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Exploring collective memory and place attachment using social media data

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Abstract. This paper describes how collective memory and level of place attachment can be explored using social media data to develop a sustainable travel destination in the city of Yogyakarta. Yogyakarta is famous as a tourist destination city for tourism in Indonesia. One of the reasons why people visit an object at travel destination is to recall the memory of the place. Memory is important for creating memorable space and places as it differentiates one place to another. Memorable places could grow as a symbol and an identity of a district in the city. This paper explores the collective memories recorded as status in the social media. The study identifies the distribution of such locations or nodes representing the memory footprint of the city of Yogyakarta, which can be achieved by determining the quality level of nodes based on the level of place attachment. Analysis is done by looking at the number of caption status by location and time. Qualitative description is used to present the level of place attachment based on the content of the status captioned. The study shows that level of place attachment seems not to be influenced by the popularity of an object. However it affects how strong a travel destination might be sustainable in future development.

Keywords: memory, place attachment, nodes, social media, travel destination

1. Introduction

Yogyakarta is famous as one of the travel destinations for tourism in Indonesia. During the year 2015-2016 there was an increase in the number of visitors both domestic (16%) and international (21%) compared to 2014-2015. The support from central and local governments in developing tourism in Yogyakarta seems inline with the planned development of New Yogyakarta International Airport (NYIA) located in Kulon Progo, DIY and Trans Java toll road connecting NYIA to Borobudur Temple. There are many reasons why people visit a tourist destination. Besides good infrastructure, they might come to recall memory of particular places and their attractions.

Memory is the mental capacity of humans to maintain and revive facts, events and etc by remembering or recognizing previous experiences [1]. Memory perceived by tourists can be from their previous memory or a memory that has been experienced by other people. Memories attached to a tourist spot become a collection of meaningful memories that are collectively remembered by a group of people who share and engage in forming memory or it is called collective memory [2].

Sharing and engaging to form memory of particular spaces and places are greatly supported in modern times like today, where everyone is connected each other with sophisticated mobile devices and supported by a good internet network. Not surprisingly, the tourist attractions and new interesting

places are rapidly shared by the existence of social media used by people who are visiting the location. Using mobile devices, people can easily upload images or status on social media telling about the condition of the sights. These practices encourage the formation of places as indirectly people have made memories about the sights with the uploaded images and status on social media.

The context in which people interacting synchronously either directly or indirectly through artefacts, devices, and storytelling, will have implications for the identity, memory, history, and meaning of the place [3]. Unfortunately, the lack of understanding of the mobility and the activities of tourists and the lack of information related to the urban context sometimes resulted in the creation of places and facilities that are less meaningful and unmemorable.

Therefore this paper addresses the issue of how collective memory and level of place attachment can be explored using social media data to develop sustainable tourism destinations in Yogyakarta.

It is expected that the tourist objects or nodes presenting the memory footprint of Yogyakarta city can be mapped.

2. Collective Memory and Place Attachment

The development of tourism is believed could affect the urban space, as the tourist attractions will form such node and a gathering point where people meet. The space would be a place if it has a meaning to the environment which is derived from its local culture [4].

The gathering people in a particular place like a tourist spot unconsciously contributes to the formation of a memory. Collective or individual memory forms identity, especially memory of events that have an important meaning to a community. Such meaningful events will thicken the boundaries of one's feelings about himself in relations to others and public society [5]. These memories can affect the creation of a space because memory distinguishes one place from another [6]. Memory is also born from the movement of people that occur in the urban space. Past memory attached to buildings and places in the urban space can be explored and can be associated with the needs of today's memory. As places have a past, the place also continues to grow in the future. Therefore memory is very important in a tourist location as it helps one to better understand the urban context [7].

Memory collected collectively at a tourist location can be described as an emotional bond between the individual and the location. The emotional connection between individual to a location/node forms a place attachment. Place attachment is a symbol of relationship with the place where it is generated by giving emotional and common sense meaning to a specific place or boundary and explaining how people perceive and relate to them [8]. Place attachment also refers to the emotional or affective bond between an individual and a particular place as well as the functional bonds that occur repeatedly in interactions between people and places [9].

There are 4 levels of place attachment according to Rubinstein & Parmelee [10]. The intensity of "Place Attachment" is described as (1) one only knows about a place and thinks about it without experiencing strong personal feelings/memories, (2) "personalized attachment", if one has a memory of a place from his personal experience, (3) "extention," when a place provides an emotional memory or psychologically involves the individual in various ways, and (4) "embodiment" / embodiment, when the boundary between the self and the environment becomes blur or even for some individuals their personal identity and place identity melted into one.

