

Reshaping Riyadh Alsolh Square: Mapping the Narratives of Protesting Crowds in Beirut

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Abstract: The conception of the state's ownership of public space and its control over its physical and psychological accessibility have shaped the spaces and the extent of public engagement. On the other side, civil movements challenge this dominance and contribute to reshaping the spaces through different modes of political gatherings. Several spaces in the Middle East have developed their significance through the competition of conflictual actors. This paper aims at identifying the spatial tools of the occupational competition for dominating the space. The article examines the method of generating time-aware maps of the spatial practices of protesting crowd out from the scattered archive of visual and verbal narratives using ArcGIS. By employing 395 archived videos which documented the protest event of 22nd – 24th, August 2015 in *Riyadh Alsolh* square, Beirut – Lebanon, the paper produced 144 plural patterns of the protestors' crowd movement per 10 minutes within 250 m radius of *Riyadh Alsolh* square's surroundings. The article defined four patterns of the crowd's territory based on their physical, functional and relational characteristics. The conflictual sense of the contradictory crowds can be used to identify the status of competition for dominance. It also indicates the correlation between the features of the pattern and the potential of raising the conflictual sense. The examined method helps to analyse crowds' contribution in shaping public spaces during urban events; however, the more available spatiotemporal recordings, the more figured characteristics of the produced space.

Keywords: Public Space, Socio-political Movement, Spatial Contestation, Crowd Mapping, ArcGIS, Riyadh Alsolh Square, Beirut

1. Introduction

Public space is an essential ingredient of cities' political, social, economic, public health and biodiversity sustainability [1]. It gathers the different actors and influences, defines the urban character and plays a vital role in displaying power relations in the city [2]. This encompasses all open spaces that are publicly owned and managed. However, understanding the public space sounds more compatible when it exceeds being only an open public domain of the state, including its accessibility, the communication opportunities and the unfocused interactions between strangers it hosts [3]. This interaction is ruled by their civil inattention, cooperative motility, restrained helpfulness and, finally, audience role

prominence [4]. These rules ensure each other's right to be present and go about their own business, move around smoothly, be available to give a hand and raise their collective role as a spectator of the urban scene fulfilling the condition of public visibility necessary for a public space.

The role of public space to support/restrict public engagement varies due to the type of space. Street resembles the constant symbol of public space, due to its role in enhancing the image of neighbourhoods, remaining the most casual and self-regulated interactions, and defining how diverse and liveable is the city. Commercial centres host various modes of public interactions; however, they play several styles of excluding the undesirables through the included functions, the quality of their finishes, surveillance,

private guards, and technologies of control. This control over public interaction may take the shape of a total excluding of lower classes and orient those who can access the space toward consumerism uses that do not conducive to encounters and debate [4]. The same theme of control is applied to the more classic commercial streets, where the owners and workers of the stores manage their surveillance of the street visitors. On the other side, public space's communicative use is getting more established in cafes and squares where conversations, debates, political gatherings, and demonstrations took place. The main difference between these two spaces is that the square's communication relies on the user's general scene rather than discussions. This includes actor/audience, street vending, artistic works and political demonstration. Within these modes of interaction, the users take the responsibility of applying their surveillance of the space [3].

The political use of public space has developed through different modes of political interaction [3]. The concept was ideally established with the classical agora and forum, where equal public discussions symbolise the empowerment of all citizens' equivalent role. In the 18th century, a limited version of the public debate appeared in the bourgeois salons with Enlightenment philosophers' inspiration [5]. Although these gatherings were less situated in space, they still challenged the states' actions. This form of democratic functionality of space continued to rely less on the physical public space. Instead, it takes place in private rooms, cafes and placeless internet pages.

In parallel, the features of the public space, along with the surrounding buildings' uses, express the trended dominance in the city among the different, contradictory and, in specific cases, conflictual actors. Thus, several political, economic, historical and religious values are attached to public spaces, enhance their significance and raise the competition of different actors to show their dominance upon the space. In most cases, states, and their partners have granted the ownership of public space. By setting a well-defined space and continuous surveillance functionality, states reduce the contestations over public space through selective invitations and exclusions of users/uses [6]. This notion has increasingly been gaining ground in cities that have various political contexts. Recent examples worldwide have shown an acceleration in contestation over public spaces, both in authoritarian and democratic contexts, whereby people have tried to claim them for civic and political formation.

