

## Street morphology as a starting point for understanding sexual harassment

Mohamed, A.A.; Van Nes, Akkelies

**Publication date**

2017

**Document Version**

Final published version

**Published in**

Proceedings of the 11th International Space Syntax Symposium (SSS 2017)

**Citation (APA)**

Mohamed, A. A., & Van Nes, A. (2017). Street morphology as a starting point for understanding sexual harassment. In *Proceedings of the 11th International Space Syntax Symposium (SSS 2017)* (pp. 197.1-197.8). Instituto Superior Técnico.

**Important note**

To cite this publication, please use the final published version (if applicable). Please check the document version above.

**Copyright**

Other than for strictly personal use, it is not permitted to download, forward or distribute the text or part of it, without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license such as Creative Commons.

**Takedown policy**

Please contact us and provide details if you believe this document breaches copyrights. We will remove access to the work immediately and investigate your claim.

# #197

## STREET MORPHOLOGY AS A STARTING POINT FOR UNDERSTANDING SEXUAL HARASSMENT

---

**ABDELBASEER A. MOHAMED**

Al-Azhar University  
abdo121@windowslive.com

**AKKELIES VAN NES**

Faculty of Architecture, TU-Delft, The Netherlands & Department of Civil Engineering,  
Western Norway University of Applied Sciences, Norway  
a.vannes@tudelft.nl and avn@hvl.no

---

### ABSTRACT

Incidents of sexual harassment are unequally distributed in the Greater Cairo Region because cities, generally speaking, have uneven patterns of movement and activity with higher rates of pedestrian and vehicular movement and activities in some quarters than others. Central areas usually have concentrations of people and activity, hence higher crime opportunities. However, simplistic explanations of urban crime patterns will be misleading and will imply that people are a source of danger. Furthermore, previous research attempted to interpret the phenomenon of sexual harassment based on social effects, but failed to address the problem from a wider approach.

Instead, the purpose of this research is to identify built environment features related to sexual harassment occurrence in the context of Cairo, to suggest different ways to create safer urban environments, based on a design-based approach. Consequently, Space syntax is used to provide evidence-based explanations and conclusions. Analysis is done at two different, yet interrelated scales: city scale and urban block scale. That is, to provide a holistic understanding of the influence of built forms on sexual harassment

The results show that touching incidents take place along globally accessible street segments, where local territoriality and social control are missing.

### KEYWORDS

sexual harassment; space syntax, Greater Cairo

### 1. INTRODUCTION

Since the early 1990s, sexual harassment has been inevitable daily danger for Egyptian women (Abaza, 2013). Sexual harassment occurs on a daily basis all over Egypt (Harassmap, 2014). It occurs mostly on streets rather than elsewhere. According to ECWR 2008, about 69% of harassment incidents take place on the street. Furthermore, according to a study conducted by UN Women 2013, a percentage of (92.1%) interviewees stated that the females walking in the streets are the most exposed to harassment (UN Women, 2013). Remarkably, the largest proportion of women do not seek police help as action is not always taken on reports. According to the Penal Code regarding sexual harassment, a woman must take the harasser to the police station, and has to provide two witnesses to a claim of sexual harassment; however, bystanders are usually unresponsive (ECWR,2008). Eventually, sexual violence violates women's and girls'

access to educational and economic opportunities. If this is the case, offering serious solutions for women's empowerment in Egypt is very urgent.

A significant attempt to deal with the problem of sexual violence particularly in Cairo is HarassMap. It uses an online platform to report and map incidents of sexual harassment. The aim is to create a "zero-tolerance" urban environment against sexual harassment through breaking the silence around the problem. HarassMap has successfully provided a safe platform for the voice of victims, and has also increased awareness around the issue through initiatives like #MeshSakta (Harassmap, 2015) (won't be silent). Nevertheless, collected data is mostly analysed, discussed and debated from a socio-cultural perspective (Schiemer, 2015). Importantly, the creation of a visual cartographic representation of incidents of harassment will possibly expand the state's policing powers. Expressed differently, identifying hotspots of sexual violence might have the effect of increasing state intervention in public spaces through targeting and criminalizing subjects, specifically political dissidents, and spaces (Grove, 2015).

