



Short communication

Urban street greenery as a prevention against illegal dumping of household garbage—A case in Suwon, South Korea

Youngha Joo^a, Youngsang Kwon^{b,*}^a Urban Design Lab., Department of Civil and Environmental Engineering, Seoul National University, Seoul, South Korea^b Urban Design, Department of Civil and Environmental Engineering, Integrated Research Institute of Construction and Environmental Engineering, Seoul National University, Seoul, South Korea

ARTICLE INFO

Article history:

Received 11 May 2015

Received in revised form

30 September 2015

Accepted 4 October 2015

Available online 13 October 2015

Keywords:

Greening project

Guerrilla gardening

Residential environment

Streetscape

Urban design

Urban waste management

ABSTRACT

While greenery in the city provide a number of important functions, the prevention of illegal dumping of household garbage (IDHG) has rarely been mentioned. Literature review on IDHG implied that greening on dumping sites can be understood as an effort to prevent such behaviour by modifying the physical characteristics of the site, in which case the physical characteristics of the greenery itself (i.e. the physical design) is also a potential factor. Therefore, this exploratory study attempts to answer (1) whether urban street greenery can function as a prevention against IDHG and (2) what relationship exists between the physical design elements of street greenery and its effectiveness. The study examined a recent IDHG-preventive greening project implemented in Suwon, a South Korean city. A quasi-experiment comparing the street greenery sites with non-street greenery sites and a binary logistic regression among the street greenery sites was conducted respectively to analyse the above questions. Results suggest that while street greenery does appear to function as a preventive method against IDHG, certain physical design elements notably related to the greenery's spatial features also tend to influence its effectiveness. A possible explanation may be that these elements might contribute to its effectiveness by reducing the actual space available for dumping garbage. It is hoped that this exploratory study could provide insight and universal implications regarding the relationship among urban greenery, its physical design, and its function as a prevention against IDHG.

© 2015 Elsevier GmbH. All rights reserved.

Introduction

Urban greenery perform a number of functions in the city. In addition to its basic substance as a natural element in the predominantly artificial urban environment, and thus also providing habitat for urban wildlife, it is also known to reduce flood risk by decreasing impervious surface area (Villarreal and Bengtsson, 2004; Armson et al., 2013), remove air pollution and improve air quality (Nowak et al., 2006), and relieve urban heat island effects (Bowler et al., 2010). Urban vegetation can offer calming, restorative effects and aesthetic satisfaction to humans, and enhances both physical and mental health (Ulrich, 1984; Kaplan, 1995; Velarde et al., 2007). It also promotes social interaction between neighbours and acts as a medium for urban regeneration (Kuo et al., 1998; Bonham and Smith, 2008).

Along with these well-known functions, another effect of urban greenery is mentioned once in a while. Based on vegetation's association with edification-related behavioural changes (Kuo and Sullivan, 2001; Velarde et al., 2007), environmental probabilmism and aesthetic appeal, the prevention of illegal dumping appears to be another potential function. It is anticipated that by landscaping and beautifying a garbage-strewn place, people would no longer perceive the place as an illegal dumping site (US EPA, 1998) (Fig. 1). The recent worldwide spread of the guerrilla gardening movement can be seen as a particular example reflecting the increasing attention to the possibility of urban greenery in common, everyday residential areas (such as street flower beds or pocket parks) as a prevention against illegal dumping of household garbage (IDHG).

Hence, landscaping efforts on illegal dumping sites along streets or vacant lots have been referred to in a few studies. Bonham and Smith (2008) reported that greening vacant lots in Philadelphia, USA positively influenced the neighbourhood's social and economic revitalisation, and suggested that it would also have reduced IDHG. Newell et al. (2013:146) briefly mentioned that the Alley Gating and Greening Program in Baltimore, USA reduced both crime and illegal

* Corresponding author. Tel.: +82 2 880 8200; fax: +82 28732684.

E-mail addresses: yhjoo1990@snu.ac.kr (Y. Joo), yskwon@snu.ac.kr (Y. Kwon).



Fig. 1. Street greenery planted to prevent illegal dumping of household garbage (IDHG).

dumping in the alley. Kim et al. (2011:356) recorded in brief that of the illegal dumping sites encountered in a residential neighbourhood of Seoul, South Korea, there were more sites without street flower beds or any forms of vegetation (84%) than those with them (14%). However, there are few studies which analyse the relationship between urban greenery and IDHG prevention directly and as an independent subject. In addition, study by Kim et al. (2011) also showed that not all greenery shows the same effectiveness in preventing IDHG. This clearly indicates that further investigation is needed (Fig. 2).