These conceptions of state's ownership, physical and psychological accessibility and the conducted communicative functions can approach the understanding of public space [7]. Understanding square through these approaches will represent either: 1. a place of distinction and power, which is regularly subjected to contestation and surveillance that aim at reducing the possibility of gathering or crowding or that tend to favour cultural events over political ones; 2. a physically and psychologically accessible space where the collective representations produce the image and character of the city [8, 9]; 3. a place of political gatherings, rallies and

demonstrations that uses 'the scene' as a tool of communication and facilitated the creation of new political actors and political subjectivities [6, 10-12]. Among the three approaches, the square represents a physical engagement of some public roles and narratives of either state or non-state powers to define space's functionality, shape and represent the public experience and make public claims [9].

The wide variety of functions and rules representing the dominance of the different political, economic, cultural and civil institutions has developed the significance of several public spaces in the Middle East. Examples like *Tahrir* Square in Cairo, Kasbah square in Tunis and *Riyadh Alsolh* square in Beirut, have developed institutional contested spaces. State's enhanced the perception of their ownership of these spaces by allocating buildings like governmental palaces, municipalities, political parties' headquarters, national museums and international institutions' buildings; along with strict police surveillance, limiting the public contribution form of passing-by rather than gathering. Within this scene, the selection of these spaces to host civil movements' protests was part of the ongoing competition that, visually, popularised dominance through occupying the space. This paper aims at identifying the spatial tools of the crowd's competition for dominating the space. It examines the method of mapping the visual and verbal narratives of protest events by calculating and allocating the changes in the crowd's population and movement using ArcGIS.

2. The Competitive and Consociational Shaping of the Space of Beirut Central District

Riyadh Alsolh is historically a significant square in Beirut Central District (BCD) 's heart – the historical, geographical, financial, commercial and administrative core of Beirut, Lebanon. The Square, named firstly as *Sahat Assour*, was constructed in 1863 as a public garden that contains a kiosk, a fountain, a municipal pharmacy and a telegraph service on the northern edge of the Square. The Square was functioning as a cattle market until 1943. The Square hosted some military parades before it became converted to a traffic island after Lebanon's independence. In the 1950s, the Square got part of Beirut's modernisation plan by adding more buildings, the Capitole and Pan American buildings, on the northern side. In 1957, the Square received the statue of *Riyadh Alsolh* and gained its current name.

The district has been developed in the area which was, historically, bordered by the Ottoman *Saray* and the camp of *Ibrahim Basha's* army, the current location of Martyrs' Square and the Lebanese governmental palace respectively. Several successive authorities have used the district to show their dominance in the city. Since Prince *Fakhr el-Dein II* built his palace, the district's occupancy's competition started with Ottoman, Russian, Egyptian, French, and, finally, the independent Lebanese. In 1932, the Opera cinema was constructed to indicate a new phase of different commercial,

cultural and religious uses that stood in parallel with the governmental one. They have converted the district into a more dynamic and livelier core of Beirut as a city of modernity and tolerance and a financial centre of the Middle East. During the civil war (1975-1990), the district the scorching spot of clashes destroyed a wide range of it and a buffer zone between the two sides of the city. Once the war ended in 1990, a new form of the mega economic power of the Solidere project stands as a key player in forming and reshaping the district.

The district's historical timeline shows that the influential forces of shaping Beirut's spaces were a mosaic of history, religion, environment, security, politics, and economic issues [13]. The ancient importance of Beirut looked instrumental in shaping the collective perception of public spaces. Simultaneously, the war experience has destroyed many central spaces and affected them' collective memory. Religion seems to have less impact on younger people's lives, but it still acts as a symbolic power of space, reflecting on the architecture and distribution of religious buildings.

