#mysanfrancisco: Social Media and the Conceptual Linguistic Landscape

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Abstract

Recent attempts to advance the field of Linguistic Landscapes (LL) have emphasized the importance of contending with the ‘actors’ of the LL and their role in interpreting or interacting with language in place (Waksman and Shohamy 2016; Barni and Bagna 2015; Malinowski 2009). This paper addresses this interest in what I refer to as the LL’s interpretant (à la Peirce 1955) or conceptual aspect by analyzing representations of physical space posted on Instagram, a popular photo sharing platform. Using a corpus of Instagram posts geotagged within the Mission District in San Francisco, California, I employ methods such as topic modeling and sentiment analysis to investigate the ways individuals are seen to engage with the semiotic landscape of the neighborhood and explore how the Mission itself is discursively constructed through these subjective recontextualizations. In doing so I aim to highlight aspects of the relationship between social media and physical place and the ways language is seen to mediate this dynamic. I argue geographically tagged social media is not representative of an LL but *productive*, viewing the selective and subjective displays found online to be as much a part of the LL context as a potential key to understanding it.

Keywords: Linguistic Landscapes, Social Media, Text Mining, Topic

1. Introduction

The field of Linguistic Landscapes (LL) encompasses study of any type of displayed language in the public space. While a great amount of research in LL has been conducted using a primarily etic approach, the incorporation of local perspectives on sign significance has more recently been emphasized as a way to balance those of the researcher and gain a more holistic understanding of the relationships at work between place, sign and people (Dunlevy 2016; Peck and Banda 2014; Blommaert 2013; Lou 2010; Garvin 2010; Malinowski 2009). As discussed in Monica Barni and Carla Bagna’s recent overview, LL has grown significantly from its beginnings in quantitative approaches concerned with the counting of languages and signs in the attempt to gauge linguistic vitality to a discipline in its own right, concerned not only with the documentation of languages’ public presence, but the complex relationship between language, place and people (2015). This expansion in scope has witnessed a parallel development of methods, both quantitative and qualitative, used to catalog and discuss the LL both in and of itself as well as its wider social significance (Blackwood 2015; Blommaert 2013; Stroud and Mpendukana 2009). As the field continues to revisit, redefine and refine its theory and methods, one central question has come increasingly into focus: how and to what extent do people engage with the LL?

It is this concern, the “authors and actors” of the LL (Barni and Bagna 2015: 7) that this paper attempts to address in two ways: 1) by demonstrating the value of social media platforms (SMPs) as a source of LL Interpre-

24 tants and 2) considering the social media platform not as representative of
25 the physical LL, but *productive* – understanding the selective and subjec-
26 tive recontextualizations to be as much a part of the LL context as a key
27 to understanding it. It is in this sense that the idea of SMPs as ‘virtual’
28 is found to be quite misleading, as the recontextualizations of place that are
29 geotagged posts are shared within a social network in a very analog sense: via
30 interpersonal relationships and semiotic chains (Agha 2007) through which
31 discourses of what a place is and what a place means are generated and cir-
32 culated. The SMP is thus positioned as a means to observe and track the
33 complex semiotic processes through which place is produced as well as an
34 instrument with which relationships between people and place are enacted.
35 Such a position both enriches our growing understanding of how SMPs work
36 and what functions they serve as well as the semiotic mechanisms used to
37 achieve them.

38 To track such mechanisms, I employ qualitative and quantitative methods
39 from LL, computational linguistics and corpus linguistics. In so doing I hope
40 to highlight the potential benefits of using techniques such as data mining,
41 sentiment analysis and topic modeling for LL studies and beyond as well as
42 contend with the limitations of such approaches for sociolinguistic research.
43 I conclude, however, that when the assumptions of quantitative inference are
44 balanced with those of qualitative interpretation significant insights can still
45 be achieved.

46 2. Linguistic Landscapes and Social Media Platforms

47 Viewing posts of LLs on SMPs as productive and processual rather than
48 representative and fixed is a fitting parallel to developments within the field
49 of LL itself. Public signs no longer serve as counts of ethnolinguistic vitality,
50 but as agents of spatialization: constituting “social, linguistic and politi-
51 cal structures” that inform as much as reflect a locale’s ideological makeup
52 (Blommaert 2013: 3; Ben-Rafael et al. 2006; Shields 1987; Lefebvre 1991;
53 Foucault 1984). Contemporary LL research is situated in the middle of this
54 dynamic, concerned with how we may understand the presence of some lan-
55 guages or scripts over others (Blackwood 2015;¹ Amos 2016), the represen-
56 tation or commodification of language (Jaworski 2015; Coupland 2012) and
57 the ways in which language display may inform our understanding of the ef-
58 fects of increasingly pervasive processes such as globalization (Vandenbroucke
59 2016) and gentrification (Lyons and Rodríguez-Ordóñez 2015; Papen 2012).

60 Of equal importance, yet perhaps underrepresented as yet in current re-
61 search, are the so-called ‘actors’ of the LL: sign producers, observers and
62 passers-by. Attention to the production component has been tackled in part
63 with discussion of “top-down” and “bottom-up flows” which are said to “or-
64 der” the LL: top-down consisting of institutions and bottom-up more au-
65 tonomous individual or corporate actors (Ben-Rafael et al. 2006; cf. Gorter
66 2006; Cenoz and Gorter 2006; Backhaus 2006 and other chapters in *Linguistic*

¹As Blackwood (2015) notes, contemporary research on minority language presence does not argue counts to be representative of vitality; rather that an evaluation of frequency provides insights on the attitudes or beliefs of the community towards language(s) (39).

