Hyper-localism and Parametric Mapping for Collaborative Urbanism

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1 Introduction

The paper presents a study on transforming data harvested from social networks into spatial explicit information, which can be relevant for urban redevelopment. In particular, spatial disposals for urban growth and their attractiveness for local users can be identified and visualized. Integrating these social aspects into the urban planning and design process is crucial to inform sustainable paradigms of urban development. Aim of the experiment is to weave sources of knowledge derived from spatial planning practices and the ones produced by the stakeholders, to achieve socially acceptable orientations in urban design (SCHOLZ 2011). The modelling proposed is an example of how these aspects can be integrated into GeoDesign processes in digital form.

An attempt to report and communicate these geo-political contents is influenced by the need of understanding the potential embedded in the lenses through which we observe the city and we represent it (WALDHEIM 2006). The notion of context, as a means through which we acquire knowledge about the city, nowadays is widened by the use of the internet and social media. Organized networks are comparable to self-organized communities in spontaneous relationship, that build their activities on principles like participation and shared action. Their deep diffusion and appeal on a large number of users sets up the premises for the construction of new form of institutions in contemporary society (ROSSITER 2006). The inclusion of the information collected through organized networks in a mapping study for the city shows the intention of the planner to analyse an urban context learning mutually from theory and practice, according to a trans-disciplinary idea of collaboration (GUATTARI 1995). The method then intends to represent some aspects of the complexity related to urban regeneration process, for the deduction of latent conditions and spatial behaviours.

The term Hyper-localism is a word of recent coinage used in journalism to express the news coverage of local events referred to a specific geographical area and its inhabitants. An “hyper-local” event is often fostered through web communities (Yeah Hackney http://www.yeahhackney.com Dalston People http://www.dalstonpeople.co.uk, Neighborhoodr http://www.neighborhoodr.com) to ensure a more efficient and radical diffusion of the information at a global scale, providing a considerable amount of data available to large audiences as an expression of social interactions within a certain neighbourhood. Hyper-local websites define a clear area of interest in relation to a physical place and help the users in identifying relevant local actors on the basis of communal trust. In social media in fact the uploaded material is offered to the users as an editable content, which is trustable on the basis of its on-line ratings. These networks advertise the aspirations of individuals or
groups of individuals translating their sense of belonging and appreciation for their urban environment in measurable spatial parameters. If we look at websites’ rating systems (i.e. Google Trends http://www.google.com/trends), phenomena and places are analysed in diagrams as quantifiable variables of appreciation of the contents among their users.

The use of hyper-local sites to gather information on the local for planning purposes implies the acknowledgement of their ability to promote social inclusion and spatial awareness as drivers of urban development. In order to disclose such dynamics, the employment of parametric maps can provide a tool for the detection of self-generated patterns of urban appropriation. Organized networks, exploited as instruments for urban monitoring, structure a correspondence between biographies of places and the agenda of their users, recreating an objective interweave between history and geography. GeoDesign applications represent an efficient device for a proactive and participative management of planning issues identifying emerging social patterns in suburban environments. Referring to Gadamer’s position in The Relevance of the Beautiful (1986), we see the role of these digital applications as “objects of art” for landscape framing, through which the processing of data aims to become a playful engine of social imagination and spatial integration.

The presented work is a mapping exercise conducted at the Royal College of Art, London - Architectural Department for the regeneration of the suburb of London Hackney. The case study aims to trace the key-points of a research that perceives the issues related to urban transformation as a matter of systemic interpretation (BERGER 2006) of relevant social phenomena in local colonization, promoting spatial awareness to envision urban re-configuration.

2 Material and Methods

2.1 Input Data

The choice of exploring an urban context from the point of view of an hyper-local network requires first of all the collection of relevant data from the websites and then the georeferencing of such data to their actual location on a map, to provide a geographic background to local social behaviours and spatial practices.