The current BCD scene is a mix of residential, commercial, administrative, cultural and religious uses with minimal green areas and two archaeological sites within the district that has no pedestrian streets. The very controlled district shows a shared dominance of the state – through secured governmental buildings, UN buildings and embassies, the military units – through tier fixed barriers and Solidere development project – through its spread re-built areas of luxurious consuming functions. The city environment looks very crowded with cars, rubbish and pollution, which converts the public spaces into escapes. On the other side, these escapes are restricted by security and some road blocking.

The district's diversified scene reflects the sectarian political identities of the consociational theme of the Lebanese regime. Since the Ta'if agreement in 1989, Lebanon's political, sectarian identities have reflected some regional and international relationships [14-16]. Since then, Lebanon has continued to suffer political instability and has continuously tried to maintain and manage the stability of its fragmented political system [17-19]. The Conflict analysis report of Beirut of November 2015 mentioned that BCD took 14% of the collective practices in Lebanon (June 2014 – May 2015). This included protest, sit-in, roadblock, reopen, tire burning, set up tents, march, fight, and celebrate. 77% of the conflicts that took place in the district were political, 10% of socio-economic development conflict and the rest were of other reasons.

On the other side, contemporary Lebanon hosts a wide diversity of non-sectarian movements who have repeatedly tried to occupy the public spaces within the district and reclaim their dominance over them. Although these movements have a limited impact on the institutions' consociational status, they pointed out the dysfunction of the 'pie-sharing' system. This includes awarding private companies with close ties to sectarian elites and failing to manage public services, which became the source of a major protest movement in 2015. It all happened when the social

protest movement You Stink started criticising the administration for its inability to collect rubbish in Beirut and its surroundings. [20, 21]

3. Mapping the Experiential Production of Space Through the Changes in Crowd's Territory

3.1. Demonstration Movement in Beirut, 2015

"When participating in events, experiencing their atmosphere, observing other people and sounding my own feelings, I realised that events not only take place in public urban space but partake in its production." [22].

In 1994, the government contracted a private company – Sukleen – to manage Lebanon's refuse collection and disposal [23]. While Sukleen's contracts were renewed in 1999 and 2010 as a result of elite trade-offs, in July 2015 the power-sharing government, stuck in fierce political deadlock over the president's election, refused to extend the contract [24]. This resulted in more than 20,000 tonnes of uncollected rubbish in Beirut [18]. You Stink gathered protesters in Beirut downtown to demand the government's resignation to allow sectarian differences to supersede the public's environmental and health needs.

Later, in September, the social movement developed into one against political corruption. For You Stink's activists, the state's failure to deliver vital public goods is an outcome of the power-sharing system that incentivizes corruption and sectarian conflict [25]. The pluralist character of the Lebanese political system that succeeded in passing through the Arab Spring revolutions, 2011, has failed with its sectarian theme. Instead of the famous slogan "The people want the fall of the regime", Lebanese activists raised the slogan "The people want the fall of the confessional regime".

The period of 22nd – 24th, August 2015 is a protest event, identified with major protest practices and clashes, which led to a dramatic change in the functionality and the connectivity of the space through setting new military barriers. Those barriers have reshaped protesters' spaces by restricting the protesters' movement and excluding some gathering nodes and movement routes. The selected event was characterised as an action connected with societal and political demands. It has a public character, initiated by collective effort and motivation, and determined by taking place in the square or its surroundings, within the movement's timeline.

Riyadh Alsolh Square provided the protestors with a chance of face-to-face creation of their democratic narrative and dignified and symbolically rich space to make their claim more evident for other citizens. The square location, which is adjacent to the governmental palace and on short distance connection with the parliament in *Nijmeh* Square, converts it to an alternative targeted space, some activists have stated (personal interviews). This allowed the square to host the highest number of protesting practices along the movement timeline (16 protest events during August and September 2015)

and all the selected intervals. As space's definition has developed into an active component of the socio-cultural phenomena [22], where a mutual relationship between shaping and being shaped is set between space and community, urban events have had a key role in the process of public space creation. Individual activists and protest groups contribute to shaping the public space using the tools of feelings, new points of view, sudden changes of perception, new uses and new meanings of the space [26].

