



Refurbishment of Signage and Way finding Systems: Case Study of Urban Spaces of Jaipur

Ar. Sneh Singh* and Siddhant Walia*

*School of Architecture and Design,
Manipal University Jaipur, Rajasthan), INDIA

(Corresponding author: Ar. Sneh Singh)

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ABSTRACT: Rapid expansion in the population of Jaipur and its geographical boundaries has increased its transportation and pedestrian requirements exponentially. These requirements can be met by government institutions and its policymaking agencies through better and robust infrastructure, good public transportation system and user friendly signage & wayfinding systems. The paper emphasizes the neglect of signage & wayfinding as an infrastructure in various parts of the city, especially in its tourist areas. This paper identifies the key areas where signage & wayfinding system is absent or not adequate but is crucial for smooth movement of vehicular and pedestrian traffic. The focus of this study is based on usefulness of current signage for the first time users, keeping in mind the basic urban elements. In order to fulfill the criteria of systemized urbanization paper uses the method of interview, photography, transact walk and design thinking to develop an easy infrastructure to tackle the chaos caused on the roads due to increased transportation and pedestrian requirements.

I. INTRODUCTION

Cities seen as an epitome of economic growth require good civic infrastructure to be able to accommodate the growing population and increasing economic activities (Alier, 2002). Due to lack of urban elements a city always lacks behind in providing a good civic infrastructure and so the question arises "How the city should be" which was first explained by Keven Lynch in 1960 in his book 'The image of a city.' He was the first person who while explaining about the city and the infrastructure invented the term legibility & special orientation which was later termed as 'wayfinding'. He also introduced how an individual can navigate the urban spaces through districts, landmarks, nodes, edges & paths (Lynch, 1960). According to him the cities are like temporal art where changes happen continuously and spontaneously so there is never a final 'city' (Lynch, 1960).

In order to understand the city visually, it is important for the city to be legible. Being legible here means more like a handwriting which can be understood by the writer but for readers or users, it is important how tidily it's written, its text size, typography & the presentation. Cities as a concept are complex and hence none of our Indian cities are easy city. For first time visitor it's jungle of roads. Even for architects and planners it's impossible to change these layouts & complexity of the city built forms.

Jaipur was founded in 1727 by Maharaja Jai Singh II (GOI, 2015). It was one of the few planned cities of its time. With the change in time, increase in geographical limits both horizontally and vertically and increase in population has made it difficult to locate places in the city. In order to solve this difficulty of location a well-defined signage and wayfinding is necessary to make it convenient for the people to have a better look of the city.

In order to understand the implications of legibility, it is important to know its essential aspects. It has two aspects which are as follows: first graphical communication and second built environment. These above two aspects are crucial in connecting people to place which is termed as EDG (Environmental Graphic Design). This EDG comprises of three main components:

- 1) Signage and wayfinding (which helps people to navigate);
- 2) Interpretation (connect story to the urban space);
- 3) Place making (an image to urban space) (Wayne Hunt, 2015).

The paper covers the first component of EDG which is signage and way finding. It can be defined in 2 ways active and passive. Passive way finding are more related to the range of clues or qualities of the place, landmarks, gates and even sometimes building types. These passive wayfinding helps the travelers in relocating themselves in creating a mental map to reach the destination.

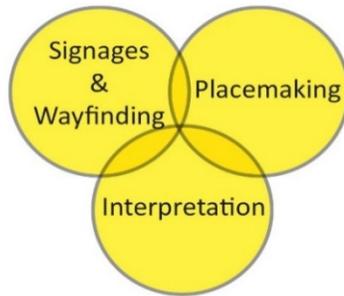


Fig. 1. Three main components of environmental graphic design.

These maps are individual personal perception of understanding the route to reach the destination. The active wayfinding systems works along with the passive wayfinding clues, which has to be: simple (so the language can be easily understood); intuitive (spontaneous); logical (based on common sense); minimal (so can be read in least possible time) (Wayne Hunt, 2015).

