

# Experiments with Psychogeography and Social Media

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**Abstract** - The research project described in this paper attempts to merge both psychogeography and locative media to understand if theories of psychogeography can be used to better understand locative media embedded within social media. The focus of this study proposes a hypothesis that using geographical features on social media (specifically the Snap Maps feature of Snapchat) to virtually explore urban environments affects how users perceive the atmosphere in these environments. Three different cities in New York State (Ithaca, Buffalo, New York City) with different population sizes were used in this experiment. Participants virtually explored various locations using the Snap Maps social media application. The experimental data demonstrated that there were significant increases in atmospheric perception ratings for certain locations after using the Snap Maps feature in Snapchat.

**Keywords**-component; formatting; style; styling; insert (key words)

## I. INTRODUCTION

Emotion strengthens the subjective sense of remembering. However, these confidently remembered emotional memories have not been found to be more accurate for some types of contextual locative details. Research has shown that the subjective sense of remembering is indeed coupled with better recollection of spatial location and temporal context [1]. These findings show that the enhanced subjective memory indicates objective recollection for spatial location and temporal context, but not for other types of details. Confidence is higher in memory for location versus other canonical features. Memory and emotion is strongly correlated with a sense of place and location [2].

### A. Psychogeography

Psychogeography is the study of how geographical environments influence the mind or behavior of an individual. The academic discipline of Psychogeography was introduced in 1955 by Guy Debord, a French philosopher, based upon the concept of 'derive'. The phrase derive, or 'drifting' describes a concept of [3] :

*"aimless, random drifting through a place, guided by whim and an awareness of how different spaces draw you in or repel you"*

Psychogeography seeks to discover how we interact with our environment by closely observing people while they

navigate around an urban space to determine their psychogeographical nature within the environment. It helps to better understand what physical places attract and repel our senses and emotional stimulation. Psychogeography is usually undertaken as fieldwork, with participants walking through a designated area, usually an urban environment. Galvanic Skin Response (GSR) measurements are sometimes taken and a Global Positioning System (GPS) is used to track emotion and location [4].

Psychogeographical practices are among one of the many mapping tools researchers can use to explore emotional connections with a specific place/venue and a person. Psychogeographic practices seek to explore and often challenge or reinterpret the meaning of a place. Researchers use a strategy called 'participatory mapping' to create a map of the future that offers users a sense of history and connection to a location's past. Participatory mapping is a set of practices intended to create maps of places through [5]:

*"input from an entire community in an open and inclusive process"*

Studies have shown that those who have seen a place change over time have a deeply rooted desire to share knowledge of that place [5, 6]. In recent research, there has been an increased focus in the field of Urban Interaction Design (UID) and emotion and affect. This research aims to create a better understanding of people's feelings and experiences of the urban environment, and to inform how technology can play a vital role in augmenting people's urban life experiences [6]. Demographic locations have atmospheres and incite different and often strong emotions in people; for instance, a spot with a beautiful view in a foreign city or the comfortable feel of the street in which a person's home is located [7]. More recently, researchers have explored how environmental factors can affect a user's happiness based upon their geolocation [8].

Psychogeography research and experimentation is often closely tied to ideas surrounding the politics of spaces and places [9]. Most research concludes that use of psychogeographical practices leads to a deeper insight which allows people to understand the places they inhabit [10].

### B. Emotion and Atmosphere

There are several factors that impact upon emotional responses to a location [11]. Emotional psychogeography maps

can be created to depict a person's emotions connected to specific places (using simplified emotion categories or qualitative measurements) typically only link one emotion to a location on the map, using different colors for each type of emotion [6]. However, the ability to acquire emotional measurements in real situations and to understand the physical environmental factors (heat, light, taste, smell and so on) have improved drastically with the advancements of wearable technology and sensors [11]. Research has shown that mobile devices can be aware of emotion state of a user and cell phone usage patterns can predict negative emotion [12].

Maps are increasingly used to trace and visualize the location of emotion, knowledge and meaning. Affective meaning refers to the perceptions, interpretations, and expectation one ascribes to a specific physical and social setting ("affective" in the sense of showing how we are "affected" by environmental settings, and in turn "affecting" the way in which we experience and interpret the mapped environmental settings). Examination of the correlation between emotional mappings and location-based content can provide informative data for web-based mapping services. Researchers have investigated the effectiveness of location-based content and how the cartographic semantics can impact the affective meaning of these geographical locations [13]. The cartographic semantics of these affective geographies provide visual accounts of how space and place relate to each other, along with visual mechanisms that are based upon users' experiences and reflections of a single space.

