Urban Forestry & Urban Greening 9 (2010) 57–64

Contents lists available at ScienceDirect

Urban Forestry & Urban Greening

journal homepage: www.elsevier.de/ufug

The effects of urban retail greenery on consumer experience: Reviewing the evidence from a restorative perspective

Yannick Joye *, Kim Willems, Malaika Brengman, Kathleen Wolf

[a] University of Leuven, Institute of Philosophy, Centre for Logic and Analytical Philosophy, Kardinaal Mercierplein 2, 3000 Leuven, Belgium
[b] University of Hasselt, Marketing Department, 3590 Diepenbeek, Belgium
[c] Vrije Universiteit Brussel, Business Economics and Strategic Management, 1050 Brussel, Belgium
[d] University of Washington, College of the Environment, Box 352100, Seattle, WA 98195-2100, USA

ARTICLE INFO

Keywords:
Biophilia
Consumer behavior
Restorative experiences
Urban green

ABSTRACT

Over the last three decades solid empirical evidence for the positive influence of greenery on human psychological and cognitive functioning has been steadily accruing. Based on this evidence, researchers and practitioners increasingly realize the importance of urban greening as a strategic activity to promote human wellbeing. Although commercial and retail activities constitute a significant and influential component of urban contexts, a concern is that the stakeholders involved (e.g. merchants) can sometimes be reluctant to integrate vegetation in commercial districts. This can be an important stumbling block for the process of urban greening. In this paper we introduce the concept of Biophilic Store Design (BSD) as the retail design strategy to consciously tap the beneficial effects of vegetation. The central aim of this paper is to demonstrate that the reluctance of certain retail stakeholders to integrate greening practices like BSD is unjustified. Two lines of evidence in support of this claim will be discussed. On the one hand, we sketch a conceptual framework which supports the view that BSD can have restorative effects for those implied in store environments. On the other hand, we review Wolf's multi-study research program on the effects of urban greening on consumer behavior, attitudes, and perceptions. These two lines of evidence show that commercial activities and urban greening are not to be considered as antagonistic but as mutually reinforcing practices.

The aesthetic and restorative effects of greenery

Since as early as the 1970s, researchers have been experimentally studying the influence of greenery on human attitudes and functioning. One of the main findings – for which a large body of empirical evidence has accumulated – is that natural (i.e. green) environments are consistently preferred over non-green urban settings, or environments dominated by artefacts (for a review see Ulrich, 1993). Another important observation is that nature can have 'healing' effects on human individuals. One illustrative inquiry in this respect is Ulrich's (1984) *Science* study, which reports that hospital patients that had undergone a gall-bladder operation recovered more rapidly and felt better when they had views on trees than when they viewed a brick wall from their hospital rooms (Ulrich, 1984). Since Ulrich's pioneering inquiry, many environmental psychology studies have investigated and corroborated the beneficial or 'restorative' effects of vegetative elements (flowers, trees, plants) on human functioning and health (for reviews Ulrich, 1993; Van den Berg, 2005, 2009). Nowadays this field of inquiry is often referred to as 'Restorative Environments Research' (Van den Berg, 2009).

Over the past two decades, two major interpretations of what constitutes a 'restorative experience' have dominated the restorative research literature. One interpretation is termed 'Stress Recovery Theory' (SRT), which has been advanced and elaborated by Roger Ulrich (see Ulrich et al. 1991; for early foundations of SRT see Ulrich, 1983). According to SRT, exposure to unthreatening nature leads to more positively-toned emotional states and is better able to bring physiological arousal in stressed individuals back to more moderate levels than environments devoid of natural elements. SRT has been corroborated by different empirical studies (e.g. Ulrich et al., 1991, 2003; Parsons et al., 1998; Hartig et al., 2003; Custers, 2006; Dijkstra et al., 2008). Quite often, these stress-reducing effects are claimed to be rooted in our shared human evolutionary past, during which early humans were deeply dependent on nature for their subsistence and survival (see especially Ulrich, 1993; also Heerwagen and Orians, 1993; Lohr and Pearson-Mims, 2006). In particular, vegetative elements were a source of food and medicine, and offered early humans opportunities for prospect and refuge (e.g. from weather conditions or predators). Ulrich (1993) contends that individuals who genetically

* Corresponding author.
E-mail addresses: yannick.joye@hiw.kuleuven.be (Y. Joye). kim.willems@uhasselt.be (K. Willems), malaika.brengman@vub.ac.be (M. Brengman), kwolf@u.washington.edu (K. Wolf).

1618-8667/$ - see front matter © 2009 Elsevier GmbH. All rights reserved.
doi:10.1016/j.ufug.2009.10.001

retained restorative responses (i.e. stress reduction) toward these natural elements had higher survival chances than those who had not evolved such a hardwired trait. This retention also explains why the stress-reducing effects of (unthreatening) nature are still widespread among modern-world individuals. (Note that greenery also positively impacts behavioral states that are closely related to stress, such as higher frustration tolerance (Cackowski and Nasar, 2003), prolonged pain tolerance (Lohr and Pearson-Mims, 2000), and alleviation of states of anger (Kweon et al., 2008).)

