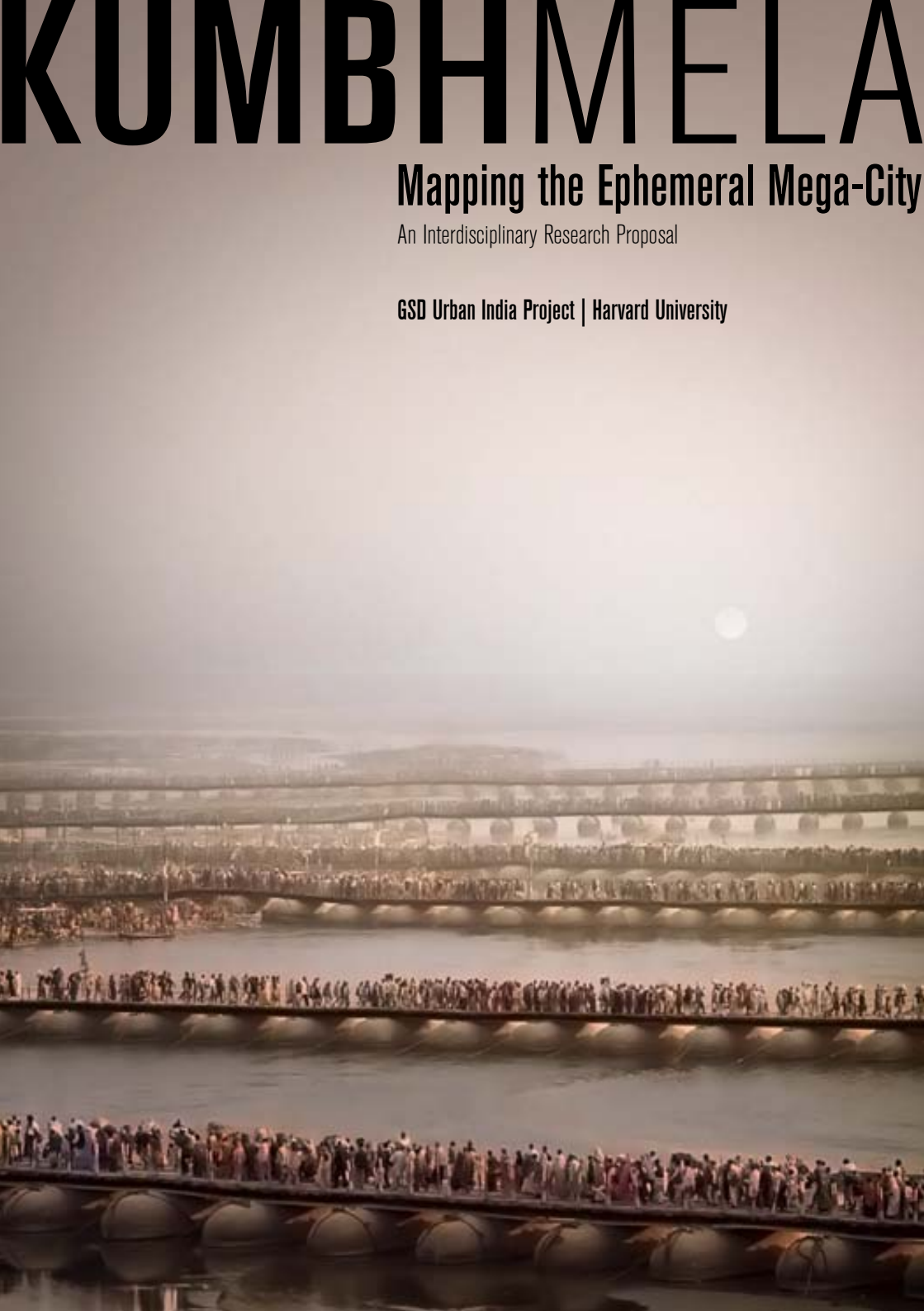
KUMBH MELA

Mapping the Ephemeral Mega-City

An Interdisciplinary Research Proposal

GSD Urban India Project | Harvard University



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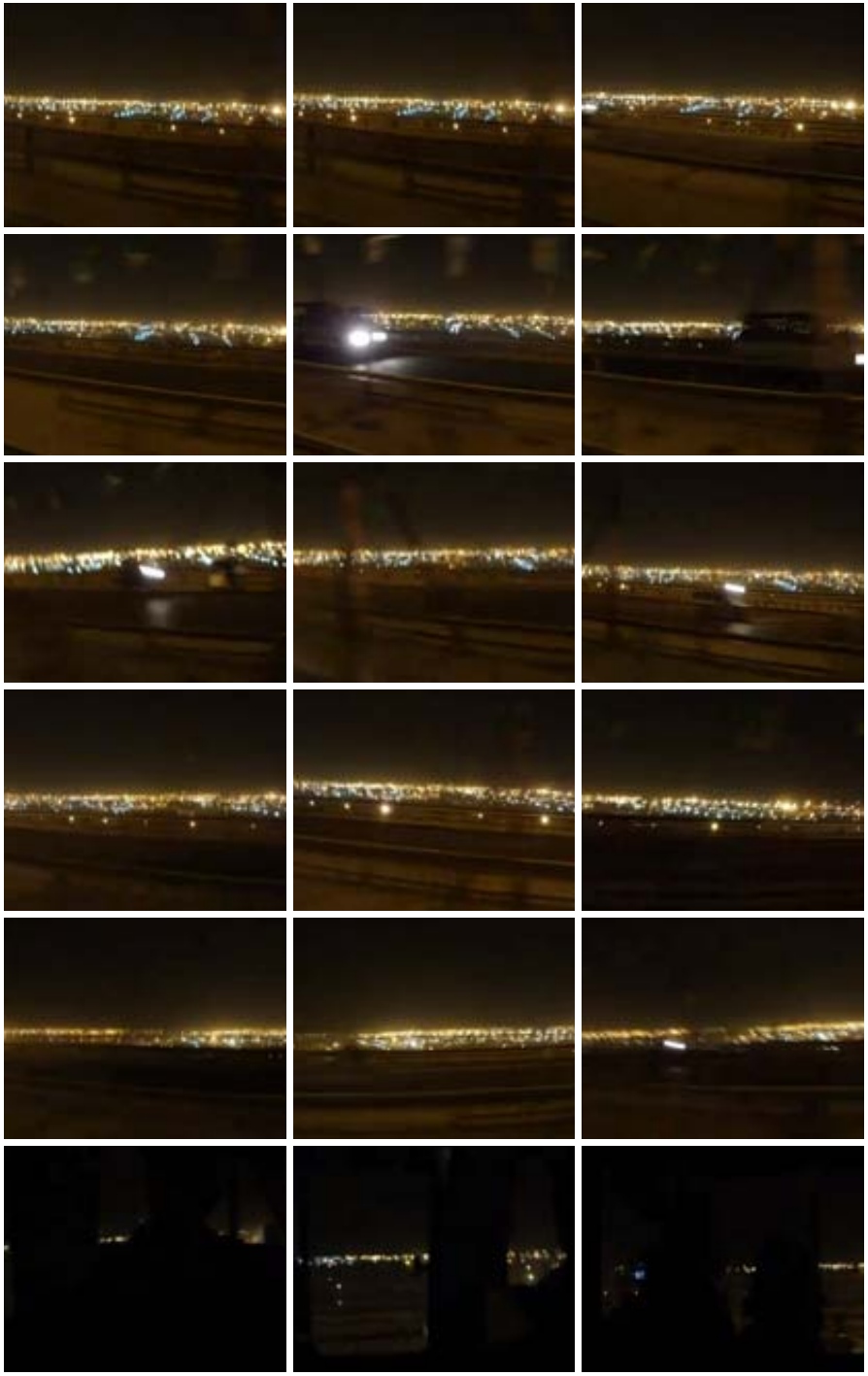
"Pilgrims came by millions! Some arrived on overcrowded trains carrying five times normal capacity. Some came by bus, some by car, some by ox drawn carts and some rode on horses, camels and even elephants. The rich and famous chartered private planes and helicopters; the less affluent came on foot, carrying their bedrolls and camping equipment in heavy bundles on their heads. Wave after wave, the pilgrims formed a veritable river of humanity that flowed onto the banks of the Ganges at Allahabad to celebrate the greatest spiritual festival ever held - the KUMBH MELA."

Jack Hebner and David Osborn
Kumbh Mela: The World's Largest Act of Faith



Snapshots from **“ALLAHABAD, CITY OF TENTS. CITY OF LIGHT”**

- a short video taken by a family from a bridge during the **Kumbh Mela**

RESEARCH GOALS

The Kumbh Mela is a case study that demonstrates how certain systems can be used for low-impact and economical urban design, educating large populations on sustainable living strategies, or disaster response. If we consider that certain aspects of ‘permanent’ 20th century design have failed, where can temporary or flexible urbanism fill in the gaps today? Can this be a complimentary strategy for urbanism? We contend that the questions above, some clearly non architectural, do have spatial effects, implications, and repercussions. Our role as designers is to make this information legible using the tools of our disciplines, and eventually to make this available to a wider audience interested in urban design for large and evolving populations.

Multiple and conflicting systems, problems, and challenges converge at the Kumbh Mela. The multifaceted nature of the event necessitates an interdisciplinary study. We hope that by fashioning multiple perspectives on the Mela, and tailoring our research questions to each one, we will better understand how the various systems in the city work together, and how the various disciplines involved can produce a cohesive set of arguments about the city and the festival.

