The changing meaning of an urban place

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Abstract

The changing meaning of an urban place

The meaning of an urban place for a traditional trading community on apāl Nākā develops in response to the development policies enforced by the government’s planning department. The government policies are enforced through artefacts such as maps and reports. The analysis of these artefacts reveals their purpose to control the development. Their operational role also assigns a certain meaning to the place. These policies are adapted to by the community as a post-implementation response. Their concerns are expressed through mobilising trade networks to emphasise the trade practices and property ownership patterns. The ethnographic data of networks and spaces analysed using the collective cultural memory framework of Assmann (1995) reveals the meaning of apāl Nākā generated by the community. The government is now implementing smart technologies to enforce their regulatory control, strengthening their meaning of apāl Nākā. The community is already well-versed with technologies such as surveillance cameras connected to smartphones. The Internet of Things (IoT) technology can reinforce the voice of the community addressing their concerns related to development. This is shown by an exemplary design concept for traffic management to be implemented by the community. This design concept which improvises upon the way the community already manages traffic indicates the possibility of enhancing the community’s meaning of place.

The research contribution lies in presenting an approach to study the meaning of place for design intervention and exploring the role that IoT technology may play in the changing meaning of place. It also contributes to the IoT paradigm by indicating a pro-community approach for technological development. The research contributes to the urban planning discipline by revealing the disparity in the meaning of a place. More immediately, the project contributes to New Media research by highlighting the role of media studies in the developing understanding of IoT.

Keywords Media studies, Internet of Things, Ethnography, Design research

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<tbody>
<tr>
<td>ADTP</td>
<td>Additional Town Planning Officer</td>
</tr>
<tr>
<td>APMC</td>
<td>Agricultural Produce Marketing Corporation</td>
</tr>
<tr>
<td>BMC</td>
<td>Bombay Municipal Corporation</td>
</tr>
<tr>
<td>BMRPB</td>
<td>Bombay Metropolitan Region Planning Board</td>
</tr>
<tr>
<td>CBD</td>
<td>Central Business District</td>
</tr>
<tr>
<td>CIDCO</td>
<td>City and Industrial Development Corporation</td>
</tr>
<tr>
<td>CST</td>
<td>Chatrapati Shivaji Terminal</td>
</tr>
<tr>
<td>DTP</td>
<td>Director of Town Planning</td>
</tr>
<tr>
<td>DMAF</td>
<td>Data Maturity Assessment Framework</td>
</tr>
<tr>
<td>FSI</td>
<td>Floor Space Index</td>
</tr>
<tr>
<td>JNPT</td>
<td>Jawaharlal Nehru Port Trust</td>
</tr>
<tr>
<td>MARG</td>
<td>Modern Architects Research Group</td>
</tr>
<tr>
<td>MJP</td>
<td>Maharashtra Jeevan Pradhikaran (Water supply and Sanitation Department of State of Maharashtra)</td>
</tr>
<tr>
<td>MMRDA</td>
<td>Mumbai Metropolitan Region Development Authority</td>
</tr>
<tr>
<td>MMR</td>
<td>Mumbai Metropolitan Region</td>
</tr>
<tr>
<td>MoHUA</td>
<td>Ministry of Housing and Urban Affairs</td>
</tr>
<tr>
<td>MoUD</td>
<td>Ministry of Urban Development</td>
</tr>
<tr>
<td>MR&amp;TP</td>
<td>Maharashtra Regional and Town Planning</td>
</tr>
<tr>
<td>MSEB</td>
<td>Maharashtra State Electricity Board</td>
</tr>
<tr>
<td>MSRTC</td>
<td>Maharashtra State Road Transport Corporation</td>
</tr>
<tr>
<td>MTNL</td>
<td>Mahanagar Telephone Nigam Limited</td>
</tr>
<tr>
<td>NH</td>
<td>National Highway</td>
</tr>
<tr>
<td>NAINA</td>
<td>Navi Mumbai Airport Influence Notified Area</td>
</tr>
<tr>
<td>NMDP</td>
<td>Navi Mumbai Development Plan</td>
</tr>
<tr>
<td>NMIA</td>
<td>Navi Mumbai International Airport</td>
</tr>
<tr>
<td>PDP</td>
<td>Panvel Development Plan</td>
</tr>
<tr>
<td>PMC</td>
<td>Panvel Municipal Council/Corporation</td>
</tr>
<tr>
<td>PMCDP</td>
<td>Panvel Municipal Corporation Development Plan</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Full Form</td>
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<td>--------------</td>
<td>-----------</td>
</tr>
<tr>
<td>PPP</td>
<td>Public Private Partnership</td>
</tr>
<tr>
<td>PWD</td>
<td>Public Works Department</td>
</tr>
<tr>
<td>SEZ</td>
<td>Special Economic Zone</td>
</tr>
<tr>
<td>SH</td>
<td>State Highway</td>
</tr>
<tr>
<td>SPV</td>
<td>Special Purpose Vehicle</td>
</tr>
<tr>
<td>ST</td>
<td>State transport</td>
</tr>
<tr>
<td>URDPFI</td>
<td>Urban and Rural Development Plans Formulation and Implementation</td>
</tr>
<tr>
<td>ONGC</td>
<td>Oil and Natural Gas Corporation</td>
</tr>
<tr>
<td>TILR</td>
<td>Tālukā Inspector of Land Records</td>
</tr>
<tr>
<td>TPO</td>
<td>Town Planning Officer</td>
</tr>
<tr>
<td>UDD</td>
<td>Urban Development Department</td>
</tr>
<tr>
<td>ULB</td>
<td>Urban Local Bodies</td>
</tr>
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</table>
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1 Introduction

The space that we inhabit every day is nuanced with complex socio-political phenomena rendering it with the notion of place. Place as I would refer to it as a design researcher allows me to capture this complexity. As several socio-political factors condition the place and keep it in mutation it becomes more and more illusive to grasp. We as communities become a part of the larger social processes struggling to define an identity of the place. Our meaning of the place stands in contrast with the meaning assigned to it by others, for example administrative offices. The meaning of the place changes responding to changing factors such as development. The latest advent of IoT will stimulate the place beyond our imagination. A new meaning is about to take shape. As a design researcher it is vital to grasp the contrast, comment on the disparity and poke the technology such that it enriches our everyday life. This is what I have tried to do in this doctoral dissertation.

1.1 ‘Urban place’ and integration of IoT as a ubiquitous technology

The research presented here attempts to define the changing meaning of place with a focus on an urban place. The meaning of an urban place is in continuous evolution responding to several factors that govern and regulate the urban fabric. The primary goal of the planning-driven development is to improve the socio-economic status of communities residing in a place. Communities respond with faith in the process of development while building their own life embedded in that place. The disciplines that engage in the development process define the meaning of place as they satisfy their disciplinary goals. The communities on the other hand generate a meaning for themselves which transparently indicates the struggle with and response to the development process. These two meanings are contrasting: the disciplinary is authoritative and that of the community’s is responsive. Urban development planned within a hierarchical discipline of urban planning often influenced by contemporary politics stands in contrast to the ever-evolving amorphous human development. This gap can be bridged by ubiquitous technologies such as Internet of Things (IoT).
Introduction

A third meaning of place is taking shape as this ubiquitous technology is seeping into the urban space. Being an open-ended development platform can mean having no hierarchical structure and disciplinary boundaries. This renders the technology an empowering characteristic. This research presents these three meanings processed through the analysis of disciplinary artefacts.

The disciplines as I described above act from outside the place by proposing policies that will dictate the mode of development inside the place. David Harvey, a Marxist geographer describes place being a social construct resulted from dominant socio-political process, sometimes external to itself (Harvey 1996, 296).

The functioning of urban planning in India can illustrate this precisely where it is tied with the socio-economic development policies. The discipline operates within the domain of government organisations which makes them highly influenced by contemporary politics. Place for urban planning is an opportunity to implement pro-development ideas that are geared to bring security of jobs, ease of mobility, increased infrastructure in terms of services and cheaper housing. This aim is achieved through regulating land holdings, landscape, regional connectivity, natural resources and so on. The scale of investigation and administration is large, so place is a linked entity with amorphous borders. Urban planners produce artefacts for implementing policies such as maps and land records, plans indicating zoning of facilities and detailed development reports. While preparing these artefacts they inevitably define the meaning of place. The meaning is embedded in the artefacts. At least in India, I have not seen any participative initiative where the community is invited for collaborative ideation of development policies. Kumar Ashok et.al. have compiled a brilliant book addressing specifically the issue of participation in the Indian urban planning scenario (Kumar, Vidyarthi, and Prakash 2021, 253). By taking a review of urban planning approach from 1947 to 2017 they claim that public participation has been deliberately side stepped. The urban planning departments present analysed outcomes as schemes to the community and then people have an opportunity to present objections and suggestions or legally oppose the scheme. These efforts quite often turn into a bargaining game. A planning scheme with little or no moderation gets implemented. The meaning of place generated in a planning office goes under way and contributes to ground reality. This meaning of place needs to be studied where an organised body such as the planning department forces an idea of place on the community to be accepted.

In the urban place this top-down meaning making process is being challenged by the introduction of ubiquitous technologies like Internet of things (IoT). With the introduction of IoT the meaning of place is evolving in a new way. The urban planning departments are implementing the technology for increased control through data collection and the community is implementing it to aid everyday life. As this research investigates the role of IoT in generating a new meaning
of place it focuses on the ubiquitous nature of IoT with which it integrates in the urban space. ‘Ubiquitous computing’ as a term was coined by Mark Weiser (Weiser, Gold, and Brown 1999, 693-696) and since then has been continuously explored to arrive at a working definition. Ulrik Ekman provides a refined definition grasping its nature,

“...In that case, a working definition of “ubiquitous computing” would be a sociocultural and technical thrust to integrate and/or embed computing pervasively, to have information processing thoroughly integrated with or embedded into everyday objects and activities, including those pertaining to human bodies and their bodily parts.” (Ulrik Ekman et al. 2016, 5)

Computing has witnessed a paradigm shift driven by ever-changing models for the networking of devices. The global market has accelerated the speed of innovation in technology and has achieved a smartness that seems adoptable in all cultures as a standard. The technology has become readily available and easily implemented as Ekman points out,

“Ubicomp cultures have become more than a potential and a much more pressing factual concern in tandem with decreasing general hardware costs, reduction in power requirements, implementation of ubiquitous ad hoc networking (including high speed and/or wireless LAN and WAN), increasing development of mobile and distributed computing, widening of the ongoing deployment of embedded computation to include networked communications among units, deployment of materials for miniaturization and further specialization of sensors and actuators, increased portability of computational devices, thin and large new display technologies, pursuit of high-bandwidth interaction and innovative multimodal input techniques, presentation of group interfaces on organizational and sociocultural levels, as well as extensions of user-tailorability to include user innovation in more domains.” (Ibid, 5)

Ekman is driving the discussion towards complexity of ubiquitous technologies. The speed of technical tools such as AI and machine learning threatens to destabilise the centuries old ethical codes of human beings. How much of us is known to the machines?, and from where they know it?, has become dangerously precarious because of the ubiquitous nature of IoT technology. The concern is towards the role of such a pervasive technology in our everyday life. There is still no robust model of such a technology which can be analysed as Ekman points out,

“One must acknowledge that a fully developed, robust, pervasively distributed, relatively smart, context-aware, and innovatively ad-hoc networked ubiquitous computing has yet to emerge as a cultural and technical fact.” (Ibid, 6)
Introduction

At the same time there are several random examples today in the world where the technology is being developed for efficiency of everyday life (Mashhadi, Bhattacharya, and Kawsar 2016; Lau et al. 2016; Lee 1968; Al-Turjman and Malekloo 2019). The research done on technological development stands free of any discussion regarding the life of communities and possible threat to privacy. Very little research focuses on adaptability at cultural level. The conceptual and theoretical discussions remain free of technological nitty-gritty. This gap must be bridged to be able to generate a comprehensive approach towards ubiquitous technology. This research presents a role that IoT can play in a contemporary society by indicating a gap to be filled in the dystopic urban place. As Ekman pointed out above, urban place in India is indeed a complex space where communities and their space face an ongoing struggle with administrative power. Within this complexity, IoT is being integrated by the administration as well as by the community.

In India a grey market of hardware and software industry allows a fair open-ended platform development. The expertise is easily available along with the range of cheap hardware components. This has led to a rigorous adoption of IoT in small and large scale environments. The community is using ad hoc networking models prepared locally and maintained by them. These are mostly simple like surveillance cameras linked to the mobile phones or sensors embedded for power consumption and security of everyday space. At this level IoT assumes its most basic form: sensors connected to Wi-Fi units which are in turn connected to data processing modules which are ultimately connected to data visualisation devices. The government on the other hand is developing a framework to be implemented through city organisation under the initiative of Smart Cities Mission (launched in 2015). Their goal and approach of controlling the urban place is discussed at length in the fifth chapter. Here the data collection mechanisms, data sharing entities and data storage systems are key concerns. The discussion about vulnerability is rigorous in the developed world such as European countries where General Data Protection Regulations (GDPR) enforce ethical guidelines (implemented in 2018). While in the developing world people remain vulnerable as underdeveloped legal structures are overshadowed by the strategies of the industry and ideas about governance. Nonetheless, IoT is integrating in both these scenarios with an exceeding speed.

This research presents a case of deciphering the role of IoT as an open-ended design platform in an urban place. To address the complexity stated above, I selected a marketplace witnessing rigorous development as a field to conduct the research. I began the research with methods for understanding existing complexity in the marketplace by defining its meaning of place. A long-term engagement with the place provided me an insight into the community’s meaning of place (read section 4.3). I also witnessed that the meaning assigned by the disciplines like urban planning was different from the meaning of the
1.2 Traditional marketplace of Țapal Năkă

My place: I conducted this research in a market-square called Țapal Năkă, located in a port city known as Panvēl on the west coast of India. My father’s last five generations have grown up here practising trade which continued until my generation. Many of my summer vacations as a teenager were spent working in the building materials shop started by my father in 1985. My great-grandfather ran the same shop where he had an import-export business with Muscat almost until 1960. My grandfather, having an aloof personality chose to operate another shop, selling dry fish in the fishermen’s locality called Kōljwārā. Both of them were sons-in-law coming from south of India married to wealthy girls in the Bēig family. Mirza Yākub Bēig, the first of the family to come to Panvēl was a labour contractor who arrived in the town in late eighteenth century from Karnāṭaka. He was helping the British East India Company¹ to build the Panvēl-Poona road through the Bōr pass² (location seen in figure 1.3) in the western ghats which proved to be the closest connection to the Deccan plateau³. The road construction started in 1779, finally culminating into a motorable road in 1835 (Campbell 1882). After the completion of the road the Bēig family settled in Panvēl and engaged in various trades, the largest being investment in land.

The family’s reputation and trade relations availed me access to the extremely cosmopolitan trading community. It was possible to walk into every house

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¹ A private company that operated from England, which started as a trade venture soon executing govern-mental powers taking advantage of a power vacuum in the middle of eighteenth-century India.

² The construction of Bor Ghaat was completed in 1863 by British engineers. The rail connection through the pass, bypassed Panvēl and was called Great Indian Peninsula Railway, known as Central Railway in independent India.

³ Deccan plateau is a geological feature that covers most of the south-central subcontinent (created by lava flows dated 65 mya) towards the east of the escarpment which makes up the western ghats that rise more than 1000m from sea-level and separate the coastal region on the west. Panvēl is located on the coast just thirty-four kilometres from the escarpment.
and take their time without any prior appointment. Community work-shops could be arranged within days’ notice. The trust that the family has built paid off through the intimate narratives that helped in generating this manuscript. I moved away from this place in 1998. My father remained in his house on Ţapăl Năkă until 2011. I visited him occasionally. I don’t have any other friends residing in this place. People here know me as the great-granddaughter of Lambuşet. My relation to the community was never intimate. When I began this research, people invested their time and energy, narrated their personal life, and shared their concerns for the purpose of this research. They wanted to tell stories, and they wanted that their representation be found in a work such as this. I remained as a participative observer throughout the research process. The trading community has a strong ethical framework relying on sharing and we both practiced the same. The dynamic of my access to this community and issues related to exploitation, power and gender are discussed in section 2.4.

Figure 1.1 shows a photograph of Ţapăl Năkă taken from a terrace of a newly constructed high-rise building. It shows the formation of the street square created by the crossing of Mahatma Gandhi Road and Uran Road. The market square not only served as a centre of market activities, but also cultural events hosted by a cosmopolitan trading community. Having a rich historical and cultural background the marketplace has continuously adopted change. The photograph shows a traditional market square about to be altered completely. The image speaks of that patient wait for development opportunity. The view is taken from a building having eight floors coming decade. The change is rapid and rigorous making the market square an ideal place for this research. This view of Ţapăl Năkă was impossible a decade ago, and it will become obsolete in the coming decade. The change is rapid and rigorous making the market square an ideal place for this research. In figure 1.2 you can see the street square in relation with the city revealing its importance as a node.

Ţapăl Năkă as a street square: Ţapăl Năkă literally means postal square; named after the presence of the first post collection and distribution point established by the British administration on the market square. The post from Pune arrived in a cart by road via Bôr pass on Ţapăl Năkă and from here was taken to Bombay through Panvêl port via a ferry (Campbell 1882). Figure 1.2 shows the location of Ţapăl Năkă and the selected precinct to conduct this study in relation to Panvêl city.

The road connecting Ţapăl Năkă to Bôr pass in the east and the Panvêl port in the west was then known as Karjat Road named after a town in the foothills. Surprisingly straight in nature it was known as Āgrâ Road before being called Karjat Road, referring to the ultimate destination, a Mughal capital near

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4 Karjat was the last railway station for the peninsular railway in Koîka before Bôr pass.
Delhi in the north of India. Țapăl Năkă is located on this road which today is known as Mahatma Gandhi Road. The research presented in this manuscript was conducted by selecting a precinct which stretches about four hundred meters on both sides of Țapăl Năkă. The market stretches beyond the limits of this precinct. This particular location around the market square has many trading communities and trading practices which exemplifies the marketplace.

Panvél is located at 40km from Dadar, a suburb now in the heart of modern Mumbai. Mumbai was built as a city by merging seven islands during the rule of British East India Company under the project called Hornby Vellard in 1845. After the independence of India in 1947, Mumbai saw an unprecedented growth achieving the status of a financial capital. In 1980, a process began to plan a sister city to the south-east on the mainland to be named Navi Mumbai. In 1985, Panvél found its own modern sister town, New Panvél. The sprawl of Mumbai reached Panvél in no time geared by the suburban railway arriving in Panvél by 1998, an extension of the Harbour Line in the Mumbai system. In June 2016, Panvél Municipal Corporation was created replacing the first municipal council ever built by British in India called the Panvél Municipal Council created in February 1852. A modern city founded by the colonial trading powers arrived at the doorsteps of a historical port town just within fifty years’ time. Figure 1.3 shows the locational importance of Panvél in history and Figure 1.4 shows the locational importance of modern Panvél in the region.

**Trading communities of the Țapăl Năkă marketplace:** Trading communities settled around Țapăl Năkă in the end of eighteenth century. Most of the
Figure 1.2 Tapal Naka precinct in relation to Panvel city shown in orange colored transparent hatch. Map created by Neha Sayed Made with QGIS ver. 3.20 (2021) and GRASS ver. 7.8.8 (2021) using vector data copyrighted OpenStreetMap contributors and available from http://openstreetmap.org.
communities settled here have migrated for trade from neighbouring states. Panvēl port has a historical significance in creating the current trading community dynamics. In the available sources today, I could trace back Panvēl port in the translation of a book written in 1762 in Gujarat called *Mīrāt-i-Ahmādī* by Ali Muhammad Khān (Khān 1965). The Persian scholar mentions Panvēl as a Portu-guese port in 1570. The Portuguese might have occupied it in 1530, as they occupied a much larger port in the north which they called Bassein, known locally as Vasai (Cunha 1876). Figure 1.5 shows the location of Panvēl port on the west coast of India. It also shows other major ports which have played crucial part in international trade since antiquity.

A recent study done by Dhopte (Dhōptē) presents analysis of three copper plates from the Śilāhārī dynasty (Dhopte 2008). One of the copper plates is about a land grant issued in 1120 CE mentioning a district called Prāṇṭōtpal which is identified as modern Panvēl. The historical references of Panvēl as a port start to appear only with the arrival of Portuguese in the middle of sixteenth century. The port forms part of a narrow strip of land on the west coast of India known as Koṅkanī This region witnessed change of power between various imperial forces in the sixteenth century. The most powerful among them were the Sultanates of Deccan, the Āḍilşāhī and the Nīzāmšāhī, the Sultanates of Gujarāt and the Portuguese. Portuguese and Nīzām Şāh’s ruled in coalition doing a profitable trade through a prominent port in the south of Panvēl at about 74km by road called Caul from 1530 to 1570 (Sohoni 2014). Caul is historically prominent, dating back to Hellenic period. It is mentioned by Ptolemy as Simylla (Cunha 1876). In 916 Caul had a population of 10,000 people descended from mixed marriages of Arab merchants and local women (Eaton 2019). The cosmopolitan nature of Koṅkan’s port towns and the flourishing trade communities can be traced back to this period. Eaton points out in his book, how trade became part of governance along with the presence and equal importance of Sufi saints in establishing power (Ibid). This dynamic becomes apparent in the data analysis of ethnographic work presented in the fourth chapter (read section 4.1 and 4.2).

In the late sixteenth century, Koṅkan saw another interesting development when an Ethiopian slave minister, called Malik Amber in the court of Nīzām Şāh

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5 A royal clan under the larger Rashtrakuta dynasty, who ruled what is today known as Mumbai from 800-1265 CE.

6 Indian history refers to the period between 6th century CE to 13th century CE as an ‘early medieval period’.

7 A strip of coastal land stretching three states of western India and is bounded by the western ghats on east. The maximum width of land is about 140km from coast and the least being 30km.
of Junnar\(^8\) established an army of about 50,000 soldiers, fifth of whom were Abyssinian Siddhis brought in through the ports of Konkan, further enriching the cultural landscape. The shifting of ruling power between the northern Gujarati’s, the Deccani Bahâmani’s and the newly arriving Portuguese rendered the ports of Konkan extremely cosmopolitan nature. The culture is kept intact with a valuable presence of Sufi saints who preached peace, prosperity and equality. Caul lost its importance as early as 1672 when the influence of all these three powers declined along with the arrival of the Mughuls and later the English who shifted trade to Surat in Gujarat and Mumbai (then Bombay) in Maharashtra respectively. The communities that arrived and settled around the port during fourteenth and fifteenth century had already diversified the social landscape of the port cities. This can be seen in the recorded population of Panvel in 1881 as follows (Campbell 1882):

"...The 1881 population returns show, that of 101,181 people 94,144 or 93.04 per cent were Hindus, 5920 or 5.85 per cent Musalmans, 500 or 0.49 per cent Jews, 486 or 0.48 per cent Christians, and 131 or 0.12 per cent Parsis. The details of the Hindu castes are: 3476 Brahmins; 904 Kayasth Prabhus, and 101 Patane Prabhus, writers; 1123 Vanis, 328 Jains, 166 Lohanas, and 72 Lingayats, traders; 41,992 Agris, 16,177 Kunbis, 749 Malis, 106 Kamathis, 69 Vanjaris, and 51 Charans, husbandmen and gardeners; 132 Telis, oil-immers; 39 Rangaris, dyers; 25 Salis, weavers; 1143 Sonars, gold and silver smiths; 662 Sutars, car-penters; 484 Kumbhars, potters; 358 Lohars, blacksmiths; 211 Kasars, bangle-sellers; 173 Shimpis, tailors; 171 Beldars and 9 Patharvats, stone-masons; 15 Tambats, coppersmiths; 75 Guravs, temple servants; 26 Ghadhis, singers; 5 Bhatas, bards; 664 Nhavis, barbers; 124 Parits, washermen; 411 Dhangars, shepherds; 315 Gavlis, milk-sellers; 147 Bhois, river-fishers; 118 Khavris, sailors; 629 Bhandaris and 316 Kalans, palm-juice drawers; 372 Pardeshis, mes-singers; 207 Buruds, bamboo-workers; 24 Ghisadis, tinkers; 8 Khatiks, butchers; 8 Halvais sweetmeat-makers; 6 Lodhis, labourers; 7636 Kōkanis, 4309 Kathkaris, 3611 Thakurs, 387 Bhils, 107 Vadars and 29 Kaidalis, early tribes; 1092 Chambhars, leather-workers; 4429 Mhars and 71 Mangs, village servants; 29 Bhangis, scavengers; 77 Gosavis and Bairagis, 76 Jangams, 70 Gondhils, 28 Bharadis, and 2 Chitrakathis, religious beggars and wanderers."

This community landscape still exists in varying numbers. Some communities within the larger community of Muslims that are not mentioned in the list above are crucial to the understanding of migration and trade on Ėpāl Nākā. The Bohras, a Dawoodi Shia sect, that came from Gujarat, the Kōkanis which are a mixture of Arab travellers, the Khatris which are converted Muslims from Gujarat, the Deccanis that came from the Deccan Plateau and the Habīs

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\(^8\) Junnar was a capital of Nizāmshāhī, one part of four that Bahāmanī Empire split into after the death of Mohammad Gavan in 1481.

\(^9\) Transliterations of these words have been kept as per the original text in the Gazetteer. The rest of the manuscript follows ISO 15919 for transliteration of Indic scripts.
Traditional marketplace of Ṭapāl Nākā

(Abyssinians), originally Siddhi but now mixed with the local population. The importance of identifying and locating these communities within the marketplace is related directly to trade as you can see above. Each of them came to Panvēl to sell a particular product or provide a service. These communities contribute to the larger trading community that has survived throughout the known history spanning last four hundred and seventy years.

It is important to understand this complexity of the community and the factors that were responsible for its composition. It informs this research in multiple ways. Firstly, it helps to understand the ‘traditional trading networks’ elaborated in section 4.2. The social bonds that the community develops bridging the religious barrier has produced the identity of Ṭapāl Nākā marketplace. This identity has not been acknowledged in the modern urban planning approach elaborated in section 3.3. Today we see a losing cultural landscape forced by a development authority which lacks vision and respect for history and heritage. The value of the communal landscape can be maintained in some form through enforcing the traditional trade with ubiquitous technology like IoT.

**Changing trade on Ṭapāl Nākā:** Almost until independence of India, trading communities of Panvēl enjoyed steady trade. The reason being, the port was fit for smaller trading ships, being almost 8km upstream from the first easily approachable port of Belapur. The Sultanates of Deccan and Moghuls were interested in building large armies with imported war-horses and army-men through the ports which might have required a larger depth of water and easy reach to the Deccan Plateau. Both Cau and Cambay (north of Surat) had the easy accessibility and hence became famous ports throughout history (seen in figure 1.5). On the other hand, this is precisely the reason why Panvēl marketplace remained a safe place for practising trade. Figure 1.3 shows Panvēl’s geographic location indented at the end of Panvēl creek. Contrary to it other ports were exposed to sea. Though, it has been extensively used as a military camp by Chatrapati Śivaji Mahārāj\(^ {10} \) in seventeenth century and by British in eighteenth and nineteenth century (Hamilton 1993). This could be another reason for a flourishing trade, as it was protected by the presence of an army camp. The seasonal flow of the river, dependence on high tide and the distance from sea-front created a protected port.

Since the very beginning Ṭapāl Nākā marketplace has been a wholesale market because of the presence of the port, availing import and export business. The Thana Gazetteer mentions Panvēl being a great centre for hemp-leaf or Gānjā trade (Campbell 1882). These leaves came from the Deccan Plateau through Bōr pass in bullock carts and was exported through the port to the ports of Gujarat,

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\(^ {10} \) Chatrapati Śivaji Mahārāj was a local Marāṭhā warrior king, who established a Marāṭhā kingdom challenging the Mughal empire
Figure 1.4: Locational importance of Panvel in modern times. Map created by Neela Sayed with QGIS ver. 3.20 (2021) and GRASS ver. 7.8 (2021) using ALOS-2 DEM ver. 3.2 provided by ALOS-2 (JAXA).
Figure 1.5  Location of Panvel port on the west coast of India. Map created by Neha Sayed with QGIS ver. 3.20 (2021) and GRASS ver. 7.8 (2021) using vector data copyrighted by OpenStreetMap contributors and available from https://www.openstreetmap.org.
Traditional marketplace of Ṭapāl Nākā

like Cambay and Surat. They were mostly used for smoking. The leaves were also exported to Mumbai and then to Europe to make a tincture of Cannabis Indica. Apart from hemp, salt and rice were two major exports, followed by sugar, cotton, tobacco, timber, fruits and vegetables. Import and export took place through the port until 1960’s. Trade through the port suffered a major blow when the Peninsular Railway, started by the British, connected Deccan Plateau to Mumbai skipping the road connection via Panvēl. During this time import of salt increased which was based on the road connection to the plateau. Rice was purchased in the market from the local farmers and then taken by road to Mumbai for sale in trucks rather than sending it through port.

The dominant Agrarian community surrounding Panvēl are Āgrīs which were salt pan workers and farmers. Today, they are leading the local politics and dictate regional mode of development. A peculiar trade pattern was followed to sell each product. This pattern dictated the architecture of the space. The trader’s home was his trading space. The same product was sold by multiple traders allowing them to share space. The importance of changing transport connection affected the trading pattern. The products sold and the transportation used in the sale, play a crucial part in generating the physical identity of the marketplace. The urban planning department does not conduct detailed studies of trade patterns before proposing development schemes. I discuss the Panvēl Development Plan in the third chapter in section 3.2 and elaborate on how the planning has deliberately disregarded the traditional architecture.

Panvēl gained a status of an administrative headquarters in the British period with the establishment of Panvēl Municipal Council in 1852. Later, it was assigned a Tālukā11 status in Raigadh district. Panvēl was the only marketplace for all the neighbouring four Tālukās because of the port and road connection. Mahatma Gandhi Road and Uran Road are the major road connections to these Tālukās. Ṭapāl Nākā at the crossing of these two roads became core of the marketplace because of these connections. The popular mode of rice trade was such that after harvesting the villagers would bring rice to Panvēl for husking and sell it to the wholesale traders. There were about thirty-five mills around Ṭapāl Nākā, among them two to three are active even today. With the money earned from selling the rice, farmers would buy other daily needs such as grocery and cloths. Ideally, they would spend a day in Panvēl and return by evening. This was the dominant mode of trade on Ṭapāl Nākā marketplace almost until the late 1980s.

This was also the time when the port stopped functioning as a major transport and trade hub, largely owing to increased efforts made by the modern government at promoting rail and road transport. Ṭapāl Nākā until the 1970s served as

11 Tālukā is a second level administrative division after district.
a major passenger transport hub, a place from where buses connected to other
major Tālukā places. This brought in trading activities such as inns, hotels and
lodges around Ṭapāl Nākā. Eventually this pattern also changed with the intro-
duction of bypasses aiming at faster mobility.

Current factors affecting Ṭapāl Nākā: The pro-development trading
community of Ṭapāl Nākā is reciprocal for a debate on technological develop-
ment and its concerns. Apart from this there is a harmonious cultural land-
scape spanning varied religions and casts. The micro-networks of traders that
contribute to-wards the larger identity of the marketplace are unique and valu-
able. Since independence the local Āgrī community produced visionary polit-
ical leaders who had a goal of bringing prosperity to the region. They lobbied
to bring national level infrastructure development projects close to Panvēl
(Balakrishnan 2019, 51). The strategic location of the city was their biggest
asset. The first was the Jawaharlal Nehru Port built in 1989 near Uran (seen
in figure 1.4). The international port handles about 55% of the total load on
all Indian ports combined (JNPT 2021). It created an employment option for
the next generation of the farmers who were now educated. The huge drift
of containers transport required large storage facilities for the companies and
farmers found it lucrative to rent out their land. Farming had already become
uncertain because of the changing weather and the small land holdings were not
practical for mechanical farming.

Around the same time in the 1980s CIDCO12 planned a sister city on the east
of Panvēl called New Panvēl. Panvēl found itself now connected to the larger
city of Navi Mumbai and eventually Mumbai. New Panvēl was built on the
paddy fields making it the first largest land acquisition project after the high-
ways. A precedent was set where farmers slowly started to see the importance of
their land value. In 1998, Panvēl was connected to the southern coastal region
of Koṅkan through the Koṅkan Railway. Long distance trains started plying
through Panvēl to all over India. Immediately after that, in 2000, the suburban
train connected Panvēl to Mumbai. Both these developments brought in mi-
grant populations triggering immense housing development in the surrounding
villages. Land dealings became a lucrative business for the villagers. This
affected Panvēl market directly. As the development reached villages, farmers
could now purchase daily needs in the villages. The wholesale market was
reduced to almost 25%. In 1990s, another major development took place.
Panvēl Agricultural produce market yard was built on the outskirts of the city
for easy vehicular accessibility. Some of the wholesalers bought shops in this
complex and started moving business away from Ṭapāl Nākā.

12 A semi government organisation called, City and Industrial Development Organisation, which has
been assigned the development rights in the region.
Lastly, the latest and the biggest game changer has been the Navi Mumbai International Airport. Located just about 2 km from Țapăl Năkă, it can be considered as the reason for setting Panvēl on the world map. Apart from setting a superfast mode of development, it has changed the life of people in and around Panvēl even before the first stone of the building is laid. About one thousand and one hundred acres of land was acquired to build the airport which required reallocation of ten villages. A respectful compensation was given to the project affected people. A large green-field development took place for the reallocation. The newly acquired wealth and loss of land resulted in increased migration of the farmers to Panvēl town, a process which had begun very slowly in the 1980s (Bridger 2018). It was no longer necessary for the rich farmers to visit Panvēl to buy wholesale goods; they could go to other markets in their newly owned vehicles. This time trade on Țapăl Năkă is witnessing a new rampant mutation. The west side of the square is becoming a jeweller’s market. There are about twenty new shops attracting the newly rich agrarian communities who now fancy investment in gold and flaunt it proudly.

This development is further accelerated by the merging of Panvēl Municipal Council into Panvēl Municipal Corporation in June 2016. I started this research in January 2016 and witnessed this development which was generating debate within the trading community. The Corporation started implementing a new set of development regulations directly affecting the urban fabric of the place. The biggest blow came to Mahatma Gandhi Road and Țapăl Năkă where a new road widening scheme is applied. Uran Road was given a new status of a state-highway passing through Panvēl connecting to the Deccan Plateau through Bhīmāśaṅkar Pass. The plan is made sighting it as a necessary step to be taken for increased vehicular load through the city. This decision is being implemented since the beginning of 2017. The trading community on Țapăl Năkă will be most affected as they lose about five meters of their shop depth from the roadside. Though they will be compensated for the loss, they suffer on the ground floor space, as the shops usually extend into storage spaces in the backside. The traders consider change as positive as widening of the road will enforce better parking facilities for their customers resulting in better trade. The community has come together to discuss and debate about how to adapt to this change. They are formulating arguments and slowly building their voice to convey their concerns. In these dynamics, IoT can play a crucial role enforcing their voice. IoT is being adopted by the community and the Municipal Corporation in different ways. I explain this in the section that follows.

1.3 Integration of IoT on Țapăl Năkă

Adoption by the community: This pro-development trading community on Țapăl Năkă has always been receptive to new state-of-the-art technology. It
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started with surveillance cameras being installed in the shops and the new apartment buildings. Initially the feed of the camera was only checked when a serious incident took place like theft. Now, the feed is streamed through live feed applications to selected mobile phones. It can also be seen on screens in the shops and in the stairways of the apartment buildings. A novel adoption is seen in the day-care centres where mothers can watch their kids on their mobile phones. Mothers are encouraged to keep a watch on their kids and if they spot their kid crying, they can call the day-care centre and enquire after her or him. This is my personal observation where I saw my friends using the app. Traders are using the cameras in their storage spaces to keep track of products. Some products already have RFID tags. The porters and transport systems are constantly connected with the traders through telecommunication as almost everyone in the marketplace now owns a mobile phone. This is explained at length in section 5.3.

Mobile phones are being used to strengthen already existing trade networks. Some, traders create unique techniques using mobile phones to enhance everyday trade. These involve on the spot diversion of product distribution or managing mobile employees in the marketplace such as tea-serving boys. The community appropriates the technology for the traditional pattern of trade. They make sure that the technology does not replace social bonds or makes traditional networks obsolete. The surveillance cameras are not used as watchdogs on customers or visitors. Their feed can be seen by everyone on a screen. The data is not stored more than a month, and it is accessed only in the case of theft. The technology is for the benefit of all stakeholders in the marketplace. Despite installing cameras in the entrance of shops or apartment buildings, there is a watchman employed who guards the premises. These guards are also present outside ATM’s in spite of the presence of cameras inside the room. A watchman is a fairly new service. The community has a relaxed and friendly approach to technology. They invent innovative ways of using the technology which does not entail the notion of control. On the contrary the Municipal Corporation uses it as a tool to enforce their idea of control. This idea of control is embedded in the hierarchical set up of the government body and its political inclination. The Smart City Mission established by the central government of India provides detailed guidelines about the implementation of Smart technologies by the state governments and Municipal Corporations. These corporations then set up a Special Purpose Vehicle (SPV), an institutional body to organise and implement the guidelines. New Delhi Municipal Corporation (NDMC), an efficient body has made detailed reports on projects to be implemented (MoUD, 2021, 68). The projects proposed talk about controlling the public space within which they have provided everyday services and healthcare.

Adoption of urban planning by Panvēl Municipal Corporation: The Panvēl Municipal Corporation was established in June 2016. In India the Municipal
Corporation is an administrative body for the urban areas having population of more than one million residents. Panvel was administered until 2016 by the first Municipal Council of India established in 1852. A Municipal Council in India is an administrative body for city or towns where the population is 100,000 or more. After the upgrading of Panvel Municipal Council to a corporation, several projects related to development were started. On the priority was widening of roads and demolition of illegal structures. Both these initiatives created an atmosphere of terror. My observations revealed few traders adding a small built-up space or making a shade in front of the shop. These do not create hindrance and is usually within the plots of the owners. Within days a demolition squad came and started demolition. The road widening scheme has not yet been implemented. It faced backlash from the community. The surveyors came repetitively to the marketplace to put marks on the buildings which seemed terrorising. The corporation created an atmosphere of terror (in section 3.2.5). In a few months, GPS systems were installed on the garbage collection vehicles. This time it was controlling its own employees. If an idle vehicle was noted on the screen in the main office, they could call the driver and ask why they are waiting. Surveillance cameras are installed on the traffic signals and circles. These are to monitor the traffic behaviour. The introduction of IoT technology by the corporation is to strengthen the idea of control which is what it wants to do while regulating the urban space.

The latest among these initiatives is to put data reading devices on the water meters and electricity meters. These feed data into the main office of these departments where billing takes place. The reading of the meters and the bill amount is sent on the user’s mobile phone. This ensures that a prompt billing takes place. Delay in payment can result in fines and few days delay can cause cutting the service. Reinstating the service is a tedious affair. It might require many visits to the offices. The control on everyday services is being tightened. IoT will be used by the corporation to better control the maintenance and services of the urban space. This is elaborated further in section 5.2.

1.4 Theoretical framework for ‘meaning of place’

This section presents a discussion regarding place and the theoretical framework I have adopted to develop the research project. I am investigating a traditional marketplace on the west-coast of India. As noted above the place has a complex history because of which an interesting urban fabric inhabited by cosmopolitan communities has emerged. This is not to say that other places in the world are less complex. The nature of their complexity would be different from the complexity of Tapal Nakas. The meaning of Tapal Nakas as a place is worth exploring considering its complexity. The meaning of place as a definition
Introduction

can provide valuable insight for design research (in section 6.3). As I wanted to focus on the meaning of place, I began searching for sources written by archaeologists, anthropologist, and geographers.

The advantage of conducting research on Ṭapāl Nākā was that it appeared to me as a thoroughly entangled place. A homogeneous entity, a tapestry full of colour and without seam. Ian Hodder captures the nature of entanglement where things and humans are living a reciprocal evolutionary life. He says,

“There is much to be done in terms of understanding the different paths we have taken as humans, caught up in our varied ways with things. But the big picture is clear. Since a dependence on made things became an evolutionary pathway, there has been one long movement, initially slow, but speeding up exponentially as the strands of human-thing entanglement lengthened and intensified.” (Hodder 2014, 33)

Hodder is an archaeologist trying to decipher the meaning of material remains of the past to capture the life it must have lived. He sees the entanglement as evolutionary process. This becomes clearer in Tim Ingold’s approach to material-human entanglement as a process in flux.

