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Water Management and Settlement Patterns in South India

from c. eleventh century to sixteenth century A.D.

A dissertation submitted in partial satisfaction of

the requirements for the degree Doctor of Philosophy

in Archaeology

by

Kanika Kalra

2016

ABSTRACT OF THE DISSERTATION

Water Management and Settlement Patterns in South India

from c. eleventh century to sixteenth century A.D.

by

Kanika Kalra

Doctor of Philosophy in Archaeology

University of California, Los Angeles, 2016

Professor Monica L. Smith, Chair

This study examines the relationship between water infrastructure, agricultural intensification, and political complexity in the Raichur region of southern India (or the Deccan) from the 11th – 16th centuries AD. In this period, regional political states expanded their territorial control and competed for strategically and economically valuable areas, such as the Raichur frontier. Using archaeological data, inscriptions, and other historical evidence, this inquiry demonstrates that the spread of state society into the frontier zone of Raichur did not by itself necessitate monumental investments in agricultural intensification. However, when these frontier zones were contested for economic and strategic reasons, local elites came to amass greater allegiance and control over resources that allowed them to construct and maintain hydraulic infrastructure. The use of archaeological data dismantles neat divisions of periodization and dynastic divides that often mark the study of early medieval and early modern South Asia, hitherto largely based on written

materials. Instead, it elucidates how regional powers depended on the capacity of local elites to control and extract critical resources such as agricultural surplus from frontier areas through their control over water resources.

The primary data for this dissertation were collected through a systematic surface survey at three places in the Raichur district: Gabbur, Maliabad, and Kalmala. Each of these places presents a different historical development from the eleventh to the sixteenth century. The combination of archaeological survey with study of epigraphic data and satellite imagery helped overcome issues of chronology and visibility in an ever-changing landscape, to reveal a narrative of uncertainty and contestation that remains invisible in court chronicles as well as inscriptions. The spatial distributions of different water technologies, when juxtaposed against epigraphic data, demonstrate the varying courses of agricultural intensification and political processes in the region. A landscape approach to archaeological remains allows this study to reveal the long life cycles and after-lives of reservoirs constructed in the Raichur frontier, and to explore how they affected and were affected by the regional politics of southern India.

The dissertation of Kanika Kalra is approved.

John K. Papadopoulos

Li Min

Sanjay Subrahmanyam

Monica L. Smith, Committee Chair

University of California, Los Angeles

2016

For

Sadhna Kalra

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List of Acronyms

ASI	Archaeological Survey of India
EIAPS	*Epigraphia Indica Arabic and Persian Supplement*
IAR	*Indian Archaeology – A Review*
IESHR	*Indian Economic and Social History Review*
IRKUH	*Inscriptions of Raichur District,* published by Kannada University Hampi
IK.IV	*Inscriptions of Karnataka* vol. IV, Raichur District

Legend for Database Appendix

Rel_Struc	Religious structure
Other_St.	Other Structure
Naga	Naga Stone
Hero	Hero Stone
Pitha	Pedestal on which idols are usually mounted
OtherIm.	Other images or images that may not necessarily be worshipped
Well/Cist.	A well or a cistern
(1/0)	Present (1) or absent (0)
Obj.	Object
Insc. Date	Date on the earliest inscription at that locus

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This dissertation would not have seen the light of day had it not been for the countless people I have depended upon for support, encouragement, help, generosity, and love over the last seven years and more.

First and foremost, I thank Prof. Monica L. Smith, the chair of my doctoral committee, for seven years of unstinting support and motivation. I am especially grateful to her for her critical guidance during my doctoral research, for helping me during my very first days in LA, and for traveling with me in the Deccan when I was still finalizing my area of research. My other committee members have not only provided constructive feedback during the course of my research and writing, but have strongly influenced my development throughout my graduate studies. Prof. John K. Papadopoulos reaffirmed my interest in historical archaeology through an inspiring course on archaeology of colonialism. Prof. Li Min always welcomed discussion of landscape archaeology, and these conversations have provided the methodological foundation of my doctoral research. Prof. Sanjay Subrahmanyam's classes helped me rethink issues of historical methods and historiography. He also pointed out many relevant readings and fielded all my queries regarding the Deccan with such patience. I would also like to thank Prof. Robert Brown for his help and encouragement in the formation of my dissertation proposal, and Prof. Alka Patel (UCI) for discussing the proposal in its nascent stage. I am grateful to other faculty at the Cotsen Institute of Archaeology (UCLA) for sharing their time, knowledge, and space with me.

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Chapter 1: Introduction

In this dissertation I investigate the relationship between political formations and water management systems in medieval peninsular India. Moving away from major political centers, I focus on an area called the Raichur *doab* that lay on the fringes of medieval polities. Through the archaeology of landscape, combined with epigraphic evidence, I study trends in water management and settlement patterns in this area. I challenge the assertion that large-scale political investment was necessary for agricultural intensification and water management by examining areas at the fringes of large political entities.

In this introductory chapter I first introduce the area of research, followed by the research questions, and chapter organization for the rest of the dissertation.

Area of Research—Geography and Topography

This dissertation focuses on a key region in peninsular India, in the north-eastern part of the modern state of Karnataka. The peninsula is demarcated from north India by the Vindhya and the Satpura hill ranges in central India. Of the three geographic components of peninsular India—eastern coast, western coast, and Deccan plateau. Within this broad region, I study the Raichur district, located between two rivers, Krishna and Tungabhadra to the north and south respectively. These rivers have now reached their base-levels, i.e. the last stage of river development, and thus they do not change their courses drastically. They have low water carrying capacity and flow momentum. The Raichur district receives about 70% of its annual precipitation averaging to 601.6 mm during the monsoons, i.e. a span of three months[1]. The short rainy season places high incentive on conserving surface run-off from the monsoons.

