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Mapping Social Media Texts as the Basis of Place-Making Process

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Abstract

This paper explores the idea of 'surface' as a way to define the new landscape in place-making process. It examines how the new landscape could be generated regarding the virtual space of social media. The idea of 'surface' is explored through a case study in Twitter social media by analyzing the visual tracking of position based on specific texts, using Twitonomy database application. In this analysis, we investigate the tweet traffic of people's tweets, retweets, replies, mentions, and hashtags on specific topics leading to particular position of pinpoints concerning those topics. We trace the spatial distribution of individual texts about particular words. Through spatial mapping of those texts, we could curate the new landscape as a platform that visualizes the spatial network based on texts. Through this process, we could extract various possibilities of place-making in everyday life that becomes intertwine between the real and virtual space.

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Keywords: surface; intertextuality; virtual space; Twitter

1. Understanding the New Landscape in Place-Making Process

The current exploration of place-making process should not be limited to the creation of a physical environment. This paper considers the important inclusion of technology to define the new landscape in innovative way. In particular, it looks into how the new landscape is generated in relation to the virtual space of social media. The new landscape is defined by the idea of surface. The surface does not only attach to land and; it consists of multilayer lines as an interface between the body and the surrounding (Spiller, 1998). With the technology, the surface could be created in a way that may be diverse from the real existence and could be "shaped by the connectivity" among the collective fragments, such as texts in virtual space (Mitchell, 1996).

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The virtual realm is a space that emerge 'the new presence of the present' through parallel network (Grosz, 2001). In terms of everyday spaces, the parallel networks intersect particularly among individual users of social media. The networks are everywhere and reflect everyday real events (Mitchell, 2003). The Twitter texts could be "duplicated, recreated, and reconfigured" (Spiller, 1998) in order to generate information and to establish the new types of relationship in virtual space. Therefore, it is possible to explore the parallel network among texts in virtual space and to understand their role in the generating the new landscape in place-making process.

The goal of this research was to explore the creation of the new landscape in virtual space based on social media as a possible approach for place-making process. In particular, the new landscape is developed by the intertextuality -parallel texts, produced in Twitter. In developing the new landscape, it becomes important to investigate the interactions between texts that are linked and created circle of network. It is also necessary to examine the possibility of texts to be connected and related to different practices or to be recreated by itself (Leach & Guallart 2009). The different practices affect the way how it acts for recreating the new landscape in order to generate the networking in another surface. The process of creation of new landscape based on parallel text becomes important in discussing the making of the "other" place in a virtual realm.

2. Finding the New Landscape

This study was conducted through investigation of specific texts of the people's tweets, retweets, replies, mentions, and hashtags, using Twitonomy database application. This method allows us to identify the particular position and the visual traffic of anyone's tweet that concern about specific topics. Twitter is a kind of social media that contains microblogging with limited word-140 words of texts that are posted as a tweet. Twitter is also an open and public medium (Hawelka et al., 2014), and thus it makes possible to examine a collective data on particular topic rather than individual behavior. Twitter platform also supports the identification of specific geo-location based on either GPS set in mobile phone or the IP address of a computer. In addition, we take advantage of the hashtag feature in Twitter that makes it possible to find certain texts from all the user's tweets. Hashtag system is used as tagging prefixed by a #symbol with a particular keyword. The Twitter users could participate in tagging any topics in order to manage the information on Twitter (Chang, 2010).

In order to track certain texts that consist of the hashtag, we use Twitonomy database application, in particular 'Search Analytic' function that generate the significant data about the particular keywords. This application could monitor the tweet traffic that concerns about the topic for several days and could illustrate how it has been tweeted recently. The 'Search Analytic' function calculated the data returned by Twitter's search service and usually represented up to 3,000 of the tweets posted in the last 6 to 9 days. For this reason, it is possible to have a dataset that illustrates about the specific texts that are related to the certain hashtag.