3. Methods

Using mixed methods, this paper explores collective memory recorded as status related to specific objects mentioned in the social media i.e. Twitter. In this study, Twitter data related to Yogyakarta tourist location shared from users' mobile devices were captured based on factors such as location and time. Using a filter called 'stop-word', data were separated from the meaningless words. Data is also classified based on the characteristics of tourism location (i.e. cultural and historical tourism, culinary tour, shopping tour, nature tourism, or spiritual tourism).

The level of popularity of a tourist location can be obtained by analyzing status based on the location and time of such objects. The study also look at the content of status to measure the level of place attachment. Word categories to filter the contents of the status have been predefined. Analysis is translated into intensity level so that the relationship between location and its collective memory can be seen.

4. Discussion

The study uses data sampling retrieved from November - December 2016 due to a consideration that the month includes holiday season, where almost all tourist sites are filled with domestic and international tourists. In order to see the space usage by the tourist and the popularity of a tourist location/object, data were divided into 4 groups of visitors based on time i.e. morning (06:00-10:00), day-time (10:01-14:00), evening 14:01-18:00), and night-time (18:01-24:00).

4.1. Cultural and Historical Tourism

There were 20 locations recorded as cultural and historical attractions in the city of Yogyakarta of which there are 13 tourist sites with number of visitors are over 100 people.

Table 1. Total number of visitors and level of place attachment for cultural and historical tourism

No	Location	Number of Visitors					Level of Place Attachment					
		Time				Total	Level				Total	Mean
		Morning	Day time	Evening	Night time		1	2	3	4		
1	Bank Indonesia Yogyakarta	0	0	0	15	15	11	4	6	0	21	1,40
2	Panggung Krapyak	0	0	0	15	15	12	0	9	0	21	1,40
3	Museum Sonobudoyo	36	4	5	9	44	87	0	18	0	105	1,13
4	Mandala Krida	39	1	32	43	115	106	8	15	0	129	1,12
5	Museum De Mata	131	25	35	65	256	237	18	30	0	285	1,11
6	Gembira Loka	75	66	33	33	207	202	0	15	0	217	1,05
7	Keraton Yogyakarta	142	471	45	302	960	928	36	42	0	1006	1,05
8	Tugu Yogyakarta	1	51	24	4	80	77	4	3	0	84	1,05
9	BNI 46 Nol Kilometer	134	40	297	70	541	532	8	15	0	555	1,03
10	Taman Budaya Yogyakarta	40	354	21	163	578	568	2	27	0	597	1,03
11	Balai Kota Yogyakarta	188	107	139	113	547	540	6	12	0	558	1,02
12	Bentara Budaya	78	32	69	137	316	310	10	3	0	323	1,02
13	Kantor Pos	10	7	7	39	63	62	2	0	0	64	1,02
14	Malioboro	27	45	1	413	486	477	12	9	0	498	1,02
15	Kotabaru	54	55	8	96	213	211	2	3	0	216	1,01
16	Stasiun Tugu	22	4	25	29	80	79	2	0	0	81	1,01
17	Taman Sari	35	11	94	36	176	175	0	3	0	178	1,01
18	Gedung Agung	66	68	19	44	197	197	0	0	0	197	1,00
19	Masjid Agung	41	26	29	24	120	120	0	0	0	120	1,00
20	Pasar Beringharjo	15	44	27	9	95	95	0	0	0	95	1,00

It can be seen from table 1 that Panggung Krapyak and Bank Indonesia Yogyakarta have the same level of place attachment. Nevertheless, Panggung Krapyak has more value at level 3 than Bank Indonesia Yogyakarta. It means the visitors has a deeper emotional bond to the place. Panggung Krapyak is part of a series of imaginary axis of Yogyakarta, so it is still interpreted to have a great influence in the life of the people of Yogyakarta. The location of Panggung Krapyak itself is a little bit far from the Yogyakarta Palace. However it is not influenced much by culture outside of Yogyakarta. The environment is still thick with past conditions that bring tourists back to ancient times. Tourists are invited to understand, live, and perceive the past events that occurred at that location.

