The importance of street Shade for downtown traditional retail business

Dulce Marques de Almeida
Arquimestria Arquitectos Associados Ltd.

Contact details:

Prof. Dulce Marques de Almeida
Arquimestria Arquitectos Associados Lda.
Rua do Heroísmo, Nº 6
4300-253 Porto, Portugal

Mobile: +351 91 684 6952
Fax: +351 22 537 6510
Email: arquimestria@yahoo.com

Abstract

The acknowledged environmental, economical and social damage caused by motorized transport has generated much effort by many cities around the world, towards containing motor vehicle growth.

Emphasis on walking is one of the emergent forces contributing to the change. Car traffic control and pedestrian streets are implemented aiming to improve the quality of urban life.

However, when designing for pedestrians, the characteristics of the people and the specificities of a place are often not taken into consideration, thus leading to unexpected outcomes.

Details such as a shaded walkway might have a significant impact on the pedestrian behaviour and choices. They could attract or discourage people to walk in a particular side of the street. This apparent small gesture can be decisive for the success or failure of a retail shop, or even a “café” esplanade located in the “wrong” side of the street.

This study addresses pedestrians’ behaviour during warm to hot climate conditions and the relationship between street shade, and shopping preferences

It employed a survey based on intercept interviews, performed in the downtown of a Portuguese town (Bragança, Lat. 41ºN). Simple statistical analytical methods were used to identify relationships between “Shade” and pedestrians behaviour. The analyses considered as variables demographic and personal characteristics as well as environmental conditions.

Findings indicated that the willingness to walk for shopping in summer is significantly influenced by the presence or the absence of shade. It was established that the influence of gender and age plays a greater role when trips with a particular destination are considered.
It was concluded that in warm to hot climate conditions shade is important for street retail success and it is certainly critical when encouraging walking is considered as an alternative to driving an air conditioned car to the nearest shopping center in the suburbs.

Biography

Dulce Marques de Almeida is an architect in practice a professor teaching environmental architecture at the ULP in Porto, Portugal and a researcher on environmental design issues. Her ongoing work focus on the impact of design decisions on the microclimate at street level and the development of strategies to improve the comfort conditions for pedestrians as a mean to promote urban walking.

Qualifications

PhD in Environment, Energy and Sustainable Design, Architectural Association School of Architecture, London, UK.
Master in Bioclimatic Architecture, Witwatersrand University, South Africa.
Bachelor in Architecture., Escola Superior de Belas Artes, Lisbon, Portugal.

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Introduction

"Shade" is a variable to be taken into consideration when aiming for the rehabilitation of traditional street retail business or its implementation in locations characterized by outdoor hot discomfort conditions for pedestrians (Marques de Almeida, 2006).

An ongoing study being performed by the author since 2004 (Marques de Almeida, 2006, 2007, 2008) in the Portuguese town of Bragança, related to the impact on walkability of environmental factors and climate control at street level, created the opportunity to observe and formulate some empirical questions, conducive to a positive contribution to the present challenge of revitalising city centres. This article refers to two of them:

1 - Is shade in summer – its existence or absence – a significant factor to the success of outdoor activities and business such as café esplanades?
2 - Is it possible to evaluate a non market good such as shade?

Brief Introduction to the City of Bragança

Bragança is a small Portuguese town (population 35 000), capital of the District with the same name, located in the north/east mountain region of Portugal "Trás-os-Montes e Alto Douro", 255 km northeast of Porto and 22 km from the Spanish border.

Its geographic position at 700m of altitude, Lat. 41º 49' N and Long. 6º 46' W, determines the continental climate of Bragança characterised by a dry warm to hot summer season described by its inhabitants as "three months of hell".

Bragança is an important reference in Portuguese History. It was the "House of Bragança" who provided the kings of Portugal for the last three centuries of its monarchy (Republic in 1910).

With a significant historic heritage, dating from the Celtics, Bragança stands today as one of the prime destinations for Portuguese historic and culture tourism.

Rehabilitation of downtown

Bragança was one of the first Portuguese towns to implement a rehabilitation programme of the downtown area (1999-2007). Significant urban renewal works included:

- Improvement of public Infrastructures (water, sewer, roads, street lighting)
- Rehabilitation of façades and roofs to the houses located within the city wall
- Incentives to private investment on downtown building renovation.
- Traffic Calming
- Pedestrians' street network stretching from downtown to the riverfront.
- Riverfront walking and cycling tracks.