“...the pathways or trajectories along which improvisatory practice unfolds are not connections, nor do they describe relations between one thing and another. They are rather lines along which things continually come into being. Thus, when I speak of the entanglement of things I mean this literally and precisely: not a network of connections but a meshwork of interwoven lines of growth and movement.” (Ingold 2008, 4)

Ṭapāl Nākā as a marketplace is indeed in a flux. The space can be seen in continuous mutation. So is the trade. The communities are also evolving which have migrated here for centuries and have adopted local ethics. The life histories of these communities are entangled with trade practice and trading space. The flux in space and trade reflects a continuous adoption to change. What are the communities responding to? They are responding to development which is forced onto them by political processes that do not necessarily lie within the marketplace. These forces are external. Marxist geographer David Harvey sees a place as a social construct always in response to external factors which do not necessarily lie within the place. He says,

“...the only interesting question to ask is: by what social processes a place is constructed?” (Harvey 1996, 294)

Harvey explains the idea of cultural conditioning of place because of socio-political processes. The development policies declared at regional level affect trade on Ṭapāl Nākā. The properties owned by the traders are regulated without their participation in the designing of policies which takes place in the
government office. The traders vote for political representatives which are part of the machinery of a long legacy of political discourse. The community struggles to understand a way to generate a dialogue with such authorities. They are usually told to formulate their needs articulated in an already designed com-plaint form (read section 5.5 and 5.6). Place thus has external links which condition its internal realities. It is part of this larger socio-political process. Arjun Appadurai cautions us before arriving at a particular idea of place based on a specific approach to investigate the place. He suggests a balanced approach echoing Harvey’s concern where the internal realities of the place are cross-checked alongside the external forces. He says,

“...neither of the above properties [ways of understanding place] is quite sufficient to guarantee that a particular idea (expressed as a term or a phrase) will become hegemonic in regard to the construction of a place. It is also important that the image provides a credible link between internal realities (and specialist accounts of them) and external preoccupations (and their larger discursive contexts).” (Appadurai 1988, 46)

This is evident on Țapăl Năkă. I could see that the community is struggling to convey their meaning of place to the administrative authorities. The authorities on the other hand had a completely different meaning of the place. The struggle availed me the opportunity to conduct a two-fold approach to study the marketplace. I conducted ethnographic fieldwork to decipher the community’s meaning of place (chapter 4). Then, I analysed the artefacts produced by regulatory authorities like urban planning to define the meaning they produce (chapter 3). The disparity is evident, and I present it in this thesis as the main argument. This dynamic evolves with the introduction of the ubiquitous technology. I have discussed this in the previous section and elaborate it better in the fifth chapter. The entangled place of Țapăl Năkă is absorbing the ubiquitous technology effortlessly. The entanglement of things and humans is now not merely the shaping of each other, but it is about an equal power play. How to grasp this powerplay as a design researcher? Particularly in this case when I am part of the entanglement. Karen Barad’s agential realism provided an apt answer for understanding the becoming of materiality and humans where the agential role is distributed in bits and parts of what we inhabit (Barad. K., 2007). Developing on Neils Bohr’s model of an apparatus and taking insights from Michel Foucault and Judith Butler, Barad presents an understanding of the physical world,

“In my agential realist elaboration of Bohr’s account, apparatuses are the material conditions of possibility and impossibility of mattering; they enact what is excluded from mattering. Apparatuses enact agential cuts that produce determinate boundaries and properties of “entities” within phenomena where “phenomena” are the ontological inseparability of agentially intra-acting components.” (Barad 2007, 148)
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Barad’s apparatuses are boundary making practices where an intra-active agential cut creates a temporal distance from the observed data. In my research I enact an agential cut when I analyse the observed data about Ţapăl Năkă. It is a temporal distance I create from the data which also contains information about me. I look at the data by taking up the agential role of a researcher and this is the cut (distance). This separation allows me to comment on the phenomena of place as a design researcher. Ţapăl Năkă with all its materiality also plays an agential role in my research query where its matter comes to matter with my temporal separation. Barad says,

“The dynamics of intra-activity entail matter as an active "agent" in its on-going materialization. Or rather, matter is a dynamic intra-active becoming that is implicated and enfolded in its iterative becoming. Matter(ing) is a dynamic articulation/configuration of the world.”
(Ibid, 151)

The material and human relationship is intra-active as is in any matter. Barad differentiates ‘intra-active’ from ‘interactive’ where, ‘intra-active’ is a becoming of matter by reconfiguring itself and the other, while ‘interactive’ merely establishes an exchange through communication. Interactive communication is a give and take and does not necessarily define the existence of parties involved. While intra-activity is an ‘iterative becoming’ of ‘environment’ and ‘bodies’. Things become what they are through ‘intra-active’ behaviour. So, place is not a mere entanglement or a fluid evolution, but it is an ongoing material [re]configuring. This approach is apt to understand the relationship we will have as humans with our everyday space embedded with ubiquitous technology. Things would have a language of communication a very visible intra-action known to us and so we will talk to them. Within this basic theoretical framework, I explored the meaning of Ţapăl Năkă as a place, and it’s would be meaning when it is embedded with IoT. This intra-active relationship needed to be understood through a methodological framework. I chose ethnographic methods to engage with the community on Ţapăl Năkă. Ethnography here was chosen to help decipher the ‘meaning of place’. The method had to elaborate on the notion of place not only as a historical construction but also as a contemporary culture. Jan Assmann’s Collective Cultural Memory proved to be an ideal theoretical model to analyse the narratives of the community (Assmann and Czaplicka 1995). Assmann refers to memory as contemporised past, indicating the dependence of memory on objectivised culture in the social realm. The theoretical model presents six characteristics of cultural memory. I utilised these aspects as markers to analyse the ethnographic data and present the meaning of place as conceived by the trading community on Ţapăl Năkă. I talk about Assmann’s theory in detail in the section 2.2.2.
There are other approaches to place. Some that I found intriguing are discussed here. Urban design a discipline born in the middle of twentieth century as a reaction against urban planning revolves around the notion of place. It addresses place as a value assigned to space. The theoretical basis here is based in aesthetics and behavioural science. Place for an urban designer is a pursuit of improving the social value of space in order to regain the lost glory of social life of the medieval towns. An approach to weave the modern with the traditional began in Europe with *The Arts and crafts Movement* started by William Morris and John Ruskin (Blakesley 2009). The movement promoted a preindustrialisation guild-based community dynamic that had a richer social structure and better conditions for healthy living as compared to the industrial urban life dominated by pollution and disease. In England, Robert Owens pro-posed an idea of a new town where an industry forms the core of a village surrounded by the houses owned by the workers (Owen 1821). This was further developed by Ebenezer Howard in his concept of *The Garden City* (Howard 1965). Howard promoted the idea of a community living in harmony with na-ture. Scandinavian countries like Sweden and Finland, under the influence of German pedagogical traditions, referred to Camillo Sitte. While criticising the mundane modern architecture, Sitte pointed out the importance of public space and the juxtaposition of build-ings in the medieval towns (Sitte, 2013). Architects like Per Olof Hallman in Sweden and Lars Sonck along with Bertel Jung in Finland incorporated Sitte’s ideas in cityplanning which showcased the ideal blending of modern needs with the classical character that promoted a community dynamics (Nikula 2006). The effort of these architects is to re-build the social life lost in the modernism movement.

While in the USA, Kevin Lynch has been influential in the pursuit of identifying key elements of the city which can enhance the mundane modern social life (Lynch 1960). *Imageability* of a city, according to Lynch, is the quality of space which evokes a strong image in the observer. The image is achieved by planning social spaces like plazas and enriching mundane elements like streets. Lynch focused on building a social character of the city and ultimately building its lasting image in the inhabitants of the place. Christopher Alexander in his book *The Pattern Language* prescribes a code for design of space where he extended the perceptive model of place by introducing meaning of space in textual and visual form (Alexander 1978). Aimed at generating an increased sense of lived experience, the code is presented in an incremental form of a scale of space. The attempt of the text is to narrate an everyday experience which values the physical aspects of space almost as an equal participant coming closer to the idea of place. Alexander, by bridging the scale barrier, encompassed the complete sense of urban place. Taking this approach further William Whyte investigated the causal relationship of man and his spatial environment. Bringing focus on the interaction of the body with urban space. He pointed out the importance of
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architectural elements in shaping the social behaviour of urban dwellers. He wanted to drive attention to the minute climate change caused by the urban space and how it plays out in changing the social behaviour of people. In his book, Social Life of Small Urban Spaces, Whyte talks about a methodology of distant observation combined with talking to people to understand the social life in public space (Whyte 1980). Jan Gehl took this approach of studying human behaviour in urban space by pursuing the goal of understanding what makes a place, a place? Gehl also started his work in the beginning of 1970s by observing the activities of people around buildings (Gehl 2011). His observation led him to understand the connection of human scale and space where the activities play a crucial part in making a place lively. By providing a detailed study of each activity that a human can perform in the outdoor space, like walking, seating, talking, hearing and so on, Gehl presents an intricate inventory for understanding place and then to enrich it as a designer. His research greatly contributed to the field of urban design as it simply brought forward the quality and importance of urban place back into the discourse; this time focused on interaction between space and people. Gehl is influenced by the work of Jane Jacobs from the USA. Jacobs criticised the urban sprawl in the new American cities and promoted the lively city life which evolves on the edge of a street and parks (Jacobs 1992). She emphasised the importance of this vibrant social life in building safety and social robustness. Her work is still influencing generations of urban designers. Place was given a valuable position in urban design in the 1960s and 70s through the effort of these scholars and activists. After studying the approach of urban design, I could use it to understand the space in Ţapâl Nâkâ. It helped me to generate maps as artefacts for analysis of urban space. Though they are not included in this manuscript they helped to strengthen the insight generated from the analysis of ethnographic data.

As a location in geography and the idea of having a territory has made place an important topic of discussion for regional geographers. They have been investi-gating a notion of humanistic geography, where a meaningful location can be identified and observed. Tim Cresswell has compiled a handsome introduction to this perspective (Cresswell 2004). Cresswell builds on his mentor, Yi-Fu Tuan, who asserted the experiential aspects of place by developing his notion of place on the theory of perception (Tuan 1977). Tuan developed the idea of ‘to-pophilia’; meaning an ‘affective bond between people and place’ which reasserts the human centric view of experience as the bond. The bond for him is of con-templating nature. His pursuit is to derive a sense of place. It strives to locate the meaning of place as located within the human experience. Contemporary to Tuan is Edward Relph who explicitly developed on the theory of existentialism proposed by Martin Heidegger. Relph finds himself unable to detach the knowledge about place away from the human mind and body (Relph 1976). He believes that our existence is rooted in the bodily experience of place. This
Theoretical framework for ‘meaning of place’

brings us to the phenomenological perspective of Maurice Merleau-Ponty who embraces the experience as not only a cognitive process attributed to mind but extends it to the bodily engagement in knowing by being and performing self (Merleau-Ponty 2002). The dualism of mind and body is rejected by Merleau-Ponty and place becomes purely existential.

The psychologists’ approach to place has been of perception of space; leading to defining place as conceived by the human mind. David Canter, who practiced geographical psychology early in his career emphasises the importance of perception in understanding the spatial context that a person finds himself in (Canter 1977). Canter points out that place is purely perceptive where the body processes contextual data and internalises its meaning. Thus, the recognition of context lies in the actions which are carried out to engage with the context and the subjective interpretation of those actions. This approach does not take into consideration the nuances of cultural specificities such as personal histories described in a form of narration as Canter points out,

“...What can be learnt from place perception in the way people describe places. What emerges is that there are two important aspects to them. One is the evaluation assigned to it by people and other is the range and type of activity associated with it.... I have frequently found that respondents when questioned about places have great difficulty in putting their thoughts and reactions into words. There is a tendency to move immediately to accounts of actual spatial arrangements, difficulty being found in elaborating what they imply. This appears to be one of the weaker aspects of our culture. Experience of places are so complex that we find it invaluable to summarise them.” (Canter 1977)

Geographers such as C. C. Trowbridge introduced the concept of imaginary maps (Trowbridge 1913, pg.890). Trowbridge created categories of people based on their cognitive capacity to orient themselves correctly according to cardinal directions. Those who had no imaginary maps and indicated the directions correctly were placed in an ego-centric method of orienting. Those who had imaginary maps and indicated deviated directions from the cardinal directions were placed in the domi-centric method of orienting. This study attempts to categorise people on the basis of knowledge gained about the compass and rejects the notion of local-contextual-cultural construction of being in a place. The studies that were influenced by this work remained focused on image of a place built in the mind. Kevin Lynch is one of the researchers who adopted this idea and has been influential in the urban studies until today (Lynch 1960). This work has been questioned by scholars like Scott Heyes who has shown in his recent study on Inuits that they have their own orienting methods based on wind directions and speed (Heyes 2002, pg.35). They also use landmarks as reference points to locate themselves in the larger geographic area. The image
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of a space remains fairly limited to the confines of imagination and does not extend to the reality which is enriched with active bodily engagement with the surrounding physicality.

Desmond Morris while comparing humans to animals in the zoo points out that we give meaning to our surroundings by making sense of available resources and hence the validity of the city life is provided by the actions of humans and their willingness to engage (Morris 1996). This perspective is further enhanced by the experimental psychologists who focus on the stimuli provided by the surroundings. They consider it as a process of becoming aware of what we inhabit and hence is purely cognitive. Terrence Lee while talking about a neighbourhood emphasises the co-relation of territory and social relationships (Lee 1968). Lee is talking about constructing a cognitive boundary of the neighbourhood based on the location of houses of friends and relatives. He states that we as humans react by assigning meaning to our neighbourhood based on our cognitive capacity to relate to geographical borders, ultimately building a sense of belonging (Lee 1970).

I found these approaches limiting in exploring the complexity of place, which Canter has aptly agreed. I will revisit these ideas at a later point in my life. For the purpose of the thesis I adopted post-human ontology as discussed above which promises an approach of equality to materiality that we are and the one that surrounds us. With this perspective, I state below the design of this research project.

1.5 The research project

I began my PhD studies and research on Țapăl Năkă in January 2016. I started the research by trying to understand the urban space by making photographic street elevations. They were later used as probes in community workshops. Through this process I reconnected with the community on Țapăl Năkă and they committed themselves for this research. My intention was to start ethnographic work with the community as a process which will turn this project into an inductive research process. I had only one research question as follows:

How will the meaning of an urban place change with the introduction of IoT?

The query implied that I should know the meaning of place as derived by the community. The community can tell me this through community workshops and narrative interviews. I didn’t start with any specific numbers in sight. My advisor Professor Lily Diaz guided me and we decided to stop at six community workshops and about forty narrative interviews. With Professor Diaz, I wrote
a conference paper for Cumulus 2016 on collaborative community workshops (Sayed.N, Diaz.L, 2016). In the conference, I presented a video of the workshop which can be seen on Youtube¹³. I attended the Doctoral Summer School of 2016 conducted by Lily Diaz-kommonen, Paul Mulholland and Luis Bruni called, Interpretation, Narrative and Identity - Towards a framework for interpretation and reflection on cultural heritage in the digital age, having a focus on narrative analysis where I was introduced to the Artefact Analysis method (Diaz-Kommonen 2016c). Chapter three in this thesis is based on the knowledge gained from this school. This was further re-enforced by attending the Doctoral Summer School 2017 called, Event-driven Culture: Case Study, ”The Visit” organised by Diaz-Kommonen along with Paul Mulholland (Diaz-Kommonen 2017). I also attend-ed a workshop conducted by Diaz-kommonen on Artefact Analysis in Hybrid Lab Symposium 2018 (Diaz-Kommonen 2018).

The narrative workshops conducted on Ṭāpāl Nākā were tagged and transcribed as and when needed. Two papers based on this data set was presented: one in an anthropology conference in India IAC 2019 (Indian Anthropology Conference) focused on development (Sayed and Diaz-Kommonen 2019), and another in a folklore conference hosted by ISFNR (International Society for Folklore Narrative Research) called BNN 2019 (Belief Narrative Network) focused on saint lore (Sayed, Diaz-Kommonen, and Sayed 2019). I present this data set arriving at the meaning of Ṭāpāl Nākā for the community in the fourth chapter.

Figure 1.6 shows a timeline of this research process.

![Timeline of research project activities](image)

**Figure 1.6** Timeline of the research project activities showing conference publications and presentations in the bubbles and data collection and analysis process in the notes below.

¹³ Youtube link: https://www.youtube.com/watch?v=eS2UYy4KCOU
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In February 2018, I realised that the meaning of the community is in conflict with the meaning of the administrative authorities. I was witnessing the struggle of the community in conveying their meaning to the municipal author-ities while dealing with development policies. I needed to understand the ad-ministrators’ meaning of place. In this case, the administrators belonged to the discipline of urban planning. I planned an extensive space mapping exercise for the course of two months by employing methodologies of survey adopted by urban planning. I also studied the approach of urban design and architecture. Then urban design practice has not yet started in Panvel city. Though there are many educational institutes offering master level courses on urban design, the practice is not yet established in smaller cities like Panvel. There are several architectural projects under construction, and the city is enjoying the boom led by the recently proposed international airport project. With a framework of methods in place, I mapped the spaces of the precinct chosen as the fieldwork site by designing a geospatial database as per the OGC® GeoPackage Encoding Standard Ver. 1.2.1 (2018) to be used through QGIS (QGIS Development Team 2021) to build a Geographical Information System to process the collected data and make maps. The maps were made as they are in the three concerned disci-plines. Some of these maps are presented throughout this manuscript as and when needed for discussion. I also presented a paper on this dataset together with my advisor Professor Diaz in the ATUT (Annual Symposium for Architectural Research) conference in Finland to gain feedback on the work in process.

After analysing these maps, I arrived at different meanings generated by these three disciplines. I realised that the most relevant meaning for discussion was the one enforced on the community by urban planning. The maps that I had created were based on a small precinct around Tapal Naka (see figure 2.1). This was because I had to limit my work for the purpose of this research. Though these maps reflect the exact methodologies of artefact production adopted by urban planning, they could not be presented as artefacts produced by the department. This prompted me to do an artefact analysis of the artefact already produced by the department. This process ensured that I employed a method of analysis practiced within media research where the artefacts are not produced by me. It turned out to be useful and I arrived at a much better understanding of how the department instrumentalises control on urban space and thereby define the meaning of place. This data-set is presented in section 3.2 of the third chapter.

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In November 2018, I participated in the Panasonic Design Challenge floated by DesignSpark an online community. Panasonic wanted to test its new IoT components. My design proposal was selected for the second phase of the competition. I was in India for the conferences and this was a good reason to finally start investigating my research question regarding the meaning of place in IoT. In December and January 2019, I conducted a participatory design process for the design competition. Based on this work, I arrived at a design concept for a traffic management system in the marketplace using the Panasonic IoT devices. The design process led me to formulate an approach to designing IoT systems with the community which will empower them to build voice and participation in the urban development. This also led me to define a probable meaning of place generated by ubiquitous technologies when they are embedded in urban space. This dataset is presented in the section 5.5 of the fifth chapter.
2 Methodology

My methods in this research are primarily inductive. I started with one research question regarding the changing meaning of place. I knew that the answer will be gained through sustained engagement with the community. Several other data gathering techniques were used to support this initiative. I wanted to know the community, grasp its constitution and explore its identity. This is central to my approach towards design research. Though the selection of the field proved advantageous in terms of access, my intervention has proved beneficial for the community who fears to lose its identity. I know the community now as a design researcher differently than when I was just a part of it. The methodology I articulated allowed me an insight into the struggles of the community to retain the identity of the place. With that insight, I could do one design experiment using design ethnography.

2.1 Objectives for research

This research, a study of the changing meaning of a place, is a new media project aimed at arriving at the possible meaning of an urban place when it will be embedded with ubiquitous technology like IoT. While addressing this research question, it is important to establish the meaning of place as it is conceived by the community residing in the urban place. This led to the selection of ethnographic methods to conduct field work with the chosen community. In the case of this research, the trading community of Ṭapāl Nākā marketplace. The first objective was to understand how the trading community defines their meaning of Ṭapāl Nākā. The ethnographic methods allowed me to explore the relationship of the community with its urban space which helped to articulate their meaning of place. To avail the response of the community as a body I chose to conduct collaborative community workshops which became the first ethnographic method to be adopted. After completing a set of workshops, I proceeded to conduct narrative interviews as they could be done within the context of the community. This became the second method of ethnography helping me to ultimately define the meaning of place as conceived by the community.
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The community strives to convey this meaning of place to the governing authorities that control urban space. One such body is the urban planning department a subdivision of the Urban Development Authority. The meaning of place defined by the governing bodies like Urban Planning Department is generated for executing development projects. Their administrative goal of regulating the urban space and designing regional development ultimately defines a meaning of place. This meaning of place is produced as a result of designing artefacts such as development plans and reports. The second objective of the research was to study this meaning of place which is enforced on the community and is contested by them. I used artefact analysis as a method to analyse, decipher and explain how meaning of place can become embedded in these authoritative artefacts. Artefact analysis is related to ethnography, in that it is also a method of cultural analysis which uses material objects to elicit descriptions and narratives about a given culture or practice (Diaz-Kommomen 2004).

Within this dynamics IoT is going to play a crucial role. The administration is using it for control and the community is using it for aiding its everyday needs. The ubiquitous technology having an open-ended development platform can empower the community by helping them to strengthen their meaning of place. The exploration of this new meaning about to take shape led to the third objective of the research: to define the changing meaning of place when it is embedded with ubiquitous technology like IoT. This meaning was achieved by presenting an analysis of an IoT design competition project separately conducted but in the same field. Within this project, design ethnography was used to explore the specific design query. The design process also included use of other co-design methods based in user-centered design. This second methodological approach is separately presented below.

This research project caters to these three objectives of defining the changing meaning of place. A new media research project allows exploring and breaking disciplinary boundaries in order to mix and match methods for a specific project. Here too, the project oriented methodological approach benefits the re-search process and helps to arrive at focused results. While emphasising interdisciplinarity in design research Alain Findeli suggests that the ultimate goal is to arrive at a common problematic,

“...the very nature of project-grounded design research implies a multidisciplinary approach to be adopted. In this respect, pluri-disciplinarity, the mere juxtaposition of mono-disciplinary perspectives is not satisfactory. In the problematization and knowledge production phase of the research, it is inter-disciplinarity that is necessary. It requires the integration of the chosen disciplinary perspectives into a common problematic. Only then is it possible to set up the research protocols liable to yield the corresponding knowledge outputs.” (Findeli et al. 2008, 81)
My objective in this research was not to reject or adopt multi-, inter- and trans-disciplinarity as models. Rather the objective here has been to use the methodology as an explorative format befitting the research question and process. This is the reason why a single methodological framework developed within a single theoretical disposition was never a consideration (as a new media project, I would rather claim that the research is non-disciplinary). Findeli suggests inter-disciplinarity as a preferred approach, where methodologies are not combined to achieve a single result, but to contribute individually to a *common problematic*. Though my approach was to keep the methodologies in fluid state I remained honest to the research problem. The exploratory approach to methodology was only to make a stronger comment on the result.

The ethnographic fieldwork consists of two types of datasets. The first dataset includes ethnographic observations and is analysed with the theoretical framework based on cultural studies (in sections 4.1 and 4.2). The second dataset of maps created by the urban planning department was collected in the form of drawings and only one is analysed using the artefact analysis method for the purpose of this thesis (in section 3.2). As has been mentioned, these maps have been produced by a governing organisation in a planning department and have negligible collaborative initiative. However, the narratives collected from the community were produced in a collaborative effort and refer to a collective culture of a community. This distinct mode of production and the ownership of the datasets required a different analytical framework. The third methodological approach concerned a combination of design methods to arrive at a design concept for Internet of Things (in section 5.5). This particular approach and resulting design concept were specifically developed for a design competition. This chapter presents the methodological approach and analytical frameworks separately to emphasise their importance in arriving at the meanings of place.

The ethnographic fieldwork discussed in this thesis was conducted in a selected precinct around Ţapăl Nâkâ marketplace. Figure 2.1 shows the location of Ţapăl Nâkâ and the precinct. A precinct is a key concept in urban planning used to denote a district of a city or town for the purpose of policy application. It has an administrative connotation. I use the term here as an area which has clear boundaries and suffices as representative of the total area of marketplace. I chose the secondary roads as defining boundaries around the precinct. The two major roads that cross-define Ţapăl Nâkâ and the four secondary roads define a boundary forming four quarters. Though only a small part of the complete marketplace, it has almost all communities that are and have been instrumental in the trading practice on Ţapăl Nâkâ.

The theoretical framework adopted to study the meaning of place is presented in the first chapter in section 1.4. This has been instrumental throughout the research project. It dictates my perspective to look at a place and hence remains as an argument subdued beneath the main argument of this thesis. While
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explaining the methodologies adopted for the research project, I present a brief review of related work in this chapter. In the next three chapters I present the data analysis and build the argument. While presenting the analysis I discuss relevant work as and when needed. In the following sections of this chapter, I discuss the methodological development in detail.

2.2 Ethnographic methods

Selection of the method: The query regarding the meaning of place as conceived by the community led me to adopt ethnographic methods where a specific insight about the ‘place’ was sought. The data gathered through this initiative represents the knowledge that the community holds regarding their notion of Țapăl Năkă as a marketplace. I had the advantage of being a part of the marketplace and the community and in a way, it could be said that this made the research autoethnographic, since the community and its identity is internalised in me. My intention was to generate engagement with the community. I went back into the place after sixteen years as a researcher. My family’s involvement in everyday trade ceased in 1998. We were no longer players in the marketplace as traders. This aspect created a sense of relaxed compassion for me and my family. As we have remained as a strong memory in the community and the space. When I approached the community with the research question they willingly participated. I see two reasons in the access they allowed me. Firstly, they were waiting for an opportunity to record their historical contribution to the marketplace. They were witnessing the loss of identity, and they saw my project as an opportunity to record their personal, trade and place history. Secondly, the development schemes such as the road widening scheme had made them aware of the speed of change that the marketplace will go through. They wanted to share their concerns regarding the development processes which were not being herd by the government authorities. The access to their personal life was given because they know my family and here the trust dynamics of the marketplace is the key.

I took formal consent from the community for participation in the study on paper in May-June 2021. The process was heart-warming. I was in the marketplace in the middle of the second wave of COVID-19. The participants were worried and tense about the pandemic and its impact on trade. They were very happy that I came to take the formal consent. They signed immediately. One participant wanted to take time to consult others who had already given consent. He eventually signed the consent form. This shows that they did not give me power over the data right away, they decided carefully. Only one participant refused to sign the consent form. He is young and new to the trading practice. His wholesale grocery shop is located outside the precinct selected for this study.
Figure 2.1  Tapāl Nākā precinct. Map created by Neha Sayed with QGIS ver. 3.20 (2021) and based on a database created in GRASS ver. 7.8 (2021) compiled by gathering property related data in the precinct.
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He does not know my family. I had interviewed him as part of design ethnography task conducted for the IoT design competition. The data produced with him is deleted from the manuscript.

The community decided on giving access to me. My purpose here in this manuscript is not to write an autoethnographic account which will entail a detailed description from my point of view. I enact myself as a researcher while presenting the research argument in a chosen format. My opinions are presented strongly as concluding arguments which echo the communities voice transparently. Tami Spry refers to Barad’s *diffraction* (2007) while explaining the difference between the self and the other in an autoethnographic account.

“Karen Barad’s (2007) work in a scientific rendering of diffraction as a counterpoint to social theories of critical reflection and/as representation advances a stimulating methodological influence in autoethnographic labors of reflexivity. She argues that diffraction attends to the “relational nature of difference(s)” (p.72); applied to autoethnography, diffraction develops the relationality to otherness in autoethnography beyond a representation of differences. Rather than a representation of what is different between self and other, diffraction is interested in the effects of difference (Barad, 2007, p. 73).” (Spry 2017, 1096)

Spry wants to emphasise on the effects of the difference where the relational dynamic of the self and other. Her emphasis is on the performative body of the autoethnographer who is co-constituted in the field with others.

“At its core, autoethnography is about bodies interacting in a sociocultural space and time. Performative autoethnography is writing from/with/of the performative body as co-present with Others, the body as epistemologically central, heuristically inspirational, politically catalytic.” (ibid., 1104)

I have processed the narrative data through an analytical framework to arrive at an outcome of a research query (in section 4.1 and 4.2). This suffices part of the research query and is strengthened further by artefact analysis of an artefact that is part of the place (in section 3.2). Hence, the format of presenting the dataset within the analytical format strongly remains adequate and transparent, almost as raw data. These can actually be traced back to raw data. As the argument staunchly supports the communities voice regarding identity of place and concerns of urban development, I have given the narrative required transparency without risking personal damage. Spry presents this transparency as presence of researcher’s corporeal body. She argues that the arguments of the researcher do not necessarily count as the comments of the other.

“...in responding to the question of who “we” are in autoethnography must address the idea that autoethnography is not about the self. It is not about self-definition or identity construction (Spry, 2006, 2011); “it is never,” as Bhabha (2009) suggested, “simply a mirror
of your making” (p. iv). But a self-less autoethnography is also not ethnography, because autoethnography holds to the material methodological foundation of the researcher’s body. All research ultimately, pragmatically, brutally emanates from a corporeal body that exists within a socio-political context.” (Ibid, 1095)

Though Spry justifies the subjective stand of the autoethnographer as the voice constructed as part of the community, I would again state Barad (2007) here echoing her agential cut as a temporal distance for stating concluding re-search arguments. This stand is enforced by conducting the ethnography strictly through carefully designed methods. Almost like setting up an apparatus as Barad would say. I did not keep a carefully written journal. Though I am in-spired by the idea of compiling a thick description as Clifford Geertz advised. This turned the research in to an inductive data collection process. Geertz summarises the activity as,

“...The point for now is thick description. What the ethnographer is in fact faced with -is to accept when (as of course, he must do) he is pursuing the more automized routines of data collection - is a multiplicity of complex conceptual structures. many of them super-imposed upon or knotted into one another, which are at once strange, irregular, and inexplicit, and which he must contrive somehow first to grasp and then to render. And this is true at the most down-to-earth, jungle field work levels of his activity: interviewing informants, observing rituals, eliciting kin terms, tracing property lines. censusing households...writing his journal.” (Geertz 1973, 10)

My dataset consists of multiple artefacts layered onto each other. It began with documenting the marketplace by taking photos. Which were used in collaborative community workshops. I recorded the workshops in video and audio format. These were transcribed. After the workshops I conducted individual narrative interviews in the context of the participant. These were recorded either on a video or audio and later transcribed. In these interviews, I produced three artefacts documenting personal life and spatial relationship of the participant with the marketplace. I remained focused to the research question and created a dataset of the ethnographic fieldwork to pursue the ‘meaning of place’.

The data was collected without setting any specific limit apart from the precinct boundaries. I wanted to reach out to the community and talk to as many people as possible. Now and then I cross-checked by making lists about communities and making sure I had a fair representation. Initially, I didn’t have the issue of gender in my mind as I had seen in the marketplace that women play a crucial part in the financing of the trade. In 2021 one of my precious informants, a successful lady running a tailoring business lost her life, probably through covid complications. She is a unique example in the marketplace as she did a successful business while owning substantial property. There are many women
like my great-grandmother who owned all the property and married a man who is an able manager. Later my great-grandfather added quite a large portion of property to what his wife owned. I know two other families in the marketplace which have the same history. Apart from these women there are craftswomen in the Burud\textsuperscript{15} community that have been dominant players in the market-place. Women also played a crucial part in the oil-milling community, helping every-day with the milling process. The marketplace has respected the role and power women have in the everyday trade. I approached the research with this perspective when it came to gender issues. Hence, the data gathered, and analysis presented in the fourth chapter, section 4.1 and 4.2 reflects an extremely localised knowledge about how gender is perceived in the marketplace. My research is a transparent reflection of that identity without any conditioning from European academic training. The traders in the marketplace belong to various age groups. They start as traders at an early age, in their twenties, and stop in their eighties. Initially, I focused on the elderly as I wanted historical information. Since 2016, about four key participants are deceased owing to old age. Later, I engaged with all age groups without having any specific set in my mind. The data is rich with personal life stories which also connect to my own family on several occasions.

I was accessing the knowledge about history and tradition of the marketplace maintained by the community over generations. This is shared knowledge within the community and refers to many aspects of life in the marketplace: relating to personal life histories, trade practice, trade network, and property ownership. I knew the community from my childhood. Their relationship with space was known to me. I had observed that the community is continuously weaving the social fabric of the marketplace with space. The meaning of place is within this continuously transforming milieu of interlinked lives of humans and things. Karen Barad’s notion of post-human ontology helped me to grasp this where I could see the intra-active becoming of this relationship which is also internalised in me (Barad K 2007, 170). This in turn helped me to articulate a method where space will be referred to as a co-constituent of the community. A collaborative community workshop seemed an ideal format to begin the ethno-graphic work.

\section*{2.2.1 Collaborative community workshops}

I designed a \textit{collaborative community workshop} as the first method to be conduct-ed with the community. The format of the workshop was such that it should

\textsuperscript{15} Burud is a craft community specific to the west-coast of Maharashtra in the Raigad district. They weave bamboo artefacts needed for agriculture activity.
trigger informal discussion which could be cross-checked, improved upon, and becomes comprehensive. The aim of the method was to collect memories from the community which would lead to the exploration of their relationship with space and ultimately their notion of marketplace. The narration was about sharing memories related to property ownership, trade practice, Ţapăl Năkă as a market-square, and trade network in the marketplace. The participants shared details of their family history in the marketplace where they had to refer to the properties they own. While discussing the ownership details, they elaborated on the property itself explaining the organisation of space for trade and daily life. The narration about trade practice constantly referred to space. The trade space was shared with other traders extending the narration to their trade relations. The place already started to be built in the narration as an embodied space. Barad’s intra-active becoming could be seen evident in the narration. This is elaborated at length in chapter 4, section 4.1 and 4.2.

The collaborative effort was crucial as the participants corrected each other about dates, names and ownership details. Figure 2.2 shows the community gathered for the first workshop at Mr. Ashok Gilda’s home. We can see that they were keen on what is being shared and whether the complete and correct narrative came across. They particularly converted the workshop in a dialogue when an event was shared where the community came together to build a voice and convey their concerns to the government. The elderly traders had much more detailed accounts of trade transactions to share. Some minute details about property ownership were unknown to the younger generation, and they were visibly pleased to know the details. There were three traders who had been tenants of one trader also present in the workshop. These four participants built several narratives together referring to their personal lives attached to the property (in section 4.2). The sharing of memories enabled a collaborative and dynamic communicative pattern amongst the participants.

The workshop was a detached format where they came out of their daily life and then talked about it while referring to a projected image of their physical context. To aid the narration, I decided to use photographs of the buildings as a mnemonic device where the narrator takes help of a projected image while narrating. Mnemonic device is a concept borrowed from Jan Assmann which I dis-cuss at length later in this section (Assmann and Czaplicka 1995). Figure 2.3 shows the image being projected on a wall and the participants are referring to it in the narration. The image used was a photographic elevation of the streets in GIMP16 (seen in figure 2.3). The GNU Image Manipulation Program, GIMP, is an open-source raster graphics editor. It has been developed by volunteers since 1995. This year, in 2021 the community plans to release the stable version

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3.0 after twenty-five years of successful development. The program is used for image-manipulation, image-editing, free-form drawing and trans coding. It has been successfully used for video game production. There are about eight forks of the program available to suit user needs. My intention behind using the program is to adopt open-source software as much as I can. (Note: I have been using Linux for the last twenty years.)

As a mnemonic device, I used images of street elevations compiled by stitching several photographs covering both the major streets in the precinct, keeping Tapal Nak in the centre. During the workshops the images of these elevations were projected on one of the walls of the room such that they could be easily seen by all the participants (seen in figure 2.3). These images became a vital reference for narrators which they used to effortlessly weave their narrations. They could talk about historical details such as plinth\textsuperscript{17} lines of the old structures and the brackets for tying horses which are now hidden under the road as it rose over the years but could be easily explained with the help of the images. The image used was the elevation of the building they own or have tenanted. Looking at the building they explained the property ownership and how it was transferred to them. By referring to small elements of the structure they could explain their importance in everyday trade. It also gave an opportunity for others to chip in and talk about construction details in the coastal vernacular.

\textsuperscript{17} Plinth is the platform raised above ground level upon which the superstructure of a building sits.
architecture. They could explain the use of spatial elements like veranda for trade and social inter-action. They explained the shared spaces and its importance in everyday life of the community. The water tank built for the community on Ṭapāl Nākā was discussed repeatedly explaining its vital role in supporting the customers and the trading community. The narration evolved in a shared format where the community engaged in expressing communicative memory as a collective collaborative effort as discussed by Jan Assmann. I explain Assmann’s idea of collective cultural memory in a section below.

The workshops were organised with the help of the community. Most of the workshops were hosted by the community in their homes. It took me about a week to organise a single workshop. In the first workshop the host played a larger role in choosing participants. I wanted to test the dynamics of organising the workshop and hence did not interfere in the process. The issue of gender equal representation of participants was not there in my mind. In the marketplace, men usually manage the cash counter, they do everyday trading. There are many women who manage the cash counter like my mother who did work for ten years in our family business of building materials retail shop. After the feedback from my advisor on the first workshop, I ensured an equal representation of gender. I have also discussed this more in brief above on page 38.

The workshops were about two hours long. Technical support for managing the equipment such as cameras and recorders was provided voluntarily by my students and family. Figure 2.5 shows students of Pillai College of Architecture (where I taught for seven years before starting full-time work on my doctoral
research) preparing equipment before the workshop. One student kept the time by ringing a bell after every three minutes, the time allocated for each participant’s turn. Figure 2.6 shows a mobile phone for timer and the bell. One student kept the time and rang the bell. These instruments played a crucial part in the management of the workshop. The host served snacks making the event homely and energetic. I had a list of questions to ask in case the narrator stops abruptly. Some narrators had to be stopped so that there is enough time for others to speak.

2.2.2 Narrative interviews

After conducting six collaborative workshops I decided to change the method to narrative interviews. The narrative interviews could be easily organised and were conducted with one narrator at a time. The participants of workshops were not chosen for narrative interview. I chose the people for narrative inter-view such that I will have a fair representation of communities which exist in large numbers. I did not conduct a door-to-door survey for collecting demo-graphic data or to identify each community that exists in the marketplace. The participants who I interviewed identified themselves as part of a community through self-ascription. Making a list of the participants related to their community is a sensitive issue in India and hence it is not included in the manuscript. I started to conduct the narrative interviews with a rough list. The idea was to gather contextual data related to the marketplace and to thicken the data set collected through the workshops. The interviews were conducted
in the context of the participant while he was engaged in everyday trade. I had a list of questions which would lead the interview, but my focus was to engage the participant in informal conversation so that I could observe his activity. The questions were common and very basic related to their personal life, trade
practice and connection with the marketplace. The interview started with life history where the participant told me about his ancestors and when and where they migrated from to Panvēl. This is a very sensitive data shared with trust. With the same trust they asked me very private questions related to my family. I shared with the same candid honesty. The discussion related to trade practice and the trading community gave me intimate access to their personal histories and values elaborating the variegated religious landscape of the place. The idea was based on Barbara Tedlock’s *observation of participation* where I engaged in a conversation that included me and my family history in a form of sharing of memories and stories.

“In the ethnographic memoir, an author takes us back to a corner of his or her life in the field that was unusually vivid, full of affect, or framed by unique events. By narrowing the lens, these authors provide a window into their personal lives in the field, a focus which would not be possible in a full-length autobiography. The author of a narrative ethnography also deals with experiences, but along with these come ethnographic data, epistemological reflections on fieldwork participation, and cultural analysis. The world, in a narrative ethnography, is re-presented as perceived by a situated narrator, who is also present as a character in the story that reveals his own personality.” (Tedlock 1991, 77)

Tedlock’s approach to narrative ethnography stresses a co-constituted subjectivity where the ethnographer and the narrator engage in a participative dialogue rejecting the binary notion of self and other. Dustin Goltz talks about the ‘I’ in politicised autoethnography, saying that it never acts alone but it is deployed in a dialogic process (Goltz 2011, 387). The trader’s data presented here in the manuscript puts forth their and in turn my struggle with the development processes tinted with politics. The community always referred to their everyday life as a response to change driven by development. This got illustrated in the interviews better as I conducted these interviews with people in their context while observing their activities. The narrative interview was immersive in the sense that it allowed the participant to refer to the actual space surrounding him. He talked about the trade as he performed the activity. Figure 2.7 shows Mr. Shah Chimanlal Bhaichand in his hardware shop. Mr. Chimanlal gave me an interesting insight about his trade relations with the leather working community from whom he bought leather bags for water wheels. It helped me to understand how the marginalised communities participated in mainstream trade on Īpāl Nākā. The narrative interview also helped as the participant could point out to his surrounding buildings and landmarks while including them in the narrative. In Figure 2.8, Mr. Kishore Khaire a bamboo craftsmen has been making artefacts in the margin in front of the synagogue. He lived in a building in front of the synagogue. This is where he grew up. Sitting there, he explained his relations in his context effortlessly. I could learn about his trade while spending two and half hours with him.
While talking with the narrator, three different visualisations were created. First was a genealogy tree which was drawn by me while they told me the history of family migration and settling in Panvēl. They told me about the first person who came in Panvēl and where he lived. The family tree evolved as they told me about their struggle in settling on the marketplace. When it came to their
own personal history they talked about their birth, education, marriage, and children. Figure 2.9 shows the genealogy tree of Mr. Raghunath Urankar. Mr. Urankar started with his grandfather who migrated to Panvēl from Uran. In his community they did not use a last name. His father adopted the last name when he migrated to Panvēl based on the name of the city/town/village they migrated from. His family is large, so I asked him to only describe as it grew from his father. He stopped by telling me the names of his grandchildren. Figure 2.9 shows his father’s cousins and his cousins as well. Simultaneous to this I asked him to point out the structures on a small map in which these events took place. This led to the making of the second visualisation showcasing their personal network in the marketplace. While they pointed out the properties they owned or rented, they also talked about their neighbours and indicated locations of cultural events. Figure 2.10 shows Mr. Urankar’s network close to his own house. The overlapping of information was done by me while he was narrating. The base map used is a snippet of the city survey done in 1926. Figure 2.11 shows Mr. Urankar seating in a garden close to Ṭāpāḷ Nākā when I was conducting his interview.

