

Lieblingsgegenden, Fenster und Mauern

Zur emotionalen Enkodierung von Raum in
Deutschschweizer Prosa zwischen 1850 und 1930

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Das Projekt | Netzwerk

“High Mountains Low Arousal? Distant Reading Topographies of Sentiment in German Swiss Novels in the early 20th Century”

- EU COST Action “Distant Reading”
www.distant-reading.net
- Kollaboration Uni Bielefeld / DHLab Basel & UB Basel

1. Korpusbau
 2. Lexikonbasierte Analyse | Annotation + Maschinelles Lernen
 3. Literaturtheorie und -geschichte
- Großes Korpus Deutschschweizer fiktionale Texte 1854-1930
 - Repositorien + Retrodigitalisierung
 - ELTeC (European Literary Text Collection, CC-BY 4.0): ELTeC-gsw
 - Literarische Darstellungen von Gefühlen messbar und digital auf räumliche Koordinaten der fiktionalen Welten projizieren
 - Raumentitäten
 - Sentiment/Emotion
 - Analysen: Realismus, Stadt/Land, Alpen-Mythos, “Nationalliteratur”
 - D-A-CH

Raum | Landschaft | Kultur

- **Landscape** = ‘area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors’
(Council of Europe, 2000, S. 2)
- ‘Wer die Natur aufrichtig schätzt, hat seine **Lieblingsgegenden**, in welche er immer wieder zurückkehrt, selbst wenn er inzwischen überlegenere landschaftliche Bilder kennengelernt haben sollte.’
(Carl Spitteler, Xaver Z'Gilgen, 1891)
- **Kultursemiotischer Ansatz** (z.B. Schiewer, 2007; Anz, 2007; Eco, 1987; Hillebrandt, 2011; Schwarz-Friesel, 2007; Winko, 2022 ; z.B. Balshaw, & Kennedy, 2000; Nünning 2015)
- ‘Seit dem Ende des 18. Jahrhunderts besetzt der Begriff der **Kultur** den Platz, an dem **Selbstbeschreibungen** reflektiert werden.’
(Luhmann, 1997, S. 880)

Raum | Landschaft | Kultur

“Deutschschweizer Literatur”

- Frühaufklärung & Romantik:
Konstruktion (schlechte) “Stadt” vs.
(gutes) “Land” (Idylle) (Geßner; von Haller)
- 19. / frühes 20. Jahrhundert:
 - konserv. Heimatliteratur
 - progr. Nationalkultur
 - (zivil-)politisches Engagement
 - ästhetische Dimension
- “Berge” / Dörfer als nationale
Identifikationssymbole
 - Idylle
 - Authentizität
 - Erhabenes

Grisot, G. / Herrmann, JB (in preparation) Examining the representation of landscape and its emotional value in German-Swiss fiction around 1900.

→ Ländlicher vs. städtischer Raum

- Affekt/Emotion: Klar unterscheidbare Trends?



J. Spyri: *Heidi-Romane* (1880 / 1881)

Jessie Willcox Smith -
<http://www.geocities.com/enchantedforest/glade/8905/jessiewillcoxsmith.htm>
I, Gemeinfrei, <https://commons.wikimedia.org/w/index.php?curid=656964>

www.heidi.studiocanal.de 2015 Movie (Gsporner)

Forschungsfrage

- Welche unterschiedlichen Typen von Landschaft und Raum finden wir in der fiktionalen deutschschweizer Prosa zwischen 1843 und 1930?
- Wie sind diese jeweils emotional enkodiert?

Procedure

Corpus of literary texts

- 111 Swiss literary texts in German, 1843-1940
- 3,007,164 words (clean)
- 38 authors

Sentiment lexicons

- BAWL-R (Võ et al. 2009)
- LANG (Kanske & Kotz 2010)
- Plutchik
- Klinger (Klinger et. al 2016)
- Glex (Clematide et al. 2010)
- SentiWS (Goldhahn et. al 2013)
- SentiArt (Jakobs 2019)

Spatial entities

- URBAN
- RURAL

Aims:

- Explore representation of **URBAN** and **RURAL**
- Analyse difference in sentiments and emotions in relation to spatial entities **URBAN** and **RURAL**
(valence, arousal and discrete emotions)

How:

- Find spatial entities in the corpus
- Analyse and compare sentiment and emotions in the text spans with sentiment lexicons
(cf. Heuser et al, 2016: Mapping emotions of London)

1. Spatial entities: rural vs. urban

Entities categories identified under the umbrella terms RURAL and URBAN

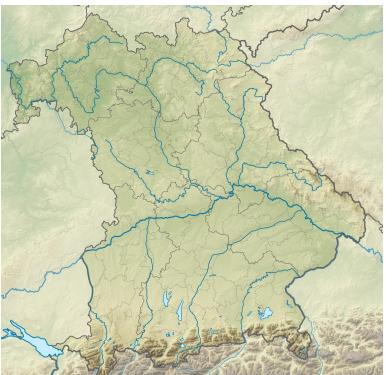


RURAL

'rural entities': spatial terms relating to – or characteristic of – the countryside, in particular related to human settlements or infrastructures, as opposed to those of the city (for example *Wanderweg*: footpath, *Feld*: field, *Hütte*: hut, shack)



'natural entities': terms describing spatial elements as found in nature, not involving anything made or done by people (for example *Bach*: brook, *Felsen*: rock)



'geolocation-natural (geo-natural) entities': proper names of natural locations such as mountains, rivers, valley, lakes (for example Matterhorn, Mont Blanc, Donau)

'geolocation-rural (geo-rural) entities': proper names of villages and small towns – with less than 5000 inhabitants – in Switzerland, Austria, Germany, France and Italy (for example Zumdorf, Enggwil, Huttwil)

URBAN

'urban entities': spatial terms relating to the city, its buildings and infrastructures (for example *Bahnhof*: station, *Kreuzung*: cross, *Palast*: palace)



