

ASSESSMENT THE FUNCTION OF TREES AS A LANDSCAPE ELEMENTS: CASE STUDY AT MELAKA WATERFRONT

Mohd Amirul Hussain^a, Yunos, M. Y. M.^a, M. A. Othuman Mydin^b,
Nangkula Utaberta^a, Nor Atiah Ismail^a

^aDept of Landscape Architecture, Faculty of Design and
Architecture, Universiti Putra Malaysia, 43400, Serdang, Malaysia
^bSchool of Housing, Building and Planning, Universiti Sains
Malaysia, 11800, Penang, Malaysia

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*Corresponding author
mohdyazid@upm.edu.my

Graphical abstract



Abstract

In many waterfront developments, particularly in the Heritage & cultural waterfront, most of developments were abandoned. Supposedly vegetation arrangement at waterfront has designed to be a great function for people living, working, shopping, sharing, walking and motoring in and through the townscape. This paper examine on trees as a landscape element at the local cultural & heritage waterfront as a result to understand about the function of trees in role to enhance the characteristic of places. Hence, direct observation has been used specifically in this study. The observation was conducted by some evidence such as picture observation, news, magazine and interview. This outcome can be helpful for the developer, policy makers and master planner to facilitate in documenting the function of the trees in environment development, as well as help designer and city planners to have a deeper perspective of trees perceptions and opinions in tropical climate.

Keywords: Heritage & cultural waterfront, function of tree in design, landscape element

Abstrak

Dalam perkembangan dermaga banyak, terutamanya di kawasan dermaga Warisan & budaya, kebanyakan perkembangan ditinggalkan. Kononnya susunan tumbuhan di pinggir air telah direka untuk menjadi fungsi yang besar bagi orang-orang yang hidup, bekerja, membeli-belah, perkongsian, berjalan dan permotoran di dalam dan melalui seni bandar tersebut. Kertas kerja ini mengkaji atas pokok sebagai elemen lanskap di kawasan dermaga budaya dan warisan tempatan akibat memahami tentang fungsi pokok dalam peranan untuk meningkatkan ciri-ciri tempat. Oleh itu, pemerhatian langsung telah digunakan secara khusus dalam kajian ini. Pemerhatian yang telah dijalankan oleh beberapa bukti seperti pemerhatian gambar, berita, majalah dan temuduga. Keputusan ini boleh menjadi berguna untuk pemaju, pembuat dasar dan perancang utama bagi memudahkan dalam mendokumenkan fungsi pokok dalam pembangunan alam sekitar, serta bantuan pereka dan perancang bandar untuk mempunyai perspektif yang lebih mendalam pokok persepsi dan pendapat dalam iklim tropika.

Kata kunci: Dermaga warisan & budaya, fungsi tumbuhan di dalam reka bentuk, element lanskap

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1.0 INTRODUCTION

Most of people take it for granted that trees are only essential part of the cities of this country and not less more than that ([1]. According to Anthony [2], when trees as a part of landscape elements, we seem to

have more ambiance towards trees and its function for citizen.

According to [3], where there is room we like to have them, but where there are pressures on space, we will do without them. According to that, we notice when space became the main factor to

avoid from planting the trees at the site, in these situation suitability of trees characteristic for an example is canopies and shape are important to choose according to the space provided.

We were notice, trees are very important to providers of shade, particular in high temperature places seem like in Malaysia.

According to issues we has been notice why trees been so important elements in Townscape development due to solve the issue and also to enhance the visual effect toward the site. This study was trying to achieve two objectives; A) to examine on trees as a landscape element at the waterfront as a result to understand about the function of trees in role to enhance the characteristic of townscape. B) To documents trees determinants as a visual effect for townscape image and identity. Reviewing the literature found that four main factors (functionality, safety, aesthetics, form) are commonly used to understand characteristic and walkability of trees in environment.

In the first stage the research will begin by elected the local case study in Malaysia waterfront.

In the second stage, Melaka waterfront were selected as the target locations for observation data collection in deep.

On the third stage, subject were deeply studies on trees along the case study location due to examines the trees as a landscape element at the waterfront and as a result to understand about the function of trees in role to enhance the characteristic of townscape according to the evidence and literature review.