67 *Landscape: A New Approach to Multilingualism*). This approach has been
68 critiqued by Kallen (2010) for assuming “different types of signage are in
69 opposition within the same system”, an assumption of inherent competition
70 that is problematic, as it presupposes the LL to be homogenous, disregarding
71 the fact that signs (as well as their creators or posters) have different and
72 independent origins, constraints, motives and levels of conscious planning
73 (42). Instead, Kallen advocates for viewing the LL in terms of frameworks
74 “defined by the functions of discourse entered into by interlocutors and by
75 the language choices and forms of expression available to these interlocutors”,
76 comparable to Erving Goffman’s conception of discourse frames (Ibid.: 43;
77 Goffman 1974).

78 Application of frame analysis emphasizes attention to the interactional
79 context of the sign (Kallen 2010; Coupland and Garrett 2010; Jaworski and
80 Yeung 2010; Coupland 2012; Lyons and Rodríguez-Ordóñez 2015), drawing
81 from Goffman’s (1974) formulation of a frame as a representation of how
82 individuals understand and contextualize experiences. Within the LL, frames
83 describe processes of context building through which a sign may signal its
84 audience or purpose through a number of semiotic choices: Kallen (2010)
85 describes the use of official insignia or prescribed shapes (such as the octagon
86 of the categorical Stop sign) in constructing a civic frame of “activities of the
87 state” (46-47); Coupland (2012) highlights how the Welsh language itself can
88 be cued as a nationalist resource or an exotified tourist commodity.

89 Discussion of frames acknowledges signs’ potential to project a partic-
90 ular context for its viewers, and does somewhat bring these viewers into
91 account: Coupland brings up the need for “mutual awareness” of displayer

92 and viewer for a sign to be effective (2012: 5). Frame analysis thus does
93 much to recognize the inherently subjective nature of sign intent and inter-
94 pretation, nuancing the ways in which one can argue a sign to index X or Y
95 within a community. The index, however, is only one part of how signs in
96 the LL (and signs in a more general sense) can be understood to work. If we
97 are to consider signs in terms of Charles Sanders Peirce’s formulation, as use
98 of the idea of the index would suggest, signs are thought of in terms of the
99 relationships they establish. Peirce proposes the sign as “something which
100 stands to somebody for something in some respect or capacity” (Peirce 1955:
101 99), advocating the sign (or the process by which a sign stands for something
102 to someone) as tripartite. The components of this sign-action are the Object
103 (the ‘something’ the sign represents); the Representamen (referred to also
104 as the ‘sign’ or ‘sign-vehicle’, the ‘something’ represented in physical dimen-
105 sions) and the Interpretant (the ‘something’ as represented to ‘somebody’ or
106 the ‘something’ that is created in the mind of the ‘somebody’).

107 To put this in perspective of the LL, a physical sign nailed to the side of a
108 building or painted on a window can be thought of as the Representamen, the
109 desire or intentions of the owner of the establishment the Object (the owner
110 wishing to communicate the establishment is there, the times at which it is
111 open, whether or not there is a sale going on, etc.) and the Interpretant
112 that which the physical sign brings about in the mind of anyone who views
113 the Representamen (“Oh! There’s a sale on!” “Who buys VCRs anymore?”
114 “How pretty”, etc.). The bulk of LL research has focused on the Repre-
115 sentamen and the processes (predominately indexical) by which these signs
116 denote their Object. The ‘somethings’ LL signs give rise to in a more general

117 sense, its Interpretant aspect, apart from those interpretations we as analysts
118 make, has gone relatively over-looked. Previous work that has attempted to
119 engage with the ways in which individuals interact with the LL has done so
120 through the use of interviews (Papen 2012) or through a presentation of an
121 area's ethnography or in-depth socio-cultural history and context (Stroud
122 and Mpendukana 2009; Blommaert 2013). To these approaches I introduce
123 use of social media platform data as a way of gauging the varied subjective
124 meanings the LL generates for people.

125 Social media has itself been discussed as its own landscape or Semi-
126 otic/Linguistic Landscape (Jones 2010; Ivkovic and Lotherington 2009) and
127 in many ways one might think of it as a place one can 'go' or 'be'. So-
128 ciolinguistic understandings of social media have mostly focused, however,
129 on conceptualizing it within the "social web" or "Web 2.0", terms used to
130 describe "platforms characterized by social interaction and user-generated
131 content" (Herring 2012: 1; Sykes et al. 2008; Zappavigna 2011; boyd and
132 Ellison 2007). In this sense social media has been primarily discussed ei-
133 ther in terms of the grammar of SMP language use, such as lexical variation
134 in Twitter posts (Gouws et al. 2011); variation of SMP-specific language
135 (so-called "e-grammar" à la Herring 2012) or the communicative functions
136 certain behaviors or activities perform: code-switching or "translingual prac-
137 tices" on Facebook as a means of negotiating linguistic authenticity (Dovchin
138 et al. 2015) for example, or the potential for hashtags on Twitter to develop
139 solidarity or affiliation with a large audience (Zappavigna 2011; 2014).

140 Social media is thus recognized as a medium and a context within itself:
141 both a means or place of communicating as well as a particularized interactive

142 construct in which specific communicative norms, registers and ideologies
143 are at work. A post on Twitter is fundamentally different than a post on
144 Facebook, in terms of audience and appearance, but most importantly in
145 terms of the functions of that post that are rooted within the culture of the
146 platform itself.

147 This mimicking of the ideological contextual constraints of physical space
148 is just one parallel between the analog and the digital, of course, but its
149 consideration is significant when discussing what the higher ordered indexical
150 meanings of SMP posts or activities. For example, take the use of hashtags
151 on Twitter versus hashtags on Instagram: on both platforms hashtags serve
152 as indexes in three senses, as indexes in a more colloquial sense (clicking
153 on a hashtag will lead you to a list of posts tagged with the same word);
154 in a metapragmatic sense as well as functioning as higher-ordered indexes
155 (Silverstein 2003). Hashtags on Twitter and Instagram (and Facebook, for
156 that matter, though less common) have an explicit metapragmatic function
157 in describing or explaining (as well as bringing about) the context in which
158 they are operating, be it to hashtag as a ways of signaling a topic under
159 discussion or as a means of signaling irony (Zoladz 2014) and a corresponding
160 implicit function in which its use assigns properties to the semiotic ‘code’ of
161 the hashtag itself, working to predict and regiment its meaning (Squires 2010;
162 Silverstein 2003: 196; Agha 2007).

