



PhD Defence

Visual framework of colour analysis of shop signs in cities of India

Submitted by:

Nanki Nath

Research Scholar
IDC, IIT Bombay
09413001

Currently serving as:

Assistant Professor
Department of Design
Indian Institute of Technology Guwahati

Guide:

Prof. Ravi Poovaiah

Industrial Design Centre
Indian Institute of Technology Bombay

Introducing the Research area



PhD Thesis structure

Chapter 1: Introduction

- 1.1 Shop signs: an introduction
- 1.2 Journey of signs and shop signs from prehistory to digital age
- 1.3 Summary of the historical journey of signs and shop signs
- 1.4 Scope and Aims of Research
- 1.5 Research questions and their relevance
- 1.6 Summary of the chapter

Chapter 2: Setting the ground

- 2.1 Introduction
- 2.2 Aims & Objectives
- 2.3 Pilot Research Project I: Semiotic analysis of shop signs of Abdul Rehman street, Mumbai, India
- 2.4 Pilot Research Project I: Semiotic analysis of shop signs of Abdul Rehman street, Mumbai, India
- 2.5 Summary of the chapter

Chapter 3: Methodology

- 3.1 Introduction
- 3.2 Aims and Objectives
- 3.3 Data collection

- 3.4 Colour study
- 3.5 Describing the method
- 3.6 Identifying and defining quadrants
- 3.7 Visual Framework of colour analysis of shop signs
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Chapter 4: Visual analysis of colour

- 4.1 Introduction
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- 4.3 Summary of the chapter

Chapter 5: Conclusions

- 5.1 Introduction
- 5.2 Visual framework of colour analysis of shop signs in India
- 5.3 Inferences and Insights of colour analysis
- 5.4 Solutions to the research questions
- 5.5 Contributions

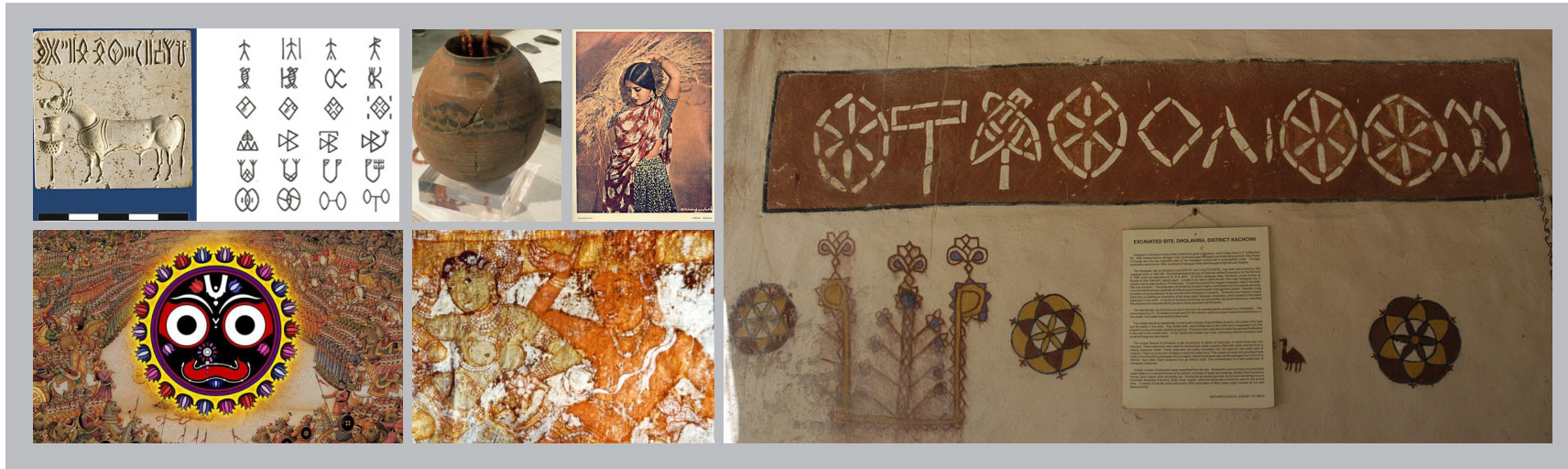
Chapter I: Introduction



- Prehistoric signs were symbols on early mediums of visual communication.
- Shift from traditional industry to a knowledge-based economy that inculcates information-digitization. In the digital age, commercially oriented signs have started giving continuity to public spaces as well as built streetscapes.
- In the digital age, entry of the signs to signify shops have made two contributions:
 - a) Shop signs as distinct entities as part of streetscapes.
 - b) Shop signs can also be considered as genuine urban markers of trades and crafts in a city (Feng Yi, 2012).
- Signs from the pre-historic and present digital age times together are like archeological layers that reveal different periods of human civilisations, their transformations, changing modes of human occupancy and use of spaces through modern versions of signage and wayfinding design.

Signs and Shop signs from the Asian Pacific Rim countries

INDIA



NEPAL



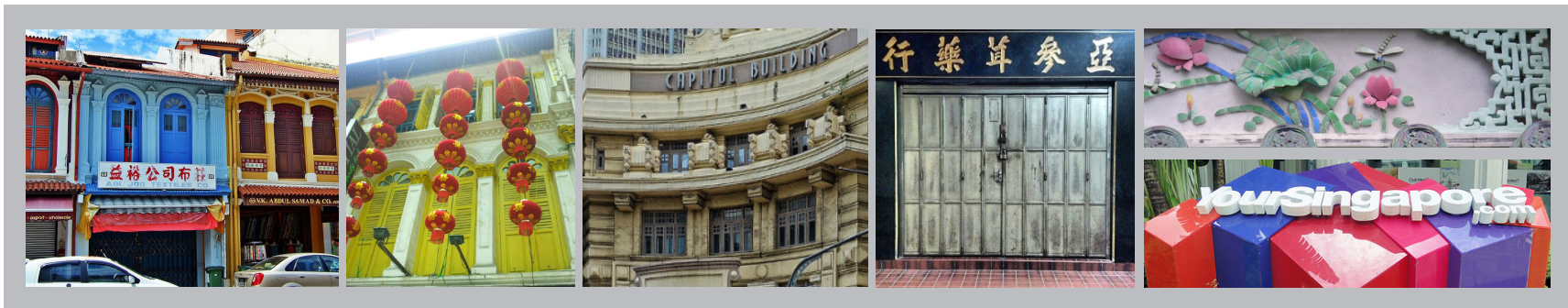
MALAYSIA

Historic Shophouse Styles	"Early Penang" Style 1790s-1850s	"Southern Chinese" Eclectic Style 1840s-1900s	"Early Straits" Eclectic Style 1890s-1910s	"Late Straits" Eclectic Style 1910s-1930s
	 <p>Physical Appearance</p> <ul style="list-style-type: none"> • 1-2 storeys (low) • Simple facade 	 <p>Physical Appearance</p> <ul style="list-style-type: none"> • From simple to decorative facade • Chinese influence: carved timber door, air vents, gable end, airwell etc. • European and Indian influence: domed shutters and UV-shaped terracotta roof tiles 	 <p>Physical Appearance</p> <ul style="list-style-type: none"> • 2-3 storeys • Chinese influence: carved timber door, air vents, gable end, airwell etc. • European influence: full-length windows, windows, geometric patterned floor tiles 	 <p>Physical Appearance</p> <ul style="list-style-type: none"> • 2-3 storeys • Chinese influence: carved timber door, air vents, gable end, airwell etc. • European influence: full-length windows, projecting columns, arches, brackets, plaster relief, geometric patterned floor tiles and embossed tiles below windows





SINGAPORE

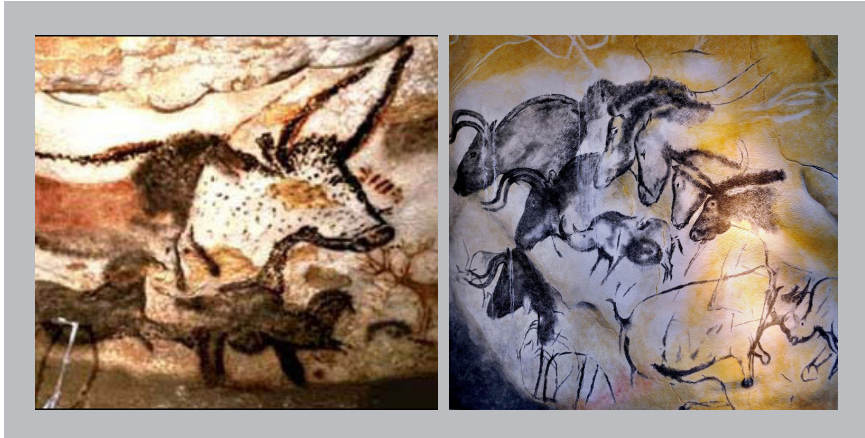


CAMBODIA



Signs and Shop signs from the European countries

FRANCE



SPAIN



SWEDEN



ROME



Signs and Shop signs from the Western Pacific Rim countries

CANADA



USA-Chicago and New York



COLUMBIA



BRAZIL



Summarizing: Journey of signs and shop signs



Asia and West reflect similar and dissimilar features in the collected signs and shop signs. For instance, neon signs of the 1940s and 1950s.



