

Whose is that Square? Cruise tourists' mobilities and negotiation for public space in Barcelona

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This paper investigates how different human mobilities negotiate public space and with which results. The case in point is that of cruise tourism in Barcelona, a city where the relentless growth of visitors and the expansion of accessibility gateways like the cruise port may well be behind the rise of 'anti-tourism' voices in social and political circles. Our work focuses on the transits of cruise passenger groups in two exemplary public spaces of the city, analysing how they come to fence off, engage with- or feed the mobility of other collectives. This research provides fresh insights on the processes that may generate disaffection among different 'place users', eliciting a revision of the expectations on the quality of public space. On a more technical level, this paper introduces a complex but cost-effective methodology, involving a mix of geo-analytic and qualitative methods, which manages to track the 'mobility clash' in public space and make sense of the response tactics.

Keywords: Mobilities; cruise tourism; urban space; negotiation; relational analysis; video-tracking.

Introduction

Cruise tourism has been growing substantially in Barcelona over the last 20 years. The Catalan capital is already the first port of call of Europe with 2.7 million passengers and 778 cruise ships in 2017 (Port de Barcelona 2018). The traffic has been rising steadily over the last 15 years (Imbert-Bouchard and Serrat 2017), along with the increase of the cruise port capacity through the construction of new terminals (now totalling nine). The success of cruise tourism is considered a driver of the expansion and consolidation of other port functions, counting directly for the 1.4% of the GRP but remarkably enabling other economic sectors for an estimated 5.7% of the GRP and 5.4% of employment (Port de Barcelona, 2016). However, the social returns of cruise tourism are increasingly questioned (Garay Tamajón 2015; Tapia 2013; Legoupil, 2013).

More broadly, the city is currently undergoing a strong ‘crisis’ in the public acceptance of tourism, due to its impacts on the life conditions and affordabilities of resident communities. Different authors have engaged recently with the increasingly contested nature of tourism in Barcelona, analysing conflicts for – and in – public space, gentrification, or environmental and acoustic contamination (e.g. Arias Sans and Russo 2016; Fava and Palou Rubio 2016; Quagliari-Domínguez and Scarnato 2017), as well as the ‘anti-tourism’ positioning of social entities and movements (Bruttomesso 2018; Novy 2018; Hughes 2018; Cocola Gant and Pardo, 2018). The media has also granted extensive coverage to these issues, both in local newspapers (e.g. Russo and Scarnato 2017) and international magazines (The Economist, June 9, 2015; The Guardian, June 2, 2017 and August 30, 2018; The New York Times Travel Weekly, July 6).

Such rising concerns may have pushed the municipal government to shift the discourse on tourism from ‘opportunity’ to ‘issue’: for Russo and Scarnato (2017) this critical positioning has been key to the unexpected 2015 electoral success of the current administration. Stricter regulations and controls have been launched to constrain further growth, pacify public space and mitigate social externalities. However, while such measures are only expected to attain their objectives in the long run, short-term growth is still a goal upheld by powerful stakeholders in the public and private sphere.

Cruise tourism is in the eye of the storm in such debate. Firstly, for its environmental impacts: Rico et al. (2019) estimate that, in spite of the relatively small numbers (2.6 million out of an estimated 33 million visitors a year), visitors in daily excursions from cruise ships using Barcelona as port of call account for the largest unitary emissions

among all categories of daily visitors (66.1 kg CO² equivalent per person/day). Its direct economic impacts are also questioned, as such ‘cruise day trippers’ leave rather little money in the city (an expenditure of 62€ per day/visitor, as reported by Garay Tamajón 2015), compared with almost 200€ spent by tourists staying at hotels. Finally, cruise tourism is blamed of being ‘imposed’ on the city by a coalition of private and public sector actors, like cruise companies, developing their own terminals in the State-controlled port area, leaving almost no decisional power to the municipal administration. Yet the most problematic aspect attributed to cruise tourism is the fact that the off-board activity of cruise passengers tends to insist on areas already suffering from very high tourism pressure (Ros Chaos et al., 2018), contributing and possibly accelerating their ongoing social desertification (Arbaci and Tapada-Berteli 2012): almost the 15% of the resident population left the Old City district in the period 2010-2015 (Ajuntament de Barcelona 2018).

The agency of cruise tourism in sustainable development, its impacts on communities and the uneven power relations it plays out at the destination end of the value chain are picked up by a substantial literature. Authors analyse the creation and distribution of value in relation to product design in shore excursions (Lopes and Dredge, 2017), the conflicts between cruise industry practices and stakeholders’ expectations (Font, Guix, and Bonilla-Priego 2016; Klein 2011), the strategic role of regional management at the destination end of the global cruise tourism value chain (Gui and Russo 2011), or the divergence between economic impacts and social and cultural effects (Brida and Zapata 2010). More recent works address specifically the spatial articulation of shore excursions (Ros Chaos et al. 2018), the spatial stratification of community impacts (Weaver and Lawton 2017), or the determinants of cruise visitors’ spatial behaviour at destinations (De Cantis et al. 2016). While this literature helps addressing the value and impacts of cruise passenger activity at ports of call and their enmeshment with space, the negotiation for (urban) space they nuance is better made sense of and analysed recurring to the conceptual and methodological toolbox of mobilities.

The mobilities literature hints at the constitutive and transformative power of flows (of people, objects, information and ideas), and at urban spaces as continuously ‘mobilised’ and negotiated by heterogeneous mobilities traversing them or mooring in them (Cresswell 2006; Hannam, Sheller, and Urry 2006; Sheller and Urry 2006). This approach

allows unpacking the multiple and complex relationships between the material dimension of urban (public) space, its generative value as spaces of relation and diversity, the patterns and rhythms of their use, their symbolic and representational character, and the economic and political agencies that intervene in their transformation. Cruise tourism can indeed be conceived as an assemblage of different mobility systems and practices (McFarlane 2011) – the mobility of large cruise ships into and off an urban port, the mobility of passengers boarding, disembarking or wandering into the destination mostly in organised tours, of goods and objects like provisions, luggage, tour buses and taxis, and of the capital investments and even policies that sustain the growth of cruise ports. This articulation of cruise mobilities is also tightly intermeshed with the material landscape of the destination, for instance the density and walkability of attraction areas that can be reached from the port, on their turn a reflection of their historical and social construction.

The unsettling effect of the penetration of cruise tourism in the tight urban fabric of places like Mediterranean cities is arguably dictated by the rigidity of such activity, both in time (whereas the scheduling of off-board excursions is highly dependent on the cruise ship time at the port of call) and space (as subject to a high level of pooling of people in groups) (Yeoman, Brass, and McMahon-Beattie 2007, 1132). In the laps of time in which specific spaces like squares and streets become overloaded with transiting cruise visitors, they may experience a radical loss of value for other urban functions and users, some rooted in such spaces (residents, workers) and some engaging with them in socially valuable ways (shoppers, non-organised tourists). Such momentary impedance to other mobilities and the uneven *motilities* they subsume (as ‘capacity to be mobile’, involving access to different forms and degrees of mobility, competence to recognize and make use of access, and appropriation of a particular choice – Kaufmann, Bergman and Joye 2004, 750), could, in the long run, generate what Amin (2008) refers to as “social pathologies of avoidance, self-preservation, intolerance and harm” (p.11), leading to exclusion from such spaces of the populations whose mobility is impeded, and to their reorientation to the segments of demand that persist in them.

In this light, our study questions how the highly regimented patterns of mobility of cruise tourism in Barcelona negotiate public space with other mobilities, both tourist and non-tourist; in which circumstances ‘impedance’ prevails; and, what practices (of avoidance and self-preservation vs. interconnection and sharing) and feelings (disaffection or

identification) are elicited in such negotiation. A key assumption that we borrow from the mobilities approach is that cruise tourists are not conceived as mobile while the other populations are sedentary: all human agents in this study are ‘on the move’, with different speeds, ranges, and intentions, fathoming a complex mesh of mobility patterns, unevenly constrained by the physical environment. The analysis of the negotiations over, relationships in, and perceptions of the public spaces that are ‘stirred’ by the interventions of cruise tourism mobilities can eventually provide some insights on the longer-term processes of transformation of such spaces – possibly producing ‘reaction tactics’ such as those described for instance by Quinn (2007) in her study of resident attitudes towards mass tourism in Venice, or triggering a reassessment of the perception of other non-organised tourism mobilities versus expectations (Popp 2012).

This analysis is carried out in two iconic spaces in the Old City of Barcelona: one is a typical sight for cruise passengers wandering into the city, and the other a somewhat ‘peripheral’ space both in terms of its situation and of its image and representation. In these areas, we reconstruct typical patterns of pedestrian mobility during periods of high and low cruise visitor intensity, and analyse their coming together in space through the use of digital techniques. Subsequently, we strengthen the interpretation of the relationships between different mobilities through first-hand observation and surveys.

The paper is so organised. In the next section we introduce the methodological framework and the analytical process deployed in this research, as well as the case study context. In the following, we illustrate the results and discuss them. In the final section we conclude with general insights from this approach, their value for policy, and some suggestions for future research.

Methodological framework

This section includes four parts, as illustrated in

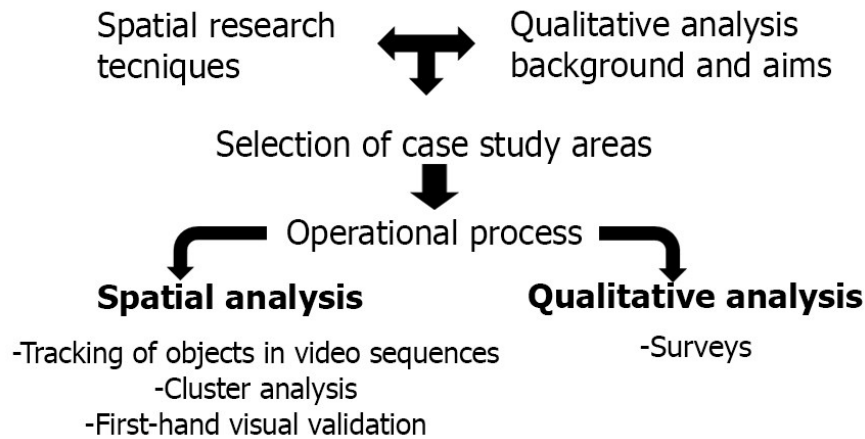


Figure 1 - Methodological framework of our study

. In the first, the main geo-analytic techniques used in our research are situated in the broader framework of socio-spatial studies and the mobilities literature. In parallel, a second part clarifies the purpose of the qualitative analysis and its theoretical underpinnings. In a third part we present and justify the selection of the case study areas, while in the last part we provide details of the operational process through which we have carried out our analysis.