163 This metapragmatic function, like that of any indexical, is suspended in a
164 feedback loop with ideological structures of value in which the metapragmatic
165 function is (re-)assigned and (re-)negotiated: in the context of Social Media,
166 what a hashtag “does” and “means” on Twitter theoretically changes each

167 time one is used, as it does on Instagram, resulting in varying norms and
168 values for hashtags dependent on the platforms themselves as well as for the
169 different individuals or groups of individuals operating within them. The by-
170 product of this is seen in the third sense in which we may consider hashtags on
171 SMPs: as operating within higher-orders of indexical meaning. As indexicals,
172 hashtags predict and regiment their use and that use in turn is imbued with
173 cultural value: #yolo, for example, (denoting the acronym for “you only live
174 once”) is observed not only as a way of describing or explaining one’s post
175 (“going skydiving today!!! #yolo”) or signaling an ironic shift (“decided to
176 go full fat with the morning latte #yolo”) but as belonging to a particular
177 register of a social type (i.e. “figure of personhood” à la Agha 2007; 2011;
178 Squires 2010). “#yolo” belongs to the imagined Millennial arsenal, flanked
179 by “#selfie”, “#tbt”, “#win” and others thought to make up the apathetic
180 narcissist social media vernacular (Author, forthcoming).

181 Platforms can be argued to have their own corresponding registers as
182 well. For example, Instagram’s platform-specific hashtags “#instagood” or
183 “#instadaily” are hashtags that index in the first sense photos to be entered
184 or considered to be featured in other higher-profile Instagram accounts as
185 “photos of the day” or Instagram photos of note; in the second sense a pop-
186 ular tag explaining the post as a categorical or conventional Instagram post;
187 the third an adept Instagram “regular” figure of personhood or “someone
188 trying to get more followers” and/or the “wannabe Instagram star” figure,
189 *ad infinitum*. Software specific features can also be seen to shape platform
190 registers: Instagram’s lack of character limit can be argued to have lead, or
191 at least facilitated, the practice of hashtag rich post codas, an example of

192 which can be found in Figure 5 – a practice that is not only not possible on
193 Twitter, but somewhat contextually out of place.

194 The indexical mechanics of hashtags, social media registers and figures
195 of personhood are as varied and numerous as their more conventionally dis-
196 cussed analog counterparts: in and of themselves not particularly surprising,
197 perhaps, but whose acknowledgment is key in our discussion of the digital life
198 of physical space. A picture of the LL is a recontextualization of a particular
199 kind like any photograph, and the act of posting such a recontextualization
200 on an SMP like Instagram must be considered within the contextualization
201 practices of the platform itself – much like a photo of an LL hanging in an art
202 gallery is considered differently than that published in an academic journal.

203 It is in this sense we may think of recontextualizations of place on the SMP
204 as both occupying and ordering both LL and SMP simultaneously: a post of
205 a geotagged picture at once 1) captures a moment in the LL; 2) “indexically
206 invokes” platform-specific meanings and values (Silverstein 2003: 202); 3)
207 implicitly assigns properties to the activity of posting on the platform and
208 4) implicitly assigns properties to the place itself. I now present examples
209 of these processes taken from my research site, the Mission District in San
210 Francisco, California and introduce quantitative methodological options with
211 which to investigate them on a large scale.

212 **3. Methods and Research Site**

213 The data for this project are sourced from Instagram, a popular photo-
214 sharing platform. Founded in 2010, Instagram claims a “community of more
215 than 500 million who capture and share the world’s moments on the service”

216 (“About Us” 2016). A 2014 study conducted by the Pew Research Cen-
217 ter suggested that Instagram was the fastest growing social media platform
218 (compared to Facebook, LinkedIn, Pinterest and Twitter) with a 9% increase
219 in adult users from 2013 to 2014 (Duggan et al. 2015). Of all adults (users
220 18 and over) online, the largest percent using Instagram were individuals
221 between 18 and 29. While it was not possible to obtain demographic infor-
222 mation for the Instagram users whose data is discussed in this paper, it is
223 likely that most posters were under 35 years of age.

224 10,208 Instagram posts were collected via Twitter’s Search Application
225 Programming Interface using the `twitteR` package (Gentry 2015) for R dur-
226 ing a four-month period between August and November 2016. The term
227 “Application Programming Interface” or API refers in this instance to a tool
228 used by a website to provide and mediate access to website data. The Twit-
229 ter Search API, part of the REST API, provides “methods for developers to
230 interact with Twitter search and trends data”, in particular “queries against
231 the indices of recent or popular Tweets”, serving a similar function as the
232 “Search” feature on the Twitter mobile application or Twitter.com (“The
233 Search API”). Tweets matching the criteria of a developer request going
234 back seven days from the time of the request are provided along with meta-
235 data such as exact time of posting and the source of the post. An important
236 aspect to note of data obtained from the Search API is that it is “focused
237 on relevance and not completeness” – meaning not all available Tweets are
238 provided in the response to a call (“The Search API”). As such, any data
239 collected cannot be described as comprehensively representative ? a consid-
240 eration, however, that must be taken with mined social media in general as a

whole (Danneman and Heimann 2014). An additional limitation to the representativeness of the data presented is that Instagram posts collected were only those cross-posted on Twitter, due to unfortunate limitations of Instagram’s API. Posts collected here were thus obtained with a call to Twitter’s API for tweets geotagged within a 1 km radius of the center of the Mission (exact coordinates 37.76°N 122.42°W) and then filtered for those tweets with “instagram.com” as a source.