When buildings have a change in ownership, the signs undergo a structural and functional change. For instance, this is particularly present in the signboards and signage of 18th and 19th centuries

Summarizing: Journey of signs and shop signs



Overall, the journey of shop signs around the world has brought forth the picture and performance of shop signs as part of environmental design as well as the socio-historic and cultural status in seemingly distinct cultures and ethnic milieus belonging to different street marketplaces. Geographically, shop signs seem to be closely intertwined within the history of a city's urban development and other social events.

Re-defining Shop Signs

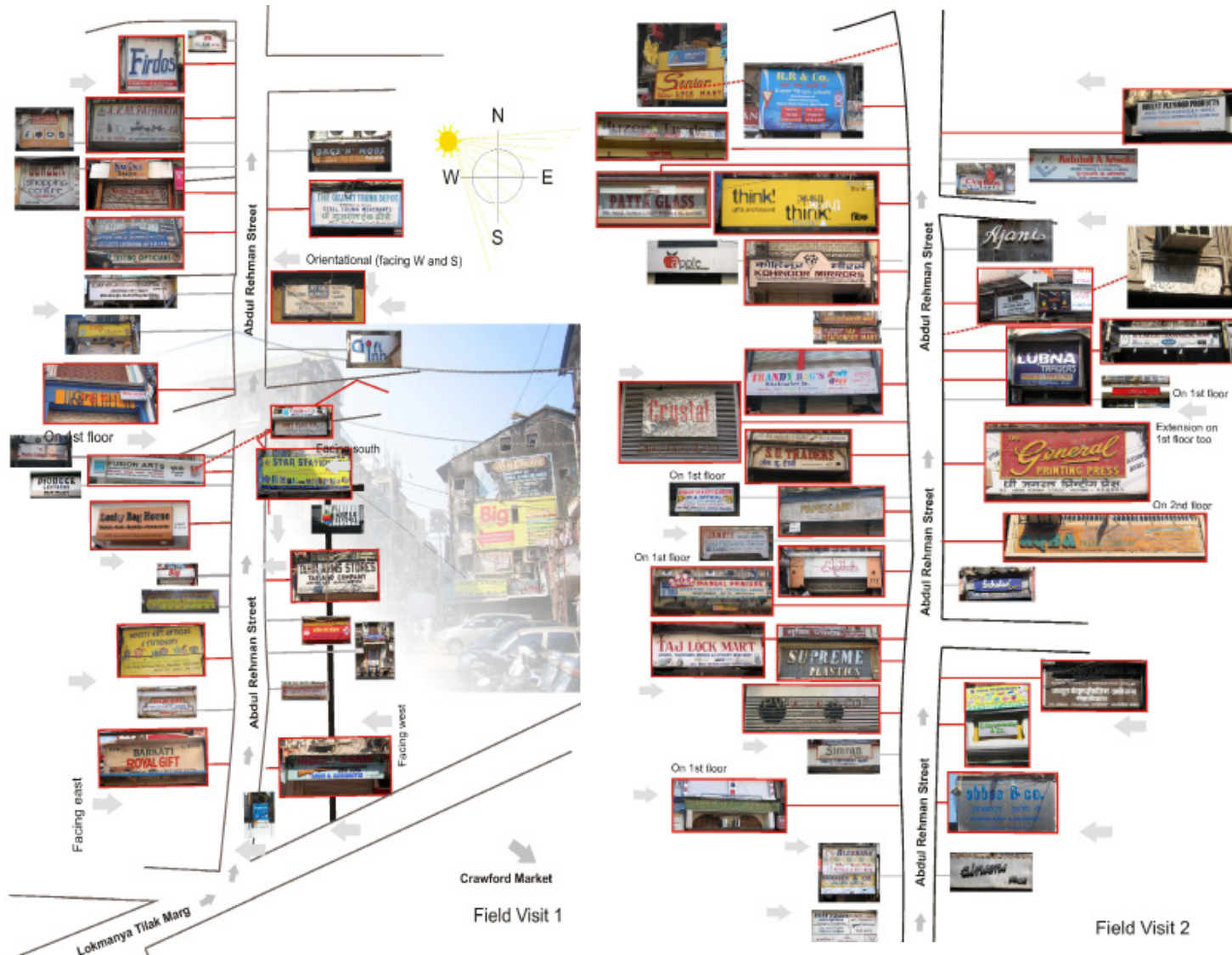


Shop signs are the fixed design boards on shop fronts that display information about the shop through the use of text and graphics. The design elements of text and graphics are bound together with the aid of visual relationships between colours used as the main visual attribute. These visual relationships help identify shops, persuade viewers and distinguish the visual identities of different shops relatively placed to each other in a marketplace.

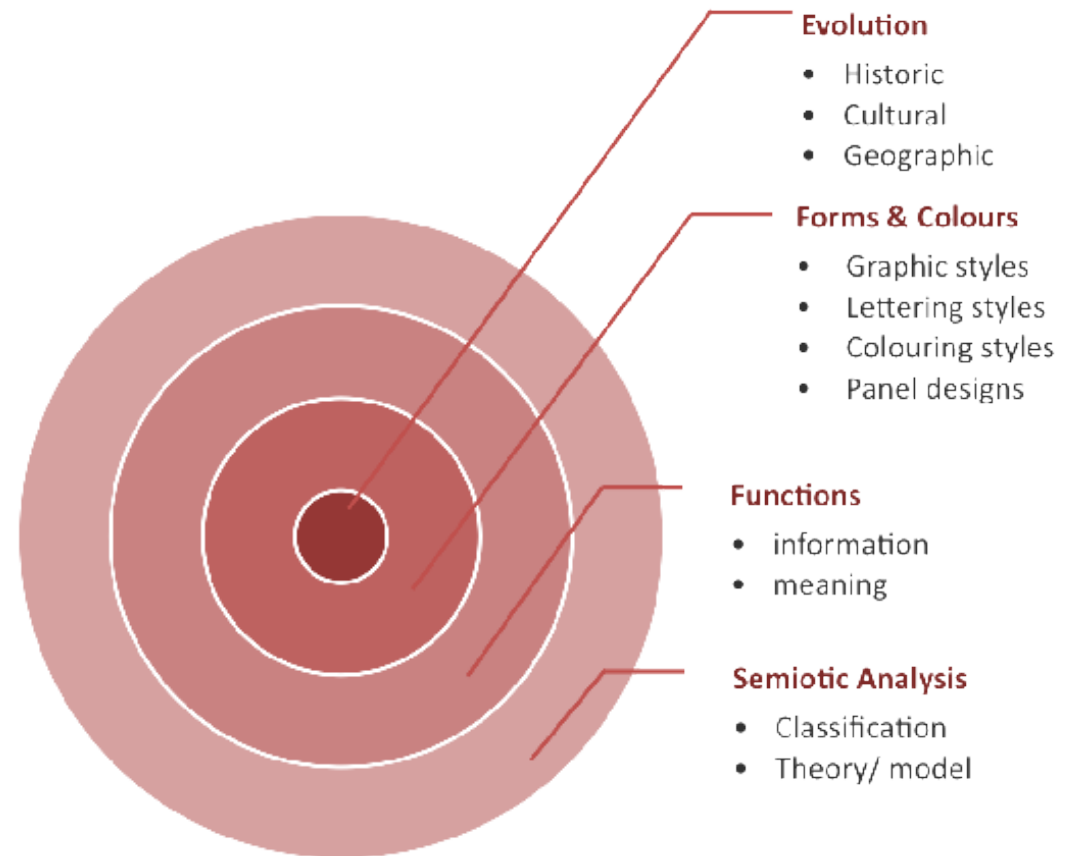
Chapter 2: Setting the ground

Pilot Project 1:

Semiotic analysis of shop signs, Abdul Rehman Street, Mumbai



- Collection of wide range of shop signs from different time periods.
- Visual Semiotic analysis: semantics, syntactics and pragmatics.
- Insights about the semiosis occurring across time periods.