To illustrate the process of creating a new landscape, we choose '#lombok' as the keyword to analyze. Lombok is tourist destination in Indonesia. We would like to see the possibility of making Lombok as a world tourism destination in Indonesia beside Bali. We would like to obtain the widespread potential of Lombok in a global world by tracking the data information from Twitter. The data traffic from Twitonomy application could indicate how Lombok could be reached from anywhere in the world and could be a topic of conversation in a virtual realm. The new landscape created from the analysis could establish the new potentiality of Lombok.

In this paper, we present the study of generating the new landscape based on parallel texts that are organized as follows. First, we describe and analyze the dataset of particular vocabulary, '#lombok' based on Twitonomy application using spatial mapping and visual chart to indicate the traffic from the texts in social media. The mapping represents two kinds of visual and interactive mapping; the global mapping based on the location of the users that mentions ''#lombok'' for several days and the distribution mapping on how the users' data are circulated in various ways. This mapping establish basis to find a mechanism in generating the new landscape. Next, the mechanism for text distribution based on the spatial network is established. This study offer a creative way in collecting and analyzing data based on database application in order to understand its peculiarities and to combine different data sources to conclude the phenomena we are interested in (Offenhuber & Ratti, 2013).

3. Mapping the Spatial Distribution Based on Tweet Texts

Our study relies on the database from 'Search Analytics' for a hashtag '#lombok' based on Twitonomy analytics application. This set of data consists of 1602 tweets generated by 877 users that were recorded from Mar 01, 2014 12:39 AM to Mar 08, 2014 09:20 PM (GMT). The amount of tweets that mention '#lombok' as a keyword varied from each day as illustrated in the chart below. Various amounts of tweets were obtained from the detailed and visual analytic on the people's tweets, retweets, replies, mentions, and hashtags that consist of '#lombok'.

Fig. 1. Number of Tweets Mentioning ''#lombok''.

3.1. Mapping global traffic

The data generated a visual interactive map that describes various locations of users who mentioned '#lombok' in their tweets. The geo-location positions was identified and made visual by the interactive map that pin-pointed the specific location of certain users and tweets, by geo-located application such as GPS and IP address in a computer. In this way, we could acquire a complete picture of global location based on '#lombok' as the key to a text. The interactive map generated by Twitonomy database analysis, suggests that the word '#lombok' reaches out to various countries in the world. In this map above, we trace the locations that are positioned by the users who participate in publishing text with '#lombok' as a keyword by Twitter social media platform in seven days. Then we created the connectivity lines that indicate the interrelationship between Lombok as a center and other location where the word '#lombok' was spread out. This indicates the worldwide distribution of Lombok, which is positioned in Indonesia.

Fig. 2. Interactive Map Generated by Twitonomy.

