

## Study of Environment-Behaviour to Examine Intervention Impact at the Lakefront Landscape and Neighbourhood Residents' Response at Dhanmondi, Dhaka

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### Abstract

Professional interventions at the neighbourhood lakefront environments often produce superficially pleasant environment, brushing aside the place perception and place attachment of the neighbourhood residents. This research principally aimed to grasp a holistic apprehension of such an intervention entitled as 'Dhanmondi lake redevelopment project', initiated in 1998 by the Dhaka City Corporation (DCC), Bangladesh. An in-depth investigation revealed the gap between the designer's objective in transforming the waterfront environment and end-user's place perception, place attachment and behavioural response towards it. Environment-behaviour study (EBS) method is used in this research, exploring the theories of 'identity' in association with 'place'. Qualitative and quantitative research methods have been applied conjointly for data analysis. For the purpose of this case study, the lakefront is divided into five distinct zones. 150 residents were interviewed from which a sample of 30 senior residents, comprising of 6 from each of the 5 Zones, have been selected randomly for questionnaire survey. The 'mean value' for the three independent variables for 'local identity' reflected marked difference in the two environmental conditions. The 't-Test' conducted ratified the significance of variation for one of these variable conditions. Moreover, results of the research revealed that two independent variables of the four determinants elaborated in the 'Identity Process Theory', had impact on perception of place identity across residents. The redevelopment has disrupted the 'sense of place' and 'identity' of the neighbourhood residents. This research suggested a holistic perception of change in neighbourhood landscape sustainable for the community.

**Keywords:** Environment-behaviour study, intervention, lakefront landscape, neighbourhood, identity process theory

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### INTRODUCTION

Landscape features like parks, lakefronts at urban neighbourhood scale are the environmental assets for the inhabitants around it. Interventions in the name of redevelopment at these settings often produce apparently pleasant environment overlooking neighbourhood's place perception, place attachment and behavioural response towards it. Dhanmondi neighbourhood in Dhaka, Bangladesh is characterized with such

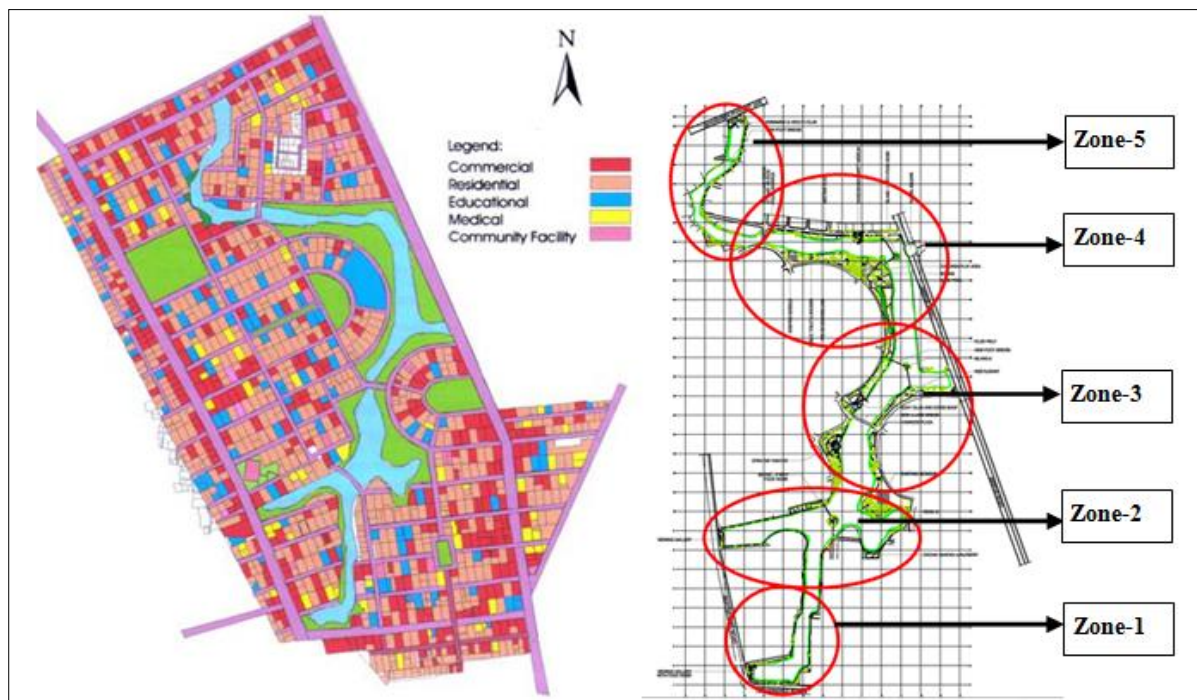
specific qualities, context and maturity<sup>[1]</sup>. In the early 50's, the area was planned as residential neighbourhood, keeping the lake, 16% of the total neighbourhood, as notable water characteristic for the community. The lake and its related public land gave a chance to provide with a choice of life and living for the locality residents. In course of time, the uncontrolled growth and betterment of private sector housing have turned the generous garden plots with single houses