In this study qualitative method are fit to the issue and objective. The evident was come from many different sources: such as, observation, noted, user opinion, personal journal and news clips from many source namely internet, books and media social sources

This paper study will do to understand and examines on trees as a part of landscape element at the waterfront area. The result is to understand and to create conceptual framework about the function of trees in role to enhance the characteristic of townscape.

Analysis indicated that user were more concern about functionality rather than safety, aesthetics and trees form. Hence some of the respondents are not really noticed what is the other function of trees in landscape design. On the other hand they just noticed that trees only provided a shade for user and particularly majority of respondents reported shade of canopies as the most important function of the trees in the environment of.

This research can be helpful for the developer policy makers and master planner to facilitate in documenting the function of the trees in environment development, as well as help designer and city planners to have a deeper perspective of trees perceptions and opinions in tropical climate and particularly Malaysia.

2.0 LITERATURE REVIEW

2.1 Overview of Historical & Cultural on Waterfront Development

As a result of the City Beautiful Movement and the transformation of city's economy from industrial to service during the middle of the 20th century [4], many of industrial activities and port facilities in cities centers moved to outside and left vast urban lands especially along waterfronts after the decline of old harbor sites [5]. These lands are suitable urban areas to redevelop and redesign as new public open spaces to reflect a new image of these cities through providing public spaces for recreational and tourism activities [6]. The first attempts of redeveloping waterfronts begun in North America during the 1960s in Baltimore and Boston, then in San Francisco. Where, these projects became later models for the following revitalization projects developed in Europe and North America [7]. In the 1970s this kind of development gradually spread to the other parts of the world [8].

2.2 The Landscape & Natural Elements

The Landscape Element uses complementary streetscape design features to provide an attractive and inviting route for a variety of users. The landscape elements design recognizes these variations in the visual and land use character of the corridor. Landscaping can visually highlight certain areas such as Intersections or staging areas and screen undesirable views such as industrial structures [9]. Benton [10] opines that most of cities have gardens, Small Park or large parks and other garden amenities which tell how society viewed the natural world. According to him, garden is an arrangement of natural which plants materials and ordering principle are determined. The most dominant landscape elements in the old town center is the water bodies namely the river or the sea and other else is vegetation [12].

2.3 Trees as a Landscape Elements

The function of trees in part of landscape elements is not also for greenery space and beautification but tree canopies in particular provide shade and cooling, while wind rows or hedgerows provide some measure of wind and dust protection [13]. Landscaping also can provide habitat for birds and other wildlife species. Trees are very important providers of shade, particular in high temperature [14]. This has been an important reasons why trees have been an important thing in landscape elements for centuries been planted along the promenade, esplanade and roadsides along the waterfront in sunny and tropical climate.

2.4 Trees in Design

The most persistent problem confronting every designer who works with trees is their seductive appeal. The remarkable aesthetic power of trees distract artists so much that their potential for building dense organic compositions has been replaced by an over-refined, precious reverence for individual trees [15]. Trees are the most exquisite and the most sparingly apportioned raw material of urban design and our city display a mere dollop of their sensual color and form [16].

2.5 The Functions of Vegetation as a Visual Effect

The function of vegetation is more to environment control, esthetical for place beautification and climate control.

Environment

The function of vegetation is to reduce the dazzled from the sun or hard light, besides that vegetation also functions to create a direction, control the noise or dust and for control the soil erosion.

Esthetical

The beautiful of vegetation shape and texture of plant can reduce the eye sore toward the concrete jungle. Vegetation also can create a good moment by capture the place in term of sizes, color, and texture.

Climate

The function of vegetation is to give a shelter for the user; however the other function of vegetation is for control the wind direction and as a wind breaker during the bad weather. As a result, by planting lot of vegetation, we can reduce the hot temperature toward the place and surrounding.

3.0 METHODOLOGY

Base on the research question and an objective, qualitative methods fits into this study. This section measures the function of trees as a landscape element in environment. Observation is the best method for social science research. An observation has two important advantages: 1. The reality-covers events in real time. 2. Contextual-cover context of event.