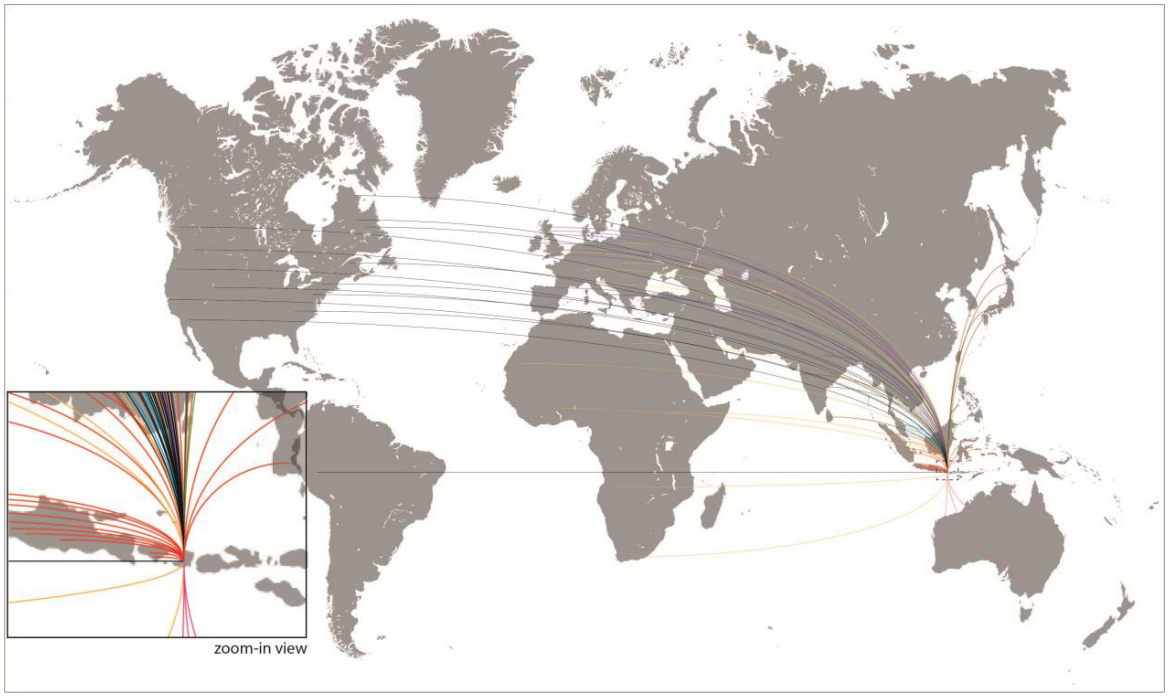

Fig. 3. Mapping Global Traffic.

Based on this connectivity, we could signify that the word '#lombok' is quite widespread in its use as a text in Twitter social media at that particular time. From the map in figure 3, we could also identify how the specific topic is extended beyond the boundaries. The boundaries and the network structure are both "topological and functional" of each other in virtual context. In particular, the network is indicated by the "space of links and flows" that could create the connecting line of the text '#lombok' as illustrated in the global mapping above (Mitchell 2003, p.7). In this mapping, we also examined the role of geography in order to contextualize the data source and the online interactions specifically that consist of '#lombok' as the key text. By the time, the word '#lombok' could also be determined both by its geographic context, and online information with physical proximity. (Offenhuber, Ratti2013). Therefore for creating the new landscape, it becomes important to intertwine the physical place, as a context, with the spatial network that re-describes the physical space with new meaning.

3.2. Mapping the spatial mechanism of text distribution

Geo-location analytic Twitter also provides us with data a source that is able to create a mapping to indicate the particular text distribution, based on a spatial network. We defined two kinds of mapping which illustrate how the word '#lombok' is dispersed - to domestic region and overseas area. The mapping distribution mechanisms were obtained by finding the points in two phases: first we hinted out the location where the user published the text about '#lombok' based on an interactive map; and second, we traced the detail clues from each of tweet texts. The clues are the ways users, who published the tweet texts, got connected; the numbers of followers, how the texts are distributed to other users by retweet function re-duplication, and how the tweet texts are marked by other users as favorite.

Fig. 4. Mapping the Spatial Mechanism of Text Distribution in Domestic Region.

The mapping in figure 4 illustrated the spreading point of the text '#lombok' in the domestic region. There are eight points of location, identified in Lombok Island, where the texts are mentioned. From all of those locations, a total amount of fourteen users, that texted '#lombok', were identified. Based on their tweets, we could hint different ways of spreading the text on Twitter platform. For example, we found tweets that were posted in Malang, one of the spots in Lombok Island and were published just by one user, @aelke_mariska. Each text that was published by her is always retweeted by a large group of people and being marked as favorite by others. The example of texts is, *"@aelke_mariska: The Sanctuary #throwback '#lombok' @ BatuBolong Temple, Lombok. http://instagram.com/p/lROD85xzVH'."*