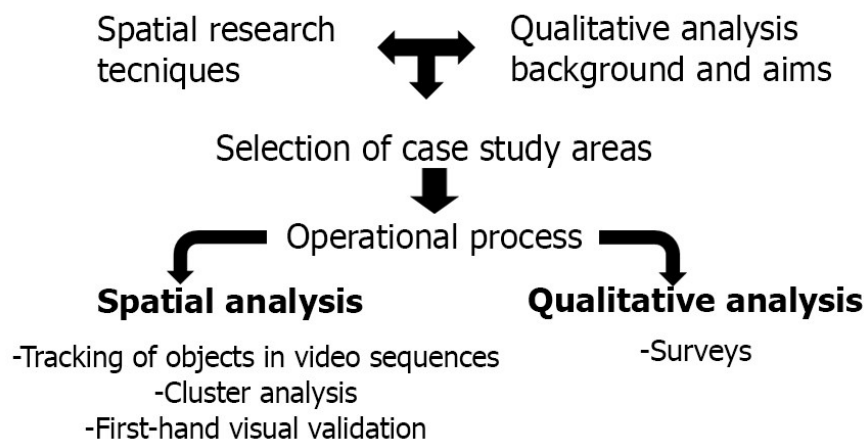


Figure 1 - Methodological framework of our study

Geo-analytic techniques

The broad context of this work is the analysis of human behaviour and its enmeshment with physical space. Among the most relevant contributions in this field, Jan Gehl, in his work *Life Between Buildings* (Gehl 1971), made a significant shift towards the analysis of the multiple practices taking shape in – and configuring – urban space. A specific focus of this approach on the spatial behaviour of tourists is based on Hägerstrand's (1970) and Pred's (1986) formalisations of space-time geography, whose potential as analytics for destinations has been highlighted by authors as Dietvorst (1994), Forer (2005) and Hall (2005). Implementations in tourism analysis have used either quantitative or qualitative methods, or on a combination of both. Most early studies used non-participant and participant observation techniques to integrate spatial analysis with a focus on performances and motivations (Hartmann 1988; Murphy 1992; Keul and Küheberger 1997; Galí Espelt and Donaire 2010).

A new impetus to this line of research has been given, on one hand, by the affirmation of the 'mobilities turn' as epistemological method, which invites to "plot, document, monitor and juxtapose places on the go" to understand how they become mobilised within networks of human and nonhuman agents (Büscher and Urry 2009: 108); and by the introduction of techniques that allow the automated collection of information on human mobility through location devices like GPS (Shoval and Isaacson 2009; Birenboim and Shoval 2016), leading to a more systematic understanding of spatial behaviour in relation to different cognitive, physical and social factors, especially when associated with qualitative techniques that require interaction with device users (East et al. 2017; Birenboim et al. 2013; Shoval and Ahas 2016). More recently, tracking with mobile phones (Ahas et al. 2008; Steiner et al. 2016) and social network footprints (Kádár and Gede 2013; Vu et al. 2015) are shifting research towards the 'big data' analysis of spatial and cognitive behaviour of large masses of visitors for destination planning, management and marketing purposes.

A variation of such 'mobile methods' relies on video processing. Video-tracking consists in capturing the exact location of subjects in consecutive frames, generally through a single video camera's field of vision. These techniques are particularly suitable to perform spatial measurements such as distance, speed, and direction, which the human observer is unable to accurately estimate. An example of application of computerised vision techniques for the collection and analysis of massive human behaviour data in a public

space is provided by Yan and Forsyth (2005). Other authors have demonstrated the value of image-processing tools for remote monitoring of tourists (Sacchi et al. 2001; Mansfeld and Pizam 2006; Mills et al., 2010). Generally, these methods rely on the possibility of acquiring CCTV images, which can be aggregated to reconstruct behavioural patterns of groups of people in space, or also of individuals when this is combined with face-recognition techniques (Haritaoglu, Harwood, and Davis 1998; Aggarwal, Chowdhury, and Chellappa 2004; Piater and Crowley 2001; Heikkila and Silven 2004).

In our research, we used video-tracking to identify patterns of spatial behaviour and interaction of different collectives in a delimited space such as a square. The major advantage was the practicality and the low cost (only requiring one fixed video camera and not relying on CCTV images owned by third parties). Moreover, it is a non-intrusive method, thus eschewing the potential bias determined by the availability to be tracked, which characterises GPS-based research, preserving at the same time the anonymity of the sampled subjects.

Qualitative methods

While video-tracking allowed us to identify spatial patterns at a general level, for a more exhaustive characterization of the different ‘mobile collectives’ and their behaviour we used direct observation and surveys. Direct observation allowed us to associate specific mobility patterns with mobile populations, for instance testing the hypothesis that large visitor groups were effectively composed of cruise passengers; while surveys allowed us to scrutinize the broader behavioural context of sampled populations, making better sense of how they cope with the dynamics of space use observed, specifically in terms of their perception of and attachment to place.

Place attachment as a perceptual category has been introduced by Williams and Vaske (2003), among others, to predict the spatial behaviour of individuals or as a factor shaping residents’ attitudes towards tourism development (Choi and Murray 2010; Gursoy and Rutherford 2004; McGehee and Andereck 2004). While ‘sense of place’ is a multidimensional and multidisciplinary notion that attempts to unpack the meanings attributed to the social and natural landscape by individuals and groups, determined by personal experiences, social interactions and daily activities (Massey 1991; Stedman 2003), the concept of ‘place attachment’ refers more specifically to “a positive affective

bond or association between individuals and their residential environment” (Shumaker and Taylor 1983, 233), restricting the focus of research on an individual's emotional relationship with the surrounding. Hence in our survey we included a set of questions specifically related to place attachment, using a metrics introduced by Williams and Vaske (2003), in order to establish a link between the emotional bond with the case study spaces and their enactments by different mobile groups.

Selection of case study areas

Our analysis focuses on mobility practices in two squares in the Old City of Barcelona, the area of most intense tourist activity and concentration of supply of the city (Figure 2). These two squares are important elements of the tourist landscape of the city, and are used and transited by residents and workers, but have a significantly different character in terms of design, symbolic charge, and functions.

The *Plaça Reial* (Royal Square) lies in the Gothic Quarter, touching with the Ramblas avenue. Historically it was a meeting place for the Barcelonans, due to the proximity with cultural venues (e.g. the Liceu theatre) and the rich commercial offer of the neighbourhood. Today, its location between the Ramblas, the Old City attractions, the beach area and the port, as well as its elegant layout with palm trees, historical buildings and the lamplights designed by Gaudi, make of it one of the most visited and transited sights of Barcelona during the day, and the hub of a bustling nightlife cluster attended mostly by tourists. The current functions of Royal Square are thus in line with the evolution of the Gothic Quarter, a quintessential ‘mass tourist’ space characterised by the crowding out of resident population and economic activities unrelated to tourism. As confirmed by Roca-Salvatella (2014), this square is a staple of tours offered by cruise companies, and thus an ideal space for studying the mobility practices of cruise visitors in relation to the many other mobilities playing out in there.

The *Plaça dels Àngels* (Angels’ Square) lies in the upper part of the *El Raval* neighbourhood, on the opposite side of the Ramblas with respect to Royal Square. It is a vibrant and youthful space, an emblematic example of the regeneration of the physical and social landscape of *El Raval* since the end of the 1970s. On the square and in its immediate proximity several cultural institutions are clustered, like the ‘flagship’ Museum of Contemporary Art of Barcelona (MACBA), the Centre for Contemporary

Culture of Barcelona (CCCB), a popular polyvalent cultural hub, the humanities campus of the University of Barcelona, opened in 2006, the Institute of Arts and Design, and the National Library of Catalonia. The presence of knowledge workers, the ethnically mixed nature of the area (with a large presence of South American and Asian immigrants as well as foreign students and ‘lifestyle migrants’ from OECD countries), the smooth and multi-level paving of the square, which makes it a highly esteemed spot by the skateboarding community, coalesce to signify it as ‘creative meeting-place’ and has driven a remarkable development of its leisure and commercial supply, with countless cafés and bars, global food stores, design boutiques and vintage shops. Angels’ Square thus differs considerably from Royal Square in terms of functions, social fabric (as it remains a densely populated area), and for the type of tourist profiles and practices that it attracts, rather geared to an ‘urban cosmopolitan’ population.



Figure 2 - Case study areas in the Old City of Barcelona

Operational process

The process leading to the obtainment and processing of data involved a sequence of three operations: the recording and tracking of people in video sequences; the clustering of the

obtained tracks; and the validation of the cluster characterisation through first-hand validation. The tracking of objects in video sequences is the most basic step to reconstruct and explore potential patterns of mobility. In our case, objects are pedestrians and their video-tracking needs to make sense of the complex patterns resulting from the interaction among a large number of individuals and with physical space (Helbing and Molnar 1995).

A first step of the research consisted in the capture of digital images using some type of sensor, in our case a digital camera. A preliminary exploration of the case study location allowed to identify two optimal time slots for the recording of cruise visitor activity, corresponding to a period of two hours after the scheduled arrival of cruise ships at the Port of Barcelona, when passengers reach the immediacy of the square after a short walk from the port terminal through the Ramblas (generally between 11 and 12 am). The second slot has been chosen as a comparative reference. Between 6 and 7 pm, the flows of cruisers wane out of this area or get fragmented and the use of the squares by different user types is at its peak. The selection of recording days was based on the arrival of high-capacity cruise ships during March 2017, alternating days of high and low intensity of arrivals to compare the related patterns of occupation of space.

Once obtained the raw video data, we had to extract the elements of interest from the frames. We used a segmentation technique based on pixel values, also known as thresholding segmentation. This method allows to convert an image in colour or grayscale to binary, so that pixels whose intensity levels exceed a certain threshold assume different values (Figure 3a). In order to extract the motion path of detected object (people), we then applied a procedure of Kalman-Bucy filtering (Figure 3b) (Kalman 1960).

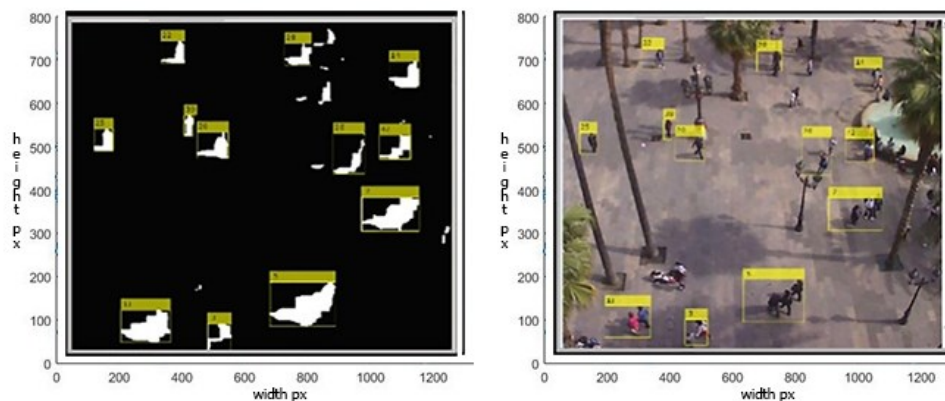


Figure 3 - (a) Segmentation; (b) Kalman-Bucy filtering

The third step of the analysis involved a statistical process of clustering (using the Matlab software) to classify indexed tracks into homogeneous groups, members within one cluster being closer to each other than members belonging to other clusters (Hastie, Tibshirani, and Friedman 2009). Specifically, we performed k-means clustering, using squared Euclidean distance as similarity measure. This type of operation requires defining a priori the number of clusters for a meaningful differentiation of the group characteristics - in our case three clusters, named 'individuals', 'very small groups' (<3 people) and 'groups' (> 3 people).

This clustering method tends to generate overlapping patterns when the centroids of one group are very close to the centroids of another group, or when the groups have different sizes and shapes; an observation could easily change its cluster membership because of a reconfiguration of mobility patterns in the observed space. This is especially significant in our case study, as status change hints at spatial closeness and possibly interaction between individuals or groups. This happens for instance when individuals or small groups come together to form a larger group or when a group breaks up into smaller groups.