Furthermore, previous studies, (UN Women, 2013), focus mostly on addressing political and socio-economic explanations of sexual harassment such as high unemployment, low-income, and a lack of appropriate legislation (Harassmap, 2014), but pay less attention to the influence of physical environment on human behaviour.

Literature has already shown that crime is strongly associated with urban space. A key concept about crime prevention and settlement safety is 'defensible space', but it is marked by the controversy between Jane Jacobs' conception of spatially integrated spaces and Oscar Newman's conception of segregated spaces such as cul-de-sac for safer environment (van Nes, 2005). So, how do the divergent views on urban space and safety help us to interpret where and how sexual harassment takes place?

So far, research on space and crime with the use of space syntax tools (Hillier & Hanson, 1984), shows that inaccessible streets (usually with low movement rates) are more vulnerable to antisocial behaviour than accessible ones (Hillier & Shu, 2000). Nevertheless, these outcomes cannot be generalised as the type of street crime depends on the spatial characteristics of built environment (Alford, 1996); for example, Alford (1996) found that different crimes have different patterns, and that the type of crime is powerfully related to the kind of space where the incident takes place (Alford, 1996). If so, various forms of sexual harassment will have different spatial features. Accordingly, this paper, based on a design-evidence approach, will focus on studying touching harassment, due to limitations on time and data.

## 2. THE METHODOLOGY

### 2.1 THE DATA

This paper uses various sets of data. GIS Street network map of the Greater Cairo is obtained from General Organization for Physical Planning (GOPP), while locations of sexual harassment reports are obtained from HarassMap.

Table 1 shows reported categories of sexual harassment and assaults in Greater Cairo over six years, from 2010 until 2016, according to Harassmap online platform. Remarkably, touching has the highest number of reports with 636 reports.

Category	Number	Category	Number
Ogling	310	Online	7
Facial expression	215	Phone calls	118
Catcalls	275	<b>Touching</b>	<b>636</b>
Comments	565	Indecent exposure	150
Stalking or following	396	Threat	15
Sexual invites	222	Sexual assault	174
Unwanted attention	12	Rape	1
Sexual photos	6	Mob attacks	16
<b>Total</b>		<b>1551</b>	

Table 1 - Sexual harassment and assault categories according to Harassmap dataset 2016.

## 2.2 SPATIAL ANALYSIS

### 2.2.1 MACRO ANALYSIS: THE CITY

A first step is to measure spatial accessibility of the Greater Cairo Region against touching reports over a six-year period. The following syntactic measures are considered: normalised angular global integration  $R_n$  (NAIN) and normalized angular choice  $R_n$  (NACH  $R_n$ ).

### 2.2.2 MICRO ANALYSIS: THE SETTLEMENT

In the second step, Cairo CBD is selected as a case to study the relationship between touching harassment and accessibility statistically.

a risk band analysis developed by Hillier and Sahbaz (2005) is used to measure touching incidents rates for the selected area. Simply, the segments with incidents data are categorized into bands according to the total number of dwellings on the segment (i.e. street segments with the same number of buildings are grouped in one band. Then a total number of reports in each band are divided by the total number of plots in that band. Once calculated, touching risk for each band can be plotted against means of spatial parameters of similar street segments. In the analyses of Cairo CBD, eight bands were made, which encompassed street segments with 1 and 2 dwellings, 3 and 4 dwellings, 5 and 6 dwellings, 7 and 8 dwellings, 9 and 10 dwellings, 11-14 dwellings, 15 and 16 dwellings and more than 16 dwellings.

## 3. SYNTACTIC ANALYSES OF GREATER CAIRO

At city scale analyses, spatial accessibility map in figure 1 shows that planned parts are permeable, whereas informal settlements are inaccessible. Furthermore, visually speaking, touching reports' locations are more common in the globally more spatially accessible areas than elsewhere. Harassers tend to avoid areas with globally broken routes. Similarly, figure 2 shows that about 40.91% of verified incidents is captured by the top 5% route choice at  $n$  metric radius. This visual relation between incidents' locations and spatial betweenness indicates that touching occurs mostly along highly trafficked routes. If so, urban environments designed in accordance with

Jacobs's defensible spaces are more dangerous than elsewhere. Nevertheless, we cannot draw conclusions based on visual explanations rather than the underlying data. Accordingly, the next step scrutinizes previous interpretations by investigating the statistical relationship between touching risk and accessibility.