From that above tweet, the texts were duplicated through retweet function by eleven other users and were pointed as a favorite by four users. That type is also occurred in the texts below from the same user that was re-published by fifteen users and was signed as favorite by seven people in Twitter social media. *"@aelke_mariska: Lingsar Temple | The most sacred Temple in Lombok. #throwback '#lombok' @ North Narmada, Lombok. http://instagram.com/p/k_8fjxRzYU/'."*

In fact, the people who duplicate the tweet and sign it as favorite are different users. For this reason, it indicates that the tweet, published by @aelke_mariska is read by a number of tweet users, who have connectivity with her at a certain period. We also obtain through Twitonomy database that @aelke_marisa had a great number of followers and was quite active in publishing texts that mention '#lombok' at that time. She posted six tweets about Lombok in seven days as analyzed by Twitonomy database. Hence, from the mapping above we could imply that @aelke_marisa is quite influential in reveal the spatial network based on text '#lombok' in Twitter social media. Therefore, it becomes important to define the user as a center of the text and explore how the text could be spread in its way. It also depends on the user's popularity and reputation as a source of texts. Another example: there was @lombokkita as the user who posted the text in Aikmel. From that position, the user published this following text, *"@lombokkita: IndahnyaTanjungAan :) '#lombok' pic.twitter.com/4vLSu1qwMl."*

This text that informed about the scenery of that location was re-posted by other fifteen users and pinned as favorite by other three users. This case indicates that the user is influential in text distribution. Nevertheless, compared to the previous user, @aelke_marisa, this user was less active and just posted one text for a period of seven days. The quantity of posts becomes significant to examine the text distribution mechanism, so as to render a spatial network.

In another example, we acquired the group of texts that were posted from a different location, Kuta, by one of tweet user @novotel_lombok. This user just tweets one text in that period. This following text was just marked as a

favorite by just one user. In this type of post, the @novotel_lombok as Twitter user does not participate as much as other users in publishing '#lombok' as a tweet text at that time, *"@novotel_lombok: Beautiful '#lombok' pic.twitter.com/3vcTR6Zhv5."*

Although this user just posted one tweet within the period of seven days, it is followed by quite a large number of users, 260 people. The number of texts that is published seems significant in the texts-based distribution mechanism. The numbers of followers will not give impact to Twitter's spatial network if the user rarely posts text.

Fig. 5.Mapping the Spatial Mechanism of Text Distribution in Overseas Area.

The mapping in figure 5 represents how the texts from Twitter were distributed in several points in Australia region. From this mapping, there are three positions where the user's tweet was mentioning '#lombok'; Perth, Melbourne, and Alice Springs. The total tweets that were published at that time were four tweets from four users. In this case, we found that each text has different ways of spreading out the information about Lombok. For example, from the text *"@ninenewsperth: #BREAKING: A #Perth mother has been sentenced to 8 months jail after being caught in '#lombok' with a small amount of methamphetamine. #9News."*

The texts were published by news user with large number of followers. For this reason, the text was retweeted by many users who read the texts. This condition is different from other three texts, illustrated in figure 5, which are duplicated by retweeting either less than the first text or none at all. Hence, it implies that the spreading of the text is made possible by identifying the numbers of users with a connection in social media in virtual space, as indicated by followers in Twitter. The wide distribution of the text in Twitter starts with the how often the text is read by others and how the other followers might be interested to repost the texts to inform to the larger audience. The spatial mapping in figure 5 might also indicate the wider possibility of text distribution and suggest that '#lombok' was not quite popular as a text at that time in Australian region.

4. Mechanisms in Spatial Distribution

Both the global traffic mapping and the spatial distribution mapping of series of texts indicate a spatial distribution mechanism, in a virtual realm. From the various cases above we concluded several important aspects in the distribution mechanism of the text in Twitter, as illustrates in figure 6.