As the data presented here are limited both by where they were found and who created them (i.e. content generated by a sub-population of individuals who use Instagram further divided by those who have Twitter accounts and cross-post to Twitter, further limited by those posts provided by Twitter’s API) it is important to reiterate that insights gleaned from these data are not taken as wholly representative of what all individuals think of the neighborhood or the encompassing context of the neighborhood itself. Rather, what is observed to be said on Instagram is seen as a selective parallel to the Mission’s physical confines, providing access to the processes by which place gives rise to Interpretants and the ways in which these subjective recontextualizations are seen to shape place in turn.

Posts analyzed are all geotagged within the Mission District in San Francisco, California. Located in the central-Eastern part of the city, the Mission has been inhabited for approximately 5,000 years, settled initially by the Yelamu, a coastal Native American tribe of the Ohlone language family. The first major urban developments, in which the area turned into a major commercial and residential zone, occurred after the 1906 earthquake when damage to residences to the north, particularly in the South of Market area,

266 caused many abandon their original plots and build anew in the Mission.

Figure 1: The Mission District, San Francisco²

267 During and after the 1906 reconstruction boom the area was predom-
268 inately occupied by Irish, German and Polish immigrants. These demo-
269 graphics began to change, however, after the post-WWII suburbanization
270 of San Francisco white middle-class families – a phenomenon better known
271 as “white-flight” (Macris et al. 2007). During this period from the 1940s to
272 1960s, the Mission saw a large increase of immigrant residents predominately
273 from Mexico, followed by an influx of immigrants from Central America be-
274 ginning in the 1960s. From 1950 to 1970 the Hispanic population in the area

²Map obtained with the ggmap package in R (Kahle and Wickham 2013).

275 grew from 11% to 45%, the northern part of the neighborhood serving as
276 a “gateway” of affordable apartments for more recently arrived Latino and
277 Asian immigrants and the residential south populated by more established
278 (predominately Latino) immigrant families. 24th street in particular grew to
279 be a “banner corridor for Latino culture” with shops, restaurants and other
280 businesses catering to primarily Spanish-speaking residents (Ibid.: 87).

281 Beginning in the early 1970s, the Mission District began to undergo gen-
282 trification. First used to describe the movement of wealthy suburbanities to
283 inner-city London by sociologist Ruth Glass in 1964, the term gentrification
284 now refers to the process by which capital is transferred to urban areas with
285 a recent history of limited investment and an average to low income popula-
286 tion. This capital is both economic and cultural, taking shape in extensive
287 public and private property investment and dramatic shifts in bourgeois atti-
288 tudes towards the desirability of living in or visiting such areas (Glass 1964;
289 Smith 1979). Gentrification entails physical and ideological displacement of
290 pre-gentrification residents, as public or affordable housing is razed or rent-
291 control protected residents are evicted to make way for higher paying ten-
292 ants. Cultural dynamics of neighborhoods change as businesses and services
293 catering to the needs and budgets of the established are replaced with those
294 that serve the interests of the privileged newcomer. In the context of the
295 United States, in which race and ethnicity have a systemic correlation with
296 socioeconomic status, the disruption of gentrification predominately affects
297 historically non-white neighborhoods and communities. It is in this sense
298 gentrification can be understood as a violent re-defining of the public space,
299 a “new urban colonialism” by which “a white Anglo appropriation of urban

300 space and urban history” is asserted (Atkinson and Bridge 2005: 2).

301 The transfer of capital to the Mission began in the early 1970s with
302 the construction of two Bay Area Rapid Transit (BART) subway stations
303 on the intersection of 16th Street and Mission Street and 24th Street and
304 Mission Street. Despite significant protest from Mission residents on the
305 impact of destructive BART construction on local businesses and the threat
306 of “increased land values” from increased connectivity to San Francisco’s
307 downtown making “large apartment houses more profitable and desirable for
308 landlords” (“BART Changes the Mission” 1970) the stations were completed
309 in 1972.

310 Land costs indeed begin to increase in the neighborhood, but stayed under
311 the city-wide median. This began to change, however, in the mid-1990s with
312 the ‘dot com boom’ centered in the Santa Clara Valley area south of San
313 Francisco nicknamed ‘Silicon Valley’. Due to its proximity to Highway 101
314 and (relatively) lower rents, the Mission became a popular neighborhood for
315 individuals working in Silicon Valley during the first tech bubble in the late
316 1990s and early 2000s. At this time median property values in the Mission
317 exceeded the city-wide median and the Hispanic population first began to
318 show a decline (?A Changing Mission? 2014). This trend slowed after dot-
319 com crash in 2000, but began picking up (seemingly) exponentially until the
320 present day, with the white population increasing by more than 20% since
321 2010 and no-fault evictions doubling to 62% since 2009.

322 Discussions and debates surrounding the gentrification of the Mission are
323 extremely prevalent aspects of its sociopolitical context and climate. Demon-
324 strations protesting increasing no-fault evictions and zonings of new devel-

325 opments are a frequent occurrence up north at City Hall as well as within
326 the neighborhood (“Mission District anti-eviction protestors take over SF
327 City Hall” 2015). Significant protests within the Mission include those tar-
328 geting so-called “Google Buses” – sleek white chartered buses hired by tech
329 companies to shuttle their Mission-residing employees south to Palo Alto
330 or Mountain View. Protests blocking “techie” chartered buses continued
331 from late 2013 throughout 2014, making international news headlines as well
332 as pressuring the San Francisco Municipal Transportation Agency to begin
333 charging charter operators for use of city bus stops (“Google Bus Backlash:
334 S.F. to impose fees on tech shuttles” 2014). Protest and critique of recent
335 changes to the Mission are also etched and echoed in the Mission landscape:
336 sites of evictions demarcated in spray paint; murals calling to “Evict Google”;
337 posters depicting chartered buses stopping at “#affluenza”; passersby audi-
338 bly scoffing at the newest “yuppie” or “techie” coffee shop.