3.1 Observation Study

Qualitative research is appropriate for any research which is involve in and focused on phenomenology, symbolic interaction and post-positivism; meanwhile quantitative research is usually associated with positivism.

In this case study direct observation has been used specifically to have the result whether, hence Melaka waterfront were be elected to finding the answer.

Thus, these case study was selected according to the vote and review from many evidence that

specific more to identity, sense of place, sense of memories, physical aspect and cultural & heritage aspect.

Furthermore, this can involve observations of meetings, sidewalk activities, factory work and etc. less formally, direct observations might be made throughout of field visit including those occasions during which other evidence, such as that from interviews, is being collected it's also conducted by a few evidence such as picture observation, news, journal, and etc. Moreover, to increase the reliability of observation evidence, a common procedure should have more than single observer to making an observation stronger.

As a result to answer researchers question, researchers was divides the issue into a three stage.

In the first stage the research will begin by elected the local case study in Malaysia waterfront.

In the second stage, Melaka waterfront were selected as the target locations for observation data collection in deep.

On the third stage, subject were deeply studies on trees along the case study location due to examines the trees as a landscape element at the waterfront and as a result to understand about the function of trees in role to enhance the characteristic of townscape according to the evidence and literature review.

Case study: Melaka Heritage & Cultural waterfront

Stunning riverside vistas, colorful pastel houses along the riverfront, and a buzzing port district are a few of the things you'll find in Melaka waterfront. Visitors can explore the city's cobbled streets by foot, and climb winding sets of steps to reach the town's best vantage points. Ride a colorful trishaw to Royal palace of Melaka to view the ancient ramparts of Malay Historic Museum, or head to downtown of Bandar Hilir to explore the bustling city squares. The old port district of Melaka rivers is the perfect place to relax by the river, while Belém includes some of Portugal historical & culture are the best museums and monuments. Families will enjoy 'Fordula de la mart', largest Malaysia maritime museum. Never less more, are perfect shade from ancient tree make Melaka waterfront more workable and cozy to visitor treasure the dazzling place. The Landscape Element of trees and other vegetation was uses in Melaka waterfront due to complementary of streetscape design features to provide an attractive and inviting route for a variety of users. According to [3], vegetation is the most important and dominants landscape elements in the old town center because it brings the characteristic and image of townscape. As we notice, the function of trees in part of landscape elements is not only for greenery the empty space and beautification but the main reasons is, trees canopies in particular provide shade and cooling, while wind rows or hedgerows provide some measure of wind and dust protection [11]. Besides of that trees also will create a sense of place

in way to enhance the identity and image of Melaka waterfront city. Figure 1 shows the best place for the ancient trees with irregular form pattern was in a central square, by which everyone's could enjoy the same trees and the same open space beneath them, Melaka waterfront square.



Figure 1 The best place for the ancient trees (Resource: www.augustana.edu)

In Melaka waterfront, there are no doubt that primary quality is that they are alive and growing, in fact of that they do not change with the seasons, that they do not show us when it is spring and when it is autumn but they show and remind us of the nature which ultimately supports us. On the other hand, they offer more than this such as their have their own beauty, and can provide a foil for the built environment. In Melaka waterfront, their uses trees to enhance the building, to add grandeur to vistas, to soften the harshness of road and beautification of landscape besides of that also for shading. Hence, trees in Melaka waterfront was break their monotony and tie them back to the landscape. As a mention in a book of Trees in the urban landscape, Melaka waterfront was play the role for thus, this visual, aesthetic, contribution of trees does not need stressing because it is so familiar. Since time immemorial human being have valued and used trees for other purpose such as for shelter and protection. This has been important reason why trees have been planted along the roadsides and open plaza at the center of squares and along the riverside. Table 1 shows the potential environments contributions of trees, shrubs, and grass: trees can have the greatest effect in Melaka waterfront

Table 1 The potential environments contributions of trees, shrubs, and grass: trees can have the greatest effect in Melaka waterfront (Source from books, Trees in the urban Landscape: [3])

	Trees	Shrubs	Grass
Air pollutions	●●●●●	●	●
Dust	●●	●●	●●
Oxygen	●●●●●	●	●
Heat	●●●●●	●	●
Wind	●●●●●	●	
Noise	●●	●	

Figure 2 shows the Melaka waterfront, Commercial riverside, large trees are foil for the built environment, beside it will create a shelter for the pedestrian user along the riverside.