The second rank of place attachment level is at Bank Indonesia Yogyakarta. The quality of the location is not only influenced by the bank's own image, but also by the character of surrounding environment such as the Monument Serangan Umum, Gedung Agung, Bank BNI and Post Office.

Urban space on the area has helped visitors to remember the memory related to past events that happened in that location.

On the other side, Yogyakarta Palace can attract visitors as nearly as 1,000 people. Yogyakarta Palace becomes a must-visit location for every tourist who travels to Yogyakarta city. The most visited time is in the afternoon, because there are certain operational times imposed by the Yogyakarta Palace.

4.2. Shopping Tour
Table 2 shows 10 popular locations for shopping in Yogyakarta. There are 4 tourist sites with more than100 visitors when data was taken.

Table 2. Total number of visitors and level of place attachment for shopping tour

No	Location	Number of Visitors					Level of Place Attachment					
		Time					Level					
		Morning	Day time	Evening	Night time	Total	1	2	3	4	Total	Mean
1	Gramedia Sudirman	4	6	6	2	18	16	4	0	0	20	1,11
2	Galeria Mall	12	22	24	7	65	62	0	9	0	71	1,09
3	Gardena	58	88	90	0	236	231	10	0	0	241	1,02
4	Malioboro	2339	1509	1872	1348	7068	6987	80	123	0	7190	1,02
5	Lippo Plaza	262	395	617	312	1586	1560	38	21	0	1619	1,02
6	Mirota Batik	13	19	25	9	66	66	0	0	0	66	1,00
7	Pasar Beringharjo	11	36	52	10	109	109	0	0	0	109	1,00
8	Pasar Kotagede	3	14	31	12	60	60	0	0	0	60	1,00
9	PASTY	16	16	19	9	60	60	0	0	0	60	1,00
10	Pasar Ngasem	25	2	20	6	53	53	0	0	0	53	1,00

Malioboro is an old shopping district. It became the most popular shopping location since established and has the highest number of visitors. Morning and evening seems to be the favourite time for tourist to visit Malioboro. Visits can be increased by improving the environmental conditions, such as planting more shade trees, planting trees as a barrier between pedestrian ways and vehicles road, restrictions on motor vehicles entering the Malioboro area, etc. Lippo Plaza comes out to be the next most popular location. This building represents today's shopping place with a modern concept favoured by young people. Visits in the afternoon are high, because the building is facilitated by air conditioners. Utilization of its space for public use with adequate facilities, holding big events monthly and annually will increase the number of visitors.

On the contrary, Gramedia Sudirman, a book store with a complete collection of books and building conditions that are comfortable to visit, has the highest level of place attachment than Malioboro despite the less visitors. Visitors are pampered with the atmosphere of a quiet shop, complete book collection, wide corridors so that visitors feel at home. Galeria Mall shows a high level of place attachment as well. In this place, visitors are pampered with the atmosphere of a luxurious store, and rental tenants. On the contrary, Malioboro is less organized, crowded, and overheat sunshine during the day might be the cause of why tourists has less memorable of Malioboro. If these conditions are not addressed in sustainable urban planning, gradually the meaning of Malioboro as a legendary tourist location for shopping will fade away, lost by the time and replaced with a new one.

4.3. Nature Tourism
The development of Yogyakarta city into densely populated residential areas makes there are only few nature tourism locations found and mentioned on social media. The location of nature tourism recorded as many as 5 locations as shown in Table 3.

Table 3. Total number of visitors and level of place attachment for nature tourism

No	Location	Number of Visitors					Level of Place Attachment					
		Time				Total	Level				Total	Mean
		Morning	Day time	Evening	Night time		1	2	3	4		
1	Gembira Loka (The Zoo)	69	41	26	19	155	150	4	9	0	163	1,05
2	Sungai Code (Code River)	21	23	49	55	148	142	8	6	0	156	1,05
3	Alun-alun Kidul (South Square)	96	43	58	318	515	511	4	6	0	521	1,01
4	Mangunan Imogiri (Orchard)	9	2	6	10	27	27	0	0	0	27	1,00
5	Sungai Elo (Elo River)	0	4	10	0	14	14	0	0	0	14	1,00

Alun-alun Kidul (South Square) seems to be the most popular tourist location compared to the four others. It is an open public space at the southern part of Jogja Palace where citizens can use it freely for relaxing, doing some sports like running, jogging, and any other outdoor activities. Morning and night times are the most favourite time when the atmosphere is still fresh and the place is shaded from the overheat sunshine. By planting more trees and providing more parking lots in the area may increase the number of tourist visits during the day and afternoon.