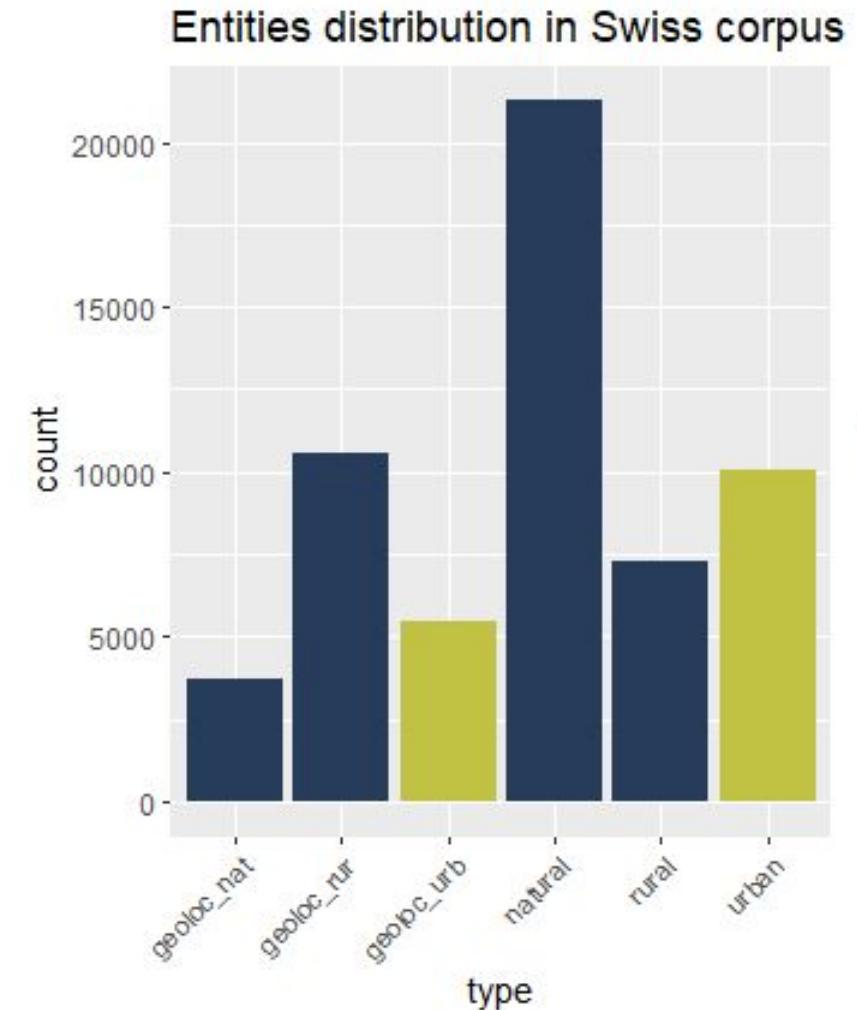
'geolocation-urban entities' (geo-urban): proper names of cities and towns in Switzerland, Austria, Germany, France and Italy (for example Berlin, Paris, Rom)

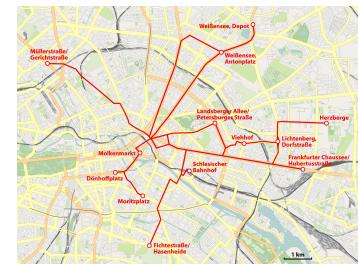
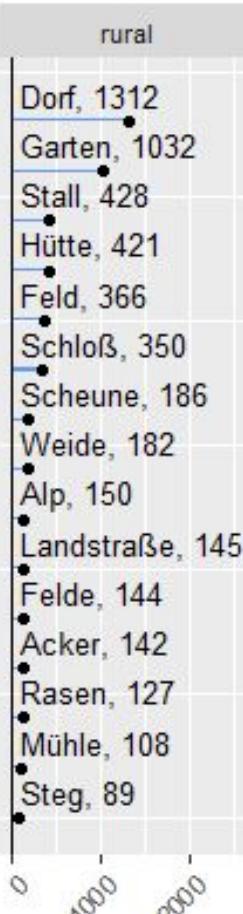
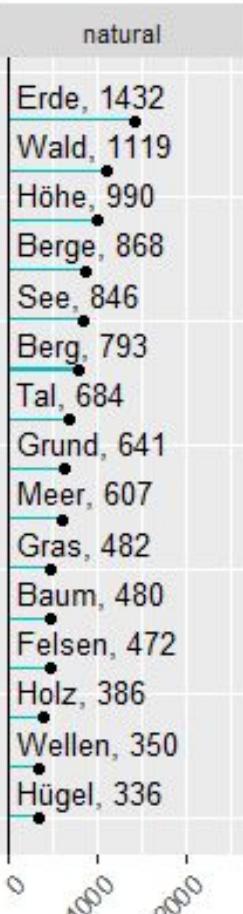


Naber, Daniel. 2020. "Openthesaurus.de." <https://www.openthesaurus.de/>.
Wick, Mark, and Christophe Boutreux. 2021. "Geonames.org." Accessed November 12. <http://www.geonames.org/>.
Wiki, Wikimedia Foundation Governance. 2021. "Wikimedia Foundation Governance Wiki." <https://foundation.wikimedia.org/w/index.php?title=Home&oldid=130586>.

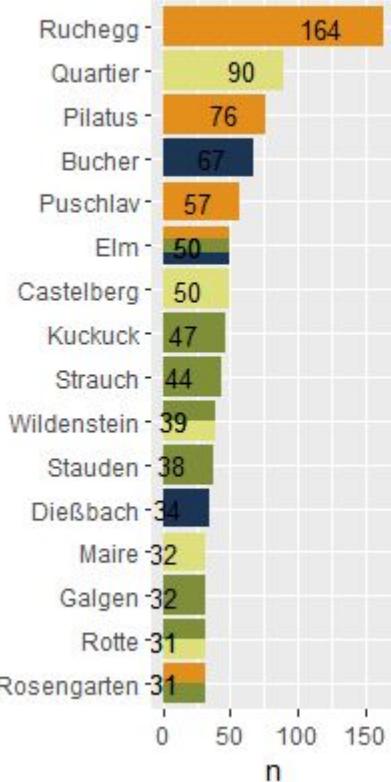
Distribution of spatial entity categories: list vs. corpus

	Spatial entities in entity list (N=173,950)	Spatial entities in Swiss corpus (N=58,261)
type		
geoloc_nat	42,564 (24.5%)	3,709 (6.4%)
geoloc_rur	124,836 (71.8%)	10,538 (18.1%)
geoloc_urb	5,490 (3.2%)	5,480 (9.4%)
natural	531 (0.3%)	21,244 (36.5%)
rural	271 (0.2%)	7,253 (12.4%)
urban	258 (0.1%)	10,037 (17.2%)
type_grouped		
RURAL	168,202 (96.7%)	42,744 (73.4%)
URBAN	5,748 (3.3%)	15,517 (26.6%)