Finally, first-hand visual validation was used in this procedure for an enhanced interpretation of the patterns identified in the previous step. Visual scrutiny of the activity in the squares in the same time frames as the recordings allowed a deeper and more contextualised understanding of the mobility practices and interactions registered. Observations regarded the main types of users and the activities performed, the duration of their stay in the squares, and the type and size of the groups.

As for the qualitative methods, the survey to residents was conducted in May 2017 and July 2017 in Royal Square and Angels' Square, respectively. The sample consisted of 60 persons in each square recruited by convenience sampling (Clark et al. 1998; Smith 2010). This method has been applied by approaching randomly people in the squares and asking them if they were 'locals' or 'visitors' in order to administer the appropriate survey.

The survey for residents was in Spanish, that for visitors in English. It was designed as a self-administered questionnaire (SAQ) to be completed by a respondent in an estimated 5 minutes. A proper explanation of the purpose of the research, together with the short time needed to complete the survey, ensured a very high level of cooperation of the

sampled population (almost a 100% response rate). The respondents were assured that the researcher would not reveal their identity, and would use the data only in aggregate form and only for the purpose of the research.

The survey to residents, illustrated in Table 1, included a set of seven questions used to probe if and how the presence of tourists in the square influenced their navigation of such space, their decision to look for alternative places to go, the frequency of their visits, and the duration and timing of their transits in and around the square. Another set of questions were directing at assessing ‘place attachment’ as discussed above, enquiring about the emotional and symbolic meanings associated with the two squares and the personal connection to those spaces in a context in which they negotiate such space with visitors’ groups. Finally, a few questions enquired about the relational interplay between residents and tourists and the main reasons for contact.

A set of different questions was included in the survey administered to tourists to probe their perception in relation to crowding, and if that would affect their behaviour in any way. The section concerning ‘place attachment’ was excluded from the visitor survey, and some other questions have been included to clarify the organisation of the visit (cruise company, travel agency, or self-organisation), the size of the group, and the number of visits to the square during their stay in Barcelona.

Tourists' mobility influence on	The presence of large groups of tourists in the square influences:	your (pedestrian) mobility within the square
		your time of permanence in the square
		your decision to look for alternative places to go
		the frequency at which you go to the square
		the periods in which you enjoy the square
		the concentration of your activities in the square during the day
		the concentration of your activities in the square during the night
Place attachment	The presence of numerous groups of tourists in the square influences:	the feeling that the square is part of your daily life
		your feeling of attachment to the square
		what the square means to you
		the extent that the square represents you
Relational Dimension	What kind of social interaction did you have during your permanence in the square:	talking to others to ask info, recommendations, etc
		establishing a personal connection
		taking pictures
		complaining about disturbance of own mobility
		avoiding others coming in your way
General questions	How many times have you visited this square?	
	Who organized your trip?	
	What is the size of the group you are travelling with?	
	How much time do you intend to stay in the square or in its close proximity during this trip?	
	Questions for both Residents and Tourists	
	Questions only for Residents	
	Question only for Tourist	

Table 1 – Survey structure

Results

Spatial Analysis

The results of the analysis of the video-tracking data are presented below in graphical form. It is important to highlight that the objective of this analysis is not the tracking of individual movements but the occupation of space by groups characterised by different mobility patterns (in large or small groups or alone) and the interaction between them within the square.

Hence, the set of diagrams on the left side represents graphical elaborations of the application of the Kalman-Bucy filter. The points on the graph represent the centroids of individuals walking through the square in each frame of the video (thus different points can refer to a same person moving, or to different persons). The dimensions of the graph are related to the "width" and "height" of the images imported from the video (as is shown in Figure 3b). The result is an overall visualization of centroids measured as on-screen coordinates in pixels. The diagrams to the left yield an initial visual presentation of the amount of people in the square relating it to their patterns of clustering. The diagrams to the right represent instead the graphical elaboration of k-means clustering produced by Matlab: the points of the graphs on the left are now repositioned on a non-spatial scale that orders them along the Y-axis according to cluster membership – ‘individuals’, ‘very small groups’ (<3 people) and ‘groups’ (> 3 people) – while the X-axis represents the ‘width’ of the video image.

Fig. (4.1)
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 03/03/2017
 Time Slot
 11.00 – 12.00 AM

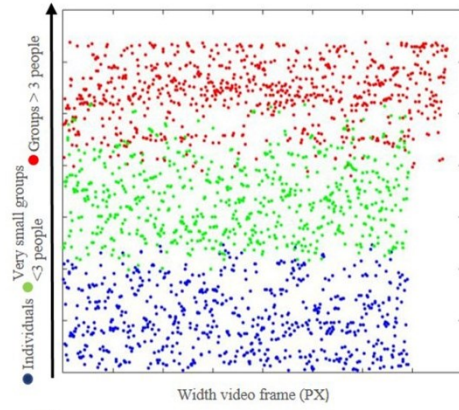
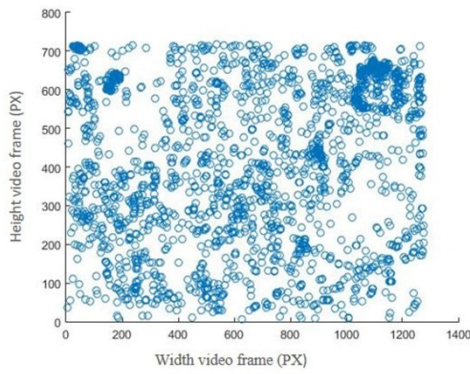


Fig. (4.2)
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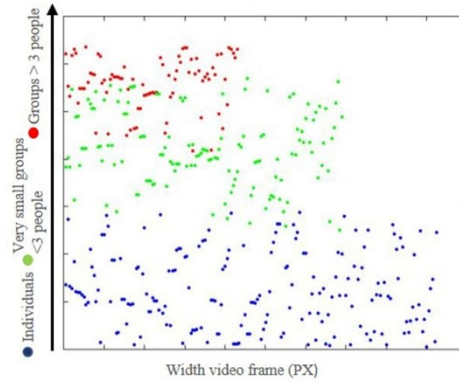
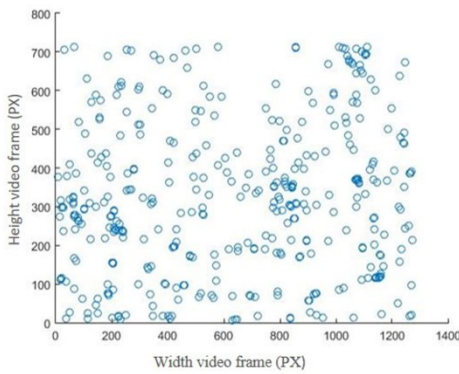


Fig. (4.3)
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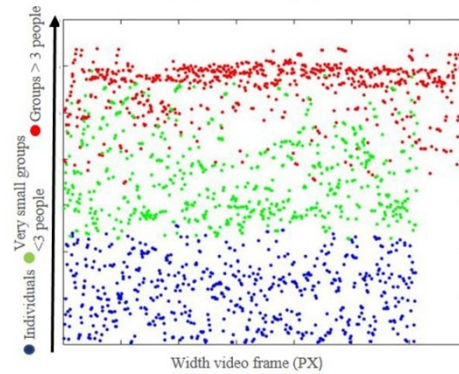
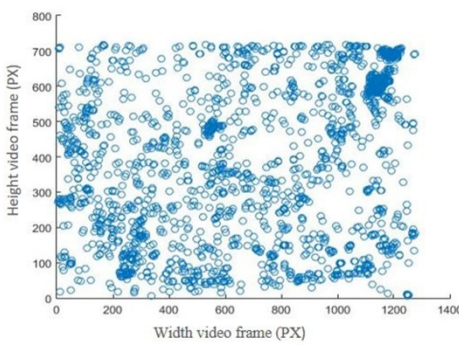


Fig. (4.4)
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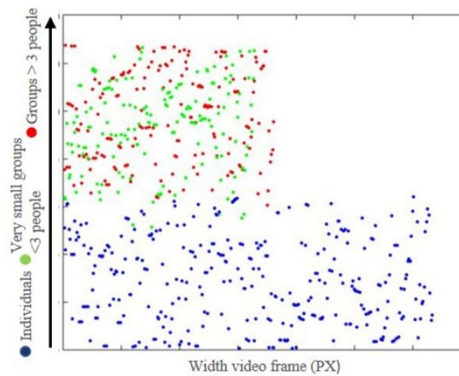
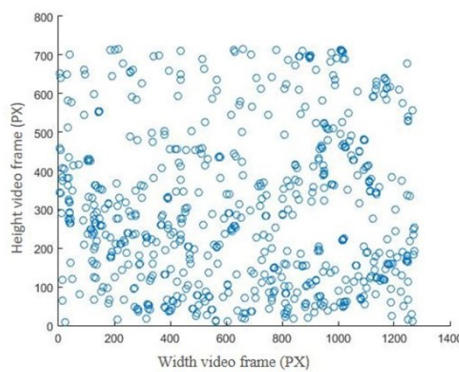


Figure 4 - Royal Square. Cruise days

Fig. (4.5)
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 03/17/2017
 Time Slot
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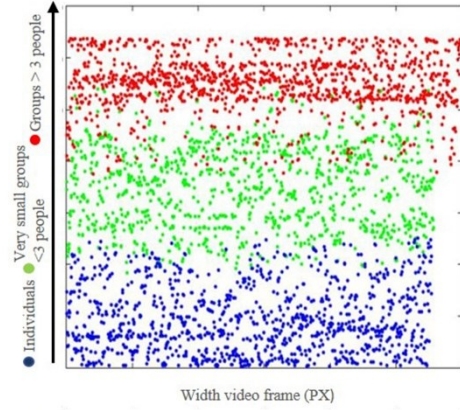
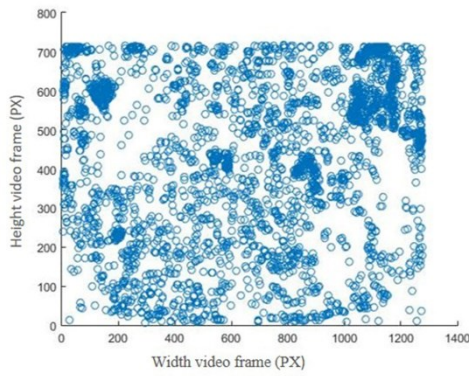


Fig. (4.6)
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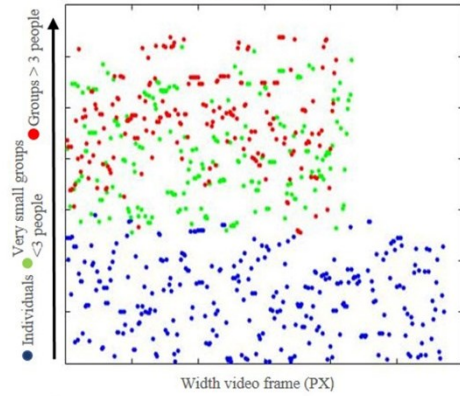
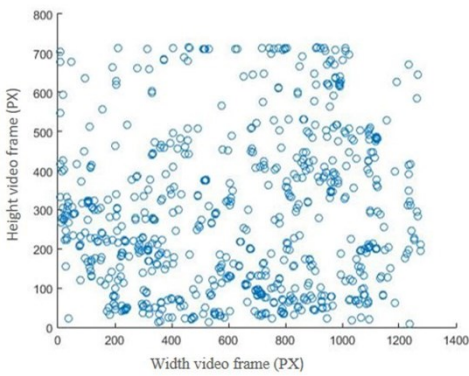


