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The Challenges of Transitioning Navigation Habits
into Systems: **Case of the Mumbai Rail Network**

Guide: **Prof. Mandar Rane**

Varun Mevada *15 633 0007*
IDC School of Design
IIT-Bombay

The Paper

The Challenges of Transitioning Navigation Habits into Systems: Case of the Mumbai Rail Network

Prof. Mandar Rane
IDC, IIT Bombay, Mumbai, INDIA
Prof. Braj Bhushan
IIT Kanpur, INDIA
Jaikishan Patel
IDC, IIT Bombay, Mumbai, INDIA
Kalagouda Patil
IDC, IIT Bombay, Mumbai, INDIA
Hriday Gami
IIT Guwahati, INDIA
Email for correspondence: mrrane@iitb.ac.in

Abstract

Since its inception 162 years ago, the Mumbai Rail network has grown into a high-density transport network of 7 million people travelling daily (Mumbai DNA, 2013) without the aid of a well-designed public information system. This has resulted in a travel culture that forces commuters to coax fellow passengers for information about stations, platforms and train routes. As a consequence, traversing the network proves to be a daunting experience for passengers, especially people who are new to the city. Therefore they struggle to form a cognitive map of the network and fail to understand the complex behavior of trains.

The first part of the paper focuses on design of the Mumbai Rail Map (MRM); unifying the three types of train services graphically, to represent peculiar behavior of trains, producing the map in three languages, designing for persons with colorblindness, and testing the map with commuters. The paper expands on how each of these aspects translated into design decisions through the 6 subsequent versions of the map. Experiments to test the usability of the map with eye-tracking studies reveal insights about Indian audience responses towards reading instructions and use of grid to find a station. The second part of the paper focuses on the challenges faced in inducing the map into the public imagination, making its absence felt amongst travelers, and its relevance for everyone, even the most habituated commuter.

The intended outcome of this research is to lay down a strategy to tame the ever-increasing complexity of the world's busiest rail network by designing and implementing a map that helps transitioning navigation habits into a unified navigation system for the future.

1. Background

We believe the 'First Things First' manifesto written by Ken Garland in 1963 still holds ground in India. What cities in developed countries consider as default, a user-friendly map for their rail system; does not even exist for the world's busiest rapid transit system, the Mumbai rail network. When we assert the need for a map, people argue against this saying,

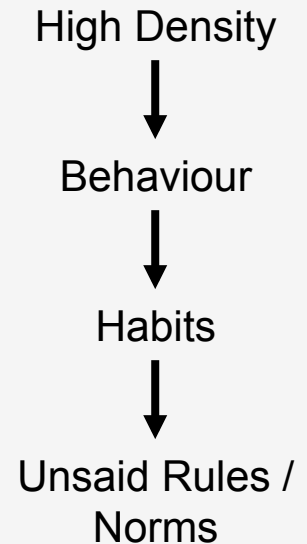
"In Mumbai we rely on asking around for information rather than referring to a map."

- Lack of well-designed public information system
- Struggle to form a cognitive map of the network
- Develop habits – *Asking people*
- Testing usability of the map with eye-tracking

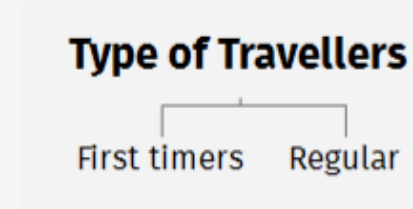
Abstract

Crowded platforms, long queues, noisy compartments, busy bridges and a never stopping spirit are the most common visuals at any station of Mumbai and its local train. EMU - Electrical Multiple Units which are otherwise known as the lifeline of Mumbai—Mumbai Local, carry about 7 million people daily.

The density makes these bridges, ticket counters, platforms, train compartments, etc. unique threshold spaces. The density forces the population to a certain kind of a behaviour, which then transform into habits over the course of time and then into unsaid rules or norms after being accepted by the masses.



Primary research



Primary research

Insight	<i>Seat Exchange is reserved booking in ladies compartment</i>	<i>You have to make space.</i>	<i>Allow to Alight first does not apply.</i>
Behaviour	Ladies coaches observe a strange behaviour of seat exchange where the lady standing points a finger at the seated women asking them to prompt their stations and then they speak up their lighting station and if they have a match then she confirms the seat by double pointing towards the lady acknowledging the seat is taken by them.	You have to adjust the 4th person on the seat. The seat is designed keeping 3 people in mind, but people squeeze in a bit to adjust the 4th person. This habit is then carried forward in during the non peak hours as well.	Due to high density when the trains arrive at the last stations (e.g. Churchgate, C.S.T, Borivali, Virar, Thane, Kalyan, etc.) during the peak hours the rule of 'Please let allow people to alight first' does not stand true. For e.g. The train is arriving at Borivali station at 8:00 am (peak hour) and it will be returning back to Churchgate from here, then the people who are alighting at Borivali must stand back till the people board, as the ratio is quite high of people boarding. This same scenario is observed at Churchgate in the evening while the people return back home.

Key Findings

- Seat Exchange (Ladies Compartment)
- Jumping on railway tracks
- Forming groups in long journey
- Allow to alight first is not the case every time
- Crossing over through trains
- Getting into luggage compartment requires no luggage
- The dabbawaala's have the first preference in luggage compartment
- Occupancy of vacant seat in the general compartment
- Even if you are in a hurry you cannot board a Virar local in peak hours to alight at Andheri / Borivali (*similar case in Central line, Kalyan / Dombivli*)
- Wear the bag packs in front while boarding



THANK
YOU