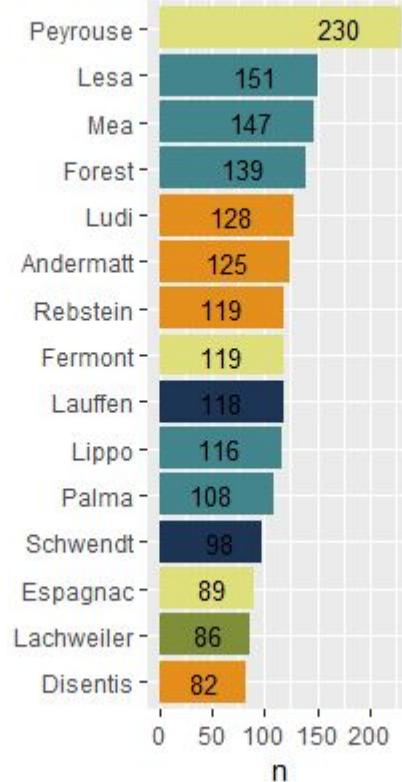




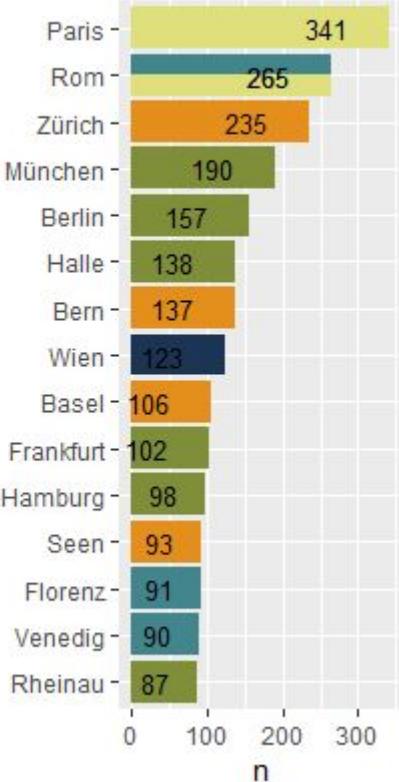
geoloc_nat



geoloc_rur



geoloc_urb



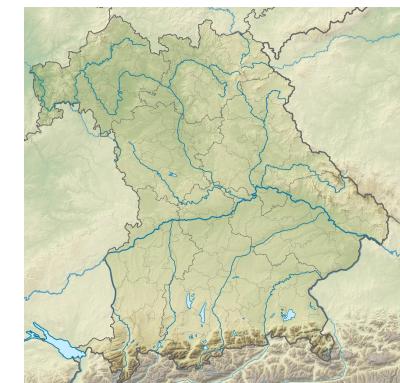
country Austria France Germany Italy Switzerland

Welche unterschiedlichen Typen von Landschaft und Raum gibt es in der fiktionalen deutschschweizer Prosa zwischen 1854 und 1930?

Observation #1

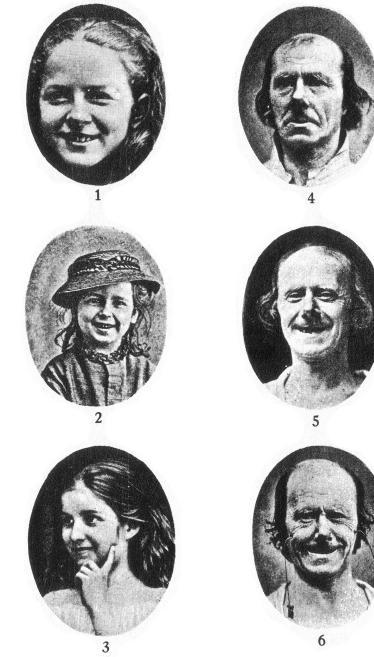
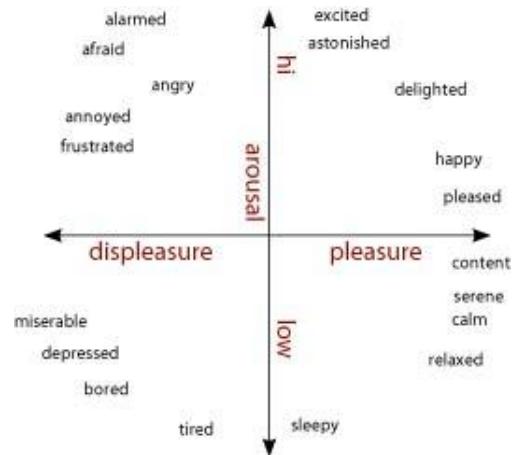
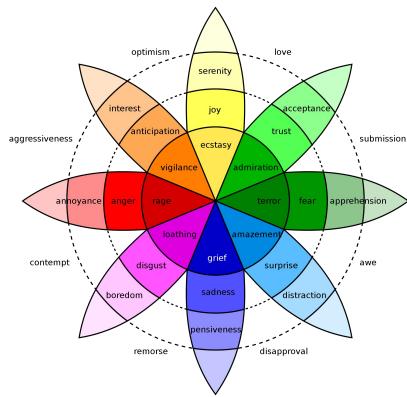
In our corpus (N= 111 texts)

- Roughly one quarter of all spatial entities: urban
- Roughly three quarters of all spatial entities:
rural/natural
 - *~ half of all spatial entities: natural (geo+terms)*
- Increase of Swiss geolocation % in most spatial categories (vs. neighbour countries)



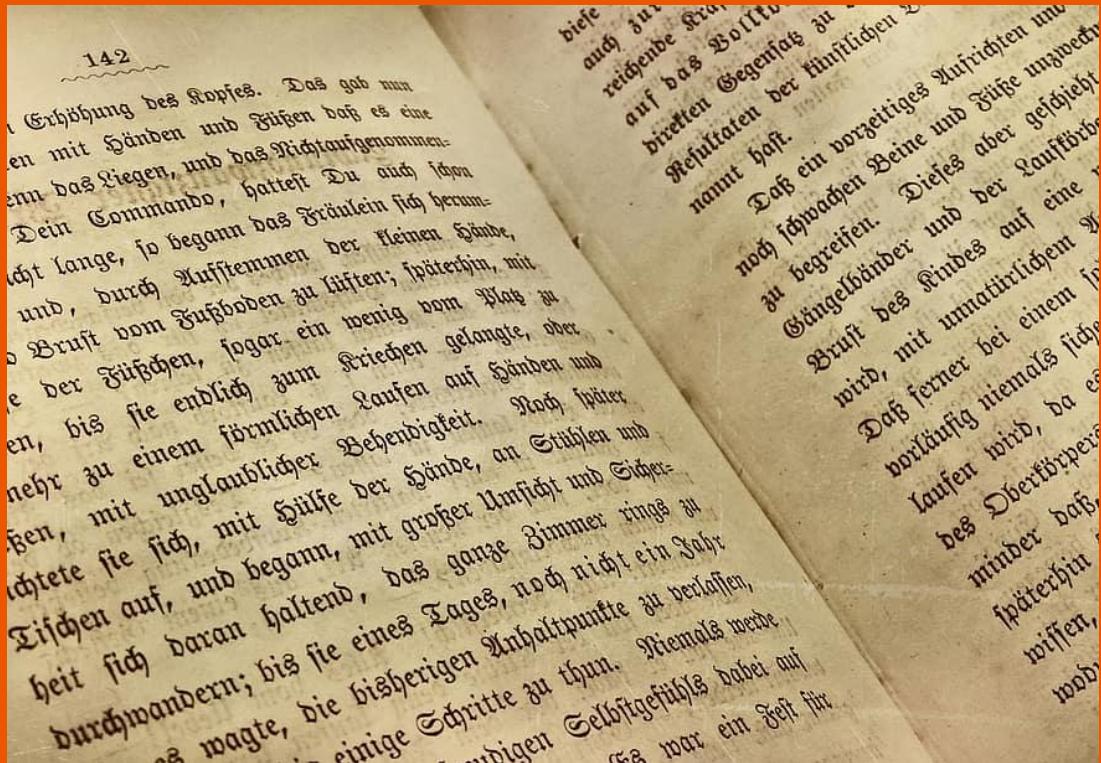
2. Sentiment analysis: Lexicon approach

	Coverage in Corpus by sentence	Coverage in Corpus by SPAN
Lexicon	Coverage	Coverage
Sentiart	90.11 %	81.23 %
GerPol	23.93 %	32.08 %
Bawl	17.45 %	33.39 %
Glex	8.18 %	15.56 %
SentiWs	7.47 %	14.93 %
Klinger	5.47 %	10.82 %
Lang	3.78 %	7.56 %
Plutchik	1.72 %	3.44 %