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30.000.000

THIRTY MILLION PEOPLE

12

EVERY TWELVE YEARS

1

EPHEMERAL CITY

60

DAYS

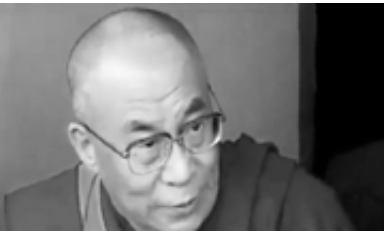
ABSTRACT

The Kumbh Mela is a Hindu religious festival that occurs every twelve years at the confluence of the Ganga and Yamuna Rivers in the city of Allahabad. Since its inception early in the first millennium CE, the Kumbh Mela has become the largest public gathering in the world; today it draws tens of millions of pilgrims over the course of approximately 55 auspicious days to bath in the *sangam* or confluence of the Ganges and Yamnunai rivers. The Mela provides a forum for both individual and collective expressions of faith as pilgrims, religious teachers, followers of monastic orders, and outside visitors converge from all parts of India. The next iteration of the festival will take place from January 14 - February 25, 2013.

The Mela is a potent forum for interdisciplinary research in a number of complementary fields. Public health, pilgrimage and religious studies, design and planning, business, engineering, governance, and technology converge at this festival, producing a complex systems and networks that has yet to be mapped in a systematic way. It is hoped that a site visit during the week leading up to the 2013 festival carried out by faculty and students in each of these disciplines will yield the field research necessary to produce a mapping of the ephemeral city.

The Kumbh Mela could serve as a rich case study, or prototype, to examine landsapes of temporality – in this case a virtual pop-up mega-city. This spatial model can be extended to situations outside of religious pilgrimage: understanding the spatial, social, and logistical elements of the Kumbh Mela through interdisciplinary research will allow us to propose the deployment of these systems in a variety of places and situations, in particular camps for refugees of war and natural disasters.

INTRODUCTION

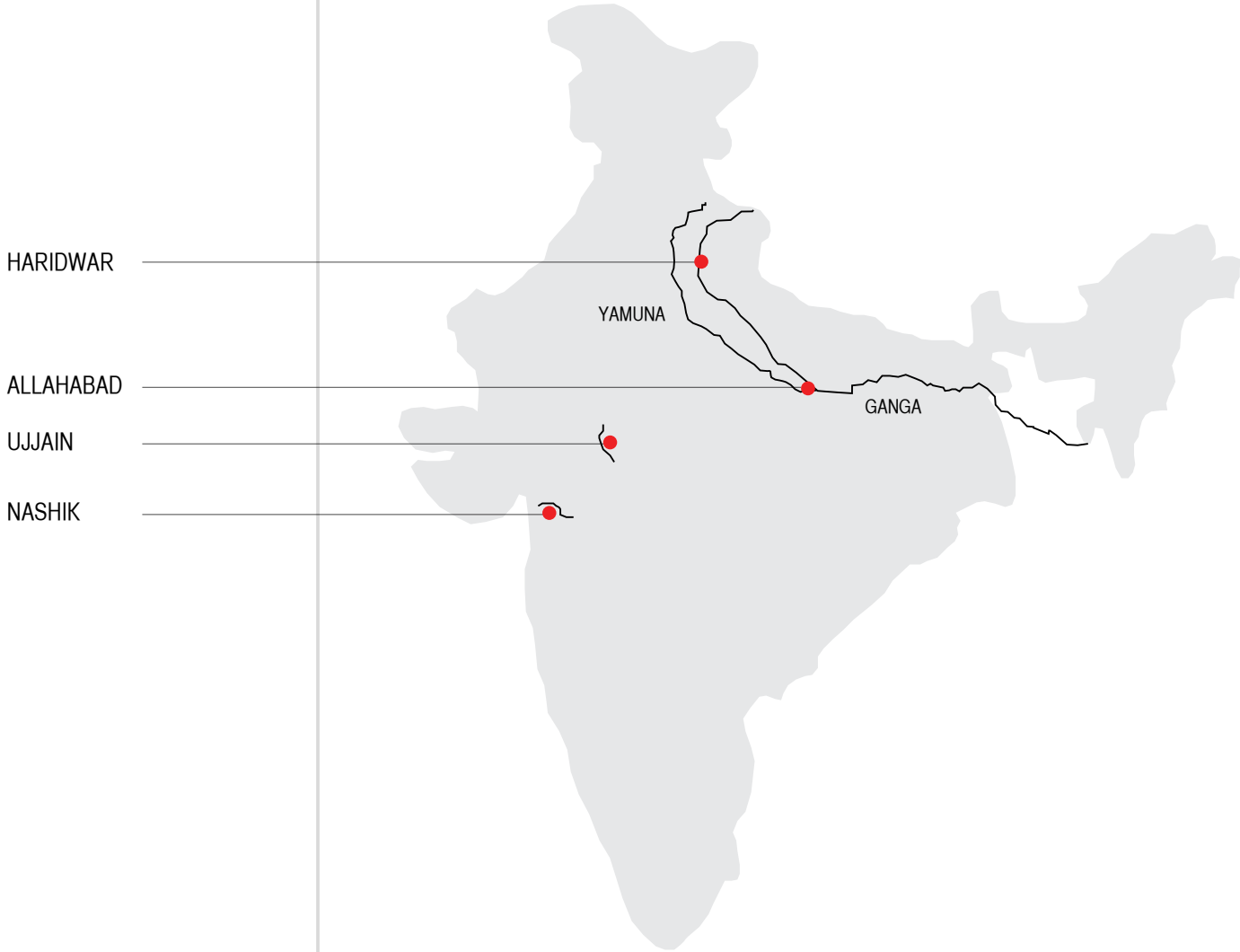


The underlying structure of the Mela supports the creation of a temporary city to house its many pilgrims. This city is laid out on a grid, constructed and deconstructed within a matter of weeks; within the grid, multiple aspects of contemporary urbanism come to be realized, including spatial zoning, electricity supply food and water distribution, physical infrastructure construction, mass vaccinations, public gathering spaces, and night time social events. The ultimate goal of the pilgrims is to bathe at the convergence of the rivers: even this act is organized into a larger procession, where pilgrims are given specific times and opportunities to bathe based on their social status. When the festival is not in session, the ground on which the city sits is used for different types of agricultural production.

The visual documentation of the festival, in the research project will ultimately be presented in the form of maps and will distinguish between two features:

• The generic, physical structure of the settlement, including the hierarchy of residential sectors, the attribution of spaces for public amenities, the location and organization of infrastructures (bridges, hospitals, food distribution, electricity, etc.), and the proximity of these spaces to the river. These are the aspects of the festival that are fixed in space and can be documented through plan and sectional drawings.

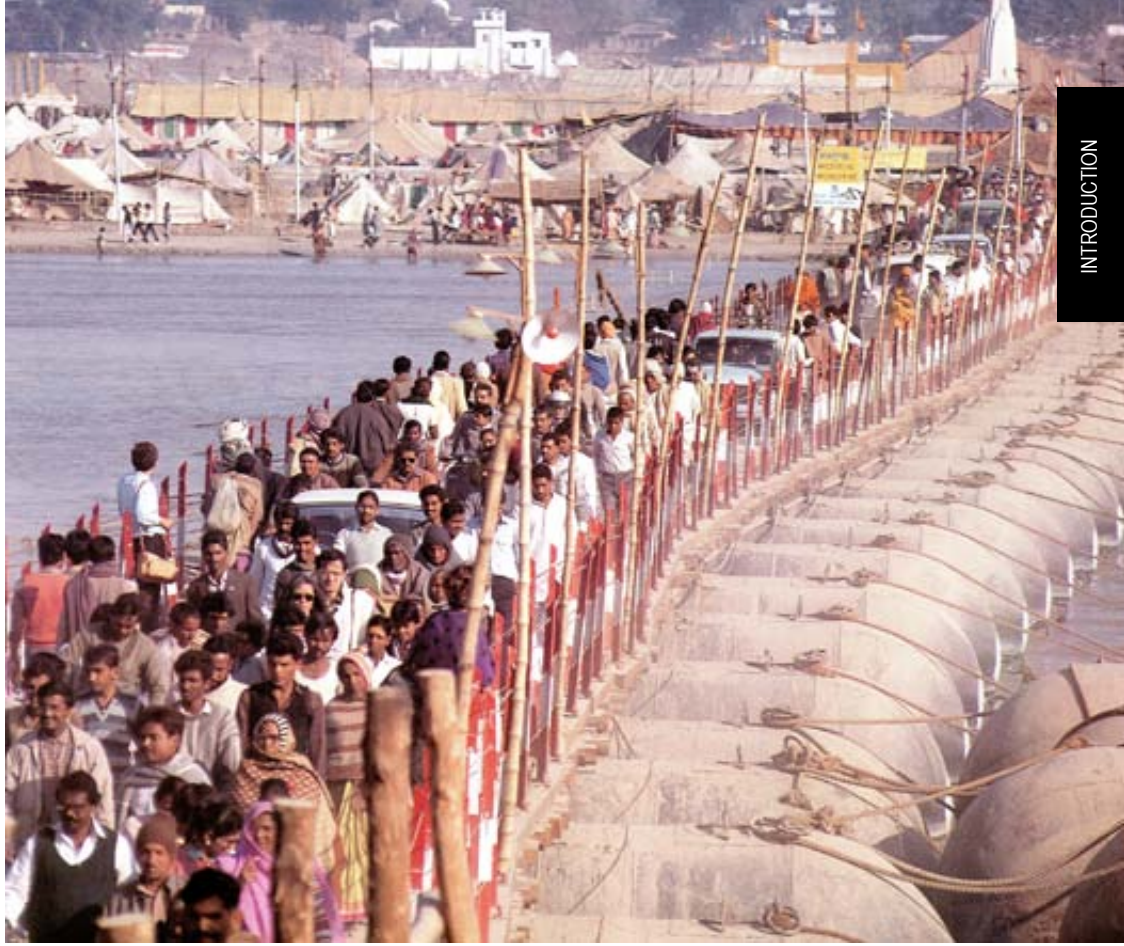
• The temporal, fleeting events that define the festival in a different way. These are the routes that the pilgrims take between different parts of the tent-city, the auspicious times for bathing, the nighttime celebrations; events that are not fixed in space, but can still be documented visually according to the spaces they occupy albeit temporarily.