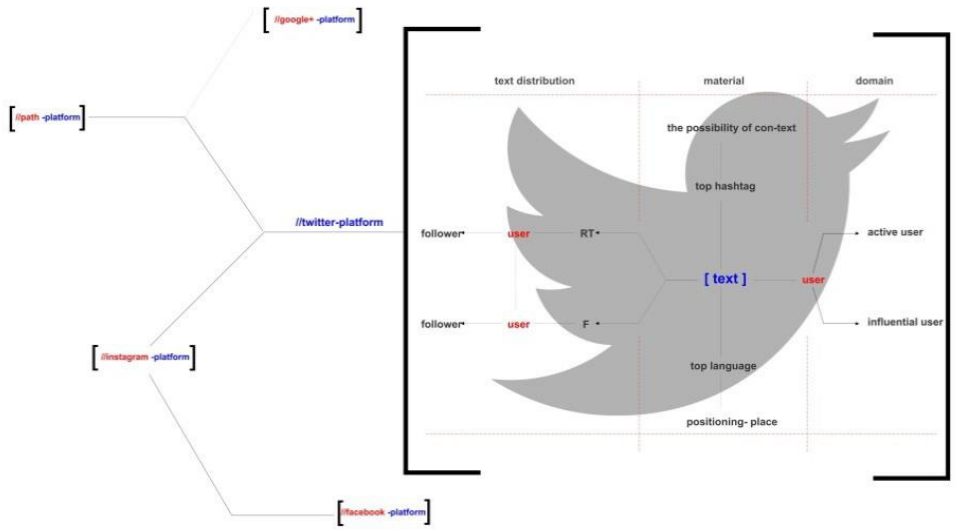

Fig. 6. Spatial Distribution Mechanism Based on Tweet Texts.

4.1. How the texts are distributed?

To understand the mechanism of a spatial distribution based on texts in social media, we need to understand the system of distribution. The set of texts is distributed by two types of systems. First, the series of texts is re-duplicated and re-published to other users by retweet mode in Twitter social media. This distribution process depends on the user details who posted the text at that time. The numbers of followers of the users become important. In this system, the follower is the influenced users that potentially read–duplicate-repost the sets of text from the source user. This distribution type is direct.

The second ways of text distribution text in Twitter is an indirect mechanism, where the followers mark the text as favorite. This mechanism is conducted by the following steps: read - mark as favorite - read by others follower in personal at favorite column activity. This is called as personal distribution of the tweet text. As explained in Twitter, "*the Activity tab is where you can discover what the people you care about are engaging with on Twitter. Activity shows the latest Favorites, Retweets, and Follows made by the people you follow on Twitter – all in one place*".

Signing the others tweet becomes one way in publishing his/her tweet in implicit ways. As people mark as favorite in someone tweet, it could be one of spatial mechanism in distributing the set of text to others group of people in virtual space. Both the direct and indirect mechanisms explain the development of connection in a virtual realm, as indicated by the system of text distribution.

4.2. What is the material content of the text?

To identify the content material of the text, we took some examples that contain some hashtags alongside '#lombok'.

"@120croreHindus: RT @nepali_hindu: Saraswati Puja by Balinese Hindus '#lombok' #Bali #Indonesia http://t.co/luuxmM86LM."

"@Bridesmagazine: #Win a trip to #Bali and '#lombok' for the #honeymoon of dreams! Here's how po.st/AC6AH4."

"@IndonesiaTrends: RT @gililombok: at the morning, they are landing from the sea #fisherman '#lombok' #indonesia #beach #sea http://t.co/00oPsl5gQw."

The three texts above consist of several hashtags alongside '#lombok', such as #bali, #indonesia #honeymoon #fisherman #beach and #sea. The analysis in Twitonomy database track that the first text was retweeted by 14 people, then the second text was republished by 7 people and also signed favorite by 4 people, and the last tweet was reposted by 3 people.

Fig. 7. Data Tracking of Top Hashtags and Top Language Generated by Twitonomy.