Cultural-semiotic approach to textually encoded affect/emotions
(e.g., Schiewer, 2007; Anz, 2007; Eco, 1987; Hillebrandt, 2011; Schwarz-Friesel, 2007;
Winko, 2022) and space (e.g., Balshaw, & Kennedy, 2000; Bologna, 2020)

Emotions / Space encoded in the text



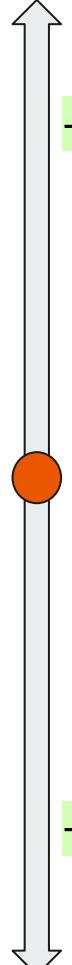
NOT actualization by
the *empirical reader*

Example: entities and BAWL-R lexicon applied to the corpus

umgehen	umgehen	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919
Blitz	Blitz	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919
Donner	Donner	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919
knallte	knallen	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919
Krach	Krach	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919
Berge	Berg	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919
stürzen	stürzen	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919
heut	heuen	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919
übereinander	übereinand	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919
rief	rufen	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919
Amstalden	Amstalden	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919

Cf. Heuser, Algee-Hewitt, and Lockhart (2016)

Example: entities and BAWL-R lexicon applied to the corpus



<u>token</u>	<u>lemma</u>	<u>type_grouped</u>	<u>title_full</u>	<u>author_full</u>	<u>pub_date</u>	valence	arousal	imageability
umgehen	umgehen	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919	NA	NA	NA
Blitz	Blitz	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919	0.500	3.905	6.778
Donner	Donner	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919	-0.200	3.947	4.409
knallte	knallen	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919	NA	NA	NA
Krach	Krach	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919	NA	NA	NA
Berge	Berg	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919	NA	NA	NA
stürzen	stürzen	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919	-1.618	3.357	4.769
heut	heuen	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919	NA	NA	NA
übereinander	übereinand	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919	NA	NA	NA
rief	rufen	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919	0.088	2.684	4.462
Amstalden	Amstalden	NAT_RUR	Der Fürchtemacher	Heinrich Federer	1919	NA	NA	NA

SUM by span	<u>type_grouped</u>	<u>title_full</u>	<u>author_full</u>	<u>span_id</u>	arousal	valence	imageability
	NAT_RUR	Der Fürchtemacher	Heinrich Federer	geonat_20	85.337	94.047	125.832
	URBAN_LOC	heinrich04	keller	urban_568	82.40	125.59	163.30

Linear Mixed-Effects Models

Sentiment
Lexicons
LMER

Lexicon	Value	RURAL	URBAN	P_signif	Coefficient	t	p	Std_Coefficient	R2_Conditional
BAWL	arousal	ns	ns	ns	-0.041	-0.391	0.695	-0.003	0.220
BAWL	valence	-	+	*	0.128	2.530	0.011	0.022	0.097
GerPol	polarity	-	+	***	0.004	3.562	0.000	0.031	0.120
Glex	polarity	-	+	**	0.008	3.044	0.002	0.027	0.102
LANG	arousal	+	-	***	-1.351	-10.812	0.000	-0.092	0.175
LANG	valence	+	-	***	-1.858	-11.540	0.000	-0.098	0.170
Sentiart	AAPz	+	-	***	-1.349	-9.718	0.000	-0.082	0.204

R version: 4.1.2

- Packages:
 - tidyverse
 - lmer
 - lmerTest
 - udpipe

Discrete Emotions Lexicons LMER

Lexicon	Value	RURAL	URBAN	P_signif	Coefficient	t	p	Std_Coefficient	R2_Conditional
Klinger	anger	+	-	***	-0.024	-3.299	0.001	-0.030	0.048
	contempt	ns	ns	ns	0.017	1.514	0.130	0.014	0.046
	disgust	ns	ns	ns	-0.003	-0.598	0.550	-0.005	0.029
	fear	+	-	***	-0.049	-5.308	0.000	-0.047	0.061
	joy	ns	ns	ns	-0.025	-1.678	0.093	-0.015	0.111
	sadness	ns	ns	ns	-0.018	-1.618	0.106	-0.015	0.048
	surprise	ns	ns	ns	0.009	0.884	0.377	0.008	0.047
Sentiart	anger	+	-	***	-2.985	-20.883	0.000	-0.175	0.235
	disgust	+	-	***	-2.467	-19.021	0.000	-0.162	0.208
	fear	+	-	***	-1.642	-10.725	0.000	-0.090	0.194
	happiness	+	-	***	-2.509	-16.656	0.000	-0.134	0.284
	sadness	+	-	***	-4.189	-27.740	0.000	-0.227	0.310
	surprise	+	-	***	-0.524	-3.999	0.000	-0.032	0.269
Stamm	anger	+	-	*	-0.012	-2.163	0.031	-0.021	0.036
	anticipation	-	+	*	0.010	2.439	0.015	0.024	0.032
	disgust	-	+	***	0.020	4.811	0.000	0.047	0.037
	fear	+	-	**	-0.016	-2.888	0.004	-0.028	0.025
	joy	+	-	**	-0.032	-3.021	0.003	-0.029	0.083
	sadness	+	-	*	-0.014	-2.083	0.037	-0.020	0.045
	surprise	ns	ns	ns	-0.002	-0.456	0.648	-0.004	0.021
	trust	ns	ns	ns	0.003	0.561	0.575	0.006	0.033

Wie sind diese jeweils emotional enkodiert?

Observation #2

Cautious observations

- Natural & rural space might be overall **more positive** (**SentiArt**)
- Natural & rural space **richer emotional topography**
 - “Stadt/Land” dichotomy; “Alp myth”
 - but it’s more complicated ...

Lexicon	Value	RURAL	URBAN
Klinger	anger	+	-
Klinger	contempt	ns	ns
Klinger	disgust	ns	ns
Klinger	fear	+	-
Klinger	joy	ns	ns
Klinger	sadness	ns	ns
Klinger	surprise	ns	ns
Sentiart	AAPz	+	-
Sentiart	anger	+	-
Sentiart	disgust	+	-
Sentiart	fear	+	-
Sentiart	happiness	+	-
Sentiart	sadness	+	-
Sentiart	surprise	+	-
Stamm	anger	+	-
Stamm	anticipation	-	+
Stamm	disgust	-	+
Stamm	fear	+	-
Stamm	joy	+	-
Stamm	sadness	+	-
Stamm	surprise	ns	ns
Stamm	trust	ns	ns

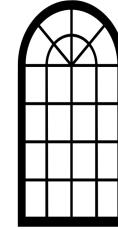
Lexicon	Value	RURAL	URBAN
BAWL	arousal	ns	ns
BAWL	valence	-	+
GerPol	polarity	-	+
Glex	polarity	-	+
LANG	arousal	+	-
LANG	valence	+	-
Sentiart	AAPz	+	-

Procedure: phase 2 - Interior Items

138 interior items

Eingang	interiors
Eingangshalle	interiors
Erdgeschoss	interiors
Esstisch	interiors
Estrich	interiors
Fenster	interiors
Fensterbank	interiors
Fensterladen	interiors
Fenstersims	interiors
Flur	interiors
Fussboden	interiors
Gang	interiors
Garderobe	interiors
Geländer	interiors
Gesims	interiors
Gestell	interiors
Heizung	interiors
Herd	interiors
Hintereingang	interiors
Hinterhof	interiors
Hocker	interiors
Kachelofen	interiors
Kalkwand	interiors