Fig. (4.7)
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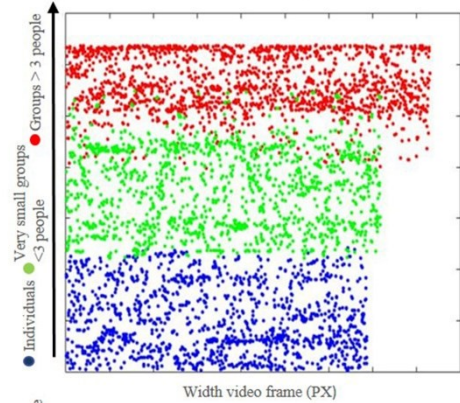
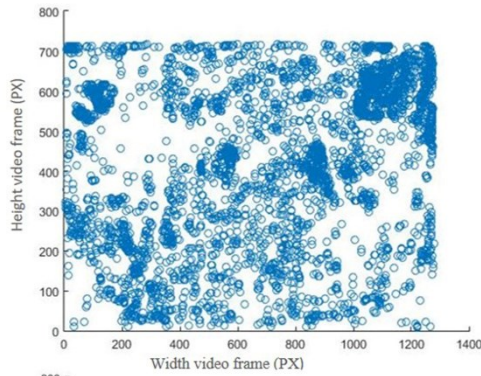


Fig. (4.8)
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 18.00 – 19.00 PM

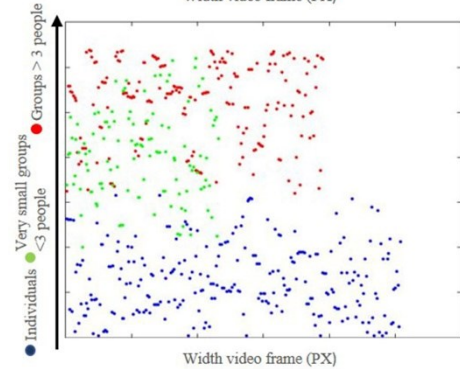
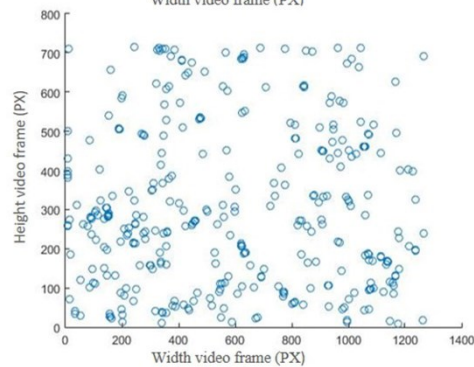


Figure 4 - Royal Square. Cruise days (cont.)

A simple observation of the tracking points (graphs on the left in Figures 4.1-4.8) reveals a much larger presence of people in Royal Square during the morning time slot. This

difference is mainly related to the transit of visitor groups and in particular of tours organized by off-board providers. Comparing this information with that of the charts resulting from the clustering operation on the right side, two basic insights emerge. The first one is that the more crowded the square is, the more evident becomes the distinction between individuals moving on their own (red dots), in small groups (green dots) or being part of a group of more than three people (blue dots). In the graphs related to the morning hours (Figures 4.1, 4.3, 4.5, 4.7), in fact, there is virtually no overlapping between the three clusters; in other words, the algorithm did not detect elements of proximity or interaction between the members belonging to the three groups established. Indeed, as mentioned above, the system generates overlapping patterns only when the centroids of one group are very close to the centroids of another group or, when the groups change their sizes and shapes.

This is observed especially looking at the increase of presences in the square in temporal progression from the first day of recording (4.1) to the last (4.7), due to the beginning of the peak tourist season towards the final part of the fieldwork period. This progression reveals the increase in clustering and of presence of large groups. Despite the separation between the three clusters, the graphs in 4.3 and 4.5 reveal some degree of spatial interaction between individuals and small groups, while the separation between large groups and the other classes is larger. In the morning slots, large groups turn out to be spatially isolated from the rest of the subjects present in the square, however there is more overlapping – and thus more potential interaction and membership fluidity – in the evening slots.

Fig. (5.1)
 Wednesday
 03/06/2017
 Time Slot
 11.00 – 12.00 AM

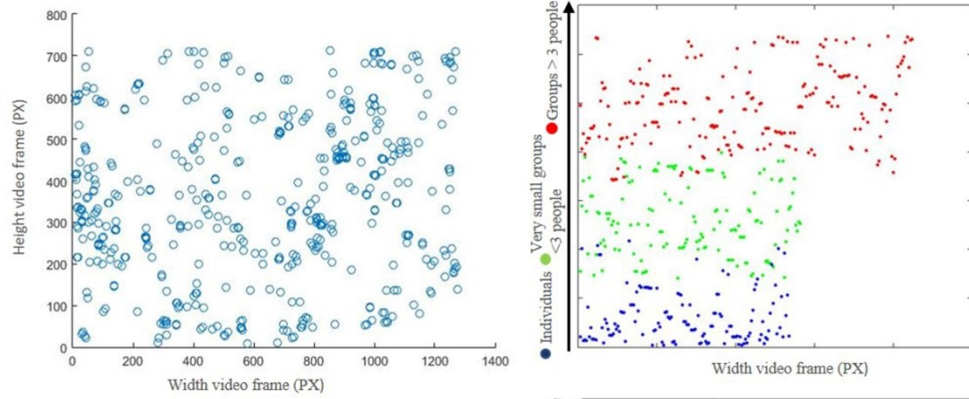


Fig. (5.2)
 Wednesday
 03/06/2017
 Time Slot
 18.00 – 19.00 PM

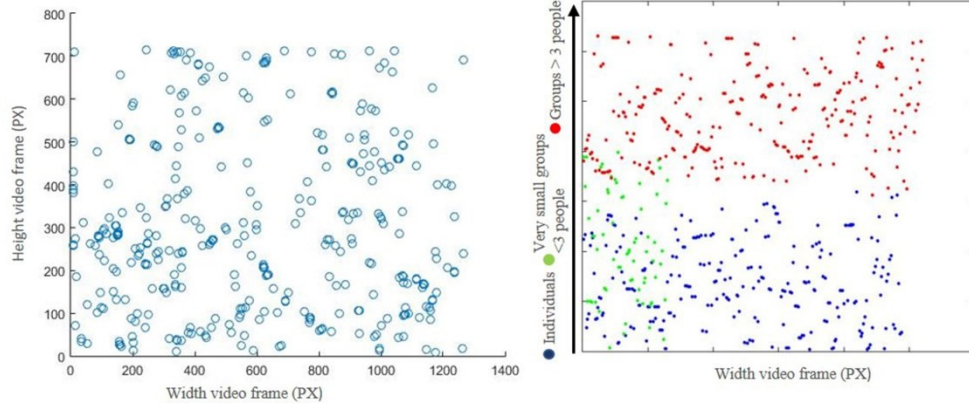


Fig. (5.3)
 Wednesday
 03/15/2017
 Time Slot
 11.00 – 12.00 AM

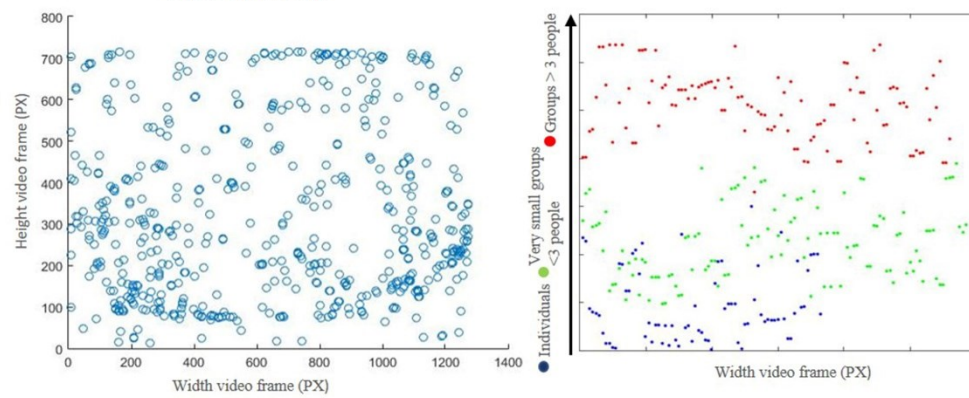


Fig. (5.4)
 Wednesday
 03/15/2017
 Time Slot
 18.00 – 19.00 PM

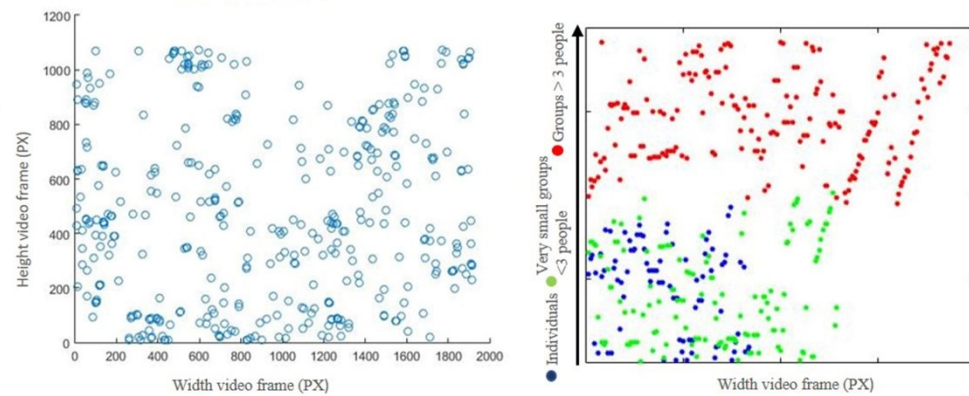


Figure 5 – Royal Square – No Cruise days

The analysis related to days without cruise arrivals (Figure 5) outlines a mixed situation: on one hand, there is a certain level of clustering (Figures 5.1, 5.3), in spite of the globally lower level of crowding. The structure is rather similar to that of days of cruise arrivals but with a lower intensity. Apparently, this affects the spatial separation between clusters: the scarcity of large groups makes it possible for smaller ones to extend their mobility practices over the whole space of the square without much hindrance.

Turning now to the graphs referring to the evening slot in cruise days (4.2, 4.4), differences can be detected both in terms of crowding and in patterns of clustering. The two clusters of very small groups and large groups appear mixed (showing no clear separation). As was confirmed through direct observation, there were hardly any organized large groups at this time slot, so the points assigned to the cluster of larger groups make less numerous groups than those observed during the morning slot. This suggests that users belonging to the three clusters do not distance themselves much but use space in a more unconstrained way.

First-hand visual validation confirmed a strong presence of large groups in the morning hours mainly consisting of 'cruise day trippers', in addition to other visitor tours and school trips. However, the space of the square is shared with local users who in the majority of cases, walk across or use it as a meeting place, leaving it soon afterwards. Considering the results obtained, it appears that for tour organisers the square is only a transit point with an observed average permanence time between 10 and 15 minutes. Tourists moving alone or in small groups dwell in the square for more than 30 minutes and use this space to relax and engage in social relations, while residents often use the square as a transit space or as a meeting point often lurking in the place for less than 5 minutes.

In the evening time, the landscape changes radically. In this time slot, large groups disappear almost completely, and a more heterogeneous population takes over. Nevertheless, there continues to be a large presence of single tourists or small groups, who in most cases hang around for a longer time (possibly using the gastronomic offer of the restaurants in the square or in the adjacent areas). We also detect a habitual population, mostly of residents, who use the square for short periods as a meeting place but also use the food offer or rest utilities in the central area.