In terms of level of place attachment, Alun-alun Kidul has less value than Gembira Loka Zoo and Code River. Gembira Loka has existed for a long time as a place for recreation while Code River flows among housing settlements in the city of Yogyakarta. For some people, both places have more meaning and that can be developed to keep their sustainability.

4.4. Culinary Tourism
There are about 10 tourist locations for culinary tourism of which 6 of them have visitor more than 100 people.

Table 4. Total number of visitors and level of place attachment for culinary tourism

No	Location	Number of Visitors					Level of Place Attachment					
		Time				Total	Level				Total	Mean
		Morning	Day time	Evening	Night time		1	2	3	4		
1	Gudeg Bu Tjitro	0	0	12	4	16	14	4	0	0	18	1,13
2	Greenhost Hotel	11	8	3	15	37	35	4	0	0	39	1,05
3	Bakmi Kadin	12	13	16	55	96	94	0	6	0	100	1,04
4	House of Raminten	18	14	43	40	115	112	2	6	0	120	1,04
5	Galeria Mall	12	20	27	21	80	79	0	3	0	82	1,03
6	Kopi Joss	19	5	16	253	293	285	16	0	0	301	1,03
7	Tempo Gelato	14	46	33	65	158	156	2	3	0	161	1,02
8	Gudeg Yu Djum	96	91	65	159	411	407	8	0	0	415	1,01
9	Agenda Resto	95	55	61	90	301	298	6	0	0	304	1,01
10	Couple Couple	26	28	28	32	114	114	0	0	0	114	1,00

Gudeg, a traditional food made from young jackfruit, remains as a favourite culinary among tourists. Gudeg Bu Tjitro has the highest level of place attachment among many other culinaries of Yogyakarta city, since it has been around since 1925. The taste of its food as well as the atmosphere of the dining places offered to the visitors brings culinary lovers back to the past. Regardless of the taste presented, the atmosphere of the place formed from the building can affect the visitors' emotions in enjoying the food.

Meanwhile another gudeg shop i.e. Gudeg Yu Djum has the largest number of visitors which popular to be visited at night. However as this place is relatively new, the level of place attachment seems not as high as the Gudeg Bu Tjitro.

4.5. Spiritual Tourism
Table 5 shows that there are 5 locations mentioned as a spiritual tourism spot in Yogyakarta of which 1 location has visitors more than 100 people.
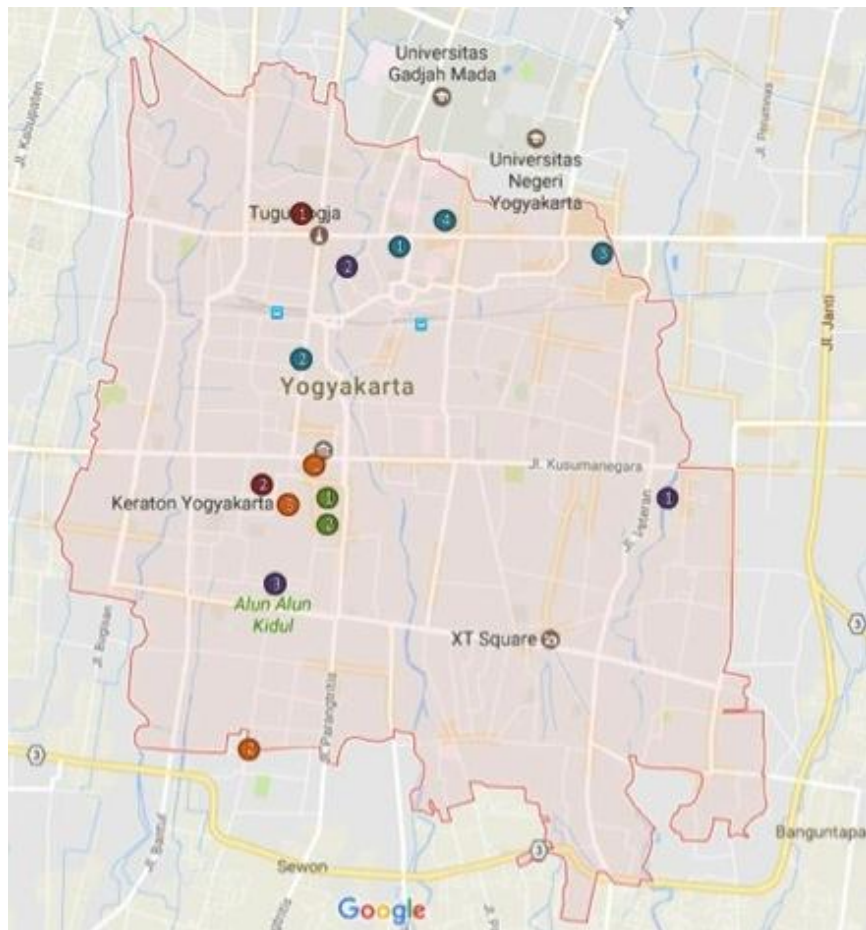
Table 5. Total number of visitors and level of place attachment for spiritual tourism