- Corpus by sentence (with stopwords)
 - Same 111 novels
 - 6,011,431 words
 - 362,772 sentences



Example from corpus by sentence

author	title	pub_date	sentence	interior_item	spatial_item	space_type
Johanna Spyri	Heidi's Lehr- und Wanderjahre	1880	Es kam aber nicht so weit, und am anderen Tag ging der Großvater hinaus – denn nun schneite es nicht mehr – und schaufelte ums ganze Haus herum und warf große, große Schneehäufen aufeinander, dass es war wie hier ein Berg und dort ein Berg und dort ein Berg um die Hütte herum; aber nun waren die Fenster wieder frei und auch die Tür , und das war gut, denn als am Nachmittag Heidi und der Großvater am Feuer saßen, jedes auf seinem Dreifuß – denn der Großvater hatte längst auch einen für das Kind gezimmert – , da polterte auf einmal etwas heran und schlug immerzu gegen die Holzschwelle und machte endlich die Tür auf.	c("Fenster", "Tür", "Tür")	c("Berg", "Berg", "Berg", "Hütte")	RURAL
Albin Zollinger	Der halbe Mensch	1929	Wollte Gott, so lag es eines Tages zwischen Weser und Elbe im Waldlaub: ein junger Mensch, der es da fand, las erstaunend von allem Brokat und Krieg darin; durch die Bäume blickend, grübelte er um dessen Dichter, wo er wohl eben weilte zwischen allen Meeren, was er dachte, fühlte, ob er schlief oder im Bahnzug fuhr oder einer Dame zu Füßen kniete oder zu Mittag speiste in einem Saale der Stadt .	Saale	c("Weser", "Stadt")	MIXED
Adolf Voegtlín	Heinrich Manesses Abenteuer und Schicksale	1910	Die Schritte, die wir auf der Treppe gehört hatten, gingen über den Hausflur und verloren sich draußen auf der Gasse .	Treppe	Gasse	URBAN