In scholars' writings, referring to demonstration groups as crowd represents an indistinct and often unpredictable mass, driven by contagious sensation [27]. In this paper, the term crowd refers to the physical representation of individuals who are brought together by their common concern, as well as desire to have a collective image, in the square and the media. This gathering applies to and represents, both 'the state' and 'non-state' crowds and their space [28-30] as heterogeneous and mutually constitutive territories of competition [28]. The phrase crowd also refers to the group's spatial realm where the individuals can define and create space through their position and relations. This crowd practice through a homogenised

repetition of individuals' contribution to physical or other social objects of the space. This repetitive contribution creates the patterns of interaction that describe the development/displacement of the crowd.

The relationship between the individual, crowd and practice are essential to study and analyse any of them as:

The structure of an individual's dispositions is non-observable by itself, but it shapes the spatial pattern of the crowd's territory through the repetition of the practices, where the relations within the crowd cannot be realised except in and through the system of placements of the individuals [31].

The crowd's territory provides its individuals with the suitable placement in relation to the situation/context, through homogenising similar positions the dominant relation that motivates the creation of other relations and defines their collective structure [1].

Visible actions shape, and are shaped by, their spheres of action and their invisible relations. They create through their own spatial patterns and locational logics which are continuously reproduced while continuously responding to various forces and struggles [2].

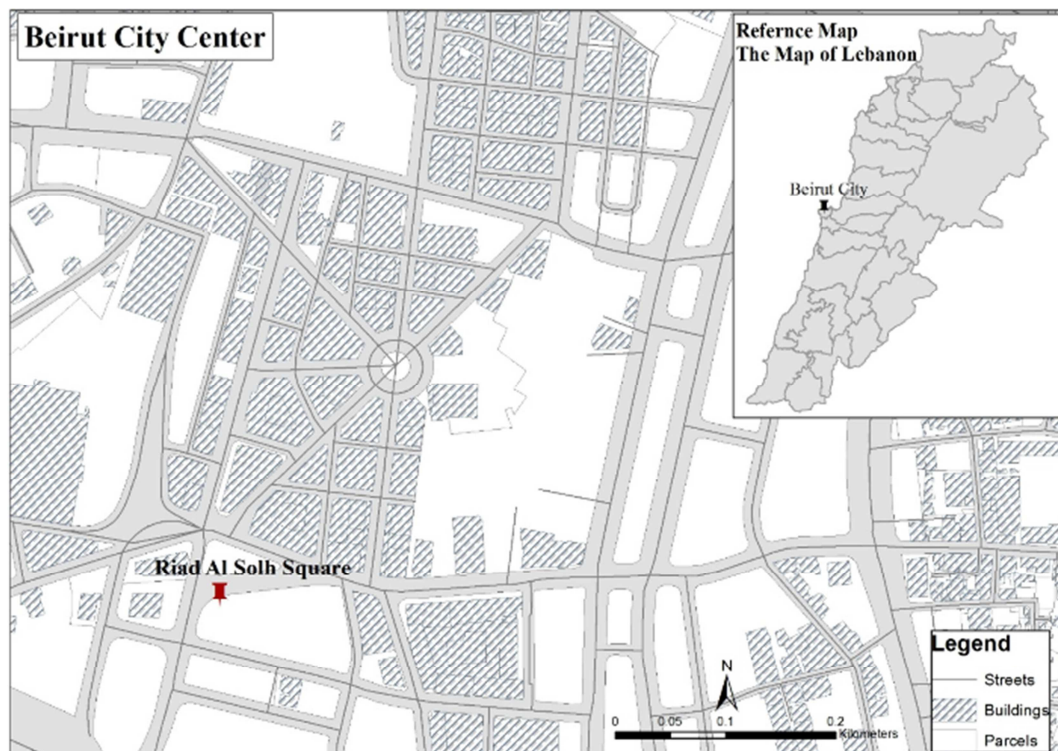


Figure 1. GIS base map – BCD.

As a result, the understanding of any of the three variables should go through and be supported by the observation and analysis of the other two as the individual position is a product of the structures of the crowd, a producer of the practices and a reproducer of the structures.