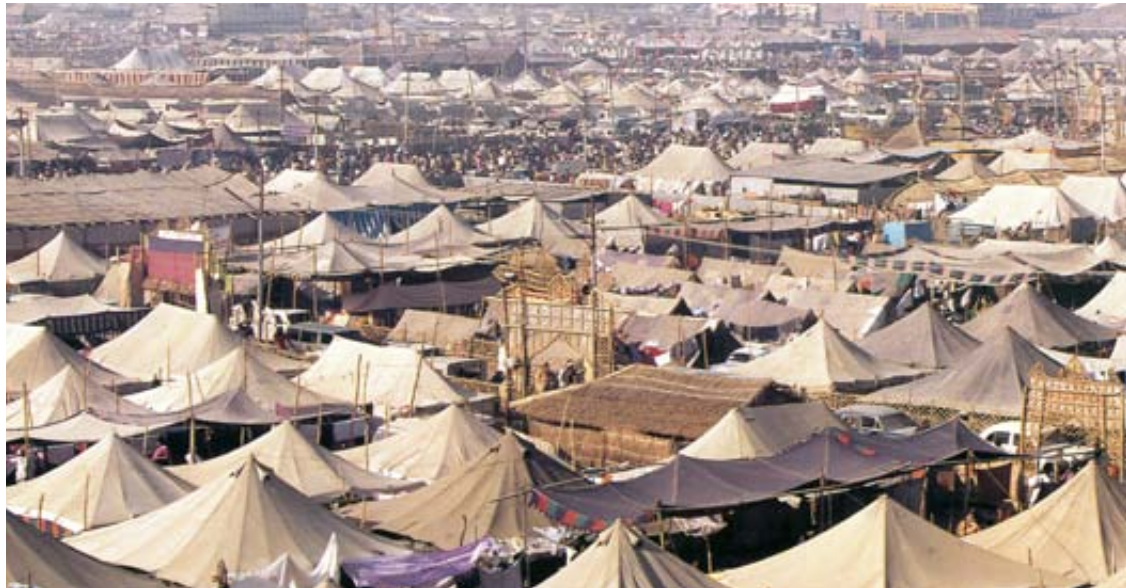
The goal of the visual documentation component of this project is to understand the processes of the temporary city at the Kumbh Mela, its aplications to planning and design and to conditions of temporal urbanization. One example is the potential deployment of such an approach and imagination to aid in disaster relief: how can the various systems established at the Kumbh be used to support populations in need of rapid infrastructural deployment?

Much of the popular literature on the Kumbh Mela treats the festival primarily as a spectacle, with, among other things, its huge crowds and religious fervor. Special attention is given to sadhus, Hindu ascetics, who become the central objects of the visiting photographer's viewfinder. This investigation of the Mela challenges this approach and it is hoped that a systematic and objective documentation of processes at the festival will reveal a rich and sophisticated urban typology, the various components of which can be extremely useful in other sites and contexts. The multidisciplinary research team sees this Kumbh Mela as a massive human undertaking, involving the government at all levels as well as civil society and religious organizations. This holds many lessons in collaborative work and modes of governance.

View of one of the several pontoon bridges that connect the two river banks



Overview of the temporal city with the temporal gates in the foreground, which define different sections



KUMBH MELA

THEOLOGY

Like many pilgrimage events in India, the Kumbh Mela is anchored in Hindu mythology. It is widely believed that at four sacred sites – Haridwar, Allahabad, Ujjain, and Nashik – amrit or the nectar of immortality, fell from a pot (Kumbh) carried by the goddess Mohini as she whisked it away heavenwards, out of the grasp of the covetous demons who had tried to claim it. Her flight, and the following pursuit, is said to have lasted twelve divine days, which is the equivalent of twelve human years; therefore, the Mela is celebrated every twelve years, staggered at each of the four sites in this cycle.

HISTORY

Those who have studied the Kumbh Mela in Allahabad see it as being more or less continuous since the Gupta period (4th to 6th centuries CE). The first description of the event was recorded sometime between 629 and 645 by the Chinese Buddhist monk Hsuan Tsang, who had travelled to India in search of Buddhist sacred texts.

Since the mid-nineteenth century, the festival has exploded in size and scope. It has been celebrated for its mass appeal, but some have questioned whether it exacerbates tensions between classes and competition between religious orders, and whether it is even possible to maintain crowd control, recalling the deadly stampede in 1954 in which hundreds lost their lives. The recent Maha Kumbh Mela, held in 2001 in Allahabad, attracted between 60 and 70 million people over the course of the weeks, and has been noted as the largest public gathering and collective act of faith anywhere on the planet. On the most auspicious bathing days, the crowd was large enough to be visible from a space satellite.

View of the devotees bathing at the *"sangam".*

View of the processions that occur periodically.

MOTIVATIONS

Deeply embedded in Hindu belief is the idea of physical and spiritual cleansing. The Kumbh Melas involve not only pilgrimage travel to the four sites of divine presence, but also collective bathing in the waters of the holy rivers. For the pilgrim, bathing is the climax of the journey, the culmination of a process that is meditative and healing for the individual and motivating for the collective in religious terms.

For many who participate in the melas, however, these huge human gatherings are opportunities for the practice of commerce, politics, public service, or public health. Their motivations for engagement in the mela are, in a sense, professional. For example, in the last century, the spread of diseases like cholera, dysentery, and most recently swine flu, has driven the organizers of the Mela to take the opportunity to provide systematic medical care, including vaccinations, to millions of pilgrims. In 2010, at the Purna Kumbh Mela in Haridwar Pankaj Jain, chief nodal officer for swine flu, described the scene:

"The entire Kumbh Mela region – Haridwar, Rishikesh and parts of Dehradun – has been marked as a separate district and divided into 31 sectors. We have set up one temporary hospital with four doctors in each of these sectors with at least ten beds. The government of India has also given us nearly 300,000 Tamiflu tablets."

Prashant K. Nanda,
"Kumbh Mela: 150 Doctors, 31 Hospitals to Control Swine Flu"
Thaindian News, www.thaindian.com

View of the *"sangam".*

Congregation of Sahus before the bath.

TEMPORAL CYCLES

The land that is the physical site of the Kumbh Mela functions on a set of temporal cycles. During the festival, it is an urban space, zoned according to the rules of the gridded; during the interim years, it sustains agricultural life. The different melas themselves are categorized according to when they occur in a 144-year cycle, and the different planetary alignments that occur during this period.

There are four types of Melas :

- The Maha Kumbh, which occurs every 144 years, last took place in 2001 in Allahabad

- The Purna Kumbh takes place every 12 years at Allahabad

- The Ardh Kumbh takes place every 6 years at Allahabad and Haridwar only

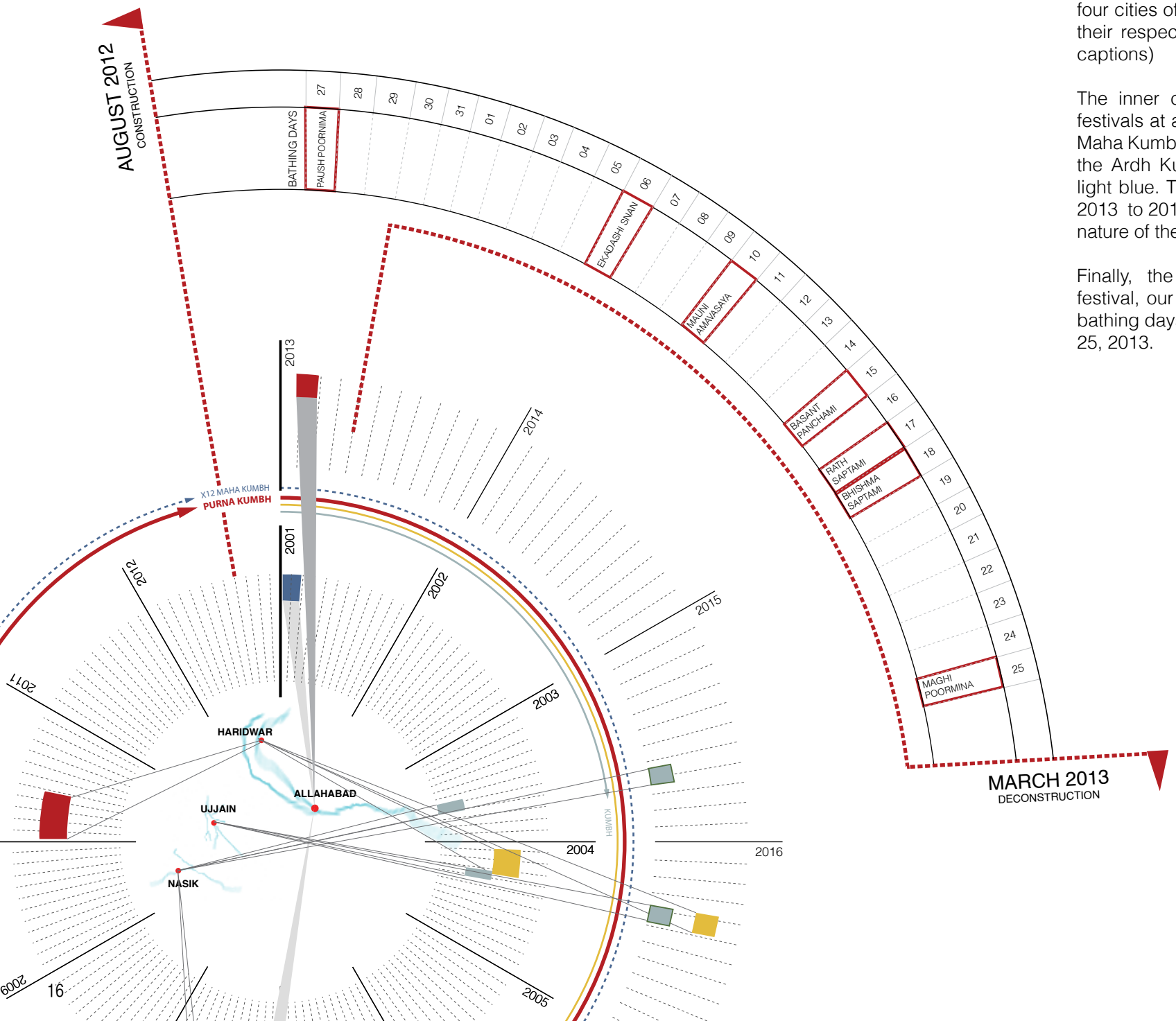
- The Kumbh takes place every 3 years at all four sites

The diagram on page 16 shows how these events alternate and at times overlap. The spaces in between can eventually be filled in with information on the agricultural cycles of the four cities; this will give a true sense of the temporal changes in each 12-year series. The cycle, when visualized in such a way, shows the cosmological nature of the event.