Pilot Project 2:

Classifying shop signs: Open Card Sorting of Bengaluru shop signs (India)

- Accumulate new nomenclature and terminology of viewers / users
- Identify significant parameters for classification of shop signs
- Final list of parameters starting from most preferred to least ones
- Viewer perspectives on effective/good and ineffective/bad shop signs from the tested sample of 90 Bengaluru shop signs

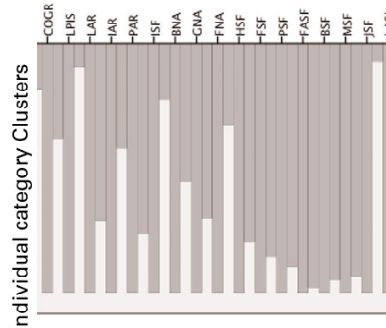
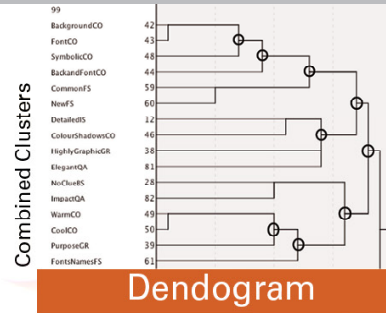


Open Card Sorting

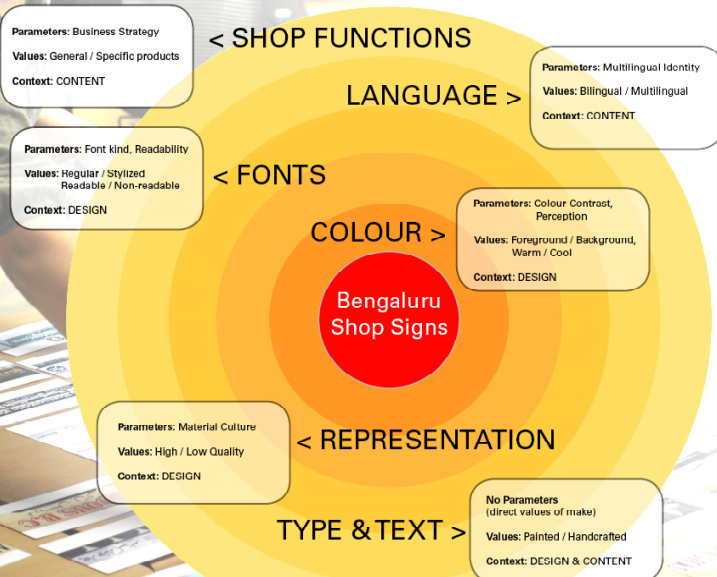
15 Non-designers



15 Designers



Working Framework



Vertical Icicle

The Process of Classification

Grouping



Organization

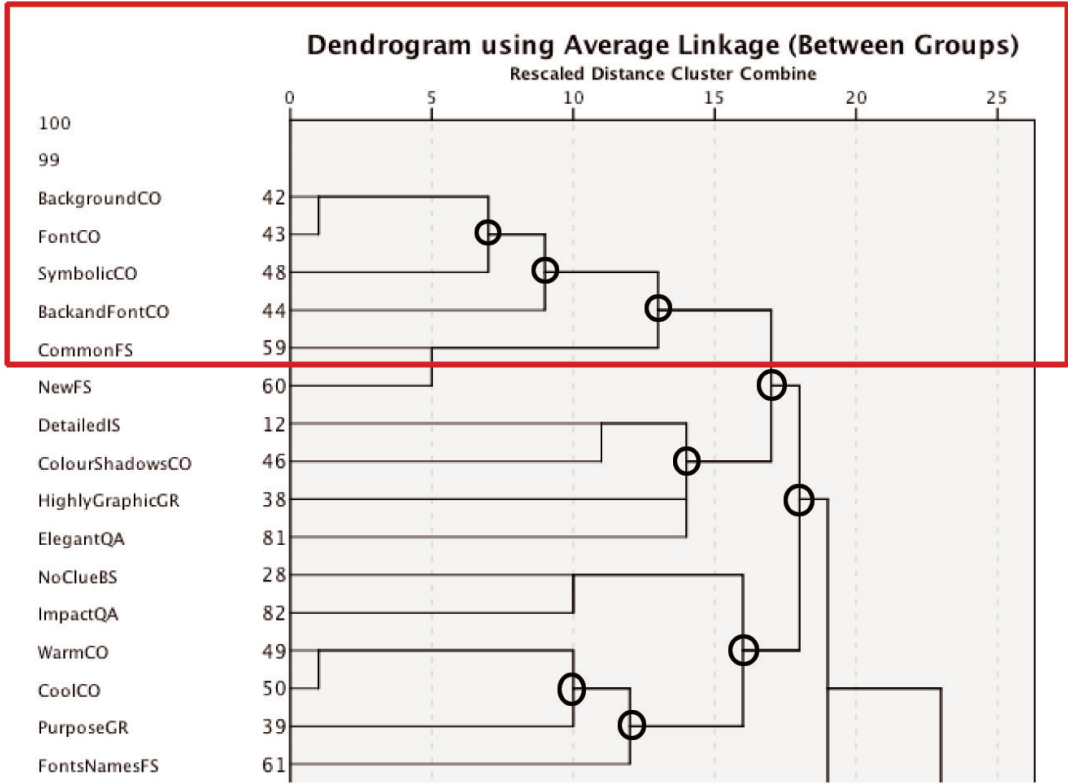
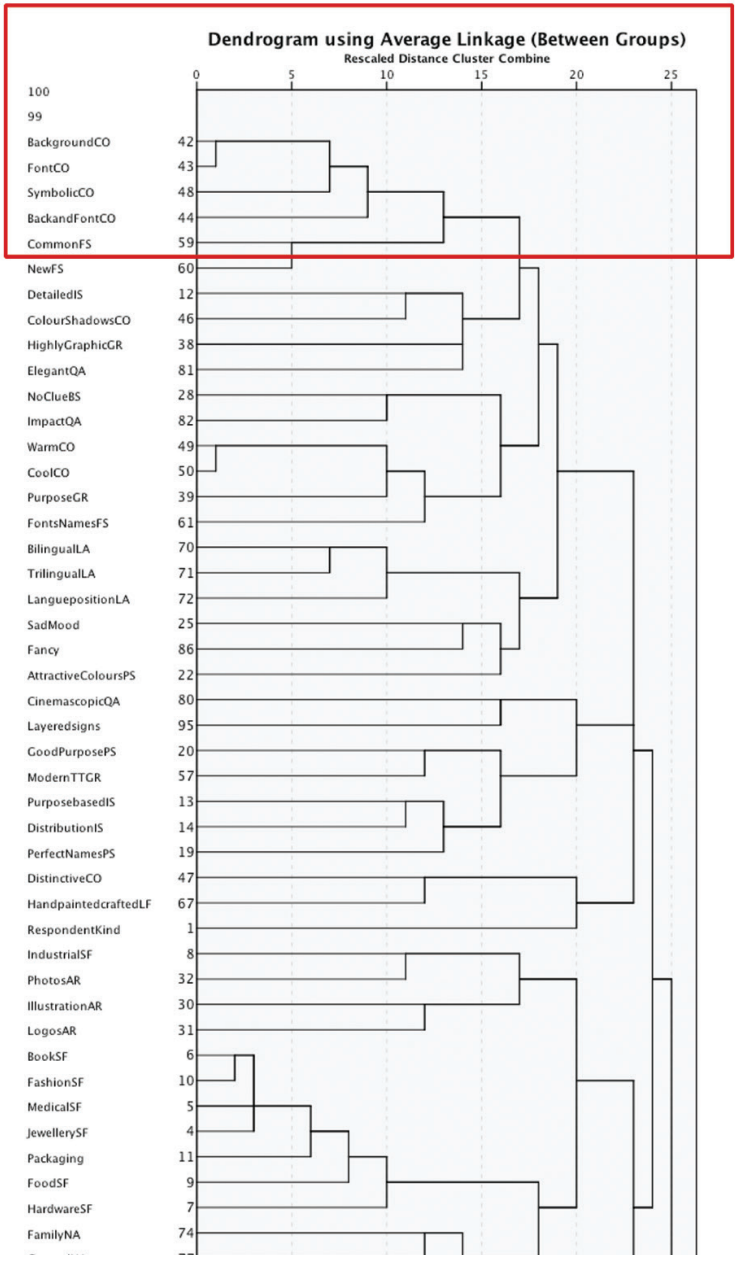


Overlaps



Hierarchy







Elements (Primary attributes)	Parameters (Functional basis)	Values (Selected units)	Context
CO	Colour Contrast, Colour Perception	Foreground-Background; Warm-Cool	Design
RP	Material Culture	High-Low quality	Design
TT	--	Painted-Handcrafted	Design and Content
FS	Font Kind; Readability	Regular-Stylized; Readable-non-readable	Design
LA	Multilingual identity	Bilingual-Multilingual	Content
SF	Business Strategy	General-Specific products	Content

Colour study and selection basis

- Moreover, colours are important in both identifying objects i.e. in locating them. in space and in re-identifying them. This is typically essential to an object's appearance that any account of visual perception must contain some account of colours (Maund, 2012).
- Based on the Greek definition of colour, it always accompanies the form i.e. colour as a visual attribute accompanies the type or the form of the letters that together construct the shop name as well as the tag line (Fig. a). Likewise for the sign panel, colour as a visual attribute accompanies the material board or the panel form of the shop sign. Colour provides the identity to this form acting as the background in a shop sign (Fig. b).