Psychogeography has also been found useful in urban planning, to better understand what is important to residents in the towns and cities they reside in. A recent urban planning study done in India that focused on psychogeography and bio-mapping [11]. The objective of this project was to have the local people get involved in the planning processes of the town. This idea built on the many different opinions and expectations of the residents. The project used a measure of urban emotion, or the expectations that residents may have due to an attachment to a location. The data that was collected (using psycho-physiological and geospatial monitoring) helped the researchers to gain an understanding to what the residents wanted [14].

One aspect of emotions that is crucial to their impact in psychogeography is atmosphere. Atmosphere is defined as the ambiance of a place that can affect a person's experience. When paired with psychogeography and locative media, this property can measure how safe urban explorers feel in the environment.

The term atmosphere can mean different ideas to different people [15]. Atmosphere is important to people who visit a place, whether it is a city, town, hotels etc., as it can have a major impact on their experiences in that location. Some areas in cities are known as places to avoid due to having a bad atmosphere – some of this property can also often be attributed to the media coverage of the location. Certain contained, small places, such as buildings or hotels, can manipulate the atmosphere by making costly architectural or design changes. However, this does not work as well for large scale places or

areas such as cities. To understand the atmosphere in a certain location, there need to describe what a person may feel there.

Researchers studied the atmosphere of a set of hotels in Norway. The data was broken into four sections: distinctiveness, hospitality, relaxation and refinement. The researchers correlated these sections with an analysis of overall atmosphere, guest satisfaction, revisit likelihood and whether the customer would recommend the hotel. This research demonstrated clearly that the atmosphere of any location can be measured and this acts as a clear indicator of customer satisfaction and future business [16].

It is not only location that affects the emotional connection to a place. A study based in Bangalore, India examined perceptions of the city by listening to the sounds in the environment and how these sounds evoke emotions around the city [17]. The data showed how sound can have a large impact on the psychogeographic experience, since listening to unfamiliar sounds in an unfamiliar place can stimulate a person's mental journey and can [18]:

*'attempt to transform the urban experience for aesthetic purposes'*

### C. Social Media / Locative Media

In modern society, GPS systems are routinely embedded within 'smart' mobile devices, such as cell phones, creating a new world of digital maps. These digital maps are now being increasingly utilized within social media applications such as Facebook, Instagram, and Snapchat. Features such as Facebook's check-in features, Instagram location tags, Snapchat's Snap Maps, are creating location based stories on these applications, which are in turn changing the way we view and interact with the world. This is often referred to as locative media - digital media that is linked to a geographical location. Social media applications are creating a digital version of the more traditional areas of psychogeography.

There are other names for locative media such as neogeography, which means "new geography". Neogeographers tend to have a more creative and artistic approach to their work than traditional cartographers. Examples of neogeography would include OpenStreetMap.org and Google Maps.

With locative media being so ubiquitous among social media applications, this raises many questions regarding how users interact and navigate around these new psychogeographical based maps within this digital social media environment. For some, social media apps such as Facebook and Twitter, determine the environment the user views based on the users that they are friends with or "follow". This is known as user-created content. For others, social media is redesigning and reusing older forms of creating content, such as instant social media messaging replacing conventional text messaging over phone networks.

Applications such as SnapChat, Instagram, and Facebook are increasingly able to show the user's locations. Within the Instagram app, the user can pick a place based off their current GPS location or a list a location from several other places by using the search bar. Within the SnapChat app, when the user

uploads their photos these pictures remain ‘attached’ to the location where the photo was uploaded for twenty-four hours.

There are currently more cell phone cameras in the hands of the public than film cameras that existed in the entire history of photography [19]. Regardless of the function, these camera phone applications constantly relocate with the user, from either placing a filter that triggers a memory to geotagging a place for the user to remember the fond memories that they shared there. Cell phone camera practices have become a ‘rite of youth’ [20].

These pictures and media maps can also be found on the internet by searching for certain words or “hashtags”. Younger generations are increasingly becoming dependent a social media presence that attaches a person to a location at a moment in time, and for this to happen, technology must move with the user, and social media needs to replicate that for it to be successful [20].

At the intersection of geographic information science and computer vision, large collections of geotagged photos have been used to map world phenomena, classify land use, geolocate photos, recognize and model landmarks, perform smart city and urban planning, etc. [21]. There are many instances where it is beneficial to represent links between geographic places and the emotions that are prevalent in these locations [6, 22]. To successfully create emotion maps, there is a need to find significant interrelationships between the way people feel a geographical location.