Maha Kumbh

Purna Kumbh

Ardh Kumbh



At the center of the diagram, four points mark the four cities of the Kumbh Mela, shown alongside their respective water bodies. (Lets check all captions)

The inner circle charts out the Kumbh Mela festivals at all four cities from 2001 to 2012: the Maha Kumbh is in blue, the Purna Kumbh in red, the Ardh Kumbh in yellow, and the Kumbh in light blue. The middle circle does the same for 2013 to 2019. In this visualization, the planetary nature of the festival becomes apparent.

Finally, the outer circle expands the 2013 festival, our case study, and displays the main bathing days between January 27 and February 25, 2013.

Aerial view of 2001 Maha Kumbh Mela, Allahabad

GEOGRAPHY

LAND USE

"ON THIS OCCASION PILGRIMS FROM EVERY NOOK AND CORNER OF INDIA - SPEAKING DIFFERENT LANGUAGES AND DIALECTS, WEARING DISTINCTIVE MARKINGS ON THEIR FOREHEADS, DONNING VARIOUS TYPES OF DRESS, AND OBSERVING DIFFERENT MANNERS AND CUSTOMS - MEET TOGETHER FOR A HOLY BATH IN SACRED WATERS."
Jack Hebner and David Osborn, *Kumbh Mela: The Wrold's Largest Act of Faith*

The four Mela cities are urban areas that are structured by their water bodies. Allahabad is situated in the fork of the confluence between the Ganga and Yamuna, whereas Haridwar, Nashik, and Ujjain have linear organizations, usually along one side of their respective rivers. In a few instances the cities spill over to the opposite bank, using foot and car bridges to join the two sides. The river front and bathing access is central to the Mela structure in these cities. The transport infrastructure of roads, trains, and highways is critical to the smooth functioning of the Mela, and these great pilgrimage fairs provide the occasion for a concerted effort to improve the transportation infrastructure.

It is also true that many pilgrims still come on foot, and in the weeks of the Mela pilgrims can be seen walking along these roads toward the city hosting the festival that year.

The urban layout of each city also must include the space for the large temporary encampments that are essential for the Mela. The city, therefore, interacts with an unpopulated terrain nearby, used alternately for agriculture and as a site for the temporary city during the Mela. This is fertile and useful land, able to sustain the density and dynamism of the temporary city as well as the long stretches of relatively quiet agriculture landscapes in between.

In the Kumbh Mela site a grid structure is visible throughout the seasons. During the festival it determines basic paths of movement and zones in the temporary city; at other times, it structures the farmland so that various crops may grow at different times of the year. The grid fulfills a dual role on the site, a simple and sustainable method of organizing land use on a fairly expansive site.

ALLAHABAD

NASHIK

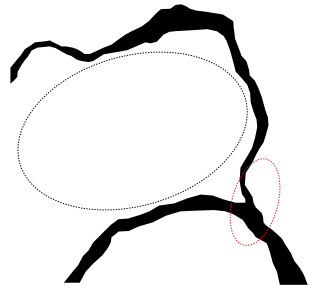
HARIDWAR

UJJAIN

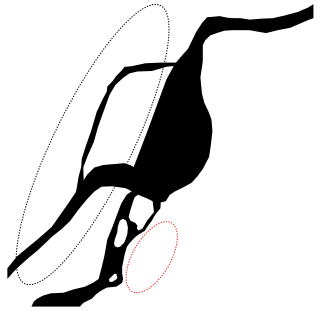
The diagrams to the right show the relationship of the built city to their respective water bodies and to the actual sites of the Kumbh Melas. The city of Allahabad sits nestled between the two branches of the rivers, and the Kumbh Mela site lies directly over the point where the rivers join. This point is known as the sangam, and is considered one of the holiest locations in India.

The *"sangam"* at Allahabad.

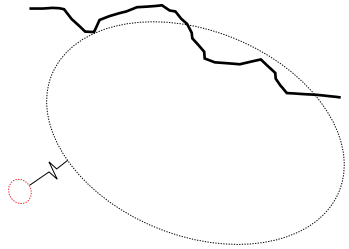
ALLAHABAD



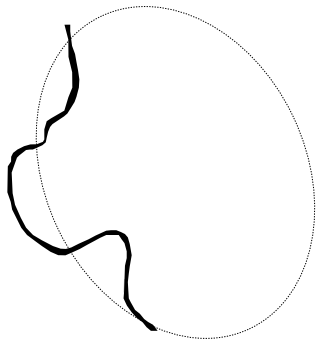
HARIDWAR



NASHIK



UJJAIN



PILGRIMS

Pilgrims who choose to attend the Kumbh Mela are overwhelmingly elderly and male, the most iconic of whom are the sadhus. Elderly women figure as an important sub-group; within these gender divisions are social or class stratifications as well. One component of the proposed research is to determine whether these differences have spatial resonances: that is, if the occupation of the tents in the city and the eventual bathing process follows a pattern of social or gender divisions as well.

More devout Hindus choose to walk the distance of the pilgrimage; thus, months before the start of the festival, pilgrims can be seen walking in long succession along the India's major highways dressed in the characteristic orange clothing

In addition to individuals and families, major religious institutions and spiritual leaders attend the Mela. One question we would like to explore in this respect is how space is allocated among these different groups, and if a social hierarchy emerges from these sometimes ambigous divisions.

View of the Sadhus before the bath at the *"sangam".*

View of the Kumbh temporal settlement

SPATIAL FORMULATIONS AND INFRASTRUCTURES OF THE CITY

Tents for sleeping, eating, religious gatherings, entertainment, and socializing make up the basic spatial character of the Kumbh Mela city. They are arranged in lines within the basic urban grid, and define more intimate pathways for walking on foot. The city is zoned from one grid block to the next, so that residential and public spaces are distinct, interspersed with hospitals, eating areas, public toilets, bridges, and so forth.

Among those less obvious (and less tactile) spatial systems are the electricity grid, food distribution, internet and cell phone capabilities, security, financial support, charitable distributions like shoes and clothing, among others.

NATIONAL AND ENVIRONMENTAL CONTEXT

Along with the three other host cities, Allahabad is situated in a larger context of religious pilgrimage sites. These are spread from the northern tip of the country, in the Himalayan foothills, down to the southernmost point bodering the Indian Deccan. These cities, occupied to different degrees depending on the holiday and time of year, create a sub-landscape within India, a pattern of spatial occupation intricately related to cycles of lunar months and seasons. It is important to contextualize this, since the early 20th century and certainly through the process of independence, national identity has played a significant role in the construction of the Indian individual. The nation was and to some degree still is the frame of reference (as opposed to the city or the state) for the individual citizen.

Allahabad, Haridwar, Ujjain, and Nashik are located within a national fabric of spiritual destinations intimately linked to India's hydrological systems. Occupation of land and water as a result of religious rituals makes a spatio-environmental impact at a national scale.

Map of Indian pilgrimage sites with Kumbh Mela cities highlighted in red

The city of Allahabad in its regional context

Images of present-day Allahabad

SITE DOCUMENTATION

AUGUST 2012

The next Kumbh Mela is scheduled to take place from January 14 - February 25, 2013, in Allahabad, Uttar Pradesh (UP). Activity related to the Kumbh Mela will occur throughout January and the commencement of the sacred festival season will be January 14. Allahabad sits on the western edge of the Allahabad district in southern UP, at the convergence of the Ganga and Yamuna Rivers. It is the holiest of the four Kumbh Mela sites, because it is believed that a third invisible river, the mythical Saraswati, also joins the two sacred rivers here.

The confluence of three rivers, or triveni, holds a special place in the Hindu imagination. Allahabad thus draws the largest gatherings of all the Melas, and with each passing festival, reinforces its image as the center of Hindu spirituality.

The area of Allahabad used for the Kumbh is highlighted here in yellow. It is adjacent to the main city, occupying the ground where the rivers converge.

While we have some understanding currently of the occupation of land during the festival, we also want to investigate the occupation of water. It is likely that the majority of visitors are unable to swim, and we are interested in the possible infrastructures in place to prevent injuries or fatalities during the bathing process.

Furthermore, the presence of millions of people bathing in a brief period, raises the question of sanitation: for diseases like cholera and dysentery - are there preventative measures in place?

March 2007

April 2008

July 2010

December 2011

Geographic transformation of Kumbh Mela site at Allahabad, 2007-2011.

Kumbh Mela site
August 2012

Overview of the government sector
for the Mela - August 2012

View towards the *"sangam"*
August 2012

View looking north
August 2012

View towars *"sangam"* showing the road memory of the previous melas.