Figure 2.9 Genealogy chart of Mr. Raghunath Urankar (name highlighted). Drawn by Neha Sayed, February 24, 2018 on the instructions given by Mr. Urankar.

The third visualisation was an elaboration of the second one where I wanted them to draw Ṭāpāḷ Nākā street square as they know it in their mind. This is a method adopted most commonly in Urban Design to understand the role of
Figure 2.10  Network map of Mr. Raghunath Urankar showing his home in red colour. The structures in blue are the ones he had personal memories and relations indicating his personal network in the marketplace. Map drawn by Neha Sayed on the snapshot taken from the City Survey map.

Figure 2.11  Mr. Urankar seating in the garden close to Țapăl Nâkâ meeting his close friends. Photograph by Neha Sayed, February 24, 2018.

landmarks in the life of urban dwellers (McGlynn et al. 2013, 43). I asked the
narrator to draw Ṭapāl Nākā as they visualise it while being away from the location. Figure 2.12 shows the mind map drawn by Mr. Murbadkar who own the first cod-soda factory in Panvēl. Being part of the well-to-do flourishing trading community, he writes the names of each trader by drawing their plots. His relations in the marketplace with other traders and their trade forms the identity of the street-square in his mind. He does not give importance to actual landmarks like the Chatrapati Shivaji Maharaj statue on the water tank. The properties of the well-known prominent traders like him builds the image of Ṭapāl Nākā market square in his mind. Figure 2.13 shows Mr. Murbadkar in his new cold-drinks shop while I was conducting the narrative interview.

![Mind map of Ṭapāl Nākā](image)

**Figure 2.12** Mind map of Ṭapāl Nākā drawn by Mr. Murbadkar on February 19, 2018 and translated by Neha Sayed.

**Analysis of the workshops and narrative interviews:** Jan Assmann discusses the concept of mnemonic device while explaining the theory of *collective cultural memory* (Assmann and Czaplicka 1995). The mnemonic device is a reference image or artefact that a narrator uses to narrate an associative memory. This concept is developed from Aby Warburg’s work called *Mnemosyne*, a large collection of images and maps ranging from antiquity to contemporary Germany (Johnson 2012). Warburg emphasised the pictorial aspect of memory where the cultural artefacts from the past form a basis for memory construction. Borrowing from this, Assmann elaborated on *communicative memory* where the memory is not only culturally referenced but is also collectively shared. Our everyday communication is nuanced by social mediation.
via a group of people which generate pools of shared knowledge embedded in memory across generations. But this mediation is co-constituted with the cultural context. Physicality, practices, family histories, and social events form a basis for the construction of memory. Maurice Halbwachs explained this as collective memory where the community holds the key to memory as it requires social mediation over generations (Halbwachs and Coser 1992). Jan Assmann proposed a theory of cultural memory where he stressed sociological aspect of memory which he finds missing in Warburg’s pictorial memory and Halbwachs’s mnemonic functions of objectivised culture. Assmann proposes a three-pole model,

“...Our theory of cultural memory attempts to relate all three poles - memory (the contemporized past), culture, and the group (society) - to each other.” (Assmann and Czaplicka 1995, 129)

Assmann proposes six characteristics of collective cultural memory which I have used to analyse the content of collaborative workshops and narrative interviews. I discuss these characteristics below briefly.

**Concretion of Identity:** The first characteristic noted by Assmann refers to the identity of the community. He points out that community develops its identity through a meticulous process of associative referencing to the collective culture.
Methodology

“"The concretion of identity” or the relation to the group. Cultural memory preserves the store of knowledge from which a group derives an awareness of its unity and peculiarity. The objective manifestations of cultural memory are defined through a kind of identificatory determination in a positive (“We are this”) or in a negative (“That’s our opposite”) sense.” (ibid, 130)

On Tapal Naka, the social processes that are active such as trade form basis of reference as the practice allows several shared experiences. The memory is built referencing various aspects of the experience such as time, materiality and certain peculiarities of the community’s cultural character (in section 4.1 and 4.2). An identity is nurtured through the memory developed as a knowledge which is created on a shared ground. It is then preserved as shared knowledge. This motivated me to further analyse how narratives are related to practice and social networks, with the results that various details related to dates, personal relations, trade transactions surfaced as references. In Figure 2.14, you can see Tulsabai sitting next to the synagogue. She proudly narrated her relations with the Jewish community with whom she had strong personal ties. Her marriage was financed by the Jewish community.

Figure 2.14  Mrs. Tulsabai a bamboo craftswoman outside the synagogue. Photograph by Neha Sayed, March 11, 2017.

**Capacity to reconstruct:** The second characteristic of cultural memory noted by Assmann is the process of reconstruction where the past is referenced with the contemporary experience. Assmann says,
“No memory can preserve the past. What remains is only that "which Society in each era can reconstruct within its contemporary frame of reference." [Halbwachs, Das Gedächtnis]
Cultural memory works by reconstructing, that is, it always relates its knowledge to an actual and contemporary situation.” (ibid, 130)

Though the memory relates to the objects which are culturally conditioned over a long period, it always references the contemporary situation. People tend to appropriate, criticise, and upgrade memory in relation to contemporary situation (on page 128). This helped me to analyse the narrations related to change in the marketplace. Figure 2.15 shows Mr. Joshi’s house in the vernacular architecture and Mr. Vora’s redeveloped property in the background. The change in lifestyle and trade was always referenced in the narrative referring to the change in design of space. Mr. Joshi’s house is built by a Bohra community trader resembling a very peculiar style. This structure will be soon demolished owing to the road widening scheme. Mr. Joshi told me in May 2021 that only 30% of his plot will remain after road cutting. Whereas Mr. Vora’s rather long plot has proved ideal development opportunity which he has materialised by adopting the modern high-rise structure.

![Figure 2.15](image)

**Figure 2.15** Mr. Joshi’s house in the vernacular style and a tall apartment building constructed in the modern style on the plot owned by Mr. Vora where he lived in a similar house as Mr. Joshi before it was redeveloped. Photograph by Neha Sayed, June 5, 2016.

**Formation:** The third characteristic proposed by Assmann is of cultural formation where various cultural artefacts lead to give a concrete form to the cultural memory.

“The objectivation or crystallization of communicated meaning and collectively shared knowledge is a prerequisite of its transmission in the culturally institutionalized heritage of
a society. "Stable" formation is not dependent on a single medium such as writing" (ibid, 130).

Objects such as texts, images and monuments are extensively referenced while formulating memory. Figure 2.16 shows Mr. Vora’s plot in which two crucial monuments exist. First, the Pir Siddhi Badshah and secondly the Chatrapati Shivaji Maharaj statue. It is a crucial location for the trading community on Ṭapāl Nākā. There are several memories that are shared about this site spanning all religious communities. The statue is erected on a water tank, a crucial function of the market in the beginning of the twentieth century. In the same site, Mr. Vora started the first petrol pump of Panvēl. The collective memory of the community elaborating the meaning of place was evident through the referencing of such a site.

![Figure 2.16](image)

**Figure 2.16** Mr. Vora’s plot showing the Chatrapati Shivaji Maharaj statue on the water tank and Pir Siddhi Badshah’s mausoleum in the background. Photograph by Salil Sayed, February 6, 2018.

**Organisation:** The fourth characteristic is the construction of a specialised common practice of the community. Assmann refers to Nicklas Luhman’s idea of cultivated semantics and calls the development of an organisational cultivation vital for collective cultural memory (Besio and Pronzini 2010). Assmann talks of the organisation as a practice which cultivates meaning in a system through communicative symbols.

"With this we mean a) the institutional buttressing of communication, e.g., through formulization of the communicative situation in ceremony and b) the specialization of the
bearers of cultural memory. The distribution and structure of participation in the communicative memory are diffuse. No specialists exist in this regard. Cultural memory, by contrast, always depends on a specialized practice, a kind of ‘cultivation’” (Assmann and Czaplicka 1995, 131)

The practice itself is an organisation with distinct communicative patterns preserved in memory, establishing a strong social system. Cultural memory depends on collective practice of the community and on the norms that bind the practice together. This helped me to understand the constitution of trade on Țapâl Năkă. Participants narrated memories of trade as a community practice which helped me to understand their survival in the marketplace for centuries. In Figure 2.17, we see a cluster of buildings having a single survey number. It was a building having a traditional space organisation. When the tenants received ownership of their part of the building it was developed piece by piece. Being the most prominent property on Țapâl Năkă, traders know all the owners and tenants in this property. In spite of the shifting of hands and fragmented identity there is a sense of togetherness within the traders who own it today. Though no longer legally bound to each other, they refer to the neighbour as part of the same organisational trading space (in section 4.2).

Figure 2.17  Plot number 912 seen as a cluster of buildings. Photograph by Neha Sayed, June 8, 2021.

Obligation: Cultural memory is preserved through a system of values. Assmann has suggested that a community differentiates things in importance by distinguishing between itself and other communities.
Methodology

“The relation to a normative self-image of the group engenders a clear system of values and differentiations in importance which structure the cultural supply of knowledge and the symbols. There are important and unimportant, central and peripheral, local and interlocal symbols, depending on how they function in the production, representation, and reproduction of this self-image.” (ibid, 131)

The characteristic self-image of the community is carefully built by a prescriptive value framework. Cultural memory is a vehicle of this knowledge. Ėapāl Nākā marketplace has several smaller social networks based on trade or the identity of a community they define for themselves. The community also pre-serves a larger trading community identity based in shared values, practices or associations to smaller networks (on page 126). A sense of obligation was present in the narrations, where shared values and shared trading practice was emphasised. Figure 2.18 shows a corner plot owned by Mr. Vora and Laxmi Narayan Mandir, popularly known as Shāni Mandir, on the opposite side. The oil-milling community shared memories of their belief in Lord Shani and Pir Siddhi Badshah, a Sufi saint. The mausoleum is in the plot owned by Mr. Joshi but has access from Mr. Vora’s plot. Mr. Joshi narrated memories of how his father used to have dreams in which he has seen the Sufi saint several times. These cross-community beliefs exist right on the street square in the marketplace. The community maintains a sense of obligation to each other via such social channels.

Figure 2.18 Mr. Vora’s plot on Ėapāl Nākā and Shani Mandir. Photograph by Neha Sayed, February 6, 2018.

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Reflexive: Cultural memory is self-reflexive. Assmann points out that communities criticise, control and alter their self-image through cultural memory.

“Cultural memory is reflexive in three ways: a) it is practice-reflexive in that it interprets common practice in terms through proverbs, maxims, "ethno-theories," to use Bourdieu’s term, rituals (for instance, sacrificial rites that interpret the practice of hunting), and so on. b) It is self-reflexive in that its draws on itself to explain, distinguish, reinterpret, criticize, censure, control, surpass, and receive hypoleptically. c) It is reflexive of its own image in so far as it reflects the self-image of the group through a preoccupation with its own social system.” (ibid, 132)

It is also practice-reflexive, as it preserves the older practice into newer forms and adjusts itself with time. Traders on Ṭapāl Nākā narrated memories about certain trust and the way it was built in the trading practice. Memories about harsh times and hard work of ancestors that has led to the easy life was evident in every personal narration, which was shared knowledge (on page 128). Memories of mutual respect and celebrating festivities together ignoring the religious divide, were cultivated carefully and solely driven towards a harmonious trading practice. They were specifically shared to indicate the current change in the social dynamics. Figure 2.19 shows the first property of Saifuddin family. When they migrated and settled here, they had to work hard to establish themselves. The story of their struggle was elaborated by Mr. Mufaddal Vora, a fifth-generation trader. Today, the family owns many properties in and outside the marketplace. Their name is most trusted in the whole district.

Figure 2.19  First property of Saifuddin family in the marketplace now split among brothers. Photograph by Neha Sayed, May 6, 2016.
Community’s meaning of place based on the analysis: The collaborative workshop and narrative interviews together gave me an insight about Ţapăl Năkă marketplace (in section 4.3). Though the community seems to have a complex nature, the analysis revealed that there is a simple social bond preserved through a meticulously derived ethical framework geared to protect the trade.

The use of Assmann’s characteristics of cultural memory as an analytical framework led me to understand the relationship of the trading community with the marketplace. In table 2.1a and 2.1b, I indicate the analysis as it is used for discussion in the fourth chapter. These networks are bound by many of the characteristics discussed above preserved in the cultural memory collectively. In chapter four, section 4.1 and 4.2, I discuss in detail how the trading community builds its network and utilises it when needed. I explain this again with the help of the pointers discussed above.

<table>
<thead>
<tr>
<th>Jan Assmann’s aspects of Collective Cultural Memory</th>
<th>Adoption for the analysis of narrative ethnography</th>
<th>Utilisation of the marker in the fourth chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concretion of Identity</td>
<td>This aspect helped me to understand the trade practice and social networks. I could utilise the details related to life histories and trade transactions.</td>
<td>This is not sighted specifically to support the argument in fourth chapter.</td>
</tr>
<tr>
<td>Capacity to reconstruct</td>
<td>This aspect is used to analyse the change in the marketplace. I could utilise the details related to the relationship between the past and contemporary situation.</td>
<td>(on page 128) I have shared an anecdote from a workshop where the participants talk about success of some traders and failure of others while responding to change caused by development policies.</td>
</tr>
<tr>
<td>Formation</td>
<td>This aspect helped me to analyse the importance of cultural artefacts like</td>
<td>This is not sighted specifically to support the argument in the fourth chapter.</td>
</tr>
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</table>

Table 2.1a Summary of Jan Assmann’s aspects of Collective Cultural Memory as adopted in the research project.
<table>
<thead>
<tr>
<th>Jan Assmann’s aspects of</th>
<th>Adoption for the analysis of narrative ethnography monuments for the trading community.</th>
<th>Utilisation of the marker in the fourth chapter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organisation</td>
<td>This aspect is used to analyse the importance of a trader’s property as an organisation designed for trade practice.</td>
<td>(on page 124) I have shared anecdotes from the workshops focusing on one particular property within which a micro network of traders exists. The network is utilised by the community as an organisation to build voice against development.</td>
</tr>
<tr>
<td>Obligation</td>
<td>This aspect is used to analyse the cultural dynamic of a cosmopolitan community.</td>
<td>(on page 126) I have shared anecdotes from the workshops elaborating on the unique interreligious beliefs of the trading community contributing to trust vital for trade. This social obligation leads to strengthen relationships resulting in tighter organisational defence against administrative issues.</td>
</tr>
<tr>
<td>Reflexive</td>
<td>This aspect is used to analyse the critical reflection of the community about change.</td>
<td>(on page 128) I have shared anecdotes from the workshops indicating the trader’s ability to criticise the practice while responding to change. The community’s ethical framework is based on this rationality vital to defend themselves.</td>
</tr>
</tbody>
</table>

**Table 2.1b** Summary of Jan Assmann’s aspects of Collective Cultural Memory as adopted in the research project.

The narrative analysis shows a changing marketplace, triggered by urban development policies. The community responds to change voicing their concern (in section 4.4). The community expresses concern about development as it
is planned without consulting them. The policies ignore community’s knowledge about urban space built over generations. This has resulted in a distinction between the meaning of place of the community and that of the administrative authorities which regulate urban space. Their goals are different. The community is working hard to achieve prosperity by building strong community dynamic. The collaborative effort to success gives them a better understanding of their life entangled in the urban space. The urban development authorities have a historical precedent of regional control. The meaning of place for the urban planning department is based in the regional development where the aim is to propose development projects. Urban planning department creates artefacts like development maps to propose these development projects. The making of these maps generates the appropriate meaning of place desired for control. In order to decipher this distinct meaning of place, I adopted artefact analysis as the second ethnographic method.

2.2.3 Artefact analysis of a map produced by urban planning department

The community that resides in the place and administrative authorities which control the urban space have a contrasting meaning of place. The participation of communities in the designing of development policies is not encouraged by the planning authorities.

“[development or regulatory] acts often also specified provisions for the preparation of interim plans or of outline development plans before preparing comprehensive plans. Each stage required a process of inviting public objections and suggestions. Delhi, for example, prepared a brochure to be distributed to citizens of Delhi explaining the reasons for preparing the city’s very first master plan. Within the overall framework of comprehensive plans, detail plans, variously termed in different states as detailed development plans, zonal plans, or town planning schemes were to be prepared. These too were supposed to be placed in the public domain for general objections and suggestions. The plans thus became statutory documents regulating the use of land through some form of mandated citizen participation. And as will be seen later, contestations around the nature of this regulation will emerge in the coming decades.” (Kumar, Vidyarthi, and Prakash 2021, 106)

The acts prescribed public participation, but the implementing authorities never actually managed to generate a dialogue with the communities to work together for development. From the perspective of the community which I am part of, the maps produced by urban planning department are seen as control artefacts. This approach is evident in the Indian urban planning scenario. Isher Judge Ahulwalia, an economist and chairperson of an autonomous think tank working on urban development policies, points out the disparity between the complexities of Indian cities and perceived planning solutions:
“...The principal flaw of the master planning approach in India has been that it has not allowed for the play of market forces in determining the scale and location of economic activity and build in these elements through flexibility...” (Ahuwalia 2015, 3)

The meaning of place for urban planning is embedded in these artefacts. They are not only artefacts for communication of policies, but they are also directives of control. A certain meaning of place is presented in the development maps prepared as drawings by the government’s planning department. These maps are used as artefacts for control. They are prepared by the urban planners following a template of content combined with a selective set of graphical representations. The graphical representation (seen in figure 3.5) is usually annotated to ease a certain level of readability. The choice of colours and hatches are standardised giving the artefact almost a global identity. The planning department does not provide a reading guidance for these artefacts apart from leg-ends. The language of communication is purely for the consumption of the planning department and dependant professionals such as architects and builders. The community for whom they are prepared for remains oblivious to the contents of these artefacts. They have a certain amount of fear associated with these maps as they know that the maps represent authority. The artefact analysis method is an ideal framework to assess the limitations and potential control of these artefacts. Lisa Given presents a broader view of the artefact analysis method.

“Although there is no one correct way to analyze artifacts, several approaches to analysis may be employed depending on the type of artifact being examined. These include content, discourse, document, historical, and narrative analyses as well as semiotics.” (Given 2008, 23)

I was first introduced to the artefact analysis method by my advisor Lily Diaz-Kommonen. She has used it very powerfully to analyse artefacts for design research. Her approach while adopting the method is comprehensive where she focuses on the dimensions of the artifact which contribute to the meaning in use. She quotes Klaus Krippendorff while explaining the nature of dimensions as,

“variables within which artifact are constituted: All physical objects have a weight, occupy space, and occur in time.” (Krippendorff 2005, 95).

With this approach she has developed a model based on the basic artefact analysis model of Susan Pearce. Pearce presents a model based on four areas.

“...a useful way of organizing the properties of an object for the purposes of artefact study is to divide these into four main areas: material, which includes raw material, design, construction and technology; history, which includes a descriptive account of its function and use;
environment, involving all its spatial relationships; and significance, which embraces its emotional or psychological messages. The sum of our understanding of these proper-ties may be described as the interpretation.” (Pearce 1994, 126)

This approach to the model provides a basic format to generate knowledge about the artefact. Diaz-Kommonen takes it further by incorporating five additional insights. These are oneness, dialogue, observer dependent, multiplicity and equivalence. She stresses that these aspects are crucial to analyse the meaning in use of the artefact. Diaz-Kommonen explains these points as follows:

“1. Oneness: The identity of the artifact is intimately related with its use and it is this use which determines its meaning. You cannot separate these two aspects. 2. Dialogue: The meaning of an artifact can only be discerned through dialogue with its users. 3. Observer dependent: Their study is not an independent idea. This means that the person(s) engaged in the analysis are invested in the discourse used to define it. 4. Multiplicity: Artifacts might have as well as support multiple networks of meanings 5. Equivalence: Signs are artifacts and artifacts are signs.” (Diaz-Kommonen 2016c)

It is through two doctoral schools (Diaz-Kommonen 2016c; 2017) in Aalto University and one workshop in the Hybrid Lab Symposium (Diaz-Kommonen 2018) hosted by Lily Diaz-Kommonen that I became aware of the use of this method. As an advisor and supervisor of this manuscript she has discussed and taught the method to me several times. Her research has a focus on museum artefacts and that is why she elaborates more on the meaning in use. She advised me to adopt Susan Pearce’s framework for the analysis of maps. Figure 2.20 shows Pearce’s framework as published in 1994. Pearce developed the model based on E. McClung Fleming’s artefact studies, where he proposes to conduct operations on the artefact as queries and thereby producing the information supplementing the artefact (Fleming 1974). Following his idea Pearce makes two columns, one of properties of the artefact on the left and another of format of information elaborating the property on the right. She presents five points exploring the artefact from its material to its impact on the current context of use.

Along with Diaz-Kommonen I prepared a framework adopting these five points which is seen in table 2.2a, 2.2b and 2.2c. We followed similar format where we elaborate on the properties on the left and format of description on the right. We also decided to analyse Panvēl Development Plan (PDP) based on this framework (seen in figure 3.3). The analysis is presented in section 3.2. It gave me an opportunity to strengthen the argument about the meaning of Tāpal Nākā as defined in the PDP. It also helped me to better understand, further analyse and elaborate the hierarchical government body of urban planning department which has almost no flexibility and sensitivity towards local contexts. The framework helped me to strongly put forth the role of the artefact in ultimately shaping the urban space and driving the development within the city.
It also helped me to elaborate the hierarchical government body of urban planning department which has almost no flexibility and sensitivity towards local contexts. I elaborate below these points briefly as I used them to analyse PDP.

The first property proposed refers to the material of the artefact (in section 3.2.1, 3.2.2, 3.2.3). The development plan is available as a print in an urban planning office which is a government body. It is designed by a specially appointed
planning authority. The design is based on a standard format of representation. A strict set of typologies are developed and adopted in all planning offices of India. I present a comparison of Navi Mumbai Development Plan (NMDP) to elaborate on the regional context. It also provided me an opportunity to discuss how the regional planning goals have forced local changes in PDP. The second property referring to the history of the map led to analyse the process of making PDP in the 1970s (in section 3.2.4, 3.2.5, 3.2.6). Its use by the then Municipal Council and now Municipal Corporation helped to elaborate on its impact on the community of Tapal Naka. PDP is now being adopted as a basis of the Panvel Municipal Corporation Development Plan (PMCDP).

<table>
<thead>
<tr>
<th>Artefact Properties</th>
<th>Content of Analysis</th>
<th>Location of the argument in the dissertation</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td>History of the map</td>
<td>In section 3.2.4 on page 94</td>
</tr>
<tr>
<td></td>
<td>Details of planning authorities and dates indicating the authoritative hierarchy of the planning department.</td>
<td></td>
</tr>
<tr>
<td>Use of the map after</td>
<td>Description of the use of map as carried out by the Municipal Corporations or other development authorities indicating their role in shaping urban space without a participatory effort with the community.</td>
<td>In section 3.2.5 on page 96</td>
</tr>
<tr>
<td>approval</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subsequent use of the</td>
<td>Description of the use of map as reference in the making of other maps as a restrictive source.</td>
<td>In section 3.2.6 on page 103</td>
</tr>
<tr>
<td>map</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>Responsible planning authority as a micro context</td>
<td>In section 3.2.7 on page 104</td>
</tr>
<tr>
<td></td>
<td>Description of the organisational set up within which the map is made showcasing the hierarchy of the organisation and</td>
<td></td>
</tr>
</tbody>
</table>

*Table 2.2a* Proposed model for analysing the maps prepared together with Lily Diaz-Kommonen (building on the model initially developed by Susan Pearce).
<table>
<thead>
<tr>
<th>Artefact Properties</th>
<th>Content of Analysis</th>
<th>Location of the argument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town Planning Department of Pune and the Urban Development, Department Maharashtra State</td>
<td>Description of the organisational set up of the Town Planning and Urban Development department at state level depicting the political influence on the organisation.</td>
<td>In section 3.2.8 on page 105</td>
</tr>
<tr>
<td>Ministry of Urban Affairs as the national level macro context</td>
<td>Description of organisational set up in the central government controlling the regional authorities indicating the control mechanism instrumented at the centre and then percolated through the government apparatus.</td>
<td>In Section 3.2.9 on page 106</td>
</tr>
<tr>
<td>Significance Meaning of the map for the planning authority</td>
<td>Description of the meaning as seen in the drafting of the policy in the map where it is used as an artefact of control.</td>
<td>In section 3.2.10 on page 107</td>
</tr>
<tr>
<td>Meaning of the map for the community for whom the map is designed</td>
<td>Description of actual site condition and response of the community depicting its struggle against an authoritative organisation.</td>
<td>In section 3.2.11 on page 108</td>
</tr>
<tr>
<td>Interpretation Meaning of Ţapăl Năkă generated through the PDP as an artefact of development planning</td>
<td>Description of the impact of the development policy proposed in PDP showcasing the impact of development policies on tradi-</td>
<td>In Section 3.2.12 on page 113</td>
</tr>
</tbody>
</table>

Table 2.2b Proposed model for analysing the maps prepared together with Lily Diaz-Kommonen (building on the model initially developed by Susan Pearce).
Methodology

<table>
<thead>
<tr>
<th>Artefact Properties</th>
<th>Content of Analysis</th>
<th>Location of the argument places having a rich historical identity.</th>
</tr>
</thead>
</table>

Table 2.2c Proposed model for analysing the maps prepared together with Lily Diaz-Kommonen (building on the model initially developed by Susan Pearce).

The third property refers to the environment within which the development plan is prepared and sanctioned (in section 3.2.7, 3.2.8, 3.2.9). It is an elaborate hierarchical set up attached to the government of state and at national level. The analysis of this environment reveals the stringent government apparatus driven by contemporary politics. Political leaders and professionals who are part of the planning authority are more inclined to the rigidly designed systems and international models of development. They are less sympathetic towards the communities and their local history. The fourth property refers to the significance of the artefact for the planning authority and the community (in section 3.2.10, 3.2.11). This allowed me to present the meaning of place as being defined by the PDP. The fifth property refers to interpretation of the map. This is where I have described the larger goal of the PDP through the proposed development policy seen in the map (in section 3.2.12).

**Meaning of the place through the analysis:** The analysis of the artefact with these three pointers indicates their operational role in regulating urban space. The impact of the development policies can be observed in the changing urban fabric of Ṭapāl Nākā. The process of artefact production discussed through the markers reveals the meaning of the place embedded in them. This meaning conceived in the administrative offices designed by authorities having political agenda does not reflect thorough knowledge of the communities for whom they work. The representation of the communities is boiled down to small number of persons easily manipulated by a powerful organisation. The meaning defined in the maps becomes quite distinct from the communities meaning of place. The maps define the place as an opportunity for planning development projects and managing regional connectivity and distribution of services. These maps promote a modern development ideal which does not necessarily protect historical identity and character of the place. A coastal city like Panvēl has a rich history of a medieval port and vernacular architecture designed for the trading community. The maps ignore this contextual informal vital for the community. Artefact analysis as a method proves fruitful to explore this meaning. In the third chapter I talk about this in detail.
2.3 Design ethnography for IoT design intervention

The second approach to methodology is a focused exercise conducted for a design competition. I participated in a design competition hosted by DesignSpark, an online forum along with researcher Salil Sayed towards the end of my studies without knowing that the competition entry can later be analysed for my doctoral research. Panasonic, Germany had announced the competition to develop a design concept using their new IoT modules. We adopted a combination of methods which can be described as partly design and ethnography. The topic of traffic management in the marketplace was taken as design challenge. The choice of methods was derived to elaborate the traffic dynamics and its manipulation at the local level by the community. The community has a unique pattern of traffic management. The Municipal authorities regulate the traffic at some extent mostly related to parking. The actual traffic dynamics is complex involving multiple activities happening simultaneously. The loading and unloading of goods happen along with customer vehicle circulation on the narrow streets. The traders have to park their vehicles on the street in front of their properties as the old and redeveloped buildings do not provide sufficient parking space. The design exploration was focused on this complexity seen as an opportunity to design an IoT network supporting and enhancing the management process. Almost four weeks were spent to complete the focused task of producing a design concept.

**Approach to design ethnography focused for designing sensor driven technology:** My basic understanding of the traffic dynamic of the marketplace came from my own experience in the past and the current observations in the field while collecting spatial data. These observations were confirmed by conducting narrative interviews. The scope for the competition was limited, and I chose design ethnography for this specific purpose. The space vs place approach much debated in the design of ubiquitous technologies comes handy here to justify my initial stand on the importance of place but with equal emphasis on space (Harrison and Dourish 1996; Dourish 2006; Harrison and Tatar 2008).

There are several approaches adopted in design ethnography when it comes to ubiquitous technology. The one that is of the engineers explores the software and hardware components by conducting data gathering from the community (Graells-Garrido and Saez-Trumper 2016; Shi et al. 2017; Lau et al. 2018; Al-Turjman and Malekloo 2019; Sahil and Sood 2019; Hofer-Schmitz and Stojanović 2020; Arellanes and Lau 2020; Marche et al. 2020). This research though crucial in the development of technology is not grounded on the understanding of the community. When I started with the experiment and decided to do design
intervention, I had a very clear idea of the community and its anticipation towards development. The recursive design process could be based on this understanding.

I began the process with the traditional approach where observations led to analysis and a core problem/interest space was identified. Though conducted in a traditional format it was not one-directional. The participants directed the discussions which led me identify the problem space. Michael Muller calls this space as the third or hybrid space within which technology design should take place through participatory design approach (Muller 2003, 1065). On Tapāl Nākā there is this third space that this research has availed. I conducted this experiment over the course of four weeks when conceptual development took place. A working prototype could not be built within the timeframe of four weeks. I explain below the process that I adopted.

**Narrative interviews with field observations:** Within the chosen precinct for study there are about three major nodes of wholesale trade. At these nodes the traffic dynamics is unique and crucial for an efficient everyday trade. For a week I went to the marketplace and observed these dynamics and documented it with photographs (in figures 5.2, 5.3, 5.4, 5.5, 5.6). I also conversed with traders and asked them their opinion (in figures 5.7 and 5.8). This is discussed in detail in sections 5.5.1 and 5.5.2. The traders were told that this particular query is to help me arrive at a design concept for IoT network. They told me about their everyday activity related to the traffic management in front of their shops. During this conversation, details about the porters’ organisation were also revealed. I could understand the management of heavy vehicles in the market-place. I also asked them about the use of mobile technology in the management. Their feedback was interesting as it indicated several insights to be adopted for design. Apart from many clues given by the traders, I noticed a unique way of temporal parking in the marketplace through these observations. I confirmed these by visiting the marketplace again to observe the activity with the traders from a rooftop. They elaborated on the pattern which I called ‘niche-parking’. This information needed to be further strengthened by converting the process into a Participatory Design exercise where I could ensure their insight in the design process. We conducted one workshop of user-games to begin this process.

**User-game:** Along with Salil Sayed who is also a design researcher, we formulated a user-game for the traders to elaborate on the everyday traffic dynamics of the marketplace. The idea was to trigger informal discussion around the traffic management while referring to images. Eva Brandt and Jörn Messeter proposed the user-game as part of design games where ethnographic field work was used as data. Their aim behind developing the user game was to,
“...to provide multiple stakeholders with means for developing, negotiating and expressing a shared understanding of users, use contexts and technology as part of concept design activities.” (Brandt and Messeter 2004, 123)

The collaborative effort was considered crucial in developing the design idea.

“The intention of the User Game is to help the stakeholders involved develop a shared image of the intended users grounded in field data. During the course of the game the image develops through the collaborative creation of a web of interrelated stories about the user.” (Brandt and Messeter 2004, 123)

Similarly, we asked the participants to formulate a story regarding their everyday activity using the photos. These participants told us many stories which proved insightful. They had a complaint regarding the role of the police which was ignored by themselves at times in the marketplace. The police is doing their duty without harming the market dynamic. The regulations enforced by the police are sometimes ignored by the stakeholders of the marketplace. Our goal was understood well, but the participants looked at it as a development project. Though apt for our purpose, they have got used to participate in the development project only in the form of complaints. This was evident in the workshop. An important aspect of the user-game was to communicate our goal and negotiate it with their aspirations. We realised that we had to compromise and settle at the insight we received from the participants. The workshop is discussed in section 5.5.2 (in figure 5.9). Because of time constraints I could not conduct another workshop.

**Cross-checking the concept with users:** Based on the observations, interviews, and the user-game I designed a concept for traffic management. The concept was to be implemented, controlled, and used by the traders. The aim was to give the authority to participate in their own development. I went twice into the market and showed the development in design to receive feedback. I could converse with two traders and both appreciated the concept. With their consent, I created some illustrations which can be seen in section 5.5. Their final remark was still to avail help of the police in maintaining everyday traffic.

### 2.4 Datasets, processing, and ethics

**Dataset:** The dataset was collected from the field in various forms over the course of two and half years. A chart of this is shown in figure 1.6. As part of the ethnographic methods, I conducted six collaborative community workshops at varied locations. Most of the workshops were willingly hosted by the community in their homes and some were conducted in my house. The community willingly embraced the effort and participated wholeheartedly.
Methodology (in section 2.2.1 and 2.2.2). I created a street elevation to be used as a visual aid in the workshops. An image editing software called GIMP was used for this purpose. I explain the use of the software in detail in the subsection 2.2.1. I began conducting narrative interviews to extend the method to larger community in the context of the participants. I have a sample of forty such interviews. Six workshops and a set of twelve interviews were transcribed in Marathi, the local language of the marketplace. I used a software called Gnome Subtitler for transcription from the recorded audio files as well as tagging and translation creating several files in the SubRip format (with filename extension ‘.srt’) meant for storing subtitles to videos. Gnome Subtitler is an Open-Source software used for the purpose of giving subtitles to audio and video. I used a Unix shell script previously written by researcher Salil Sayed for his own research. The script produces a CSV file (Comma Separated Values) with a ‘.csv’ extension by combining the SubRip (.srt) files produced using Gnome Subtitler18. The CSV file can be opened as a spreadsheet in any Office Suit such as LibreOffice for further processing. The interviews were further tagged in the spreadsheet and translated as needed for the specific purpose of a publication.

While conducting the ethnographic work I also conducted various experiments for producing a photogrammetry model of the main streets. This dataset was revised twice between 2016 and 2019. The first dataset was processed to make point clouds in VisualSFM, a software particularly designed with the objective of creating point clouds from photographic data. The process faced a challenge in taking photos on very narrow streets having tall buildings resulting in the inability of achieving convergent views. Since the resulting point clouds were very weak, I shifted to a new process. In January 2019, I did the exercise again aiming at making a 3D model by using the motion tracking technique in Blender19, a Computer Graphics Suite. This data will be used for future work related to this thesis. Instead, in February 2018, I started to document the space using hand drawn maps. These were later transferred in the GIS database using QGIS, an Open Source platform for spatial analysis and map-making. Using this database, I produced the maps that have informed this manuscript. A sample of two activity maps are presented in Appendix III. Simultaneously, maps produced and published by the government’s planning department were sourced and used as references within QGIS for producing the geometry need-ed for spatial analysis. In December 2018, a focused exercise which used ethnography for

18 “Gnome Subtitles is an Open Source subtitle editor for the GNOME desktop available on SourceForge platform that supports the most common text-based subtitle formats, video previewing, timings synchronization and subtitle translation.”, https://sourceforge.net/projects/gnome-subtitles/ (24/08/2021)
design was conducted for the Panasonic design competition aimed at producing an IoT design concept for traffic management in the marketplace. A week of field observations was supported by narrative interviews specifically aimed at understanding the traffic dynamics. One user-game workshop was conducted with the same narrators. A relatively small dataset was created over the course of three weeks for the purpose of the competition.

**Consent of the community:** Once again, the community was informed about the research aims and objectives. Their verbal consent was taken before collecting data. A formal consent is taken from the participants as per the Aalto University guidelines for ‘use of personal data regulation’ in May 2021. The participants were handed a privacy notice as per the EU regulation. The content of consent form and privacy notice was cross-checked by the research consultant at Aalto University. The data collected from the participants and from the planning department is shared to be used for this doctoral manuscript. All except one participant agreed to sign the consent form. The author’s role while conducting the narrative interviews was of an observer as participant as suggested by Barbara Kawulich, echoing Tedlock mentioned in subsection 2.2.2.

“...the role providing the most ethical approach to observation is that of the observer as participant, as the researcher’s observation activities are known to the group being studied, yet the emphasis for the researcher is on collecting data, rather than participating in the activity being observed.” (Kawulich 2005, 22)

Selected data from the above-mentioned dataset will be archived within the scope of **System of Representation Research Group** in the Department of Media at Aalto University. Another important note mentioned below advised by Barbara Kawulich is adopted while addressing anonymity. The participants who chose to remain anonymous have been assigned a pseudonym.

“Another ethical responsibility is to preserve the anonymity of the participants in the final write-up and in field notes to prevent their identification, should the field notes be subpoenaed for inspection. Individual identities must be described in ways that community members will not be able to identify the participants.” (ibid, 32)

**Authenticity of oral narratives:** The ethnographic work based on narrations of the community leads to two major concerns: firstly, the authenticity of the collected data, and secondly, my personal bias. The first concern about the authenticity of data as the community narrates their stories can be cross-checked only at the level where common knowledge about the place is in question. For example, dates, spatial locations and events. These references to persons, events and structures repeat and, in their repetition, get cross-checked. When it comes to personal life events, beliefs, and experiences the authenticity of the narration should be addressed as first-person experience. The narration
elaborates narrator’s relationship with the marketplace. The nuances of the narration expose the community’s commitment and engagement to the marketplace. A strong ethical bond already exists within the marketplace which has kept the trade alive for centuries. The fearless sharing of personal life is also done on this understanding that most of it is already common knowledge. For a trader on Ṭapāl Nākā, his family and family events are inseparable part of this long-time commitment to trade. Authenticity has been the capital in this marketplace. People told me about the hardships they have faced when they were marginalised within the marketplace. That divide has now eased, but the past is referred to in their narratives. They do not pretend that they want to forget it or show that they have now become rich and that past doesn’t matter. They rather boast the opportunity that the marketplace provided them to progress and climb the social ladder. My commitment to the community is keeping this trust intact and respecting the value they brought to this research by sharing their life.

**Bias:** Another crucial concern for the ethnographic research has been about the bias which I as a researcher bring to my analysis and conclusions. As I have stated earlier, the ethnographic data is co-created where I am present as a co-narrator building a narrative together with the participant. Though I have used a theoretical framework to analyse the workshops, this analysis invariably includes me not only as a researcher but as one from the place. The subjective bias here is stronger as a researcher, creating a temporal distance from the data to be analysed. Karen Barad refers to this as an agential cut where the researcher detaches himself from the work and asserts his bias (Barad 2007). This is discussed in more detail in section 1.4. Thus meaning of place that I have sought to bring forth through the analysis is based on two agential roles: first, as a part of the community, and secondly, as a researcher.