The drawing on Fig. 1 shows a plan of the city center of Bragança, with the geographic limits of the rehabilitation programme phasing.

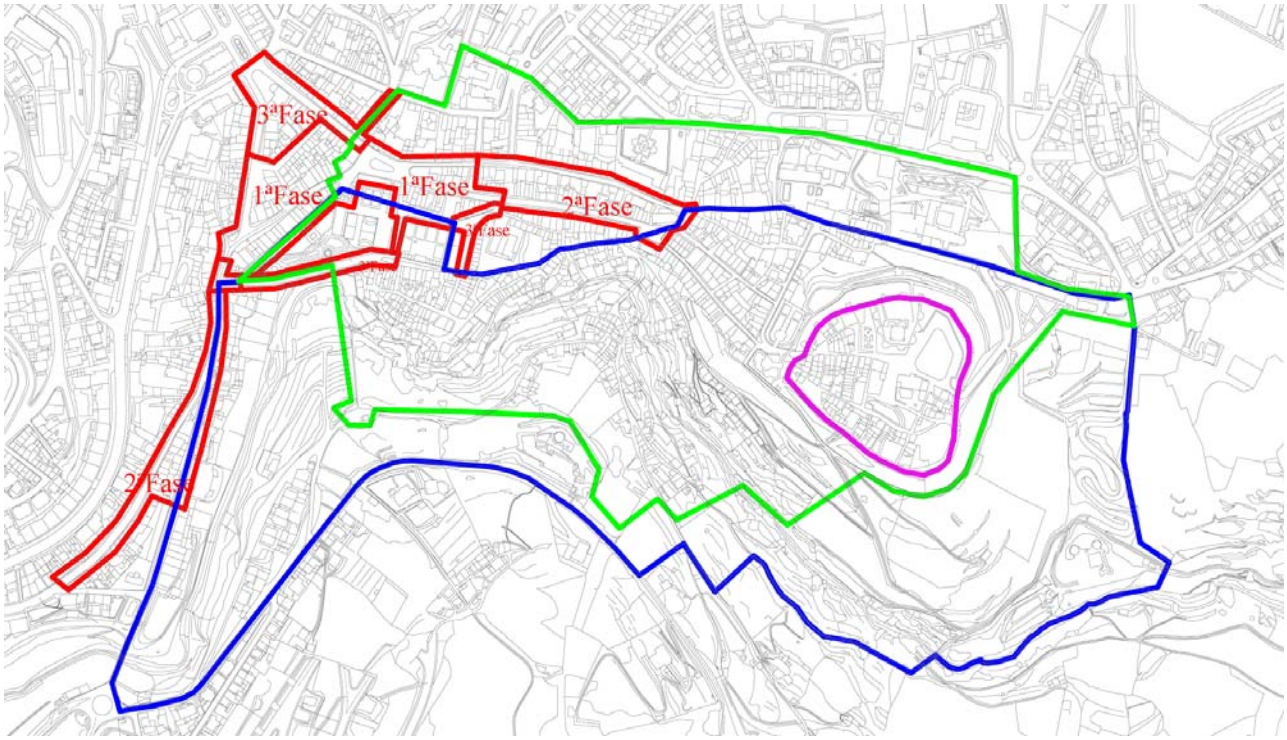


Fig.1 Rehabilitation of downtown Bragança, Portugal
Source: Courtesy of Municipality of Bragança

The "Walkability" Study

As referred above the study was performed in Bragança. Bragança was chosen as the field for research due two main factors:

1 – Its climate is characterised by a 3 month of warm to hot season (essential condition to enable assessing the value of shading on "walkability")
2 – The implementation of a rehabilitation programme in the historic city centre of Bragança (1999-2007) anticipated the possibility of pursuing investigation related to pedestrians' behaviour.

The study includes surveys based on intercept interviews complemented by, real time climate monitoring, site observations and photographs.

Three premises were assumed:
1 - Climate conditions are a major factor influencing urban outdoor activity and walking. From the latter, in turn, greatly depends the street vitality and the city sustainability.
2 - The first action to be taken to mitigate hot conditions outdoors in summer is to intercept solar radiation - the most important source of heat gain - by providing shade to both surfaces and people.
3 - Strategies capable of mitigating street thermal discomfort should be considered and actions implemented in order to create microclimate conditions capable of encouraging walking and activities outdoors.

Photographs were taken to several gathering places (Marques de Almeida 2007) as a mean to register pedestrian's behaviour on route choice and the way they use the urban outdoor spaces in summer in respect to shade availability.