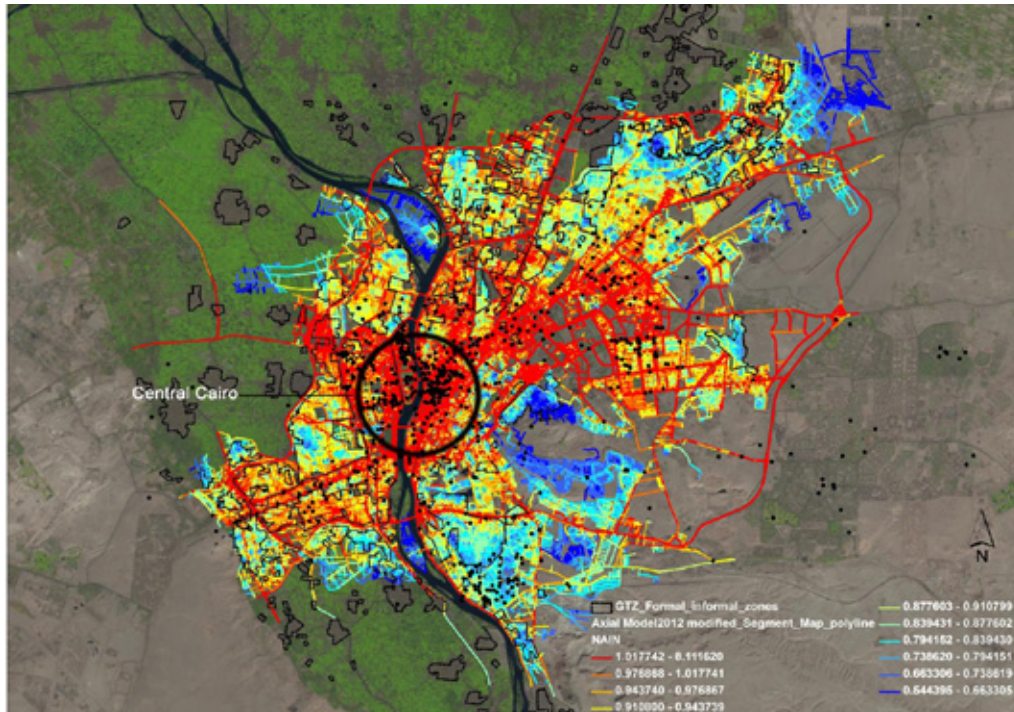


Figure 1 - Normalised angular global integration Rn overlapped with touching reports in Greater Cairo (Source: authors).