A popular research area in emotion-based psychogeographical mapping is to gather information that has been geotagged from social media apps, such as Twitter or Instagram. Smartphone and geotagging use is now common in people of all ages [12]. The exponential growth of publicly available geo-referenced multimedia has created a range of interesting opportunities to gather spatially located user data [21, 22]. From gathering geospatial data using geotagged posts in social media applications, researchers have been able to identify and depict areas in the Los Angeles area of California, where specific emotions are strongly expressed [22]. Statistical models and informative data from studying geospatial emotion retrieval has helped researchers better understand how to distinguish emotions that are connected to specific locations [7, 21, 22, 23].

#### D. Mental Maps

A mental map is a first-person perspective of an area and how a person interacts with it, for example the image a person has of their neighborhood. Mental maps allow the planning of activities and routes for travel. These maps can also be used to show ideas such as images and sound and illustrate if a picture or location has left an imprint on someone.

A number of studies have involved participants walking around a location then using mental maps to assess what the participants would remember from the walk, such as the landmarks passed or the sounds and smells heard, and how these influences stood out to the participant. The landmarks

that were deemed the most important involved a level of personal attachment or spatial knowledge [24].

Other studies have focused on the relationship between bio-mapping and mental mapping [25]. This research attempts to discover how personal maps impact how a person relates with the world. The research correlates three types of maps :

- *Maps by Many* are maps that have been created by many people and have no restrictions on viewing them since many are open sourced.
- *Emotional Maps* are another name for bio-mapping and uses GPS data about how users walk through the city and a GSR to measure their response to the environment.
- *Situationist Maps* are mental maps made from fragmented experiences from the city being observed.

Multiple maps of a city in its entirety and in parts were created and tested generating large amounts of data. The results were assessed by urban planners who believed the process held great potential for future city design [25].

Other research investigated how a demographic location, such as downtown Los Angeles, can have a relationship between communication infrastructure and fear using communication-shaped mental maps. Participatory mapping plays a role in many studies such as these, as survey and user based locational data is apprehensive in gathering useful data on emotional and psychogeographic mappings [23].

## II. EXPERIMENT DESCRIPTION

This research aims to explore and expand the knowledge of Psychogeography and its relationship with locative social media. In particular, this research aims to have a deeper understanding of how social media applications may alter one’s perception of an environment’s atmosphere.

Locative media is used in Snapchat, a popular social media application on mobile devices, particularly, SnapChat’s feature called Snap Maps. This study aimed to explore how Snapchat’s Snap Map feature affects user’s atmospheric preference and, if population size affects user’s perception of a city’s atmosphere being welcoming. This study explored whether the methods of psychogeography can not only be applied by walking through an urban area, but if it can also be used digitally with a social media application such as SnapChat. Part of this study used mental maps, which allowed participants to show a visual representation of their mind.

Experimental Hypotheses :

- H1: Using Snap Maps at a specific location increases the user’s atmospheric perception that a location is welcoming.**
- H2: A larger the population of a specific location increases the user’s atmospheric perception that a location is welcoming.**

### A. Participants

A total of 74 participants (20 Male, 51 Female, 3 Other) took part in this study. Of the 74 participants, 20 were in-person, and 54 were online. Participant age ranged from 18-58 years old (Mean = 25). Prior to the study, all participants had the SnapChat application downloaded onto their mobile devices and had used it more than three times a week.

### B. Materials

A range of materials were used during this experiment :

*Snap Maps* – SnapChat is a social media application that allows for multimedia messaging where pictures, messages, and videos are only accessible for a short period of time. In June 2017, SnapChat released a feature called “Snap Maps” where a user can share photos and videos, in real time, to the world based on their location and also allows their SnapChat friends to view their location on a word map. If there is a location that has several “snaps” (video, pictures) the SnapMaps map displays the activity on the map as a heat map.

*SPSS* - a software tool used for data analysis.

*Google Forms* - a Google application that allows users to create their own surveys to send out to others and record responses. T

*Mobile Device* - Participants used their own mobile devices, each had their own personal SnapChat application installed synced with their own account.

*Mental Maps* - these were created by the in-person participants while simultaneously watching the stories on the SnapMaps application.

### C. Design

A mixed factorial design was utilized in this experiment. Three United States Cities within New York State were chosen based on population size from the United States Census Bureau 2016 population estimation :

- New York City (Large: 8,537,673)
- Buffalo (Medium: 256,902)
- Ithaca (Small: 30,756)

Each participant was given a pretest questionnaire asking them to rank on a 5-point Likert scale (Strongly Disagree - Strongly Agree) based on how welcoming they found each city to be. Participants were then asked to watch SnapChat pictures and videos at the chosen cities using the SnapMaps feature. They were then asked to rank twenty-four words (twelve unwelcoming, twelve welcoming) on the same pretest 5-point scale, to determine their post experiment welcoming score for the three cities.