**Credits:** Due credit to the community and the government organisations is given in the end of the manuscript. The authenticity of information shared by the community is cross-checked in the collection of the dataset by ensuring collaborative efforts. The community is close-knit preserving communal and economic bonds and respecting the communal pact of ethics. The narrations inform these ethics and hence ensure authenticity.
3 The meaning of Ţapăl Năkă assigned through urban planning

3.1 Development policies on Ţapăl Năkă from 1950 to 2018

This section presents the development Ţapăl Năkă marketplace from 1950 to 2018. In the evolution of Panvēl city, the marketplace of Ţapăl Năkă is probably an intermediate development. Meaning that it evolved as a market square in the early twentieth century whereas the Panvēl marketplace is mentioned in history as early as fifteenth century. Figure 3.1 shows the Ţapăl Năkă market precinct in the centre and indicates the evolution of the city around. The fishermen community near Panvēl creek must be the first inhabitants and other migrated communities settled around them. The gazetteer of Bombay and the Islands published in 1909 acknowledges Koli’s as the first inhabitants of Mumbai (Edwardes 1909). Next to their settlement is Vāni Āli (merchant’s row, of merchants of local origin) then the old marketplace of Panvēl locally known as Mirchi gallī (Chili lane) followed by Kāpaṛ gallī (Textile lane) or Mārwaṛ Bazaar settled by merchants from the northern states of Gujarat and Rajasthan. This is a typical pattern of settlement one can see in a coastal city of India including the metropolis of Mumbai. In the case of Panvēl, there is a locality in the north of the Kāpaṛ gallī where other communities not related to trade reside together, just outside the chosen area of study. They have migrated to Panvēl by appointment as tax collectors or on other important official posts by the eighteenth-century Marāṭhā rulers. These communities chose to live separately from other communities. Some of them chose to settle around Ţapăl Năkă market-place and did adapt to trade such as owning rice mills. The migrating trading communities from the state and other parts of India preferred to settle in the marketplace which became cosmopolitan. The current cosmopolitan community dynamics of the marketplace must have taken shape in the fifteenth and sixteenth century when the west coast of India was bustling with international trade (Eaton 2019). This was true until the colonial period as the Portuguese and British both used the port predominantly for trade. I have
explained this at length in the first chapter in section 1.2. It is one of the reason why Panvel Municipal Council is the first Municipal Council in India formed in 1852. Mumbai had not emerged as a major trade centre yet.

The southern part of the marketplace had all sorts of mills and a good number were owned by the Jewish community. The marketplace grew and gained a strong identity because of its agrarian customer. This background is well explained in the first chapter in section 1.2. There was a stable symbiotic relation-ship between the farmer who brought agricultural produce to the market and the trader who supplied necessary daily needs. Transport systems were efficient; the port that brought goods and roads that helped in their distribution contributed to the efficient functioning of the market. A traditional but pro-modern marketplace developed rigorously. A new wave of modernisation was mobilised after the independence of India in 1947. The pace of this modernisation was beyond the grasp of the trading communities. Every ten years, a new national level development project was introduced within the vicinity of Panvel affecting the marketplace. These development policies were not only related to trade, but they were also about urban and infrastructure development. They were designed to improve the economic status of the agrarian communities which in turn altered the marketplace.

The first change in the marketplace came with the closing of Panvel port and building a bypass road from the outskirts of the city. This marked the beginning of new transport systems which contribute to the infrastructure of the city. Closing of the port did not affect the customers of the market, but the traders now had to reorganise and adapt to new ways of product distribution. The road-dependent product distribution prompted traders to build large storage facilities outside the city. The quantity of the storage space within the market got reduced. Around this time tax regulations related to wholesale trade kept on changing. Government introduced new schemes for trade licences and levied certain products. This resulted in insecurity related to wholesale trade among traders in the marketplace.

The decentralisation of Mumbai became a rising concern for the political leaders in the 1960s. According to Anupama Shaw the divided state politics was forced to deal with demand for regional development and spread of economic activity to backward areas (Shaw 1999, 957). The idea of Navi Mumbai gained stronghold and became a reality in 1971. Shaw points out the role of various committees which produced development plans and reports that has dictated the development policy as follows:

“As opposed to the inaction following the Modak-Mayer recommendations (Unofficial document proposing dispersal of industries and expansion of Bombay to mainland in 1947), the slow reaction to the Barve Group report (Government appointed study group to access underground railway proposal in 1958) and the 1964 Development Plan (Greater Bombay
Figure 3.1  hanging identity of Ṭapāḷ Nākā in relation to Panvēl city. Map created by Neha Sayed with QGIS ver. 3.20 (2021) and GRASS ver. 7.8 (2021) using vector data copy-righted OpenStreetMap contributors and available from https://www.openstreetmap.
The meaning of Țapăl Năkă assigned through urban planning

Development Plan prepared in 1964), the state government’s positive and quick response to
the BMRPB’s Plan (Bombay Metropolitan Region Planning Board prepared the DP in 1970)
and the speedy formation of CIDCO, provide a sharp contrast. It was as if the government had
suddenly, in the late sixties, awakened to the urgent need for urban management. Pressure
from the business class against relocation of existing units, active campaigning by profes-
sional architects through MARG (Modern Architects Research Group) and the backing of a
middle class looking for a better living environment helped galvanize the government and
direct it towards some concrete steps. CIDCO was set up by the state government as a
Public Limited Company under the Indian Companies Act and is a wholly-owned govern-
ment company. In March 1971 it was designated the New Town Development Authority for
New Bombay and in October 1971 it undertook to prepare a Development Plan. MARG’s influ-
ence on CIDCO was very strong in the early years when Charles Correa, Pravina Mehta and
Shirish Patel were given key decision-making positions. Their ideas shaped CIDCO’s Draft
Development Plan which appeared in October 1973. Final sanction was given to the Plan in
August 1979” (Shaw. A, 1999, 968)

The local political leaders saw this as an opportunity towards modernisa-
tion and economic growth. They invited and strongly supported project-based
development in the region. As a result of these efforts three national level
projects were introduced in and around Panvēl in the early 1980s. The first was
a town-ship for the employees working in The Oil and Natural Gas Company
(ONGC) built on the outskirts of Panvēl. This brought a completely new service
sector population which preferred a posh marketplace. The second project was
Jawaharlal Nehru Port Trust (JNPT) in Uran which created job opportunities
for local agrarian communities. The labour organisations strongly demanded
employment for the local population. The next generation of farmers now
shifted to service sector and focused on modern education.

These decisions which were taken in the late 1970s and early 1980s affected
Țapăl Năkă marketplace. Many other smaller markets popped up around Panvēl.
The speedy development of rural areas and urban Panvēl was changing the
regional dynamics. Traders struggled to cope with this change as trade became
uncertain. Those who were practising trade for generations diversified their
business activities. Mr. Karwa pointed out in the first community workshop,

“Țapăl Năkă market has now become a retail marketplace. Those who were in wholesale
business have shifted either to the new Market Yard or to Uran Naka like myself. Many of the
traders changed their business and adopted to new product or pattern of trading”.

Panvēl Market Yard was built in the 1980s to the south of the study area
and be-came another active trade centre where farmers could come and sell
their products. The location of the Market Yard can be seen in figure 3.2. Not
only did it connect to the other larger market-yards in the state, but was also
heavily depended on Agriculture Produce Market built in Sănpără, a node of Navi
Mumbai 20 km to the north-west of Panvél. This is where most of the wholesale traders decided to move to cope up with the change. The vegetable market on Ṭapāl Nākā also depended on the market-yard. The vegetable market is seen in figure 3.2. These factors slowly lead to a shift from wholesale trade to retail trade on Ṭapāl Nākā marketplace. Market liberalisation focused at faster economic development was initiated in 1991. The state politicians shifted their goal to developing economic corridors across the state. A recent study done by Sai Balakrishnan focuses on the shift in economic policies since the liberalisation process.

“Since liberalization, the infrastructural priorities in Maharashtra have shifted from big dams to economic corridors. The new megaprojects, which the state government calls its “marquee infrastructural projects,” include the Navi Mumbai Airport, the Pune Metro Rail Project, the Nagpur Metro Rail Project, the Mumbai Trans Harbour Link and Multimodal International Passenger and Cargo Hub Airport, and the development of the Navi Mumbai Airport Influence Notified Area (NAINA) Smart City around the new Mumbai international airport. The shift in infrastructural priorities stems from the growing pressures of territorial competitiveness faced by India’s various state governments. With the liberalization of the economy, the state governments are now in fierce competition with one another to attract private investment to their territories.” (Balakrishnan. S, 2019, 51)

Balakrishnan further emphasises that development of economic corridors such as Mumbai-Pune corridor has provided opportunities for development. Being an urban planner himself he sees the agrarian communities as beneficiaries of alternative economic growth. He says,

“Within the corridor region, I collected ready reckoner rates for 242 villages and census towns located in seven Tālukās: Panvél, Khalapur, Mawal, Mulshi, Hawēli, Baramati, and Khed. I selected these Tālukās because six of them (except for Baramati) fall within the Golden Triangle region, and the Mumbai-Pune economic corridor directly passes through them or indirectly exerts an influence on their land markets...The Mulshi and Mawal Tālukās are the most underdeveloped regions from an agrarian past, but they are now being re-valued due to their proximity to the economic corridor...The Panvél and Khalapur Tālukās, due to their proximity to Mumbai, started industrializing in the 1940s, and they are now benefiting further from their proximity to the economic corridor.” (Balakrishnan. S, 2019, 56)

Three major transport projects were developed as a result of the urban corridor proposal: first being the suburban train connection to Mumbai, and western railway connecting the Kōkan region to Mumbai and other states in India. Panvél became the terminus for Panvél-CST\textsuperscript{20} harbour line. Secondly,

\textsuperscript{20}Chatrapati Shivaji Terminal Previously known as Victoria Terminus, is a UNESCO world heritage site built in 1887. It is the headquarters of Central Railway and one of the busiest railway stations of India.
The meaning of Ṭapāl Nākā assigned through urban planning

the Kōkan Railway, because of which Panvēl became a major transport hub in Navi Mumbai for long distance trains. This attracted the service sector employee who chose to live in New Panvēl as he could afford a bigger and better home. Thirdly, the Mumbai-Pune Express Highway that bypassed Panvēl. This altered the commercially viable development around the National Highway.

The National Highway acts as a border between Panvēl and New Panvēl. New Panvēl having a population of 350000 developed its own retail marketplace in the 2000s. Other nodes of Navi Mumbai like Kamothe and Kharghar were developed in the last twenty years by acquiring farmlands. The Āgrī community which forms the majority of the agrarian community readily accepted land acquisition sighting economic growth. They relied on compensation money and other benefits such as reallocation of land somewhere else. Their politicians could not show them a future in farming. This shift of agrarian production directly affected Ṭapāl Nākā marketplace. As the farmers stopped producing rice most of the rice mills in Panvēl closed. The need of ancillary products required for farming reduced, and these traders had to shift to change the product sold.

In 2005, Panvēl was hit by a major flood. The water level at the peak of the flood on Ṭapāl Nākā was six meters. Shops and storage areas were submerged in water and traders suffered an insurmountable loss. Traders came together and approached the central government for compensation. They were given minor compensation. None of the old vernacular buildings suffered any loss, but a redevelopment meant generating capital and having a possibility to move out of another flood risk. The redevelopment drive geared up multifold by the announcement of Navi Mumbai International Airport (NMIA). The land prices soured, and traders decided to utilise this opportunity for generating capital. The land acquisition for the project was about 7200 acres causing displacement of 3500 families across 10 villages (Tirolkar 2021). This displacement of rural population caused the largest rural-urban migration ever in Raigad district. These villagers were given alternative housing in a newly built township near Panvēl. In spite of this most of them chose to come and live in Panvēl as the redevelopment policy had allowed an increased density creating more floor space.

Responding to these changes, the marketplace has been mutating; in the pattern of trading practice as well as in the organisation of spaces. The Ṭapāl Nākā marketplace, once famous for wholesale trade of rice and salt, has now become a retail market. Today, the wholesale trade is limited to grocery and hardware. A part of the market is converting into a jewellery market as the newly wealthy farmers prefer to invest in gold. This can be a temporary phenomenon, as it depends on the capital of the farmers. The newly migrated population might not participate in the trading activity. The wholesalers will find themselves lost and will move away further from the main street. The shops below the large apartment buildings will provide daily needs as is the pattern in other
Figure 3.2  Locational connectivity of Tapal Naka. Map created by Neha Sayed with QGIS ver. 3.20 (2021) and GRASS ver. 7.8 (2021) using vector data copyrighted OpenStreetMap contributors and available from https://www.openstreetmap.org
suburbs of Navi Mumbai. The role of malls and large grocery chains on the outskirts of Panvel will further contribute to this change. A tightly bound trading community building identity of a traditional marketplace will be lost to the contemporary suburban shopping-street pattern. The notion of place as a conglomeration of people and space is challenged by the modern urban planning principles. The social dynamic of fragmented social networks contributing to a larger place identity is crucial for sustaining community harmony. This very dynamic is about to get dismantled with the introduction of shopping malls.

As we saw above, multiple transport hubs have been developed around Panvel. The international port and airport and the railway station are prominent transport hubs altering the connectivity of Panvel with the rest of the world. Figure 3.2 shows a locational connectivity map of Ṭapāl Nākā marketplace with changing transport network. Until 1960s, Ṭapāl Nākā was the only bus stop in Panvel city. Ṭapāl Nākā was an important junction on M. G. Road which was previously known as Āgrā Highway or Mumbai-Puṇē Highway and later Karjat Road. M.G. Road connected the Panvel port to the north, south and east of India. Uran road bifurcates from M.G. Road on Ṭapāl Nākā establishing another valuable connection towards west to Uran and JNPT. This is one of the reasons Ṭapāl Nākā marketplace gained importance because of the road connections.

In the 1960s the first bypass to Panvel city was built, called NH48 also known as the Mumbai-Puṇē National Highway. This was done to create a possibility of faster traffic flow and avoid congestion in the Ṭapāl Nākā marketplace. In the 1950s, State Transport Service was established by Maharashtra government and later a bus station was built on the new highway. Private buses which used to offer services starting from Ṭapāl Nākā slowly stopped operating. The State Transport buses operated through the market square picking up passengers from the bus stop. In the 1980s, Hamid Mullā Road, named after a local personality, was built bypassing Ṭapāl Nākā and developing two new nodes: Pancharatna Naka and Uran Nākā. Today, on Ṭapāl Nākā, there is a three-seater rickshaw stand as the only transport facility available on the market-square. The farmers have stopped using bullock carts, and now they arrive at Uran Nākā in a bus or a shared rickshaw and then walk through the market. These new connections affected Ṭapāl Nākā marketplace as a beginning of slow decentralisation process. The marketplace started to alter from a wholesale marketplace to a retail marketplace.

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21 The National Highway 48, a system used to name the national highways of India.
22 The State Transport has gone through many iterations in the 1950s it was known as the State Transport, Bombay. Today it is under the Maharashtra State Road Transport Corporation which connects to neighbouring states of Madhya Pradesh, Karnataka and Andhra Pradesh. https://msrtc.maharashtra.gov.in/index.php/node/index/3
The introduction of NMIA at a close vicinity of Ṭaḷḷ Nākā altered the marketplace to a great extent in terms of regional connectivity. A state highway project is declared to aid to connect airport with Panvēl and further north and east. This is SH54\(^23\), called the Panvēl-Bhimāsāṅkar highway. This state highway will vary in width throughout its stretch, but the part through the city is planned to be a four-lane road which means chipping off the most important properties on Ṭaḷḷ Nākā completely altering its identity. As the new state highway passes through the street square and the old structures are demolished a new street square is taking shape. The alteration in Ṭaḷḷ Nākā marketplace took place because of the development policies proposed in the regional and city level development plans. These artefacts prepared by specially appointed planning authorities have specific development goals. Two regulatory documents care-fully drafted by the government are crucial in drafting a development policy for urban areas. First is The Maharashtra Regional and Town Planning Act (MR&TP) drafted and approved in 1966 and second is Urban and Regional Development Plans Formulations and Implementation guidelines (URDPFI) draft-ed and sanctioned in 1996. I present the artefact analysis of Panvēl Development Plan in the following section to indicate its role in defining the meaning of Ṭaḷḷ Nākā for the development authorities.

3.2 Analysis of Panvēl Development Plan

This section presents artefact analysis of the Panvēl Development Plan. The Panvēl Municipal Council was upended to Panvēl Municipal Corporation in 2016. A new revision to this map is under preparation. Until then this map is considered valid. The first development plan for Panvēl Municipal Council was created in 1966. The boundary is adopted from the survey map conducted by then City Survey Office in 1926 and additional land survey done in 1953. Land surveys are conducted by Tāḷukā Inspector of Land Record (TILR)\(^24\) office which is divided in two departments. One is the City Survey Department and the other is the Land Survey Department. TILR is now known as Mahabhualekh\(^25\). The Development Plan establishes boundaries sanctioned by the Municipal Corporation, district administration and state government. The second important regulation enforced by the plan is Land Use. The third piece of information in the plan is the list of amendments made to land use of certain plots which are highlighted in green and annotated as Excluded Parts, and in bright orange as modifications done by the Director of Town Planning.

\(^{23}\) State Highway 54, a system of naming state highways in India.

\(^{24}\) Tāḷukā Inspector of Land Records

\(^{25}\) Mahabhualekh is literally translated in English as ‘bigger land map’.
The meaning of Ṭapāl Nākā assigned through urban planning
Figure 3.3  The Panvel Development Plan
The meaning of Ţapăl Nákă assigned through urban planning

The DP mentions on upper right corner that it is submitted under section 30 of MR&TP act. This section requires concerned town planning authority to invite suggestions and objections from the public and to report changes in the newspaper. Section 30 and following two subsections are binding on the Town Planning Officer.

3.2.1 Material: Construction: physical attributes of the map

The physical attribute of the map leads to understand the process of making the map within a strictly hierarchical government organisation (in table 2.2 on page 62). The Panvêl Development Plan (PDP) seen in figure 3.3 is a scanned copy of a colour coded blueprint. I acquired the scanned .jpg file from the Panvêl Municipal Corporation. It can also be purchased as a print on paper from a private printing facility in Panvêl. The .jpg file is divided in two parts for ease of sharing. It is combined in figure 3.3 to understand the artefact better. The paper looks yellow because it is an old blueprint which was scanned after using the paper for a while. The map is created in 1992-93, when it was a common practice in the planning departments to draw maps by hand on tracing papers, most likely on Gateway sheets\(^\text{26}\) and then take blueprints as and when needed.

The original drawing as is seen in blue line drawing and text is hand drawn. The map content is created using two different sources as base data. First source is the Land Survey map created by Land Survey Department, which specifies ownership of land by assigning survey numbers. This is done to the plots outside the core city area known locally as gāothân\(^\text{27}\). This can be seen in an enlarged detail, ‘A’ in figure 3.4. The second source is the City Survey map created by City Survey Department, which specifies ownership of plots within the city limits of gāothân. This can be seen in enlarged detail ‘B’ in figure 3.5. The plots hatched with lines are too small for the scale of the map and hence their survey numbers are not indicated. The content of these two sources are traced by hand on the tracing paper to create the base map.

On the base map the policy of the Town Planning Scheme is presented by drawing new city limits, plot boundaries, assigning plot numbers and their land use by using colour coding. The meaning of the colours and certain alterations is presented as legend and small detailed maps. The text of the map is written using stencils. Alterations and additions of text is done using free-hand text as can be seen in the map and in the legend. The rendered blueprint has been repeatedly used for alterations and new scans are created. The border of

\(^\text{26}\) Gateway is a leading brand in manufacturing translucent tracing paper ideal for manual and print drafting. The paper is manufactured from 100% cellulose fibre without the use of transparentising chemicals.

\(^\text{27}\) gāothân is a Marâthi word for village settlement
the map shows mark of a protective tape used to prevent tearing of the original sheet.

![Map of Panvēl Development Plan](image)

**Figure 3.4** Detail 'A' showing the land survey plots in the background having their survey numbers on which the town planning scheme is superimposed.

### 3.2.2 Material: Design: presentation of content

The content of the map represents strict typological classification (in table 2.2, on page 62). The map presents two major spatial elements which are to be regulated by the Town Planning Office. The first content refers to area boundaries and second is to Land Use. Survey numbers are assigned to new proposed plots to ease the drafting of regulations and maintenance of records. Colour coding is used for Land Use to make the reading of the map easy. The legend list seen in figure 3.10 shows a classification of boundaries and land use derived for the Panvēl Development Plan. Panvēl nestles on a mound formed on the bank of the river Gadhi which is seen in the south. It has formed a natural boundary for the city. The other content shown is the road network. Each road has been assigned a width. Within the gāoṭhāṇ boundary new road widths are suggested, and new
roads are proposed as can be seen in figure 3.5. Below I discuss the two major contents which form the main design of the map.

**Figure 3.5** Enlarged detail 'B' showing the gāoṭhān boundary in red line and the plots hatched as grey indicate a mixed-use land-use applied to plots within the boundary and adjacent to main road.

**Gōathān boundary:** In the core of the map we can see a bright red boundary which represents the gāoṭhān, meaning old settlement. This can be clearly seen in the enlarged figure 3.6. This boundary is adopted from the City Survey Map prepared in 1926. The area within this boundary is classified as ‘Congested area’. The glossary of items shown in the maps indicate a policy modification, ‘M-16’ applied to this area. This modification specifies new development regulations by the Director of Town Planning. Within this area old survey numbers of plots are maintained and hence not indicated on the map. Only a handful of new plot numbers are assigned to newly formed plot boundaries within this area.

**Town Planning Scheme boundaries:** The first Town Planning Scheme known as the Town Planning Scheme No.1 adopted the boundary from the Municipal Council limits. This is seen in thick blue dash-dot line in figure 3.7. This boundary was created on the basis of the addition done in 1953 to the existing City Survey conducted in 1926. As the map was created before the Panvēl Municipal Corporation was formed it refers to the Council boundary as the
city boundary for administration. The map also indicates a thin blue dash-dot boundary indicating the land acquired and planned by City and Industrial Development Corporation (CIDCO). The land plots seen inside CIDCO boundary are indicated from the Mahabhualekh land survey maps. CIDCO creates zonal plans indicating plot boundaries and land use for the land acquired by them. The third boundary shown in the map is the boundary of the revised development plan seen in red. This is the new addition done to the city limits for which the map proposes land use and land plots. This additional land was a marshy land near the Panvel Port.

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28 CIDCO is an acronym of the City and Industrial Development Corporation of Maharashtra Limited (CIDCO). Completely owned by the State Government incorporated as a company on 17th March 1970 it is a public sector undertaking of the Government. https://cidco.maharashtra.gov.in/about
**Amendment boundaries:** An interesting boundary within the map is the black outline to certain plots indicating application of section 28 (4) and 26 (2) of MR& TP act of 1966 stated as follows: **Sub-section (4) of section 28** refers to the declaration of changes done to the public in a newspaper:

> [(4) Not later than two months, after the receipt of the report of the Planning Committee, the Planning Authority or the said officer shall consider the report including the objections and suggestions received by it or him and make a list of such modifications or changes and carry out the same in the draft Development plan, as it or he may consider proper. The Planning Authority or the said officer shall publish, in the Official Gazette and in not less than two local newspapers, the list of modifications or changes made in the draft Development plan for information of the public.]

**Sub-section (2) of section 26** refers to availability of draft development plan and related documents to public for raising suggestions and objections. It is stated in the act as follows:

> (2) [The notice shall also state that copies of the following particulars in relation to the draft Development plan are also available for inspection by the public and copies thereof, or extracts therefrom certified to be correct, are also available for sale to the public at a reasonable price at the place so named, namely :—] (i) a report on the existing-land-use map
and the surveys carried out for the purpose of preparation of the draft plan; (ii) maps, charts and a report explaining the provisions of the draft Development plan; [(ii-a) map showing the planning units or sectors unalterable till the Development plan is revised;] (iii) regulations for enforcing the provisions of the draft Development plan and explaining the manner in which the permission for developing any land may be obtained from the Planning Authority or the said officer, as the case may be; (iv) a report of the stages of development by which it is proposed to meet any obligation imposed on the Planning Authority by the draft Development plan; (v) an approximate estimate of the cost involved in acquisition of lands required by the Planning Authority for the public purposes, and also cost of works, as may be necessary. (Law and Judiciary Department 2015, 24)

These black boundaries seen in figure 3.4 are suggestions of people and these amendments are done by the Panvél Municipal Council and sanctioned by Town Planning Officer, Alibag and Director of Town Planning, Pune. A careful observation reveals that these are plots for gardens and schools. People have tried to express need or to protect green areas and school boundaries. There are other plots that are excluded from the development plan seen in figure 3.8. These are highlighted in green. These are amendments done on public suggestion by the Director of Town Planning, Pune.

![Figure 3.8](image)

**Figure 3.8** Enlarged detail ‘D’ showing amendments requested by people and sanctioned by the Director of Town Planning, Pune.

**Plot boundaries:** The development plan also shows new plot boundaries and survey numbers assigned to them. These are mostly created outside the plot boundaries as can be seen in figure 3.9. The new survey numbers are circled. The plots are developed within these plot boundaries. In some cases the developers buy many adjoining plots and then amalgamate them to build large gated communities. This is a popular trend around Panvél nowadays.
Land Use: Land Use is the second major content presented in the development plan. The legends shown in the map is a list of all Land Use types and boundaries presented in the development plan. The colour coding of Land Use is a standard followed in all the urban planning departments of India. Figure 3.10 shows the standard Land Use colour coding adopted in PDP. First Land Use prescribed is residential. The mixed-use Land Use also has a yellow colour but with a grey hatch. This is seen in figure 3.5. As we can see the plots facing main roads have been hatched with grey lines and are allowed a mixed-use having a higher Floor Space Index (FSI)\(^{29}\) resulting in more built-up area per unit area of land. Mixed-use refers to a building which has both residential and commercial use. The second type of Land Use is the public and semi-public use which includes schools, playgrounds, administrative buildings, and government hospitals. The third use is commercial and industrial indicated in blue and violet respectively. The green open spaces are indicated in green and water bodies in blue. The agriculture produce market, locally known as Market Yard

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\(^{29}\) FSI refers the Floor Space Index
has a dark blue hatch over plain blue background. Transport and communication shown in grey colour. There are several burial grounds and crematoriums in the development plan. Most of these locations are on the riverbank, and they are historical.

The distribution of Land Use is the main design consideration for development plans. In PDP as we can see in figure 3.3 the land use within the goathān is maintained in its original form. As historically Panvēl has been a place of administration the core of the city is dotted with institutional buildings. These are administrative buildings, schools, hospitals and post offices. As the communal landscape is cosmopolitan, there is a religious structure representing each community. The Taḍāl Nākā marketplace connected to the port having mixed-use land use is maintained. The development of land outside the goathān area shows predominant residential use and very few public open spaces. Whereas the old city had many lakes and open spaces for playgrounds within and outside its boundary. The proposed land use of the newly added and to be developed land is thus based on catering to the urban migration from rural areas.

3.2.3 Material: Characterisation: contextual comparison

Development plans are prepared at various levels of the government apparatus, and they follow exactly similar typologies applied at various different scales of land area (in table 2.2, on page 62). The largest level being the scope of regional development plan applied to a specific region identified for development. There are special notified area development plans as well which overlap existing regional development plans. In the case of Panvēl about four development plans overlap each other. First is Mumbai Metropolitan Region (MMR) development plan which covers the entire region around the metropolis. Secondly, Navi Mumbai Development Plan (NMDP) which is a project area identified to be developed as a satellite city to Mumbai. Thirdly, Navi Mumbai Airport Influence Area (NAINA) development plan, which is a special notified area for regulating development influenced by the airport. Lastly, Panvēl Development Plan (PDP) which regulates the development within the Municipal boundary. The planning department thus works on a hierarchical setup. The regional development plans dictate the local Municipal level development plans. The policies percolate to the smallest scale of an urban node also known as a suburb.

I will discuss here the design on NMDP and compare its content with PDP. This will help in generating a contextual comparison between the two maps. NMDP was proposed to cater to the increasing pressure of migration on Mumbai. The idea of developing a satellite city in the southeast called New Bombay, now known as Navi Mumbai was initiated in the 1960s. A committee formed to articulate the general development regulations for the metropolitan region of
Mumbai submitted a report to Maharashtra Government in March 1966. This report was sanctioned as the Maharashtra Regional and Town Planning Act (MR&TP). Through this act, the Bombay Metropolitan Region was notified in January 1967. The draft development plan for the Bombay Metropolitan Region endorsed the recommendation of a new metro centre called New Bombay. A public sector undertaking was formed by the state government to prepare the Draft Development Plan of Navi Mumbai called CIDCO on 17th March 1970. The Draft Development Plan prepared by CIDCO was submitted in 1975 and was subsequently sanctioned in 1979. The Development Plan seen in figure 3.11 shows NMDP revised and published in 2012. The plan proposed development
of 14 urban nodes (suburbs) linked to the Central Business District (CBD) in the centre of the region. Several revisions have been made to the DP since 1979 introducing new development policies mostly affecting the zonal boundaries (land use boundaries) along with introduction of new transit-oriented projects. The project of designing a development plan for a region is thus quite different from the process undertaken for a map like PDP. The PDP grows from an old city where the proposed development serves a specific growth need of a city. The NMDP indirectly affects the growth pattern of Panvël by proposing large scale nodal development.

The map seen in figure 3.11 is a new georeferenced map prepared by creating a database of land ownership. The process of making this map is discussed above in section 3.2. Figure 3.12 is an enlarged detail showing the overlapping of village boundaries with the new proposed land use. The village boundary is denoted in brown coloured dashed line and the zone boundary is a black straight line. The map indicates name of each village and shows the gaothan location with a black line hatch and a black boundary. The contours visible in the map are taken from the satellite imagery. Apart from the land use shown as zones in the map the road and rail network are indicated by formulating five road and one rail category. A separate Transport Network Plan is prepared by CIDCO using the same layers of data as mentioned above. Thus, the NMDP seen in figure 3.11 indicates regulatory boundaries, land use, proposed road-rail network, and new development projects.

The NMDP shows Navi Mumbai Project Area boundary in orange dash-dot line. The red dash-dot line indicates the boundary of Navi Mumbai Municipal Corporation (NMMC). This can be seen in figure 3.12. As the Panvël Municipal Corporation was established only in 2016 it is not shown in this map. It does indicate the Panvël Municipal Council boundary which is the area of PDP. This boundary is seen in figure 3.12 having an orange colour filling and labelled with ‘Panvël’. The NMDP indicates several project boundaries which is a major contribution of the development plan. We can see Jawaharlal Nehru Port Trust (JNPT), Special Economic Zones (SEZ), Agriculture Produce Markets30 (APMC) and Navi Mumbai International Airport (NMIA). The proximity of SEZ and NMIA introduced in last ten years have caused change in the development market of Panvël. The brown coloured rectangular area is NMIA seen in figure 3.12. The Agriculture Produce Market Committee (APMC) seen in figure 3.13 as an area hatched with brown horizontal lines is proposed by NMDP to cater not only to Navi Mumbai but also to Mumbai Metropolitan Region. A similar agriculture

30 APMC is a statutory market committee constituted by a State Government in respect of trade in certain notified agricultural/horticultural/livestock products. http://www.mumbaiaPMC.org/aboutus_new.html
produce market of much smaller scale called Market Yard is proposed in PDP. This market is supposed to cater to only Panvel Taluka.

The NMDP indicates six standard land use classifications. Figure 3.14 shows the enlarged detail of legend list. Though residential is listed first, it is less than the total industrial and project area combined. The nodal plans are not visible as they are usually drafted to a much smaller scale. The industrial area in the
north is known as Thane-Belapur Industrial Corridor which is sanctioned for chemical industry. The Industrial area in the east is known as Taloja Industrial Belt also sanctioned as chemical industry. The industrial zone in south has been converted into a Special Economic Zone\textsuperscript{31} and known as Dronagiri SEZ. It has the advantage of being close to JNPT as well as NMIA. This SEZ is classified as export goods manufacturing industry.

The NMDP shows two zones in the north assigned for wholesale market and warehousing. The second zone is in Kalamboli assigned for warehouses and hosts Kalamboli Steel Market Yard. We can see a commercial zone around NMIA. Part of it in the north of the airport comes under CBD and another part is in the south near the new airport. A large area in the south is assigned as the Port Area supporting JNPT is indicated in a pink hatch. The white zone on the west boundary is left as No Development Zone aimed at protecting the ecology of the marshy land adjacent to Thane creek. Patches of Panvēl creek, Kasardi

\textsuperscript{31} SEZ is a specifically delineated duty-free enclave with all required infrastructure provided under single administrative umbrella primarily meant for locating industries which manufacture and export goods and APMC is a statutory market committee constituted by a State Government in respect of trade in certain notified agricultural/horticultural/livestock products. http://www.mumbaiapmc.org/aboutus_new.html services. http://www.doingbusinessinmaharashtra.org/mobile/SEZ_in_Maharashtra.aspx
The meaning of Țapăl Năkă assigned through urban planning

river and Taloje river all connecting in Panvēl creek behind the airport are termed as Woodland Corridors and coloured olive green.

The NMDP is focused on a project driven development of a region. These projects affect the local dynamic and scope of city or suburban development. The higher FSI provided to the gāoṭhān area in PDP is a result of the land acquisition done for large projects around Panvēl. The content of NMDP is different in its scope than the PDP. The large scale of a region is used to generate a network of development projects. While in the PDP we see growth of a city where the city is now designed as a residential suburb ignoring its legacy as a marketplace.

3.2.4 History: History of the map

The history of the map reveals the organisational set-up (in table 2.2, on page 62). The Panvēl Development Plan seen in figure 3.3 is the second revision prepared under the leadership of the town planning officer Mr. S.V.Surve in Town Planning Office, Alibag. Alibag is the district\textsuperscript{32} headquarters of Raigad

\textsuperscript{32} District (zilā) is the level of administrative division of an Indian state or territory.
Figure 3.14  Enlarged detail showing the legend list of NMDP.
district in which Panvēl is a Tālukā. This is why the town planning office is located in Alibag. Figure 3.15 is an enlarged detail 'G' of PDP showing the approval signatures and stamps. The second revision to the PDP is prepared in the 1990. It is first approved by then president of Panvēl Municipal Council in 15th July 1991. After this approval it was sanctioned by the director of Town Planning in Pune on 16th March 1993. Figure 3.15 shows stamps and signatures of these three authorities along with a key map showing the sanctioned are presented in the development plan. The director of Town Planning located in Pune controls the development of Maharashtra state under which Raigad is a district. The director of town planning is the final authority in controlling the urban development in the state. The first development plan was prepared in 1970 for the period of ten years. The PDP seen in figure 3.3 is approved for the period of ten years from 1990 to 2010. A new development plan is under preparation now by the Panvēl Municipal Corporation.

3.2.5 History: Use of the map after approval

Use of the map by the administrative authority indicates the role of the artefact in shaping urban space (in table 2.2, on page 62). The Panvēl Municipal Council started to implement the policies mentioned in the PDP after 1993. After the PDP was sanctioned several amendments were done on the request of the community in Panvēl. Disputes related to property ownership surfaced and some areas such as the one mentioned as area ‘B’ in the PDP went under arbitration. This is seen in the enlarged detail in figure 3.5. An arbitrator was appointed to make a map for this area. The map seen in figure 3.16 is a detail plan prepared by the Town Planning Office in Alibag finalising an arbitration case for the disputed plots and also indicating the road cutting as a result of road widening scheme proposed in the PDP. This map is being used by the Panvēl Municipal Council as a detailed plan for a specific area in the PDP. The same area can be seen in figure 3.17 as an enlarged detail from PDP. As this is part of the Tāpāl Nākā marketplace it is ideal to discuss this map to understand how the PDP is used by the municipal authorities. The street square we see in the map is Tāpāl Nākā. There are two distinct uses of the map first is the indication of final plot lines for the plots under dispute and second is the indication of road cutting done to existing plots. The map also defines new road widths in this area. I will briefly discuss these uses of the map below.

**Indication of final plot lines:** The plan indicates boundary of area ‘B’. Within this area eleven plots boundaries are redrawn in red colour and termed

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Tālukā also known as Tehsil is an administrative subdivision of a district.
as final plot boundaries. Their survey numbers are highlighted in red colour. Most of the plots which have been finalised were owned by Plot Balaji Mandir Trust\textsuperscript{34} on which the temple exists. The temple can be seen on extreme left in figure 3.16. The adjacent plots with survey numbers 251, 249, 250, 256, 232, 232 A and 257 were owned by the trust. Mr. Ashok Gilda a trustee of the temple and Mr. Prabhakar Panhale a trader informed this to me in the narrative interview. The trust had to give away tenanted plots to the vegetable market, and later it chose to sell the other plots as well. The plot demarcated as survey number 250 and annotated as market has in reality two parts. A part adjacent to the vertical 18.24 M road is tenanted to Mr. Joshi who is running a sawmill having

\textsuperscript{34} Balaji Mandir Trust is founded by the Marwadi trading community in Panvēl.
an entrance from the same road. The plot with survey number 249 in the corner of the market does not exist as a separate plot and the market entrance is derived from this plot. When I interviewed Mr. Joshi he informed me that he has filed his demand for land ownership through the tenancy act in the Town Planning Office, Pune. This indicates that the map is still under dispute despite being called an arbitrator’s settlement. On the other side of the road the plot with survey number 232, 232 A, 257 are finalised and today there is Maharashtra Bank building in 232 and residential complexes in the other. Plot number 254 is Shani Mandir which is taken care of by Laxminarayan Mandir Trust. Plot number 255 and 256 were in the ownership of this trust, but this map settles their ownership to private owners. Plot number 252 and 253 on the corner of Țăpăl Năkă owned by Mr. Vora are finalised with a new boundary. Their plot is shown significantly cut in the road widening scheme. The map does not show their plot as it exists today in the street square. Mr. Vora has also fighting for his rights in the court against the scheme as he looses a major chunk of his property on a prominent location.

**Road-cutting for road widening scheme:** The horizontal road seen in the map is the Mahatma Gandhi Road with a proposed width of 15.24 M. As we can see in the map the road cutting is applied only on one side of the map and the other side is left untouched. The road perpendicular to this is known as Uran
Figure 3.17  Area ‘B’ as seen in the PDP. The vegetable market is seen in blue with green outline. The pink plot adjacent to the market is Balaji temple. Krishnale lake is seen in green. It is referred to as a tank and can be seen in figure 3.19.

Road, and it is planned for a width of 18.24 M. This road is proposed as a State High-way 54 connecting NMIA to Pune via Bhimāśankar. The road cutting for SH54 does not indicate existing plots on Țapâl Nâkâ being cut in the road widening scheme. The road in front of the market shows a width of 9.14 M. This road runs along Krishnale lake and has a line of shops which are not shown in the plan. Panvēl Municipal Council have been charging a tax from these shops, but they are considered as illegal in the Panvēl Development Plan and hence they are not acknowledged. The purpose of indicating the road widths is to establish the SH54 as the main road passing through the area. Also, the traffic island is realigned with the SH54 rather than its current location appropriate for the existing condition.

**Urban policy related to road widening and arbitration of plot boundaries:**
The plot boundaries demarcated in the map and assigned new numbers have been in dispute. The plot assigned as market and adjacent to the temple is now in the ownership of Panvēl Municipal Corporation. It was initially leased to the Panvēl Municipal Council for the purpose of holding a daily vegetable market. Today, there is an entrance from Mahatma Gandhi Road through plot number
This is not indicated in the map as it is through a private property though it has been the major access to market for about forty years. Within the market plot there was a well and a small stage to perform plays. Both of these have been removed, and the market is now a cluster of shades with no walls. It has become a crowded marketplace having little maintenance. The tenants in the market told me that they are waiting for the market to be redeveloped. This can ensure better maintenance and larger shop space. The road outside marketplace is proposed as a wider road having 9.14 M width. Today it is a narrow road with shops on both sides creating an identity of a traditional marketplace. Though shops aligned to the lake block the view to the lake. You can see the road in figure 3.18 and backside of the shops with the lake in figure 3.19. This short length of the street in front of the market is the most lively and enjoyable part of the market.

Figure 3.18  The road in front of the vegetable market. The Balaji Temple is seen at the far end painted white and yellow. Photograph taken by Neha Sayed, March 29, 2021.

The market plot and the corner plot having survey numbers 249 and 250 are quite different in reality. A plot tenanted to Mr. Joshi forms a large chunk of the plot 250. Mr. Joshi informed me in the narrative interview that his father tenanted the plot from Balaji Temple Trust and started a sawmill known as Joshi Sawmill. When I interviewed Mr. Joshi he was fighting a legal battle with the Director of Town Planning against the rejection of acknowledging his plot boundary. He wants to keep his stake as a tenant and ultimately have a stake in the redevelopment. He has disapproved the proposal in the map proposed by the arbitrator.
On Ṭapāḷ Nākā three existing structures get severely affected by the road widening scheme as seen in figure 3.20. A valuable property owned by Mr. Vora is not indicated in the map as the whole plot goes in road cutting for SH54. Two opposite plots owned by Mr. Joshi and Mr. Pote are also cut, and the cutting can be seen in the map (figure 3.16) and in figure 3.20. These three properties are still in vernacular architecture and form part of the interesting identity of Ṭapāḷ Nākā market square. Mr. Vora told me in his narrative interview that this is not the first time that he has sacrificed his property for the common cause. In the city survey maps done in 1926 the road adjacent to Mr. Vora’s plot was just pedestrian access to the larger plot behind. Later in the second survey the pedestrian road was extended to the lake by the Municipal Council and again extended through the lake to the other side. Mr. Vora sacrificed his plot for such recurrent road widening schemes.