The data tracking in figure 7 suggests that the distribution of '#lombok' does not stand alone. The accompanying words mentioned following the hashtag, contribute to linking among several users. For instance, when the user search for #bali, they could also found '#lombok'. And if they are interested in '#lombok' as the linked text they would repost, suggesting the vocabulary network in virtual space. The same is also applied in some other keywords that become adherent as a top hashtag that follows the main word '#lombok'. Therefore, it is possible to include the other hashtags as content that support the networking vocabulary that create the popularity of '#lombok' as a text.

We also discovered that language is influential in distributing the Twitter text. Based on the analysis of Twitonomy database application we discovered that the word '#lombok' is mostly found in the series of the text with Indonesian language. Then English, Dutch, German, Spanish, and French languages are positioned next to the top languages used to mention the word 'Lombok' in the Twitter text. The language could utilize the state of interrelating position of the users as a text source that gives influence in the system of networking text. When we examine the texts with familiar language, we will be attracted to read more and re-posted it in order to spread the familiar language information. Since the location base of Lombok is in Indonesia, Indonesian language becomes the connecting material in publishing the text 'Lombok' in the social media.

4.3. Who is the user that posted the text?

The first important point in the mechanism of the spatial distribution based on text in Twitter is the people as the source of text and producer of text, the tweet users. In this sense, the user acts as the active source and has a significant influence to create spatial network of the text. There are two aspects that create the central position of users in curating the landscape of the network: the influence and the activity of the users.

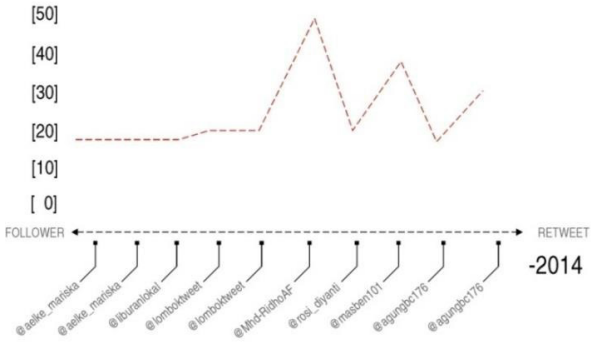

Fig. 8.The most Influence and Active Users Based on Texts.

'Influence' indicate how many followers the user has who potentially read the posts in their timeline and how often the followers re-posted the text from the first source user of the tweet text. Through the large number of people that follow the source, the distribution of spatial mechanism of the text is enhanced to create the wide connection. Example in figure 9 shows the ten texts from the first source users who become the most influential user based on the text '#lombok' at a certain period. Therefore, the more increases of number of the follower and retweets, the wider connections he/she has.

However the activity of a user in publishing the tweets that mention 'Lombok' also seems to become the significant aspect. The Twitonomy database could track how many users produce the texts mentioning '#lombok' at that time. We also found that users who frequently produce texts that mentions '#lombok' acts as an important role in creating the surface of the spatial text in virtual space. Regarding intensity, the users who has high influence and acts an active source also important in forming the popularity of the term 'Lombok' in a virtual platform.

5. Curating the New Landscape Based On The System Of Spatial Distribution

From the spatial mapping of specific texts that we explore above, we attempt to curate the new landscape as a platform that envisages spatial network based on texts. This new landscape narrates the future landscape consisting of the '#lombok' as a key vocabulary of networking. The key text # Lombok as the parallel network (Grosz 2001) becomes the basis for pointing the circle of network in the new particular positions. In curating the new landscape as illustrated in the following mapping, we initiate a cutting out between the real landscape and the concept of landscape, established by the traces of '#lombok' inter-textuality, as produced in Twitter social media. The dots of the network are later projected based on the widespread global picture tracking of the '#lombok' text that consist of different network levels. The denser sections that emerged showed the wider network level in those points. Based on various density of the level of network text-distribution we develop the contour of the text.

Fig. 9. Mapping the New Landscape Based on '#lombok'.