This paper mapped the reshaping of Riyadh Alsolh square during selected protest events of the You Stink movement. It analysed the visual archives of videos, news reports and photos to calculate and allocate the changes in the population and placement of two homogenised crowds who were

continuously changing and responding to the changed situation of the square:

The police crowd, which is a highly regulated and well-defended proactive group whose territory is more stable, created and expanded in relation to some fixed points (physical objects of the space: square, barriers, streets intersections and significant buildings).

The protestors' crowd, which is a more spontaneous reactive crowd whose territory was changing frequently in relation to their population, the physical objects of the space

and the expansion of the territory of the police crowd.

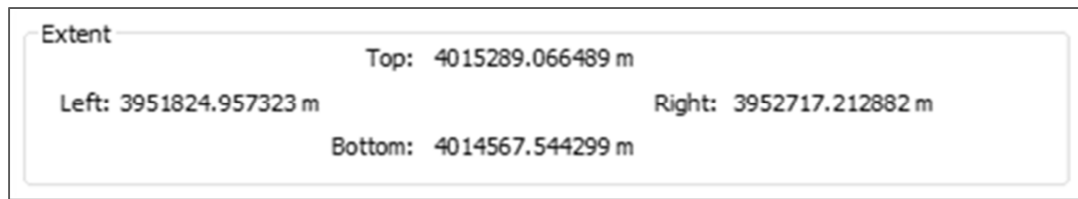


Figure 2. The spatial extent of the spatiotemporal layers.

3.2. Mapping Tool and Procedure

a. Developing base maps

In order to reconstruct the unrest historical event using spatiotemporal data using GIS, a systematic process was followed. First of all, various maps are needed in vector formats such as the Beirut district property map, the building footprints maps, and the road network map in GIS format. These maps were obtained from the GIS centre at the University of Balamand in Lebanon. These maps dated back to the year 2010, thus they need to be updated to account for the changes that took place until the year 2015 when the revolts took place. Satellite images taken in 2015 with an accuracy of 50 cm were used in order to update the base maps and provide a precise and realistic representation of the area under study in that particular point of time (Figure 1). Then, a Mercator based map projection was combined with the WGS84 Geographic Coordinate System (GCS). This projection is selected since the data will be published to ArcGIS Online that uses the WGS 1984 Web Mercator (Auxiliary Sphere) which is a coordinate system as a default projection since it is a global platform. In Lebanon, the majority of available base maps are stored using a double stereographic projection with Clarke 1880 spheroid-based datum. This projection is very specific to Lebanon. Hence, all the base maps should be re-projection to Web Mercator using a specific transformation before being published to ArcGIS Online. Additionally, the new datasets were automatically set up as Web Mercator services. Even though, ArcGIS Desktop and ArcGIS online re-project on the fly, this method puts a load on the system especially with large volumes of data. Finally, since the work requires the spatial mapping of population density in a temporal manner over three days, the spatial extent of the spatiotemporal layers must be unified. Hence an important step is to define the spatial extent of the project. The extent is shown in the figure below as extracted from ArcGIS (Figure 2).

b. Creating the spatial datasets

To help in allocating the crowds within the space, a reference grid was created with the pre-defined spatial extent with a cell size of 10 by 10 meters (figure 3). Each cell was given a unique ID to be used as a reference for each 10 by 10-meter geographic location. For each 10-minute time span on the 23rd, 24th and 25th of August 2015, a new grid was created mapping the actual number of population present within each cell (10 x 10 m) during that time span. The cell ID and area (each up to 100m²) are preserved in all the generated grids.