339 While considerable criticism has been directed towards the “techies” for
340 the Mission’s racial and socioeconomic change, no problem is ever so simple:
341 as Smith (1979) and others point out, gentrification can better be under-
342 stood as the movement of capital into a city, not only people. Regulations
343 are complicit as much as new renters in the “Changing Mission”, a process
344 underscored by privilege and its ever-present racial correlates. There are cer-
345 tainly other things going on in the Mission apart from gentrification, but it
346 must be emphasized that a steady underline of the Mission context is dis-
347 placement – either undergoing or undergone. The silencing of such a process
348 is as significant as the trumpeting of one – a point of special significance as
349 we turn to the data.

Figure 2: Critiques of Gentrification in the Mission LL

350 4. Data and Analysis

351 The goal of this paper is to explore the ways in which the LL is both
 352 enacted and engendered on social media. These processes can be observed
 353 on a smaller scale in the form of individual posts and on a larger, more
 354 encompassing level through a corpus obtained through text mining. I will
 355 first provide some examples of posts in which individuals are seen to engage
 356 and animate the LL, and then present the corpus data and related analyses.

357 Interactions with the LL on Instagram vary in form and degree of (explic-
 358 itly apparent) engagement. This is illustrated in Figure 3 and Figure 4: an
 359 example of the Mission’s LL posted ‘without comment’, followed by another
 360 piece of Mission LL in Figure 4 with an accompanying hashtag commentary.

361 While no explicit hint to its interpretation is given by the poster of this

Figure 3: ‘No Comment’ Mission Thrift

362 image of the Mission Thrift shop front on 2330 Mission Street, its lack of
 363 commentary must be seen as equally significant as the text provided in Figure
 364 4 and 5. No comment is one of the ways in which individuals may ‘interact’
 365 and produce the LL on social media. While sparse, this production of 2330
 366 Mission Street is nevertheless subjective: framed by a subjective viewer for
 367 subjective viewings. This subjectivity is made more apparent in Figure 4, a
 368 post of a spray-painted message presumably outside near a private driveway.

369 The image, like that provided in Figure 3, brings a selective piece of the
 370 LL within the digital sphere and further recontextualizes it with the hashtags
 371 “#onlyinsf”, “#mission”, “#weird”, “#weirdsf” and “#sanfrancisco”. Such
 372 hashtags as “#sanfrancisco” and “#onlyinsf” animate this chunk of the Mis-
 373 sion by connecting it to posts with the same tag: the physical LL becomes

Figure 4: ‘#onlyinSF’

374 the digital LL, a thumbnail in the pixelated gallery generated with a click
 375 on one of these tags. The image of the LL is part of what “#onlyinsf” and
 376 “#weirdsf” can mean and, simultaneously these tags are part of what the LL
 377 can mean to an observer. The snapshot of the LL on Instagram and the ac-
 378 companying comments are therefore not to be understood as representative
 379 either of the LL or of its interpretation, but a distinct parallel – a projection
 380 or shadow of the physical and conceptual.

381 While the conceptual LL of Instagram must be considered as parallel
 382 and distinct from a theoretical view point, it does not necessarily follow
 383 that individuals do not move freely from the physical to the digital or that
 384 a impermeable barrier exists between the two. Such fluidity is illustrated

385 in the Instagram post shown in Figure 5, in which the boundary between
 386 material and virtual space is seen to be very permeable indeed.

Figure 5: ‘#mysanfrancisco’

387 Like the example provided in Figure 4, this post contains a piece, al-
 388 beit less focused, of the Mission District LL with a short prose and hashtag
 389 commentary.³ In this example, however, another Instagram user is seen to
 390 comment: “Lol, I think we just walked past each other bro”, to which the
 391 poster responds sarcastically “thanks for saying hi bro” with the ‘face with

³The hashtags #vSCO and #vscocam refer to a photography application developed by the Visual Supply Company for smart phones. The VSCO app allows users to take, edit and share photos in a “minimal interface and a wealth of inspired photo-altering tools” (“App Store Editor’s Notes”). The hashtag #vSCO and #vscocam can also be described as part of the social media register of the ‘hipster’ figure of personhood.

392 rolling eyes’ emoji and ‘face with tears of joy’ emoji (conventionally under-
393 stood as strong laughter). The commenter responds: “naw man, I was too
394 busy snapping, didn’t see you (face with tears of joy)”. In this example we
395 see a curious event: two individuals occupying the same physical space in
396 great proximity yet interacting in the generated conception of the place that
397 exists online as both were ‘too busy’ engaging with this parallel landscape
398 to notice each other.⁴ It is in moments like this that the tangibility of such
399 aspects are highlighted – ‘conceptual’ and ‘parallel’ or even ‘digital’ do not
400 make these landscapes any less real – here we have an example in which
401 the digital appears to be more tangible than the organic, at least for these
402 two individuals. The tag “#mysanfrancisco” encapsulates this relationship
403 quite elegantly. ‘San Francisco’ as a place is here simultaneously material
404 and virtual, objective and subjective: a distinct entity that can nevertheless
405 be claimed and personalized.

406 While analysis of discrete posts provides important insights on how indi-
407 viduals can be observed to engage with or animate the LL, it is also useful
408 to utilize a larger corpus obtained through text mining to investigate these
409 processes on a more encompassing scale. Such an approach views photos
410 on Instagram as themselves part of an area’s LL: as seen in the previous
411 individual examples, geotagged images on social media are not necessarily
412 representative but productive, bringing about a parallel place through their
413 subjective positioning. As such, I argue any geotagged image can be claimed
414 as part of the conceptual LL of social media, even if it does not depict

⁴A circumstance increasingly more common – at times dangerously so – with augmented reality games or applications such as Pokemon Go.