Role of colours in visual design of a shop sign

- Colours imbibe an art of persuasion as part of the visual display design on signboards. This art of persuasion that colours communicate with a visual mood and modes of display helps attract customers or the first time visitors to the shops.
- This identity creation depends upon the visual identity and grammar of colour(s) used in shop signboards. A consumer reacts to the colour of an object within 90 seconds of viewing it.

Laurie Pressman, vice president of the Pantone Colour Institute has expressed that, “Colour is the single most powerful communication tool influencing 50 to 85 percent of ideas and product purchase decisions. With consumers looking at colour more holistically, it has become the catalyst of cross-design thinking and the connector across all areas of design”

Research Questions



- 1) What sort of visual framework is needed for the analysis of colour in shop signs?
- 2) How do we use this framework to visually analyse colour, its characteristics and modes of communication on shop signs in India?
- 3) What are the emerging transitions, affinities and differences in colours and their applications in design of shop signs in India across cities and time periods?

Chapter 3: Methodology

Aim and Objectives

- To decide the basis and appropriate parametric approach of acquiring as well as organising a good number of shop signs from a selected number of cities for final analysis.
- To select a sampling method in order to acquire a representative group of shop signs from the large data collected by the researcher.
- To identify the variables of cities, marketplaces and time periods.
- To identify the component parts in the visual attribute of colour that can be taken forward for the final analysis of shop signs.
- To select a suitable existing method for the formulation of a visual framework for colour analysis of shop signs in our research.

Data collection

Documentation through Photography

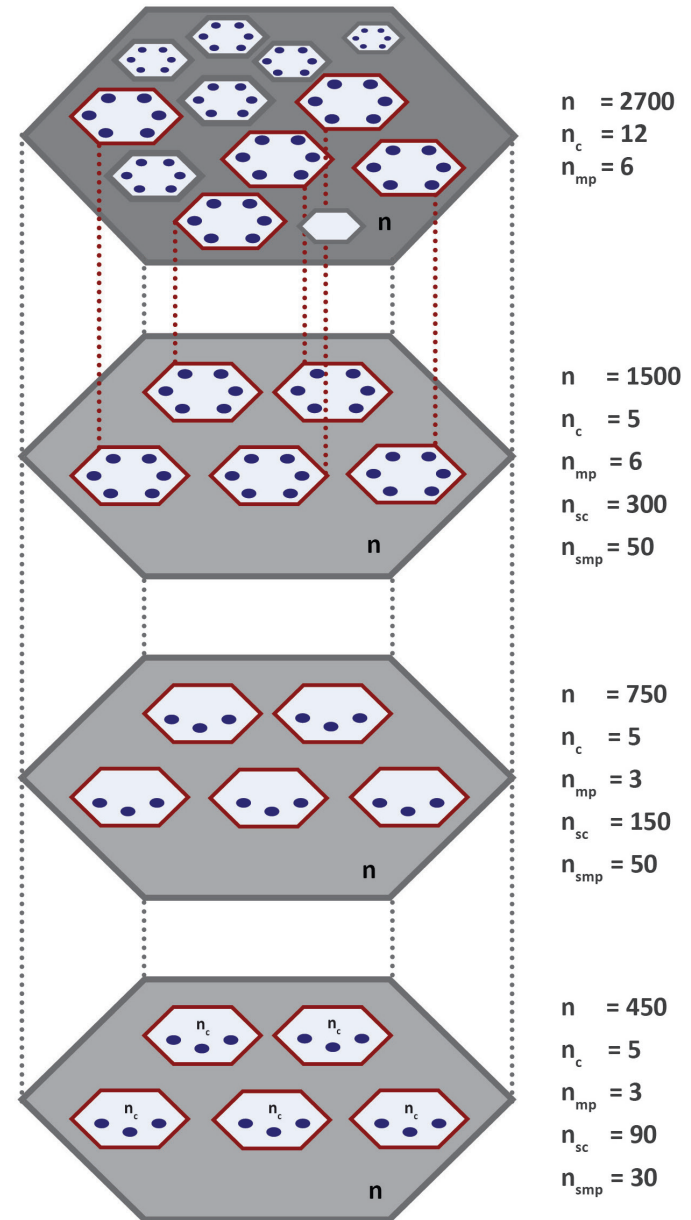
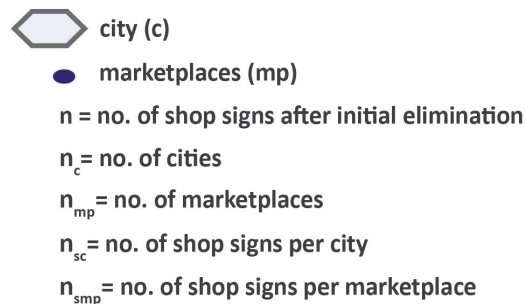


Documentation through Videography



Stratified Sampling of collected data

- 1) Total Population (N):
N = 3500 shop signs in six marketplaces of each of 12 cities
- 2) Population (n) after elimination of damaged shop signs:
n = 2700 shop signs in six marketplaces of each of 12 cities
- 3) Reduction of 12 cities to 5 cities with a good number of around 300 shop signs per city with 50 shop signs per marketplace (mp)
- 4) Reduction of six marketplaces to three market places.
- 5) Reduction of number of shop signs from 50 to 30 per marketplace.



Selection criteria of cities, marketplaces and time slots

Cities

Jaipur, Hyderabad, Mumbai, Bengaluru and Chennai

Marketplaces

Small-scale business marketplaces



Small and medium scale business marketplaces



Large scale business marketplaces



Time slots

1930-44, 1945-59, 1960-74, 1975-89, 1990-2004 and 2005 onwards

Identifying factors



→ Time Slots →

- Visual syntax of elements and arrangements: PATTERNS
- Semantics - changing visual expressions and styles: TRENDS
- Pragmatics - symbolic meanings of colour known / learned with time: CONVENTIONS
 - historical, cultural, architectural or social underpinnings/forces: TENDENCIES

4 factors / Quadrants: redefinitions

Patterns

Patterns are composed of similar elements of a visual attribute and similar arrangements or visual relationships between those elements that guide the concrete form or the formal syntax in the visual design of a shop sign.

Inter-city large pattern



Shop sign examples from cities of Jaipur and Mumbai

Small patterns are the color characteristics themselves. All these small patterns together within a dimension of large patterns complete the pattern system of a visual attribute analysis in the current research. This implies that there are color characteristics as part of broader color dimensions that explain color at a detailed level.

Trends

Trends are the simultaneous movement or change of one or more characteristics (variables) of a visual attribute of design of a shop sign in a certain direction along time as the constant variable. Here, the objective or goal may not be clear for any single factor. But, the direction has some link with respect to visual, social, economic or even historical popular themes belonging to a specific time period.

Bollywood posters with orange-red movie titles →



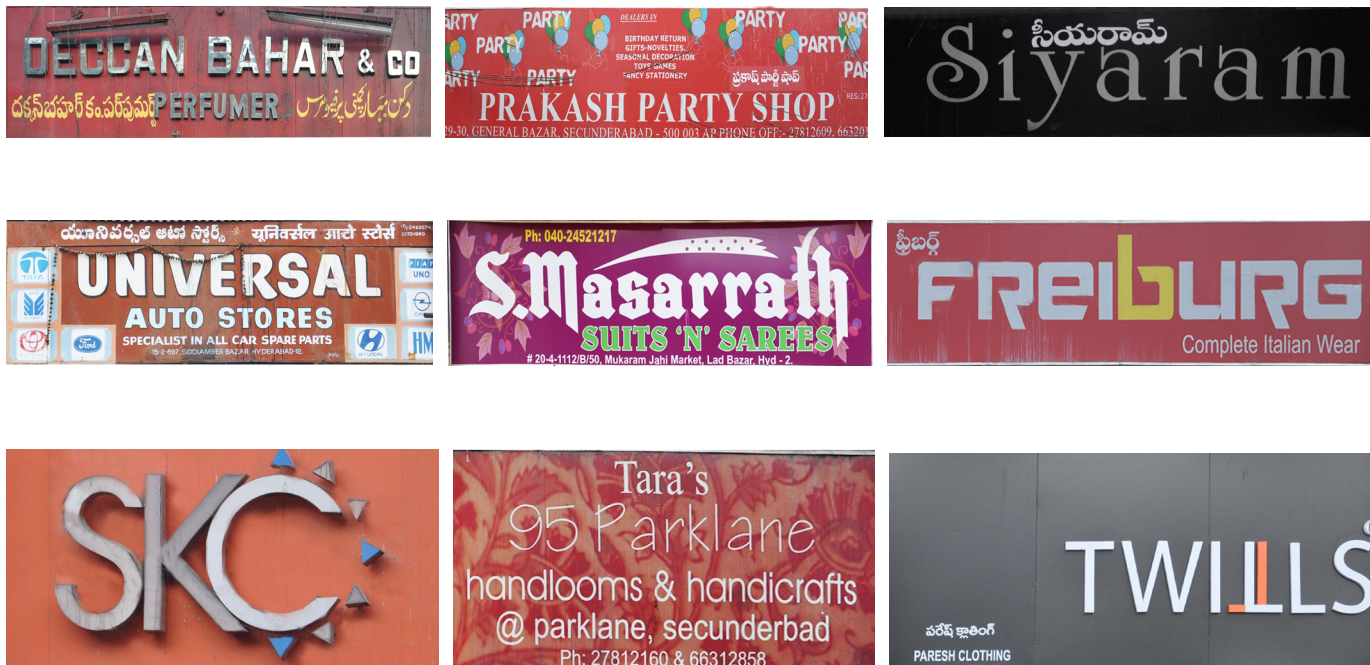
TREND: Orange-red shop names →



1975-89, popular themes and colour trends in the shop signs, Mumbai

Tendencies

Tendencies are causal behavioral inclinations or prevalence toward a specific line or direction that may or may not vary in the designs of shop signs. They are those innate qualities in a visual attribute that develop because of impelling social, aesthetic or historical forces.