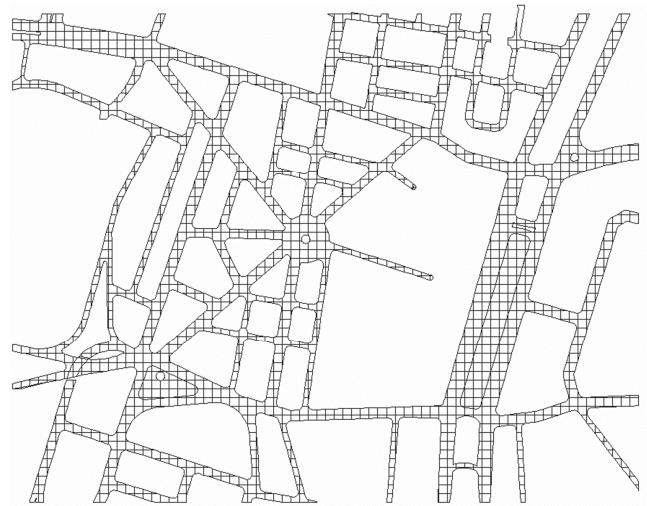


Figure 3. The polygons of all voids in the study zone – each up to 100 m².

Then, 395 archived videos were collected from accessed resources and were categorised on three steps to shaping up the temporal distribution of the archived narratives. Firstly, the videos were distributed on three days, then, various time spots were identified as reference points: (1) the reported time of starting the event, (2) sunset time to refer to the light change in the videos' background, (3) news time of TV channels as they included a live recording of the events and finally (4) the reported time of the end of the event. In parallel, the videos were categorised into two groups based on their recourse. Group A, which are those videos taken from primetime news of 5 TV channels: MTV, NEWTV, LBC, FUTURE and OTV. These channels represent three independent channels that are not directly connected to a political party and two other channels which represent the 14th and 8th political poles of Lebanon. The videos of this group are limited in number but include most of the milestones of the day along with live reports of the peak time of the event (17:30-19:00 GMT). Videos from group B are shorter, may not include some spoken narratives and are taken from various resources.

Projecting from the visual database, crowd's situations per time-lapse were categorised into: (D) defined situations, where a unique situation is clearly described, (S) stable situation, where no significant change is recorded and (T) transitional situations, where the mediating movement between situations is recorded. Unrecorded time lags were defined using verbal narratives projection on distance, in relation to other recorded movements that took place in the

same area. Each situation was described by its borders, zones of densities and practice (change location/movement direction). Borders and densities were allocated on the maps using the physical objects of the space as spatial references (e.g. building facades, road intersections, traffic signs ...etc.).

The population of each polygon (at the time) was calculated using the equation:

$$\text{Population} = (200 * \text{percentage}) * \text{Area}/100$$

Where: 200 is the standard capacity of 100 m², the percentage is either 10, 20, 40, 60, 80 or 100% of the polygon occupation and the “Area” is a numeric field in the file attributes – included in the exported data from the .dwg file.

Applying this equation, to all cells of the previously created grid, resulted in dot density spatial datasets of the change in crowd's distribution per 10 minutes from 14:00 – 22:00 GMT, on 22, 23 and 24.08.2015. This dataset was visually presented by converting each grid into a point of a spatial dataset. The points in the datasets represent the centre location of each grid cell. This step generated spatial datasets with attribute tables having the following information: Cell ID, Date and time, and population. The points with no population value present in the table are removed while all other values greater or equal to zero are kept. Finally, In order to map the crowd movement on a daily basis, all the point spatial datasets for a given day are appended. The generated spatial dataset for each day contains different information for the same location at different times. An important step is to enable the time field in the spatial datasets and specify the date/time format (YYYY/MM/DD hh:mm:ss) in order to create a time series spatial dataset. It is

worth noting that the time values were entered in Greenwich Mean Time (GMT). Five-time series spatial datasets are generated in this step.

c. Creating Online Maps

All the layers generated in the previous step were published online on the ArcGIS online platform. The online maps allow the visualization of the population data at each point of time as a sequence of firefly's symbols in different colour ramps and weights. This data representation enables the viewers to visualize the population density at each location at a given point in time. The project also required the visualization of the police vehicles, police barriers and the police personnel around the Riyadh Alsolh square. These layers were generated from tables that contain information along with location coordinates. The map in figure 4 shows the mapping style of the population data in each day and the other layers.

The web layers for each day displayed online contains information about the population for the same location at different times of the day every ten minutes. Hence, the temporal data need to be enabled in the web layers to create web-enabled maps. Additional configuration is also needed such as the default speed per time interval and the TimeSpan. The TimeSpan shows the period of each time-aware layer and is generated automatically based on the time in its attribute table. Finally, by animating time-enabled maps, one can visualize it at each step and see patterns or trends emerging over time. Hence, Time Aware app was used to visualize the time-enabled layers. The output of the Time-Aware app is an animated map showing the temporal movement of the crowd every ten minutes with a time slider.