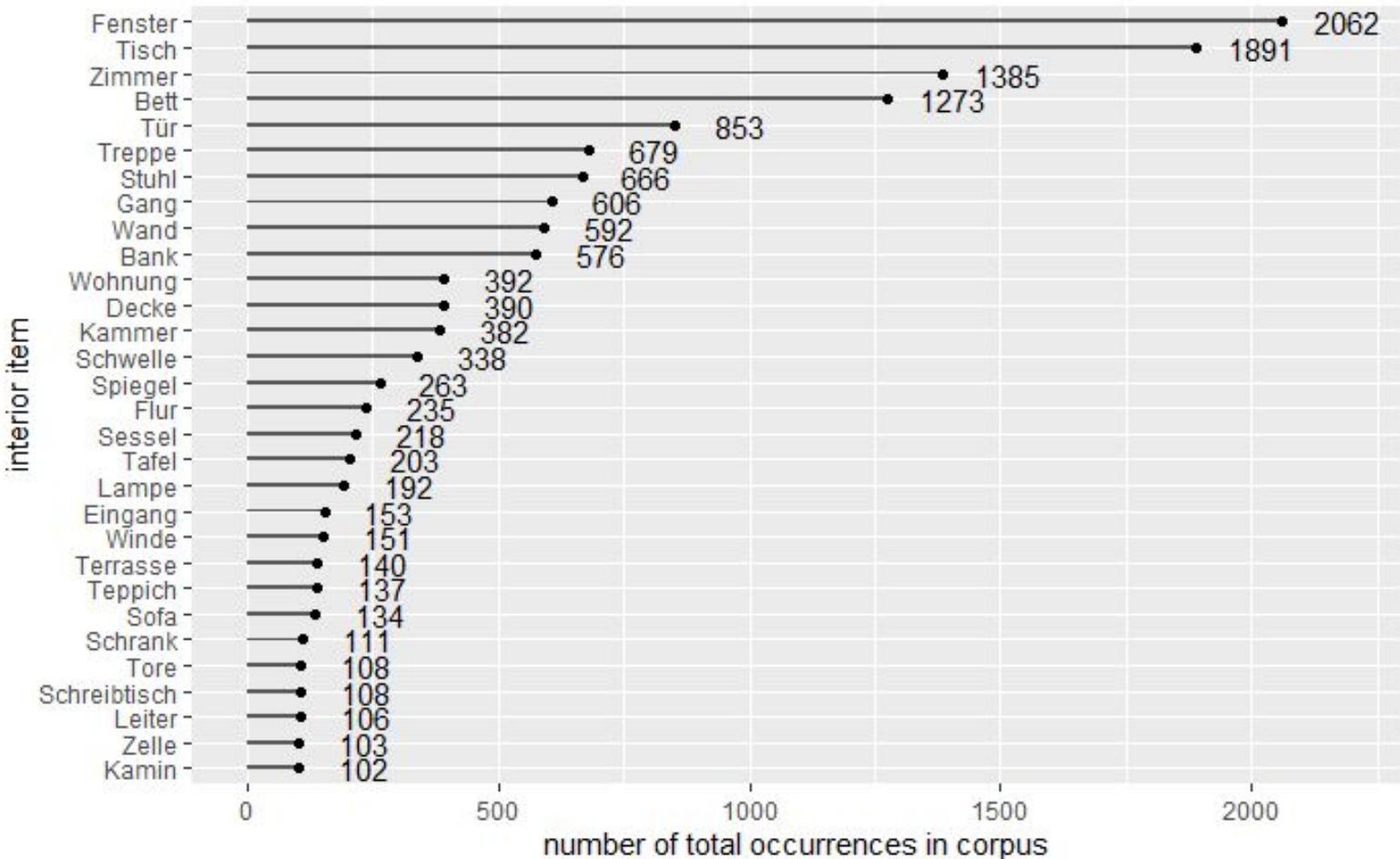
Procedure: phase 2 - Interior Items

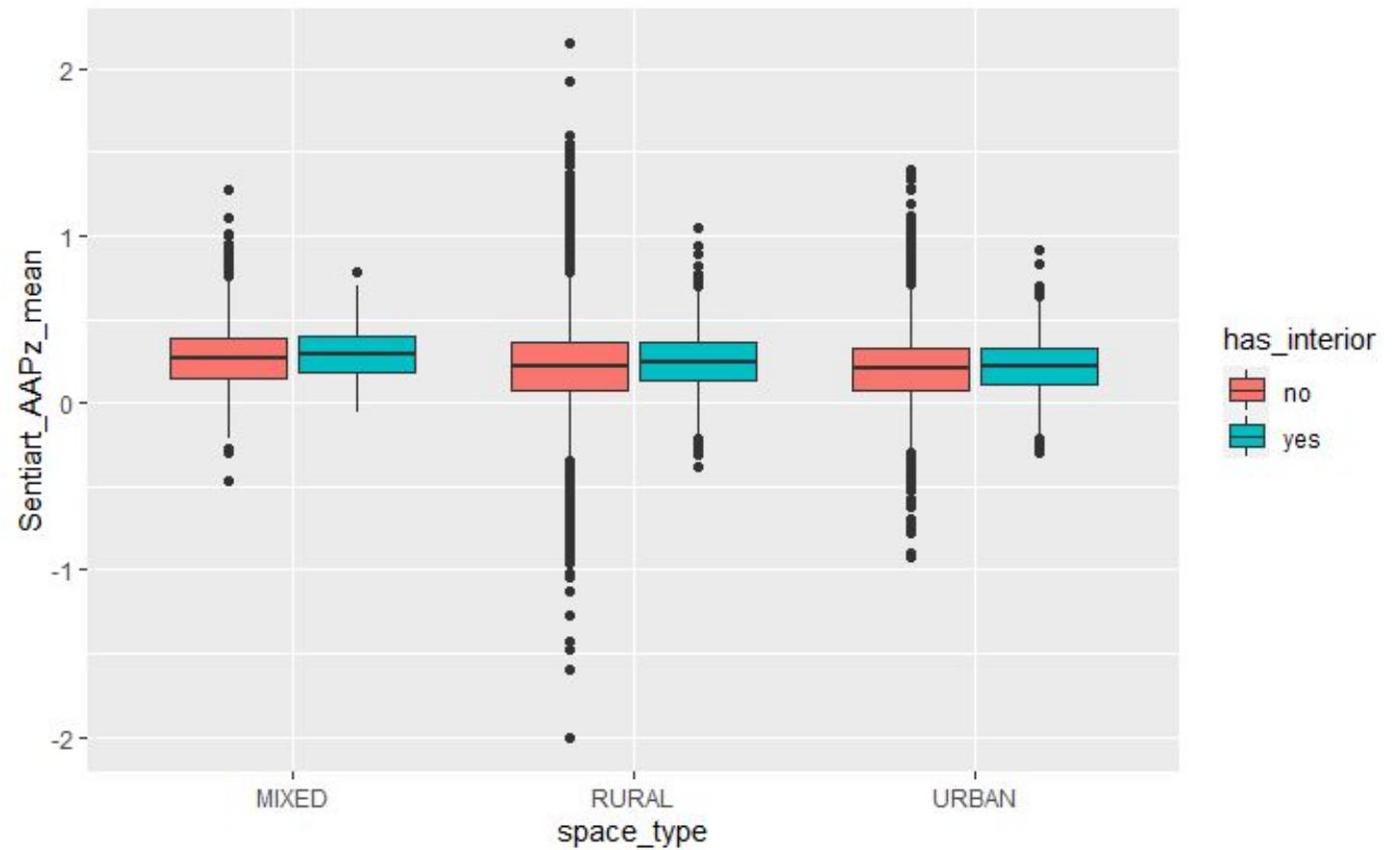
Number of sentences with interior items	total
	(N=362,772)
has_interior	
no	347,464 (95.8%)
yes	15,308 (4.2%)

Number of sentences with interior items by space type	MIXED	RURAL	URBAN	total
	(N=2,782)	(N=32,542)	(N=11,185)	(N=362,772)
has_interior				
no	2,570 (92.4%)	30,863 (94.8%)	10,515 (94.0%)	347,464 (95.8%)
yes	212 (7.6%)	1,679 (5.2%)	670 (6.0%)	15,308 (4.2%)