No	Location	Number of Visitors					Level of Place Attachment					
		Time					Level					
		Morning	Day time	Evening	Night time	Total	1	2	3	4	Total	Mean
1	Klenteng Poncowinatan (Shrine)	0	21	0	0	21	14	14	0	0	28	1,33
2	Gereja Katholik Baciro (Church)	23	16	6	11	56	54	2	3	0	59	1,05
3	Masjid Agung (Mosque)	28	17	19	45	109	109	0	0	0	109	1,00
4	Masjid Sumur Gumuling (Mosque)	2	0	0	0	2	2	0	0	0	2	1,00
5	Gereja Katholik Kotabaru (Church)	23	8	6	34	71	71	0	0	0	71	1,00

Poncowinatan shrine has the highest attachment level among the other five locations. The shrine is located behind Kranggan Market - another chinese district besides Malioboro area. People around the shrine still perform ritual prayers with various offerings such as fruits and cakes as a form of their gratitude. Tourists visiting the shrine can still see this ritual and might be able to interpret what they see.

The Great Mosque is part of the Yogyakarta Palace and it has the largest number of visitors. It is popular to be visited at the evening and night which might be due to the overheat conditions at the site surrounding the mosque during the day and in the afternoon. Adding more trees and replacing the pavement cover of the mosque's yard with grass is expected to decrease the heat and to invite more visitors to come.

Figure 1 shows the popularity of all tourist attraction in the city of Yogyakarta and their level of place attachment.

a. Cultural and heritage tourism
1. Bank Indonesia Yogyakarta ①
2. Panggung Krapyak ②
3. Keraton Yogyakarta ③
b. Shopping tour
1. Gramedia Sudirman ①
2. Malioboro ②
3. Lippo Plaza ③
4. Galeria Mall ④
c. Nature tourism
1. Gembira Loka Zoo ①
2. Code River ②
3. South Square ③

d. Culinary tourism
1. Gudeg Bu Tjitro ①
2. Gudeg Yu Djum ②
e. Spiritual tourism
1. Klenteng Poncowinatan ①
2. Masjid Agung ②

Figure 1. Map of Tourist Attractions and Their Level of Place Attachment

5. Conclusion
From the analysis of the number of visitors and the level of place attachment presented above, it seems that the popularity of tourist location is not necessarily correlated with the level of place attachment. This condition can occur as the more tourists visit a location, the more difficult the

tourists to observe, interpret, and reflect the events that happened at that location. The less tourists to visit such objects, the more flexible they are to explore the objects, feel the atmosphere, and give meaning to the events existed in the location.

From the data presented above, it is found that almost all tourist sites are only in the first level of place attachment. Although some locations have above level one yet have not reached level two. This indicates that certain locations have been memorized and tied emotionally and psychologically by the visitors although they are still in the level of "personalized attachment".

A city can succeed in its social sustainability, if historical values and the memory, which are lived in the city are preserved and maintained by its citizens. In this case, Malioboro has a slightly higher level of place attachment than other locations for cultural and historical tourism categories and shopping tours, because people still respect and live on historical values which performed in their every day life and transmitting to the next generations.

This study shows that the degree of place attachment influences the strength of the purpose of the journey, which may be sustainable in the future development. Thus, the locations of travel destination will not lose their original identity, which will make them unmemorable for the next generation.

Tourist sites with low attachment level can be improved by architectural intervention, which is suitable to the character of the location. Location with large number of visitors is potential to increase their level of place attachment. By increasing the level of place attachment, the level of emotional bonded of the visitors to a particular location will also increased. This will support the sustainability of the tourist attractions in the future.

Acknowledgments

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