### D. Procedure

For the experimental procedure, 20 participants were recruited for in person interviews and observation throughout the study. Simultaneously, 54 participants completed the study

online using Google Forms. Both in-person and online participants were given and asked identical questions. Although, the in-person participants also created a mental map during their interviews. The procedure went as follows:

1.) *Pre-Questionnaire*: A pre-questionnaire was given to each participant to ensure that they met the study criteria of being over the age of 18, having SnapChat on their mobile device, and using the application more than three times each week. Participants were then asked to rank how often they have visited the three cities (New York City, Buffalo, and Ithaca). Next, participants ranked how welcoming they perceived each city to be based on their past experiences with the cities.

2.) *Experiment*: Participants were asked to open SnapChat on their personal mobile devices and navigate to the SnapMaps feature. From there they were instructed to locate New York City on the heat map and watch some of the videos/pictures that had been uploaded at that location within the past 25 hours (also known as “Our Stories”). Participants were instructed to watch the stories for 2 minutes or until that location ran out of stories to view. In-person participants were also provided with a map of New York State and asked to draw and write out what they saw in the stories and what stuck out to them the most. These illustrations acted as mental maps. After the 2 minutes were up participants were asked to rank 24 words, 12 words that are perceived as positive (Annoying, Boring, Broken, Busy, Forgettable, Noisy, Paranoid, Scary, Stressful, Ugly, Uncivilized, Unsettling) and 12 that are perceived as negative words (Civilized, Different, Entertaining, Serene, Fun, Historical, Interesting, Memorable, One of a Kind, Original, Pretty, Quiet), based on the stories that they just viewed in that particular city. Then the entire process was repeated for both Buffalo and Ithaca.

3.) *Post-Questionnaire*: Participants were asked to pick which of the three cities they found the most pleasing based on the SnapChat stories that they watched and asked why they chose that city. Then participants were then asked which of the three cities that they were most likely to go out and explore based on the stories that they watched.



Figure 1. Mental map created by a study participant (New York City)

### III. RESULTS

The results are given based on each research hypotheses :

*Hypothesis 1 (H1):* The data demonstrated that using SnapChat Snap Maps at a geographical location increases user’s atmospheric perception that a location is welcoming. A two-way repeated measures ANOVA (time: pre and post X cities: NYC, BUFF, and ITH) was conducted to examine the effect of Snapchat interaction on atmospheric perception ratings for the three cities.

The ratings were obtained for each city before and after participants used Snap Maps. The ratings were standardized to perform cross-measure comparisons. Results revealed no significant main effects of time,  $F(1, 71) = .001, p = .98$  or cities,  $F(2, 142) = .006, p = .98$ , on the ratings. There was no statistically significant interaction between the time and cities variables,  $F(2, 142) = .04, p = .96$ . These results suggest that there were statistically significant increases in atmospheric perception ratings before and after using Snap Maps.

TABLE I. TWO-WAY REPEATED MEASURES ANOVA

| Within Subjects Effects |                |     |             |       |       |          |            |            |
|-------------------------|----------------|-----|-------------|-------|-------|----------|------------|------------|
|                         | Sum of Squares | df  | Mean Square | F     | p     | $\eta^2$ | $\eta^2_p$ | $\omega^2$ |
| Time                    | 7.456e -4      | 1   | 7.456e -4   | .007  | 0.978 | 0.000    | 0.000      | 0.000      |
| Residual                | 66.922         | 71  | 0.943       |       |       |          |            |            |
| Cities                  | 0.013          | 2   | 0.007       | 0.006 | 0.994 | 0.000    | 0.000      | 0.000      |
| Residual                | 162.431        | 142 | 1.144       |       |       |          |            |            |
| Time * Cities           | 0.045          | 2   | 0.022       | 0.037 | 0.964 | 0.001    | 0.001      | 0.000      |
| Residual                | 86.861         | 142 | 0.612       |       |       |          |            |            |

Note. Type III Sum of Squares

TABLE II. H1 ASSUMPTION CHECKS

| Test of Sphericity |                    |                  |                               |                        |
|--------------------|--------------------|------------------|-------------------------------|------------------------|
|                    | Mauchly's W        | p                | Greenhouse-Geisser $\epsilon$ | Huynh-Feldt $\epsilon$ |
| Time               | 1.000 <sup>a</sup> | NaN <sup>a</sup> | 1.000 <sup>a</sup>            | 1.000 <sup>a</sup>     |
| Cities             | 0.997              | 0.913            | 0.997                         | 1.000                  |
| Time * Cities      | 0.970              | 0.349            | 0.971                         | 0.998                  |

<sup>a</sup> The repeated measure has only two levels. When the repeated measure has two levels, the assumption of sphericity is always met.