This paper finds out the gaps in the existing signage & wayfinding systems in the theory and the practice under the real life environmental condition. As a pilot study the paper chooses the area of 2.5 kilometers from SahkarBhawan Circle to Indra/JDA Circle in the city of Jaipur. The said area has been chosen because it is centrally located and connects the prominent destinations like Vidhan Sabha, Sawai Mansingh Stadium, Airport Road, Government Office buildings (SahkarBhawan, Jaipur Development Authority), renowned Hospital and School buildings. In comparison to other city areas in the city this stretch has better signage count and wayfinding systems.

II. METHODOLOGY

The paper uses the survey method to understand the signage and way finding already existing in the city. The survey includes photography, interviews, transact walk and design thinking.

III. PROBLEM IDENTIFICATION

The paper identifies the requirement of modification at initial stage of signage & wayfinding planning. The decision point are kept very close to the installed signs which should be technically thought. It is always preferred to have at least 50 meters of buffer between signage and decision point for effective vehicular signage. The development of decision diagrams are based on speed and motion of the user. Reviewing sight line and essentiality of adequate lightening at a regular distance should be emphasized while planning. In order to help the tourist enjoy the city's scenic beauty it is important to have pedestrian signage at regular

interval. Pedestrian signage helps in understanding the city routes & important destination properly. These pedestrian signage carry information which includes YRH (You are here) maps or directories of important destinations. Signage can be categorized on the basis of its message type: directional signage (to direct people); informational signage (to convey important information like directory); identification signage (identifying public places); regulatory signage & advertisements (traffic regulatory signage & advertising panels) (Gibson, 2009).

The Bhawani Singh Road includes 4 nodes named as Sahakar Bhawan Circle, Ambedkar Circle, Rambagh Circle & Indra/ JDA Circle. For non-regular user it's very difficult to identify these names of the nodes (circle). Identificational signage need to be added on these circles so that it can help people to remember and know where they are located. This span also includes 4-5 good landmarks including landscape featured circles but are somewhat lost in urban build forms. There are seven other secondary roads intersecting the primary road (Bhawani Singh Road). These roads don't have any directional and identificational signage although having many important destinations.

IV. ZONING

Jaipur city plan divides city into nine zones based on the concept of nine planets. But this physical zoning does not reflect in the signage and wayfinding programme. No unique identification is provided to these zones so it would be good if they have a new definition, symbols and color code. It is important to build a storyline to connect people with places. It is important to highlight that architects and designers function of putting signage & wayfinding design proposal often come late so they have the advantage to collect in depth information & research of other fields (Arthur and Passini, 1992).The best example can be seen in the city of Downtown Los Angeles, CA (Figure 5), the city has thirteen zones, with integrated identity and wayfinding system (Hunt Design, 2009). All these zones have distinct icons with different color codes allotted to them.

The signage should always be designed for first time visitor. Revisitor can use their previous experience in navigating the desired location (Lynch, 1960). To make it easier and simpler, the landmark can be used as reference point. While looking for the particular address, the mental status also plays a factor which is usually tense, distracted, tired, worried and sometimes in confusion of missing traffic lights or one way sign (VanderKlipp, 2006).



Fig. 2: Jaipur city.



Fig. 3. The current signage location plan.



Fig. 4. Signage & wayfinding scheme of Downtown Los Angeles, CA (Hunt design, 2009).

V. LEGIBILITY

Signage Hierarchy

Hierarchical Location. It is always advised to locate the signage in hierarchical order. The information delivery should be in 3 layers. The people on the road should know in advance where he or she will reach if he/she follows certain direction, second is the confirmatory sign which ratifies that the person is on right track, lastly the identificational sign which verifies the arrival of destination. The first two types of signage are usually directional signage& the last one is mostly identificational sign (Wayne Hunt, 2015). The case study indicates only 20% of the signage are hierarchically places (Table 1).

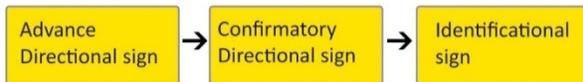


Fig. 5. Signage hierarchy-location.

Message Hierarchy. Similar to location, Hierarchy should also be present in message (information to be conveyed to the user) because some information holds more importance. Based on the importance level, message is formulated and assigned a place on the signage board.

