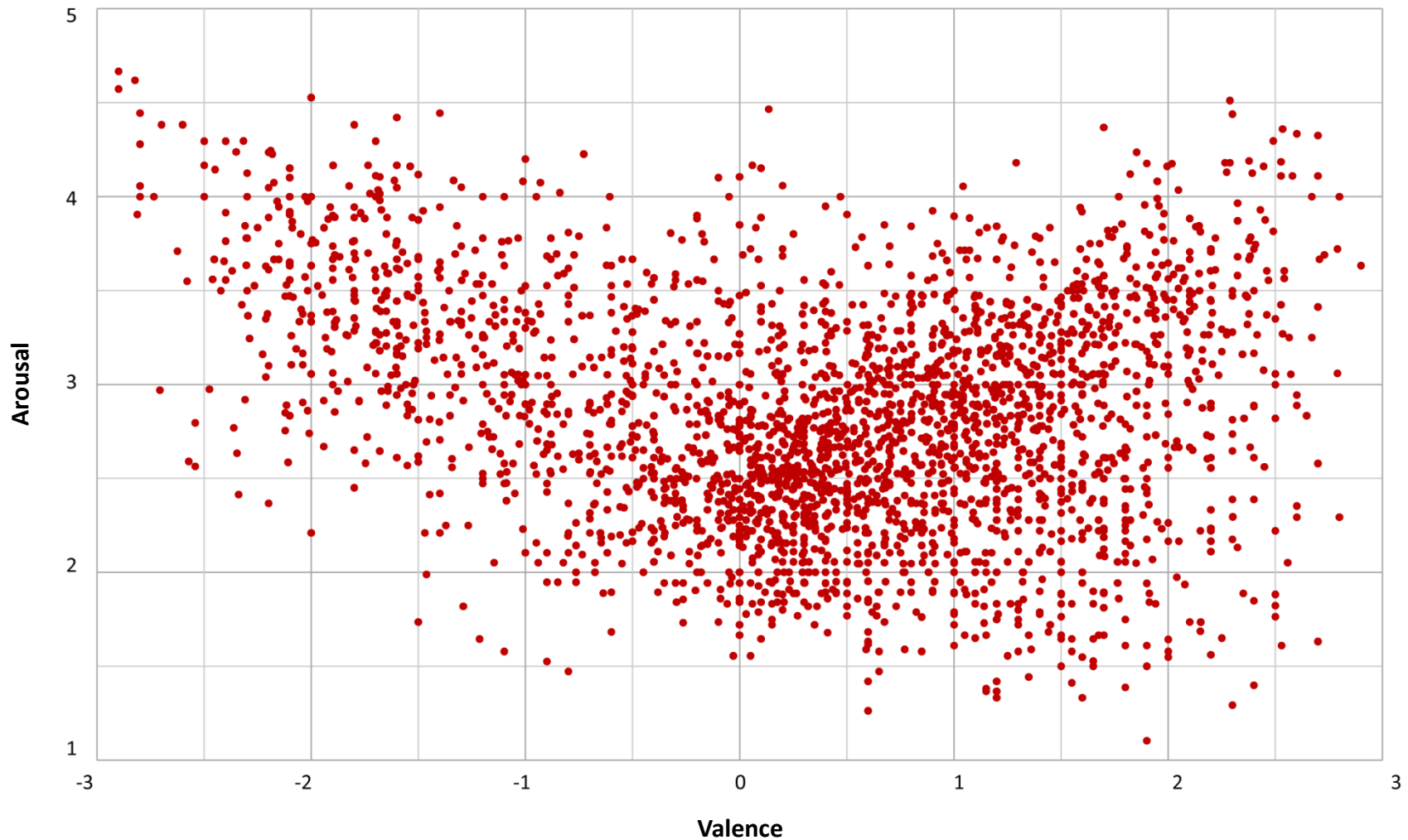


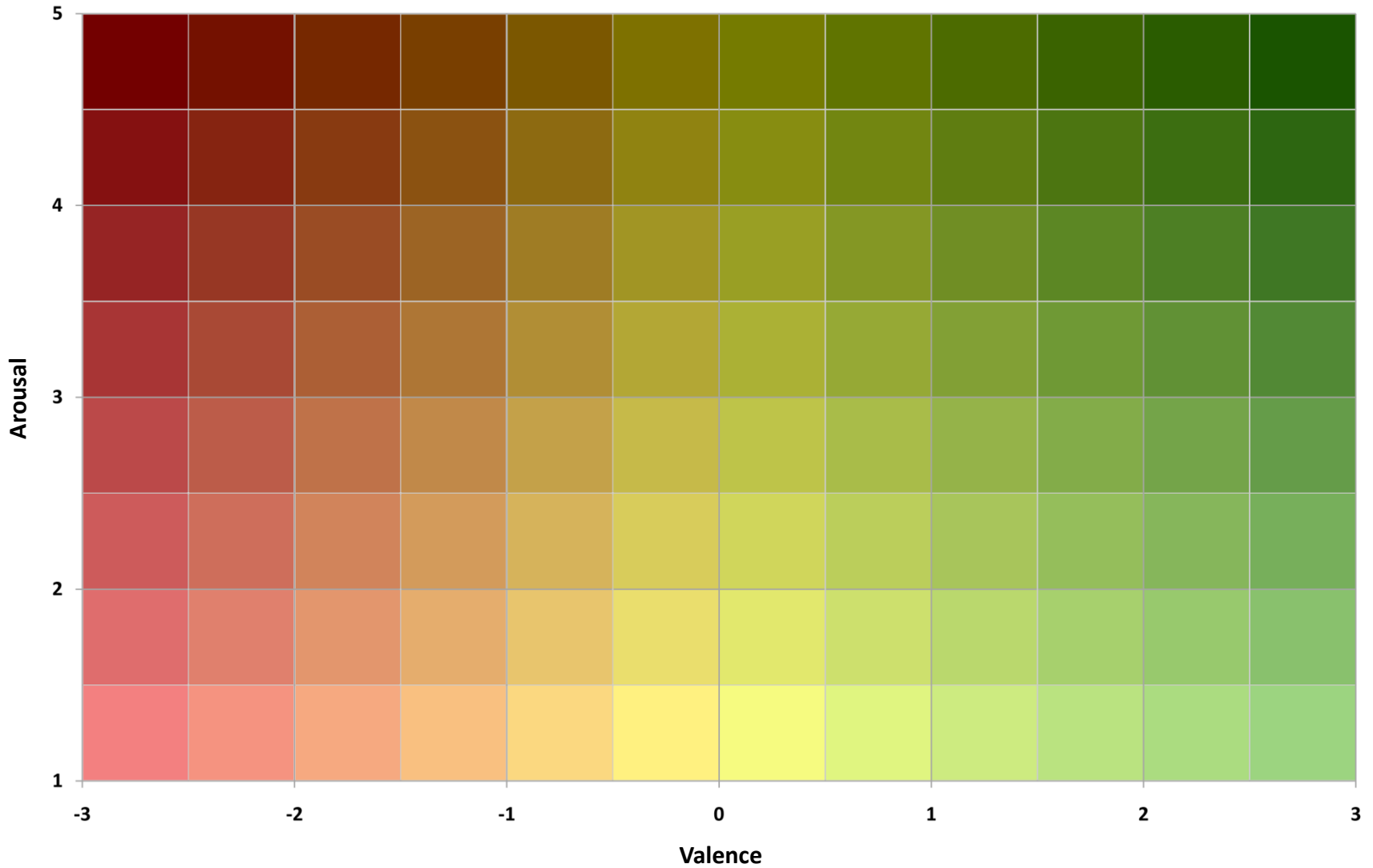
angriff attack bad damage die
government kommen list massiv nazi
platzen police polizei pressure rot ruin soldat stehlen
storm tense traffic verkehr verlassen war wissen work



emotions

Emotional Analysis of Dresden without Consideration of Grammatical Special Cases





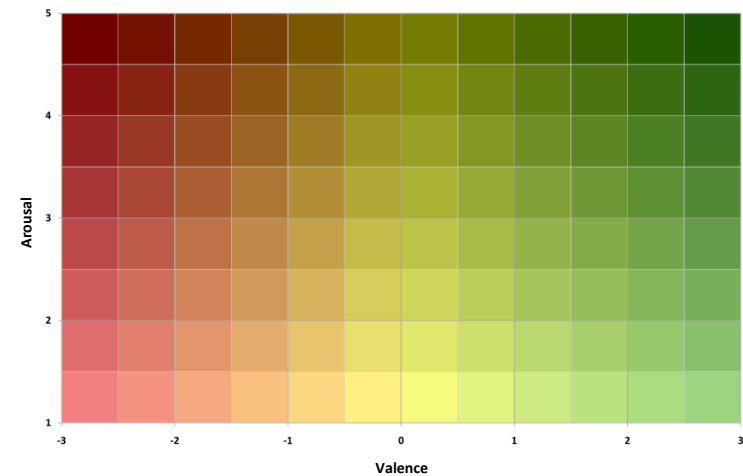
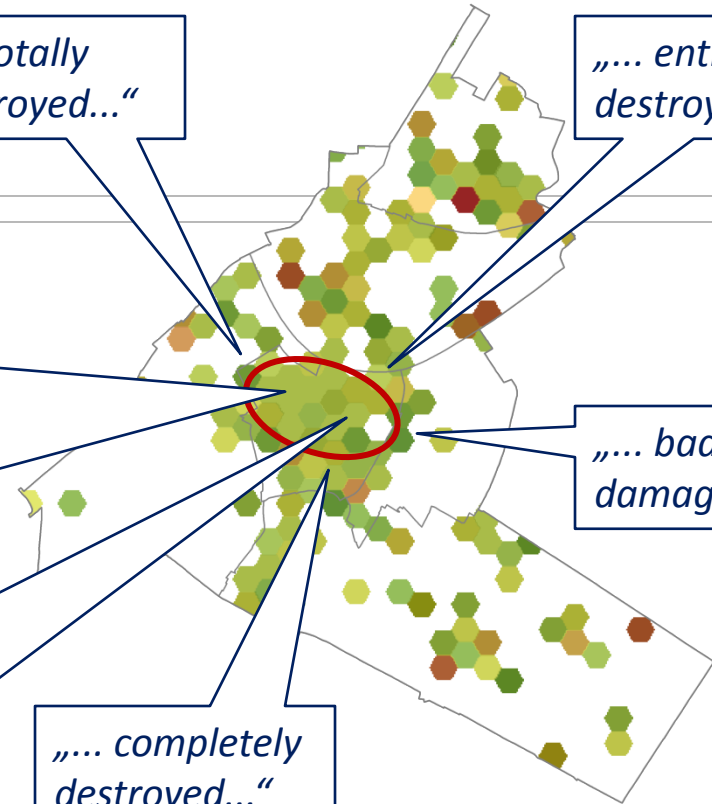


„... totally
destroyed...”

„... entirely
destroyed...”

„... badly
damaged ...”

„... completely
destroyed...”



Problems and Weaknesses

- language processing
- degree words
- irony
- reference of photo description
- incorrect photo metadata
- validation of emotions



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Thank you for your attention!

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