Illegal Dumping of Household Garbage (IDHG) and its connection with urban greenery

Defining the terms of and reviewing the discussions on IDHG – its troublesomeness and its contributing factors – is necessary to understand in which context it is related with urban greenery. ‘Illegal dumping’ as defined by the US EPA Region 5 is “disposal of waste in an unpermitted area” (US EPA Region 5, 1998:4). While illustrating the essence of the notion, this definition encompasses a rather broad range of disposal scale and waste type, ranging from one-item littering at the individual level to large-scale dumping at the corporate level, and from municipal household garbage to industrial or agricultural waste, thus requiring a narrower conceptualisation. Since this study focuses on illegal dumping at the household level, the term ‘illegal dumping of household garbage’ will hereafter be conceptualised as indicating “the disposal of



Fig. 2. Another street greenery with the same purpose but ineffective.

garbage-filled bags and/or end-of-life electrical appliances and furniture generated from an individual household at an unpermitted public space in a residential area”.

As well as being a widespread urban phenomenon undesired and avoided by residents, IDHG becomes an urban problem for the following reasons: it threatens the public good, such as public hygiene and health (US EPA Region 5, 1998; Garvin et al., 2013) and urban streetscape and city desirability (Alozie, 2010); forms a poor image on and aggravates socio-economic deterioration of the entire neighbourhood (Perkins et al., 1992; Bonham and Smith, 2008); might spread disorder and trigger additional hazardous behaviour (Wilson and Kelling, 1982; Keizer et al., 2008); and adversely affects property resale values (Seo and von Rabenau, 2011).

Regarding this substantial urban problem, a variety of contributing factors have been discussed. Economic factors, such as unit pricing on household garbage and the low penalty of illegal dumping have been suggested both theoretically (Fullerton and Kinnaman, 1996) and empirically (Kim et al., 2008; Matsumoto and Takeuchi, 2011) to increase illegal dumping. Insufficient public garbage collection services and facilities are also known to increase illegal dumping (Matsumoto and Takeuchi, 2011; Zapata Campos and Zapata, 2013). Demographic factors, such as population decline, education level (Hollander et al., 2009) and unemployment rate also influence IDHG behaviour, while the effect of income level is controversial (Matsumoto and Takeuchi, 2011). Community surveillance activities help reduce IDHG (Matsumoto and Takeuchi, 2011), while the spatial characteristic factor of unclear ownership is responsible for increased IDHG (Yatmo et al., 2013). Physical characteristics, namely disorderly, uncared-for scenes or aesthetically unappealing looks, and spaces where dumping has already occurred, seem to attract illegal dumping (Wilson and Kelling, 1982; Crofts et al., 2010; Yatmo et al., 2013).

Although many studies have reported such causes of IDHG, articles studying actual IDHG-preventing efforts are difficult to find. This study thus attempts to bridge the gap, though limited, by concentrating especially on the physical characteristics aspect which is related to urban greenery. The above literature review on factors contributing to IDHG show that landscaping and beautifying on garbage-strewn sites can be understood as a preventive measure focusing chiefly on ameliorating the physical characteristics factor. Hence, the question asking the relationship between urban greenery and IDHG prevention eventually becomes a question addressing the physical characteristics, or specifically, the design of the greenery themselves, provided that their degree of maintenance are similar. Additional theoretical basis on physical design possibly influencing illegal dumping behaviour can be found in the environmental probabilism perspective of environmental psychology (Bell et al., 1990) and the three-D (Designation, Definition, Design) approach to space assessment of the CPTED theory (Crowe, 2000).

Aims and research questions

This research is believed to be the first attempt to discuss urban greenery’s IDHG-preventing function, both empirically and as an independent subject, hence being an exploratory study. Therefore, this paper aims at suggesting a rudimentary explanation concerning the relationships among street greenery, its physical design, and its IDHG prevention functionality. By doing so, it also aims at providing both basis and insight for programmes on designing IDHG-preventive street greenery such as municipal policies or guerrilla gardening activities. To achieve such aims, this study attempts to answer the following two research questions: (1) Can street greenery function as a preventive method against IDHG? (2) What differences in the physical design of street greenery are associated with IDHG prevention effectiveness, and in which way?

Download English Version:

<https://daneshyari.com/en/article/10252116>

Download Persian Version:

<https://daneshyari.com/article/10252116>

[Daneshyari.com](https://daneshyari.com)