The selection of an urban quadrant as a case study is important to disclose these conditions. For the following exercise the suburb of London Hackney has been selected for its emerging character of fast developing neighbourhood, due to its proximity to the site for the Olympics 2012, the remarkable concentration of young people and artists among its population, and the possibility to work with an existing hyper-local website (Yeah! Hackney). Despite all these positive features the neighbourhood presents several elements of spatial decay, including scarce connectivity to other parts of London, low quality of dwellings and residential facilities and the absence of major public spaces and services. This work aims to identify available drivers of regeneration studying spatial behaviours as expression of emergent social patterns of local colonization.

A satellite image of the area taken from Google Maps has been used to localize activities and information on the map. The exercise will exploit RGB colours from the quadrant for the following modelling phases in Grasshopper. The quadrant includes the geographic
boundaries of Hackney as established by the local council, covering an area of approximately 20 sq km as illustrated in Fig. 1.

Among the data gathered from the website, main local businesses, NGOs active on the area and listed local communities have been chosen as attractors for the construction of a parametric map. Each attractor in the website shows a chart with the number of viewers as a degree of appreciation of the attractors by the network’s users. These values have been used as indicators of appreciation of the urban attractors as they express a sense of belonging of the users to the attractors they have promoted on the website.

2.2 Modelling approach

The experiment uses Rhinoceros 4.0 and the latest version of its plug-in Grasshopper as basic tools to manipulate and to model numeric data.

Once imported the selected quadrant in Rhinoceros, the image is processed in Grasshopper using the Image Sampler component, which detects the RGB colours of the satellite image.
allowing the recognition of green spaces, dwellings, squares and streets. Open spaces, gardens and fields are presented as available spaces for the development of the attractors, as they can outline areas of future growth and transformation. The dichotomy between colonized areas and open territories has been rendered creating a NURBs surface for which the peak points symbolize clusters of disposable land for future development. The surface embodies an idea of “transfigured landscape” that expresses deep potentialities for urban transformation included in the quadrant. The landscape is analysed dividing the surface in contour curves in order to measure such phenomenon. In parallel, the attractors chosen from the local network are geo-referenced on the map and then included in the scripting process in the shape of red crosses as shown in Fig. 2.

The tessellation of the surface through a Voronoi diagram has the aim of clarifying the neighbouring relationships between spatial opportunities and the attractors. In a Voronoi diagram the distance between two objects in space is their shortest path in the network rather than their Euclidean distance (AA.VV. 2008). The Voronoi cells (dark green network in Fig. 3) are generated from a set of points obtained dividing the contour curves in a constant number of segments. The end points of each segment become the “sites” for the construction of the Voronoi cells. Bisecting with a perpendicular the lines that connects each site we obtain the network of cells. The more the cells are small and concentrated, the greater will be the spatial availability for urban growth.

Starting from the same set of sites, the cells obtained are offset according to their proximity to the attractor points (orange cells in Fig. 3). This parametric operations allows to compare spatial disposal and the physical possibility of growth of each attractor. The diagram in Fig. 3 shows that where the attractors are more concentrated the spatial disposal for growth is actually quite low (the orange cells almost overlap with the green network), therefore the current urban configuration will be unable to receive a greater number of users on the long term. On the contrary, on the area of the Olympics, where the space for urban growth is available, a smaller number of attractors identifies smaller possibilities of regeneration and urban colonization. The use of a Voronoi diagram in the exercise helps in creating an abstract topography of the place where all the described relationships can be displayed more directly and then synthesized.

The possibility of increasing the complexity of a generative map represents a relevant practice in outlining some hidden qualities of the city. For this reason the vertical extent of the map has been modelled exploiting numeric values collected from the social network which display the appreciation of the attractors by their users. The offset cells (orange cells in Fig. 3) are exploited as bases for a set of extrusions whose height is directly affected by the appreciation that users have shown on the social network by clicking on the attractors’ page or linking the page to other networks. The extrusions are also proportional to their proximity to the attractors, in the way that the values are apportioned on the whole quadrant of study. The maps obtained are then overlapped and integrated in an axonometric view as in Fig. 4.