The plot with number 253 is a water tank also donated by Mr. Vora’s family to the Municipal Council in 1897 as per the inscription on the dedication stone on the water tank. Plot number 252 (seen in figure 3.16) is also owned by Mr. Vora in which he ran the first petrol pump of Panvēl. Today that plot is empty and serves as access to Sufi saint Pir Siddhi Badshah’s mausoleum. The community around Ṭapāḷ Nākā reveres him and organises Urus, -day of the saint where people are invited for dinner. This ceremony of two to three days takes place in this plot. The mausoleum is in the plot of Mr. Joshi but accessible from Mr. Vora’s plot. Mr. Joshi told me that he also believes in the saint and Siddhi Badshah used to come in his father’s dreams.
Figure 3.20 Photograph of Țapăl Năkă indicating the road widening scheme and its effect on existing properties.

There are six plots with new boundaries on the other side of the road. First on the corner with survey number 254 belongs to Laxmi Narayan Temple Trust. The temple is dedicated to Lord Laxmi Narayan and hosts idols of other deities. Today, it is famous as Shani Mandir after Lord Shani. The plots adjacent to the temple with survey numbers 255, 256, 232, 232 A and 257 were in private ownership. All of these except 257 have been in the ownership of Balaji Temple Trust. The cluster of structures seen below plot number 257 is known as Mominpada. The history of Mominpada dates back to about two hundred years. Momin is a community observing Sunni Muslim religion who were cotton weavers migrated from northern states of India (Campbell 1882). Pădă refers to a small settlement of houses usually belonging to communities that have shared livelihood. Most of the structures were later bought by the Yakub Beig Trust and tenanted by other migrant communities like Teli’s (Oil millers) and Burud’s (basket weavers). Today, only one structure from that period exists and is occupied by Mr. Jangam. The Momin’s probably migrated to northern suburbs of Thane and Kalyan where the handloom and power loom industry flourished in the twentieth century.

The plan indicating final plots acts in the favour of some stakeholders of the marketplace. It does not acknowledge current disputes or solved matters. There is no recognition of history or appreciation of vernacular architecture. The road widening scheme is a simple red line showing cutting on the precious buildings having a rich historical background. The actual cutting in meters is
not indicated on the plots. The reason behind formulating area B is not indicated on the sheet and hence is very difficult to understand. A key map which could show other adjacent areas if any are not seen. The map is a simple representation diluted as much as possible for ease in regulating space. Most of the structures represented in the plan have an interesting story and community history which is wiped out from the structures. The PDP acts on the urban place of Panvēl by implementing a rather disinterested development policy.

3.2.6 History: Subsequent use of the map

The map will form a source for future planning and hence its content remains valid and valuable (in table 2.2, on page 62). The PDP is being revised by the Panvēl Municipal Corporation. The process is long as it requires to be updated for the corporation’s boundary. Within the new boundary Panvēl will become just another urban node to be connected with efficient transport system. The corporation will aim at bringing a kind of similarity of urban infrastructure between all urban nodes. Infrastructure here refers to the services provided and maintained by the corporation. The roads, water supply, drainage and electricity are the major concerns in an old city like Panvēl. The PDP has now formed the basis for the larger development plan. The infrastructure will be designed for the larger connectivity and maintenance of the new corporation boundary.

After its initiation in 2016 the corporation has focused on several goals to achieve a minimum standard of infrastructure considered ideal for a modern city. Firstly, they started to implement road widening schemes. They have been demolishing illegal structures in order to clear way for the road construction. The road widening scheme was met with a strong opposition from the community. They had no clarity regarding the process. In my initial fieldwork on Taपēl Nēkā every trader complained to me about the process adopted by the new corporation. Mr. Ashok Gilda started this discussion in the first community workshop I conducted as part of my ethnographic query. He mentioned that they had formed a group of traders who have started dialogue with the corporation and had temporally halted the process. In my recent visit to Panvēl in March 2021 I found that the community is being charged with increased property tax, calculated from 2016. Whereas the community has been paying its dues towards property tax throughout this time. With the help of a solicitor the community has managed to get the taxes reduced after a legal fight in the court. The PDP still forms basis for all these activities. The new Panvēl Municipal Corporation Development Plan (PMCDP) will follow the same legacy as the ideals of planning and governance remain undeterred unless challenged by the community.
The meaning of Ţapăl Năkă assigned through urban planning

3.2.7 Environment: Responsible planning authority as a micro context

The map is generated in the Town Planning office of Alibag where the responsible planning authority is located. This office works as a micro organisation closest to the local context (in table 2.2, on page 62). The PDP as we see in figure 3.3 is prepared and sanctioned under section 30 of The Maharashtra Regional and Town Planning Act sanctioned in 1966. The act proposes the process of making town planning schemes. In figure 3.10 we can see that the act is mentioned as the first information to be read. The act is stated in MR&TP document as follows:

30. (1) The Planning Authority or as the case may be, the said Officer shall submit the draft Development Plan [along with the list of modifications or changes made in the draft Development plan under subsection (4) of section 28 to the State Government for sanction within a period of six months] [from the date of publication of the notice in the Official Gazette regarding its preparation] under section 26. (2) The [particulars referred to in] subsection (2) of section 26 shall also be submitted to the State Government. (Law and Judiciary Department 2015, 24)

In section 3.2.2, I have described the subsections of the act and their relevance. The planning process for this plan began by formulating a Planning Authority. The Planning Authority was composed of a group of selected officials as representatives of the responsible government authorities, political representatives, and experts in the field such as architects. The authority is hierarchical starting from the state administration to the level of local administrative body such as Municipal Council in this case. The micro context of the plan relates to the Municipal Council and the district administration in Alibag. The political representatives of the ruling party in the council and the district are members of the authority who represent the community. In figure 3.15 we see the signatures of the three main sanctioning authorities for the PDP. The amendments to the plan done by public petition is a complex process, and it can vary from case to case. The changes done to land ownership or land size is recorded in the City Survey Department. All development of land within the boundary of the PDP is sanctioned by the Municipal Council. It includes division or amalgamation of plots. Other decisions such as change of land use are done by higher authorities discussed below. As the Municipal Council is now appended to Municipal Corporation these decisions are also taken by the administration of the corporation.
3.2.8 Environment: Town Planning Department of Pune and the Urban Development Department of the state of Maharashtra

The local Town Planning office is headed by a regional office located in larger cities and these offices are answerable to the State government revealing the intricate hierarchical ladder (in table 2.2, on page 62). The PDP seen in figure 3.3 is prepared under the leadership of Assistant Town Planning Office of Town Planning Office (TPO), Alibag. The office in Alibag is headed by the Commissioner of Raigad District. This office is part of the Konkan Division which governs the urban development of seven districts. Its head-office is located in Belapur CBD about 14 km from Panvel. This office is headed by Divisional Commissioner and the urban development department is controlled by Additional Town Planning Officer (ADTP). Some changes required to be done in the PDP have to be sanctioned by the ADTP. There are six divisions of Maharashtra state and Konkan is one of them. The urban development of all these regions is controlled by the Director of Town Planning (DTP) in the Town Planning Department located in Pune. The PDP has been sanctioned by the DTP. He is the ultimate authority controlling the town planning schemes proposed in the state. The TPO in Pune was established in 1914 and was headed by Consulting Surveyor to the British government. The post is now designated as Director of Town Planning.

It is within this environment the PDP is designed as a development plan. The Town Planning Department consists of several smaller departments regulating the urban space of towns and cities. These are attached to the local Municipal Corporations and Councils. They share the responsibilities depending on the scale of development within the city limits. The design and drafting of the development plan take place in the TPO.

The TPO is under the Urban Development Department (UDD) of Government of Maharashtra. The UDD is led by the Cabinet Minister and under him is the Minister of State. These are elected member of the State Assembly. The UDD defines state level urban development policy based on the motto of the political party. These policies are mostly focused on planning development projects. A good example of this is NAINA, the new international airport near Panvel. To execute such large-scale projects UDD creates an independent Development Authority such as NAINA. It has special powers to regulate the area affected by such as large-scale project. CIDCO is another such Development Authority which has powers to acquire land and develop industrial cities. Navi Mumbai has been planned by CIDCO as we saw in section 3.2.3. The third independent Development Authority is Mumbai Metropolitan Region Development Authority (MMRDA). Its major responsibility is to strengthen regional connectivity by developing efficient infrastructure. It is responsible today for generating several
new transport routes and services in the region. MMRDA is led by the Cabinet Minister, the highest authority in UDD. All these independent authorities and their projects have affected development in Panvēl, and is reflected in the DPP. We several amendments done to the DPP where green and open areas are being converted into the residential areas. Large projects around Panvēl managed by these authorities have put pressure on the development of the city.

3.2.9 Environment: Ministry of Urban Affairs as the national level macro context

The Urban Development Department of Government of Maharashtra adopts the central government’s development policy structure. The Ministry of Housing, and Urban Affairs (MoHUA) decides the nation-wide urban development pattern which is driven by the national political agenda (in table 2.2, on page 62). It is within the scope of this authority projects like Smart Cities Mission are developed, and then percolated to the level of state government. The management of Smart Cities Mission is prescribed on its website as follows,

“The implementation of the Mission at the City level will be done by a Special Purpose Vehicle (SPV) created for the purpose. The SPV will plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the Smart City development projects. Each Smart City will have a SPV which will be headed by a full time CEO and have nominees of Central Government, State Government and ULB on its Board. The States/ULBs shall ensure that, (a) a dedicated and substantial revenue stream is made available to the SPV, so as to make itself sustainable and could evolve its own credit worthiness for raising additional resources from the market and (b) Government contribution for Smart City is used only to create infrastructure that has public benefit outcomes. The execution of projects may be done through joint ventures, subsidiaries, public-private partnership (PPP), turnkey contracts, etc. suitably dovetailed with revenue streams”.

The SPV will be a limited company incorporated under the Companies Act, 2013 at the city-level, in which the State/UT and the ULB will be the promoters having 50:50 equity shareholding. The private sector or financial institutions could be considered for taking equity stake in the SPV, provided the shareholding pattern of 50:50 of the State/UT and the ULB is maintained and the State/UT and the ULB together have majority shareholding and control of the SPV.

Funds provided by the Government of India in the Smart Cities Mission to the SPV will be in the form of tied grant and kept in a separate Grant Fund. These funds will be utilised only for the purposes for which the grants have been given and subject to the conditions laid down by the MoUD.” (Smart Cities Mission 2021a)

In spite of the distinct political ideals of government in centre and the state, the approach to urban development have been surprisingly similar. Urban development from the current political view of India corresponds to economic growth. There are negligible disputes between different political parties when
it comes to development projects. For example the current debate between the
technical parties in Mumbai is the naming of the new airport in Panvel. Each
party wants their leader’s name to the airport and huge rallies are being organ-
ised to convey the demand. When the new airport project was announced the
politics was about compensation money and relocation of the community. The
agricultural population which got affected by the airport aimed at getting maxi-
mum benefit from the project. Panvel on the other hand suffered from the shear
pressure of local migration and resulting sacrifice of open space. The PDP which
is now being revised by the Panvel Municipal Corporation will consider the
recommendations of the Smart City Mission and other such projects pro-posed
by the central government of India.

3.2.10 Significance: Meaning of the map for the planning authority

The Panvel Development Plan generates the meaning of Panvel as a city by
assigning the development policy for regulating urban space (in table 2.2, on
page 62). The Development Plan proposes development policy through the
establishment of new boundaries and land use. The core of the city termed as
goathān is classified as congested area and a higher FSI is allocated to the plots
within this area. The density of this area is thus planned to be increased. The
traders of the marketplace have been given commercial benefit through the
higher FSI. The plan also extends city limits and proposes increased residential
area. The city is seen as a suburb of a satellite city and part of the metropolitan
region.

The Navi Mumbai project area is planned to develop residential zones around
industrial areas. CIDCO specialises in developing industrial cities, and it has
done its job in developing large industrial projects in the satellite city. The
industrial activity in Navi Mumbai is supported by large transport hubs such
as JNPT, NMIA and the Konkan railway. The purpose of the city to decentralise
Mumbai has been successful. The SEZ proposed near the port, airport and in the
chemical belt of Belapur have been operating successfully. The random develop-
ment triggered in the rural areas due to the proposed NMIA has been cur-tailed
by proposing NAINA development plan.

Within this rigorous development activity, PDP is designed to suffice the need
of the time to provide increased residential area. It responds to the larger develop-
ment projects taking shape around the city. The need of farmers from the
neighbouring rural areas to sell their produce have been fulfilled by building
a Market Yard. The old institutional and religious plots have been preserved.
Some open space has also been sacrificed to fulfil the higher demand of residen-
tial area. By proposing this development policy, the town planning department
has successfully created an identity of a suburb for Panvel.
3.2.11 Significance: Meaning of the map for the community

The PDP by developing an identity of a suburb of Navi Mumbai ignores the historical identity and cultural heritage of Panvël (in table 2.2, on page 62). There are several valuable structures in the core of the city which need protection and preservation. Classification of this area as congested is not fair as most structures were only two storied with a single family and all had an open space within the plot boundary. The traditional architecture is sustainable in every sense where mixed-use houses built with local materials supported trade. A unique coastal identity made the marketplace look humble yet rigorously active. Within the large plots owned by traders there were chawls\(^{35}\) to house tenants such as newly arrived traders or domestic help. Multiple shops were built in one structure allowing the owners to rent out the ones they did not need and reclaim when-ever they wanted to expand. Even though the port was closed for trade in the 1960, it could very well operate as a passenger terminal. A unique coastal identity peculiar to the west coast of India could have been maintained as heritage. This character is not acknowledged. Rather, the plan simplifies and forces a modern land use aiming at utilising the land for increased density. The marketplace is becoming like any other suburb of Mumbai having high rise buildings where the residential part is completely detached from the market at the street level. The migrating local population finding accommodation in these apartment buildings though not completely foreign has no intention to participate in the trade.

Several green spaces and water bodies owned by the Municipal Corporation are shrinking. The Director of Town Planning in Pune, a city about 100 Km away from Panvël sanctions the modifications suggested by the local authority. The pressure of allowing such modifications could be mostly political or lobbied by the developers. Few modifications seen in the map for maintaining green areas suggested by the public are adopted by the Town Planning officer in Alibag. As we can see in figure 3.19 one such protected garden is modified by the Director in Pune and converted it to residential use. The city of Panvël is thus becoming more and more congested. The development policy has given a commercial benefit to the residents of the city by allowing higher FSI. Higher density has created residential space for local agrarian population which is affected by projects proposed in the regional development plans. The impact of PDP can be best discussed by taking an example of a merchant property on Tậpäl Nâkâ. I discuss below survey number 912.

\(^{35}\) Chawls are multi-storied tenement buildings where each tenement has its entrance from a shared corridor. The tenements also share sanitary facilities. In Mumbai several typologies of chawls exist mostly housing middle-class families.
**Survey number 912:** This plot is right on Tāpāḷ Nākā and forms one of the corners of the market square. There was a two storied structure turning around the corner. Part of the old structure still remains and is seen on the left in figure 3.22. The typology was like a chawl where a merchant shop was connected to his upper story home through an internal staircase. There were eleven tenants within this property. First post office of Panvēl was housed in this building. This is why the street square is called Tāpāḷ Nākā meaning post square. Later, the post office was moved towards north in the city and a small sorting counter still existed on the street square in this very building. Later, only a post box remained which is now shifted to the opposite corner of the street square.

![Figure 3.21](image)  
**Figure 3.21**  
Detail ’H’ from the PDP showing a green space converted into residential zone.

The ownership of the property shifted many hands and finally landed in the hands of Mr. Rasik Thakkar. In 1970, he gave away ownership rights to his tenants when the Panvēl Development Plan was announced. He retained three shops in his ownership and redeveloped them into a mixed-use building in 2016. This building is seen in figure 3.22 next to the old structure having a setback from the street. On the corner of the plot seen in figure 3.23 are two parts, first is the Union Special Hotel owned by Mr.Khalde and then Mr. Pote’s spice shop along with two other shops. Mr. Khalde resides on the first floor and runs the restaurant on the ground floor. Mr. Pote’s property on the extreme
corner is also preserved as it is from the old structure. He has made alterations to the structure for easy maintenance. The last part of this plot is developed as a mixed-use apartment building called Šanaišvar Apartments. Figure 3.24 shows the building abutting Mr. Pote’s structure. You can also see this structure in figure 3.22 behind Mr. Thakkar’s re-developed building. The building has shops on the ground floor and private apartments on the floors above.

![Image](image1.jpg)

**Figure 3.22** Survey number 912 looking towards Ţapál Nákā. Photograph taken by Neha Sayed, June 8, 2021.

A structure with a unique local identity of vernacular architecture is split into bits and pieces. Redevelopment of the old structure took place as and when needed by the owners. The Municipal authority cared less about maintaining any character of the street square or of the large plot. Even though the commercial FSI allowed for this area has proved lucrative for redevelopment the community is worried about the changes that might be applied in the future. Provision of increased FSI allows the owner to build twice as much as the plot area. Mr. Thakkar who owned three parts of the plot have built four stories above the shops. Now there can be six to eight additional families housed in this building as opposed to his joint family in the old structure.

The development policy regarding road widening scheme has been changing in the last thirty or so years. The newly formed Municipal Corporation has a new set of regulations than the ones proposed earlier by the Municipal Council. Mr. Thakkar as you can see in figure 3.22 has left a five-meter margin from the main road while Šanaišvar building has about eight meters. Shops and
godowns\textsuperscript{36} in both the newly developed buildings are more in number compared

\textsuperscript{36} Warehouse in India and Hong Kong, https://en.wikipedia.org/wiki/Warehouse.
to the old building. Loading and unloading of goods from these godowns always takes place and has to be mutually arranged by the traders. This is a very tedious affair for a wholesaler and both Mr. Thakkar and traders in Şanaişvar find it difficult to manage. Planning officers usually connect this problem to traffic congestion and hence propose road widening schemes. Increase in road width does not solve the problem as customers and traders use the increased width for temporal parking of vehicles. The issue of traffic, loading-unloading of goods and private/public parking should be solved together. Panvél Development Plan or the road widening scheme do not provide a comprehensive solution to this problem. The marketplace classified as a congested area in the DP had served as a wholesale marketplace for decades. Density in this area was much lesser than proposed by the DP which has rather turned the area into a congested space as we can see in the photographs.

The policy requires provision of five cars when twenty apartments have been sanctioned. This requires the traders to sacrifice valuable ground floor space for parking which should rather be utilised for trade. The footprint of the building is not sufficient to provide sufficient parking and shops combined with godowns. The policy regarding parking is not well thought and hence the community prefers to not make any provision for the same. Owners park their vehicles in the front margin of the plot or on the street. The margins between the buildings as you can see in the images are too narrow and hence not sufficient to derive light and ventilation. The community is kept in dark about the source of water and electricity for the increased density of the area. Today, the electricity is not provided on one weekday. Few years back it was not provided for certain hours every day. There are dams located in the vicinity of Panvél which provide water to the city. Today, on Şapal Nākā there are three different water sources supplying water. Despite of this, proximity of a metropolis like Mumbai puts a lot of pressure on these water sources especially in the summer when the water level shrinks.

There are no suggestions for visual character of the marketplace or the city. The highrise buildings are not visually appreciable for a pedestrian because of the narrow road width. The facades have been designed having a similar modern character. A wide range of colours have been used on the street by the community. The traditional vernacular architecture had varied typologies though similar in character. It responded to the social landscape as the facades of those buildings provided an easy interface for communication with the street. There were verandas and balconies which not only protected the building from rain and heat but also provided excellent opportunity for social interaction. Though evidently seen as a regional character present on the western coast of India, planning authorities have ignored to incorporate these anecdotes in the development policy. Conservation of individual buildings having heritage value takes place by making lists and tagging such properties in India. In the case
of Panvēl not a single building has been listed or tagged. This aspect remains completely neglected in the planning policy.

There were open spaces within or behind the buildings. Much of the daily activities like drying clothes and food used to take place in those spaces. Small kids could play safely in this area. Old people could seat in the sun and socialise. Women could seat and chat in the afternoon. The chawl typology allowed a proximity of families which generated a warmth within the community. The redeveloped plots as you can see have no open space for any of these activities. There are no balconies overlooking the street or anywhere else. The Municipal Corporation could have acquired land for open space and the provision could have been made in the development plan. The development policy shows no sensitivity towards these issues. It rather propagates haphazard development which seems again very much temporal considering the future of cities in India. Here I conclude the artefact analysis of the PDP.

3.2.12 Interpretation: Meaning of Ṭapāl Nākā generated through the PDP as an artefact of development planning

The Panvēl Development Plan has generated a meaning of Ṭapāl Nākā marketplace by regulating the marketplace (in figure 2.2, on page 62). As we saw above the NMDP treats Panvēl as a Municipal Council boundary, an area to be treated as a node which needs to be efficiently connected via road or rail to other nodes. The Panvēl Development Plan defines Ṭapāl Nākā marketplace as congested area which needs better infrastructural facilities like wider roads. The widening of road through the marketplace will allow the Municipal Corporation to better control parking regulations and traffic movement. The Road Widening Scheme seen in the arbitration proposal acknowledges plot boundaries as ownership boundaries. The final plot boundaries demarcated in the map indicate proposed solutions to issues related to ownership of plots.

NMDP is treated by CIDCO as a project area to be developed as a sister city to Mumbai. This DP caters to issues related to Mumbai Metropolitan Region. It is drafted with the vision that development in Navi Mumbai will ultimately cater to the regional infrastructural development. Connectivity of 14 nodes within Navi Mumbai and their ultimate connection to Mumbai is a major concern of NMDP. The proposal of an international port and airport allows decongestion of traffic in Mumbai. Similarly, the proposed industry, wholesale markets and warehouses in Navi Mumbai have increased efficiency in traffic management of Mumbai. Within this scenario, Panvēl is the last node towards east which does not play an important role in the mobility of the region. The wholesale markets and warehouses are rather proposed in newly constructed nodes like Sanpada near Vashi where connectivity is efficient towards eastern parts of the state. The
trading community of Ţapăl Năkă efficient in doing wholesale trade is not valuable from the perspective of modern planning principles as it is considered better to design new bigger markets with efficient mobility and parking requirements. Ţapăl Năkă marketplace is treated as a suburban marketplace by NMDP. This is why its strengths such as the Panvēl port is curtailed and made dysfunctional.

The PDP is a proposal to widen the boundaries of Panvēl city and regulate internal development of the city. This artefact regulates land use, plot boundaries and road widths. Within the goathān boundary classified as a congested area it has established the land use of religious and institutional buildings. Ţapăl Năkă marketplace has been awarded a mixeduse status with increased FSI and thereby promoting density. Even though at regional level the marketplace is considered suburban, there is a proposal for widening the road widths to avail movement of traffic. There is no proposal of green or open space within the congested area as the land value is high owing to the higher commercial FSI. The PDP as an artefact defines Ţapăl Năkă marketplace as a congested area having a possibility of redevelopment and thereby satisfying the regional requirements of residential accommodation. Existing large plots with only one family is a good opportunity for the planning department to materialise into an apartment building housing about twenty families of four persons. The vernacular architecture is of little value and the local trade can be altered into something else which has no need of clear definition. The community is being convinced by showing them a modern dream of lucrative property deals.

The PDP as an artefact defines Ţapăl Năkă marketplace as mere ownership boundaries which now will be regulated by the Municipal Corporation. The increased road widths and smarter services of water and electricity will help in better control over their distribution and manipulation. This way the ideals of Smart City Mission can slowly be implemented aimed at stronger administrative control. Ţapăl Năkă thus, is a place which needs immediate infrastructural revival allowing to cater to the regional issues of migration, nodal connectivity, and internal mobility where the latest technologies can be used for increased administrative control.

The arbitrator’s proposal for area ‘B’ discussed above is an artefact defining Ţapăl Năkă marketplace as an area with clear ownership boundaries. The plan indicates newly finalised plots with neat final boundaries proposed to the owners. The road widths are applied as per the regional requirement of making SH54 prominent and M.G. Road as less prominent road connection. The proposal defines Ţapăl Năkă as a place to be manipulated with clearly defined planning goals. The plan does not acknowledge any human realities such as existing disputes and court cases against the proposal. It does not indicate properties that are removed in road widening schemes nor does it acknowledge the traders who are sacrificing their land. The proposal only depicts what it proposes and wants to execute.
The artefacts described above define Ṭapāl Nākā marketplace as a suburban, congested area to be regulated and controlled for mobility and services. They propose the disintegration of local identity and promote a higher density which can solve regional problems of local migration. To achieve this goal the artefact rejects the historical identity of the community along with their rich vernacular architecture. As there is no acknowledgement of the historical marketplace. There is no idea of what character it can take in the future. Ṭapāl Nākā marketplace does not find value in the perspective of modern city planning principles adopted by the planning departments in Mumbai and Navi Mumbai.

3.3 Response of the trading community to urban policies

The coastal towns of Kōkan have developed historically around the port and related trade. Trade through the port has been active for centuries, bringing trading communities not only from varied parts of India but even from the Persian Gulf and Africa. These communities brought their traditional trading practices which were embedded in the daily life of each member of the family. Almost like a trading organisation, these trading families built their establishments in a mixed use format where home was combined with the shop. These houses were self-sufficient having a dairy, a poultry and horse stables in the back yard. A well distributed land use that grew consciously as a planned community effort having a rich variety and carefully created public facilities made these cities self-governing organisations.

Trade started to change in the colonial times as the Portuguese and British colonial dominance on the west coast of India affected local trade and ultimately coastal cities like Panvēl. This was the beginning of response to external factors causing change in trade on Ṭapāl Nākā. After the independence of India many more external projects were built around Panvēl affecting trade as we have seen in the artefacts discussed above. The community responded to change in trade without much complaint. They adopted new patterns of trade, changed the products sold, shifted their base within the market and started investing in land. They became insecure of government policies which always came as a surprise. The political leadership represented the agrarian population and their vision was to bring prosperity by bringing large national level projects in which easy job allocation could be done for locals. This community rejected the sense of belonging to their land and its value in pursuit of modern life unknown to them. This goal was supported by the state government as it was conducive for the government schemes. Protection of a historical port town and marketplace was neglected.

The development policies discussed above at the city level affected the traders very differently. These policies were designed to regulate their own properties
by unknown authorities. They were invited to submit objections to proposed
ideas through a tedious process. They were not trusted for their local deep
knowledge of space and social life. Their participation in designing policies
was considered a hindrance. Their properties were being cut randomly without
their consent. Why the road cutting is applied only on one side and not on the
other was never explained. Their response to this was a sad struggle in the
planning offices or legal courts. Immense amount of money was spent on legal
battles to protect the land they had carefully preserved for generations. They
were forced to bargain in the legal courts where the case was settled by giving
them compensation for lost property or a floating FSI to be used somewhere
else. As the DP had rejected the historical or social value of traders’ properties
these issues were never discussed in the court or planning offices. The much-
learned planners and the politicians never acknowledged the cultural value of
the marketplace. The community found it vain to capitalise that value in a de-
bate or legal battle.

The response of the trading community to urban policies thus became a post-
policy implementation legal battle to be fought in not so friendly environment
of government offices. Their voice is usually silenced by luring them into lucra-
tive deals usually dished out by the builders lobby. The increased FSI resulting
into re-development of plots and ultimately local migration has marginalised
the trader’s community. They adopted the redevelopment policy as it seemed a
lucrative option and the capital generated was re-invested in trade somewhere
else. Most traders opted to invest in land again and decided to wait to capitalise
that at a later stage. Their response to the policies is ultimately a losing battle
for everyone on Ţapăl Năkă. The community is diluting, the trade is becoming
weaker, and the migrated local population has no idea what the place was and
will be in the future.
4 The meaning of Ṭapāl Nākā generated by trading communities

4.1 The pro-development trading community of Ṭapāl Nākā

The trading community of Ṭapāl Nākā has been adaptive to development goals. They have never expressed a rejection of modern ideas that they believe will only enhance their position in the marketplace. Development is seen as a necessity for improving trade activity and prosperity. In the course of last seventy years the community has been responding to development. The response has had undertones of loss and gain. They suffered major losses while adopting policies which made them change the product sold; for example, from rice and salt as the major products to general grocery. The wholesale trade has been slowly diminishing making the merchant enterprise smaller, diverse and disintegrated. Those traders which had large families and big land holding have survived. They readily adapted the new impact on trade by bifurcating into several small businesses while maintaining the capital in the family. Jan Assmann’s framework presented in section 2.2.2 of second chapter offers insights into a possible narrative analysis related to the aspirations and disappointments of the community. It helps to analyse their expression in the workshops and interviews. I present the argument by highlighting key aspects of Assmann’s theory and then discussing the insight from the community.

Theoretical reference: One of the key aspects in Assmann’s framework of cultural memory is the ‘Capacity to reconstruct’ (in table 2.1, on page 56). The community references from memory the struggle faced while adapting to change. They reconstruct the memory in the narrative where they share the success of some members of the community and loss of others giving equal importance to both.

A good example to consider here is the shutdown of oil mills in the 1960s because the traditional stone mills were replaced by machines. This rendered many people jobless on Momin Pada (seen in figure 3.16 and 3.17). Thankfully in the same decade, motorisation was speedily replacing the traffic dynamics, as
horse and bullock carts were being replaced by three-wheeler auto-rickshaws. The narrative from the second collaborative community work-shop revealed this shift from trade to service sector for the people on Momin Pada, especially the oil milling community. Figure 4.1 shows the workshop participants who live on Momin Pada. Figure 4.2 shows Momin Pada a cluster of houses abutting M.G. Road where the oil-milling community lives predominantly. Mr. Dalvi started to talk about this and Mr. Panhale and Mr. Kumar joined,

Mr. Dalvi: “...so because of that everyone became a driver. They would transport material to and from Mumbai for the businessmen from the Gujarati and Marwadi community. My father was a driver, my paternal uncle was a driver, my maternal uncle was a driver.”

Mr. Panhale: “Almost 80% of all were drivers in our area (Momin Pada).”

Mr. Dalvi: “Yes, absolutely...and then there is Dingorkar Transport...which is a very recent business, initially they were running a cycle repair shop.”

Mr. Panhale and Mr. Kumar: “Yes, they had a cycle repair shop.”

Mr. Dalvi: “After that they developed into a mechanic’s workshop and now they have an engineering workshop. They started many related businesses to that.”

Mr. Kumar: “Then they bought a coal vehicle as well, didn’t they?”

Mr. Dalvi: “Yes. Right. They had a contract...and so there were many drivers in this area. After a while the auto-rickshaws appeared. Before that there were horse carts especially on this road and on the bus stand.”

Mr. Panhale: “About fifteen to twenty horse carts were there in Panvel...my paternal uncle used to run one but so did some Muslims.”

Mr. Dalvi: “What could be an alternative trade? So...some became drivers and others owned the horse carts.”

Even today, most of the men are drivers working for varied different organisations from state transport to private transport. This was also an attempt at justifying the current economic status of the oil-milling community during its response to development. Not all communities went through this change. The communities that relied on handmade products faced the vulnerability to ma-chines and mass production. The oil milling community, the leather workers and the bamboo weavers had to find alternative sources of livelihood. While sticking to their ethnic identity, the participants narrate their struggle for survival together with each other. The changing practices and the associations that are enhanced or reduced find reflection in their cultural memory. The Dingorkar family are today well-established traders having multiple businesses. They are mentioned in the narrative as an association which was crucial for the oil-millers community.

Theoretical reference: The community is reflexive (in table 2.1, on page 56) about what has changed and what is being lost. The trade practice became temporal and was affected by several development related
decisions. The traders on Ṭapāl Nākā reflect on their trading practice and continuously appropriate their goals and aspirations.

The trading practice on Ṭapāl Nākā have changed drastically several times, and quite rapidly in the last fifty to sixty years. This pace was unprecedented.
The meaning of Ṭapāl Nākā generated by trading communities

My father’s own business survived only twelve years because of several reasons. My mother, Sudha pointed out,

“...we came to Panvēl. Munir left the job in Pune Sakal [a newspaper in Pu-ne] and we decided to come here and start a business. We decided to start a medical store. Madhav medical was not there at that time. But, we didn’t. We started a building material shop, and it was a very difficult business. We suffered a lot in the loading and unloading of material and so on. But, we did a successful business until 1998. But, the market was starting to shift towards Uran Naka. Two other incidents took place, first was the riots in 1993 and second was the floods in 1995. Both, created disbelief and anxiety. We came out of it, but then the market situation had changed. Munir went to all the dealers with whom he used to do business and crosschecked if there were any dues. We closed the business without loss.”

The pro-development drive of the regional governments was beginning to reflect in the marketplace. The villages became self-sufficient and the reliance on Panvēl was decreasing. The floods in 2005 devastated Ṭapāl Nākā marketplace. A new development drive started with redevelopment of old properties. People found the old buildings unsafe after the flood. They believed that redevelopment will bring money and possibility of expansion. But, the old charm of the market started to wear away. Mr. Panhale reflected on it thus,

“I do not like this pattern of development. Whatever was there before was excellent. I do not agree to this, all this development, I really do not like. All this is very artificial. The value that was there in the character of old buildings was much more than these new buildings.” Mr. Vijay kumar added to this very nostalgically, “Panvēl is like that poem, you remember? 'On the bank of a blue creek, is my green village, I will show it around the world, by putting its name, After you cross the bridge, the road will turn a little' A long one after that, but Panvēl for me was like this. A beautiful, picturesque coastal town with red Mangalore tiled roofs and plenty of trees”

These traders, practising trade for generations, assign value to the tradition. Traditional ethos of the marketplace which gave them everything that they have today are preserved and practised. The nature of change in trade is assessed with a reflective understanding of circumstances. There is a rational and logical assessment of what was endorsed and what was rejected. The change in trade as Sudha pointed out was hard and traders who had larger economic support could re-establish themselves in different locations to start afresh. Those who didn’t have it relied on re-development of their properties; thereby raising capital to migrate somewhere else or to start another business. Flood was another reason for redevelopment as the buildings were more than two hundred years old and were deteriorating. They were not well-preserved and had suffered severe damage through neglect. Along with their beauty that
came with the vernacular character was their most appropriate contextualisa-
tion in the coastal region. People could relate to them as they had a very humble
scale. But, the redevelopment was inevitable considering the profit and for a
trader that is always of priority. Development meant success. The new build-
ings are monstrous and there is no possibility of relating to them in terms of
character. They appear very foreign. The older generation cannot relate to
them not only because they do not have the old charm but also because they are
enclosures which dictate a completely different lifestyle. Mr. Panhale and Mr.
Vijay Kumar are saddened with the loss of character, and they reflect on what
they are losing. The cultural memory is exercised here as a tool to reveal what
is being lost, and the reflection comes by accepting the new. Figure 4.3 shows
the house of Mr. Motilal Banthia, a traditional jeweller who owns a shop on the
ground floor and resides on first floor. Mr. Banthia has preserved the house well
but faces a continuous pressure for redevelopment. I learnt in May 2021 that he
has finally sold the structure to a builder for redevelopment.

![Image of Mr. Motilal Banthia’s house](image_url)

**Figure 4.3** Mr. Motilal Banthia’s house built in vernacular style of architecture peculiar to the west coast of India. Photograph taken by Salil Sayed, March 3, 2018.

### 4.2 Trade and property relations in the marketplace

The trade on Tapāl Nākā is strongly connected to the properties. The ownership
and tenancy patterns in the marketplace are valuable for the trading practice.

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37 https://en.wikipedia.org/wiki/Indian_vernacular_architecture
All family members of a trader participate in the trading practice contributing in some way. The traders selling similar products prefer to live next to each other. This is a traditional pattern in India. They believe that living together and practising similar trade enforces ideal ethics and increases footfall of customers. About twenty-five jewellers’ shops exist next to each other on Ṭapāl Nākā. A shop owner who is a newcomer is always supported with trade infrastructure and community belonging. Merchants have been migrating to Panvēl for centuries. The trading community maintains knowledge about this process of accumulation. Traders willingly share knowledge about trade, property, and family. This transparency is expected from everyone as it creates trust. If a valuable aspect of the past is lost in the memory of some, others preserve it and share when needed. This is explained better in the following paragraphs.

**Theoretical reference:** A house of a trader is an organisation (in table 2.1, on page 56). It extends into a larger organisation forming a micro network of traders’ houses ensuring security, sharing and fair practice. Trade on Ṭapāl Nākā functions like an organisation. Trading relations are bonded tightly via trade but also via property ownership and tenancy. In some cases, the bonds are created by marrying into the families. The micro network is thus intricately tight and at the same time ever expanding into other micro net-works. The jewellers’ micro network is connected with the grocers’ micro network through family relations.

A very good example to discuss this would be about their memories related to Ṭapāl Nākā as a transport hub. The memory about how, it functioned as a transport hub was very important and to reconstruct it, they chose to speak about the Union Special Hotel. Mr. Maniyar (seen in figure 4.6) constructed a perfect and precise narrative about the street square. He began by saying that the Union Special Hotel used to be a bus stop from where buses to Pen (Tālukā38 in the south) would start. I had known from another narrator previously that Mr. Juvekar used to run buses from Ṭapāl Nākā. So, I asked to confirm if he was the one who was running the buses. Mr. Panhale corrected by saying that, it was Mr. Sorabji who ran the first bus service. This was agreed upon by everyone. Later, Mr. Digodakar (seen in figure 4.6) in his narration added,

“...after the port was closed, two bus services started from Ṭapāl Nākā. One was run by a Parsi [Zoroastrian] gentleman (Mr. Sorabji) and the other by Mr. Isaac who was Jewish. Mr. Isaac used to pick up passengers from their homes if you paid him extra money. His buses used to go to Mumbai.”

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38 Tālukā: (in South Asia) is an administrative district for taxation purposes, typically comprising a number of villages. The Free Dictionary, https://www.thefreedictionary.com/Tālukā, (24/08/2021)
Mr. Digodkar did not mention the Union Special Hotel, but his narrative enhanced the memory construction by adding more details about the varied bus services. This narrative improved and became a very strong reconstruction as Mr. Thakkar elaborated on Union Special Hotel. He said,

“...Appa Padhye used to run a Union Transport Company in the same space where Mr. Sunil Khalde is running the Union Special Hotel. He used to run buses from Panvél to Roha. On the other side of the same building, there was Mr. Juekar’s Chirner-Uran bus service. In the Union Transport Company, Mr. Shankar Govind Khalde was a ticket master. Even today, the hotel is known as the master’s hotel. Mr. Padhye asked Mr. Khalde to start a small snacks corner within the transport company for the convenience of his passengers. Appa Padhye was fond of eating beetle leaves, and so he asked Mr. Ayub to start a small Paan Shop which was also of convenience to the passengers where they could buy tobacco and so on. Later, Mr. Sunil Khalde converted the transport company into the Union Special Hotel.”

This narrative surprised many as most of us were oblivious to the fact that Union Transport Company was owned by Appa Padhye. In the end Mr. Khalde (seen in figure 4.5) pointed out that he was not aware of the Transport Company and Appa Padhye. He added,

“...people come and ask me what is the meaning of ‘Union’? And I tell them, that the hotel was started by people and hence it is called ‘Union Special Hotel’. Today, I came to know that it was a transport company.”

Figure 4.4  Union Special Hotel on Tapāl Nākā. Photograph taken by Neha Sayed, June 8, 2021.
The meaning of Ṭapāl Nākā generated by trading communities

The traders have a very strong memory about each building, regarding the families that lived in them, about the sale and purchase of those properties, about trade conducted in them and so on. Mr. Rasik Thakkar (seen in figure 4.5) knows every detail about the properties he owned and also about the neighbouring ones. He remembers the details of each tenant and how trade changed in each family. This memory he has stored with a reference to the space. Mr. Rasik Thakkar, referred to the photo on the screen all the time and helped me navigate around while constructing a narrative. He referred to many elements on the structures while talking about trading practices or certain historical references such as the existence of the first post office. It was Mr. Thakkar who pointed out to me that the statue of Shivaji Maharaj is installed on a community water tank built by the Panvēl Municipal council towards the end of the 19th century. Both, these physical elements and their pivotal role in the history and character of Ṭapāl Nākā was mentioned several times in the narrative. These structural elements become building blocks of the trading community’s identity.