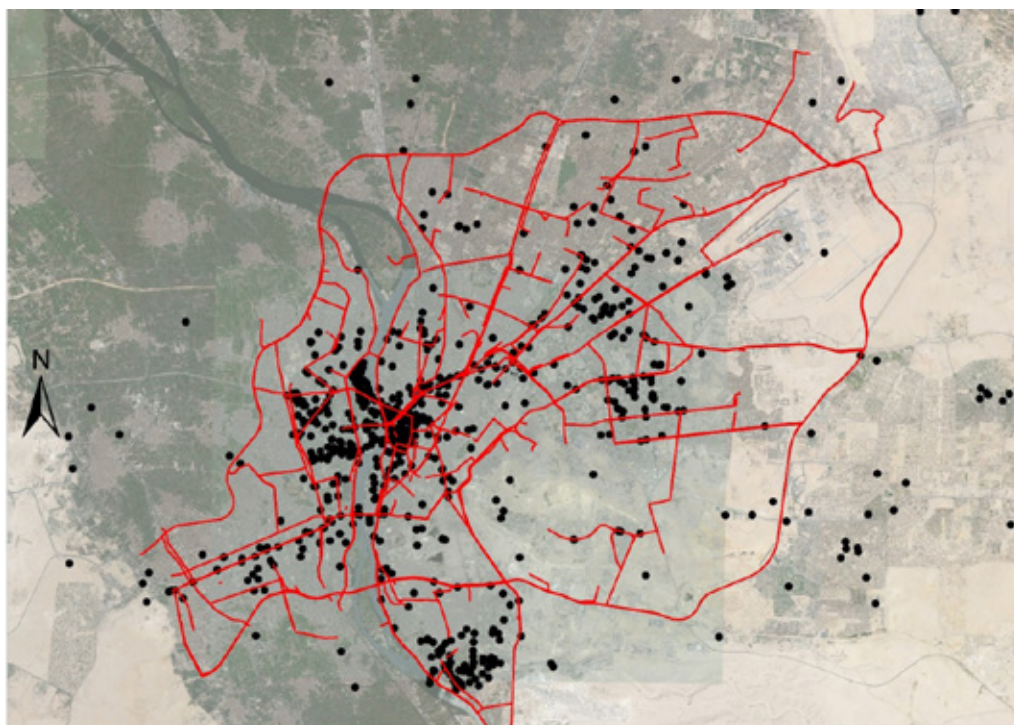


Figure 2 - Top 5% normalised angular choice Rn overlapped with touching reports in Greater Cairo (Source: authors).

#### 4. STATISTICAL ANALYSES

Statistical analysis is a primary step to examine the significance of the above-mentioned qualitative findings. With a total of 43,747 street segments and 295 reports in Central Cairo, there was a considerable dataset to run the analysis.

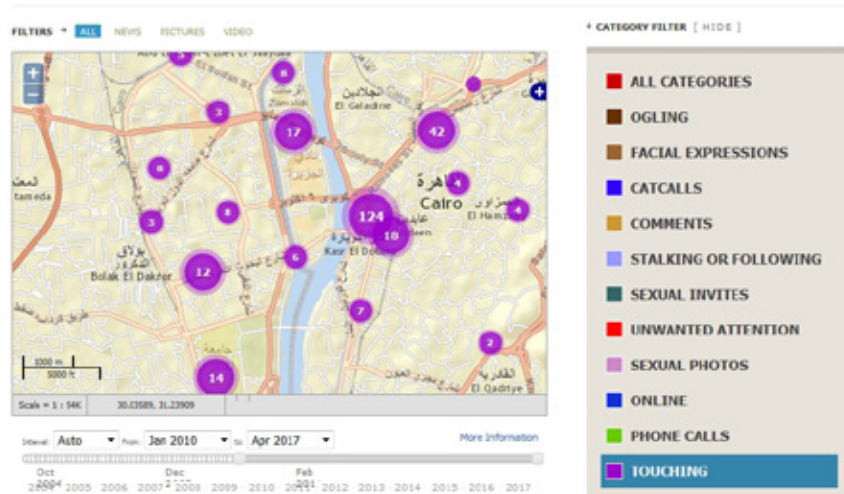


Figure 3 - touching reports count in central Cairo (Source: <http://harassmap.org>).

By employing risk band analysis introduced by Hillier and Sahbaz (2005) touching risk in each band was calculated. Table 2 shows the outcomes of the relationship between the normalised touching risk and the investigated spatial parameters at various scales. There are strong correlations between most spatial variables and touching risk. Notably, globally accessible street segments have a higher touching risk than the globally isolated ones. NAIN explains 74% of the variance ( $R^2 = 0.746$ , sign (2-tailed) = 0.006).

Preliminary results at this stage complement the results of analysis at a macro scale. Although spatial integration enhances sense of safety through the effects it has on the daily movement, it gives harassers escape paths and victims. This is in accordance with studies from Hillier and Sahbaz (2005). They stated the following:

*"Overall, we can say that urban integration, and the increase in movement and levels of activity that it brings has a double effect; it can produce more natural surveillance and safety in numbers and so reduce crime; and it may mean that potential criminals also use integrated streets, and so make more accessible locations more dangerous. Both effects undoubtedly exist, and a key variable is the degree to which there is a residential culture in more active areas. Where it exists, crime risk is reduced, where it does not, risk is increased."*

(Hillier and Sahbaz, 2005: 67)

		Band number	Integration Rn	Integration R2000	Integration R400
Harassment risk	Pearson Correlation	-.872**	.864**	.873**	.844**
	R-Squared	0.760	0.746	0.762	<b>0.712</b>
	Sig. (2-tailed)	.005	.006	.002	.008
		NAIN Rn	NAIN 2000m	NAIN 400m	
Harassment risk	Pearson Correlation	.836**	.531	-.068	
	R-Squared	0.698	0.282	0.004	
	Sig. (2-tailed)	.009	.169	.641	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Table 2: demonstrates the correlations between touching reports count and spatial accessibility parameters in central Cairo.