into subdivided multi-ownership types. The structure and other facilities were flexible beyond limits, which in turn resulted in invasion of the lake and environmental degradation. In 1998, the Dhaka City Corporation (DCC) took initiatives to regenerate the lake and its setback area, to enhance the societal, economical, cultural and environmental sustainability of the neighbourhood. This 'Dhanmondi lake redevelopment project'

has been stretched in an area of 85.6 acres out of which almost 31 acres is of land area and rest 54.6 acres is as water body<sup>[2]</sup>.

### RESEARCH OBJECTIVE

Observation at the context revealed a gap between the planning and design intentions of 1998 intervention and a holistic understanding of the lakefront place in relation to its neighbourhood identity *vis a vis* the resultant environment.



**Fig.1:** The Area Map Prepared Showing Land Use and Different Zones Defined for the Purpose of this Study.

The multi-use public facilities incorporated in the lakefront development of 1998, attract many city dwellers in the neighbourhood. Consequently, the intervention had caused overcrowding, noise, littering, traffic congestion, lack of security; posing impact on sense of place and belongingness, living quality, comfort, safety, use pattern and overall liveability of the neighbourhood dwellers that confronted the place attachment and local identity among its neighbourhood residents. The previous studies in the context, using 'space syntax' as the tool, had shown the vibrancy of the lakefront environment indicating the success of the

1998 intervention at macro scale<sup>[2]</sup>, keeping neighbourhood resident's satisfaction aside and excluded. The present study, partially based on the M. Arch thesis conducted by the author<sup>[3]</sup>, underpins the behavioural response and satisfaction of the neighbourhood residents at micro scale, having 'place attachments in the lakefront environment before and after the 1998 intervention. The four key design aspects, namely functionality, accessibility, culture and history, and ecological environment in evaluating the lakefront development at the context in association with local identity had been analysed elsewhere<sup>[4]</sup>. It revealed that the

three independent variables had marked impact on the place perception of post-development environmental condition across residents. The present paper illustrates whether the environment-behavioural relationship at present was in threat to the Place-identity of the neighbourhood residents or not. The principles of 'Identity Process Theory' (IPT)<sup>[5]</sup> were examined as independent variables affecting the two environmental conditions.

### **Practical Significance of the Research**

Globalization and worldwide style in architecture, urban design, planning or in any other fanciful stream, broadly conceived as the movement that exceeds its edge and transnational reach over capital, talent, product, services and information<sup>[6]</sup>. In the globalising cities, urban areas strategise and re-negotiate their visions and identify *vis-à-vis* the new world order<sup>[7]</sup>. The quest for world class status is often envisioned by state and also by the professionals in practice of design and development of outdoor landscape as: parks, waterfronts, as way to attract investment, talent and tourist. Notion of 'place making' has mostly turned into 'place marketing'. Successful prototypes serve as guidelines for cities looking to reshape their landscape, irrespective of the contextual specificity.

The urban waterfronts have become a primary site of experimentation in architecture, urban design, planning and urban governance<sup>[8]</sup>. Modern tendency of waterfront development in the western context is the aftermath of deindustrialisation in downtown ports and urban revitalisation which aimed to attract people back to downtown for business, living and recreation. In North America, this trend has been traced back in the early 1960s and gradually has spread to Europe and elsewhere from the 1980s<sup>[9]</sup>. It has become a well-established phenomenon

internationally due to its economic, social and environmental benefits at present. This phenomenon is even more obvious in developing countries. At this state, a 'geography of everywhere', encapsulating what other cities have to offer, may result in a 'geography of nowhere'<sup>[6]</sup>. Scholars are increasingly urging that, rather than solely continuing to attract investment, talent and tourists, cities should also retain their unique and desirable local characteristics, advance sustainability in various levels, and create attachments with local people. More than an international image, the waterfront should create urban landscape with an authentic identity<sup>[10]</sup>.