Hand-crafted and Digital production in general color tendency in the main text of modern shop signs, Hyderabad

Conventions

Conventions are sets of accepted norms, standards and criteria established since ages. In context of shop signs in our study, most of these conventions are either the color codes applied in context of their business meanings or the historical narratives specific to a particular city or India at large.



Onam Rangoli representative of southern saturated color palette, the same saturated palette is a ubiquitous symbol of the visual color culture of South India in Chennai shop

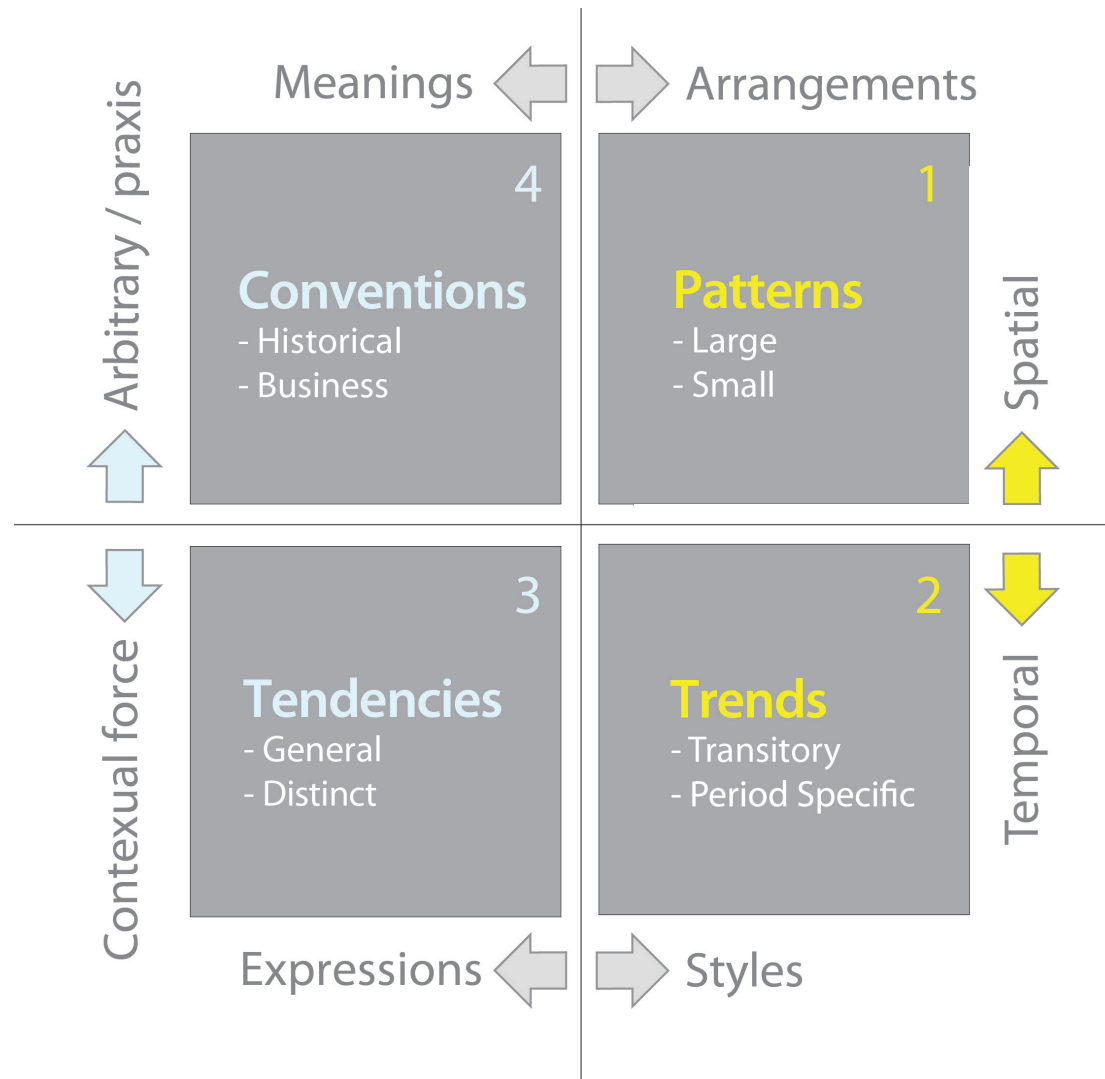
Describing the method: Bricolage

The term Bricolage or making do combines elements, components or concepts into new and original outcomes¹. This method of combining elements has its roots in the academic studies belonging to social research. According to Denzin and Lincoln (2000), bricolage in methodological context reveals insights into the rigour and complexity in social research. The etymological foundation of bricolage comes from a traditional French expression that denotes crafts people who creatively use left over materials from other projects to construct new artifacts (Rogers, 2012).



¹The philosophy of making-do is opposite to the scientific methods of research. A bricoleur's approach of making do suggests indeterminate future possibilities in order to create unpredictable outcomes (Yee and Bremner, 2011).

Visual framework of colour analysis of shop signs



Theoretical basis in applying Bricolage methodology to formulate the visual framework

- **Ontological mode**
‘real existence or nature of reality’
(Guba and Lincoln, 1994)
- **Epistemological mode**
‘how things really work’
(Guba and Lincoln, 1994)
- **Methodological mode**
Concrete illustration of a framework

Chapter 4: Visual analysis of colour

Preparation of each signboard for visual analysis of colour:

Three Layers of Information



← Signboard



← Shop name / main text

← Tagline / secondary text



← Background sign panel

Colour dimensions and characteristics

Colours are important in both identifying objects i.e. in locating them in space and re-identifying them. This is typically essential to an object's appearance.

Colour Dimensions	Colour Characteristics	Quadrants
1. Colour Description	Colour hue Colour value Colour saturation Colour temperature Colour kinds	Patterns, Trends
2. Colour Relationship	Colour combination Colour hierarchy Colour contrast Colour effect Colour scheme	Patterns, Trends
3. Colour Pragmatics	Colour functionality Colour production	Tendencies, Conventions
4. Colour Symbolism	Colour identity	Tendencies, Conventions

The Pink city of India: JAIPUR



- The pink wash meaningfully reflects the royal identity of Jaipur.
- The structure of this planned city reflects the choices of the Rajputs and the royal families.
- There is a unified collection of shop signs that express a prominently traditional identity of this city.
- The heritage buildings and the materials used influence the use of colour and other visual attributes on these signs.

Patterns in Jaipur

Color hue patterns	Pattern examples	Business size
i) White main text on darker backgrounds		Modern hi-end big showrooms
ii) Dark blue and black shop main text on lighter backgrounds		Medium size, medical related shops