Turning now to the analysis of the video tracks taken in Angels' Square (in Figure 6), the patterns revealed are distinctively different from those of Royal Square. A comparison of

the graphs of Figures 4 and 5 with those of Figure 6 give evidence of the distinct nature of the two spaces. From the functional point of view, Angels' Square plays a more complex and heterogeneous role. Although this space is part of the tourist circuit of Barcelona it represents primarily a meeting point for the development of social activities framed by the surrounding environment.

Fig. (6.1)
Thursday
06/28/2017
Time Slot
11.00 – 12.00 AM

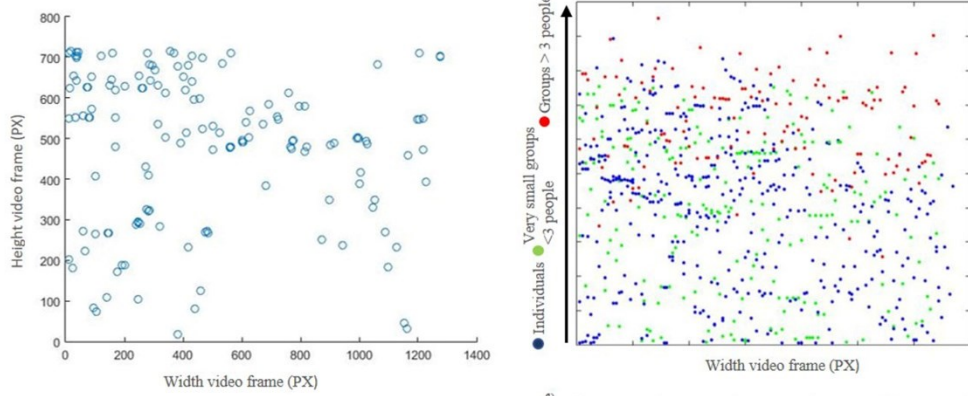


Fig. (6.2)
Thursday
06/28/2017
Time Slot
18.00 – 19.00 PM

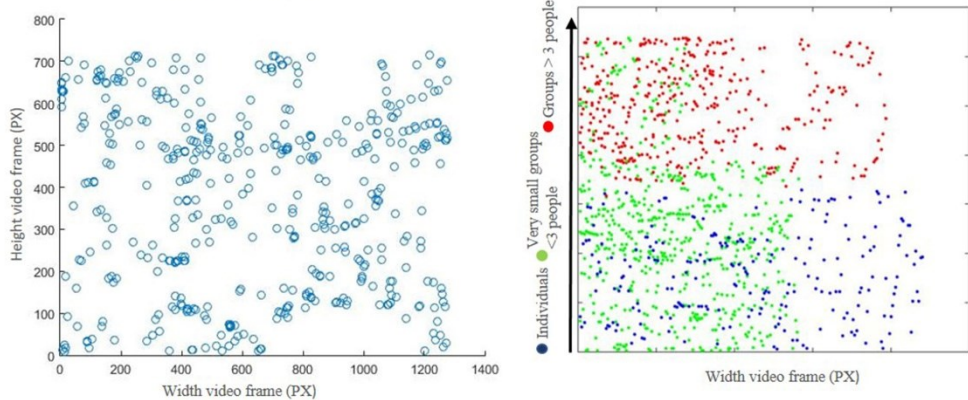


Fig. (6.3)
Friday
06/29/2017
Time Slot
11.00 – 12.00 AM

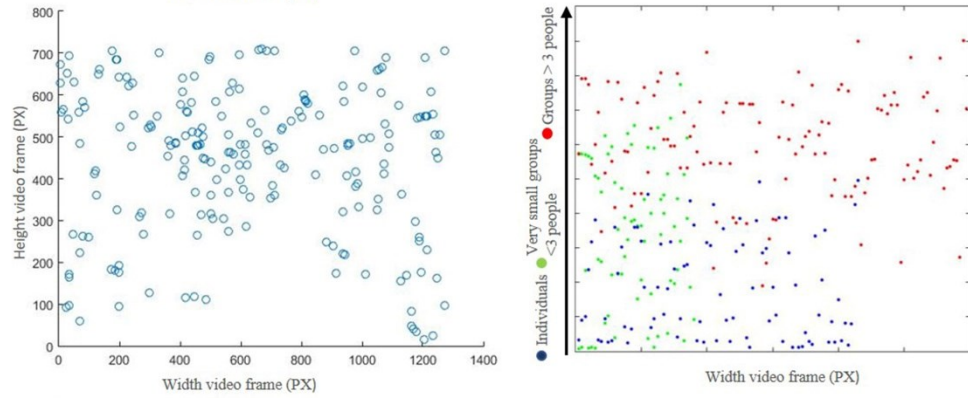


Fig. (6.4)
Friday
06/29/2017
Time Slot
18.00 – 19.00 PM

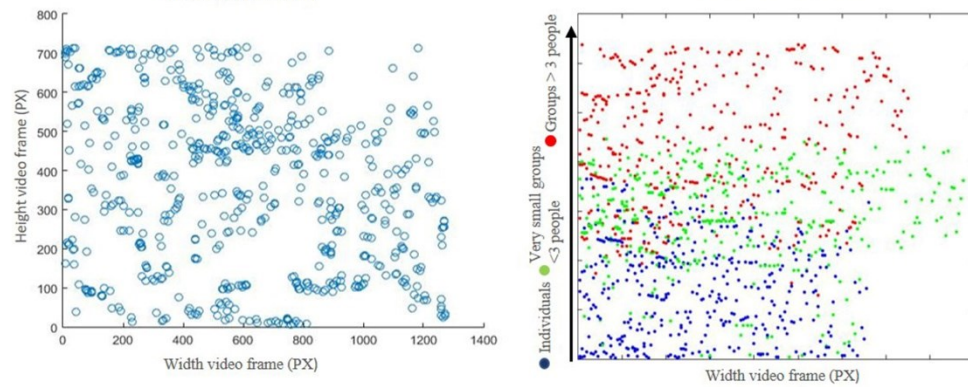


Figure 6 – Angels' Square

The low daytime activity in the square during working hours is based on its predominantly local use. Evidently, it is possible to observe the presence of tourists who cross the square and gather at the entrance of the MACBA museum, however the presence and frequency of large groups stationed or walking through the square is limited, and this seems to determine the absence of a clear spatial clustering pattern also among the other user typologies. This is especially evident in the morning time slot, where the almost complete lack of large groups (> 3 people) encourages a physical approximation between the categories, making their spatial patterns indistinguishable (graphs 6.1, 6.3). On the other hand, in graphs (6.2, 6.4), which refer to the afternoon slot, the presence of blue points (groups of > 3 people) is detected in a similar measure to the other points. Through first-hand visual validation, it was possible to detect that these groups did not exceed 8-10 people. We can therefore affirm that the mobility patterns are similar in the morning and in the afternoon, however the substantial increase in the number of people in the afternoon slot and that the lack of larger groups definitely influences the modes of use of the square. This structure of use seems to be enabling interactions between different groups. Unlike in Royal Square, there is no neat spatial division between the mobilities practices of the different groups. On the contrary, the integration of different functions in time and space offers more opportunities in terms of potential interconnections between people.

Qualitative analysis

Figures 7 and 8 present the results of the residents' survey. The data taken in Royal Square suggest that the presence of tourists and their mobility patterns influence the residents' practices and perceptions of this space. Specifically, two thirds of the respondents admit that the considerable presence of compact visitor groups (a typical feature of cruise tours) affects their own mobility and this has a negative impact also on the time of permanence (57% respond between 'quite' and 'a lot'). The percentages decrease with respect to the questions about the frequency in which the residents are heading towards the square and the choice to concentrate their activities there during the day. 52% of respondents answered that the presence of groups of tourists has little or no impact to that respect, possibly because among locals there are workers who use to spend their free time in the proximity of their workplace. For the same reason, the question on whether the presence of tourists affects the feelings that the square is part of their daily life, 80% of the respondents answered either 'a little' or 'not at all'. Over a half of the of the respondents

(55%) responded that tourist pressure has ‘quite some’ or ‘a lot’ of impact to the feeling of attachment to the square. However, a majority of them still considers the square as a space of their own (83% ‘a little’ or ‘not at all’).

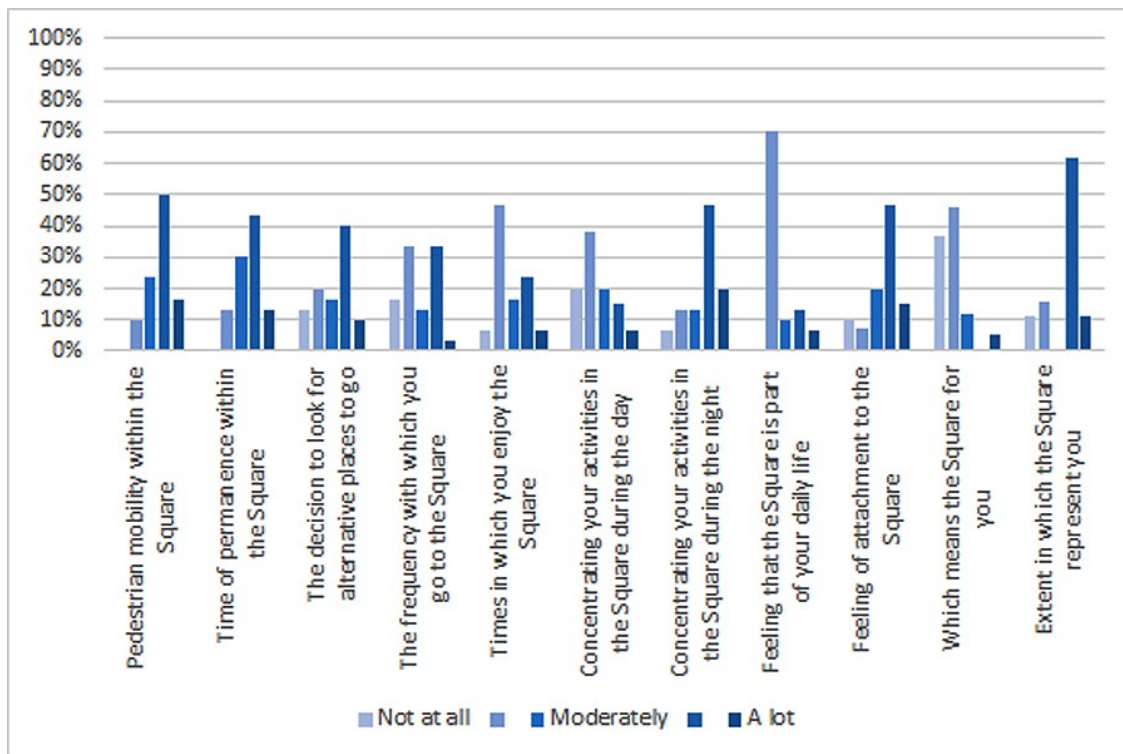


Figure 7 - Tourists’ influence on residents’ mobility and place attachment in Royal Square

The picture changes slightly when considering the results of the survey carried out in Angels’ Square (Figure 8), as was expected when upon a preliminary exploration this space revealed little transit of cruisers’ tours. In this context, the capacity of different collectives to accommodate their activities and share the space seems sufficient to manage potential conflicts. The pedestrian mobility of locals is hardly affected by tourist groups (70% of the respondents having answered ‘not at all’ or ‘a little’ to this question), while in some cases they do raise questions about the hindrances to mobility caused by skaters. There is little evidence of a relationship between tourist pressure and time spent in the square, since 77% of respondents to this question answer ‘not at all’. Residents mostly consider that the presence of tourists does not affect the frequency with which the residents are heading towards the square (83% answer ‘not at all’), or the choice to concentrate their activities there during the day to eschew visitor pressure (63% ‘not at all’), while there is a slightly more distributed result regarding the choice to concentrate

activities during the night (36.7% ‘not at all’, 33% ‘quite’). Tourist pressure seems to bear little relation also with the feeling of attachment to the square. The majority of surveyed residents claims that the presence of large groups of visitors does not influence their feeling that the place represent them (62.3% ‘not at all’), the meaning that the square has for them (82% ‘not at all’), or their attachment to the square as part of their daily life (56.2% ‘not at all’). Seemingly, the convergence between the practices of different visitors and leisure activities performed by locals appears to be a factor that heightens place attachment rather than dissipating it.