### **Theoretical Significance of the Research**

The literature review for this study focused on relevance to waterfront development, environment-behaviour relation and identity theories in association with place. The theories in Environment-Behaviour studies (EBS) has emerged from the confluence of two sets of complementary concerns, one in the professional disciplines of environmental design and the built environment as architecture, urban design, urban planning; and the other in the domains of socio-cultural and behavioural sciences as sociology, psychology, human geography, anthropology<sup>[11]</sup>. The professional design and planning disciplines often pay insufficient attention to individual perceptions and preferences, group norms and dynamics, behavioural, social, and cultural values and expectations in the planning and design of our human environment. On the contrary, strict behavioural and social science disciplines show less concern about the relation of these social understandings and applicability to the physical environment. The EBS attempts to bridge this gap, to develop empirically-based understandings of the place-person reciprocal interactions, and to apply such understandings to the

better planning and design of the built environment.

In the EBS, as the major tool for waterfront development, the planning and urban design are seen as being about place making<sup>[10-13]</sup> aiming to construct the identities of places through manipulation of the activities, feelings, meanings and urban fabric that combine into place-identity. The qualitative dimension of place in relation to space and place making is discussed by scholars in different disciplines<sup>[14-27]</sup>.

### ***Relevance of Scale and Identity in Waterfront Redevelopment***

The 'Waterfront Communities Project' (WCP), funded by Inter Reg. IIBB and led by Edinburgh City Council, suggested in the WCP conference (February, 2007) that there are fundamentally three scales for measuring aspects of place-making for waterfronts i.e., macro-scale which refers to placing the waterfront in a broader regional, national and international context and is often nearly tied to 'place-marketing'; the meso-scale referring to how the place fits into the overall waterfront area and the surrounding city; and the micro-scale which refers to the detailed sense of place produced and the quality of the physical, visual and social realm within this. This is an essential component of what makes a place 'comfortable', 'inviting', 'attractive', 'exciting' etc. to local users<sup>[28]</sup>.

'Identity' in relation to place is a complex term to define as exemplified by the multiplicity of definitions within urban design, planning and environmental psychology literature. The terms city identity, place making and sense of place are utilized throughout urban literature to describe many of the same ideas regarding the way cities or places are perceived by those experiencing them. Personal identity is 'core and integrated belief and characteristics through which a person

defines him or her. Associating the concept of personal identity to a place, personal identity is a discourse social concept which consists of four primary elements<sup>[29]</sup>:-

1. Spatial choices that separate the place from others (location, infrastructure, communication and architecture).
2. Characteristics or qualities of inhabitants that differentiate them from inhabitants of other places (belief, custom, physical appearance).
3. Social conditions and social relations between the inhabitants.
4. Civilization and/or past times, seen as a unifying component that again connect the inhabitants to tradition and again distinguish them from others'.

The Waterfront Centre ([www.waterfrontcenter.org](http://www.waterfrontcenter.org)) issued the 'urban waterfront manifesto' in 1999<sup>[30]</sup>, setting out basic laws of waterfront development. An analysis of the values highlights potential key aspects, namely practicality, availability, civilization and history, and ecological environment. The four aspects can be seen associated with different elements that convey local identity. Reviewing literature in urban design and place identity in waterfront developments, researchers have confirmed that these key aspects are linked to the specific aspect of constructing local identity<sup>[5,10,12,13,31,32]</sup>.

### ***Identity Theories***

The works on 'Identity' had further been extended over the areas as: Place-Identity<sup>[33-36]</sup>, Social Identity<sup>[37-38]</sup> and Identity Process Theory (IPT)<sup>[5]</sup>. 'Identity' is a complex phenomenon, constructs of which are the composite factors like: genetic, social, psychological, and cultural as well as the built environment that act conjointly and combine to shape identity. Place based notion of 'identity' depicts that, when attachment to certain place grows, we first need to determine ourselves with that place, both at a smaller scale (neighbourhood, workplace, home,



room etc.) and at large scale of measurement (community, town, city, state etc.)<sup>[39]</sup>.