Figure 2 Melaka waterfront, commercial riverside

Figure 3 visualizes the arrangement of trees along the Melaka waterfront area, the huge tree a very important to providers of shade, particularly in high temperature such as in Malaysia country, besides of that trees also will create a sense of place in way to enhance the identity and image of Melaka waterfront city [8].

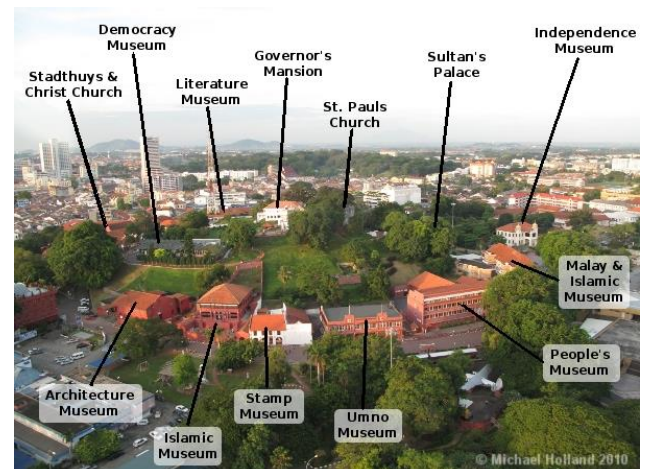


Figure 3 The arrangement of trees along the Melaka waterfront area

3.2 Tree

The function of trees is for the shelter and reduces the hot temperature. A single trunk and have a straight trunk can create a beautiful canopy. Most of the ancient tree in Melaka waterfront can produce the flower during the seasons. The example of trees is *Fragrea fragrans* (Tembusu), *Delonix regia* (Semarak api), *Cinnamomum iners* (Kayu manis) and huge ancient tree of Samanea Saman was plating along the waterfront walkways to create the natural ambiances & soften the view between the man-made structure and landscape. Thus, these plants will enhance the quality of view toward this townscape. In Melaka waterfront city, the trees were planted in a grouping that mix and match with difference types of plant canopies namely spreading form Oval shape, Pyramid shapes Round and Fountain to create an effect of forest and ornamental. However along the promenade we can easily found a pocket park, were a small shrub was planted with big tree to create the natural ambiances and ornamentals view, and are those which will not flower but are best for their evergreen foliage, shapes and ornamental look. Figure 4 shows tree was planted along the side at Melaka waterfront. Hence a single trunk tree was used and has a straight trunk and spreading form canopy that create a beautiful environment toward this area.



Figure 4 The tree was planted along the side at Melaka waterfront

Figure 5 shows that the tree was planted in a group to give the effect of ornamental looks and as a shelter for the user and pedestrian user along the riverside. Besides it does also will minimum the temperature during the hot day and also for glare control during the sunny day.



Figure 5 Tree was planted in a group to give the effect of ornamental

Figure 6 shows that the palm tree and spreading form tree was planted along the waterfront in both of side of road to create the sense of direction toward this area. On the other hand, during the sunny day, the huge fountain canopies can be a natural shelter for user along the pathway.



Figure 6 The palm tree and spreading form tree was planted along the waterfront in both of side of road

Figure 7 demonstrates the ancient tree was planted along the Melaka waterfront a long time ago to create the sense of welcoming, from the effect of spreading form copy it's will create a calmness elements and resort feeling when tree canopies move during the breeze. In many historical cultures city such as Melaka, ancient tree were symbols for such ideas as victory, peace, and fertility.