415 something perhaps more traditionally classified by researchers as part of the
416 physical LL. Even so, this perspective fits nicely with theoretical conceptions
417 of what an LL is: “any (public) space with visible inscription made through
418 deliberate human intervention” (Jaworski and Thurlow 2010): geotagged im-
419 ages on Instagram do occupy a ‘space’ of sorts on an Instagram feed and can
420 be assumed to be generated with some degree of deliberation.

421 To identify the broader patterns present in the conceptual geotagged
422 Mission, I apply sentiment analysis and topic modeling. Before applying
423 these techniques, however, the corpus of 10,208 Instagram posts needed to
424 be ‘cleaned’ by getting rid of URLs (as these are all re-posts on Twitter each
425 post has a URL to the original Instagram post); corpus-specific insignificant
426 encodings (i.e. “&” for the symbol “&”; the phrase “Just posted”) and
427 repetitive ‘spam’ content automatically generated by bots. This phase of
428 processing created some ‘empty’ documents which were then eliminated, re-
429 sulting in a corpus of 8,971 posts. I then used the tm package in R (Feinerer
430 and Hornik 2015) to eliminate white space, punctuation and numbers; turn
431 all terms to lowercase (to eliminate “Park” and “park” being counted as two
432 different terms) and to transform the corpus text into a plain text format
433 for easier processing. Finally, stop words or function words were eliminated
434 from the corpus using a combination of the tm package’s built in stop word
435 list and the stop word list provided by the tidytext package in R (Silge and
436 Robinson 2016).

437 Sentiment analysis, also known as opinion mining, describes the study of
438 “people’s opinions, sentiments, appraisals, attitudes and emotions towards
439 entities such as products, services, organizations, individuals, issues, events,

440 topics, and their attributes expressed in a written text” (Liu 2015: 7; Na-
 441 sukawa and Yi 2003). Dictionaries of words annotated for different forms
 442 of sentiment are used to classify matching terms in a corpus, enabling the
 443 researcher an overall sentiment assessment of a text. For this study, the bing
 444 corpus of positive and negative words were used (Liu et al. 2016) with the
 445 tidytext package in R (Silge and Robertson 2016). A graph representing the
 446 top positive and negative terms (occurring at least 20 times) present in the
 447 Mission Instagram corpus is shown in Figure 6.

Figure 6: Top Terms contributing to Positive and Negative Sentiment

448 The Mission Instagram corpus appears to have a positive bias, with 30
 449 terms occurring more than 20 times contributing positive sentiment com-
 450 pared to 12 negative terms. Positive terms framing posts are seen to relate

451 to emotions (‘love’ / ‘loving’, ‘happy’, ‘excited’, ‘enjoying’, ‘proud’), descrip-
452 tions (‘beautiful’, ‘amazing’, ‘fun’, ‘super’, ‘awesome’, ‘delicious’, ‘gorgeous’,
453 ‘wonderful’, ‘cute’) and specific activities (‘thrift’, ‘celebrate’) while nega-
454 tive terms framing posts relate to states (‘lazy’, ‘miss’, ‘lost’), descriptions
455 (‘hard’, ‘bad’) or pejoratives (‘shit’, ‘fuck’). Interestingly, the emoji ‘knife’
456 also is a frequent contributor to negative post sentiment.

457 The positive sentiment bias present in Mission Instagram posts is also
458 observed in its most frequent terms. A word cloud of the top 50 of these
459 frequent terms is shown in Figure 7. In addition to frequent mentions of
460 place either by name or hashtag (i.e. ‘San’, ‘Francisco’ and ‘sanfrancisco’;
461 ‘Dolores’, ‘Park’ and ‘dolorespark’) terms suggestive of positive framing such
462 as ‘good’, ‘new’, ‘great’ or emojis suggestive of positive framing ‘heavy black
463 heart’ (the red heart emoji) are also present. Interestingly, the frequent
464 occurrence of ‘street art’ in the corpus suggests prevalent engagement with
465 the Mission’s physical LL on this larger scale.

466 While a look at overall term sentiment and frequencies provides some
467 insight on the nature of the Instagram corpus, I am interested in identify-
468 ing specific discourse themes or topics that users post about. One way of
469 categorizing these broader topics is by identifying inherent structures or re-
470 lationships present in the distribution of terms across the corpus using topic
471 modeling. Topic modeling is a probabilistic modeling technique commonly
472 used in computational and corpus linguistics to identify structures within a
473 large set of documents (Blei and Lafferty 2009; Grün and Hornik 2011; Wood
474 2014; Graham and Ackland 2016). Topic models use an iterative algorithm
475 to assign and group terms in a corpus to a pre-determined number of topics

Figure 7: Word Cloud of Top 50 Terms

476 set by the researcher. In the first pass, terms in documents (or for this study,
 477 words in individual posts) are assigned a topic (represented by a number)
 478 at random. This provides a proportion of terms assigned to a topic in this
 479 tweet as well as the proportion of how many times this same term has been
 480 assigned the same topic across the corpus. These proportions are then used
 481 to calculate the probability for the term's topic assignment for the next pass
 482 of the algorithm. This process is repeated a large number of times (specified
 483 by the researcher) until each term is assigned a particular topic and each
 484 document is assigned a topic based on the topic probabilities of the terms
 485 contained within it (Awati 2015; Blei 2012).

486 For this study, I ran a 5 topic Latent Dirichlet Allocation (LDA) algorithm
 487 with Gibbs sampling using the topicmodels package in R (Grün and Hornik

2011). A table of the 16 top terms for each topic is shown in Table 1.