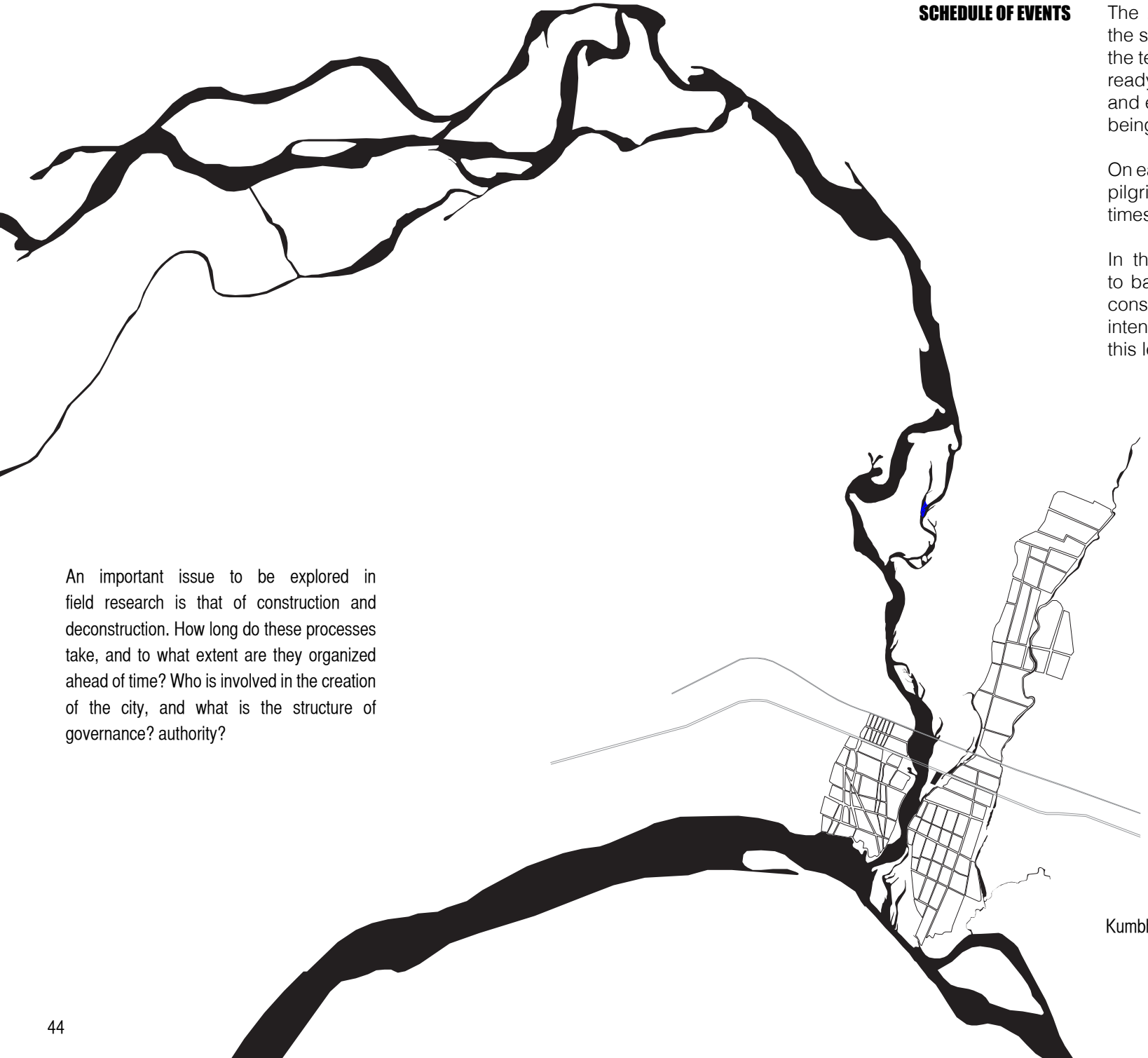
SCHEDULE OF EVENTS

The 2013 festival begins on January 14, with the sacred day of Makar Sankranti. By this time the temporary city will be virtually complete and ready for the Mela which begins on January 27 and extends to March 10, the main bathing day being Mauni Amavasya Snan on February 10.

On each of these days, and the ones in between, pilgrims are scheduled to bathe at particular times and in a specific order.

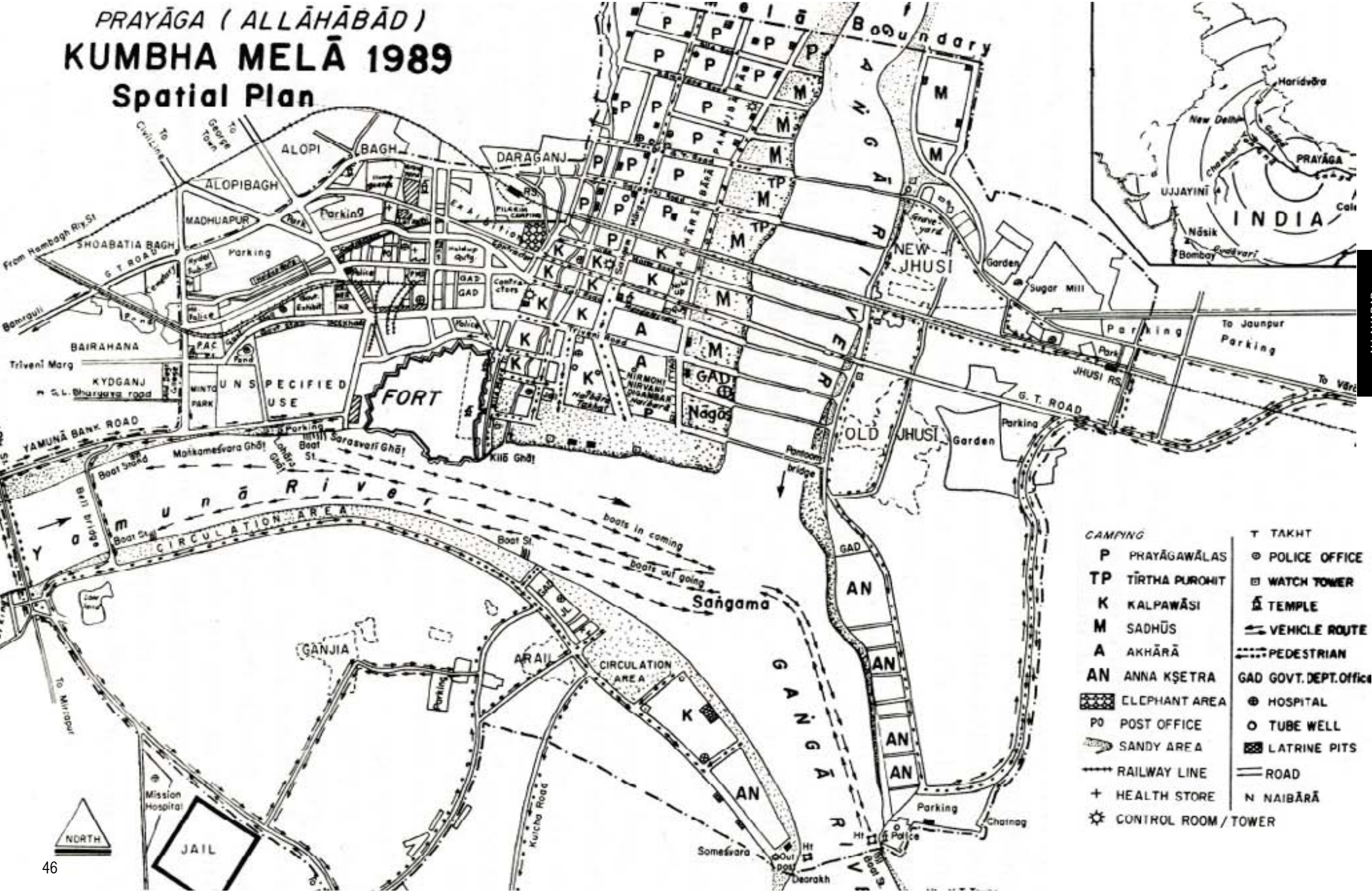
In the past, the ascetics have been allowed to bathe first - at times this has caused some consternation among others, as well as an intense desire to view the spectacle. In 1954, this led to a fatal stampede in Allahabad.

An important issue to be explored in field research is that of construction and deconstruction. How long do these processes take, and to what extent are they organized ahead of time? Who is involved in the creation of the city, and what is the structure of governance? authority?