TABLE III. H1 DESCRIPTIVES

| Descriptives |      |            |       |    |
|--------------|------|------------|-------|----|
| Cities       | Time | Mean       | SD    | N  |
| NYC          | Pre  | 0.002      | 0.999 | 72 |
|              | Post | 0.006      | 1.010 | 72 |
| BUFF         | Pre  | 0.017      | 1.009 | 72 |
|              | Post | -0.014     | 1.008 | 72 |
| ITH          | Pre  | -0.018     | 1.008 | 72 |
|              | Post | 4.715e -16 | 1.000 | 72 |

*Hypothesis 2 (H2):* The larger the population of a geographical location increases user’s atmospheric perception that a location is welcoming. A repeated measures ANOVA was conducted to compare atmospheric perception ratings for the three cities obtained after Snapchat interaction. Mauchly's Test of Sphericity indicated the assumption of sphericity was not violated, and thus, no corrections were applied. Results

revealed a statistically significant difference in atmospheric perception ratings for the three cities,  $F(2, 142) = 5.81, p < .01, \eta^2 = .08, \omega^2 = .06$ . Post-hoc tests using the Bonferroni test indicated that atmospheric perception ratings of New York City ( $M = 3.25, SD = .56$ ) and Ithaca ( $M = 3.34, SD = .49$ ) were more positive when compared to that of Buffalo ( $M = 3.09, SD = .49$ ). However, the ratings for New York City and Ithaca did not significantly differ from one another.

TABLE IV. REPEATED MEASURES ANOVA

| Within Subjects Effects |                |     |             |       |       |          |            |            |
|-------------------------|----------------|-----|-------------|-------|-------|----------|------------|------------|
|                         | Sum of Squares | df  | Mean Square | F     | p     | $\eta^2$ | $\eta^2_p$ | $\omega^2$ |
| Overall Post            | 2.287          | 2   | 1.144       | 5.806 | 0.004 | 0.076    | 0.076      | 0.062      |
| Residual                | 27.972         | 142 | 0.197       |       |       |          |            |            |

Note. Type III Sum of Squares

TABLE V. H2 ASSUMPTION CHECKS

| Test of Sphericity |             |       |                               |                        |
|--------------------|-------------|-------|-------------------------------|------------------------|
|                    | Mauchly's W | p     | Greenhouse-Geisser $\epsilon$ | Huynh-Feldt $\epsilon$ |
| Overall Post       | 0.962       | 0.256 | 0.963                         | 0.990                  |

TABLE VI. POST HOC TESTS

| Post Hoc Comparisons - Overall Post |                 |       |        |        |
|-------------------------------------|-----------------|-------|--------|--------|
|                                     | Mean Difference | SE    | t      | p bonf |
| NYC BUFF                            | 0.164           | 0.074 | 2.222  | 0.084  |
| ITH                                 | -0.083          | 0.074 | -1.127 | 0.785  |
| BUFF ITH                            | -0.248          | 0.074 | -3.348 | 0.003  |

Based on the results shown here, there is slight difference between Ithaca’s pretest and posttest, whereas there is a larger difference between NYC and Buffalo and Buffalo and Ithaca.

TABLE VII. H2 DESCRIPTIVES

| Descriptives |         |      |       |       |    |
|--------------|---------|------|-------|-------|----|
|              | Overall | Post | Mean  | SD    | N  |
| NYC          |         |      | 3.252 | 0.525 | 72 |
| BUFF         |         |      | 3.087 | 0.493 | 72 |
| ITH          |         |      | 3.335 | 0.486 | 72 |

Overall, Ithaca was known to be the most welcoming city out of the three cities studied.

### IV. CONCLUSION

The aim of this study was to improve understanding around psychogeography and if it could be correlated to social media. The results were not as expected. The research hypothesized that atmosphere would increase with size of city. The data illustrated that the smallest city studied was viewed as the most welcoming to participants and was only slightly more welcoming based on all responses. However, the research also demonstrated there is a significant correlation between social media, psychogeography, locative media and atmosphere.

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