The people-place interaction in the process of constructing 'identity' is reciprocal, as the places where people have lived influence their environmental preferences and thus, affect the kind of the environment they may seek out to prefer. Conversely, places are also influenced by people's identities<sup>[34]</sup>. In interdisciplinary research domain, few environmental researchers used the word 'identity', something that is understandable because 'identity' is a word with indistinct borders, used in different ways within different disciplines<sup>[5]</sup>. However, the focus of the study is to explore the relevance of identity theories to examine the impact of the built and natural environment on residents' identity in association with place perception at different scale of place. This is seen as a result of holistic and reciprocal interaction between people and their physical environment.

The proponents of IPT suggest that personal identity should be conceptualised in terms of biological organism moving through time which develops through the accommodation, assimilation and evaluation of the social world. The selection of information related to this process is governed by four principles as: distinctiveness, continuity, self-esteem and self-efficacy.

Using these IPT principles that originated in social psychology discipline but modified and developed within an environmental context, it is suggested that-

1. Respondents having place attachment to certain place would express place identification through which they would be distinguishable from others.
2. Place attachments among respondents would maintain a conscious continuity,

place referent and place congruent both, to their own place.

3. Respondents having attachments to the local area would express positive self-esteem from that attachment and those who do not have such attachments would express negative or neutral self-esteem associated with their relationship with the area.
4. Respondents would feel that the local environment would be manageable which would be referred to the functional aspects of the environment, e.g., close proximity to work, and evaluation of facilities such as shops, schools etc.<sup>[40]</sup>

## METHODS

The methodology for this case study was derived from an in-depth understanding of the relevant research domains and captured multi-method approach in accordance with its research objectives. The research approach emphasised the individuality and uniqueness of the participants and setting. Reliability is obtained through cross-verification of people's accounts. The two methodological steps of the EBS technique are: (1) Observing Environmental Behaviour and Physical Traces; and (2) Focused Interviews and Standardized Questionnaires were applied for data collection<sup>[41,42]</sup>.

For the purpose of this case study and convenience of the field survey, the lakefront area was divided into five zones considering the setback conditions<sup>[43]</sup>. These five distinct observation zones had been identified with a coordinate system of convenient scale, measuring 148 feet square grid and referenced as: A, B, C...up to O on X-axis, and 1, 2, 3...up to 31 on Y-axis as shown in Figure 1. Two broad types of behaviour setting were categorized as: the outdoor amenities (plaza, squares, amphitheatre, walkways, and bridges (pedestrian and vehicular); and the indoor amenities (restaurants,

gymnasium, public toilets, souvenir shops etc.).<sup>[3-4]</sup>

The evaluation method consisted of two steps. The first step was based on the evaluation of the 'key design aspects' in association with 'place' and 'identity' as: Functionality, Accessibility, Ecology of the place, and History, Culture, Memory<sup>[3]</sup>. In the second step, the study examined how the physical changes in the neighbourhood lakefront environment impacted on the residents' satisfaction level, and thus their individual and collective socio-psychological and behavioural responses that reflected in the environment-behaviour relationships.

Sample participants of neighbour residents were selected randomly from each of the five zones. 150 participants were interviewed informally from which 30 senior residents (60+) were selected randomly upon 'willingness to respond' for detailed interview session. A 20 item questionnaire was prepared for testing the 'key design aspects'<sup>[3]</sup>. For further examination, the four principles of IPT as independent variables affecting the two dependent variables as 'post-development condition' and the 'pre-development condition', coded as *PoDeCon* and *PrDeCon* respectively, an 8 item questionnaire was prepared and ten participants were interviewed accordingly. A 'Liker-type' Scale was used considering the Level of Agreement as 'Strongly Agree', 'Agree', 'Neither Agree nor Disagree', 'Disagree' and 'Strongly Disagree' (SA, A, A/D, D, SD) with a 5, 4, 3, 2, 1 rating. Analysis of the findings using Descriptive Statistics is depicted in Table 1.