The places to be photographed were defined in advance. They were chosen according to their importance as key amenity to the community's quality of life and the "livability" of downtown Bragança, together with their location in terms of their exposure to solar radiation along the day.

Outdoor Café esplanades were among the subjects to be analysed. This article presents some arguments drawn upon the observations of two selected street Cafés, located at corner sites of the major connective streets within the city center.

Photographs were taken during August (12th, 13th and 16th) on two week days (Friday and Tuesday) and on a Saturday. Preference was given to the cases where a distinct timing, in shade and in the sun, was identified. The aim of this survey was to investigate if various conditions of sun exposure would agree with different patterns of occupancy.

Fig. 1, 2 e 3 show two of the cases surveyed during summer time. These Esplanades of two different cafés, are located downtown at about 250 meter apart from each other. Their closeness created the possibility of comparing the costumers' affluence to these places by observation while taking pictures of both esplanades at the same hours, along the day.

The esplanades have different orientation towards the sun and as result they are in the sun and in the shade at different hours. It was observed that depending on which esplanade is in the shade, that one would show more costumers, while the other esplanade exposed to direct sun would have very few customers or none at all. Furthermore, when the sun "moves" towards the west the occupancy pattern reverses, following the shaded spots available at the other café.

These observations are quite revealing in terms of the importance of shade on the costumers preference for one place or the other. In the particular case of outdoor activities, which function takes place only during summer, such as some street restaurants and café esplanades, one could conclude that sun exposure (as a result of orientation / and location) is an important variable to considered, when estimating the success of a Café with outdoor service.

Although shade may be provided through small devices such as umbrellas or awnings, they would not solve the problem of heat discomfort outdoors if the surrounding surfaces such as pavements and walls and other built structures are exposed to direct sun radiation for long periods of time.

Therefore, in locations with warm to hot conditions, shade must be considered at the urban scale and viewed as a public need in terms of environmental quality and as an walkability factor (Marques de Almeida, 2008).

Although trees may be the ultimate environmental shading device, with proved varied benefits to the urban environment, (Laverne and Lewis, 1996; Beckett et al., 2000; Maco and McPherson, 2003; Nowak et al., 2006), shade can be provided by different means, trough unlimited design solutions, (built structures or green elements) depending upon creativity and various particular factors, such as feasibility, economical and local requirements constrains, among others. Nevertheless, whatever solution may be chosen it must be part of the urban design concept.

Fig. Nº 2:
Café Esplanades
Site location: Café A, Café B

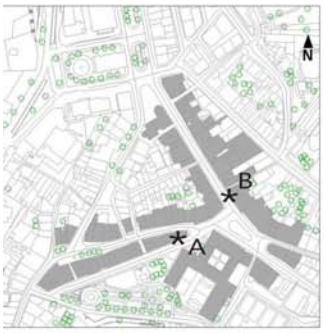


Fig. Nº 2a:
Café Esplanades
Below: Photographs taken along the day. 12th Aug. (Friday)

South Side -A

East Side - B

10:00H / 11:00H

12:00H / 13:00H

14:00H / 15:00H

16:00H / 17:00H

Fig.2: Photos Esplanades 12th August (Friday), Bragança, Portugal

Fig. Nº 3:
Café Esplanades
Site location: Café A, Café B

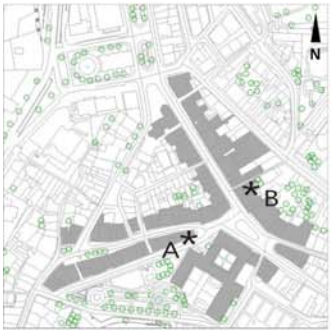
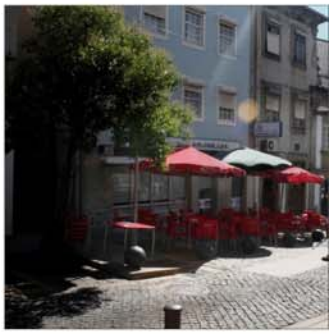


Fig. Nº 3a:
Café Esplanades
Below: Photographs taken along the day. 13th Aug. (Saturday)