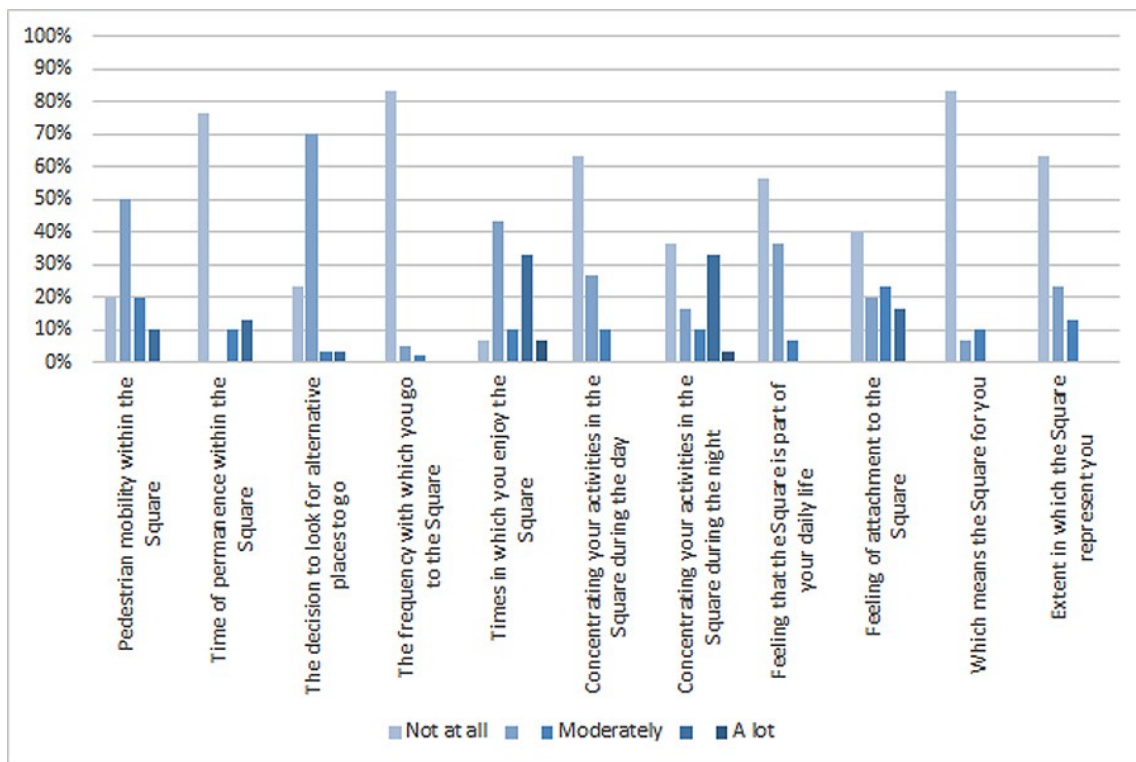


Figure 8 - Tourists' influence on residents' mobility in Angels' Square

The visitor survey sheds light on the influence of the presence of tourists and their mobility practices on other tourists. The results are presented in Figure 9. In general terms, the mobility of tourists has less pronounced effects on the spatial and temporal behavior of other tourists than what observed in the survey with residents. It seems to influence only marginally decisions to seek out alternative destinations (all the respondents in Angels' Square answered 'not at all', and 90% of the respondents in Royal Square between 'a little' or 'not at all'), or the frequency with which tourists visit a square (in Angels' Square 80% answered 'not at all' and in Royal Square 76.6% 'a little'). The

situation appears more stratified with respect to the influence of the presence of large groups of tourists. 90% of the respondents in Angels' Square claimed that they were not affected. Nevertheless, especially as far as the Royal Square is concerned, some of the respondents expressed some sensitivity to the crowds, noting the difficulty of moving freely in the square and that the presence of large groups affected their decisions to revisit the square during their stays in the city (30% said the crowds affected them somewhere between 'quite' and 'a lot'). The response was similar in regard to the decision to concentrate their activities in the square during the day (40% of respondents answered 'quite' or 'a lot').

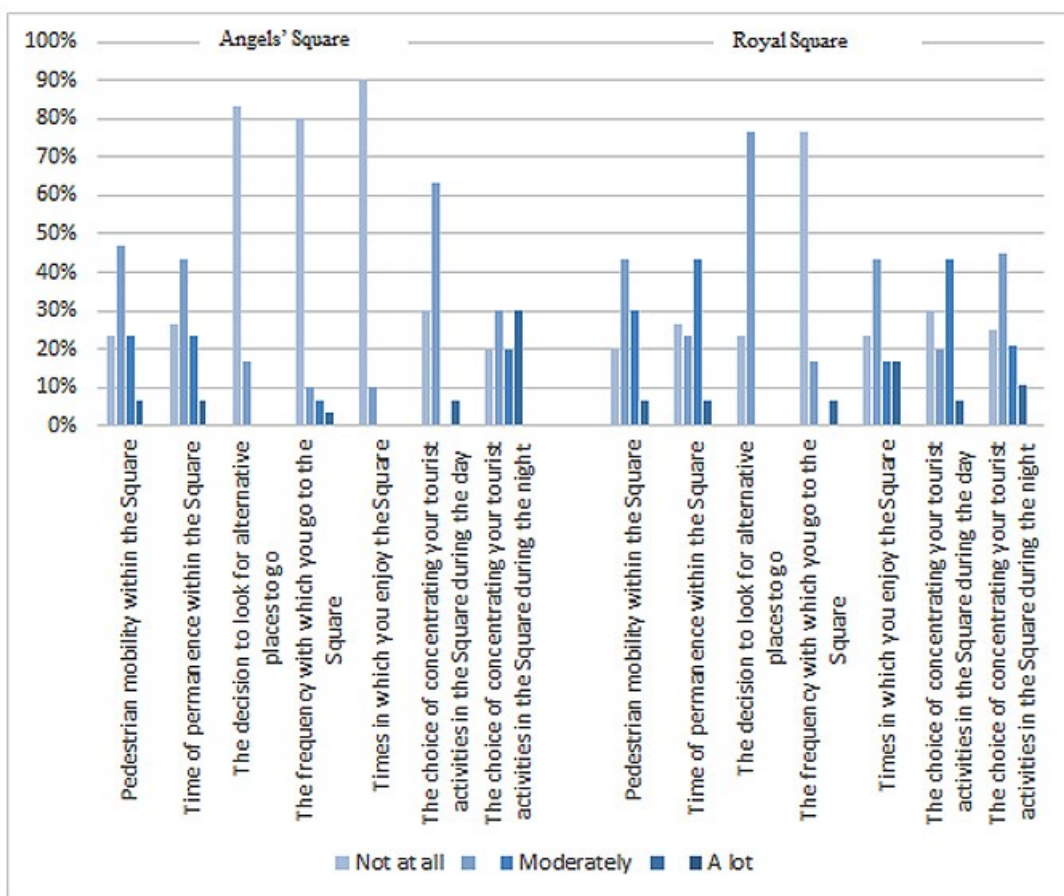


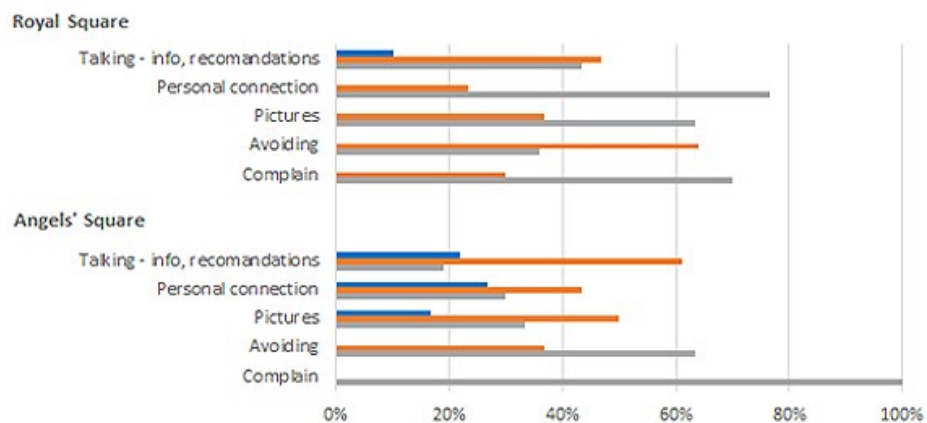
Figure 9 – Visitors' influence on other visitors' mobility within Royal and Angels' Square

Figures 10 a) and b) illustrate the results of the survey section enquiring about the nature and volume of social relations that are played out in the two squares, contributing to a

better interpretation of the analysis performed through the video-tracking technique and of the ‘perception’ analysis conducted in the first part of the survey.

Firstly, both residents and tourists in the two squares were asked whether they had established some kind of contact with other users of the square and if so, to specify whether these were other tourists or residents, as well as the nature of this interaction: a request for information, taking pictures, personal connections or if the interaction reflects a negative attitude (complaints and avoidances).

a)



b)

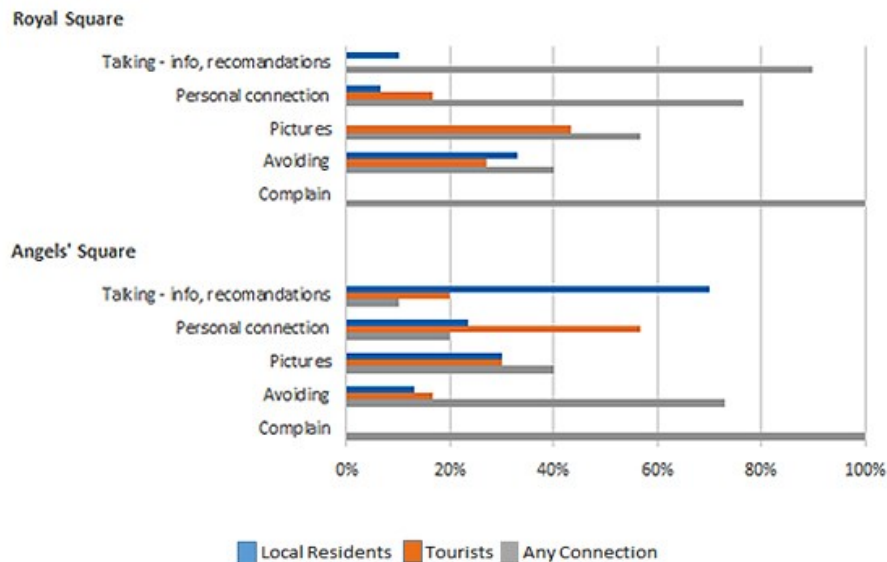


Figure 10 Relational practices in the two squares a) -residents b) -visitors

As shown in Figure 10a (top side), only the 8% of residents surveyed at Royal Square claims to have established a personal connection with other residents, and the 13% did so

with visitors. On the other hand, 50% of residents have provided information to visitors. Globally, the results of the survey in Royal Square reveal that this space is a poor producer of heterogeneous social relations, breaching of one of the conditions that define public space as a site of exchange, socialization and encounter. For residents, the negotiation of this space mostly unfolds as ‘impedance’, and particularly so when the square is at its most crowded, pushing them to zigzag their way through it, weaving in and out of visitor groups in a way that slows down their movement.