The study findings were then synthesised and analysed in terms of environment-behaviour relation, response and satisfaction across neighbourhood residents from which the conclusion was drawn<sup>[3]</sup>.

## RESULTS

The test results for the 'key design aspects' in association with 'local identity' is shown in the Figure.2 where the histogram illustrates the mean value scores for the two environmental conditions. It is clear that the mean value differences for the three independent variables functionality, accessibility and history, culture and memory are 2.38, 1.28 and 1.07 respectively with a negative value difference (-0.1) for ecology of place variable. This test is analysed further elsewhere<sup>[3]</sup>. This paper is an attempt to state whether or not, the intervention has affected the perception of place identity across neighbourhood residents at the 'post development condition'. Among the four independent variables taken, the mean differences for distinctiveness (2.05), continuity (1.85) and self-efficacy (0.35) have shown positive difference with self-esteem having negative (-0.2) impact. The test result in Figure 3 is explained here with its theoretical references.

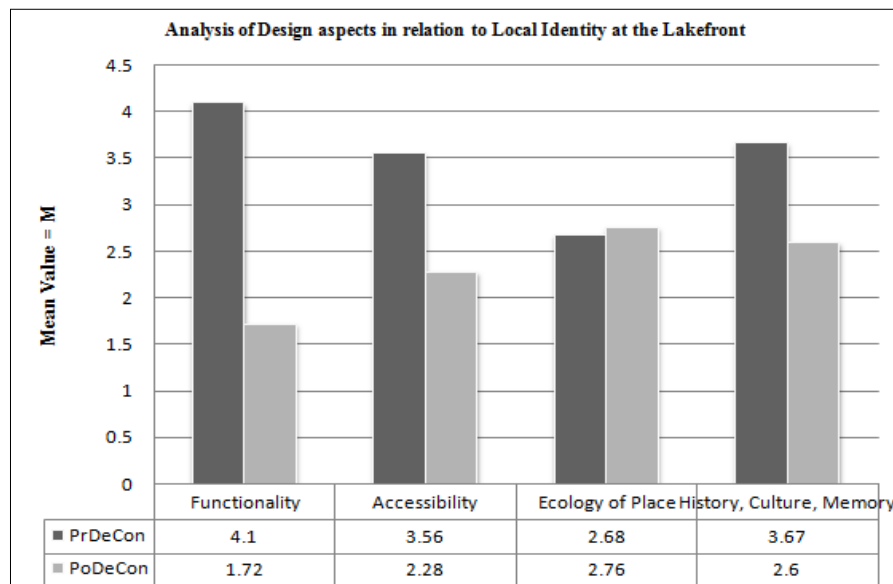
The researchers of IPT opined that the 'distinctiveness' principle would be confirmed by the distinguishable identification of the residents from others. Result with this respect revealed that respondents preferred the 'pre-development condition' as it was their neighbourhood territory. Transformation of that territory has turned the lakefront into city scale public realm. It thus has posed the sense of local identity in a threat<sup>[44]</sup>.

Evidence of continuity was expected to centre the respondent's residential history, attachment to the area and liking/disliking of the changed environment. Most of the residents have shown their degree of agreement in favour of the pre-development condition as it was a place with emotional attachments to them. City scale accessibility in to the inner areas and incorporation of new functions disrupt

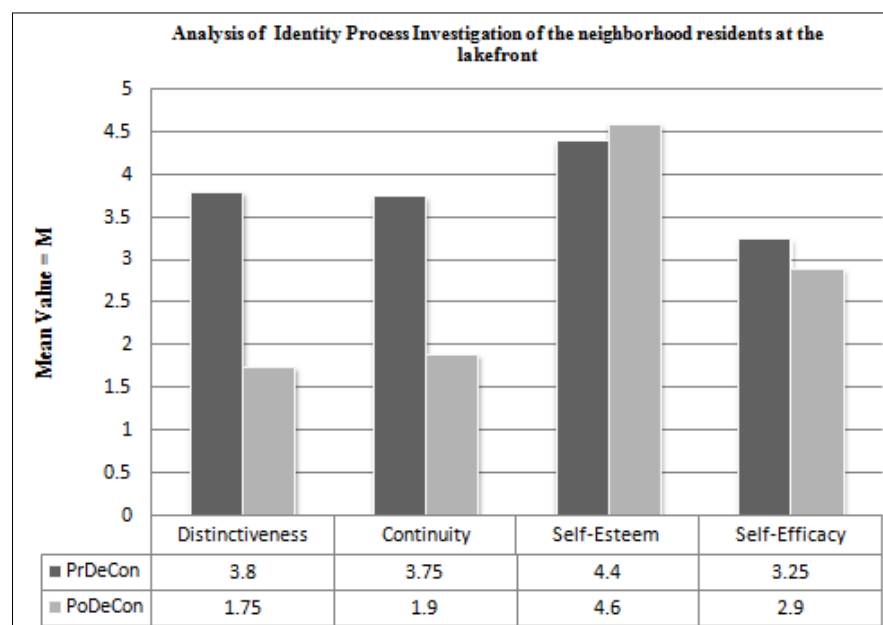
their image of the neighbourhood lakefront environment.