![Four owners of the property on Ṭapāl Nākā who participated in the first collaborative workshop. Photograph taken by Salil Sayed, August 17, 2016.](image)

Mr. Ashok Gilda’s (seen in figure 4.5) family is in trade for last eight generations. His great-grandfather owned the building on Ṭapāl Nākā which has become a cluster of many buildings as you can see in figure 3.23. He owns a part of this cluster which has the same survey number. I have discussed this property in detail as it got affected by the development policies in section 3.2.11 of third chapter. There were four participants who own parts in this large building which has been owned by at least two of them. Today, it is split in five parts, some of them already developed to the fullest. One part has become an apartment building with shops on the ground floor. The other four are in personal possessions. Today only two parts of the building are from the original structure. The original structure was owned by several traders and this history was told thrice in the workshop. The original building form, the ownership history,
the trade history and the situation today was repeatedly discussed. This is a perfect example to illustrate the organisational nature of the trading community and its reflection in their common memory. Mr. Shinkar (seen in figure 4.5) who owns a part gave the first detailed description of the transfer of ownership of the building as he thought it is important to convey how he came to own a part of it. He said,

“...the building that you see here is built by Mr. Ashok Gilda’s great-grandfather. After that many transformations happened. It was later bought by Mr. Chinulal Jasrukh. He later sold it to Mr. Shamji Kasalchand. After that Mr. Rasik Purshottam Thakkar bought it and he now has given it to the ten-ants. Now, we have become its owners.”

Mr. Gilda began his narration by emphasising the structural aspects of the building, pointing out that about three hundred years ago when the structure was built, there were a few steps that you have to climb to get into the structure which leads him to think that the customers used to come on horses to purchase the goods. He added to Mr. Shinkar’s ownership transfer by saying,

“...as told earlier the building was bought by the Munot family and later was sold to Shamji Kasalchand and then to Rasikbhai Thakkar. But, Rasikbhai did a very beautiful act, that we who were tenants were made owners of our share of the building. We are really indebted to him for setting such a precedent.”

Mr. Gilda and Mr. Shinkar are neighbours sharing only a wall between them. They have been neighbours for about thirty-five years. Mr. Rasik Thakkar who was one of the participants and once an owner of the whole property gave the narration a richer content by adding precise dates and tenancy details. He added,

“...there were eleven tenements on this side (facing M. G. Road) and nine on the side of Pote. These eleven tenements were such that there was a shop on the ground floor and a staircase going from the shop to the residence upstairs where they lived or would use that space as storage...this building was sold in 1926 by Gilda’s family to Chunilal Jasrukh Munot. His son inherited it, and then he sold it to Shamji Kasalchand and from him, it came to me. I saw that it is very difficult to develop this considering eighteen tenants and the restrictions of tenancy act... meanwhile in 1956 the City Survey assigned separate survey numbers to all tenants, making it easy for me to transfer ownership rights to them. I started doing that from 1984...”

Mr. Rasik Thakkar, while narrating about the building added an interesting memory about the Union Special Hotel which I have discussed in detail above. Mr. Khalde who is the owner of the hotel was present and was surprised to know some details about the hotel. The presence of Union Transport Company
and its ownership in the hands of Appa Padhye and then the transfer to Mr. Khalde’s grandfather was a very important anecdote about the property.

The four narrators residing in a large property shared memories about their own life histories and trade practice. This is a good example to talk about a trading practice as an informal organisation which can exist within the more formal organization of a shared property bonded by legal frameworks. The nature and scope of the informal trading practice comes to light through the act of creating the narrative. This is framed in the context of the formal organization’s ownership history. As the formal organization changes, it impacts the lives – and practice – of those involved with it. The narrative elaborated on the pattern of settling into a formal organisation which had an ownership history. They have shared that common belonging and becoming part of this property as an organisation. Further they shared about the trade practice their ancestors have done within this building. Their great-grandparents started the business in this property which was different from the one they do today. Some of them became bigger merchants and some became smaller. There are many minute personal details as to the success and failure of a merchant in Ƞapält Nákã marketplace. There is no need to elaborate on those details for the purpose of this research. The important point to be noted here is the way these traders are bounded together in an informal trade organisation. The memory about Mr. Khalde’s family elaborating on the shift of trade in Union Special Hotel and Mr. Gilda’s memory about his great-grandfather being a prominent wholesale merchant to him owning a medical store indicates their willingness to adapt and evolve within the trading community. They have been part and parcel of the informal organisation of trade and the possibility to grow and prosper relied on the common shared knowledge about the intricacies of this organisation. This argument is supported by several mentions throughout the workshop about the property ownership transfers and the knowledge of the exact money dealings that were done.

**Theoretical reference:** The trading community maintains a sense of obligation (in table 2.1, on page 56) towards each other. It is cosmopolitan in nature where many religious communities live together harmoniously. Living together meant participating in cultural activities together and respecting each other’s religious beliefs. The Sufi tradition in India created a possibility of harmonious shared belief. Ƞapált Nákã is dotted with memorials of Sufi saints who are known for blessing the sick and struggling. In a marketplace of opportunities, they imbued a faith that breached all religious borders. This is also a way in which the community develops its identity. Assmann refers to this as *concretion of identity.* The community references the religious artefacts present in the place to build an identity.
Over the course of the last three hundred years, the trading communities settled around each other nesting in this harmonious religious landscape. Some communities bounded together tightly, and others chose to remain secluded. Among the ones that shared a common bond was the Jewish community and the Teli (oil-millers) community. I have elaborated above about the bond that they shared because they were in the same trade. Mr. Panhale pointed out in his narrative,

“...In the marketplace, Teli community was quite prominent. Teli and Israeli. First the Israeli Synagogue was built and then the Shani temple. In the temple, there are two idols, one of Shani and the other of Maruti. Both of these have been established by Teli and Israeli community. So, the combination is very close.”

Mr. Panhale also pointed out that the Teli community has been a strong believer in the Sufi tradition of Islam. He is quoted above referring to this phenomenon. While mentioning Mr. Sunil Khalde, the owner of Union Special Hotel he added later,

“...Siddhi Badshah is a protector for everyone of Tapal Naka. Everyone goes to pay respect to him. Sunil Khalde is the caretaker of that place. He has the first right to offer prayers there.”

Teli community has migrated from the Deccan plateau. The Jewish community migrated from the coastal region. The Muslim community has migrated from different places and maintain their distinct identities. On Tapal Naka, these three communities have lived in extreme proximity to each other. They managed to create a common bond together while maintaining their individual identity. Figure 2.18 shows the location of the mausoleum of Pir Siddhi Badshah and Shani Mandir.

The narration by Mr. Panhale was invigorating for the participants. He effortlessly narrated the traditional bonds between the trading communities. While practising similar trade and attempting to preserve the ethos of the practice they shared a common bond which was strengthened by certain gestures such as common religious beliefs. Life on Tapal Naka was not limited to the trading activity, but a richer stronger community dynamic is evident, practiced through shared religious beliefs. Mr. Panhale connected three different religions together through the most valued aspect of life, ‘belief’. Later in the workshop, Mr. Digodkar who is Jewish, preferred not to elaborate on this and focused his narration on the activities of the Jewish community itself. This can be attributed to the fact that since the 1990s there has been a very strong trend of migrations to Israel. Not more than a handful Jewish families reside in Panvel today. I myself have been in very close contact with the Jewish community and still have friends that have migrated to Israel. The Muslim community is also very much
mingled with the other communities in the marketplace. The Bohra community is very reclusive and religious. In spite of these attempts of preserving the identities there have been several interreligious marriages within the marketplace. Social obligation towards each other exists in much more relaxed form of sharing life together rather than a compulsory pattern of being. Figure 4.6 shows Mr. Digodkar from the Jewish community and Mr. Vora from the Bohra community.

![Figure 4.6 Traders on Țapăl Năkă who participated in the first collaborative workshop. Photographs taken by Salil Sayed, August 17, 2016.](image)

**Theoretical reference:** The trading communities on Țapăl Năkă are reflexive on trade. Traders assess the changing trade practice affected by the development policies very closely. They analyse the change and reflect on how it is evolving. The values of the traditional trade bonds are always cross-checked and re-evaluated.

The trading practice has remained successful despite continuous challenges because it has always been self-reflexive. The traders preserved and passed over the memories of the initial struggle of not only about their efforts to settle and grow as a trader but also about the struggle of their customers. The exponential increase in the costs of products and labour repeatedly appear in the narrative of the participants. They share these two aspects simultaneously which indicates the sensitivity towards their customers and an effort to engage in fair trade. Mr. Mufaddal Vora (seen in figure 4.6) shared a very engaging account of his father who established the business with hardship and commitment. He told us,

“...you see the small lane that goes in, inside there is a well. [the structure is seen in figure 2.19] Near that well my father had a small space measuring six feet by six feet. In that space my father has done all kinds of business...his policy was, ‘you ask, and we give’...at that time there was no electricity. He used to repair the petromax lights and cooking stoves. When the villagers would have a function they would hire lights from him. In the evening, after closing the shop at six, my father would take the ordered petromax lights on a bicycle to the villages as far as Nere, Shirdhon, Palaspe. There were no roads. Sometimes you had to go through
water streams. He would reach and light up the lamps for the function. He would then sleep there all night, wake up in the morning, take the lamps, and come back to open the shop at eight. For doing this, he used to get one rupee.”

This struggle led to a very successful business where Mr. Mufaddal Vora shared the memory of how the actual trading transaction used to happen and how the customers trusted them. He said,

“...people used to give us advance money. In order to be able to get the Mangalore roof tiles for the next season, they would give money this season. They would tell the number of tiles they would want next season and would give us the money. We used to make a roll of that money and put his name on it. Cement was also sold like that. We used to take that money and make roll of that money and keep it. When the material arrived we would open the money bundle, deliver the material and return the change. People trusted us.”

Mr. Mufaddal Vora also mentioned that the labour was very cheap and so was the product. He himself has seen in his lifetime cement being sold from nine rupees per bag. This aspect of increase in the commodity price and labour has been a major concern as that has affected the trade and profit related to it. Mr. Shelkar, in the very beginning said,

“...our first shop was in the building owned by Dharamji Virji. There was a simple tin roof shade in which my father started the business. There was no electricity. They used to have lanterns in the shop. That building was built by grandfather of Dharamji Virji. At that time the labour cost four annas a day (a quarter of a rupee).”

Trade on Ṭapāl Nākā has continuously evolved responding to the needs of the people that it served. Traders have remained sensitive to their customers who were predominantly agrarian communities. They did prosper through hardship and commitment. Almost all those who lived in this marketplace are migrated from other regions of the state or other states of India. Their ethos of traditional trade belongs to their respective community which is bounded to religion. Within the microorganisation of a shop, one can see the reflection of this extremely specific cultural aspect of doing trade. Though there are multiple such patterns, and it would be very interesting to study them, they are way beyond the scope of this research. Irrespective of this multiplicity there is a common understanding developed by being and doing together. Certain commonalities include, development of trust, consciousness of inflation, and understanding towards restrictions on trading and tenancy policies. These values are preserved within the marketplace; those who deviated from it have suffered losses, though that was never the only reason. What creates
and enforces these values is a reflexive practice of trade that assesses the ever-evolving economic dynamics with reference to the values and then arrive at a trading model that is sustainable to both parties, the traders and the customers.

Trading communities of Ṭapāl Nākā create a bond with the space using personal trade relations. These relations are culturally enforced by social and religious events. The traders reflect on the trade practice and assess the changing ethos. This ethos is passed on from generation to generation. The community evolves along with the space and their relationship with each other. This in-depth knowledge and belonging to the place generate their meaning of Ṭapāl Nākā. My attempt here was to show through their narrations analysed through Assmann’s aspects of cultural memory is to show that their meaning of place arises from the trade practice but tightly connected with the marketplace.

4.3 The meaning of Ṭapāl Nākā for the trading community

Trading practice embedded in space: The trading practice as we saw above is strongly embedded in the space. The space does not only support the everyday trading activity but has a personal and legal meaning of ownership or tenancy. The value of the trade is directly connected with the value of the property in which it is practiced. To be an aspiring trader means to be an aspiring landowner. Property brings liquidation and weight to the reputation of the trader. He becomes more trustworthy. He becomes more bankable. This is why there have been powerful land-owning traders in Ṭapāl Nākā. Mr. Mohammed Rajabali Vora pointed out to me,

“...from here (his home) to Ṭapāl Nākā, everything was owned by your great-grandfather.”

Today my father owns nothing on Ṭapāl Nākā. All properties are sold. Mr. Bohra continued that his family has been the tax collectors in the feudal land management system. He said,

“In my life-time I bought, a hundred acres outside Panvēl, and we call it century garden”.

The Banthia family came to Panvēl about two hundred years ago. They have been a very powerful family in Panvēl. Today they own large number of properties on Ṭapāl Nākā and run a flourishing jewellery business. They have promoted many smaller jewellers to come and settle around them. These aspiring small traders are given shop-spaces on rent. A bond of respect begins from such relationships. The trader on Ṭapāl Nākā values trade, trader and property equally. The value of place for them resides in the understanding of this interconnected and interdependent relationship.

Cultural memory preserved and evolved based in the practice and community relationships: The trading community preserves cultural memory of the marketplace. The cultural memory as we saw above hooks on to aspects that are embedded in the trading practice and community relationships. The
attributes of space provide a reference point to preserve the memory. Cultural memory is shared and is acknowledged by all members of the community. It allows the community to reflect on the change in marketplace. It also builds strong community bonds as it supports the idea of the organisation and ethics of obligation. The traditional nuances of trading practice such as bookkeeping by a Munim39, are symbols of preserving the memory. The accounting ledger commonly known as chodpi becomes a mnemonic device to preserve memory about the changing trade practice. Several other similar artefacts prove to be pivotal in the construction and preservation of cultural memory. The detailed records of property ownership, sale and purchase are well known and preserved in the memory by the traders and when needed to be brought to surface. The community thus weaves the marketplace not only with trade practice but by preserving details about the change.

**Aspirations and prosperity as driving forces which create the place-bond:**
The trading community on Ṭapāl Nākā has migrated from other parts of the state and country. The merchants came to Panvēl and settled here because of the safe trade through the Panvēl port. The craft communities came and settled in Panvēl because of the marketplace where they could sell their products. Some communities came and settled here because they were assigned administrative duties by contemporary rulers. This is of course the historical trend in migration. The modern migration is caused by industrialisation. The service sector employees came and settled around Panvēl. The current migration is local, from the neighbouring rural area, predominantly farmers who have sold their land for development projects and prefer the city life. These communities have come and settled on Ṭapāl Nākā and around Panvēl aspire to prosper.

The prosperity has come to the communities on Ṭapāl Nākā through the daily struggle and challenges. Their motivation to become stable and well-to-do has taught them to adopt and respond to local dynamics of development. Some families after prospering also migrated out of the marketplace. My own family after having a large stake and active participation has migrated out of the marketplace. This has happened primarily because the newer generation is not interested in practicing trade. Like me most educated members of the family have migrated out of the marketplace. But we are still connected to the place through family history of residing in the place for more than two hundred years. Our ancestors are laid to rest in the burial ground at Ṭapāl Nākā. Even though the property and trade ties have vanished the community ties are still very strong. Like my family, everyone who has resided on Ṭapāl Nākā maintains the community bond. Our Jewish family friends who have migrated to Israel pay an annual visit to the synagogue. When they visit, they meet each and

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39 Munim is a traditional profession similar to the chartered accountant of today.
every person in the neighbourhood who supported their struggle during times of scarcity and in turn helped them to prosper. When I talk to them, I realise that they preserve memory of small little things that we did together.

The communities on Ṭapāl Nākā maintain a strong community bond because their challenges and struggles have been common. Their shared goal of prosperity drives them to unite and strive to solve everyday challenges. In this process they generate an empathy for the marketplace which is impossible to conceive by an outsider. The community on Ṭapāl Nākā has created an everlasting bond with the marketplace. This bond holds a knowledge about the place which is valuable and contributes towards their meaning of place.

**Shared beliefs in enriching the place-bond:** The place bond developed by the community on Ṭapāl Nākā is further enriched by building shared beliefs in similar deities. Ṭapāl Nākā is dotted by religious structures devoted to gods, demigods, saints and spirits. Many communities observing Hindu religion and several sects of Islam reside next to each other in the marketplace. Apart from these, Jains and Jewish communities have been early settlers. Since the twelfth century (Eaton) the Indian subcontinent came under the influence of Sufism. The belief that was spread through the saints weaved the divided communal landscape into a harmonious entity. These Sufi saints must have arrived in Panvēl via the port. If you observe the coastline of the Indian Ocean from eastern Africa to Persian Gulf to western India, most of the port cities have a Sufi shrine. This happened because the Sufi saints were revered by the kings and their armies (Eaton, R; 2019, 144). The traders developed a strong bond with the Sufi saints as they blessed their struggle in the foreign land and eased the process of settling down. Prosperity is directly linked to their blessings. They blessed all without considering the religious inclination. Today, as I observed on Ṭapāl Nākā, their believers are found more among the Hindus than Muslims.

Memorial stones of these Sufi saints exist even in the homes of traders. Some saints who became more wellknown have a larger shrine. In most cases, these shrines are maintained by devoted and enthusiastic Hindu traders. Mr. Khalde pointed out to me one day morning in early March, ”Neha, come to the Urous of Siddhi Badshah this evening. We have a special meal.” He had mentioned to me several times before that he looks after the administrative affairs of the Siddhi Badshah shrine. The Teli oilmillers community has the largest following for Siddhi Badshah. Mr. Panhale told me in the first community workshop that the Teli community has the largest following for Siddhi Badshah and Paach Pir, another shrine on a nearby mountain top. Extending this cross-community belief, he also opened the discussion towards a specific relation with the Jewish community. He told us,
“The Hindu oil-millers were known as Somvar Teli (Monday oil-millers) and the Jewish oil-millers were known as Shanivar Teli (Saturday oil-millers). The Shani Mandir on Ṭapāl Nākā is built by both the Teli and Jewish community together.”

Mr. Panhale was pointing out to the fact that Hindu and Jewish oil-millers were very closely bound by trade in the marketplace and were just acknowledged separately based on the prayer days. Both the communities reside very close to each other on Ṭapāl Nākā. The community on Ṭapāl Nākā remains closely bound through such shared cultural aspects of daily life. While narrations of such intimate connections bridging the religious boundaries the community on Ṭapāl Nākā reveal the place-bond that they have created through such connections. As Mr. Maniayar pointed out in the beginning of the first community workshop very clearly,

“The most important thing about Ṭapāl Nākā marketplace is that everyone lives here with harmony. There are no disputes, no quarrels and no problems within the community. Everyone lives happily with each other.”

This observation is vital in understanding the place-bond of the community with the marketplace. They strive together in their aspirations, and they prosper together.

**The meaning of the marketplace for the community:** The meaning of Ṭapāl Nākā for the community is derived from the complex milieu of trade, belief, and property ownership. The historical change in the community dynamic and trade has not affected this meaning of the place. Various migrating communities altered the communal dynamics without changing the ethos of the marketplace. Trade connected with the property remained the central focus of the marketplace. The cultural landscape remained tightly woven with the cultural memory embedded in the physicality of the marketplace. The organisation of trade is self-reflexive and critical of the changing patterns of trade. The community maintains a sense of obligation towards various religious beliefs. The newly migrating populations are being assimilated in the marketplace. New traders are encouraged to aspire for prosperity. The local agrarian population migrating to Panvēl is accommodated in the increased density allowed by the newly built multi-storied mixed-use apartment buildings. They have arrived about five to six years ago. The trading families have resided here for more than a hundred years. Though their stake in the property is reducing because of redevelopment they are still trying to hold a grip on the market dynamics. Mr. Rameshchandra Singara who runs a jute-rope wholesale shop for last sixty years told me,
The meaning of Ṭapāł Nākā generated by trading communities

“Every day many builders contact me for redevelopment. The biggest pressure is from the jewellers who want to convert this part of the market in a jewellers’ market”.

Though this is a very stressful situation for Mr. Singara it is a relief to know that the jewellers want to keep the market dynamics alive. Mr. Singara is not interested in the jewellery business. He is just waiting for a good bargain from a builder because his property today has become a prominent location. The trading community believes that trade will flourish, and they will keep their stake in the marketplace in spite of the increase in density even though the development drive has taken away the essence of the marketplace. The image of a coastal town trading in agriculture produce supporting the regional farming communities is in mutation. Mr. Kishor Khaire (seen in figure 2.8), a bamboo weaver pointed out to me,

“We will all have to shift out of here. I won’t be able to sit here on the street like this. So, I bought a shop in the next building which I am using as a storage. In few years, we will see a very different Ṭapāł Nākā”

Mr. Khaire is pointing out to the changing physicality driven by development. He is not happy about the change. His bamboo artefacts won’t sale as well in the shop as he sells them on the street. At the same time, he has already found other markets where he can sell those artefacts at better price and in larger quantity. He is disappointed about the fact that this generations-old place where all members of his community stayed together and practiced the craft are now scattered around the city. The sense of the Burud community on Ṭapāł Nākā is getting diluted. He said to me very proudly,

“If you catch a rickshaw at ST stand (State Transport bus service) and tell him that you want to go to Burud Ali (Burud lane), he will drop you here”.

Though I grew up in the next building to where he sits, I always told the rickshawala to take me to Dr. Shitoot’s dispensary and the rickshawala brought me home. Dr. Shitoot’s dispensary is in front of Mr. Khaire’s sitting place. The same place is also known as Momin Pada. I could not trace back the history of this name properly. Momin is a weavers’ community following Sunni Islam. Though Momins do not live here anymore the area is still known by them. Today, it is better known for the Teili oil-millers’ community. Mr. Khaire also sits abutting the Synagogue, a structure well known on the coast of Maharashtra.

Community’s plight in voicing their concerns related to development

4.4 Community’s plight in voicing their concerns related to development

The non-participative development policies: The trading community on Ṭapāl Nākā knows the marketplace dynamic as an insider (in table 2.1, on page 56). The generations old knowledge preserved as a memory is valuable for the trader on everyday basis. This value of belonging to and knowing the place is ignored by the government’s planning department while drafting development policies. The bamboo weavers’ community is getting scattered, and they are forced to move out of the place where they have practiced the craft for generations. The Burud Ali, an area where one could see the amazing craft displayed together, is now becoming sparse. The community has not been considered while drafting the development policies. Their specific way of working and exhibiting the craft is not acknowledged. The meaning that they have brought to the place by practicing the craft for generations is neglected. The identity of Burud Ali which is intimately connected with the larger identity of the place is not protected in the development policies. The disregard of the planning department towards such a valuable community indicates an abhorrence of traditional craft practices. It also indicates a disrespect towards the intimate network of communities which exists in the place. The displacement of communities has weakened the cultural landscape and disturbed the communal harmony of the place. Mrs. Tulsabai Gaikawad (seen in figure 2.14), also a Burud lady, practicing bamboo craft in front of the synagogue laments,

“Everything is changing. All good people are going away. Nothing seems like the good old days...The Jewish people from the synagogue funded my marriage and cared for me as I grew up. They always invited me to their functions. Now, there is no one who knows me. It has changed...There are only four Burud houses left here. We try to sell as much as we can.”

She is worried about the road widening scheme being implemented since 2016. The scheme was announced to the trading community by sending one-page notices mentioning the cutting in each plot. These notices were not served
to the craftsmen who use the street as they don’t own any property which faces the street. According to the planning department they are street side vendors even though they own property in the same area. Mrs. Tulsabai Gaikawad asked me,

“What is going to happen in road widening? Will they ask us to go away? Is the Synagogue also facing road cutting?”

There is fear among the community about what might happen. They are anxiously waiting. Their voice is marginal. The traders owning property facing the street are also anxious. They know the value of their property which is inherited for generations. Mr. Kumar who owns a prominent property in which he runs an eatery has been patiently waiting for a reasonable development of his property. His property is designed as a chawl, tenements having shops in the front and two-room apartments in the back. Arranged like railway compartments the purpose of this structure was to avail cheap housing for budding traders. There are about twelve tenements in this single storied structure. Four of them belong to Teli oil-millers community. There was a mill combined with a cow shade in the backyard of the chawl. The chawl itself is a longitudinal structure with narrow depth. The road cutting will greatly affect the depth of the building as it will take away half of the shopfront.

When I visited Mr. Kumar he seemed destitute. He showed me the notice served to him by the Municipal Corporation written in Marathi. The legal language of the notice is minimalistic and hence ambiguous. He asked me,

“What do you think the notice says? Does it mean that they will cut five meters from the plot boundary or five meters from the front wall of the structure?”

The notice was one sentence long in which the five meters number was written on a dashed line. This meant that the officers filled in the cutting by hand on each notice. The structures are at varied distances from the road face. It was difficult even for me to understand exactly what it meant. The officers from Municipal Corporation had come for a survey and made some random looking marks on the buildings. They avoided providing any clarity to the traders, or they conveyed as ambiguous message as written on the notice. The traders were at loss about what exactly is going to happen. Mr. Saifuddin Vora (seen in figure 4.6) started a court case against the notice as he is about to lose all the plot in road widening. He said,

“This is the third time we are giving away our property for a development project. This time all of our plot is getting cut.”

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Mr. Vora will get a compensation and the court case will ensure that there is a fair bargain. If he had been consulted while drafting the policy the hassle of the court could have been avoided. The trading community can sit on a table to discuss a proposal which is going to affect them and can arrive at a solution which is fair for all. This is what they do over the counter every day. The traditional market dynamics allows to strike a deal with a considerable empathy for prosperity. They are used to a customer with whom they need to strike a ‘no profit no loss’ deal. While working for my father in his shop I have sold cement bags with one-rupee margin. We did it only to keep the money rolling. The traders have the capacity to think about all the stakeholders of the marketplace. They are neglected by the authorities responsible for development without even trying to connect and understand their concerns.

**Voicing their concerns:** When I started this research the newly formed Municipal Corporation had undertaken several development projects. Among these the road widening scheme and a drive to demolish illegal structures were pursued rigorously. An air of restlessness had set in, and the traders were coming together to start a dialogue with the authorities responsible for implementing the projects. Their initial demand was to provide clarity about the road widening policy. They wanted to know how it will affect exactly their properties. They had found that the policy is not evenly applied to all properties. The Jewish community was shocked to know that their hundred-and fifty-years old Synagogue will face a cutting. The structure is designed in a beautiful vernacular style and stands strong even today. Ideally it should receive a heritage listing and protection. Mr. Digodkar, a lawyer by profession, was clueless as well. He was trying to find out the ways to protect the heritage structure from various sources. He told me,

“I am trying to find out the laws regarding heritage structures. I am sure we can protect the synagogue, and it will not face cutting. I am also concerned with the Jewish burial ground which is getting encroached by slums. Can you help me with documents? Do you have a survey map of the burial ground site? I also want a proper map of the synagogue plot.”

The community looked at me as a person who knows everything about the Čapāl Nākā marketplace. They knew that I am an architect and I must have gathered legal maps from government departments. The process of acquiring a surveyed stamped map from the Land Survey Office is a tedious process. You must apply to get the map, pay a fee, and then visit again to collect the map. These offices are busy and not friendly. In the recent years there have been efforts by the government to make some documents available online such as Property Cards. Since 2018, the website is down, and I could not access these documents either. Like Mr. Digodkar every trader in the marketplace was running around trying to find as many documents as they can to put up a case
The meaning of ɬapâl Nâkâ generated by trading communities

...in an attempt to protect their property. Mr. Gilda told us in the first community workshop that he and a couple of others present in the workshop have started a dialogue with the authorities. He said,

“We have met them once. We asked them if it is possible to know details of the road widening scheme. We wanted to know what is the larger plan, and why different traders are getting different notices.”

Mr. Gilda did not get satisfactory answers. He along with others were planning to continue the dialogue as they wanted clarity. They wanted to come together to voice their concerns. They were aware that some of them have a bigger problem such as Mr. Vora, who is losing his plot entirely. Mr. Vora joined the group and went to the meetings. But he also filed a court case against the notice issues to him to ensure that he gets a fair compensation. Mr. Digodkar was looking for other valid arguments to save the synagogue. Mr. Thakkar who had just developed his plot was worried if his newly constructed building will face a cutting. Others patiently joined the team to know how to prepare for this change. Their plight to build voice against the scheme was desperate.

The Municipal Corporation was working with full swing on other projects like demolition of illegal structures. Mr. Banthia’s addition to the building on the second floor was demolished. He told me,

“I had an approval for this from the Municipality. They were not sure of the addition and had told me that this is a provisional approval. I was hoping that the Corporation will respect the decision of the Municipality.”

He seemed quite shocked as he stood in front of his shop. He asked me,

“What do you think will happen? The marketplace will change so much. It will lose its character and it will become like any other market in the suburbs of Mumbai”.

As an answer I tried to point out to the negligence and lack of empathy to vernacular architecture. I gave him examples from traditional markets in Europe where old structures are preserved, and the value of the marketplace is raised because of the specific heritage identity. He nodded but didn’t seem very convinced. He had not seen the unique value of preservation and maintaining a peculiar regional identity. I felt that he was trying to find ways to analyse and assess what went wrong and how to deal with the change. He does not have an anxiety about trade or trade relations and knows how to do a good business. He knows his clients and his trading community. But he has an anxiety about schemes that are designed about his life, property and thereby trade in which
he is not at all consulted. He is shocked to face decisions regarding his property made in some unknown office by some unknown people.

Traders on Ṭapāl Nākā build a voice and try to confront the development policies which seem straightforwardly harmful to trade. They try to negotiate with the authorities post policy implementation. They first initiate a dialogue with the authorities in a peaceful process. The traders want to convey that they are pro-development but their right to contribute in their own development should be respected. If they feel too insecure and find the policies utterly unfair, they fight a legal battle. In the legal battle, they usually get a better bargain regarding the value of the property. In the case of Mr. Bohra where the property will be completely lost to the road widening scheme the bargain about compensation is a sad alternative. The value of the property and its relation to the marketplace is not considered by the planning officers responsible for development. The apathy of the community to protect traditional architecture and identity arises from the insecurity of sudden and non-participative development policies. The community comes together to voice their concerns based in solid knowledge about the marketplace. The value of this knowledge and voice becomes diluted in the post-policy implementation phase as the debate is driven towards a bargain. The communities plight lies in conveying their knowledge about the place which should be ideally regarded as valuable by the authorities responsible for development.
5 IoT’s role in reconfiguration of meaning at Ṭapāl Nākā

5.1 The contrasting meaning of Ṭapāl Nākā

As we saw in the previous chapter meaning of Ṭapāl Nākā for the trading community is embedded in their relationship with the marketplace created through the trading practice. Their knowledge about the evolution of the marketplace overtime is preserved in their collective cultural memory. They have enforced the community bond established through trade further by creating a cultural tie-up based in interpersonal relationships and shared beliefs. They took the responsibility of managing their social space within which trade can safely prosper. The marketplace meant a place within which one has to invest not only through a capital but also by generating trust exhibited in communal action. The interface of a dwelling thus became a fragile interface between the public and private space. The vernacular architecture built by the traders ensured a kind of transparency needed to build trust in the marketplace. The streets and lanes were humble, narrow and clean (Campbell 1882). This was true of all cities on the west coast of India. The sense of intimacy was deliberately created to ensure security. This has been famously described as ‘Eyes on street’ by Jane Jacobs (Jacobs 1992). All stakeholders of the marketplace had a particular view designed for a purpose. The marketplace was accommodative for newly arriving aspiring traders. Everyone was slowly enrolled in the common agenda of prosperity through communal harmony. Ṭapāl Nākā marketplace was a place where space and the community evolved in reciprocal exchange. The meaning of the marketplace for the community lies in this deep understanding of ‘creating place’.

As opposed to this the planning departments in the government offices define Ṭapāl Nākā as mere village centre, a gāoṭhān in local language. Urban planning in India has adopted the modern grid-iron concept supporting motor driven mobility. Le Corbusier introduced the modern terminology in India by designing Chandigarh in 1960s. His influence over Indian urban planning
is evident in most of the newly planned cities and in the design guidelines. Recently, URDPFI guidelines follow American and Chinese design ideas and standards for urban development (MoHUA 2015). There is a sensitivity towards historical cities which is developing slowly. But, the requirement to be qualified as a historical city to be conserved or preserved is set to very high standards having to qualify as a monument. The history of cities like Panvēl is not well written as the importance of it as a trading port was lost already in the colonial period. There are many scholars today who are writing about 15th century coastal trade and community dynamics (Sheikh 2010, Eaton 2019). This will cast light on the historical importance of these cities and need of their preservation; but, much damage is already done. The modernisation drive of cities has neglected marketplaces like Ṭapāl Nākā and converted them into mere suburban developments.

As we saw in the third chapter the planning department defines Ṭapāl Nākā as a congested area having an opportunity to be loaded with density. It becomes just another node of a satellite city to be reinforced with efficient transport infrastructure. The local and regional identity preserved by the communities for centuries is rejected. The community was lured into lucrative land development facilitated by the RCC structure and eventual contemporary aesthetics. Within a span of forty years, the local identity and character is lost as the vernacular architecture got replaced with the RCC buildings. The community dynamics is challenged by the local migration. While designing the development policies, a new regional identity supporting the metropolis of Mumbai was considered more important. This larger vision of the planning department was never discussed with the trading community of Ṭapāl Nākā. They were told that Panvēl is now getting better connected to a metropolis. Their knowledge of the marketplace and its historical background was never consulted while defining a new identity; rather, the design guidelines do not talk about any specific city character or identity; the document only talks about regional urban development. The value of a traditional marketplace is rejected in pursuit of creating an efficient regional urban development plan. The community on the other hand is struggling to convey their concern about development. They have the capacity to envision a future that does not necessarily reject the traditional.

5.2 IoT technology initiative of the government

The government of India is rigorously aiming at converting about 100 cities into smart cities. A commission called Smart Cities Mission is established to fulfil this task under the Ministry of Housing and Urban Affairs. The mission is supported by various academic and funding organisations around the world.
Pilot projects executing the initial ideas related to data collection and management have been carried out in some cities since 2019. Most of the cities selected to conduct pilot projects have a rich historical background. They have gone through a similar pattern of development as discussed in the third chapter. Over the course of last seventy or so years these cities have become complex places responding to transformation. A strange mixture of old and new is seen in these cities where the new is introduced as a development. The introduction of smart technologies in this scenario is seen as another tool for development and administrative control. The mission statement stated on the website of the enterprise and in its various documents define smart city as holistic development for the general benefit of its citizen. A smart city for the mission is,

“...it is a city, which is liveable, sustainable and has a thriving economy offering multiple opportunities to its people to pursue their diverse interests.” (Smart Cities Mission 2021b)

The mission statement also claims to remain people-centric where the citizens participation is considered crucial. Though the statement clearly mentions that it requires smart people and that their actual involvement is appreciated post-project implementation where mobile based tools will be used for data collection. It is stated as following:

“...The Smart Cities Mission requires smart people who actively participate in governance and reforms. Citizen involvement is much more than a ceremonial participation in governance. Smart people involve themselves in the definition of the Smart City, decisions on deploying Smart Solutions, implementing reforms, doing more with less and oversight during implementing and designing post-project structures in order to make the Smart City developments sustainable. The participation of smart people will be enabled by the SPV through increasing use of ICT, especially mobile-based tools.” (Ibid. 2021)

The core concepts of the urban planning department remain as the same. Regional development is considered crucial where a designed and standardised template can be adopted for various cities. The replicability of a model is considered advisable and efficient resonating with the original concepts of urban planning. The smartness of the technology is not seen as adoptive to existing regional identity but rather as a supporting mechanism for the existing administrative structure. Hence, the objective of the mission is stated as,

“...the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of ‘Smart’ Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a lighthouse to other aspiring

41 SPV stands for Special Purpose Vehicle
cities. The Smart Cities Mission of the Government is a bold, new initiative. It is meant to set examples that can be replicated both within and outside the Smart City, catalysing the creation of similar Smart Cities in various regions and parts of the country.” (ibid. 2021)

The idea of the smart technology is to be adopted for the efficient e-governance and to have better control on public services such as electricity, water and drainage. The complexity of vision statements creates an ambiguity about what is going to happen. The inclusive nature of technology is not stated as an enabler of equality but rather stated as a supportive tool for providing better services.

“The core infrastructure elements in a Smart City would include – adequate water supply, assured electricity supply, sanitation, including solid waste management, efficient urban mobility and public transport, affordable housing, especially for the poor, robust IT connectivity and digitalization, good governance, especially e-Governance and citizen participation, sustainable environment, safety and security of citizens, particularly women, children and the elderly, and health and education.” (ibid. 2021)

In a nutshell, the vision re-iterates the larger idea of urban development adopted by the urban planning departments for decades. Three types of development models are adopted: retrofit, redevelop and greenfield. The idea of retrofitting and redevelopment has been in practice as we saw in the Panvel Development Plan. We have seen the development policies adopted for a congested area like Tapal Naka marketplace. We have also seen how the greenfield development is planned in Navi Mumbai Development Plan. A node like New Panvel is a greenfield development, i.e. development on virgin land that was not used for settlement or industry previously. Smart technology is seen in these templates as a tool which will help in better administration of the basic planning ideas. Hence, the goal is stated as,

“The purpose of the Smart Cities Mission is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, especially technology that leads to Smart outcomes. Area-based development will transform existing areas (retrofit and redevelop), including slums, into better planned ones, thereby improving liveability of the whole City. New areas (greenfield) will be developed around cities in order to accommodate the expanding population in urban areas.” (ibid. 2021)

A Data Maturity Assessment Framework (DMAF) is created to establish the collection and data management within a sample of 100 cities. The intent is stated as,
“...DMAF aspires to help cities to strategically focus on unlocking the power of urban data in key urban sectors for enhanced decision-making, improved efficiency and greater collaboration and innovation with the urban ecosystem.” (Ministry of Housing and Urban Affairs 2021, 11)

Two key pillars, namely, Systematic Maturity and Sectoral Maturity, define the way cities should be assessed for their preparedness for data generation and management. The Systematic maturity has markers for assessing the existing established system in the cities which can harness the data governance plan. The Sectoral Maturity is the actual availability of data and its form for management. The methods to be implemented for doing this assessment are statistical resulting in a DMAP factor based on a mathematical formula. The descriptions of markers within these two pillars resonates the same overall statements narrated under the vision statements stated above. There is a clear message about an administrative system that is being created to look for existing data frameworks. The strengthening of the system will allow for stronger data-collection and management. There is no clarity about citizen participation except that they will contribute in data generation. A careful reading of annexures in the documents provides this insight.

The Panvel Municipal Corporation has already started to implement the system on the Taptal Nakal marketplace. The meters measuring electricity and water supply are getting fitted with sensors. An intermediate system of billing is taking place where a person from the supply board clicks a photo of the reading and sends it to the office. The same day a text message is sent to the customers telling them about the reading and asking them if they want to cross-check it on their meters. The billing officer takes the photo sent by the reading-taking person and puts it on the bill which is then uploaded for online payment on the website and printed for posting to customers. The human agency in this exercise will be reduced when the sensors will send the reading to the computerised billing system which in turn will automatically inform and bill the customer by a text message. The aim here is to make the billing and procurement of the amount as quickly as possible. There have been several cases in my own apartment block where timely payment of bills was somehow missed, or the record is missed by the system. As a result, a person comes to your door to ask if you have paid the bill. If you are not at home to show that you have paid the bill, he cuts the connection without calling you or waiting for you to cross-check. A degree of scare is created by the supply board for timely payment. The introduction of sensors in this scenario will generate more control as the cross-checking system in person will probably be removed, and the supply will be cut directly by the system when the necessary pieces of technology are implemented.

The garbage vehicles are also being fixed with a GPS to track their location and ensure that they are not standing idle. In this case, the control is on the
employees of the municipal corporation. The garbage is picked every day. The segregation system is not yet in place as of 2021. Only plastic is being separated and picked up separately. There is a ban on plastic bags and only plastic more than fifty micron thick is allowed for packaging the grocery. The corporation has levied heavy fines if the laws regarding use of plastic are broken. All small shops and informal vendors are checked rigorously by the corporation. The system is being developed for better monitoring. The municipal corporation is trying to adopt smart technologies into the administration for the purpose of better control on the public services provided. The community on the other hand is using smart technology more logically for their benefit which is explained in detail in the next section. The sensitivity of deploying sensors for data collection reflects that privacy and safety of all stakeholders is maintained. My observations related to this are described in the following section.

5.3 IoT technology used by the trading community

The urban level development implemented in and around Panvēl has had strong repercussions for the trade and thereby on the trading community of Čapal Nākā. Since 1990s, the marketplace saw computers being introduced for accounting, the ATM’s being installed, and the computerised billing had started in some shops. Essential services like telephone, electricity, and water supply became smarter by incorporating better billing and recovery as described above. The streets got flooded with all sorts of vehicles and the homes with many modern appliances. From this perspective, it could be said that the trading community on Čapal Nākā has been pro-development. In the fourth chapter I have discussed their approach to development by giving examples of adopting new modes doing business. This required them to learn new patterns of communication and develop new skills. Section 4.1 talks about how the oil millers community became a driver’s community.