To summarize the generative map is influenced by the following parameters:
- local attractors or centralities (local businesses, NGOs, local communities shown on the hyper-local network)
- spatial disposal for urban growth (open spaces, fields, left-over)
- users’ appreciation of the local attractors
Fig. 2: Map of the spatial disposal for urban growth. The darker green colour indicates peak areas of spatial disposal in relation to the attractors.

3 Results

The results of this experiment are shown in Figure 4. The outcome of the modelling process is an augmented image of the city which shapes some of its intrinsic characters and envisions its possible future development. The generative map displays the relationships existing in Hackney between what is perceived by its inhabitants as local attractors and the surrounding spatial operators. In particular on the East border of the quadrant, where the site of the Olympic Games 2012 is located, the sense of attraction to this operator in quite low in comparison to the great offer of public space and commercial facilities. This condition is even more relevant if we think that at the time of the experiment the main shopping mall of the Olympics, Westfield, was already open. The inhabitants of Hackney
Fig. 3: Generative map of the spatial attractions. The map shows the appreciation of the attractors by the hyper-local users in relation to the spatial availability for future development.

don’t seem to be affected by the presence of such a global infrastructure nearby. The intentions of the mayor to land the Olympics in this context following more consolidated practices in urban planning does not appear to be an effective strategy to provide urban regeneration. The extrusions of the local attractors’ appreciation clearly indicates the central park of London Fields as a very appealing location for the growth of the neighbourhood, together with some isolated centralities towards Whitechapel (South-West) and the water reservoirs of Walthamstow (North-East). The green fields of Victoria Park also result as fertile places for urban transformation as well as the transversal corridor of locations along the Regent’s Canal towards the City (West). Furthermore, the peaks display new emerging centralities as drivers of urban change that can be identified for example in the areas surrounding the food market of Broadway rd. near London Fields, the Wetherell rd. market near Victoria Park, or the MOT International Gallery for contemporary art on the waterfront of the Canal.
4 Discussion and Conclusions

The presented work is an attempt to demonstrate the benefit offered by the exploitation of GeoDesign tools like parametric mapping in urban design and planning. The map shows in fact the necessity of finding capillary drivers for the regeneration of Hackney, like local markets or public spaces for art and culture, regardless the presence of a global scale operator such as the site for the Olympic Games 2012.

This approach allows to detect latent conditions of urban environments, hence to generate alternative planning practices that include the view of the inhabitants on the transformation of their own neighbourhood. The use of data collected through a hyper-local social network aims to inform design methods and policies which are more collaborative and participative in the sense that they should integrate the vision of their users in a stage that anticipates the act of transformation. In this respect the use of such applications and the role of participants

Fig. 4: Generative map of the spatial attractions. The map is divided in three layers, local attractors, opportunities for spatial development and appreciation of the attractors. New drivers of suburban regeneration are detected on the upper layer.
in GeoDesign processes could be even more proactive. The presented model describes the complex relationships that surround a project of urban change like the Olympics site, letting the users acknowledge their position regarding the proposal.

A future step of development of the exercise could be the inclusion of real-time data streams used as rating system of the information provided by the parametric map, to show how the model is received by the users on the hyper-local network before its actual construction. The idea can be implemented using recent Grasshoppers’ plug-ins like Ghowl and Pachube, and integrating the model within a social network. A more “dynamic” platform of spatial analysis will then be fostered through the display of the contents in constant update with a virtual forum where new projects can be assessed and rated by rulers and users.

This strategy could provide also a feasible answer to the issue of displacement processes, for which places attractive for certain social groups maybe not attractive anymore if they are transformed. Transformation in space and time can be forecasted and virtually pre-determined in GeoDesign applications. Social media and organized networks recreate in fact a continuous exchange between real life and virtual envisioning. The use of the information detected through such media for GeoDesign purposes should be considered an instrument to acquaint the spatial awareness of the resources available for urban regeneration.

References