In the next section of this enquiry we will try to understand gender movement pattern in Cairo CBD to address the relationship between potential natural interfaces of different kinds of people and the issue of sexual harassment.

## 5. CONCLUSION

This paper has attempted to explain unequal distribution of touching reports in Cairo’s urban context based on grasping different urban patterns. The preliminary results have shown that touching incidents concentrations relate mostly to the globally spatially accessible routes.

global integrated areas seem to have a weak of territoriality (i.e. a lack of local social accountability and control). Therefore, women are more vulnerable to sexual harassment in these types of spaces.

Then, could design solutions based on restricting social interactions foster women’s safety? The answer is no as different kinds of people have diverse needs. To illustrate, objectives of planning interventions will meet only the needs of a certain group, especially with the absence of effective participatory planning. Furthermore, problems of militarised spaces and constrained individual liberties are very expected to occur, when a specific group is excluded from urban planning solutions (Kohn, 2004).

To avoid aforementioned issues, professionals should have a good knowledge about the people they are planning for. Finally, this paper is a starting point to understand sexual harassment based on spatial accessibility model. However, more effort is needed for a holistic understanding of the relationship between sexual harassment and physical features of built environment.

## REFERENCES

- Abaza, M. (2013) Intimidation and resistance: Imagining gender in Cairene graffiti. *Jadaliyya*.  
Viewed 16 February 2015 from  
[http://www.jadaliyya.com/pages/index/12469/intimidation-and-resistance\\_imagininggender-in-ca](http://www.jadaliyya.com/pages/index/12469/intimidation-and-resistance_imagininggender-in-ca)
- Abdelmonem, A. (2015). 'Reconceptualizing sexual harassment in Egypt: A longitudinal assessment of el-Taharrush el-Ginsy in Arabic Online Forums and Anti-sexual harassment Activism.' *Kohl: A Journal for Body and Gender Research* Vol. 1, No. 1
- Ahmed, S. I., Jackson, S. J., Ahmed, N., Ferdous, H. S., Rifat, M. R., Rizvi, A.S.M, Ahmed, S. and Mansur, R. S. (2014) Protibadi: A platform for fighting sexual harassment in urban Bangladesh. In: CHI '14 *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, p. 2695-2704.
- Amar, P. (2011) 'Turning the Gendered Politics of the Security State Inside Out?' *International Feminist Journal of Politics*. 13(3): 299-328.
- Anderson, K. E., (2012). 'Sexual Harassment Discourse in Egypt: A Sociolinguistic Analysis', unpublished Thesis, University of Texas at Austin.
- Bottoms, A. E., & Wiles, P. (2002). Environmental criminology. In M. Maguire, R. Morgan, & R. Reiner (Eds.), *The oxford handbook of criminology* (pp. 620–656). Oxford: Oxford University Press.
- Ceccato, V. (ed.) (2012), *The Urban Fabric of Crime and Fear*, Springer Dordrecht Heidelberg New York London
- ECWR (2008). "Clouds in Egypt's Sky – Sexual Harassment: From Verbal Harassment to Rape"
- Ebaid, N. 'Sexual Harassment in Egypt – A Neglected Crime', unpublished thesis, American University in Cairo.
- Fatima, Mareah Peoples (2008). 'Street Harassment in Cairo: A Symptom of Disintegrating Social Structures,' *The African Anthropologist*, 15: 1-20.
- Hafez, S. (2012). 'No Longer a Bargain: Women, Masculinity, and the Egyptian Uprising,' *American Ethnologist* 39:37-42.
- HarassMap (2014). 'Towards a Safer City – Sexual Harassment in Greater Cairo: The Effectiveness of Crowdsourced Data'