Art	Occasion	Place	Food	Outdoors/Leisure
sanfrancisco	tonight	mission	tartine	park
street	night	san	coffee	dolores
alley	happy	francisco	manufactory	day
art	party	district	bar	love
clarion	birthday	photo	morning	time
streetart	sunday	sanea	amazing	city
chapel	friends	draft house	elbo	dolores park
missionea	fun	alamo	theea	favorite
valencia	halloween	igerssf	food	beautiful
smilingfacewithheartshapedeyes	friday	ceramics	weekend	bear
life	week	excited	sparkles	cafe
california	saturday	fran	fire	people
heavyblackheart	music	heart	brunch	dog
facewithtearsofjoy	cinema	los	sfmanufactory	lazy
mural	amnesia	districtea	chocolate	finally
missiondistrict	house	spca	bakery	twohearts
station	theea	armorykinkcom	bread	club
graffiti	live	iea	dance	dont
cream	tomorrow	cha	ive	stop
taco	toea	heath	hotbeverage	blacksunwithrays

Table 1: Top 20 Terms per Topic

Descriptive titles were inferred from identified top terms and posts identified as belonging to assigned topics. There is a topic related to art or more direct depictions of the Mission’s LL topic (i.e. posts discussing Clarion Alley, a small street between Valencia and Mission filled with murals); an ‘Occasion’ topic that appears to revolve around specific events or celebrations (‘birthday’, ‘tonight’, ‘sunday’); a topic related to marking place (framing posts with ‘Mission’ or other specific places such as the restaurant

496 flour + water as well as terms associated with Instagram activity tied to
 497 place such as ‘igersSF’); a food topic (frequent mention of different foods or
 498 meals, the ‘face savoring delicious food’ emoji, mention of popular Mission
 499 restaurants or eateries like Tartine Manufactory) and a topic related to ac-
 500 tivities or lifestyle choices (reference to outdoor activities with various tree
 501 or nature emojis; mention of Dolores Park; mention of spending time with
 502 friends; hanging out at cafes; working out at the gym or practicing yoga).
 503 A visualization of the geographical distribution of these topics is provided in
 504 Figure 8.

Figure 8: Geographic Distribution of Topics⁵

505 At first glance, there does not appear to be any clear differences in post

⁵Map obtained with the gmap package in R (Kahle and Wickham 2013).

distribution, but by subsetting the data and zooming in on specific areas in the map interesting patterns emerge. An example of this is shown in Figure 9, which shows a map of Mission posts with ‘Place’ and ‘Occasion’ topics removed.

Figure 9: Subset Map of ‘Art’, ‘Food’, ‘Outdoors/Leisure’

From this map we see ‘Food’ and ‘Art’ distributed throughout the neighborhood, while ‘Outdoors/Leisure’ posts appear cluster around Dolores Park and are noticeably absent from 24th street. All topics are present on the two main commercial streets of the neighborhood, Valencia Street and Mission Street, however there the ‘Outdoors/Leisure’ topic appears to be more common on Valencia, as shown in Figure 10, a close-up comparing Valencia and Mission with the ‘Art’ and ‘Food’ topic removed.

This pattern is echoed in 24th street, as shown in the closer view of

Figure 10: Subset and Zoom of Valencia and Mission, ‘Food’ vs. ‘Outdoors/Leisure’

all topics in Figure 11. Compared to the other main streets of Valencia and Mission, 24th has far fewer posts. As the ‘least gentrified’ street in the neighborhood, it is interesting to see this sparsity on 24th, especially as pockets of posts re-appear at pockets of 24th aligned with establishments associated with ‘gentrification’ such as Wise Sons Jewish Delicatessen and Philz Coffee⁶. Posts classified under the ‘Food’ topic are common, and ‘Art’

⁶While the owner of Philz Coffee has occupied this space since the 1970s and transformed it into a coffee shop in 2003, it and its specialty delicatessen neighbor across the street share features of establishments frequented by and understood as ‘for’ a newly-arrived higher-income clientele. Such features include emphasis on organic, locally-sourced food (with accompanying higher prices), increased specialization and commodification of that specialization’s authenticity through selective references: a Jewish delicatessen with “Matzo Ball Soup – not at good as your bubbe’s”; “Philz Coffee: One Cup at a Time ...

524 is prevalent in the intersection of 24th and Mission, where many large murals
 525 can be seen.

Figure 11: Topics on 24th

526 Food and Art as topics thus appear to be spread out across the Mission,
 527 whereas Outdoors/Leisure is more frequent north of 24th on Mission (to
 528 some extent) and Valencia street. Posts under this topic of leisure (posts
 529 containing terms such as ‘love’, the palm tree emoji, the cocktail emoji, the
 530 wineglass emoji) appear to be concentrated in the more gentrified parts of
 531 the neighborhood.

buying only the highest quality green beans to ensure a perfect taste experience”; “Visionary FARINA founders embarked on a mission to bring an authentic northern Italian experience to terra Americana ... FARINA doesn’t just approximate the cuisine of Liguria, it’s the real thing”

532 A similar pattern is seen in the distribution of the ‘Occasion’ and ‘Place’
 533 topic, shown in Figure 12. “Occasion” (posts discussing a specific event
 534 or special occasion) are fairly spread out, whereas ‘Place’ posts, posts that
 535 discuss specific places in the Mission (perhaps to draw attention to the poster
 536 being at a certain location, or the location as part of the post discourse),
 537 appear to favor Valencia street over other locations.