The situation appears quite different in Angels’ Square (bottom side of Figure 10a), where the survey indicates that 30% of the sampled residents were able to establish a personal connection with other residents, and more than the 40% with visitors. No surveyed resident affirmed to have approached visitors to complain, and only 36% claims having had to dodge them. A few respondents stated that they had to dodge skaters, a community that is mostly perceived by residents as ‘tourists’. We can conclude that Angels’ Square provides an environment which is more conducive to accommodating different practices of mobility, although this does not necessarily imply the establishment of a personal relation.

Figure 11 - Relational dimension of the square (visitors)

The results of this section of the visitor survey in the two squares also reveals the diversity of relationships played out between different groups. As shown in the bottom side of Figure 10b, some 70% of the visitors surveyed in Angels’ Square established some kind of contact with local residents and more than 20% with other tourists, asking for recommendations and information. More than 23% were able to establish a personal connection with residents and more than 56% with other visitors. On the other hand, as shown in top side of Figure 10b, only 6% of sampled visitors at Royal Square have been able to establish a personal connection with residents and 16% with other visitors. The results at Angels’ Square indicate no strong evidence of complaints (100% ‘not at all’) or avoidance tactics, while in Royal Square 23% of the surveyed respondents admitted having to zigzag to avoid crashing into other visitors.

The last group of questions of the visitor survey allowed to better define their profiles. Visitors to Royal Square, in more than 80% of the cases, belonged to an organized trip

and the 70% came on a cruise stopover, while the great majority of the visitors to Angels' Square travels autonomously. This is clearly reflected in the size of the groups that populate the two squares and in the time of permanence (as revealed by first-hand observation 70% were in groups larger than 10 people in Royal Square; 63% were in groups smaller than four people in Angels' Square). The 70% of those surveyed at Royal Square responded that they had never been there previously, and express no intention of returning during their stay in Barcelona. In contrast, visitors at Angels' Square not only are more likely to have already visited the square (two or three times, in the 80% of the cases), but also express the intention to return. Several respondents pointed out that not all tourists were perceived in the same way and that certain types of visitor profiles and practices were strongly preferable to others. 'Mass tourism' was considered negatively in this regard by both residents and other visitors, who evidently do not see themselves engrossing those ranks.

Discussion and Conclusions

This paper has examined the agency of cruise tourism as embodied practice of mobility and its material and symbolic effects in/on space within a relational framework. Our analysis has used a combination of spatial-analytic techniques and qualitative methods to flesh out relational patterns of proximity, interaction and impedance, characterising in this way two iconic squares in Barcelona where tourism mobilities unfold as key determinants of the social construction of space. In this way, we have been able to analyse the 'differential' character of cruise tourism, which constitutes a specific mobility practice interfering with the mobility of both resident populations and the mobility of other (mostly non-organised) visitors, strongly informed in its spatial and time patterns by factors such as the location of the port, the scheduling of cruise ships at ports of call and the promotion of tourist spaces in the city. We have also focused on how material practices of mobility may affect 'attachment to place' for residents and its attractiveness for visitors, suggesting that conflicts in the use of public space may also lead to a change in the perception of the value of these spaces for its users, and reveal the ambivalent nature of public space according to the particular forms of appropriation by its users.

Though our study focuses on the negotiations between mobilities taking place in the two squares taken as exemplary cases, its results also hint at broader processes of exclusion triggered by the rise of a particular form of mass tourism mobilities taking over central

city spaces. While the exclusionary character of public space is primarily approached in the urban planning literature as the result of planning decisions in the spheres of design, functionality and ownership (Carmona, De Magalhaes and Hammond 2008) it is also seen as outcome of social ecologies determined by negotiation power over their uses between a network of global and local, where tourists as cultural consumers play a key role (Zukin 2008).

In this sense, in a space like Royal Square in our study, a main hub for cruise excursions and a node in the 'mass-tourist' landscape of the city, relational processes mostly play out as impedance and avoidance. This character is not only observed during the peak periods of transit of cruise visitors, but also in evening hours, when, despite the greater fluidity, the separation of use patterns is still evident. This square has arguably come to be signified as meeting and transit space 'for tourists' beyond its original functions. The contestation over its use is not only enmeshed with the process of tourist specialisation of surrounding areas, but may well be one of the key factors driving social exclusion through the abandonment of the neighbourhood by original residents, together with skyrocketing housing values and the readjustment of the commercial supply. The extent to which the observed impedance for residents can be directly related to decisions to out-migrate from this area, and the extent to which impedance registered (to a lesser degree) by independent visitors in this square is influencing their perceptions of it as 'attractive' or authentic, has to be confirmed by further research.

As a counterpoint, Angels' Square, somewhat eschewed by cruise tours on account of its nature as 'fringe' space, emerges in our study as a space of juxtaposition of different mobilities. Even in the wake of the increasing contestation about the growth of tourism in Barcelona and its associated pressures, it affirms an identity of 'open', mixed and culturally generative space.

Our results are consistent with Whyte's (1980) characterisation of the spatial behaviour of individuals as 'domino effect' influenced by other mobilities. Yet, along with Adey (2006) – who considers social life as operating through “constitutive relationships of movement, relative immobilities and differences in speed” (p. 77) – we also suggest that heterogeneous mobilities characterized by uneven ruptures, frictions, frequencies and rhythms of different groups in time may hinder one another at the expenses of the generative qualities of space. Recent mobility research indeed shows a growing interest for such temporal patterns (Sheller 2011) and in the relationships that are directly involved

in social life and in the production of space. In this sense, we can state that the results of our work confirm the strong influence of tourism mobility practices on the local context, or as Hannam et al. (2006) suggest, “the proliferation of places, technologies and ‘gates’ that enhance the mobilities of some while reinforcing the immobilities, or demobilization, of others” (p. 11).

Beyond the empirical findings, which are possibly not surprising at all except for the insights that they might provide to the current debate about ‘policing’ tourism and space in Barcelona, this study has allowed to test an analytic procedure – from track data collection to their elaboration and presentation as clusters representing specific mobility patterns – which is relatively cheap to develop, preserves the privacy of the subjects tracked and does not rely on public or corporate ‘big data’ owners.

Finally, policy-wise this work contributes to the debate about the need to accommodate different mobilities in the city and especially in its public space as a strategy for more resilient places. Beyond future ‘hard planning’ decisions taken by non-local agencies, like the further expansion of the cruise port, our insights could influence short-term management decisions, for instance in the sphere of routing and mobility of cruise passengers into the city, the negotiation over the offer of products for companies organising off-board excursions, and the promotional strategies of specific central spaces for mass tourism.

References

Adey, P. 2006. “If mobility is everything then it is nothing: towards a relational politics of (im)mobilities.” *Mobilities*, 1(1), 75-94.

Aggarwal, G., A.R. Chowdhury, and R. Chellappa. 2004. “A system identification approach for video-based face recognition. In Pattern Recognition.” Paper presented at ICPR 17th International Conference, Blacksburg, August 3-7.

Ahas, R., A. Aasa, A. Roose, Ü. Mark, and S. Silm. 2008. “Evaluating passive mobile positioning data for tourism surveys: An Estonian case study.” *Tourism Management*, 29(3), 469-486.

Ciutat Vella en xifres (Ajuntament de Barcelona; accessed September 20, 2018). <http://www.bcn.cat/estadistica/catala/dades/guiadt01/index.htm>

- Amin, A. (2008). Collective culture and urban public space. *City*, 12(1), 5-24.
- Arbaci, S., and T. Tapada-Berteli. 2012. "Social inequality and urban regeneration in Barcelona city centre: reconsidering success." *European Urban and Regional Studies*, 19(3), 287-311.
- Arias Sans, A., and A. P. Russo. 2016. "The Right to Gaudí. What Can We Learn From the Commoning of Park Güell, Barcelona?." In *Protest and resistance in the tourist city*, edited by Novy, J. and C. Colomb, 247-263. London: Routledge.
- Becker, E. 2017. "Barcelona: Taming tourism." *The New York Times Travel Weekly*, July 6.
- Birenboim, A., S. Anton-Clavé, A.P. Russo, and N. Shoval. 2013. "Temporal Activity Patterns of Theme Park Visitors." *Tourism Geographies*, 15(4), 601-619.
- Birenboim, A., and N. Shoval. 2016. "Mobility research in the age of the smartphone." *Annals of the American Association of Geographers*, 106(2), 283-291.
- Brida, J. G., M. Pulina, E. Riaño, and S. Zapata. 2013. "Cruise Passengers in a Homeport: A Market Analysis." *Tourism Geographies*, 15 (1), 68-87.
- Bruttomesso, E. 2018. "Making sense of the square: Facing the touristification of public space through playful protest in Barcelona." *Tourist Studies*. Advance online publication. doi: 1468797618775219.
- Burgen, S. 2017. "Barcelona cracks down on Airbnb rentals with illegal apartment squads." *The Guardian*, June 2.
- Burgen, S. 2018. "Why tourism is killing Barcelona – a photo essay." *The Guardian*, August 30.
- Büscher, M., and J. Urry. 2009. "Mobile methods and the empirical." *European Journal of Social Theory*, 12(1), 99-116.
- Carmona, M., De Magalhaes, C., and Hammond, L. 2008. *Public space: the management dimension*. London: Routledge.
- Choi, H. C., I. and Murray. 2010. "Resident attitudes toward sustainable community tourism." *Journal of Sustainable Tourism*, 18(4), 575-594.
- Clark, M. A., M. Clark, M. Riley, and R.C. Wood. 1998. *Researching and writing dissertations in hospitality and tourism*. Cengage Learning EMEA.

- Cócola Gant, A., and D. Pardo. 2017. "Resisting tourism gentrification: the experience of grassroots movements in Barcelona." *U3 - Journal of urban design and planning* 13(5): 39-47.
- Cresswell, T. 2006. *On the move: mobility in the modern western world*. New York: Routledge.
- De Cantis, S., M. Ferrante, A. Kahani, and N. Shoval. 2016. "Cruise passengers' behavior at the destination: Investigation using GPS technology." *Tourism Management*, 52, 133-150.
- Dietvorst, A. 1994. "Cultural tourism and time-space behaviour." In *Building a new heritage: Tourism, culture and identity in the new Europe*, edited by Ashworth, G. J., and P. J. Larkham, 69–89. London: Routledge.
- East, D., P. Osborne, S. Kemp, and T. Woodfine. 2017. "Combining GPS and survey data improves understanding of visitor behaviour." *Tourism Management*, 61, 307-320.
- Fava, N., and S. Palou Rubio. 2016. "From Barcelona: The Pearl of the Mediterranean to Bye Bye Barcelona. Urban movement and tourism management in a Mediterranean city." In *Tourism in the City: Towards an Integrative Agenda on Urban Tourism*, edited by Bellini, N., and C. Pasquinelli, 285-295. Heidelberg: Springer.
- Font, X., M. Guix, and M.J. Bonilla-Priego. 2016. "Corporate social responsibility in cruising: Using materiality analysis to create shared value." *Tourism Management*, 53, 175-186.
- Forer, P., 2005. "Tourist flows and dynamic geographies: applying Gi science to understanding tourist movement and impact." In *Understanding the Tourism Host–Guest Encounter in New Zealand: Foundations for Adaptive Planning and Management*, edited by Simmons, D.G. and J. R. Fairweather, 21-56. Christchurch, NZ: EOS Ecology.
- Galí Espelt, N., and J.A. Donaire. 2010. "Direct observation as a methodology for effectively defining tourist behavior." Paper presented at e-Review of Tourism Research (eRTR) - ENTER 2010, Lugano, February 10-12.
- Garay Tamajón, L. A. 2015. *Llums i ombres del turisme de creuers: el cas de Barcelona*. *Documents d'anàlisi geogràfica*, 61(3), 563-580.
- Gehl, J. 2011. *Life between buildings: using public space*. Copenhagen: Island Press.