- Hassan, R. M., Shoukry, A., & Komsan, N. A. (2008). Clouds in Egypt's sky: Sexual harassment from verbal harassment to rape, Egyptian Center for Women's Rights report. Viewed 3 June 2015 from  
<http://harassmap.org/en/wp-content/uploads/2013/03/ECWR-report.pdf>
- Hillier, B. (1996) *Space is the Machine*. Cambridge University Press.
- Hillier, B. and Shu, S. (1999) Design for secure space, *Planning in London*, Issue 29, pp. 36-38.
- Hillier, B., (2004), 'Can streets be made safe?' *Urban Design International*, 9 (1), 31-45
- Hillier B., Iida S. (2005) Network and Psychological Effects in Urban Movement. In: Cohn A.G., Mark D.M. (eds.) *Spatial Information Theory. COSIT 2005. Lecture Notes in Computer Science*, vol 3693. Springer, Berlin, Heidelberg
- Hillier, B. & Sahbaz, O., (2005), 'High Resolution Analysis of Crime Patterns in Urban Street Networks: an initial statistical sketch from an ongoing study of a London borough'. In: van Nes, A. (ed.), *Proceedings Space Syntax. 5th International Symposium*, TU Delft, Tech. Press, Delft.
- Hillier, B. & Stonor, T. (2010) Space Syntax- Strategic Urban Design. *City Planning Review, The City Planning Institute of Japan*, 59/No.3 (285), 7-11.
- Ilahi, N. (2008). You Gotta Fight for Your Rights: Street Harassment and its Relationship to Gendered Violence, Civil Society, and Gendered Negotiations,' unpublished thesis, American University in Cairo.
- Kohn, M. (2004), *Brave new neighborhoods: The privatization of public space*, New York: Routledge.
- Mohamed, A., van Nes, A. and Salheen, M. (2015) Beyond informality: traders as space experts in their own informal settlements. In: *proceedings of 10th International Space Syntax Symposium*, London, UK, pp. 135:1-19.
- Netto, V.M. (2007) Practice, communication and space: A reflection on the materiality of social structures, Doctoral thesis, University of London.
- Nguyen, T. M. and van Nes, A. (2014) 'Identifying the spatial parameters for differences in gender behaviour in built environments. The flaneur and flaneuwe of the 21st century', in *Che 'genere' di città per il futuro*, Vol. 6 n. 10 (Giugno 2013), Università degli studi di Napoli Federico II, Centro interdipartimentale L.U.P.T, ISSN 1974-6849, e-ISSN 2281-4574

- Phadke, Ranade, and Khan, 2009, *Why loiter? Radical possibilities for gender dissent*. In M. Butcher and S. Velayutham (Eds.) *Dissent and Cultural Resistance in Asia's cities*. Routledge, London and New York.
- Thomson Reuters Foundation (2013) *POLL: Women's Rights in The Arab World. The Worst and Best States for Women*.
- Turner, A. (2004) 'Depthmap 4 - A Researcher's Handbook', Bartlett School of Graduate Studies, UN Women (2013a) 'Study on Ways and Methods to Eliminate Sexual Harassment in Egypt'
- UN Women (2013b). 'Sexual Harassment in Egypt: The Causes and Confrontation Methods'
- van Nes, A., 2005, *The Burglar's Perception of His Own Neighbourhood*. In: A. van Nes (ed.), *Proceedings of 5th International Space Syntax Symposium*, TU Delft, Delft, Techne Press.
- van Nes, A. and López, M. (2010) 'Macro and micro scale spatial variables and the distribution of residential burglaries and theft from cars: an investigation of space and crime in the Dutch cities of Alkmaar and Gouda', *Journal of Space Syntax*, Vol. 1, no 2, p.296-314.
- van Nes, A. (2011) 'The One- and Two-Dimensional Isovists Analysis in Space Syntax'. In: Nijhuis, S., Lammeren, R., Hoeven, F. (Eds.), *Exploring the Visual Landscape: Advances in Physiognomic Landscape Research in the Netherlands*, Research in Urbanism Series, Vol.2.
- Yamane, T. (1967), , 2nd Ed., New York: Harper and Row.