Self-efficacy was noted when the respondent referred to the ease (or not) with which he/she could carry out his/her daily life in that area<sup>[45]</sup>. Considering this principle of IPT, respondents' perception

of the lakefront place with respect to 'PreDeCon' and 'PoDeCon' shows no marked difference. In a sense, it shows that residents' sense of manageability and ease of living and using the environment, in both the environmental condition is almost same.



**Fig.:2: Comparative Analysis o Mean Value of Podecon and Prdecon Score for 'Key Design Aspects.**



**Fig. 3: Comparative Analysis of Mean Value Score of PoDeCon and PrDeCon for Identity Process Investigation.**

Self-esteem was reported in terms of resident's pride in living that particular

environment. In order to confirm this, the respondents had to refer to the 'levels of

agreement' of how living in the area gave them a positive feeling about themselves. In this particular case, findings indicate a new dimension of the study. Residents' response reveals that the post-development condition of the lakefront at city scale or 'National Scale' gives a sense of pride, prestige and status to them. Here, the structure of identity, as the IPT retains at its core, the 'content' and 'value' dimension are examined across the neighbourhood residents.

In content dimension, which includes behavioural styles, values, attitudes, belief systems, self-ascribed attributes as well as in group memberships; residents show some degree of dissatisfaction to the changed scale of the environment at 'micro-scale of perception'. In value dimension, that includes the value being attached to each content element<sup>[46]</sup>, the post-development lakefront condition elevates the neighbourhood resident's self-esteem as, pride, prestige, status about the lakefront place at a 'meso-scale' and 'macro-scale' of perception.

## DISCUSSION AND CONCLUSION

The results revealed that the resident's satisfaction level towards the post-development environmental condition with respect to functionality, accessibility and history, culture, memory aspects is significantly lower comparing to the pre-development condition of the lakefront. Primary reason of which was identified as-the selection and integration of newly introduced function into the neighbourhood; location of the recreational and commercial functions in the inner neighbourhood areas, and less accessibility from the surrounding public transport network in the peripheral lakefront areas; absence of community participation in terms of neighbourhood residents' need based study; and discontinuity of the residents' cognitive image of the place in their memory. The macro-scale place making approach had

ignored the micro-scale understanding of place making in that context. In accordance with the notion of 'content dimension' of IPT<sup>[5]</sup>, the incorporation of public functions at the lakefront that attract city dwellers into the neighbourhood environment seemingly show vibrancy of the environment. In 'value dimension' of IPT<sup>[5]</sup>, that intervention has turned the inner-neighbourhood lakefront environment into a city-scale public realm. As a result, the serenity of the neighbourhood scale landscape image has been transformed and disrupted the sense of place and identity across the residents.

To promote sensitive, site-specific urban waterfront planning and redevelopment that reflects the individuality of each place, a holistic understanding of the context is an essential prerequisite for success. Waterfront developments that keep local population in mind need to: provide functionality that attracts local people from different background; accessible to local people; responsive to local culture, history, memory; and local identity.

The study succeeded in identifying that the post-development lakefront condition has provided an abrupt and clear incident of socio-spatial change affecting individual and collective levels of functioning of neighbourhood living.

However, the transformed environment seemed to have elevated the sense of pride and prestige of the residents, though its relationship with the intervention could not be fully ascertained. This evaluative investigation suggests further research at the context to assess change of local identity and its association with perception of local environment with respect to scale of place making.

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