South Side -A

East Side - B

10:00H / 11:00H



12:00H / 13:00H

14:00H / 15:00H

16:00H / 17:00H

Fig.3: Photos Esplanades 13th August (Saturday), Bragança, Portugal

Fig. Nº 4:
Café Esplanades
Site location: Café A, Café B

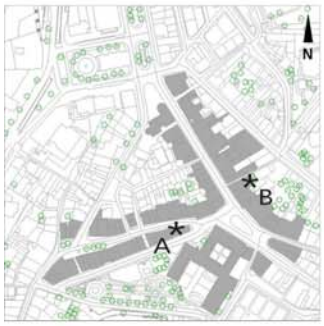
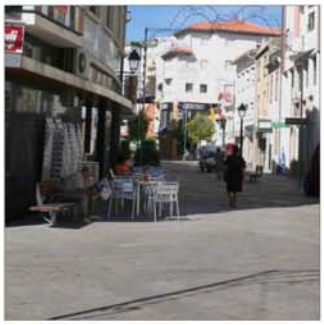


Fig. Nº 4a:
Café Esplanades
Below: Photographs taken along the day. 16th Aug. (Tuesday).

South Side -A

East Side - B

10:00H / 11:00H



12:00H / 13:00H

14:00H / 15:00H

16:00H / 17:00H

Fig.4: Photos Esplanades 16th August (Tuesday), Bragança, Portugal

The Economic Factor

Researchers from various fields of Science, involved in finding solutions to the present urban environmental problems are giving increasing attention to the importance of urban shading.

However, the return of urban shading strategies investment, in terms of environmental benefits is most of the times overlooked by policy makers and not taken into serious consideration by town planners and urban designers. One of the reasons behind this situation is the difficulty of valuing a public good that does not have a market value yet (further referred as non market good). This is the case of a change in an environmental amenity, such as the shading of the public urban space.

Stevens (2005) explains that in order to implement a policy change, decision makers need to know the likely economic effects of a policy change before they occur. It is, therefore, necessary to anticipate the changes in economic behaviour that are expected to follow the implementation of a new policy.

In other words in the case of policies that mandate urban shading it is imperative to valuate the benefits derived from the implementation of a policy that provides shading over pedestrian routes and outdoor public places. For this purpose the Contingent Value method of environmental goods valuation could be applied.

Contingent valuation - CV, is described by Mathis et al (2003) as a method of estimating the economic value of non-market environmental goods (and public goods in general).

An example of CV method application is the valuation of the benefits of air pollution reduction (Ridker and Henning, 1967). Contingent valuation was also used in several studies to estimate the economic value of tree cover in urban areas, (Treiman and Gartner, 2006; Veseley, 2007).

Breffle, W et. al. (1997) further explains that this CV method estimates individuals' Willingness To Pay – WTP, for some policy, such as a change in environmental amenities. It is based on information gathered through survey questionnaires on how much people (or specific groups) would be willing to pay to have a particular policy implemented.

The Willingness To Pay – WTP reflects the WTP in the form of higher prices, taxes or fees

The most common mean of funding a public good is through consumers payments in the form of higher prices, taxes or fees, thus when the interviewees are asked how much they are willing to pay for a particular amenity, it usually refers to this traditional manner of retribution.

Mathis, M. et. al. (2003) advances some recommendations to guide the design of a Contingent Valuation survey with the purpose of eliciting willingness to pay (WTP) for a particular hypothetical good or service. Among other advices he refers the need to include detailed descriptions, of the policy that respondents are asked to value, highlighting several points that should be addressed in the questionnaire:

a) - the environmental good or service itself
b) - the expected effects of the proposed policy
c) - the method and structure of provision
d) - the probability of success
e) - the expected outcome if no action is taken
f) - the range of substitutes for the good or service being valued, and
g) - the method of payment.

Any CV survey should be pre-tested and preceded by a survey sample. An estimate of the benefits associated with the environmental amenity in question would be determined from the survey results.

Conclusions

Street activity is intimately related to outdoor climate conditions. Comfortable outdoor conditions encourage walking and contribute to a liveable and prosperous community. In the case of outdoor hot discomfort the first action to be implemented is the minimizing of the most important source of heat gain outdoors – direct solar radiation – providing shade.

A study performed in Bragança included a survey of two esplanades. Photographs taken in various hours along the day, during different days in summer, give evidence to consumers' preference for shaded in summer.
Shade becomes a valuable environmental asset to urban living with a non market value, difficult to quantify.

A contingent value survey sample is to be performed in order to evaluate the non market value of "summer urban shade in public spaces". Information regarding the "willingness to pay" for "Shade" as a public good, will give a dimension of the importance attributed to "Shade" by the various sectors of the population.

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