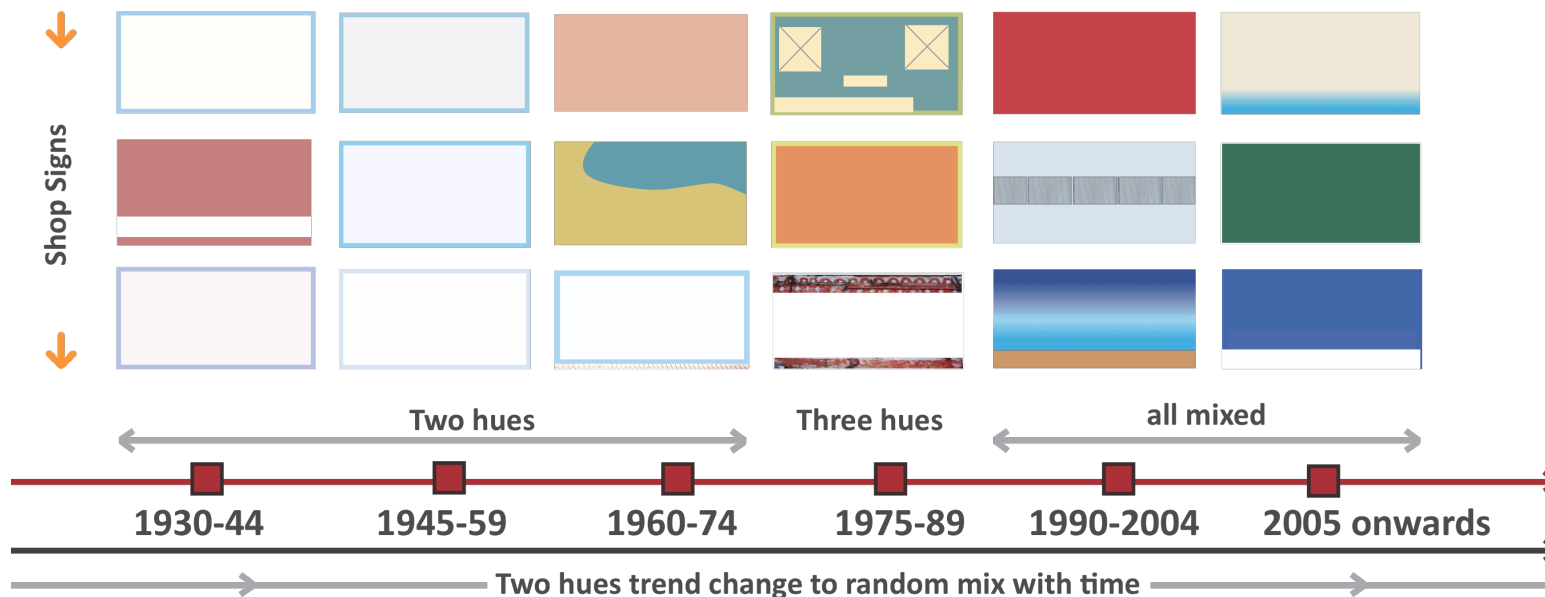
Color value patterns	Pattern examples	Business size
i) High value in white and yellow		Medium size old and big size modern stores
ii) Medium value in green		Small size old stores and a medium size modern stores
iii) Dark value in dark blue, dark green and dark brown		Small size old shops and one medium size modern store

Hue Transitory Trends in Jaipur

Color hues frequency transitory trend in the shop names, Jaipur

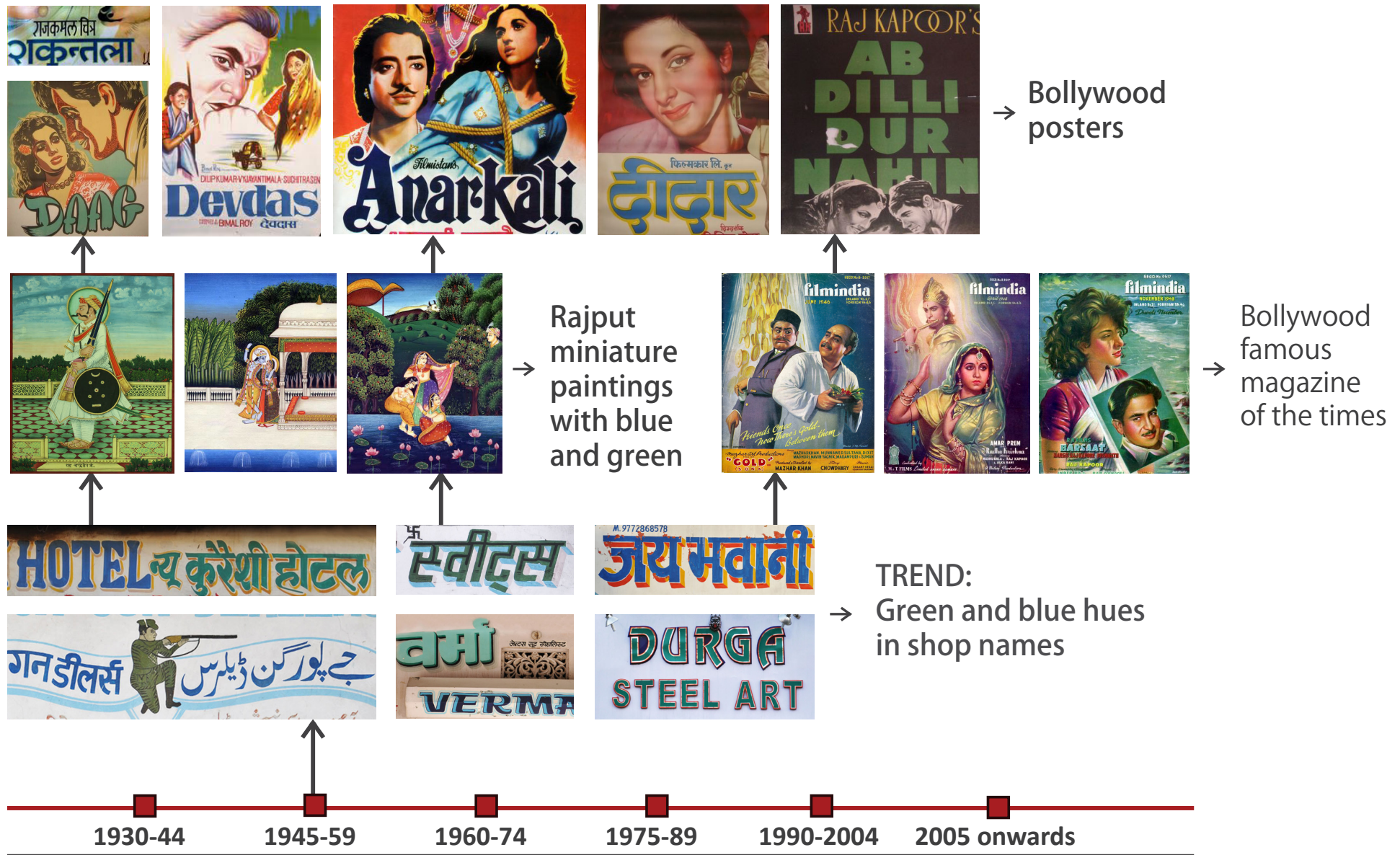


Color hues frequency transitory trend in the background sign panels, Jaipur

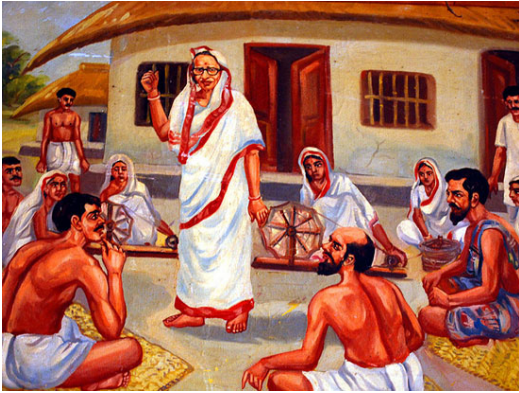


Period Specific Trend in Jaipur

1945-59, popular themes and colour trends



General Tendency in Jaipur



Hand-painted erstwhile painting (left), shop signboard in hand-painted technique, India (right)



Hand-painted color production general tendency in the main text of shop signs, Jaipur

Distinct Tendency in Jaipur

Sweet shop names displayed in saffron/ burnt orange hue



Direct business product based place-specific underpinning

National underpinning of Bhagwa hue



Saffron / burnt orange-red shop names in Khatipura and Ajmer road marketplaces, Jaipur

Distinct tendency in Jaipur

Light pink wash sign panels

Color hue distinct tendencies are directly related to specific stone material in specific city. Similar inter-city distinct tendencies are there for the rest of the cities in this research.

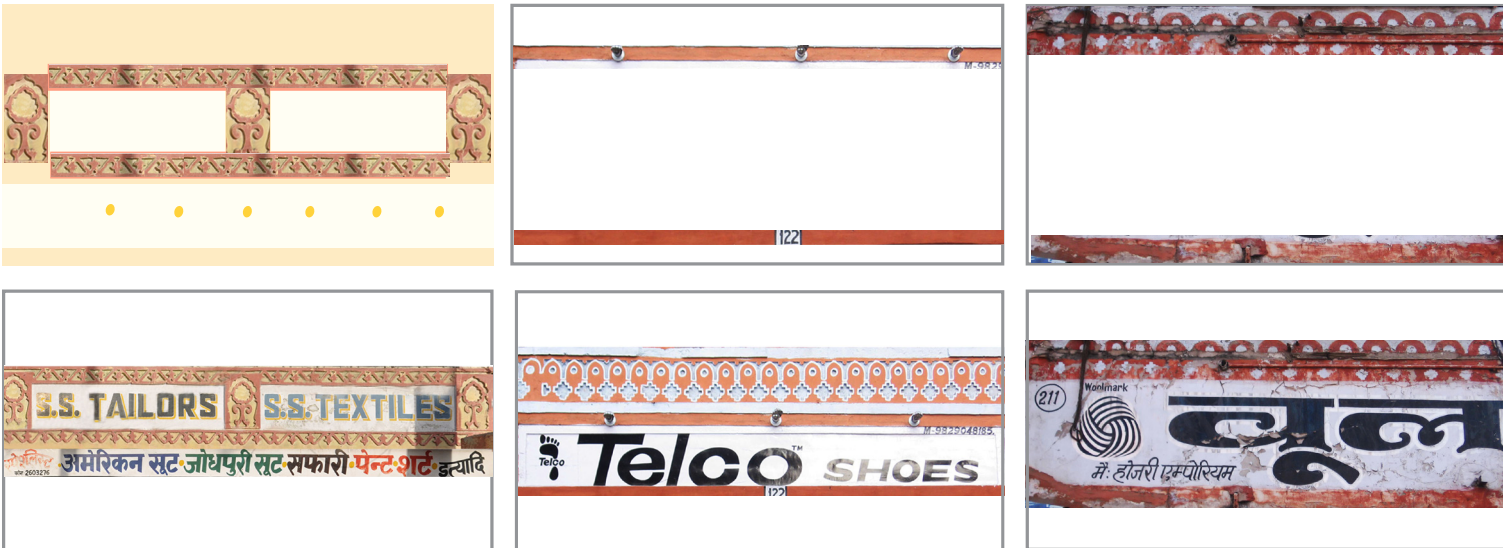


Distinct Tendency in Jaipur

White and pink colour combination in Kangoora designs



Geru (pink)-white kangoora designs are established traditional convention of historic buildings and hotel facades in Jaipur still practiced