A second interpretation of restoration builds on the finding that unthreatening nature – and especially vegetation – is able to restore and refresh the ability to focus or direct attention. Directed attention is a faculty that is deployed during tasks that require concentration, such as proofreading or studying. This second interpretation of restoration has been developed by Kaplan and Kaplan (1989) and Kaplan (1995) and is known as Attention Restoration Theory (ART). What is crucial about directed attention is that it can be subject to fatigue and depletion. A degraded capacity to direct attention can be associated with degraded cognitive capacities, difficulties in controlling (misplaced) behavior, negative personal and interpersonal reactions, and so on. Central to ART is the fact that environments which are characterized by *soft fascination* are uniquely capable of recovering Directed Attention Fatigue (DAF). Soft fascination implies that an individual's attention is captured in an undemanding and effortless manner, thereby allowing attentional resources to recuperate (Kaplan and Kaplan, 1989; Kaplan, 1995; Herzog et al., 1997). Although ART does not exclude that non-natural settings can rest directed attention (e.g. Kaplan et al., 1993; Ouellette et al., 2005), restorative research experiments have to this day mainly focused on the restorative qualities of *natural* settings, and elements (e.g. Hartig et al., 1991; Tennessen and Cimprich, 1995; Hartig et al., 2003).

The studies revealing the aesthetic and restorative effects of environments containing greenery are frequently considered as supporting evidence for the 'biophilia hypothesis' (Wilson, 1984; Kellert and Wilson, 1993). Biophilia is commonly defined as the inborn emotional affiliation with natural processes and elements (like greenery), which is claimed to be the result of human evolution in a natural environment. Although it still needs to be established to what extent biophilia is hardwired, the numerous environmental psychology studies on nature's beneficial effects leave little reason to doubt that humans emotionally relate to (certain) natural elements in positive ways. Nowadays, the upcoming field of 'biophilic architecture' has fuelled a renewed interest in biophilia. Central to biophilic architecture is that it attempts to tap the positive or 'biophilic' effects of nature in architecture, either by including actual nature (e.g. real plants) in architectural environments or by symbolically referring to nature in architectural design (e.g. nature ornament) (Kellert, 2005; Joye, 2007; Kellert et al., 2008). This new design trend draws its relevance and urgency from the fact that opportunities for contact with nature are often in decline in current modern living environments. With increasing population levels and urbanization, this alienation from nature could become further exacerbated, with the result that an increasing number of individuals will lose the opportunity to experience nature as a source of psychological and physiological health and enjoyment. Biophilic architecture does not imply a romantic return to nature but acknowledges urban living as a reality. It therefore reconciles both aspects (i.e. nature and architecture) by deliberately integrating natural forms, elements and conditions into the built environment (for specific design proposals, see Kellert, 2005; Joye, 2007; Kellert et al., 2008).

One straightforward biophilic design strategy consists of integrating *greenery* into the urban context; see Kellert et al. (2008) for concrete design suggestions. However, since stores and commercial settings constitute a significant part of the urban fabric, it is not unimaginable that the associated stakeholders (i.e. shop-owners, tenants, employees, salesmen) will be reluctant to integrate plants or trees in the urban areas where their businesses are situated. For example, there may be concerns about whether the costs of maintaining urban vegetation will outweigh possible benefits or about the fact that trees may reduce the visibility of storefronts or obstruct access to products. The central aim of this paper is to shed further light on this issue and to inquire what the possible effects of biophilic design strategies could be in these contexts. Do such interventions indeed have adverse effects for retail businesses or do they rather provide them with a strategic advantage? We will denote the strategy to consciously bring nature into retail areas and stores by Biophilic Store Design (BSD). In the ensuing sections, we will explore the possible effects of BSD from two perspectives. First, we will examine from a conceptual perspective the question of whether greenery's possible restorative potential could be effective for retail settings, and what the specific effects of this could be for consumers, shop owners, and employees. We will then attempt to back up this conceptual discussion by reviewing existing empirical research, mainly done by Kathleen Wolf, into the possible positive influences of urban vegetation on commerce. These two lines of inquiry will be followed by a discussion and a presentation of ideas for future empirical research.

An exploratory study of the restorative potential of Biophilic Store Design

Introduction

A common finding in preference studies is that introducing greenery enhances the perceived aesthetic qualities of urban, man-made environments. Consistent with this, empirical research shows that green interventions also improve the visual outlook of commercial/retail environments (see the next section for an in-depth discussion of this issue). As empirical inquiries have suggested a close link between aesthetic judgments and restorative experiences (Van den Berg et al., 2003; Dijkstra et al., 2008), the question arises as to whether including foliage in such contexts may induce restorative responses as well. Note in connection with this that restorative experiences such as stress reduction and attention restoration induced by greenery have been found to occur in different contexts, such as hospitals (Dijkstra et al., 2008), office environments (Kweon et al., 2008), roadside views (Parsons et al., 1998; Cackowski and Nasar, 2003), school settings (Han, 2009), home environments (Kaplan, 2001; Hartig and Fransson, 2009), and laboratory settings (Berto, 2005). The upshot is that there does not seem to be an a priori reason to assume that restorative effects would not take place in shopping contexts as well. In the following sections our objective is to develop a framework that provides evidence for the claim that BSD can facilitate restorative experiences (i.e. stress reduction and attention restoration).

Conceptual framework

The elaboration of this framework will be essentially based on conceptual grounds. In particular, we will review research findings indicating that the act of visiting urban commercial areas is frequently experienced as stressful and attentionally taxing (Fram and Axelrod, 1990; Fram and Ajami, 1994). By coupling these findings to the empirical literature on the restorative effects of