Figure 7 Ancient tree was planted along the Malaka waterfront

4.0 RESULTS AND DISCUSSION

Table 2 shows the potential environments contributions of trees, shrubs, and grass: trees can have the greatest effect in Melaka waterfront. This section examines the physical factor of vegetation that contributes to the townscape character of the cultural & heritage waterfront in Melaka. The vegetation in Melaka waterfront is considered unique compared to their old counterparts due to the significant differences in character in the form of canopies, function, characteristic, image, identity and meanings attached to the area by residents. What sets them to be unique from the newer centres and the other waterfront townscapes is also the sense of vitality through the human activities that take place on the street and the relationship between the buildings and the outdoor spaces fronting the street. An art of relationship between the buildings and their juxtaposition with the street is observed in historic townscapes where the tree and its canopies form often become important focal point that characterize the view one can enjoy in the cultural & historic waterfront townscapes. The sense of variety within uniformity is one of its strong features that make the cultural & heritage waterfront townscapes are difference than its counterpart and having a stronger sense of place.

Table 2 The potential environments contributions

Case study	Landscape elements	Types / Characteristic	Visual effect function
Melaka waterfront	Vegetation	Tree <ul style="list-style-type: none"> • Spreading • Round • Oval • Propping 	<ul style="list-style-type: none"> • Continuity • Screening • Privacy • Direction • Climate control • Esthetical • Historical value • Sense of place • Ornamental value • Identity and image
		Palm <ul style="list-style-type: none"> • Fountain 	<ul style="list-style-type: none"> • Direction • Sense of welcoming • Esthetical • Ornamental value
		Shrub	<ul style="list-style-type: none"> • Screening • Esthetical
		Climbers	<ul style="list-style-type: none"> • Screening • Esthetical
		Groundcover	<ul style="list-style-type: none"> • Esthetical • Soften the view

5.0 CONCLUSION

At the end of the top, we noticed that trees are not just for shade and wind breaker during the storm. Hence, some of seasonal interest plant is very unique, seasonal contrast and interest in landscape can present a very comprehensive picture throughout of the year, as an example in typical beech and sugar maple forest in North America, the shrub layers able to succeed in the heavy summer shade from the trees provides a sequence of interest thought the medium of the leaves, flowers or berries. Several studies have shown that the canopy of trees were changes or contrasts through the seasons are not usually very dramatic when the tree canopy comprises light foliage because there is not such a difference in illumination at ground level between Winter and Summer. On the other hand, plant forms are also the important part when we speak about the identity and image. If we accepts the definition of "form" with respect to the plants as the mass contained within extremities of growth, it is clear that evergreen and coniferous trees and shrubs will figures prominently, as well as deciduous trees and shrubs in the Summer, especially if they have a close to leaves. It is well known some of plants canopy like conical and bell-like canopy can be used in groups unless as an accent among the other plants. Although the visual differences between plants have sometimes been illustrated by attributing human personalities to them, this has been particularly true in poetry. Just as human personalities can clash or be in harmony, so have designers and theorist suggested that certain combinations of object which have distinctive form or habits produce effects of street, repost and balance. The habits and form of plant is the base of its appearances and are thus important visual factor in the way a plant contributes to the landscape. Color with respect to vegetation has a very considerable range and variety in the hue or kind of color and its density and to these are added the variation resulting from the illumination and the nature of the leaf and flower surface. Besides of the color the plants and texture are also important due to create the image and visual impact. The leaf cover of the habit and form of a plant produces a textures effect which is derived from the shapes and size of the leaves, from the way in which the leaf overlap to create shadows and from the way in which light is reflected from the leaf surface. The size of the texture units, the leaves gives a scale value to a plant in the same way that a wall constructed with bricks gives a differences impression of size compared with a wall constructed of large stones. Therefore, as results planting designs can embody strong contrasts and also subtlety in the way the visual characteristics of plants together produce a work of art however, the creation of true symmetrical effects limits the designer, and the idea of balance is a more frequent design objective. When put some balance in planting design, a symmetrical effect is

possible by placing groups of different species in such a way that the observer perceives some different symmetrical and some balanced effects in his perambulation through the landscape, and sometimes two similar groups appear symmetrically placed and sometimes two dissimilar groups are balanced and at no time is the symmetrical effect an extreme and continuous one as with an avenue. Now we understood that, planting is a part that can enhance the image and identity of place.

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