Underpinnings: Pink of the quartzite sandstone used in buildings, celebrated in paintings and philately that stood as a mark of royal Jaipur

The Pearl city of India: HYDERABAD



- Since the Nizam's times and legacy till date, this city rich architectural heritage exists.
- The Hyderabad state has been an archetypal Indian princely state (Benichou, 2000). Post 1960s, there was an increase in immigrations of artists from other cities of Indian subcontinent to Hyderabad.
- The new face of the Hyderabad city in mid-19th century as a cultural hub emerged with the rise in economy and trade.

Period Specific Trend in Hyderabad

1975-89, popular themes and colour trends

Tollywood posters with orange-red movie titles →



TREND: Orange-red shop names →



Distinct Tendency of Hyderabad

Pearl white names of jewellery and fashion modern brands



White Pearls (left); Sahebzada Salabath Jah & Sahebzadi Ahmed Unnisa, son and daughter of The Nizam VI. circa. 1910 (right)

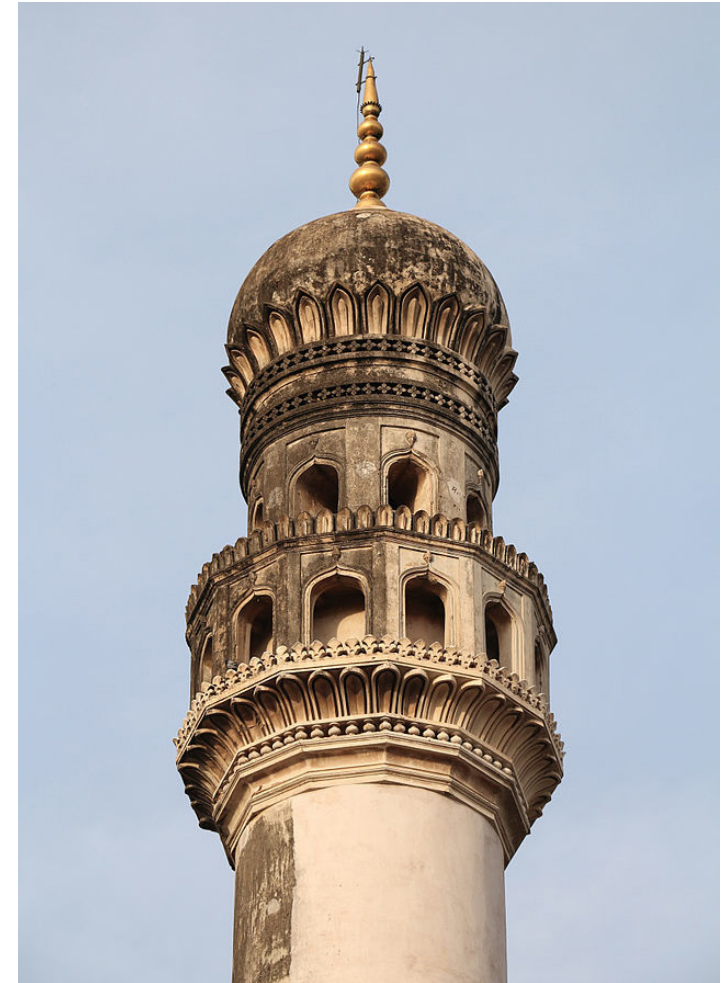
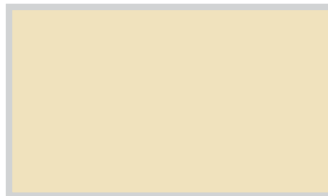
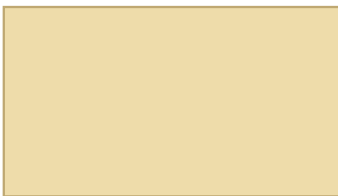
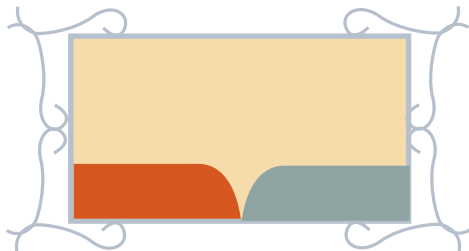


Silver distinct tendency in the main text of shop signs across two marketplaces

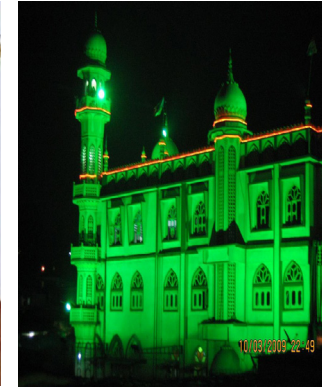
Distinct Tendency in Hyderabad

Yellow lime and granite sign panels

Color hue distinct tendencies are directly related to specific stone material in specific city. Similar inter-city distinct tendencies are there for the rest of the cities in this research.



Convention in historical context of Hyderabad



Green is the sacred color in historical and cultural context of Hyderabad and is used to display Urdu script



Green colour in Urdu script historical convention in the main text of shop signs

Chapter 5: Conclusions

Inferences and Insights of colour analysis (inter-city)

1960-74, popular themes and colour trends in Hyderabad

Tollywood posters with red-orange movie titles against green / yellow green hues



TREND: Red-orange mainly. Combination of red-orange



1960-74, popular themes and colour trends in Bengaluru

Kannada posters with orange, red and orange-yellow movie titles →



TREND: Orange-red and orange shop names →



1960-74, popular themes and colour trends in Chennai

Tollywood posters with red-orange and yellow movie titles



TREND: Red-orange and yellow shop names

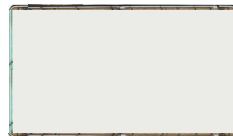


General Tendency

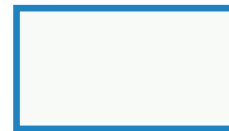
White background panels with blue borders in old shop signs of Jaipur, Hyderabad, Mumbai and Bengaluru



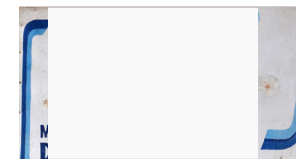
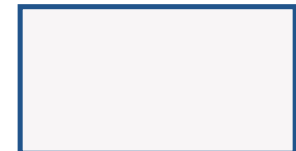
Jaipur



Hyderabad



Mumbai



Bengaluru

Distinct Tendency

Yellow Malad stone sign panels of Mumbai

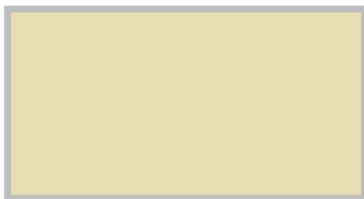
Colour hue distinct tendencies are directly related to specific stone material in specific city. Similar inter-city distinct tendencies are there for the rest of the cities in this research.



Distinct Tendency

Faded yellowish white marble sign panels of Bengaluru

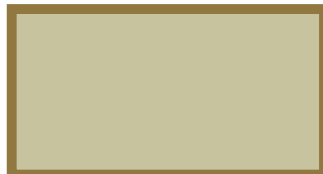
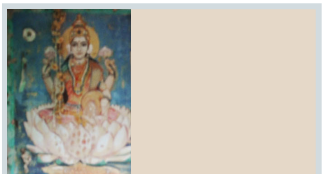
Colour hue distinct tendencies are directly related to specific stone material in specific city. Similar inter-city distinct tendencies are there for the rest of the cities in this research.



Distinct Tendency

Basalt and yellow dressed stone panels of Chennai

Colour hue distinct tendencies are directly related to specific stone material in specific city. Similar inter-city distinct tendencies are there for the rest of the cities in this research.



Convention in business context

Metallic hues of gold/silver/silver grey in shop names of Jaipur, Mumbai and Bengaluru



Jaipur



Mumbai



Bengaluru

Solutions to Research Questions

1) What sort of visual framework is needed for the analysis of colour in shop signs?