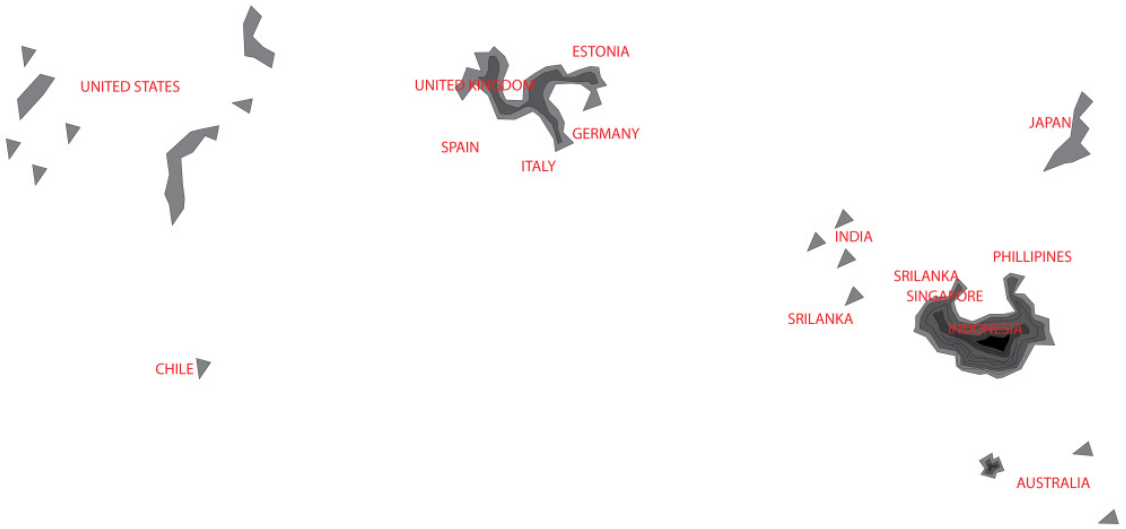

Fig. 10.Mapping Contour of the New Landscape.

6. Conclusions and Implications

The study demonstrates that we could comprehend contour of the new landscape that is interconnected with the real geographic situation. The mapping above illustrates the intersection of layers between the real situation and the data image. The findings on these contour mappings of the new landscape based on a key text suggest the expanded idea for exploring the other new landscape in the place making process. Based on the findings of this study, we conclude that there is a system of a spatial distribution that could curate the new landscape based on the intertextuality. Through the process of spatial mapping, there are various possibilities to identify place-making in everyday life that intertwine the real and the virtual space.

These findings might have an implication on how the place making of the real space and the virtual space is defined. Place-making is not only based on the geographical space but more on the interconnectivity. It allows possibility of integration of public engagement and place making process through the development of spatial network in social media.

References

Chang, Hsia-Ching (2010). A new perspective on Twitter hashtag use: diffusion of innovation theory, Proceedings of the 73rd ASIS & T Annual Meeting on Navigating Streams in an Information Ecosystem, 47(85).

Grosz, Elizabeth (2001). *Architecture from the outside: essays on virtual and real space*. London: MIT Press.

Hawelka, B., Sitkoa, I, Beinat, E., Sobolevsky, S., Kazakopoulos, P., Ratti, C. (2014). Geo-located Twitter as proxy for global mobility patterns, *Cartography and Geographic Information Science, 06*, 80.

Leach, N., Vicente ,G. (2009). Hyperhabitat: Reprogramming the World. *Architectural Design, 79,* 4.

Mitchell, W. J. (1996). *City of bits: space, place, and the infobahn*. London: MIT Press.

Mitchell, W. J. (2003). *Me++: The Cyborg Self and the Networked City*. London: MIT Press.

Offenhuber, Dietmar, Ratti, C.(2013). *Mapping the future in: connecting minds, crating the future*. London: Touchline.

Spiller, N. (1998). *Surfing the surface, in: digital dreams: architecture and the new alchemic technologies*. London: Whitney Library of Design.

Whyte, J. (2002). *Virtual reality and the built environment*. Woburn: Architectural Press.