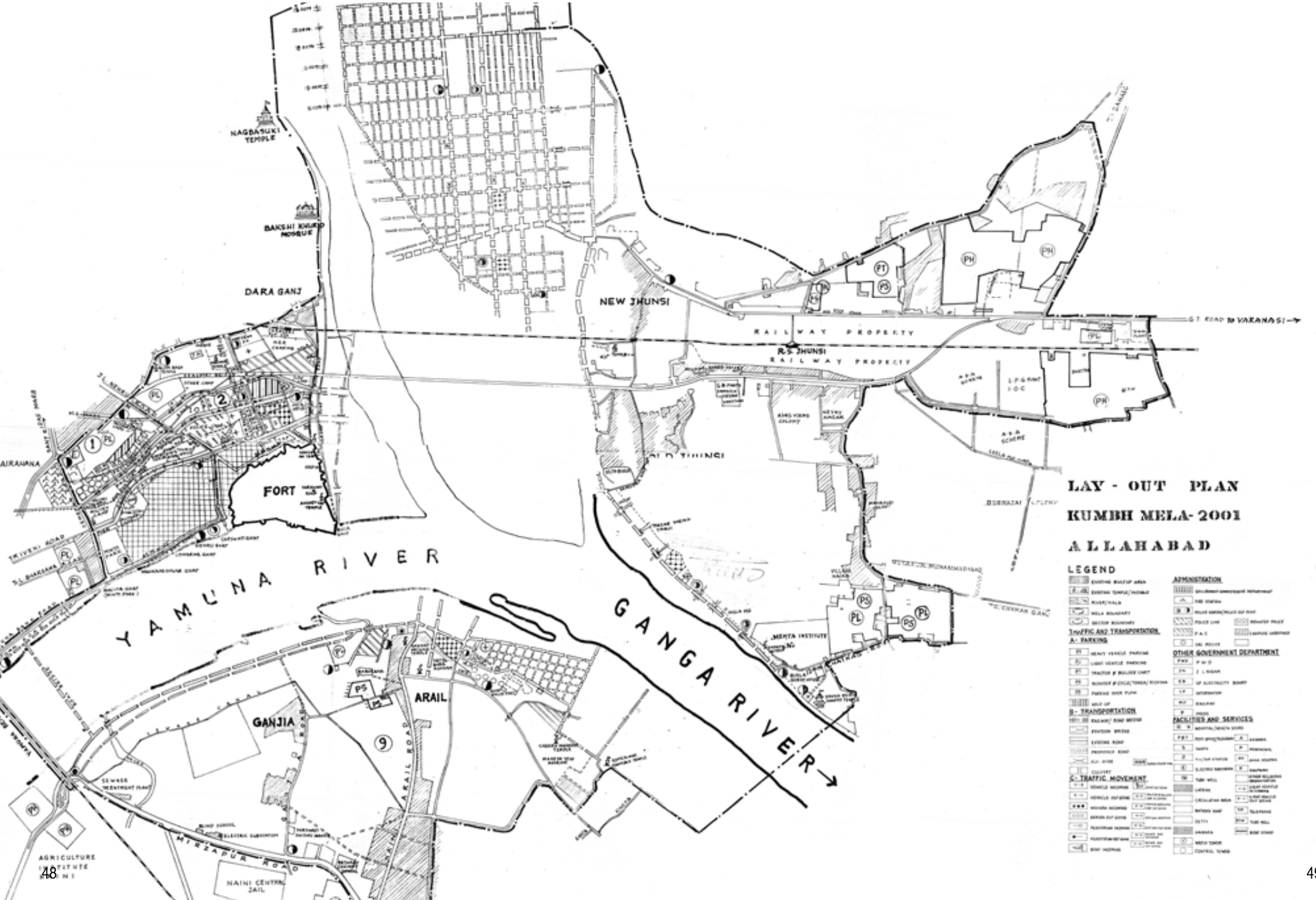


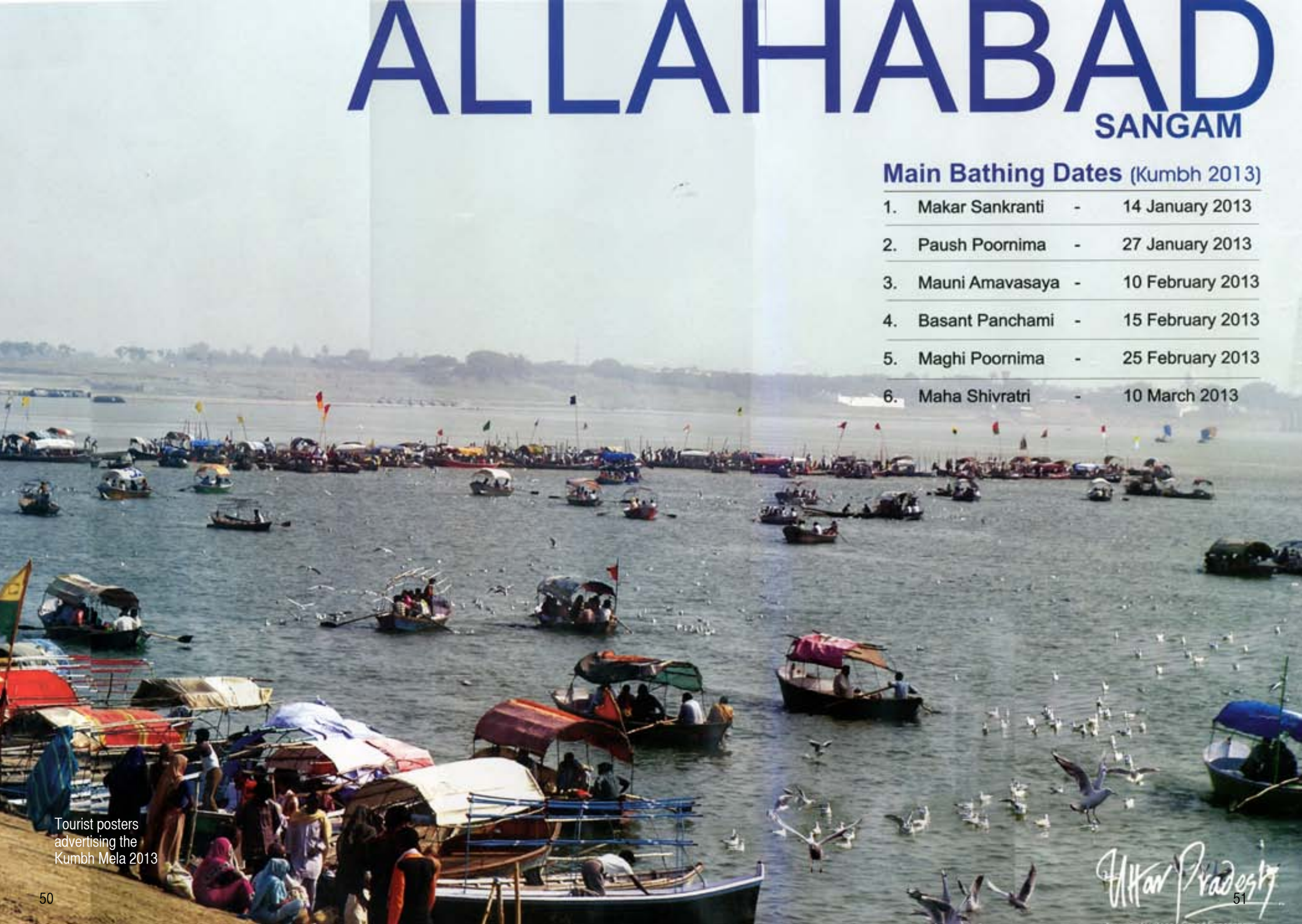
Kumbh Mela site, Allahabad

Plan drawing developed for the 1989 Kumbh Mela at Allahabad

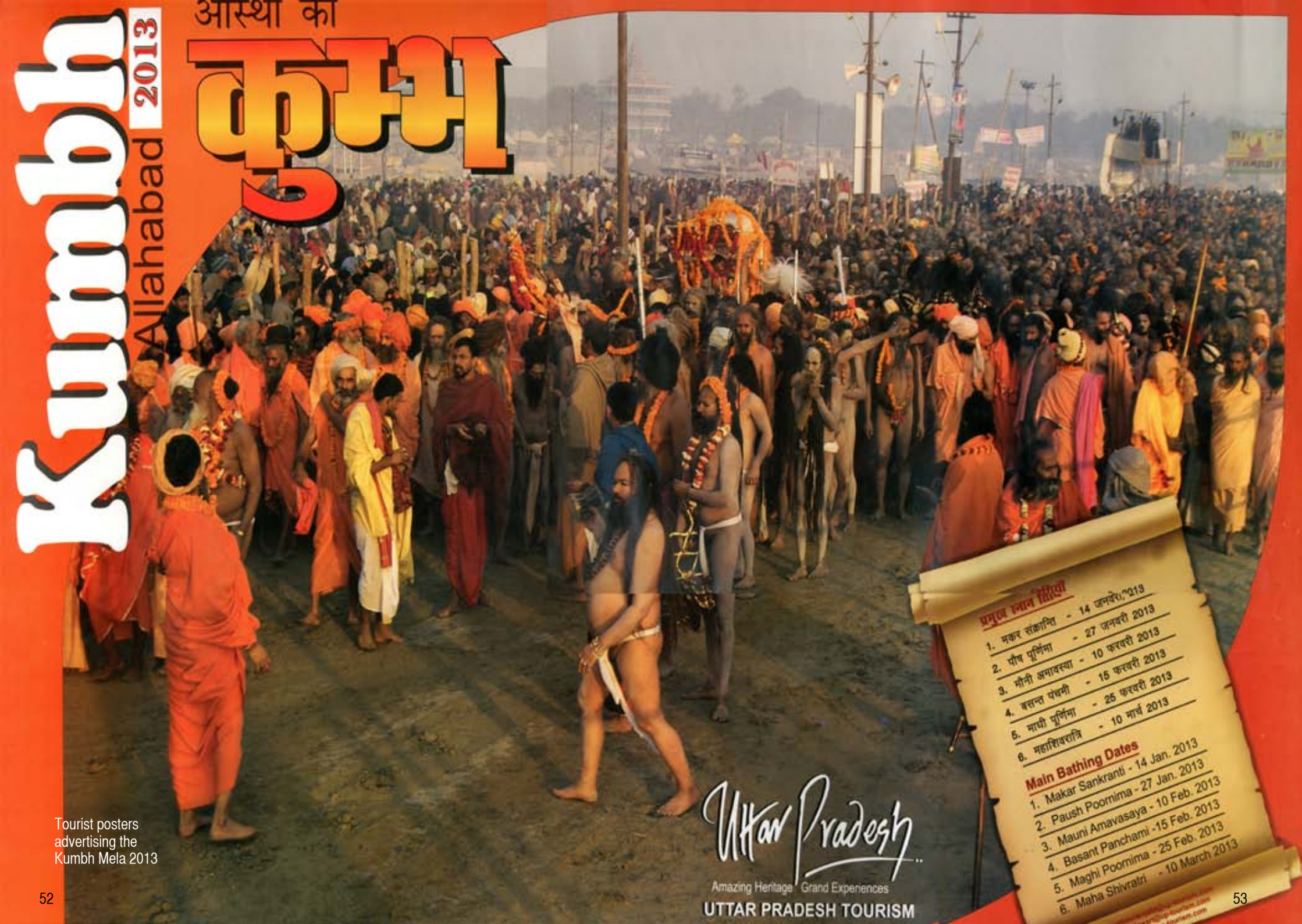


Plan drawing developed for the 2001 Kumbh Mela at Allahabad





Tourist posters advertising the Kumbh Mela 2013



Tourist posters advertising the Kumbh Mela 2013

View of the fabrication yard of the pontoon bridges. August 2012

View of the fabrication yard of the pontoon bridges. August 2012

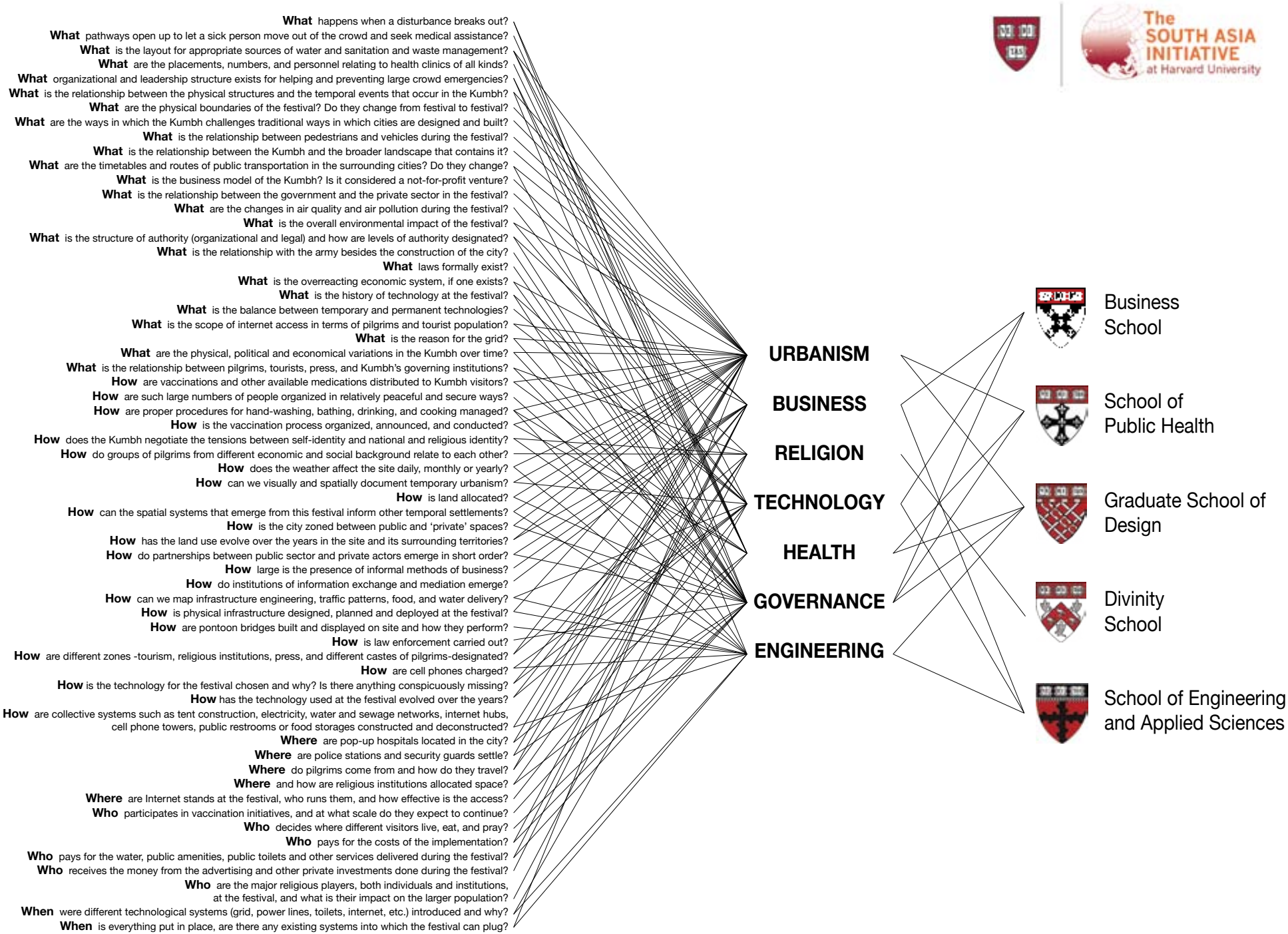
View of the fabrication yard of the pontoon bridges. August 2012

PERSPECTIVES

INTERDISCIPLINARY APPROACH

The project focuses its energies on visualizing and spatializing information that is gathered in looking at the various simultaneous processes occurring at the festival. Cartography, our chosen method of analysis, is a tool that can accommodate many types of data: material and immaterial, fixed and ephemeral, static and temporal, and so on. The micro- and macro-scale processes that occur at the Kumbh can be placed into a cartographic framework that both analyzes the information and suggests its potential uses in other sites in the future.

The research team intends to visit the Kumbh Mela site at Allahabad during the 2013 festival. These days would be spent recording the different layers of activity and interviewing as many attendees and organizers as possible. Scholars of the different disciplines will work together to collect both spatial and non-spatial information, to be assimilated into a large interdisciplinary publication later in 2013.