Colour becomes a dynamic marker of identity creation and display design influenced by multiple forces.

What we learnt in the process of applying this qualitative method is that elements and their relationships in colour are organised in alignment with specific quadrants of the framework in such a way that the design researcher in the role of a bricoleur may build upon. The abstract side of colour includes the semiotics of colour. As part of semiotics, we observed patterns that are arrangements of elements to describe syntactics; trends that are popular styles or expressions based on popular themes in time to bring forth the semantics.

Finally, tendencies and conventions represent embedded causal qualities as well as established symbolic meanings that help describe the pragmatics of colour. The proposed framework is a visual analytical tool that analyses the attribute of colour including patterns, trends, tendencies and conventions along specific functional

2) How do we use this framework to visually analyse colour, its characteristics and modes of communication on shop signs in India?

The answer to this question is two-fold.

In the first part, the formulated framework for colour analysis outlines the structure of each of the four quadrants into classifications.

The second part of the framework presents the identification of variables within the attribute of colour for final analysis. For this, a table of colour dimensions, characteristics and quadrants was outlined before starting the analysis of colour in shop signs of each of the five cities in this research.

3) What are the emerging transitions, affinities and differences in colours and the applications in design of shop signs in India across cities and time periods?

The use of universal achromatic hues of white, grey and black in present times is pertaining to the effect of globalisation and international appeal inherent of the modern day products and brands.

Theme based underlying socio-political influences may have regulated dominant use of some hues and other description and relationship based characteristics. Therefore, the visualisation graphs throw light on the emerging transitions that describe the affinities and differences appearing in the hues of the main texts and background sign panels across cities and time periods in the context of colour applications in the visual designs of the selected data of shop signs from five cities in India.

Contributions

- 1) Visual framework of colour analysis of shop signs**
- 2) Visual mode of diachronic analysis of colours in shop signs**
- 3) Inductive theoretical process to redefine quadrants**
- 4) Rich qualitative associations in the visual analysis of colour**
- 5) Relevance of the framework for signboard designers**

Limitations of the study

- 1) The domain of visual design of shop signs in India is vast and complex including many overlapping aspects. For this, it was decided to look at only five cities and to restrict to three different types of marketplaces presenting three distinct business scales in each of the five cities. Therefore, this research work has analysed a total of 450 shop signs from the selected five cities of India, namely Jaipur, Hyderabad, Mumbai, Bengaluru and Chennai. The data of shop signs analysed as part of this research work covers time slots (each of fourteen years: 1930-44, 1945-59...), starting from 1930s till the present times.
- 2) The formulated framework for analysis in this research has focused on the visual attribute of colour. The other visual attributes such as typography, layout, graphics, materials and fabrication techniques of shop signs have not been analysed by the visual framework in this research.

Suggestions for future work

- 1) The proposed Visual framework is flexible to undertake research frontiers to study other design attributes (Typography, Illumination and colours, material representations) of shop signs, signs, etc.**
- 2) The proposed Visual framework can be used to conduct cross-country analysis.**
- 3) The proposed Visual framework can be used to study in-depth about the signage designs from wayfinding perspective(s) and work towards practice-based solutions.**

Select Bibliography

Asza (2012, May 31). Singapore – on Communities and Contrasts. [ptraveller Blog post]. Retrieved from <http://www.pttraveler.com/2012/05/31/singapore-communitiescontrasts/>

Avari, B. (2007). *India: The Ancient Past: A History of the Indian Sub-Continent from C. 7000 BC to AD 1200*. London: Routledge.

Ayob, S.H. (1999). *Colonialism and Visual Culture: A Study of the effect of colonialism on visual culture with particular reference to Malaya (Malaysia)*. [Thesis]. University of Wales Institute of Cardiff. Retrieved from http://ir.uitm.edu.my/2694/1/SALWA_HJ_AYOB_98_24.pdf

Ball, Philip. (2001). *Bright Earth, Art and the Invention of Colour*, pp. 214-215 (French translation).

Baker, C.J. and Phongpaichit, P. (2009). *A History of Thailand*. Edi. 2. [e-book]. Retrieved from: <https://books.google.co.in/>

Bastow-Shoop, Zetocha and Passewitz. (1991). *Visual Merchandising A Guide for Small Retailers*. Iowa State University: North Central Regional Center for Rural Development.

Bednarik, R. (2005). "Lower Palaeolithic Rock art of India and its Global context". Accessed December 2013, from THE EIP PROJECT: http://www.ifrao.com/wpcontent/uploads/2014/06/Man_in_India_2007.pdf

Britannica, Halftone process. (2014). Retrieved May 2014, from Online Encyclopedia Britannica: <http://www.britannica.com/EBchecked/topic/252449/halftone-process>

Select Bibliography

- Burkitt, M. C. (1921). PREHISTORY: A Study of early cultures in Europe and the Mediterranean Basin. UK: Cambridge University Press.
- Burton, Tony (2008). "Dr. Atl and the revolution in Mexico's art". Mexconnect newsletter. ISSN 1028-9089.
- Canton, Naomi. (2012). "How the 'Silicon Valley of India' is bridging the digital divide".
- Calabi, D. and Derek, K. (2007). Exchanges and Cultural Transfer in European cities, c. 1500-1700. In Cities and Cultural Exchange in Europe, 1400 – 1700. (Calabi and Christenen, Eds.). Cambridge. UK: Cambridge University Press, pp. 286-314.
- Caroll, J.M. (2007). A Concise History of Hong Kong. [e-book]. Retrieved from: <https://books.google.co.in>
- Dunlap, W. (2006). History of the rise and progress of the arts of design in the United States. [e-book]. Retrieved from <http://www.google.co.in/>
- Dutt, R.C. (1904). Epochs of Indian History: ANCIENT INDIA. London: Longmans, Green & Co. (2000 BCE – 800 CE).
- Elson, R.E. (2008). !The Idea of Indonesia!: !A History!. [e-book]. Retrieved from: <https://books.google.co.in>
- Encina, Francisco A., and Leopoldo Castedo (1961). Resumen de la Historia de Chile. 4th ed. Santiago I. Zig-Zag. p. 44.

Details of paper in refereed conferences held in India / abroad:

Nath, N. and Poovaiah, R. (2011). **Understanding Richness: A new typology of visual cues and meaning in Signs.** Proceedings of Design Development and Research Conference (DDR), Cape Peninsula University of Technology (CPUT), Cape Town, South Africa, pp. 283-301.

Nath, N. and Poovaiah, R. (2013). **Pragmatic and Syntactic trends in Display Typography on the shop signs of Abdul Rehman Street, Mumbai.** Web Proceedings of Typography Day, IIT Guwahati, Assam, India, pp. 17.

Dalvi, M. and Nath, N. (2013). **Display Typography of House Names in Mumbai's Residential Buildings: A Semiotic Intervention.** Web Proceedings of Typography Day 2013, IIT Guwahati, Assam, India, pp. 17.

Nath, N. and Poovaiah, R. (2013). **Classifying Shop Signs: Open Card Sorting of Bengaluru shop signs (India).** Proceedings of International Conference of Research in Design, Global Product Development, Part 1, Lecture Notes in Mechanical Engineering, Springer India, (ICoRD, 2013), IIT Madras, Tamil Nadu, India, pp. 1287-1299.

Nath, N. and Poovaiah, R. (2014). **Role of Display Type in Signage Design, India.** In Proceedings of collective abstracts in "Design Innovation and Success", International Ergonomics Conference HWWE 2014, IIT Guwahati, Assam, India.

Nath, N. and Poovaiah, R. (2015). **Simulating the Appearance of Painted and Digital Display Type on Shop Signs in India.** Web proceedings of Typography Day 2015, IDC, IIT Bombay, India.

Publications

Abstract selection for International conference in Dublin 2010:

Nath, N. and Poovaiah, R. (2010). **Investigation of the most preferred Bilingual Combination of Words: An Experiment with a selected Place Identification Signboard.** ATypI Dublin, Ireland.

Institutional Magazine Paper (Published):

Nath, N. and Poovaiah, R. (2010). **Investigation of the most preferred Bilingual Combination of Words: An Experiment with a selected Place Identification Signboard.** DESIGN THOUGHTS, IDC, IIT Bombay. Issue: August 2010.

e-Newsletter Publication:

Nath, N. (2014). **Indigenous Identities: Hand-painted Letterforms in India.** Design For All Institute of India, New Delhi. Aug 14-Vol. 9-No. 8. pp. 27-33. Retrieved August 2014 from, <http://www.designforall.in/newsletteraug2014.pdf>

International Journal Publication:

Nath, N. and Poovaiah, R. (2015). **The influence of movie poster themes on the color trends used in the shop signs of cities in India.** Design Principles and Practices: The Design Journal Collection, The International Journal of Visual Design, USA, September, 9(3), 23-53, 2015.

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recent record from Lajpat Nagar, New Delhi :-)