Figure 12: ‘Occasion’ v. ‘Place’

538 While it is not possible to establish a causal link with the data available
 539 of gentrification and these topics, it *is* possible to discuss the interesting co-
 540 occurrence of these topics and a colloquial understanding of these areas as
 541 the most gentrified of the neighborhood. The most gentrified areas appear
 542 to generate posts centered on recreation, relaxation or on drawing atten-
 543 tion to ‘being’ in a particular place. While the very act of geotagging does

544 serve to bring attention to this kind of ‘being’, the producers of these posts
545 have underscored this geotagging with accompanying, clarifying or elabo-
546 rating prose. This is in contrast with other topics found more consistently
547 throughout the Mission, those that focus on food or dining, celebrating or
548 observing an event or holiday or observance of neighborhood art. These dif-
549 ferences might be categorized as emphasis of states over activities, experience
550 over enterprise. As these posts are positioned as the interpretant aspect of
551 the LL, these topics could also be categorized in terms of the different ways
552 in which their interpretants are brought about. The Outdoors/Leisure and
553 Place topic posts can be described as rhematic in that their object is refer-
554 enced in terms of the qualities it possesses (‘beautiful’, ‘favorite’, ‘excited’,
555 red heart emoji, etc.) while Art, Occasion and Food appear to be dicents
556 or dicisigns, achieving reference through “saturated predicates” (tagging a
557 photo as ‘#streetart’, ‘#brunch’, using the ‘face savouring delicious food’
558 emoji or the ‘knife and fork’ emoji, writing ‘Happy Birthday X’, i.e. tagging
559 to establish ‘this is a photo of X’) (Atkin 2013; Peirce 1955). A mapping of
560 this division is provided in Figure 13.

561 These visualizations of topic distribution not only provide further con-
562 textualization for understanding the Mission’s conceptual LL but serve as
563 a strong reminder of the limits of social media to provide ‘evidence’ of an
564 area’s context as whole. As seen in these maps, posts are far from evenly
565 distributed – the entire geographic area of the Mission is not covered nor,
566 we must assume, are the thoughts of all those who move through it. It is
567 significant, however, when these posts are fully considered as selective and
568 subjective projections. The parallel Mission, the conceptual LL of Instagram,

Figure 13: Dicent v. Rhematic Posts

569 is a positively framed space, discussing primarily enjoyable states or activi-
 570 ties. There is a division between more and less gentrified areas and the types
 571 of enjoyment most frequently discussed, however *en masse*, the conceptual
 572 LL shows a positive subjective bias. Analysis of most frequent terms and
 573 inherent topics show no substantial mention of gentrification or any related
 574 topics such as displacement, no-fault evictions, inequality or increasing rent
 575 costs. The significance of this is best articulated via an understanding of the
 576 “semiotics of silence” (Kallen 2002; Jaworski 1993), in which the power of
 577 absence to speaks as much, if not more at times than presence, and silence
 578 resonates as erasure. For the Instagram Mission, gentrification is silenced
 579 and inequitable processes erased.

580 Such erasure speaks to, on the one hand, the inherent nature of social

media as a positivity-biased space, with a tendency to only discuss or share pleasant or enviable experiences, and on the other, the discrepancy between projected digital places and their physical correlates. In this sense, Instagram can be thought of a sort of sieve, separating the unpleasant from the agreeable – the process of taking a picture, tagging and (optionally) commenting on it as the “simplest of interpreting agents” (Kockelman 2013: 37). It is in this sense the idea of the conceptual LL is reiterated: geotagged social media should be considered as the interpretant echo of the place in which they are situated by users. As a sieve, the process of posting on Instagram has to “take on (and not just take in) features of the substances [it] sieve[s], if only as ‘inverses’ of them ... in some sense, all sieves are inverses or even shadows of the substances they sort” (Ibid.: 36). Study of the conceptual, interpretant or shadow place constituted by geotagged social media thus not only informs our understanding of what makes it through the sieve (that is, what are the overarching features of acceptable posts or topics) but the systemic or ideological components of the sieve itself. In the case of the Mission, we observe a preference towards discussing art, special occasions, the place captured in the photo, food and leisurely activities, and a systemic exclusion of any kind of reference or acknowledgement of the uncomfortable reality of inequitable displacement.

5. Concluding Remarks

The significance of these findings is found in returning to the metapragmatic power of social media post content to simultaneously occupy and order. It is through the subjective and selective displays that the Mission is

605 re-produced, re-contextualized and re-established virtually, and as shown in
606 the example in Figure 5, the term virtual can be quite misleading. Social
607 Networks are, after all, social networks, consisting of interpersonal relation-
608 ships and interaction. The term used by Instagram to describe relationships
609 between one user and another (i.e. who is seeing whose posts), ‘following’
610 speaks directly to the social significance and dynamics of the Instagram en-
611 vironment. Networks of follower-following encapsulate the idea of semiotic
612 chains of transmission, through which relationships between signs and mean-
613 ings are produced, shared and consumed (Agha 2007). The act of posting
614 is a link mediating content and meaning, and the act of geotagging a link
615 mediating place and meaning: the conceptual LL and the networks through
616 which it moves constitute semiotic chains in which discourses of what the
617 Mission *means* and what the Mission *is* are circulated. That gentrification
618 is absent from the mass-mediated conception of the neighborhood is of great
619 theoretical and social significance, simultaneously upholding the idea that
620 the circulation of meanings or reflexive activity “articulate” subjective cul-
621 tural value (Silverstein 2003; Agha 2003), and demonstrating the potential
622 dangers of this process whereby prevalent inequities and injustices are erased.

623 Such insights on the large-scale characteristics and consequences of the
624 Mission’s conceptual LL demonstrate the value of combining qualitative as-
625 sessment and computational analysis. As social media continues to increas-
626 ingly mediate individuals’ social and semiotic experiences, the necessity of
627 using it to track these very processes becomes equally important. Tools such
628 as text mining, sentiment analysis and topic modeling reveal the hidden un-
629 derlying structures of the conceptual LL, enabling unprecedented access and

insight on the social production of place.

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