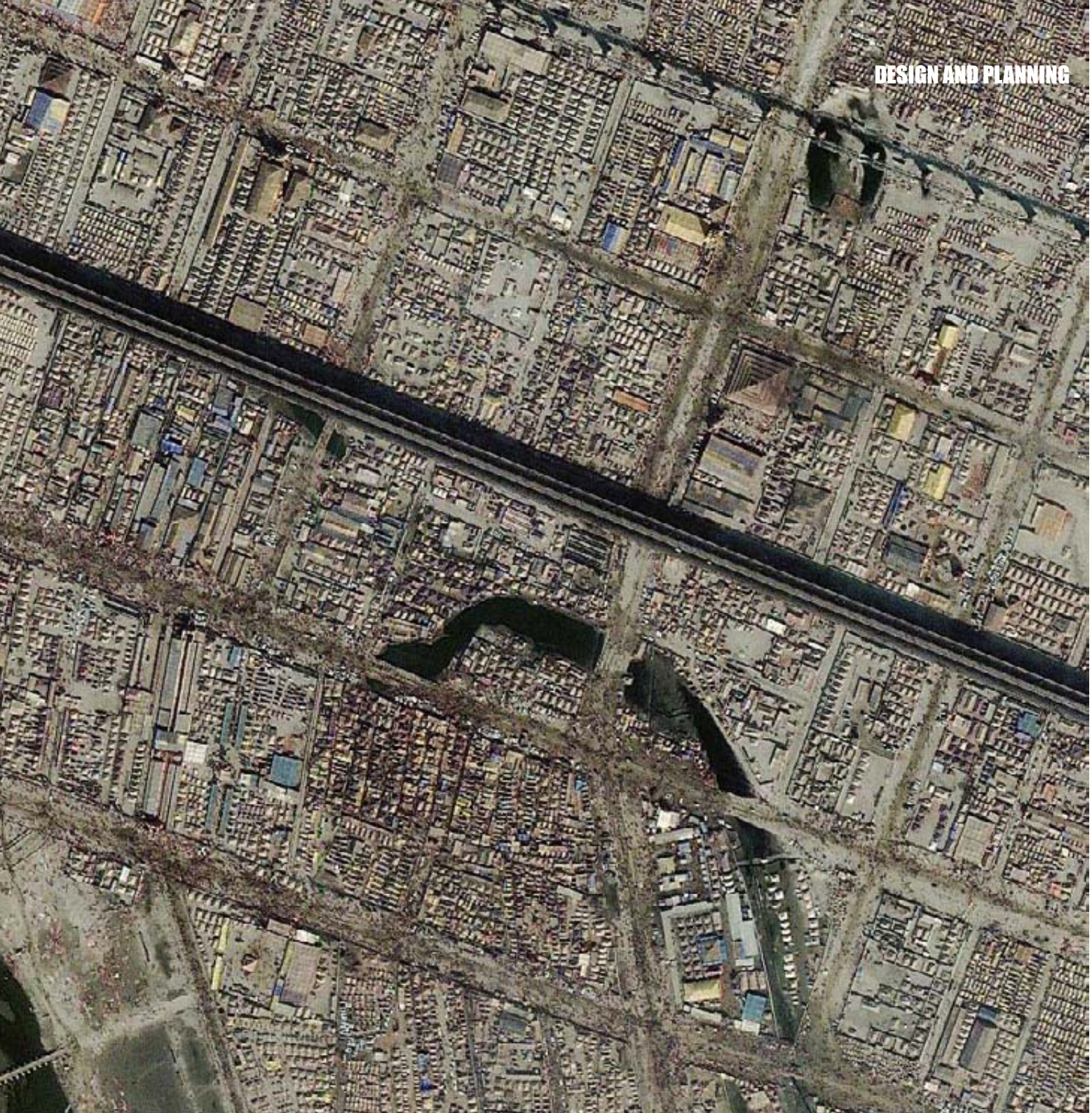

What happens when a disturbance breaks out?
What pathways open up to let a sick person move out of the crowd and seek medical assistance?
What is the layout for appropriate sources of water and sanitation and waste management?
What are the placements, numbers, and personnel relating to health clinics of all kinds?
What organizational and leadership structure exists for helping and preventing large crowd emergencies?
What is the relationship between the physical structures and the temporal events that occur in the Kumbh?
What are the physical boundaries of the festival? Do they change from festival to festival?
What are the ways in which the Kumbh challenges traditional ways in which cities are designed and built?
What is the relationship between pedestrians and vehicles during the festival?
What is the relationship between the Kumbh and the broader landscape that contains it?
What are the timetables and routes of public transportation in the surrounding cities? Do they change?
What is the business model of the Kumbh? Is it considered a not-for-profit venture?
What is the relationship between the government and the private sector in the festival?
What are the changes in air quality and air pollution during the festival?
What is the overall environmental impact of the festival?
What is the structure of authority (organizational and legal) and how are levels of authority designated?
What is the relationship with the army besides the construction of the city?
What laws formally exist?
What is the overreacting economic system, if one exists?
What is the history of technology at the festival?
What is the balance between temporary and permanent technologies?
What is the scope of internet access in terms of pilgrims and tourist population?
What is the reason for the grid?
What are the physical, political and economical variations in the Kumbh over time?
What is the relationship between pilgrims, tourists, press, and Kumbh's governing institutions?
How are vaccinations and other available medications distributed to Kumbh visitors?
How are such large numbers of people organized in relatively peaceful and secure ways?
How are proper procedures for hand-washing, bathing, drinking, and cooking managed?
How is the vaccination process organized, announced, and conducted?
How does the Kumbh negotiate the tensions between self-identity and national and religious identity?
How do groups of pilgrims from different economic and social background relate to each other?
How does the weather affect the site daily, monthly or yearly?
How can we visually and spatially document temporary urbanism?
How is land allocated?
How can the spatial systems that emerge from this festival inform other temporal settlements?
How is the city zoned between public and 'private' spaces?
How has the land use evolve over the years in the site and its surrounding territories?
How do partnerships between public sector and private actors emerge in short order?
How large is the presence of informal methods of business?
How do institutions of information exchange and mediation emerge?
How can we map infrastructure engineering, traffic patterns, food, and water delivery?
How is physical infrastructure designed, planned and deployed at the festival?
How are pontoon bridges built and displayed on site and how they perform?
How is law enforcement carried out?
How are different zones -tourism, religious institutions, press, and different castes of pilgrims-designated?
How are cell phones charged?
How is the technology for the festival chosen and why? Is there anything conspicuously missing?
How has the technology used at the festival evolved over the years?
How are collective systems such as tent construction, electricity, water and sewage networks, internet hubs, cell phone towers, public restrooms or food storages constructed and deconstructed?
Where are pop-up hospitals located in the city?
Where are police stations and security guards settle?
Where do pilgrims come from and how do they travel?
Where and how are religious institutions allocated space?
Where are Internet stands at the festival, who runs them, and how effective is the access?
Who participates in vaccination initiatives, and at what scale do they expect to continue?
Who decides where different visitors live, eat, and pray?
Who pays for the costs of the implementation?
Who pays for the water, public amenities, public toilets and other services delivered during the festival?
Who receives the money from the advertising and other private investments done during the festival?
Who are the major religious players, both individuals and institutions, at the festival, and what is their impact on the larger population?
When were different technological systems (grid, power lines, toilets, internet, etc.) introduced and why?
When is everything put in place, are there any existing systems into which the festival can plug?
URBANISM
BUSINESS
RELIGION
TECHNOLOGY
HEALTH
GOVERNANCE
ENGINEERING
Business School
School of Public Health
Graduate School of Design
Divinity School
School of Engineering and Applied Sciences

PUBLIC HEALTH

Where are pop-up hospitals located in the city? **I** How are vaccinations and other available medications distributed to Mela visitors? **I** Who participates in vaccination initiatives, and at what scale do they expect to continue? **I** How are such large numbers of people organized in relatively peaceful and secure ways? **I** What happens when a disturbance breaks out? **I** What pathways open up to let a sick person move out of the crowd and seek medical assistance? **I** Do people seem to sense when the crowds are getting dangerously dense? **I** What is the layout for appropriate sources of water and sanitation and waste management? **I** How are proper procedures for hand-washing, bathing, drinking, and cooking managed at the family or group level? **I** What are the placements, numbers, and personnel relating to health clinics of all kinds? **I** How is the vaccination process organized, announced, and conducted? **I** What organizational and leadership structure exists to help prevent and respond to large crowd emergencies (weather emergencies, stampedes or outbreaks of group violence, use of weapons)? **I** When and how food and medicine are distributed?

RELIGIOUS STUDIES

How do groups of pilgrims from different economic and social background relate to one another spatially? **I** Is there a stratification within the grid that separates types of pilgrims, and genders, from each other? **I** How does the Mela negotiate the tensions between self-identity and national and religious identity? **I** Who are the major religious players (both individuals and institutions) at the festival, and what is their impact on the larger population? **I** What are the differences in their relationships to pilgrims, tourists, the press, and the Mela's governing organizations? **I** What are the edges of sacred space? **I** Where do pilgrims come from and how do they travel? **I** Where and how are religious institutions allocated space?



How can we visually and spatially document temporary urbanism? **|** What is the relationship between the physical structure of the temporary city and the temporal events that occur there? **|** How is land allocated? **|** How does temporal or temporary urbanism challenge large and permanent, but often brittle, urban form? **|** How can the spatial systems that emerge from this study inform natural and political emergency situations (i.e., refugee camps)? **|** What are the physical boundaries of the festival, and do they change from festival to festival? **|** How is the city zoned between public and 'private' (residential) spaces? **|** How are the collective systems—tent construction, electricity, water, sewage management, internet, cell phone towers, public restrooms, food distribution, medical care, and crowd control, to name a few—spatially constructed and deconstructed? **|** What are the timetables and route maps of public transport in the surrounding city, and to what extent do they change for the festival? **|** What is the land use data over the course of multiple years for the site? **|** Can we relate the Kumbh to other similar models (temporary army camps and music festivals), or does it have a completely unique structure? **|** Is the transition between the festival use of land and the agricultural use of land conscious and well embedded in the cultivators imagination or is it a spontaneous action?

BUSINESS

What is the business model of the Kumbh Mela? **|** Is it considered a not-for-profit venture? **|** What role can private organizations (corporations and NGOs) play in in the development process in India, especially in the face of a 'dysfunctional state'? **|** Does the Kumbh Mela provide a clear framework for these relationships to unfold over the course of a few weeks, or is it a different model? **|** What is the balance between government involvement and the private sector in organizing, deploying, and managing the festival? **|** Is there a fixed partnership structure? **|** How do partnerships between public sector and private actors emerge in short order? **|** Are basic necessities like water supply subsidized by the state or federal government? **|** Is there a charge for the use of public amenities, like restrooms? **|** Is there an advertising or branding presence for the companies that are there (like internet vendors)? **|** How large is the presence of informal methods of business, including hawking and vending of consumables? **|** What is their governance structure? **|** Desired Cell Phone Information: Time of call; GPS or cell tower location from which call is made (longitude and latitude); duration of call; the city, province, or country the phone is registered to, and the original phone coverage provider; the area code or country code for the phone number from which the call is being made; the area code or country code for the phone number receiving the call

How can we map infrastructure engineering, traffic patterns, and food and water delivery? **I** What kinds of physical systems are in place for these? **I** How is physical infrastructure planned and deployed at the festival? **I** What are the changes in air quality and air pollution during the festival? **I** How might data like this be visualized with the tools available to engineering and design? **I** Does the religious nature of the Kumbh Mela completely determine how effectively people work together to deploy infrastructure? **I** Are the systems set up here only capable of lasting for the duration of the Mela, or can they be more permanent? **I** How does the pontoon bridge system, which carries millions of people in and out of the festival site in a short span of time, interact with both land and water? **I** How is it physically located in the river? **I** What are the overall environmental impacts of temporary infrastructures at the festival? **I** How to minimize the quantity of waste plastic bottles? **I** How to design for reuse then the installation, dismantling and repurposing of all of the pipes, latrines, pumps, and filters? **I** Who makes the initial investment in water and waste water infra and how is the money recaptured? **I** How are contingencies considered financially, for example does someone provide insurance against equipment damage or extra rain or not enough rain or a cholera outbreak?

GOVERNANCE

What is the structure of authority (organizational and legal) and how are levels of authority designated? **I** What is the interface with the Army? **I** Do they have an authoritative presence outside of the actual construction of the city? **I** How is law enforcement carried out? **I** Are there designated police? **I** What laws formally exist? How are different zones in the city—tourism, religious institutions, press, different castes of pilgrims—designated? **I** Who decides where different visitors live, eat, and pray? **I** What is the overreacting economic system, if one exists? **I** Is the festival comprehensive in this sense or is it a collection of micro-economies? **I** Do city planners or event planners have a presence at the festival?

TECHNOLOGY

What is the history of technology at the festival? **I** At what point were different technological systems (grid, power lines, toilets, internet, etc.) introduced and why? **I** Which technologies have the festival chosen to use and why? **I** Is there anything conspicuously missing? **I** What is the balance between temporary and permanent technologies? **I** Is everything put in place just for the festival, or are their existing systems into which the festival can plug? **I** Where are internet stands at the festival, who runs them, and how effective is the access? **I** How are cell phones charged? **I** Can the technologies and methods used at the festival give us clues about how temporary technologies can be used in cities outside the religious context? **I** Is there a way to incorporate the light technological footprint developed at the festival into already-established, and more rigid, urban environments? **I** What is the reason for the grid? **I** Can we construct a timeline of technology for the festival, perhaps back to the 19th century? **I** Which systems are consistent from one festival to the next, and which evolve? **I** Can we chart the evolution or stagnancy of these systems over time? **I** Does he festival function like an ecosystem, with stresses, stimuli, and flows? **I** What are these potential stresses and how to they affect the city? **I** What are the variations in the Mela over time (how has the city structure changed)?

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