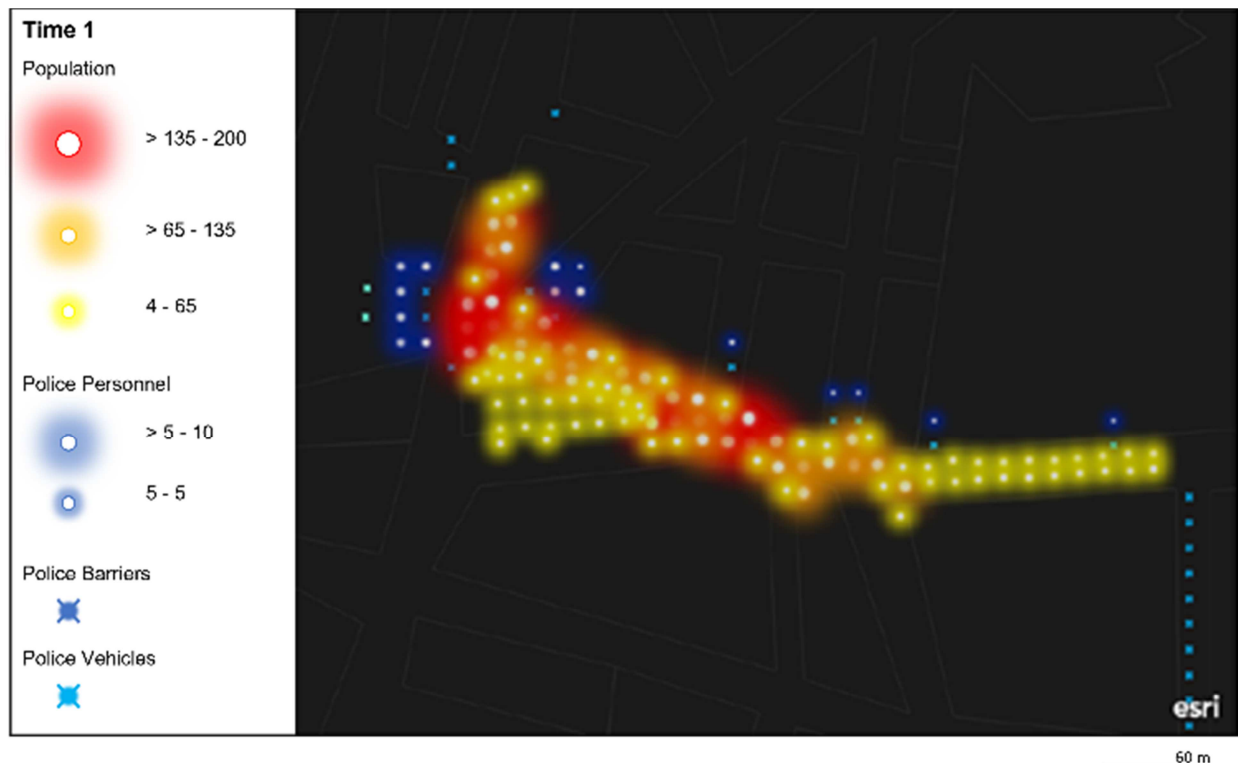


Figure 4. The ArcGIS online map of the crowd distribution (23.08.2015 – 16:00 GMT).

4. Shaping Riyadh Alsolh Through Protests

Riyadh Alsolh, like all other public spaces of BCD, has been historically an urban space of continuous process of shaping and being shaped by the mosaic of powers that try to popularize their dominance on the district. The presence of several institutional buildings, markets, offices and military barriers have dominated the texture of the district for the last 3 decades. In 2015, the civil movement of You Stink brought the citizens back to the district as a player in shaping its spaces.