As shown in the figure 6, ‘Arrival hall’ & ‘Baggage claim’ are of primary importance in Airport so placed on top and other information are of secondary and tertiary importance and can be understood by pictogram so placed below with lower font style. The case study indicates only 10% of the signage have the message hierarchy in the signage panels. (Table 1).

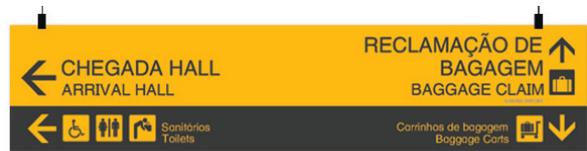


Fig. 6. Message hierarchy for an airport signage.

Signage Height & Location. Orientation of road side signs are not correct on many streets. The continuously running vehicle often blocks the view of the motorist from seeing the road signage. The recommended signage height should be 7 feet above the ground in order to have adequate visibility & viewer reaction time (USSC, 2003). Viewer reaction time (It is the time taken by viewer to read, understand and react after seeing the signage) depends on the speed of a vehicle, pedestrian and vehicular traffic volumes and should be measured.

Table 1: Checklist for existing signage & wayfinding (Directional/ Identificational/ Informational) based on legibility Criteria

Legibility Criteria	SahkarBhwan Circle										Ambedkar circle						Intermediate locations (Ambedkar to Rambagh)		
	1	2	3	4	5	6	7	8	42	43	11	12	13	14	15	44	16	17	18
Signage Hierarchy – Location	x	x	-	x	x	✓	x	x	✓	x	x	x	-	x	✓	x	-	-	✓
Signage Hierarchy – Message	x	x	-	x	x	-	x	-	-	x	x	x	-	x	-	x	x	-	✓
Signage Location	x	x	✓	✓	x	x	x	x	x	x	x	✓	✓	x	x	x	✓	-	✓
Signage Height	x	x	✓	✓	✓	x	x	✓	x	x	✓	✓	✓	✓	x	x	✓	-	✓
Signage Message area	✓	✓	✓	x	✓	✓	x	x	✓	x	x	x	✓	x	✓	x	x	-	✓
Signage Cap(Text) Height	x	x	-	x	x	✓	x	x	✓	x	✓	x	-	x	✓	x	x	-	✓
Color	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓		✓
Contrast	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	x

Note:

- ✓ : criteria meeting as per guidelines
x : criteria not meeting as per guidelines
- : not applicable

Table 1 (contd.):

Legibility Criteria	Intermediate locations (Ambedkar to Rambagh)			Rambagh to Indra/ JDA Circle				Indra/ JDA Circle										
	22	23	45	24	27	28	29	46	30	31	34	35	36	37	38	39	40	41
Signage Hierarchy – Location	✓	-	-	x	-	-	✓	x	x	x	x	✓	x	x	x	x	x	✓
Signage Hierarchy – Message	✓	-	-	x	-	-	✓	x	x	x	x	✓	✓	x	x	x	x	✓
Signage Location	✓	✓	✓	x	✓	✓	✓	x	✓	x	x	✓	x	✓	x	x	x	✓
Signage Height	✓	✓	✓	x	✓	✓	✓	x	✓	x	x	✓	✓	✓	x	x	x	✓
Signage Message area	✓	✓	✓	✓	✓	✓	✓	x	x	x	x	✓	✓	x	✓	✓	✓	✓
Signage Cap(Text) Height	✓	✓	-	x	-	-	✓	x	x	x	x	✓	✓	x	✓	✓	x	✓
Color	✓	✓	-	✓	-	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Contrast	x	x	-	✓	-	-	✓	✓	x	x	x	x	x	✓	x	x	✓	x

Note:

- ✓ : criteria meeting as per guidelines
x : criteria not meeting as per guidelines
- : not applicable

Table 3: Font size and viewing distance (Vehicular) (USSC, 2003)

Distance in meters	20-50	30-90	30-90	30-90	40-120	50-200	50-200
Cap height in millimeters	7.5	10	12.5	15	20	25	30
Speed in Kilometers	35-50	35-50	50-65	65-80	80-95	95-110	110-up

Placement of signage should be such that trees and other landscaping features cannot obscure its visibility from estimated distances. The case study shows less than 50% signs are not located properly & 40% signs have height as an issue (Table 1)



Fig. 7. Trees obscuring the signage visibility & low height signage can lose their significance.