The latest and the most revolutionary deployment has probably been introduction of mobile communication devices such as the smartphone. Almost every stakeholder in the marketplace owns a mobile phone, smart or not. And this has transformed the way the market works. Things have become more efficient and surprisingly more equal. For example, a major support system of the trade is provided by porters. These workers are protected by their labour organisation which ensures that they are not exploited and are duly paid. They are members of the organisation which gives them a salary. But they can also work extra for a trader and then paid separately. I interviewed a group of porters while they were resting in shade (see figure 5.1.). None of them had a smartphone, but they owned a basic phone which they only used for receiving and making calls. It fitted perfectly in their pockets. One of them said,
“We receive a call when the trader has work for us. We use the phone to call each other and form a group as needed to complete the task.”

![Figure 5.1](image)

Porters resting in shade in the afternoon waiting to receive a call from a trader. Photograph by Neha Sayed, February 7, 2018.

The transport system in the marketplace also has an interesting pattern mostly dependent on the mobile phone. Small three-wheeler carriers called tempo wait on a particular spot as seen in figure 5.2. The photograph is taken looking towards Tapal Nakā. This spot is famously known by the presence of Maharashtra Bank seen on the left in the photo, and also by the presence of Joshi Sawmill on the left. The customers of the market can directly contact these tempo drivers and arrange for transport of goods. Small traders from the neighbouring villages use their service as well. Mrs. Janabai Bhagat, a small trader from Waghivali, a village close to Panvel told me how she uses the service,

> “I have a list made of products I need. I come personally to the market once every week. The traders here know me. It is the same shop that I buy things from. Then they pack those products and keep them in their shop. I then call the tempo service that comes to my village every evening and ask him to pick my things from those shops. He drops them at my shop in the evening. He lives in my village.”

Mobile phones enable fast contact for different groups of people, and an equal opportunity in terms of work is generated in the marketplace. For example, the shop sales-boys and girls, shop cleaners and the domestic servants use the mobile phone extensively to stay connected with the employer. Most of them aim for the latest version of a Smartphone. The Chinese suppliers have
provided a huge range of affordable devices making it very easy to buy a smartphone. This gave easy access to social media where these stakeholders can now share images of products, place orders, and respond to requests almost free of cost. When NOKIA introduced the multilingual keypad and interface it transformed the reach of the technology. Their strong and carefully designed phone responding perfectly to the climate and cultural use created trust and boosted the confidence of the uneducated laymen. The stage was set for affordable and sleek smartphones introduced by Chinese vendors. A market analysis done by B. Karunakar presents the impact of the Chinese smartphones on the Indian mobile phone market,

“The recent entrant Chinese players like Huawei, OnePlus, OPPO and Vivo have concentrated on the low end segment with low penetrative pricing. Some other firms like Xiaomi provided a good design with affordable pricing while establishing a strong online presence with less dependence on physical distribution stores, an approach different from the traditional players. The strong entry of the Chinese players in recent times, as a result led to the fall of market share of Indian mobile handset manufacturers like Micromax, Intex, etc.” (Karunakaran 2017, 5)

The telecom industry is providing 4G network even though interruptions are common. The competition is killing the best of the services. Karunakaran discusses the impact of the service providers on the Indian market taking case of Reliance Jio which has transformed the reach of a mobile phone.
“The telecommunication market dynamics have changed considerably since September 2016 with the disruptive entry of Reliance Jio (Mobile Network Operator) offering free voice combined with penetrative pricing of data usage. Recently, July 21, 2017, Reliance Jio also announced that the Jio Handset would be available to the user with a 3 year refundable deposit of Rs. 1500/-.” (ibid, 6)

The competition is not necessarily healthy. People have experienced low connectivity and sometimes blocked networks. The service centres are overloaded with work and can provide little help. The landline is a semi-government initiative suffering from bureaucracy and hence not efficient in service. There are several issues with their services even though they have been better compared to the privatised services; their quality and credibility has suddenly declined in the last few years. In spite of these challenges, the community has faith in the resources available in current situation, and they have a way of understanding and responding to such problems.

Mobile phones are now seamlessly connected to surveillance cameras. A surveillance camera is fixed in almost every shop and apartment building within the marketplace. Its primary purpose as of now is to provide footage on human activity whereby theft and burglary can be controlled and captured. Until now, it has proved useful in very few cases of theft. In future, the systems might give information regarding time, number of people, and their general appearance as a clue to investigation. In the case of ATM machines, it has helped to give concrete clues towards theft because the camera is installed in a very ambiguous location. In spite of the presence of the surveillance camera there is a security guard always present in all types of premises. The jeweller’s shops have multiple cameras, making almost everyone conscious of being recorded. Despite this, jewellers do not trust the cameras; their way of securing the products is very different. They employ people only through acquaintance and then make them responsible for the care of products. At least a few among the staff are distant or close relatives of the owner. In the night, the whole shop is emptied, and the jewels are stored in a safe in the jeweller’s home just above the shop. Apart from security the next biggest use of the surveillance camera is to watch the salespersons and monitor their work. The feed of the camera can be observed through the phone interface. This has become vital in the storage areas, on the cash counters, in the reception areas of various consultants. In the case of the consultants, it is used to also know about the number of visitors waiting in the reception. A value judgment can be made by the consultant by observing the waiting visitor through a camera. Cameras in the day-care centre relay their feed live which can be watched by parents on their mobile phones. Well-being of the kid is cross-checked and also a judgement is passed on the behaviour of the child and employees of the day care. These are my own personal observations.
The third technology intervention that one can see very evidently is the introduction of sensors. Shop and office doors are being automated, products have RFID tags, the auto rickshaw drivers are using GPS enabled applications on their Smartphones. The place is slowly getting embedded with varied data sensing and data sharing devices. As is always the case with this community, the technology is being adopted without considering its perils. Personal numbers are shared, and valuable data is extorted with casual approval of the uneducated user. The commercial value of data easily available through sensors is unimaginable for the community. No security settings on the phones are used. The lack of awareness is taken as advantage for by service providers and vendors of devices. The pace of technology integration cannot be stopped as the benefits that it offers tend to surpass the drawbacks or at least the knowledge about them. The possibility of booking a prepaid taxi or rickshaw where there is no need to bargain reduces a great deal of anxiety and increases prompt service. I personally have used a taxi booking application on the mobile phone in India. My observations reveal that the taxi drivers use the application in many peculiar ways, such as turning the application off or calling you and asking the destination and then refusing to come. This suggests that how people usually relate in formal and informal networks is of vital importance for the design of the technology. IoT technology has a social dimension; the intercommunicating devices will have to learn the social norm of a specific community. This is what I intend to discuss next.

5.4 IoT design concept by the community

In place like Ṭapāl Nākā the role of communities in innovating and using IoT technology will be crucial. The intervention of IoT is promising where the data to be processed is generated and managed by the people. Several studies have been made where citizen participation in improving urban services is considered valuable. Jennifer Gabrys has published research done on urban citizenship where the citizen generate data and manage it to improve the overall urban life (Gabrys 2016). One aspect of urban citizenship is where they take photos of problems noted in their neighbourhood and share it on a portal informing the administrative authorities. Even though this approach creates an increased awareness and responsibility, it leaves much in the hands of the authorities. Eiichi Taniguchi has proposed an intricate system of logistics in Tokyo as a public-private partnership platform. The city logistics that can navigate parallelly to passenger traffic with the help of an integrated IoT model can happen only with the coordination between all stakeholders (Taniguchi 2016); yet, he does not clarify much about the methods which people can adapt to participate in the decision-making. Probably, Taniguchi wants to separate the logistics
movement from the city activity and hence ordinary commuters are neglected in the study, but there are multiple stakeholders involved in the logistics industry who could be consulted before coming up with a model.

IoT as a technology is distributed within the space, and hence has a non-hierarchical structure. The network can create a heightened sense of responsibility and awareness within the community. The case of Ṭapāl Nākā as a place in IoT can prove to be such an example where the traditional ethos of community life can get embedded into the modern technology of IoT. Oxford dictionary assigns the origin of the word internet to 1970s and refers to a network of computing devices where inter means ‘reciprocal or mutual’ and net means network. Internet of Things should not forget this liability. Based on the fieldwork, I developed an approach to design of IoT on Ṭapāl Nākā addressing this issue. I present this below.

The design of ubiquitous technologies in a traditional community with intimate social bonds such as those that have come into being and continue to exist on Ṭapāl Nākā requires an in-depth understanding about their cultural disposition. The trading community functions within certain established norms and are responsible for building a network of trustworthy relationships. As we have seen in the fourth chapter, in the ethnographic fieldwork, I could establish that a community heavily depends on sharing knowledge about each other and the trade. While sharing space with each other they share the expertise of trade practice and its intricacies to develop strong and valuable relationships. This leads to a kind of transparency that is expected, appreciated, and practised by everyone in the marketplace. Transparency related to sharing exists within a trading community like Ṭapāl Nākā ubiquitously. Physical objects, in other words things, and the community which uses them hold the knowledge about what is being shared. These things will become means of communication. It can be a simple accounting book, a property or a property record, a bag of cement and similar things. There is an important aspect of ownership that is enacted by the community. Everything is owned first and then shared. Hence, how much to share and how to share it is decided a priori and agreed upon. We can only understand this aspect of ownership and sharing from the community. They can tell us what the norms for sharing are. Therefore, it is beneficial to conduct design ethnography before implementing IoT in traditional communities. If we do not understand the cultural notion related to use, we will exploit the essence of trustworthiness of social bonds and in the long run will suffer from lack of commitment. Ethnographic work implies a sustained community engagement which can only be achieved by conducting a participative field work where several tailored methods can be used to gather rich insights.

In the case of Ṭapāl Nākā marketplace, it is ridiculous to implant a network of things that do not talk the same language of communication as that of the trading community. It will be worthwhile to discuss the idea of ownership
of data especially in a community such as Țapăl Năkă. The ubiquitous nature of sharing within the community directly corresponds to the ubiquitousness of things as it is conceived under IoT. Things on Țapăl Năkă have a floating ownership where the use is transferable either permanently or temporally with a proper consent. Obviously, the whole idea of trade is profit-oriented and hence the network of things should act as a support mechanism enhancing the healthy competition rather than becoming biased. Ownership can be floating but not moving away from the localised knowledge pool, meaning not having the capacity to be transferable without the consent of the community. Hence, it is vital not to have a third-party initiative to maintain and process the data. The community can hire consultants that can suggest and design applications and provide help in setting up and maintaining the data processing and data storage. A small community driven hub can be placed within the marketplace which can resemble a DIY workspace. This can also lead to a sustainable adoption of technology where the young generation would grow up learning and evolving with the technology. The trust will become part of the design and building process.

It is also important to note that the inherent aspect of sensor driven technologies is surveillance. There is a thin line between monitoring a condition and surveillance for control. A sensor detects activity and sends its measurement for processing; here, the interpretation matters more than anything. The idea of sharing on Țapăl Năkă implies solidarity and not control. Monitoring is another concept that comes close to the idea of sharing because it justifies the floating ownership pattern. Lastly, sharing also implies a strong social bond. The technology should not replace any social bonds, but rather enforce them. There are several stakeholders in the market, such as agents who act as middlemen, they encourage trade by either bringing in customers or by acting as customers in charge. Whether their contribution is biased, unnecessary or not, is another debate, what is important about their presence is that they build trust, they generate business, and they bring life to the marketplace. The applications that are bound to create a possible shared data within the community should not replace the knowledge of these people.

**Considering this background IoT as a system should be integrated in a traditional urban marketplace with following constraints:**

- The system should not participate in surveillance systems
- The system should not replace social bonds but rather foster them
- The system should be decentralised and should not need any external agency to operate and maintain it as a whole.
Apart from these the design process to be adopted for such an enterprise should have following considerations:

- There should be a sustained engagement with the community allowing them to provide insight on the network and sharing patterns.
- The community should be actively engaged in the conceptual development process.
- The community should build the system and maintain it themselves.

I am presenting a case that can be informative in the specific case of Țapâl Năkă marketplace. It was done as an entry for an international design competition floated by Panasonic, Germany and hosted by DesignSpark online forum (“Panasonic Design Challenge” 2019). I entered this competition along with Salil Sayed (who is also a researcher) without thinking of it as a part of my doctoral research, but as we chose the same site of my fieldwork it naturally became intertwined and ultimately proved fruitful for my research project. We went on to win the second prize for our design concept, and the first prize was not awarded to anyone for lack of a better entry. I am presenting analysis of the design concept developed for this design competition as an IoT project which can be implemented on Țapâl Năkă. The concept followed both design process considerations and technological considerations mentioned above.

5.5 Traffic management system for Panasonic Design Challenge

5.5.1 Problem identification and field reconnaissance

In Țapâl Năkă marketplace on everyday basis, the goods are unloaded through a tedious process into the storage areas located behind the shops. This happens in parallel with deliveries being uploaded into the customers’ vehicles. These two simultaneous processes create one of the biggest challenges for parking in the marketplace. There is a constant need to do the traffic management in front of the shops and traders do it and carry out both activities smoothly. This management is done together by traders, porters, and vehicle drivers. The management activity goes on until the product is being unloaded from or uploaded to the vehicle. Figure 5.3 shows a loading and unloading process being performed simultaneously. In this case, the wholesaler is using the whole shop space as storage. Wholesale traders need only a table and chair to perform the trade. A small rack in front of them shows samples of materials being sold. Even that is not needed if only one or two products are sold. The shop in figure 5.3 is in
a redeveloped apartment building where the trader is no longer residing in the same building as there is no internal connection from the shop space to residences above. We see a porter in front of the truck about to pick up a bag. The activity is taking place in the afternoon when there is not much traffic. A rickshaw is kept waiting in front of the shop by the customer as he is talking with someone on the mobile phone. It is in the favour of the porters to help in the traffic management. The drivers and the cleaners of the vehicles are used to navigating the vehicle through the traffic congestion caused by large vehicles. They have developed a knack for manoeuvring through it efficiently. Customers of the marketplace coming from villages have a certain plan and a to-do-list for the day. They are always looking for quick and easy parking options as they do the shopping.

![Figure 5.3](image_url) Loading and unloading process being performed simultaneously in front of the shop. Photograph by Neha Sayed January 3, 2019.

Since my childhood, I have observed that several heated arguments would be heard while a traffic-jam is being solved. But, as I observed closely, the arguments are constructive and are not derogatory. The aim is to keep efficiency in the trade practice. At the end of the day, everyone is satisfied with the hard work they have performed. IoT as technology should reinforce these social bonds and not replace them. I followed a design process to achieve an integration of this technology having a sustainable dynamics. The first step was to conduct observations in the marketplace about the traffic dynamics. I went into the marketplace and started to talk to people who live and own shops in some well-known trading spots. In Figure 5.4, we can see Mr. Deshmukh (standing
in the middle) and his neighbour explaining to me the way traffic operates in front of his building. Were traders. The workshop was moderated by me and researcher Salil Sayed who is also While praising the swift movement of traffic he also pointed out the problems in the parking situation. He said,

“The problem is people park in front of each other. The owners park close to the shop. When the customers start to come, they park in front of the owner’s vehicles. So, there is a multiple layer parking taking place in front of the shop.”

This can be seen in figure 5.5 where I have colour coded the layered parking. The green vehicles close to the shops are owners’ vehicles standing idle throughout the day. The orange vehicles are waiting for an activity of loading and unloading. The white vehicles are the ones who have hacked a niche space for a very small time slot. I have called this niche-parking. There is an aspect of gamification here as the small niches for parking on the sides of the road are hunted down and quickly replaced by another vehicle. This game goes on all throughout the day while the customers and transport vehicles juggle for niche-parking places. Even as the niches are hacked, there are not enough to suffice the activity, leading to multi layered parking as seen in figure 5.5. This dynamic of hacking parking spaces is done with an unspoken consent of the community. The first rule is, it should not be too obstructive to the moving traffic; secondly, you must be ready to move if asked; and lastly, you must respect the reasonable time slot. This is possible only because of the existing social bonds in the market-activity.

5.5.2 Participant interviews and user game

After conducting basic observations, I started to cross-check them with the community. I wanted to find out their concerns regarding the traffic dynamics. My new questions were to know what were their major concerns regarding everyday traffic management? What works and what does not? I conducted several participant interviews. The first insight was from a trader Mr. Karwa who manages the traffic in front of his shop with the help of his employees. Mr. Karwa told me his mode of managing unloading on a busy day,

“It is not possible to park the huge truck in front of my shop in the rush hours of the day. The market activity slows down in the afternoon. When my delivery comes the truck-drivers call me from the outskirts of the city. I guage the activity on the day and tell the driver a convenient time to enter the marketplace. I call him and inform about the time to arrive. Similarly, I call the porters and ask them to arrange for a group to come at that time to unload.”

He is also using his shop predominantly as a storage. The two men employed in his shop overlook the process of loading-unloading while managing traffic on
IoT’s role in reconfiguration of meaning at Ṭapāl Nākā

Figure 5.4  Mr. Deshmukh (standing in the middle) and his neighbour explaining the traffic dynamics in front of their apartment building from the terrace of the building. Photograph by Neha Sayed, January 12, 2019.

Figure 5.5  The niche parking in front of shops. Different colours indicate different levels of parking. Illustration created by Neha Sayed in GIMP.

the street. After he makes the call to the truck driver, the truck arrives in front of his shop as you can see in figure 5.6. The truck takes up almost half of the street space. The photograph is taken at 13:36 when the market has slowed down.

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Mr. Karwa expressed his concerns regarding the traffic management. He is completely disappointed with the efforts of police in managing the traffic. He told us,

“All the regulations regarding traffic were ignored not only by people. The police is not doing enough policing. There should be larger fines. People are ignoring traffic signs. We are doing their job.”

He wanted stronger rules and bigger fines for people who did not follow regulations. He later told us that the municipal corporation is having a meeting with the merchant association to discuss the new parking and traffic related issues. The regulations have always been there and so are the fines. They have been played with by the trading community and others who visit the market. The traffic is heavy and swift, and there is a sense of discipline and order if you look carefully. There is more effort in organising it by the community, but at the same time there is immense freedom which they are enjoying. The regulations can be stricter only if there are solutions to the present problem related to the availability of parking. If there is a possibility of parking a vehicle very easily then the hassle will be reduced. The blame on police is an alibi.

Mr. Kumaran, owner of Maharashtra Hotel, a restaurant offering local cuisine be reduced. The blame on the police is an alibi., expressed similar concerns. Figure 5.7 shows Mr. Kumaran being interviewed in his restaurant. His customers are specific and dedicated. They do not arrive in a vehicle. He
himself lives close to the hotel and hence prefers walking to work. He does not have to do any traffic management in front of his hotel. He had general concerns about the discipline of the community when it comes to parking regulations. Referring to the current rule of parking on one side of the road depending on the odd and even calendar dates he said,

“Now there is this odd-even regulation. But, no one is following it. People are parking on both sides. This is causing traffic jam at rush hours. The police are picking up vehicles on the wrong side only on some spots. Sometimes people follow the regulations sometimes they don’t. The regulations also change from time to time.”

![Figure 5.7](image)

**Figure 5.7** Mr. Raju on the counter of Maharashtra Hotel owned by him. Photograph by Salil Sayed, January 3, 2019.

Mr. Kishor Khaire, a craftsman weaving bamboo product required for daily needs and agriculture, sells his product in the front margin of the synagogue (seen in figure 5.8). He has a temporal setup on the roadside. He and many from his community set up these shops close to the synagogue. Their customers come either walking or in vehicles. There is usually enough space for parking in front of the synagogue and there is not much of a hassle. Even though they don’t depend on the parking availability or traffic condition, they have always helped to resolve traffic congestions in front of their shops. Their intimate connection with the road is evident as they engage with the traffic dynamic in a completely different way. Mr. Kishor expressed his concern about randomness in parking and said,
“As a kid I have grown up on the roadside, making these artefacts and selling them. We depend on the road as it brings customers to us. We always participate in resolving issues that take place regarding parking or traffic. There is a lot of randomness about parking and people somehow find their way through the crowded road.”

The community is aware of the issues related to parking and traffic movement. They themselves ignore regulations conveniently. Even when they desire relaxed attitude towards regulations, they want stricter measures to be taken by the police.

Figure 5.8 Mr. Kishor Khaire (seated) with his friends seating in front of the synagogue selling his bamboo artefacts. Photograph by Salil Sayed, January 3, 2019.

With this insight from the interviews, I proceeded to conduct a user game, based on service design methodology. I have discussed the development of the user game as a method in the second chapter in section 2.3. I invited five participants with whom I have had several conversations previously. Four of them have participated in other activities related to my research such as workshops or narrative interviews. One of them was an autorickshaw driver who was recruited on the spot. The workshop was conducted in the evening in a restaurant on Ṭapāl Nākā. The aim of the workshop was to elaborate traffic related issues on everyday basis in the marketplace. Except the rickshaw driver all others a design researcher. We had taken several photos while conducting observations in the marketplace regarding the traffic dynamics. We printed them in a small size of about 100mm x 50mm. Their content was discussed with the participants.
The user game was about constructing a story of the traffic dynamic by organising the photos in a series of events as experienced by the participants. When one participant builds a story, another can start a story from any photo seen in the first story. We can see that there is a pattern of connecting stories formed in figure 5.9. They needed help in building the story with the help of the photographs. They would stop and wanted to talk converting the workshop into a focus group. They voiced their concerns about policing and municipal regulations as they had told me before. They reiterated their demand to discipline people better and make them aware about their wrong doings. The stories they formed talked about struggle in finding parking and navigating through the street. The traders preferred to tell again how they do the management in front of their shops. The larger insight from the user-game was that the design concept should evolve in the domain of the trader as they are the ones who depend on traffic management.

![Figure 5.9](image.jpg)

Figure 5.9  User game with participants to elaborate their daily experience with traffic in the marketplace. Photograph by Neha Sayed, January 12, 2019.

It was the first time that the community was asked to participate in a problem-solving process. My initial query regarding history and contemporary community dynamics was easy for narration as the questions referred to their personal life. The questions regarding technological adoptions seemed new and difficult. The problem was not about communication between us, but about their commitment to play a decisive role in a research and design process. They had never been consulted in a decision-making process. They did not know the power of participating in a decision-making process. They have a certain way
of articulating problems. They have been trained by the government agencies for decades to formulate problems as complaints. A complaint can be answered very easily with a set of pre-defined answers. A complaint is to be registered in a file where it sits in a queue. It is mostly about technical problems. In certain cases, such as electricity, water supply and drainage services the complaints are answered relatively quickly. Other complaints pertaining to complex problems requires continuous follow up and patience to have a dialogue in a government office. Most of the times such tasks are delineated to political bodies who then utilise the opportunity to mobilise both the community and the government machinery towards their political ends.

Based on this insight, I began to develop some design concepts. I took the basic sketches back to the participants and discussed with them. They supported the idea that the design should lie in their domain. I decided to remain honest to the field observations and design a concept that empowers the traders towards their goodwill in trade relations. I based the idea on hacking the niche spaces for temporal parking which is a strong existing dynamic and works apparently effortlessly. With this concept, I went back to the traders and cross-checked the concept with them. The traders were excited and amazed to see that something like that can be done, but still expressed that the police can also have a role to play in this system.

5.5.3 Design Concept

The design concept developed was focused on managing the parking space in front of the shops. The traders will have to take the initiative to install and maintain the system. It will obey all the three essential parameters I have discussed above. The concept is illustrated below in figure 5.10 and figure 5.11. A grid of sensors embedded in the street can be seen on an interface on the mobile phone. The colour coding of the grid-points indicates available or occupied parking places. The green dots show available spots and the red occupied spots. The empty spots resemble the niche spaces that are used for hacking. A series of these grids show parking spaces in front of the immediate neighbour, the next shop. Shopkeepers then can ask customers to use that available space without having to get up from the cash counter and the helpers and porters can be guided better in helping the loading and unloading activities. The adjacent trader has the same interface on his phone and is using it similarly. The traders can now have a better understanding of how to hack the niche spaces smoothly by keeping each other’s interests intact. The aspect of hacking the niche space brings in the gamification dynamics which is mutually accepted. This can avail sharper management at the shop-level and hence improving loading and unloading activities. This will also help in removing the idle vehicles that prove as blockage in the temporal parking. The swiftness in using niche spaces will
also allow the street traffic to move faster. The minimal interface can trigger informal discussions among the traders rather than generate animosities about the use of parking space.

**Figure 5.10** An assembly of devices that transmit data to the mobile application. Photograph by Neha Sayed, January 3, 2019.

**Figure 5.11** The interface on mobile phone shows the sensor grid embedded in front of the shops. Photograph and illustration created by Neha Sayed in Inkscape.
The system does not require a central management as there is no need to gather and store data. It relies on temporal data processing. The devices that form the network do not act as a surveillance system. The concept employs a Bluetooth module (PAN1760A)\textsuperscript{42} in combination with a WiFi module (PAN9420)\textsuperscript{43}. These two together are mounted just below the sign boards on a wall forming a master device. An LDR sensor coupled with another Bluetooth module is embedded in the street creating a grid form. All the devices are very small minimising the assembly. The LDR sensor will detect obstruction of light caused by a parked vehicle and transmit that data to the master device. The Bluetooth module transmits two types of signals: one in the case of a covered sensor, and another when it is not covered. The WiFi module processes the data and then feeds into the application on the mobile phone. The sensor and Bluetooth module are installed in a small socket that can be screwed out from the street for maintenance or to protect against theft. The shopkeepers have many small daily rituals to be performed in opening and closing the shop. This can be an added routine.

5.5.4 Analysis of the design concept

The three basic design drivers that I had decided on are adopted in the concept. The design concept by remaining committed to the trading community in the marketplace eventually contributes to the enhancement of trade. The technology sustains trade relations and acts as a facilitator for the trade. I have discussed above extensively about the much questionable stand of IoT applications that exploit privacy and threatens social relations. This concept strengthens community bonds by remaining evasive and simplistic. The traffic dynamics in the marketplace is like a game where people are trying to find an appropriate spot for the required amount of time. This aspect is enhanced and made pleasurable through the design concept as the traders are now part of it and are working towards the customer satisfaction. They are assuming the responsibility and contributing to the traffic management with commitment. The police are doing their duty quite well; they are lifting wrongly parked two-wheelers now and then, locking idle four-wheelers and charging fines wherever applicable. They cannot stand in the marketplace every minute and manage the traffic for the traders. The application allows a dialogue that solves these issues in a delightful manner. The concept conquers the negativity attached to IoT technology by not becoming a surveillance tool or by creating development management dependencies. The design process ensures a participative process where most of the beneficiaries were consulted and involved. It also empowers

\textsuperscript{42} A Bluetooth component used for the design concept, provided by Panasonic as part of the competition.

\textsuperscript{43} A WiFi component used for the design concept, provided by Panasonic as part of the competition.
the user to articulate their voice as a shareholder of decision-making process. The reduced trust in the policies forced by the planning departments can now be built mutually. It can be done by showcasing the power of solving problems by the community which knows their space and everyday life. The development plans I discussed in the third chapter are at odds with the aspirations of the community. They believe in it and adopt it without consultation as they are not aware of an option. When it comes to the technologies like IoT, we can create this awareness and finally bridge that gap between human aspirations and built promises. The approach of this design process and concept follow this very idea.

5.6 The meaning of Ţapăl Năkă enhanced by IoT

I demonstrated in the third chapter that the meaning of Ţapăl Năkă is generated by planning department through careful articulation of artefacts used to implement development policies. Urban planning ideologies exercised through the development plan have a goal of better administrative control. I have also talked in this chapter about this very control being enhanced with the use of Smart technologies. Planning departments have a process which invites community feedback rather than active engagement in formulating development goals. The community’s knowledge and aspirations are not considered valuable. Their concerns are heard, training them further to complain about ideas proposed. Their suggestions are appreciated but judgement and decision of trained authorities is considered final.

The community on the other hand has a better grasp of the urban space they occupy and operationalise. Traditional communities in the small towns of India, such as on Ţapăl Năkă have a deep connection with their urban space built consciously. Their meaning of place is based on a multi-layered formation process conditioned within the social domain. Urban space is urban place for them. A place to grow as part of evolving daily practices. The evolution of space and place is natural, shaped by the efforts and active engagement of changing community dynamics. This very notion is continuously conveyed to the planning departments while responding to development policies. Their voice is mulled through by the goliath of administrative power. The community on Ţapăl Năkă is an evolving interconnected but borderless network which harbours a potential for disintegrated, locally operational unit of power. IoT can prove as a blessing for such networks, empowering them to have a voice and a role to play in development. The traffic management design concept that I have discussed above is one example that elaborates about opportunities that result from accessing this empowered local network. Unbiased and distributed technology can produce other equal opportunities for these micro networks,
manipulating the convergence characteristic to the technology. The combination and connection of devices and the use of data that they sense would remain within the hands of the communities, allowing them to personalise the data usage and control the data seepage. The Internet of Things could really harbour and strengthen the voice of the community.

Another dimension of IoT is surveillance. Here I want to briefly introduce a small part of my fieldwork that made me think about how the community on Ṭapāl Nākā perceives the idea surveillance. I came across several stories in which people narrated how they witnessed the night vigils of the saints and spirits. They had seen or heard a night vigil of a saint protecting a particular boundary covering a particular area. These stories were narrated by people representing all castes and religion. The two Sufi saints, one spirit and two demi-gods performed the vigil. Their area and the boundary changed depending on the location of the narrator’s house. You can see these routes, locally known as savari in appendix III. In most of the narrations the Pir (a Sufi saint) was riding alone on a horse and the spirit too was walking alone, but sometimes they met each other and strolled together in circles around the marketplace.

Considering this interesting anecdote, IoT can contribute by providing a bargained vigil wherever necessary in the trade practice. There have been three stages of surveillance in the marketplace. The first dynamics is about a supernatural existence of the saints and spirits who can interfere in a personal life, but only to a certain extent. What is witnessed by the saints and spirits at a personal level does not become common knowledge. This creates a trust that insures privacy. As the supernatural is not human, so is the technology. The technology can see but may not interpret for any purpose other than the safety. What the technology sees may not be shared. The second dynamics is about the police enforcing a layer of regulations which are malleable and are compromised. On Ṭapāl Nākā the community is sharing the role of the police and reducing their burden of constant vigil. The traders, jewellers for example, use their traditional notions of taking care of their valuable products. They use the latest technology that is available, but they do not completely trust the devices. The vigil of the IoT can help in assisting this traditional process; again, refraining from sharing personal information but streaming what is public, making it open. The vigil should be under the control of those who need it and not in the hands of the vigilante. IoT having a flexibility of coupling devices and front-end design can bring about a vigilant support service.

On contrary to such a robust embedded approach to deploying technology, IoT is implemented as a planned project which becomes a sub-project to any development project shaping the urban place. The sensor driven technology of IoT promotes empowerment, equality and has a distributed non-hierarchical structure. A precursor to this thought is presented above. This research
presents the meaning of place in IoT through the perspective of the technology itself, rejecting binding frameworks while accepting open ended platforms for development. The meaning of place derived by the urban planning department made me aware of their authority in dictating and defining place. Their agency is biased and based on binaries. Internet of things on the other hand rejects all those binaries by being equally distributed but simultaneously being absent to social hierarchies. The Place in IoT is bound to be more equal, disintegrated, and empowered.

Internet of Things promises a parallel network of things to the networks of humans where things will communicate with each other and with humans with equal efficiency. By things I mean the everyday things that we use. It could be our clothes. It would not be right to call them devices as they are not meant to be such. Withing these everyday things communicating devices will be installed. I would say they are going to be everything that we are part of, and they will be within us, in our bodies, aiding us in sensing in case we diminish the capacity. The technology is ubiquitous and amorphous rendering us the bare truth, that we are after all a simple materiality which conditions other materiality. But we are biased and polarised. The digital technology is not. It is today in its evolutionary stage where the democratic advantages of the technologies are misused by other social processes such as politics. The study on Țapâl Nâkâ shows that the already implemented technology is adopted in such a way that it does not create a nuisance for what the place stands for, it’s trading practice. In other words, everything on Țapâl Nâkâ has to stand as equal participant in the practice, with agreed and approved existence. As we saw the urban planning practice have overshadowed or altered the trade practice. In this example, IoT will not do that because of its distributed structure, a capacity to seamlessly integrate in humans as well as space. Hence the place in IoT will be a place for equality where the technology will avail an unbiased place.

The distributed nature of Internet of Things can challenge the hierarchical structure of administrative offices. While disciplines like urban planning build and implement segregated structures for efficient distribution, IoT can challenge these structures by being neutral to social divisions. The trucks carrying goods can inform the traders as well as porters their time of arrival in the marketplace, helping these agents to manage their time efficiently. The trucks will not discriminate between the materiality that it encounters. The technology can work in this fashion by becoming blind to structures. This flexibility has proved advantageous for industry and governance and hence there is a huge investment in the idea of convergence. Thus, the place in IoT will be of disintegrated and dispersed and distributed reducing the binding bias.
6 Conclusion

6.1 The meaning of the community enhanced by IoT

Urban place is a complex milieu of social relations tightly connected with space. The meaning of Ṭapāl Nākā for the community is embedded in the traditional trade practice and networks. Small networks of tight neighbourhoods are further connected to larger networks and then to even larger to ultimately form an identity of a city. The bamboo weaving Burud community lives around the Jewish community who has provided them support. The Burud community is further surrounded by the well-to-do Teli (oil millers) community. Teli community has provided political patronage to the Burud community. Teli community is further surrounded by the wealthy Muslim, Marwadi and Gujarati communities having large scale trade holding in the marketplace. These intertwined networks of communities on Ṭapāl Nākā have contributed to blurring of the communal boundaries. Their interpersonal relations for generations assign meaning to everyday life in the marketplace. The meaning of place evolves from the smallest community and its intimate space. As David Harvey points out, that there is an internal meaning of place generated by the communities. But, he stresses the fact that it is shaped by external forces such as development schemes proposed by the administrative authorities (Harvey 1996). They use artefacts such as development plans to generate their own meaning of place.

Planning authorities look at the marketplace as a space to be regulated and controlled by introducing development policies. The community is forced to adopt these policies designed for regional development. The maps and draft reports have an embedded meaning of place drafted in the office of the planning department. The work of Lacaton & Vassal Architects, based in Paris, won the most prestigious award in architecture, the Pritzker prize 2020.44 Their practice since 1987 has successfully focused on showcasing the importance of communities as they relate to their intimate space. Similarly, Alejandro Aravena

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won the same prize in 2016\(^45\) for his major contribution towards empowering communities to take decisions about their own space. He has successfully created a participatory process where he acted as an agent to convey the needs of the people to the city administration. He has demonstrated a successful reverse process than the one practiced in the Indian scenario. The planning authorities have ignored the intricacy of urban place well known to the community. As we have seen in the third chapter, they have created a contradictory meaning of Ţapâl Nâkâ (in section 3.2.10 and 3.2.11). This very meaning is contested by the community. This contest takes place post-policy implementation. The community utilises its trading network to come together and voice their concerns. They convey their deep understanding of the place which is neglected in the policies. An initial debate in the planning offices quickly gets converted into legal battles or fight for fair compensation. The voice of the community is thus mulled under the complicated bureaucratic structure of the government departments.

The ubiquitous IoT technology is being introduced by the planning departments to enhance their administrative capacities. On Ţapâl Nâkâ marketplace the municipal corporation has started to use the technology to regulate and control daily services (in section 5.2). However, the community has already been using the technology merely to aid trade practice (in section 5.3). Simply put, the community uses the technology to generate support for existing trade practices without replacing traditional trade relations. With this study about Ţapâl Nâkâ I have aimed to show how the technology can be adopted in such a way to support the community with its multiple participants, and it’s trading practice. In other words, everything on Ţapâl Nâkâ has to become equal participant in the practice, with agreed and approved existence. Hence, the place in IoT will be a place for equality where the technology will avail an unbiased place. IoT can prove as a blessing for trade networks, empowering them to break through the disciplinary barriers that restrict their development. The traffic management design concept that I have discussed in the previous chapter, elaborates exactly this empowered local network. The unbiased, distributed technology can produce equal opportunities for these micro networks, manipulating the convergence characteristic of the technology. The combination and connection of devices and the use of data sensed would remain within the domain of these communities. This will allow them to personalise the data usage and control the data seepage. The network of things will have a parallel existence to the network of communities. As the technology will be trained by the community it

\(^{45}\) https://www.pritzkerprize.com/laureates/ale-jan-dro-ara-ve-na

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will understand and reflect their concerns regarding urban space. The technology will speak for the community and support their voice in the development process. It will enhance the community’s meaning of place.

It is important to point out here my thoughts regarding equality and democracy as a researcher and a citizen of a democratic country. I have grown up in a country having a rich historical and cultural background. The complexity of Indian communal landscape is difficult to grasp, but it makes its citizen believe that equality is the only way to preserve democracy. Not much has been achieved since independence of India concerning this issue. The booming economy is rather fuelling uneven development. My approach in this thesis is to question this development goal where equality is compromised. I see technology as a game-changer in this dynamic. My ethics driven by the post-human ontology inform my standpoint where things and humans have equal disposition. I have explained this briefly in the first chapter (on page 21). I support equality which comes from the collaborative effort driven to nuance questions like: who we are? and what is our relationship with the technology? Hence, the ‘meaning’ of a place became an appropriate pursuit for this research where we as humans and technology are co-constituted together.

In this thesis I have managed to define the meaning of Ṭapāl Nākā. I have shown how it is defined differently by different agencies assigning a character of a contested place. I am a design researcher, and I am interested in exploring the approach to ‘design’. Hence, I developed this research into various domains where I have a developed skill-set. The ‘meaning of a place’ can be defined most accurately by an ethnographer when he writes an account of the place. It is sufficient in itself as an ethnographer can address to the complex milieu of the place. In my opinion this is the best way to work with the meaning of place. I also think that this is not a goal for design ethnography. Especially because, the way it has evolved as a detached domain from ethnography focusing solely on ‘design goals’. In this research I had to use both separately to justify their inherent distinct potentiality. It suited my own research and design goal. As a design researcher it is most appropriate to conjure the meaning of the place to address a ‘design goal’ and not only to create a cultural account of the place. The meaning of the place got defined in the process of addressing an issue that is actively shaping the place and its people.

6.2 Community as an active participant of decision-making process

An ever-evolving trading practice is the meaning of place for the community in Ṭapāl Nākā. Here the community dynamics which have evolved in the last
four hundred and seventy years have rendered the place an identity that resonates with other similar trading cities on the western coast as well as the mainland of India. Richard Eaton in his recent book on the role of Persian rulers in India pointed out their efforts in grounding cultural diversity by means of trade which predominantly took place through port cities like Panvel. He talks of Muhammad Gavan a Persian regent serving for two teenage Bahamani monarchs in the Deccan region reigning in the fifteenth century,

“Boasting personal and commercial connections from the Balkans to India, the cosmopolitan vazir was determined to put Bidar (capital of Bahamani state) on the world map.” (Eaton 2019, 147)

A migrant himself, Gavan invested his loyalty in making the cities and towns into harmonious trading communities breaching religious borders. Samira Sheikh while referring to the sultanate of Gujarat, points out the vital role of the Sufi saints in trade.

“The dargah of Baba Ghor, the patron saint of the camelian mines near Ratanpur in south Gujarat, is mentioned even in the fourteenth century Ibn Battuta. This Afghan adventurer-holy man is believed to have pioneered the agate mining industry of the region, which was already flourishing the fourteenth century. Subsequently, Baba Ghor became the preceptor for the Sidi community of northeast African origin and an annual fair dominated by the Sidis from all over Gujarat came to be held at the shrine.” (Sheikh 2010, 155)

The model developed by the Sultans, of harmonious, prosperous trading state, blessed with the secular spirituality is visible on Ṭapāl Nākā. The place, for the community, is a carefully orchestrated and calibrated variable where all differences, social or political, are downplayed for the larger goal of prosperity. An ethnographic account of Ṭapāl Nākā as a place reflecting this past leading to its present configuration should be made available to the community. It can be used to empower them to build a voice which is built with the combination of accumulated knowledge of generations and current needs. This documentation can also prove vital for the young generation which is losing contact with the communal makeup of the marketplace. It will aid them to formulate a comprehensive voice for development. The insurgent migrating population should also be made aware of the historical importance of the place.