Defining the crowd by using their physical representation of the gathering of individuals with common concern has eased mapping the texture of the square/surroundings by tracking their changes in location and direction of movement. The process of mapping a scattered archive of visual, written and spoken narratives using GIS produced several layers of the real situations of the square at certain points in time. Using GIS as a mapping tool has improved the capability of combining different types of data into one readable document. It enables the data to be managed in a spatiotemporal dataset, visualised and published online.

The resulted maps revealed a dynamic space that is specific to creators, location and time. Additionally, they raised the concern of situation-to-be as important as describing the current situation.

The sequence of 144 maps has defined a stable distribution of the barriers in the square's surroundings. The police barriers were distributed due to the accessibility of mainly targeted buildings: Governmental Palace, Parliament, Ministry of Environment and Beirut Municipality – as the shortest connection between Martyrs and Nijmeh squares. The entrances to Nijmeh square are permanently controlled with multi-layered gates with army guards. While metal wires were added to the connection between the parliament and El Amir Bachir streets, as well as at the end of El Amir Bachir Street connected to Chiekh Toufiq Khalid Street (adjacent to ESCWA building), Evangelical church and Ahmad Daouk (heading to the Governmental Palace) and later Riyadh Alsolh Street (known as Banks Street). As the protest frequency and population increased, these wires were replaced with heavy cement barriers at these points.

The maps showed that all these barriers and the personal presence of both protestors and police were used to mark a dynamic property of both. The borders of these properties were stable at Riyadh Alsolh Street entrances towards Nijmeh square, the connection of El Amir Bachir, Chiekh Toufiq Khalid and Ahmad Daouk streets, as well as all entrances from El Amir Bachir Street towards Nijmeh square; however, the other end of El Amir Bachir Street towards Bechara El Khoury, the Waygand (known as Municipality Street) and Hussein El Ahdab streets were all dynamic due to the crowd flow.

Additionally, the maps defined a homogenised crowd's territory of all groups of protestors which have been identified through literature and interviews. This includes You Stink Activist, civil society (non-sectarian) campaigns, previous or

existing leftist and communist parties and '*We Want Accountability*'. The repetitive characteristics of the crowd's layout have figured out 4 main patterns in relation to the crowd's population, the physical objects of the space and the expansion of the territory of the police crowd:

Clustered crowd: A static territory of a small population of protestors that reacts towards a stable police territory. For this pattern, the barriers act as a node of attraction for protestors who are occupying the square. This pattern shows the lowest probability of clashes between police and protestors.

Radial crowd: A static territory of a large population of protestors that reacts towards a stable dense police territory. For this pattern, the barriers act as a node of attraction for protestors who are occupying the square. This pattern shows a low probability of clashes, even it has the nearest spatial adjacent of police and protestors.

Linear crowd: A transitional territory of a small population of protestors that reacts towards a police territory whose size is changed quickly, defined and expanded with the use of tear gas and fire shooting. For this pattern, the barriers act as an attraction point for protestors who have been evacuated from the square and an evicting point for the police who occupy it. Although this pattern has the largest buffer zone between the two territories, it shows the highest probability of clashes.

Divided radial crowd: A dynamic territory of a large population of protestors that reacts towards an expanding police territory with the minimum movement of their personnel and the use of water shooting. For this pattern, barriers act like an evicting node of protestors and a shared occupation of the square.

5. Conclusion

Using ArcGIS as a mapping tool of the crowd's movement in the square helped in, systematically, include data from different types and various resources in a united visual document that allows for proper analysis. This exercise allowed to map the population density in a temporal manner.

By connecting the physical features of all territories to the probability of clashes happening, it has been found that the conflictual sense of the different groups within the space can be used as a tool of identifying the status of their competition for dominating the space. The produced maps have, surprisingly, indicated some disconnectivity between the size and spatial adjacent of the crowds and the arousing of their conflictual sense; yet they showed that the dynamics of the crowd's territory may have a direct impact on the conflictual sense of the creators of space.

However, the more recorded objects (both physical and social) in time will help to figure out the main characteristics of the space which has been produced with the experience of its occupiers. Therefore, it is recommended to expand the used method to include more elements and features of the mapped event; as well as applying on similar protest events and squares in the district.

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