- Gui, L., and A.P. Russo. 2011. "Cruise ports: a strategic nexus between regions and global lines—evidence from the Mediterranean." *Maritime Policy and Management*, 38(2), 129-150.
- Gulliver. 2015. "Nobody goes there any more, it's too crowded - Tourism in Barcelona." *The Economist*, June 9.
- Gursoy, D., and D.G. Rutherford. 2004. "Host attitudes toward tourism: An improved structural model." *Annals of tourism Research*, 31(3), 495-516.
- Hägerstrand, T. 1970. "What about people in regional science?" *Papers of the Regional Science Association*, 24 (1), 6-21.
- Hall, C.M. 2005. "Reconsidering the geography of tourism and contemporary mobility." *Geographical Research*, 43(2), 125-139.
- Hannam, K., M. Sheller, and J. Urry. 2006. "Mobilities, immobilities and moorings." *Mobilities*, 1(1), 1-22.
- Haritaoglu, I., D. Harwood, and L. Davis. 1998. "W4: Who, when, where, what: A real-time system for detecting and tracking people." Paper presented at IEEE International Conference on Automatic Face and Gesture Recognition, Nara, April 14-16.
- Hartmann, R. 1988. "Combining field methods in tourism research." *Annals of tourism research*, 15(1), 88-105.
- Hastie, T., Tibshirani, R., and Friedman, J. 2009. "Unsupervised learning." In *The Elements of Statistical Learning*, edited by Hastie, T., R. Tibshirani, and J. H. Friedman, 485-585. New York, NY: Springer.
- Heikkilä, J., and O. Silvén. 2004. "A real-time system for monitoring of cyclists and pedestrians." *Image and Vision Computing*, 22(7), 563-570.
- Imbert-Bouchard, D., and R. Serrat. 2017. L'efecte dels creuers a la destinació de Barcelona. Technical document of the Barcelona Tourism Strategic Plan 2020. Retrieved 15 April 2018 from: https://ajuntament.barcelona.cat/turisme/sites/default/files/documents/12_relatoria_-_creuers_-_160713_vmomco.pdf.
- Hughes, N. 2018. 'Tourists go home': anti-tourism industry protest in Barcelona." *Social Movement Studies*. Advance online publication. doi: 10.1080/14742837.2018.1468244

- Kádár, B., and M. Gede. 2013. "Where do tourists go? Visualizing and analysing the spatial Distribution of geotagged photography." *Cartographica: The International Journal for Geographic Information and Geovisualization*, 48(2), 78-88.
- Kalman, R. E. 1960. "A new approach to linear filtering and prediction problems." *Journal of basic Engineering*, 82(1), 35-45.
- Kaufmann, V., M. M. Bergman, and D. Joye. 2004. "Motility: mobility as capital." *International journal of urban and regional research*, 28(4), 745-756.
- Keul, A., and A. Kühberger. 1997. "Tracking the Salzburg tourist." *Annals of Tourism Research*, 24(4), 1008-1012.
- Klein, R. A. 2011. "Responsible cruise tourism: Issues of cruise tourism and sustainability." *Journal of Hospitality and Tourism Management*, 18(1), 107-116.
- Legoupil, T. 2013. "Los conflictos que genera el turismo de cruceros en Barcelona y otros puertos mediterráneos." *Biblio 3W. Revista Bibliográfica de Geografía y Ciencias Sociales*, XVIII, 1049(13). Retrieved from <http://www.ub.edu/geocrit/b3w-1049/b3w-1049-13.htm>.
- Lewicka, M. 2011. "Place attachment: How far have we come in the last 40 years?" *Journal of Environmental Psychology*, 31(3): 207-230.
- Lopes, M. J. and D. Dredge. 2018. "Cruise tourism shore excursions: Value for destinations?." *Tourism Planning & Development*, 15(6), 633-652.
- Mansfeld, Y., and A. Pizam. 2006. *Tourism, security and safety*. New York: Routledge.
- Massey, D. 1991. "A Global Sense of Place." *Marxism Today*, (38), 24-28.
- McFarlane, C. 2011. "The city as assemblage: dwelling and urban space." *Environment and Planning D: Society and Space*, 29(4), 649-671.
- McGehee, N. and K. Andereck. 2004. "Factors predicting rural residents' support of tourism." *Journal of Travel Research*, 43(2), 131-140
- Mills, J., A. Curtis, B. Kennedy, S. Kennedy, and J. Edwards. 2010. "Geospatial video for field data collection." *Applied Geography*, 30, 533e547.
- Murphy, P. E. 1992. "Data gathering for community-oriented tourism planning: case study of Vancouver Island, British Columbia." *Leisure Studies*, 11(1), 65-79.

- Novy, J. 2018. "Urban tourism as a bone of contention: four explanatory hypotheses and a caveat." *International Journal of Tourism Cities*. Advance online publication. doi: 10.1108/IJTC-01-2018-0011
- Piater, J. H., and J. L. Crowley. 2001. "Multi-modal tracking of interacting targets using Gaussian approximations." Paper presented at Second IEEE International Workshop on Performance Evaluation of Tracking and Surveillance, Kauai, Hawaii, December 9.
- Popp, M. 2012. "Positive and negative urban tourist crowding: Florence, Italy." *Tourism Geographies*, 14(1), 50-72.
- Port de Barcelona. 2016. III Pla Estratègic 2015-2010. Retrieved 19 July 2018 from: http://content.portdebarcelona.cat/cntmng/guestDownload/direct/workspace/SpacesStore/e/3f0a50ab-74ad-447e-a23b-14f27eedda31/III_PLA_ESTRATEGIC_PBCN_cat.pdf.
- Port de Barcelona. 2018. Estadístiques de tràfic del Port de Barcelona. Dades acumulades desembre 2017. Retrieved 15 April 2018 from: http://www.portdebarcelona.cat/cntmng/guestDownload/direct/workspace/SpacesStore/89358f94-ba2f-41c2-bf8e-471b40e0fcea/PortBcnTrafic2017_12_ca.pdf.
- Pred, A. 1986. *Place, practice and structure: social and spatial transformation in Southern Sweden; 1750-1850*. Cambridge: Polity.
- Proshansky, H. M., A. K. Fabian, and R. Kaminoff. 1983. "Place-identity: Physical world socialization of the self." *Journal of environmental psychology*, 3(1), 57-83.
- Quagliari-Domínguez, A., and A. Scarnato. 2017. "The Barrio Chino as last frontier." In *Tourism & gentrification in the metropolis. Geography and tourism series*, edited by Gravari-Barbas, M. and S. Guinand. London: Routledge.
- Quinn, B. 2007. "Performing tourism Venetian residents in focus." *Annals of Tourism Research*, 34(2), 458-476.
- Rico, A., J. Martínez-Blanco, M. Montlleó, G. Rodríguez, N. Tavares, A. Arias, and J. Oliver-Solà. 2019. "Carbon footprint of tourism in Barcelona." *Tourism Management*, 70, 491-504.
- Roca-Salvatella. 2014. Big Data and Tourism: New Indicators for Tourism Management. Barcelona: Telefónica I+D and RocaSalvatella. Retrieved 15 April, 2018, from http://www.rocasalvatella.com/sites/default/files/big_data_y_turismo-eng-interactivo.pdf.

- Ros Chaos, S., D. Pino Roca, S. Saurí Marchán, and A. Sánchez-Arcilla Conejo. 2018. "Cruise passenger impacts on mobility within a port area: Case of the Port of Barcelona." *International Journal of Tourism Research*, 20(2), 147-157.
- Russo, A. P., and A. Scarnato. 2017. "Barcelona in common": A new urban regime for the 21st-century tourist city?. *Journal of Urban Affairs*, 1-20.
- Sacchi, C., G. Gera, L. Marcenaro, and C. S. Regazzoni. 2001. "Advanced image-processing tools for counting people in tourist site-monitoring applications." *Signal Processing*, 81(5), 1017-1040.
- Sheller, M., and J. Urry. 2006. "The new mobilities paradigm." *Environment and planning A*, 38(2), 207-226.
- Shoval, N., and M. Isaacson. 2009. *Tourist mobility and advanced tracking technologies*. Routledge.
- Shoval, N., and R. Ahas. 2016. "The use of tracking technologies in tourism research: the first decade." *Tourism Geographies*, 18(5), 587-606.
- Smith, S.L. 2010. *Practical tourism research*. Wallingford. Cabi.
- Stedman, R. C. 2003. "Is it really just a social construction?: The contribution of the physical environment to sense of place." *Society and Natural Resources*, 16(8), 671-685.
- Steiner, T., R. Baggio, M. Scaglione, and P. Favre. 2016. "Implementing lean destination management with strategic visitor flow (SVF) analysis." Paper presented at the Aiest International 2016 Conference, Malta, August 29-31.
- Shumaker, S. A., and R. B. Taylor. 1983. "Toward a clarification of people-place relationships: A model of attachment to place." *Environmental psychology: Directions and perspectives*, 2, 19-25.
- Tapia, M. 2013. "Transformación del puerto de Barcelona ¿Adiós a la planificación urbana?" *Biblio 3W XVIII*, 1049(04). Retrieved from <http://www.ub.es/geocrit/b3w-1049/b3w-1049-04.htm>.
- Vu, H. Q., G. Li, R. Law, and B. H. Ye. 2015. "Exploring the travel behaviors of inbound tourists to Hong Kong using geotagged photos." *Tourism Management*, 46, 222-232.

Weaver, D. B., and Lawton, L. J. (2017). "The cruise shorescape as contested tourism space: Evidence from the warm-water pleasure periphery." *Tourism Management Perspectives*, 24, 117-125.

Whyte, W. H. 1980. *The social life of small urban spaces*. Washington, DC: The Conservation Foundation.

Williams, D. R., and J. J. Vaske. 2003. "The measurement of place attachment: Validity and generalizability of a psychometric approach." *Forest science*, 49(6), 830-840.

Yan, W., and D. A. Forsyth. 2005. "Learning the behaviour of users in a public space through video tracking." *Application of Computer Vision*, 1, 370-377.

Yeoman, I., D. Brass, and U. McMahon-Beattie. 2007. "Current issue in tourism: The authentic tourist." *Tourism Management*, 28(4), 1128-1138.

Zukin, S. 2008. "Consuming authenticity: From outposts of difference to means of exclusion." *Cultural studies*, 22(5), 724-748.