This research has produced a narrative of Ṭapāl Nākā. The elicitation of the narrative is done by using ethnographic methods in combination with design processes such as participatory workshops. The data has been analysed for the specific research question with the help of Jan Assmann’s Collective Cultural Memory framework. The larger dataset referring to the personal histories have immense potential for generating a rich anthropological account of the place. A guiding principle that I have followed in constructing my account comes
from Arjun Appadurai (on page 21). The dataset collected from the trading community showcase internal realities about the marketplace. As advised by Appadurai I juxtaposed them with external preoccupations. Appadurai says that an account of a place remains incomplete without understanding the larger discursive contexts. He says,

“Finally, neither of the above (ways of constructing an account) properties is quite sufficient to guarantee that a particular idea (expressed as a term or a phrase) will become hegemonic in regard to the construction of a place. It is also important that the image provide a credible link between internal realities (and specialist accounts of them) and external preoccupations (and their larger discursive contexts).” (Appadurai 1988, 46)

This resonates well with David Harvey’s proposition about larger social processes conditioning local space. I used the collective cultural memory concept proposed by Jan Assman to access the internal meaning of the place defined by the community. It was essential to access the external meaning to elaborate the contrast in the meanings. This was done through the artefact analysis to address the design goal of this research. In the end all data that is analysed and discussed in this thesis is presented by drawing a temporal agential cut, to separate my agency as a designer from the one that belongs to Țapăl Năkă. The exploration into the Urban Planning discourse by analysing their artefacts allowed me to present the limitations they enforce on the communities and urban space. This will help community to appropriate their outlook about the development process. The research has brought to surface their potential as a tight trading community being suppressed by a non-participative development process. This can empower them to articulate their standpoint and expertise precisely. The intricate nature of interconnected community networks seen in the narrative will help them build a robust and responsible representation. They will be able to claim their stake in the decision-making process related to their own economic and urban development. Țapăl Năkă marketplace has an appropriate scale to begin this process.

This research has also produced a dataset relating to current urban fabric which is also vital for the community. The speed with which the urban space of the marketplace is changing is unprecedented. Older generations have maintained cultural memory of the historical marketplace which needs to be seen through the configuration of space. Young generation should be able to access the new architectural language as compared to the old vanishing vernacular architecture. The maps and drawings prepared in the duration of this research will aide the community to formulate their voice regarding urban space. The maps will enable them to develop their vocabulary related to urban planning and design. They can use them as a reference in the dialogue with the planning
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authorities. This can prove to be a beginning of the participatory process where they can claim knowledge about planning principles.

The research also introduced a participatory design process within the community. Though at a small scale and running only until the conceptualisation process, the process gave them a taste of their potential in decision-making. The power to be able to decide for themselves was new, and it took them by surprise. They responded in the usual manner where they formulate their concerns as complaints (in section 5.5.2). It will take a while to alter the psyche of responding to development as a struggle. Development meant adopting new ways of doing things while believing that the change will do good to life in general. They are not yet aware that a responsible claim to their own urban space will generate a dialogue with the administration that maintains and regulates space. Their voice gains a clarity through the participatory process. In the case of Tapał Naka, it will pave way to educate the community about their role in development as a catalyst rather than that of a response.

6.3 Contribution to new media research

New media has been evolving as a project and part of media studies over last three decades. Media is not a discipline on its own. Jonathan Sterne asks whether the future of digital media studies is in disciplinary form,

“The biggest questions regarding the disciplinization of digital media studies must be intellectual. That is, after all, why we do it. If we consider digital media studies as an intellectual enterprise, then I believe it entirely fair to say that the field is not moving toward disciplinarity. I’ll state it forcefully: As Gertrude Stein said of Oakland, California, so it is for digital media studies. There is “no there there.” The field doesn’t know where it fits within the pantheon of humanities and social sciences.” (Sterne 2005, 251)

Sterne is driving attention to the open-ended framework of the media studies which I also see as advantageous. I think the field of media studies is a disciplinary. In the projects conducted as new media, digital technology works as a reflexive tool with the focus on the social dimension of design. Sterne comprehends this as such:

“My point is not to defend the nobility of kitchen appliances from insults heaped on them by academics, but rather to reassert the need for us to understand technologies as part of heterogeneous networks that do not adhere to the analytical categories we invent for the purposes of scholarship. Technologies have to be understood amid other apparently different, technologies, practices, ideas, and institutions. If we follow the connections, if we look to morphology instead of common sense assertions, we may well begin to tell very different stories about technologies.” (ibid, 253)
Ubiquitous technologies such as IoT reflects this approach. IoT provided an opportunity to integrate digital technology in all design disciplines. It has opened door for communication technology to become part of every object we use in our every-day life. Things started to talk to each other while talking with us. We are bound to live in a fair world where we will co-habit a living space. This co-habitation is only possible if we understand clearly who we are and what is the role of things surrounding us in our life. The relationship between humans and things has become crucial to understand as ubiquitous computing will avail a means of communication between them. Lily Diaz articulates the complexity of design scope of ubiquitous technologies,

“As ubicomp technologies develop, spread, and become integrated into human activities, they individuate into diverse specificities such as tools used in particular contexts and activities. But context and infrastructure are not things that exist as if frozen in time. The category of social media tools, for example, is not something that was invented beforehand by one person, community, or corporation. It is something that is developing and individuating in a way that is contingent or at least dependent upon multiple historical and social conditions that vary. Because of this complexity, it is very difficult for designers and software developers to anticipate the gamut of possible uses of a given technology.” (Diaz-Kommonen 2016a, 30)

This research contributes to new media by providing an approach to understand this very complexity. The case of Tapol Naka marketplace presented in this manuscript provides an example scope of IoT design. The research argument presented here caters to the core strength of ubiquitous technology of having the possibility of being democratic. This is an achievement of the research process which is embedded in the larger query regarding community and its space. This research narrates the role ubiquitous technologies can play in empowering communities to build their voice in urban development. The design concept presented in this manuscript is derived from analysis of data collected in the field over a long period of time. The research contributes to new media by elaborating this very approach which befits the a-disciplinary nature of new media.

The research presents a model of ethics to be considered for the design of IoT technology. The things that are connected to humans and are evolving with them follow the ethical code of the community. The co-habitation is successful as things know the ethics of the community and obey such frameworks. The internet of things embedded in an urban space can be seen in view of Karen Barad’s post-humanist theory as an apparatus (Barad 2007). In an apparatus, an agential cut is temporarily performed to create distance from the ongoing intra-activity of subject and object. Barad presents an ethical model through the apparatus which allows a temporal separation for assigning meaning to the ongoing intra-activity. She says,
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“Apparatuses are the material conditions of possibility and impossibility of mattering; they enact what matters and what is excluded from mattering.” (Barad 2007, 148)

The community performs an agential cut from the network of things as and when needed to observe and analyse its workings. The ethics are shared with things and hence a temporal distance ensures the functioning of the network. The IoT concept presented in this thesis is an example of how things can become active participants in the everyday trading practice. They enhance the trading activity and thereby empower the community. Things do not just become the ones that obey orders, but they are cared for, their role as active agents in the trading practice. They do not become authoritative watchdogs as is feared in their predominant role today in surveillance. Lily Diaz points out to the notion of privacy and its erosion through the use of ubicomp systems. While referring to Bauman who emphasised that surveillance is the key factor that will fuel ‘power’ to ubicomp applications, Diaz sees that we are increasingly becoming vulnerable (Bauman and Lyon 2013).

“Our has quickly become the consumer-based liquid modern society that Bauman foreshadowed where the notion of privacy and how we draw our boundaries regarding ourselves, our families, and our communities is constantly eroded.” (Diaz-Kommonen 2016b, 62)

This is the reality of our every-day life today. Ubiquitous technology is valued and devalued for its potential of convergence, the ability to create larger data collecting and distribution networks. The flexibility of convergence has proved advantageous for industry and governance and hence there is a huge investment in the idea. The Human Development Report suggests, more than the profit of these two agencies, convergence is efficiently destroying barriers and empowering marginalised communities (United Nations Development Programme 2019, p. 35). This research presents a case where the technology shares the space with the community while remaining non-intrusive. It does not become a surveillance system but at the same time it has the capacity to connect and expand within the marketplace. The research contributes to new media by bringing in a discussion about shared ethics as it is practiced in new materialism.

This brings the issue of sustainability to the front. In the fourth chapter, I have elaborated quite in detail about the functioning of a trading community in the marketplace. The trading practice is strongly embedded in the space giving meaning to its minutest detail. The vernacular architecture within which it was practiced supported the organisation of trade. The communities that formed the marketplace and the ones that depended on it shared a strong communal bond. The new high-rise apartment buildings have now destroyed this very format by accommodating increased density. The migrating local population
will need time to develop roots in the marketplace. The trading community is able to reflect on the change and has accommodated it sighting profit at the cost of loss of identity of place. This research aims to bring value to the very idea of trading space which is essential for the marketplace to survive and grow. The research presents internet of things as an enabler for participation in development. The design concept presents a dynamics of IoT where the everyday materiality of the trading space becomes the means of a digital network. The network is also designed and maintained by the community to ensure the value of materiality involved. Participation of the community in configuring the ubiquitous nature of the network makes this research democratic. The design presented here lies in the public domain.

6.4 Contribution to design research

This research began with an enquiry about the changing meaning of place. I started with a research question and chose a specific community known to me to begin raw data collection. The research question was:

**How will the meaning of an urban place change with the introduction of IoT?**

I selected ethnographic methods to engage with the community. This first part of the research conducted over the course of two years turned the research into an inductive process echoing Clifford Geertz’s idea of compiling a thick description (Geertz 1973). Inductive approach is adopted in qualitative research methods where raw data is analysed into categories to arrive at dominant themes. David Thomas prescribes a very simplistic yet constructive approach to adopt an inductive research process. He simply puts it as,

“The primary purpose of the inductive approach is to allow research findings to emerge from the frequent, dominant, or significant themes inherent in raw data, without the restraints imposed by structured methodologies.”(Thomas 2006, 283)

The goal of this research was to derive an insight from the transcripts of workshops and interviews to understand the community’s meaning of the marketplace and response to urban development. What David Thomas refers to as dominant themes became insights for me into the life of the trading community. The insight as I call it can be developed into a middle-range theory which is established in the middle-ground of development on Ėpäl Nākā. The aim of the research was not to establish the middle-range theory nor do I claim that I have achieved and presented it here in this manuscript. Nonetheless, it informs the research as a meta-analysis framework to be adopted at a later stage. Middle-range theory was proposed in sociology by Robert Merton has a focused goal of
deriving insight from a specific locale based on observed data. This could prove vital for this research. Merton defines the approach to the theory as,

“Middle-range theory is principally used in sociology to guide empirical inquiry. It is intermediate to general theories of social systems which are too remote from particular classes of social behavior, organisation, and change to account for what is observed and to those detailed orderly descriptions of particulars that are not generalized at all. Middle-range theory involves abstractions, of course, but they are close enough to observed data to be incorporated in propositions that permit empirical testing. Middle-range theories deal with delimited aspects of social phenomena, as is indicated by their labels.” (Merton 1949, 448)

This approach is adopted in archaeology by Lewis Binford albeit a bit differently. Binford wanted to postulate the behavioural patterns of the past based on the current observed material configuration (Binford 1977). I find his idea of inferring past dynamics based on the available material appropriate and useful for my research on Țapăl Năkă. The articulation of the meaning of place for the community can be seen as a partial attempt to arrive at such a middle-range theory about the marketplace of Țapăl Năkă. The insight from the community and the mapping of space led the research for design process. The community has now become an asset for me and the dataset can be mined for numerous design projects which I can execute along with them.

The practice of design ethnography is evolving, becoming more aware of issues related to gender and politics. The original aim of unraveling the contextual information of user has been further extended into continuous exploration of design within the users’ context. In the course of last two decades design ethnography acquired an approach of iterative research and design process, now known as research through design. Ilpo Koskinen et al. propose this approach more comprehensively by calling it research through design practice (Koskinen. I. et al., 2011). Koskinen et al. review the design practices conducted in various different patterns where there is actual construction of ideas taking place. They call it constructive research in design research. This research has stopped at conceptual development of a IoT design. I did not construct or test actual prototypes in the field. I did an iterative conceptual development with the community. The insight gathered from the ethnographic work became a basis from which design questions are raised, designs are conceptualised and now should be constructed. The ethnographic insight becomes distinct from the design process as a knowledge base. It is almost like a constitutional code of the community with whom a design practice can now start. Articulation of the research question dictated this path. It generated participation of the community for a long-term basis because the research question was aimed at exploring their place as a query. Concept of participation in the design process is now ensured with the nuances of politics as it is played out within the traditional trading community.
The ethics and politics of the trading community are strongly embedded in their trade practice. The materiality of trade practice and its morphing with the space forms the basis of ethics and politics on Țapăl Năkă marketplace. The community’s identity is strongly embedded in the material configuration. The products stored in the storage spaces behind the shops having an interface with the street translates as trading in the trade practice. The shared personal and trade space is nuanced with the ethics of practice. The politics that dictates the marketplace is more complex to understand because of the intricate cosmopolitan nature of the community. It is a place where even religious ideas are shared. On the surface the trade appears as patriarchate but deep inside it is genderneutral. Women have owned a large capital in the marketplace while men ran everyday business. With such an entangled social dynamics strongly woven with materiality the community brings immense transparency to the participation process as I witnessed in the research. The idea of participatory design is foreign not only to the community but to urban planning discipline in India. I have discussed this at length in the third chapter. While defining my role in the participatory process I adopted Karen Barad’s posthumanist agential realism (Barad 2007). Barad talks of an agential cut that we as a researcher perform while analysing observed data. The agential cut is a temporal distancing from the phenomena under observation. The ethics and politics of the community are internalised in me and hence while designing an approach to participatory design I needed distance. This is evident in the way I laid out and conducted the process as a co-ordinator. Suvi Pihkala and Helena Karasti have elaborated this very aspect of politics embedded in the design process by analysing their experiments from a post humanist perspective. They situate the designer in the middle of the ongoing political evolution in society,

“By suggesting politics in the middle, we are not only reminding that politics are enacted in practice, but rather that the socio-material practices are always already political. The politics of mattering situate designers and researchers “in the middle of things” as it becomes impossible to disentangle or separate the historicity that brought us here and the futures that might yet be. This relationality is a material-discursive relationality of “moments,” “places,” and “things” [referencing Karen Barad] in their ongoing reconfiguring, and, in this reconfiguring, we are/were already entangled. This is the gist of the “always-relational” politics of mattering.” (Pihkala and Karasti 2018, 4)

Being part of the becoming of the community I conducted the design process with increased control. The user-game workshop and the discussion around design with the community revealed their commitment and readiness for collaboration. The design conceptualisation phase was done in isolation and not with the community. Time also played out as a crucial aspect in the case of Panasonic Design Competition as it had sharp deadlines. My knowledge and
experience of participatory design methods comes from Scandinavian participatory design tradition. The discussion around politics and ethics within the Scandinavian scholars puts emphasis on democratic design process (Ehn, Nilsson, and Topgaard 2014). This democratic aspect of the participatory design process would enable the community to articulate a power position adding to their current transparent political discourse. I can help enrich this through the mapping exercise I conducted for this research.

Along with the ethnographic enquiry I conducted a mapping exercise of the marketplace to understand its physical character. The data collected from the field followed methodological approaches of urban planning, urban design and architecture. The maps were produced in QGIS. The exercise of generating the maps provided another insight on the dynamics of the urban space as it is utilised by the community. The maps support the insight gathered from ethnographic fieldwork empirically. The commanding approach of the traditional disciplines without democratic participation of the community led me to study their disciplinary discourse practiced through the artefacts they produce. I conducted artefact analysis as a method to discover the design discourse of these disciplines. The research process thus followed an inductive format where I kept on adding and improving data, methods and analysis. This is why the research became a-disciplinary. It is not multidisciplinary because I did not want to conceive it or narrate it as such.

The research adopts methodologies based in various traditional and contemporary disciplines to create engagement with the chosen field to pursue a research query. Alain Findeli et. al. suggest that this approach should rather be called, ‘multi-professionality’ as they think that the traditional design disciplines are more about achieving end product of a particular scale (Findeli et al. 2008). They suggest that the research should be project-grounded and should have a multi-, inter- and trans-disciplinarity embedded in the process. They think these three should be inherent for the design process. As this research project was conceptualised by me and was executed with the skill-set I already have it becomes a multi-professional research project. The inductive format of data collection brought a fluid, progressive nature to the research process.

In the middle of the process I encountered folklore in the field and went as far as publishing a paper on the data collected and analysis based on a very basic theoretical model (Sayed, Diaz-Kommonen, and Sayed 2019). The experiment brought value to the insight gathered from the ethnographic data. I adopted methodological frameworks of various disciplines while exploring the field under study. I mixed them up at various stages breaking disciplinary notions and hoping to reject the disciplinary project in any form. The analysis as is presented in this manuscript puts forward an argument and suggestion of utilising IoT technology in urban place. I want it to be seen as a research project conducted for New Media which has a non-disciplinary disposition.
6.5 Contribution to urban planning

Contemporary urban planning development policy in India is focused on tackling the rate of urbanisation. In next thirty years, India will witness the largest rate of urbanisation compared to any other country in the world (MoHUA 2015). Current government policy related to urbanisation is to build new urban nodes around large cities and to provide better infrastructure to the existing ones. The URDPFI guidelines discussed in the third chapter provide guidelines to control and plan urban development. The major resource used in articulating this document are similar guidelines used in countries such as the USA and China. Traditionally Urban Planning in India has followed the western model as it is and now it is also looking at China as an ideal. The agenda is to make cities financial centres: it states,

“Enhancing the productivity of urban areas is central to the policy pronouncements of the Ministry of Urban Development. Cities hold tremendous potential as engines of economic social development, creating jobs generating wealth through economies of scale. They need to be sustained augmented through the high urban productivity for country’s economic growth. National economic growth poverty reduction efforts will be increasingly determined by the productivity of these cities towns. For Indian cities to become growth oriented productive, it is essential to achieve a world-class urban system. This in turn depends on attaining efficiency equity in the delivery financing of urban infrastructure.” (Ministry of Housing and Urban Affairs 2021b)

Patrik Geddes in the early twentieth century, before the independence of India proposed an approach to urban planning in India which is grounded in the historical development of cities,

“town-planning is not mere place-planning, nor even work-planning. If it is to be successful, it must be folk-planning” (Tyrwhitt 1947, 22)

He proposed to do it by conducting rigorous surveys of existing urban space. In the reports he submitted to the then Indian government he provided sample maps. He advocated city surveys in order to derive a planning approach from the cities itself which then can be analysed to propose a customised development plan appropriate for the local culture. Geddes remains largely ignored in the Indian urban planning practice. I believe that the research done in this thesis on Ṭaphalt Nākā as part of this thesis resonates his thoughts. I adopted a process of understanding urban place with a focus of deriving knowledge from the community and the materiality of the urban space of Ṭaphalt Nākā. Today, many cities and towns of India like Panvēl are on the verge of loosing their identity and historical importance as it remains ignored in the development planning
process. This work contributes to bring about a debate and a critical perspective to the approach of urban planning ideals as they are practiced today in India.

Participatory design process was never practiced within the urban planning discipline in India for various reasons. Ashok Kumar et. al. published a handsome compilation stressing the issue of public participation as it is referred to in the planning offices.

“Thus, criticism of techno-bureaucratic nature of the state’s urban development efforts, disconnected from peoples’ real issues throughout the processes of planning, implementation, and governance, began to surface by the early 1980s. It is important to note that, sidestepping local involvement at the level of projects built on the actual ground, engineer-dominated implementing agencies turned public participation into a mere formality, paying lip service both to the mandated requirements of law and to the ideal of democratic self-rule.” (Kumar, Vidyarthi, and Prakash 2021, 158)

There are various reasons why such an approach became a standard procedure. Firstly, because the model of ideal planning is adopted from USA, or now from China where participatory processes are not promoted. This is evident in the drafting of urban regulations such as the URDPFI guidelines (MoHUA 2015). Secondly, the authoritarian system of government departments rejects the knowledge-base of communities. A dialogue with any community is considered a hassle as there are no tools to support it and it is considered time consuming as there is no faith in their opinion. This research showcases a sample study to create engagement with the community. It presents a format with which a designer can create basic understanding of the field under study. It is common for urban planning to do surveys but they usually do not go to the depth of understanding communities and provoking their participation. Patrik Geddes said about a century ago,

“The measure of the success of a city survey depends on its appeal to the individuals that compose the city: upon its power to rouse each from his, often life-long, training of seeing himself as a self-interested economic man and therefore mere dust of the State – to realising himself as an effective citizen valuing...his contribution to his city, in his city and for his city” (Tyrwhitt J. eds, 1947, 35)

This research contributes to urban planning by indicating the value that such a design research can bring to the discipline at large. As was elaborated in section 2.1 of the second chapter, the data for this research project was gathered following a design research approach and as articulated in the methodologies suggested by Findeli (Findeli et al. 2008). That is an approach in which the designer elaborates the research topics of the thesis through engagement in a project. Later, through the adoption of design ethnography discussed in section 2.3 the project became grounded in the current participatory design tradition. In
the fifth chapter, section 5.5 presents a case of design for IoT as a culmination of the methodological approach. This approach is not seen in the urban planning practice in India and hence provides a new perspective. As Kumar et.al have pointed out in their research a deliberate attempt of the planning departments to maintain control over development by not allowing public participation.

“...key urban functions listed in the Constitution’s Twelfth Schedule, such as town planning, were not transferred to local governments with many states reluctant to establish metropolitan planning committees and to empower the district planning committees. Similarly, laws for community participation and public disclosure have not been framed yet. It appears that most reforms conforming with the economic reforms–oriented agenda were implemented, while many provincial governments deliberately sidestepped decentralization and governance-oriented reforms in order to retain control over city affairs at the state level.”(Kumar, Vidyarthi, and Prakash 2021, 253)

Among its aims, the project work as well as the thesis intends to provide new information (as well as reflections) for the urban planning discipline indicating the advantages inherent in inviting public participation. It also provides communities a new perspective of creating their space in the designing of development policies. Thus, it could be argued that the approach and data – generated within design research – presented in this dissertation, is a contribution to the urban planning discipline.

Internet of things is being adopted within the infrastructure development of cities in India. The Smart Cities Mission is conducting several case studies to gauge the potential of cities to adopt to the digital technology. Most of the projects discussed on the website are for infrastructure maintenance and governance. The ultimate goal being better control on administration. There is a lack of transparency related to issues related to data privacy as those ideas are not developed with the community. This research wants to elaborate the fact that the design development of IoT technology should take place within the public domain. The technology itself can provide a tool for creating engagement with the community and precious time of surveys can be saved. The technology can empower the community to participate in the administration making the development process democratic. Jennifer Gabrys discusses the idea of urban citizenship based on Foucault’s unfinished concept of biopolitics,

“Revisiting and reworking Foucault’s notion of environmentality not as the production of environmental subjects but as a spatial–material distribution and relationality of power through environments, technologies, and ways of life, I consider how practices and operations of citizenship concretize that are a critical part of the imaginings of smart and sustainable cities. This reading of environmentality in the smart city recasts who or what counts as a

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46 https://smartnet.niua.org/dsc/dmaf.php
Conclusion

“citizen” and attends to the ways in which citizenship is articulated environmentally through the distribution and feedback of monitoring and urban data practices, rather than as an individual subject to be governed.” (Gabrys 2016, 187)

Gabrys believes that though smart cities are conceived and designed on the basis of a generic model, they should rather adopt and respond to local dynamics. She says,

“Although smart cities could be rather generic and universalizing in their approach to urbanism, many smart cities also emerge through the materially and politically contingent spaces and practices of urban design, policy, and development, while also forming commitments to specific—if speculative—urban ways of life.” (ibid, 189)

The objective of a smart city should be to create democratic local models geared to generate sustainable urban development. The present attitude towards urban citizenship seems that of shared responsibility towards administration of the city. This has to extend to shared development. Governance cannot be about implied ethics of urban citizenship developed in the incubator of government offices without a democratic process. It cannot neglect historical and traditional knowledge and local politics. This research project showcases a reversed development concept where the community utilises smart technologies to voice their concerns. This approach of using smart technologies in urban development does not use the communities as databanks feeding into a system. This research contributes to the design thinking of smart cities where communities contribute to urban development by doing it themselves.

6.6 Future directions of the research

The research process conducted to pursue the research question has in itself several potential directions to be taken in the future. What has already been achieved in this project should be articulated as a fluid framework of generating localised knowledge about an urban place. This will form the basis of design research. As suggested by Ilpo Koskinen et al., the research should now extend into a making process where an iterative design process can be tested.

“The laboratory also helps researchers study alternative explanations and competing hypotheses; doing this is far more difficult in natural settings.” (Koskinen et al. 2012, 55)

What is a natural setting? Is it the location of actual use? Is it the locale of people who will use the design? In my research, I now have a research locale within which design experiments can now take place. In my view, it takes form of a lab having roots in the community with whom the research is taking shape.
This is now possible as I have established an engagement with the community with a larger research goal rather than only a project-oriented query. Jennifer Gabrys has discussed the work of Connected Sustainable Cities (CSC) project developed by MIT Mobile Experience Lab (Gabrys 2016, 186). Their goal caters to a bigger scale comprising several cities.

The DAIM research project conducted in Denmark has a collaborative approach predominantly held under the Lab for Social Design programme hosted by Design School at Kolding, Denmark (Halse 2016). It is a good source of inspiration. Another interesting project called Lead User Innovation Lab had a similar approach of collaborative co-creation (Mack et al. 2013). Both projects are immaculately conceived involving various stakeholders. A direction, I can take in the future with this research project. In both cases, there is a project-based approach to deliver either a system or a product. IoT can also be considered as a project albeit a fluid one where it does not necessarily have a single output. A multiplicity of ideas can arise in an IoT project and hence it should be predominantly located within the public domain.

Another valuable direction that can be taken for future research is to develop a model which will depict morphing of urban space. A georeferenced digital model of an urban place which evolves over time represents morphing in the real world. The community can maintain an ongoing process of feeding information of their everyday space into the model which performs as a clone of the urban space in the virtual world. The real-time information generated also becomes a probe for future development. IoT will integrate into every small detail of the urban space. This is difficult to visualise in the real world. The mesh of a digital model will allow simulations of design concepts where networked technology can be tested. This can be converted into a VR environment to take it to an experience simulation level. During the course of this research, I attempted to create a photogrammetric model of Ṭapāl Nākā marketplace through various software suites. I realised that BlenderGIS, an addon for Blender has a robust pipeline of production combined with MeshLab (Cignoni et al. 2008). The database in QGIS can be linked to the 3D model in Blender through BlenderGIS (domlysz 2020). This means that the distributed information in the real space can be combined with a virtual model to use as a probe for development.

The model will also contain data related to community. Ownership and tenancy patterns are useful for bringing clarity in a dialogue with the administration. The model can provide a scale where the community can build their

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47 BlenderGIS is a plugin for the Blender CG Suite to allow making a georeferenced 3D model.
48 MeshLab is an open-source tool for processing point clouds and meshes produced using photogrammetry methods.
voice for development. It can function similar to a BIM\textsuperscript{49} system where the community can upload and retrieve information related to the components of built space as well as their attributes. The design of IoT within such an environment will achieve true sustainability as the community will own the responsibility towards the management of the urban space, their immediate neighbourhood. Their properties are documented in several government offices for different purposes. The format of documentation and the regulations which dictate them change recurrently, making the record maintenance a tedious process. I have briefly discussed this in the third chapter. The model can provide an opportunity for the community to maintain these records effortlessly. It will generate an increased sense of urban life and thereby empower the community to make conscious decisions regarding development.

The model can also store social history of the community. Being an interactive digital tool, it will become a new media project as it will provide an opportunity for reflection while producing output on various fronts. The ever-evolving collaborative model will provide stimulus for several other projects in the form of analysis of urban place and the role of communities. It can take a form of a narrative model which can tell stories of the community, their social networks, their beliefs as they are embedded in space. History of the place is valuable for the expanding cities like Panvēl. Places like Panvēl having rich historical background and community dynamics remain largely ignored by research community as it is very difficult to gather historical information.

The data that I have collected and analysed regarding the saintlore of Ṭapāl Nākā can prove valuable in enriching the narrative of the marketplace. The shared beliefs regarding the saints and spirits of the community have contributed to tightening the trade bonds. These narratives have made my understanding of the place richer but also the insight based on these narratives led me to understand the traditional idea of surveillance pre-existing in the community. The saints and the spirits could touch their bodies, correct behaviour, and maintain order. The narrations of these personal experiences of this divine presence was passed from generation to generation. The belief has a respectful fear attached to a saintly presence. The caring watchfulness is allowed to a degree where the saint or spirit visits houses and creates assurance. The ease in adopting a presence that keeps a watch probably comes from these traditional notions. The interesting aspect to consider here is the variation in the narration and the moulding of the story. There is an aspect of shared power structure rather than a complete control given to the almighty. I can pursue this thread in generating a deeper meaning of the place and reflect on community networks.

\textsuperscript{49} Building Information Model is a standardized model created for the built environment where information related to the minutest object is stored for production and maintenance. It is being legally enforced as a prerequisite for new buildings in developed countries.
which will ultimately build a robust society. The research beholds amazing and fascinating directions to be pursued.
Conclusion
A Transcription sample

Transcription of the first collaborative community workshop conducted for Neha Sayed's PhD dissertation.

Date: 16/08/2016
Place: Mr. Ashok Gilda's residence
Number of participants: 11
Snippet details: Mr. Maniayar was the first participant to speak in the first community workshop. At the time of this recording, he was 82 years old. Each participant had three minutes to speak.
Transcriber: Neha Sayed
Original language: Marathi
Clip 1: 10:10:72 to 12:14:08

<table>
<thead>
<tr>
<th>Speech line</th>
<th>Start time</th>
<th>End time</th>
<th>Speaker</th>
<th>Speech in Marathi</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>54</td>
<td>10:10:72</td>
<td>10:28:68</td>
<td>नेहा</td>
<td>:)...अर्थ होणार नाही, कारण प्रत्येकाचा अर्जून सांगणासारखे काहीतरी अर्जेल. किंवा वेगळी आठवण अर्जेल. तर आपण सुरू करूया? रुझान टायमिंग...याहांचे अभी आपल्यांचे पत्ता हे ना ये यांसे ऐसा जावेगा.</td>
<td>:)...No it will not happen like that, because everyone will have something new to tell or a different memory to share. Should we start now? Ruzan check the time and</td>
</tr>
</tbody>
</table>

Table A.1a Transcription of the first collaborative community workshop.
<table>
<thead>
<tr>
<th>Speech line</th>
<th>Start time</th>
<th>End time</th>
<th>Speaker</th>
<th>Speech in Marathi</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>55</td>
<td>10:28:78</td>
<td>10:64:71</td>
<td>मणिचार</td>
<td>ते टपाळ नाख्यानातून जी सुधवात केली तुनी, भी पूढे बाजार पेहेच रहात होतो. बाजारपेढप्याचे. तर सिखून सगळा में बाजार पनवेलाचा, कापडगडूँ पापून ते त्या दिगडकरच घुड्यातून तर्कडीच जागा होती, तर्कडीच घंटा मोडा होता त्या टायमा. ते उरण रोड जे आहे ते, पुलापर्तजासी होतां. पुलापर्त काही न्यवेंच त्या टायमा. आता नंतर बाजार बाजार बीकटिकरणी गेले ते, त्यामुळे ते बरोबर आहे. आणि सर्वांत जुनी मलिन्द आहे.</td>
<td>You started from ropol. Naka. I used to live in the market just ahead. The main marketplace was from Kapad Galli to Digidkar's home. That's all the market was. Only this stretch was doing big business at that time. That Uran road you that you see until the bridge there was nothing. After the bridge there was nothing at that time. Now everything has expanded and went everywhere. Hence what</td>
</tr>
</tbody>
</table>

*Table A.1b  Transcription of the first collaborative community workshop.*
<table>
<thead>
<tr>
<th>Speech line</th>
<th>Start time</th>
<th>End time</th>
<th>Speaker</th>
<th>Speech in Marathi</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>56</td>
<td>10:64:81</td>
<td>10:68:25</td>
<td>नेहा</td>
<td>म्हणजे बोहरी मॉस्क.</td>
<td>you have chosen to study is correct. And the oldest structure is the Mosque.</td>
</tr>
<tr>
<td>57</td>
<td>10:68:25</td>
<td>10:73:24</td>
<td>मणियार</td>
<td>ती समग्रात जुमी मस्जिद आहे. आणि बाजार पेटे मध्ये शाने देऊन पाच जुनाच आहे.</td>
<td>That mosque is the oldest mosque and the Shani Temple is old as well.</td>
</tr>
<tr>
<td>58</td>
<td>10:73:34</td>
<td>10:76:43</td>
<td>नेहा</td>
<td>जे आता याचायत दिसताय आपल्याला.</td>
<td>This that we see here.</td>
</tr>
<tr>
<td>59</td>
<td>10:76:43</td>
<td>10:91:88</td>
<td>मणियार</td>
<td>ती आहे. आणि टपाल नाक्यावर जे युनियन दाखवल्याने ना युनियन, युनियन होटल आहे ना आता, ती पुर्या तिकडेल बस स्टॉप होता. तिधून पेण वगळ्याचं गाड्यांना जायचं * युनियनच होती ती.</td>
<td>That one and on Տապալ Նակա you see that Union, Union Hotel that was a bus stop before. From there buses to Pen and every-where else used to start.</td>
</tr>
<tr>
<td>60</td>
<td>10:91:98</td>
<td>10:96:48</td>
<td>नेहा</td>
<td>जिथून जुवेकरांची गाड्या सुटावली.</td>
<td>From where Juekar’s</td>
</tr>
</tbody>
</table>

Table A.1c Transcription of the first collaborative community workshop.
<table>
<thead>
<tr>
<th>Speech line</th>
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<th>Speaker</th>
<th>Speech in Marathi</th>
<th>Translation</th>
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</thead>
<tbody>
<tr>
<td>61</td>
<td>10:96:58</td>
<td>10:99:8</td>
<td>पन्हाळ</td>
<td>नाही, त्याची सोराबजी रोटे. त्यांची.</td>
<td>vehicle used to start</td>
</tr>
<tr>
<td>62</td>
<td>10:99:9</td>
<td>11:01:8</td>
<td>मणियार</td>
<td>ते टपाल नाव्यावरुन.</td>
<td>No, before that Sorabji Shet. His</td>
</tr>
<tr>
<td>63</td>
<td>11:01:91</td>
<td>11:03:7</td>
<td>नेहा</td>
<td>आच्छा, मग युनिवर्स होटेल कोठ आहे?</td>
<td>That was from Tapal Naka.</td>
</tr>
<tr>
<td>64</td>
<td>11:03:8</td>
<td>11:07:16</td>
<td>मणियार</td>
<td>टपाल नाव्यावर, शानिमंदीरच्यासमोर.</td>
<td>Ok, so where is Union Hotel?</td>
</tr>
<tr>
<td>66</td>
<td>11:09:39</td>
<td>11:14:47</td>
<td>मणियार</td>
<td>तिकम्बे पेंग बगळे गाड्या जायचया.</td>
<td>Ok, so the one that is owned by Mr. Khalde?</td>
</tr>
<tr>
<td>67</td>
<td>11:14:57</td>
<td>11:17:3</td>
<td>सगळे.</td>
<td>सोराबजी, सोराबजी...</td>
<td>From there buses to Pen used to leave.</td>
</tr>
<tr>
<td>68</td>
<td>11:17:4</td>
<td>11:18:96</td>
<td>मणियार</td>
<td>सोराबजी मृणजे मुंब्रा लाईन.</td>
<td>Sorabji...Sorabji...</td>
</tr>
<tr>
<td>69</td>
<td>11:19:06</td>
<td>11:24:66</td>
<td>दिगोडकर</td>
<td>जुवेकरंची मंतर आली. मृणजे बोट बंद केली नातेचया ता दोन गाड्या झाल्या.</td>
<td>Sorabji used to go to Mumbra</td>
</tr>
</tbody>
</table>

Table A.1d  Transcription of the first collaborative community workshop.
<table>
<thead>
<tr>
<th>Speech line</th>
<th>Start time</th>
<th>End time</th>
<th>Speaker</th>
<th>Speech in Marathi</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>11:24:76</td>
<td>11:66:44</td>
<td>मणियार</td>
<td>ते आला दुकान आहे ना, त्याच्या समोर मी रहायलों. ते आमच्या समोर, समोरची गर्दी. त्या टायमाला, बाजार पेंठमध्ये बारतावारता, जास्त करुन म्हणजें काय, तर पनवेलमध्ये जवळजवळ तीस ते बतिस राईस मिळ होत्या. पनवेलच्या राईस मिळमध्ये बाहेरच्या आफल्या खेंतीहाडीची मांडे याची. भात तांदूळ बरें, ते तांदूळ बनवून जायचे. तर रोज बाजारपेंठमध्ये बैलगंगांचा जबरदस्त व्यवहार होता. में बाजार होता पनवेलचा. रायगडमध्ये पनवेल फस्ट नंबर्ला होता. त्या टायमाला. आजच आहे, पण तेहा मोठा पंढर</td>
<td>You see that shop, I used to live in front of it. It was in front of me, in the opposite lane. At that time the biggest business was of rice mills, there were about thirty to thirty-two rice mills. In those rice mills farmers from neighbouring villages used to bring their produce. Rice and all. They used to husk rice there. So, there was a huge business of bullock carts. Panvel was the main market. In Raigad district Panvel was</td>
</tr>
</tbody>
</table>

*Table A.1e* Transcription of the first collaborative community workshop.
<table>
<thead>
<tr>
<th>Speech line</th>
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<th>Speaker</th>
<th>Speech in Marathi</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>71</td>
<td>11:66:54</td>
<td>11:68:17</td>
<td>नेहा</td>
<td>मग धंदा राईस मिलचा होता?</td>
<td>Then was the trade about rice mills?</td>
</tr>
<tr>
<td>72</td>
<td>11:68:27</td>
<td>11:98:22</td>
<td>मणिवार</td>
<td>राईस मिलचा होता ना. तीस बंतिस राईस मिल मूणण्यें, माल पेँचून जायचे. माल विक्रून जायचे. त्याचे पैसे आले की बाजार पेँचून जायचा. आणि आसा हिसाब होता बाजारातल्याचे. ते पनवेळच्या आहजांजुळा गांव चिक्कार, गांव. ते समां गिहांड्क पनवेळच्या यापचे. धंदा खुप मोठा होता त्या टायमाला. आणि बाकी दुसरं काय विशेष मूणण्यें, इतकं मोठं पनवेळ आसून आता पर्या कृपलीही भांडण्यां.</td>
<td>Yes, there were about thirty to thirty-two rice mills. People used to buy produce and sell it also. With the money earned from selling the rice they used to purchase other daily needs. Around Panvél there are many villages, these customers used to come to Panvél market. The trade</td>
</tr>
</tbody>
</table>

*Table A.1f*  Transcription of the first collaborative community workshop.
<table>
<thead>
<tr>
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<th>Start time</th>
<th>End time</th>
<th>Speaker</th>
<th>Speech in Marathi</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>73</td>
<td>11:98:33</td>
<td>12:03:57</td>
<td>नेहा बरोबर, आणि तुमचे दुकान कुठे होतं आपली?</td>
<td>was quite big at that time. And another very important thing is even if Panvel is so big, there is no quarrel. You can go anywhere there is no problem. This is very special of Panvel.</td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>12:03:67</td>
<td>12:14:08</td>
<td>मणिपार भाजी मार्केटचा आतमध्ये होतं. भाजी मार्केटचा आतमध्ये, आता टपाळ नाक्षाचर आहे. मस्जिदचा पुढे, अतुल ट्रेडर्स मुंबई. काळ तुम्ही आला होता नातिकडें.</td>
<td>Right, and where was your shop before? My shop was inside the vegetable market. Now, it is on Tapal Naka, meaning ahead of the mosque. Atul Traders, you did come there yesterday, didn’t you?</td>
<td></td>
</tr>
</tbody>
</table>

Table A.1g  Transcription of the first collaborative community workshop.
Activity Maps of Ṭapāl Nākā market square
Activity Maps of Ţapăl Năkă market square

Figure B.1 Activity map of Ţapăl Năkă market square on a weekday.
Figure B.2  Activity map of Ṭapāl Nākā market square on a weekend.
Activity Maps of Țapăl Năkă market square
References


Diaz-Kommonen, L. (2017b, August 29). *Event-driven culture: Case study the 'visit'* [Doctoral School]. Department of Media, ARTS, Aalto University.


This research presents an approach to study the meaning of place for design intervention and exploring the role that IoT technology may play in the changing meaning of place. It contributes to the IoT paradigm by indicating a pro-community approach for technological development. The research reveals disparity in the meaning of a place generated by the urban planning departments especially in the Indian scenario. More immediately, the project is based in new media research by highlighting the role of media studies in the developing understanding of IoT.