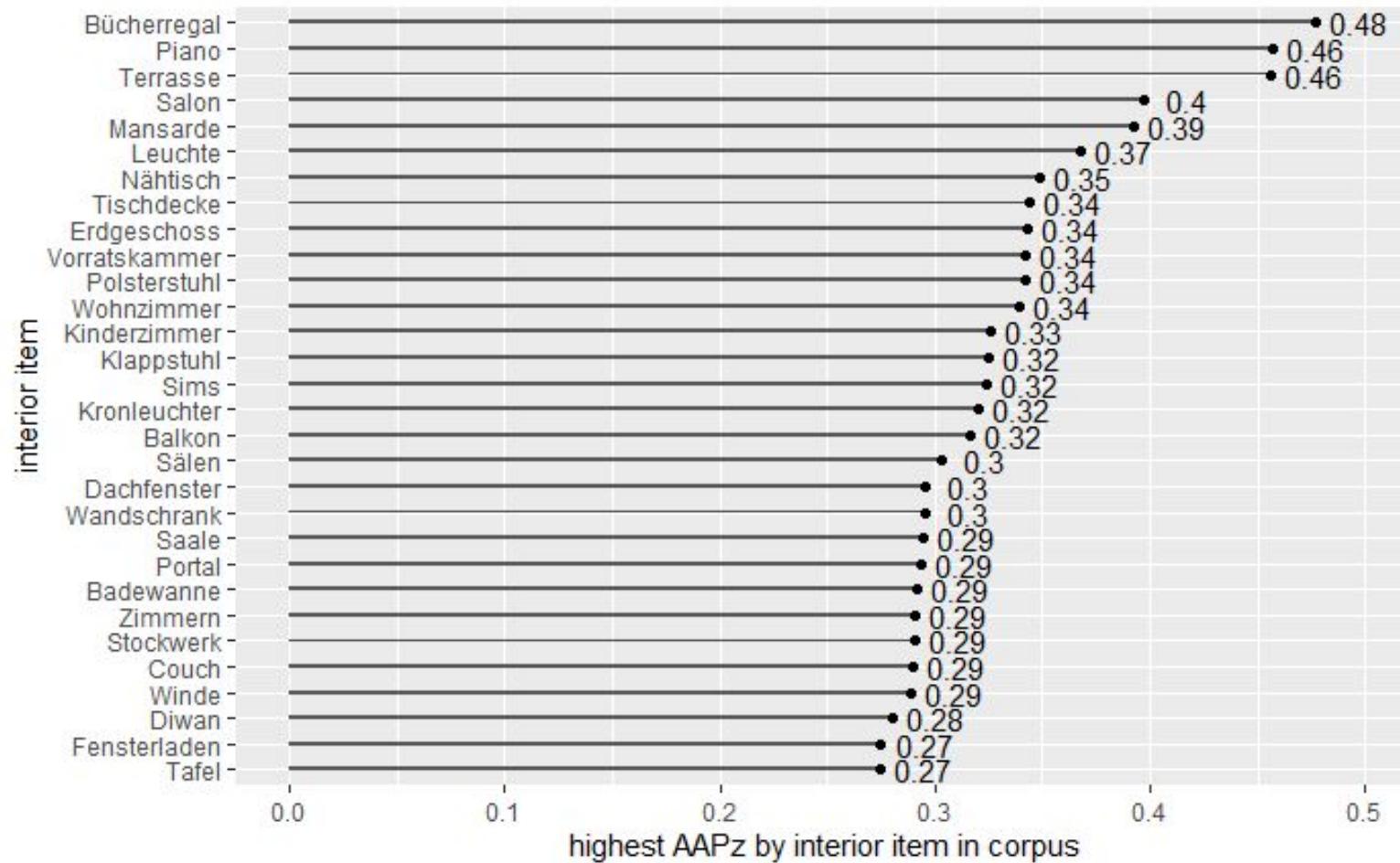


Most frequent interior items

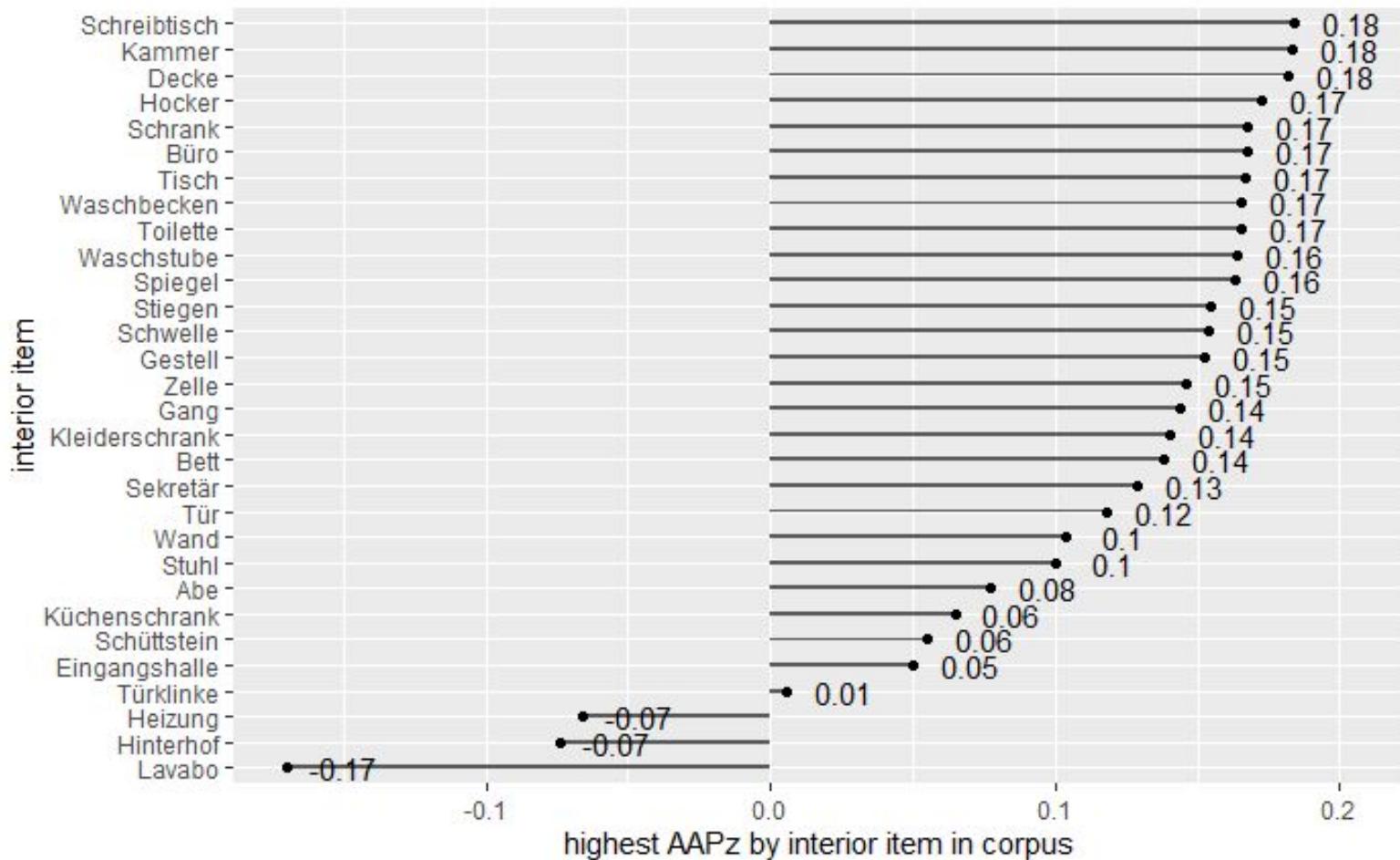




Highest AAPz (SentiArt) by interior item in corpus



Lowest AAPz (SentiArt) by interior item in corpus



Ergebnisse

Welche unterschiedlichen **Typen von Landschaft und Raum** in fiktionaler deutschschweizer Prosa 1843-1930?

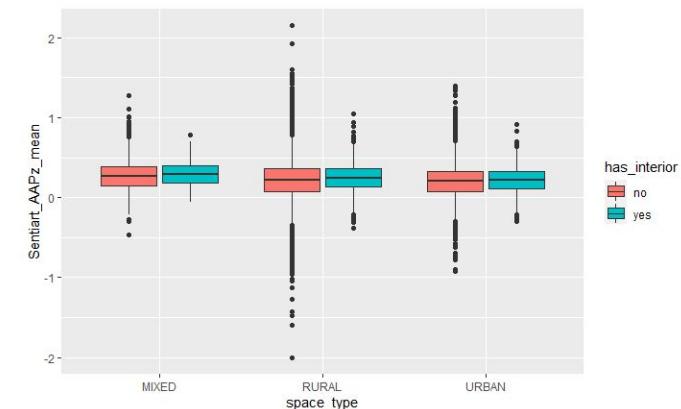
- Städtisch 26%; Ländlich/natürlich 74% (...Pilotkorpus)
- “Relativ Schweiz-bezogen”
- Innenraum-Entitäten
 - nicht bes. urban: 8% mixed, 6% städtisch; 5% ländlich (rel. generische Begriffe)
 - häufigste: *Fenster, Tisch, Zimmer, Bett, Tür ...*
 - pos. *Bücherregal, Piano, Terrasse, Salon, Mansarde, Leuchte ...*
 - neg. *Hinterhof, Heizung ...*

Wie jeweils **emotional enkodiert**?

- Ländlich/natürlich: größere emotionale *Varianz* (diskr. Emotionen)
- Ländlich/natürlich: Hinweis auf höhere *positive Valenz* (SentiArt)
- Innenraum-Entitäten: wenig negativ, kein Unterschied über Raumtyp (rel. generische Begriffe)



Lexicon	Value	RURAL	URBAN
Klinger	anger	+	-
Klinger	contempt	ns	ns
Klinger	disgust	ns	ns
Klinger	fear	+	-
Klinger	joy	ns	ns
Klinger	sadness	ns	ns
Klinger	surprise	ns	ns
Sentiart	AAPz	+	-
Sentiart	anger	+	-
Sentiart	disgust	+	-
Sentiart	fear	+	-
Sentiart	happiness	+	-
Sentiart	sadness	+	-
Sentiart	surprise	+	-

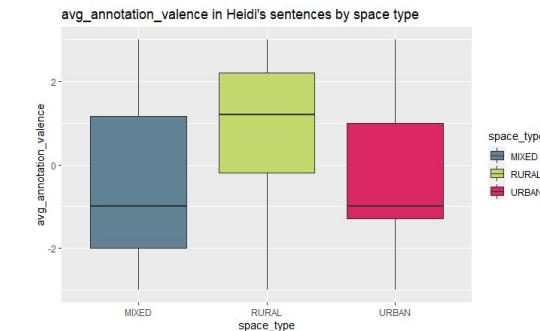


Ausblick

- Affective Computing vs. Statik der Diktioneäre →
- Annotation und Active Learning
- Hochskalierung (Korpusbau)
- Word embeddings (Herrmann, Byszuk, Grisot, accepted)
- D-A-CH
- Final COST Conference (Mai) → Neues zu Spyri's Heidi
<https://www.distant-reading.net/events/final-action-event/>
- Summer School "Raum und Affekt" (ZB Zürich, einige wenige Plätze frei; Zielgruppe "Noch-Analoge")