Signage Message Area determination. The size of the signage is governed by number of words, Viewer Reaction time & text height. The ratio of the negative (background) and positive (text) plays an important role, as per USSC study report it should be 60- 40 i.e. the text should occupy 40% area of signage and rest is left blank, this gives ease to the viewer to get enough time to move their eyes freely for reading, understanding and reacting on it (USSC, 2003). According to case study 60% of the signage followed this criteria (Table 1) of 60-40 %.



Fig. 8. Good legibility message area of signage should be in 60-40 ratio.

Signage Text (cap) Height. The text height should always be with respect to decision points; these decision points are the locations where commuter has to take quick decision about his further direction of travel and thus can also be termed as point of confusion (USSC, 2003). The case study indicates 65% of the signage don't satisfy the required ratio between cap height to distance (Table 1). Table 2 gives the relationship between Cap Height with Distance at which certain sizes of lettering can be read by a person with normal eyesight. For example making a pedestrian signage when the decision point is 20 meters far from the sign the cap height has to be 70mm.

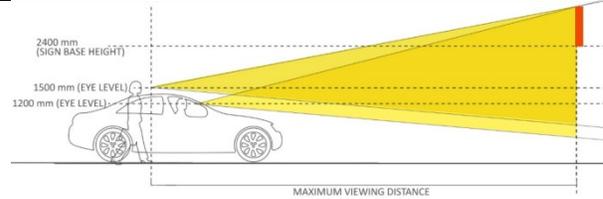


Fig. 9. The best possible distance which can catch the eyes of the people.

Color and Contrast. The contrast between the text and the background makes the signage easy to read especially when the viewer is seeing it in limited time. It is always better to avoid light colors for text on a light background, and dark text colors on dark backgrounds. Also consider common forms of color blindness – Protanopia (red/green color blindness), Deuteranopia (red/green color blindness), and Tritanopia (blue/yellow color blindness), including many grey areas in-between. It is advisable to try and avoid these combinations, as information will not reach some of the visitors. The selection of color should be such that the Light Reflecting Value should be more than 70% as recommended by ADAAG (ADAAG, 2002). All the existing signs in case study satisfies the criteria of LRV values as indicated in figure 10.

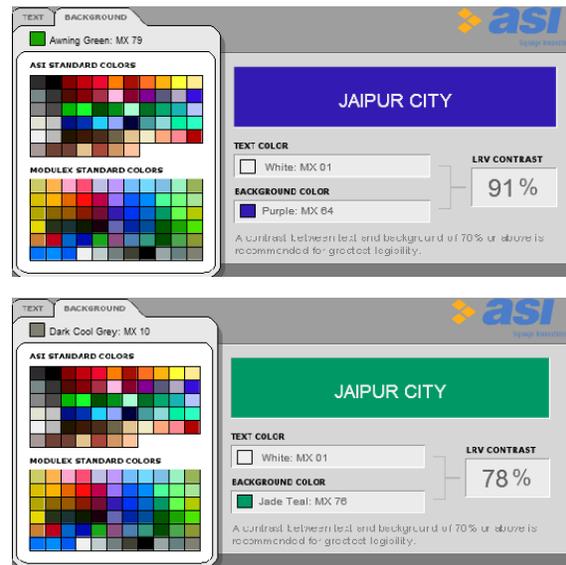


Fig. 10. Measure level of LRV contrast between text and background for existing signage (ASI).

VI. CONCLUSION

This study is a small addition to what is already being done to systemize the urbanization process. This study reveals the importance of signage and wayfinding system which can reduce chaos situations in heavily populated areas of Jaipur city. With the change in time and situation, this study also demands a re-thinking in the planning of good civic infrastructure.

VII. LIMITATIONS OF THE STUDY

This study looks only at the architectural and design perspective. This study only highlights the problems of legibility in the form of signage and wayfinding.

VIII. DECLARATION

The signage & wayfinding study in this paper are in compliance of National Building Code and City planning guidelines. Wherever the areas lack behind in providing generic information, the paper draws reference from international codes & guidelines i.e. USSC, SEGD & ADAAG.

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