→ Mittwoch bis Donnerstag, 29. bis 30. Juni 2022
→ Zentralbibliothek Zürich
→ Einlass gemäss geltenden COVID-Massnahmen
→ Anmeldung erforderlich

<https://www.zb.uzh.ch/de/ueber-uns/veranstaltungen-reihen/aus-der-digitalen-werkstatt>

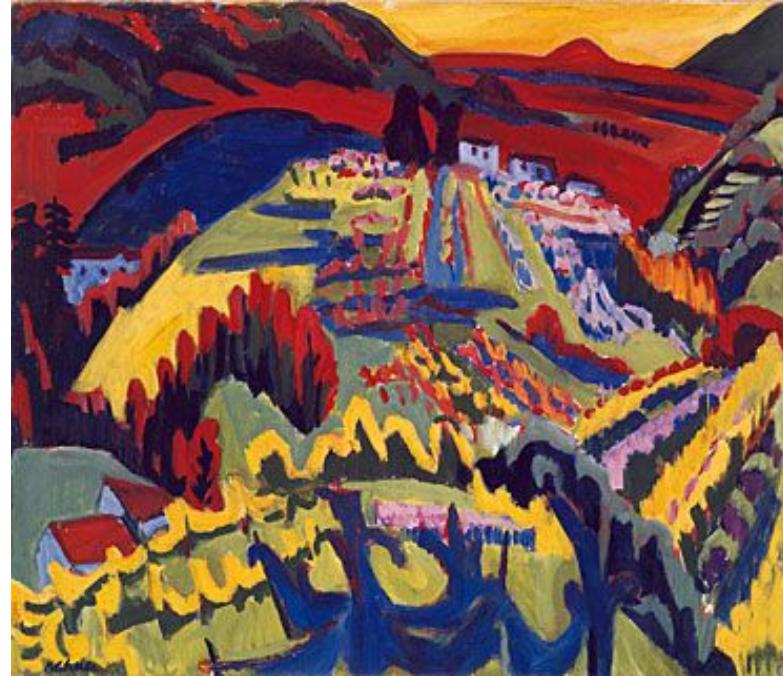


Herrmann, J. Berenike / Byszuk, Joanna / Grisot, Giulia: Using Word Embeddings for Validation and Enhancement of Spatial Entity Lists. International Conference Digital Humanities 2022. Tokyo, Japan (accepted)

References

- Balshaw, M., & Kennedy, L. (2000). *Urban space and representation*. Pluto.
- Bologna, F. (2020). A Computational Approach to Urban Space in Science Fiction. *Journal of Cultural Analytics*. <https://doi.org/10.22148/001c.18120>
- Bubenofer, N., Volk, M., Leuenberger, F., & Wüest, D. (Eds.). (2015). *Text+Berg-Korpus*. Institut für Computerlinguistik, Universität Zürich; XML-Format.
- Council of Europe. (2000). European landscape convention. Report and Convention.
- Derungs, C., & Purves, R. S. (2014). From text to landscape: locating, identifying and mapping the use of landscape features in a Swiss Alpine corpus. *International Journal of Geographical Information Science*, 28(6), 1272–1293. <https://doi.org/10.1080/13658816.2013.772184>
- Ekman, P., Friesen, W. V., & Ellsworth, P. (1982). What emotion categories or dimensions can observers judge from facial behavior? In *Emotion in the human face* (pp. 98–110).
- Herrmann, J. B., Grisot, G., Gubser, S., & Kreyenbühl, E. (2021). Ein großer Berg Daten? Zur bibliothekswissenschaftlichen Dimension des korpusliteraturwissenschaftlichen DH-Projekts "High Mountains – Deutschschweizer Erzählliteratur 1880-1930". 027.7 *Journal for Library Culture*.
- Heuser, R., Moretti, F., & Steiner, E. B. (2016). The emotions of london. *Literary Lab*.
- Hoang, M., Bihorac, O. A., & Rouces, J. (2019). Aspect-based sentiment analysis using bert. *Proceedings of the 22nd Nordic Conference on Computational Linguistics*, 187–196.
- Kanske, P., & Kotz, S. A. (2010). Leipzig Affective Norms for German: A reliability study. *Behavior Research Methods*, 42(4), 987–991. <https://doi.org/10.3758/BRM.42.4.987>
- Kim, E., & Klinger, R. (2018). Who feels what and why? annotation of a literature corpus with semantic roles of emotions. *Proceedings of the 27th International Conference on Computational Linguistics*, 1345–1359.
- Lowenthal, D. (1978). Finding valued landscapes. *Progress in Human Geography*, 2(3), 373–418. <https://doi.org/10.1177/030913257800200301>
- Menninghaus, W., Schindler, I., Wagner, V., Wassiliwizky, E., Hanich, J., Jacobsen, T., & Koelsch, S. (2020). Aesthetic emotions are a key factor in aesthetic evaluation: Reply to Skov and Nadal (2020).
- Nicolson, H. G. (1959). *The development of English biography*. Hogarth Press.
- Oatley, K., & Johnson-Laird, P. N. (2002). Emotion and reasoning to consistency. *Advances in Consciousness Research*, 44, 157–182.
- R Development Core Team, & Team, R. C. (2017). *R: A language and environment for statistical computing*. Vienna, Austria.
- Russell, J. A. (1980). A circumplex model of affect. *Journal of Personality and Social Psychology*, 39(6), 1161.
- Scarantino, A. (2016). The philosophy of emotions and its impact on affective science. *Handbook of Emotions*, 3–47.
- Schindler, I., Hosoya, G., Menninghaus, W., Beermann, U., Wagner, V., Eid, M., & Scherer, K. R. (2017). Measuring aesthetic emotions: A review of the literature and a new assessment tool. *PloS One*, 12(6), e0178899.
- Scott, A. (2003). Assessing public perception of landscape: from practice to policy. *Journal of Environmental Policy & Planning*, 5(2), 123–144.
- Vö, M. L. H., Jacobs, A. M., & Conrad, M. (2006). Cross-validating the Berlin affective word list. *Behavior Research Methods*, 38(4), 606–609.
- Wartmann, F. M., Acheson, E., & Purves, R. S. (2018). Describing and comparing landscapes using tags, texts, and free lists: an interdisciplinary approach. *International Journal of Geographical Information Science*, 32(8), 1572–1592. <https://doi.org/10.1080/13658816.2018.1445257>
- Wijffels, J. (2020). *udpipe: Tokenization, Parts of Speech Tagging, Lemmatization and Dependency Parsing with the 'UDPipe' 'NLP' Toolkit*. <https://cran.r-project.org/package=udpipe>
- Zimmer, O. (1998). In search of natural identity: Alpine landscape and the reconstruction of the Swiss nation. *Comparative Studies in Society and History*, 40(4), 637–665.

Thanks! Grazie! Merci! Danke!



<https://mountain-sentiment.github.io/>

<https://p3.snf.ch/Project-189832>