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[1] B.N. Sri Sathyan, *Raichur District Gazetteer*. Bangalore: Karnataka State Government Press, 1970, 20; *Climatological Atlas of India* 1981.

Geologically, the plateau is primarily made of igneous material and Proterozoic granite deposits, arranged horizontally in layers. It is abundant in basalt and granite. The *doab* areas, situated between two rivers, in the Deccan are rich in alluvium deposits. Raichur *doab* and Shorapur *doab* in northern Karnataka have been historically important regions of the Deccan. Besides being suitable for agriculture, they have some gold and diamond deposits as well.

In the southern Deccan, I have chosen to focus on the Raichur district because it is located in a semi-arid zone where artificial irrigation is necessary both for sustaining agriculture and human settlements. More importantly, Raichur formed a frontier area between prominent states of medieval India and an investigation into the political economy of water here provides insight into the political processes unfolding in the region between the 11th and 16th centuries AD. I rely primarily on archaeological surface survey data collected from three distinct places in the Raichur region—Gabbur, Kalmala, and Maliabad—that are indicative of the diversity of archaeological sites and trajectories of change in the region. Gabbur is a walled settlement in the Devadurg taluk; Maliabad with its concentric twin fortifications sits immediately south of Raichur city, while Kalmala is located south of Gabbur and west of Raichur city. Both Maliabad and Kalmala are located in the Raichur taluk.

Brief Historical Background

The first evidence of agricultural activity in the Deccan dating to ca. 2300 BC is noted in the form of Neolithic sites and ash-mounds in the archaeological landscape of Karnataka and

Andhra Pradesh.[2] Both texts and material remains are used by historians to study the subsequent early historical period in the Indian subcontinent. The presence of Ashokan rock edicts, dating to ca. 3rd century BC, have been interpreted to indicate that the region came under the influence of powerful polities located in the northern plains, such as the Mauryas, who brought a large territory under one political entity.[3] People practiced agriculture and non-agrarian occupations such as sculpting, trading, and manufacture of commercial goods. They lived in both rural areas and in cities, although the archaeology of early historic India has favored investigating cities over rural areas. The economy was monetized, indicated by numismatic, art historical, and textual evidence. One can also argue for religious eclecticism during this period with a number of popular religious and philosophical orders emerging in addition to Brahmanism of the earlier period, such as Buddhism and Jainism.

In the period from ca. 200 BC to ca. 300 AD, the Satavahanas came to rule over most of the Deccan region, while the Shakas, Shungas, and Kushanas ruled over different areas in

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[2] Southern Neolithic of India is of archaeological significance for at least two reasons. One, it is a key element in the debate and discussion over earliest plant domestication in South Asia. Two, the Neolithic societies in south India present a range of complex socio-cultural behavior that we are only beginning to understand. Scientific inquiries into palaebotanical remains of these socities suggest independent domestication of millets and pulses in south India before circa 2300 B.C. For more on southern Neolithic and the realted Ashmound culture, see: Dorian Fuller, "Agricultural Origins and Frontiers in South Asia: A Working Hypothesis", *Journal of World Prehistory* 20 (2006): 1-86; Dorian Fuller, Nicole Boivin, and Ravi Korisettar, "Dating the Neolithic of South India: new radiometric evidence for key economic, social and ritual transformations", *Antiquity*, 81(2007): 755-778; K. Paddayya, "The Ashmounds of South India: Fresh evidence and possible implications", *Bulletin of the Deccan College Research Institute* 51/52 (1991): 573-626. http://www.jstor.org/stable/42930442; K. Paddayya, *Investigations into the Neolithic Culture of the Shorapur Doab, South India* (Leiden: Brill, 1973).

[3] Hisotrical and archaeological research challenges the idea of a centralized Mauryan Empire. For more on recent research on Mauryan polity, see: Monica L. Smith, "Networks, territories, and the cartography of ancient states", *Annals of the Association of American Geographers* 95, no. 4 (2005): 832-849; Monica L. Smith et. al., "Finding history: the locational geography of Ashokan inscriptions in the Indian subcontinent", *Antiquity* 90, no. 350 (2016): 376-392; Nayanjot Lahiri, "Revisiting the cultural landscape of Junagadh in the time of the Mauryas", *Puratattva* 41 (2011): 114-30; Namita Sugandhi, "Between the patterns of history: Rethinking Mauryan imperial interaction in the southern Deccan", (Ph.D. diss., University of Chicago, 2008).

western and northern India.[4] The money economy expanded and so did trading activity, both in-

land and long distance. It involved movement of goods and people over both land and water.

Private donations to religious institutions and individuals increased, but there still were a large

number of donations or gifts made by members of the royal family and the ruling classes. The

Satavahanas were the first to donate land with tax exemptions.[5] This trend was popularized by

the Vakatakas[6], who ruled the region after the decline of the Satavahanas, from ca. mid-3rd

century AD to ca. mid-5th/6th century AD. During roughly the same time period, the Guptas

exercised control over much of north India[7], while there were a number of other smaller polities

in the Deccan and in the far south that entered into feudatory alliances for specific political and

strategic reasons.

The medieval period in India begins from ca. 500 AD with the disintegration of the Gupta

Empire and lasted until ca. 1500 AD.[8] Politically, the Gupta Empire in the north and the

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[4] For archaeological studies on early historic India, see: Frank R. Allchin et. al., *The archaeology of early historic South Asia: the emergence of cities and states*, (Cambridge: Cambridge University Press, 1995); Shinu Abraham, "Chera, Chola, Pandya: Using archaeological evidence to identify the Tamil kingdoms of early historic South India", *Asian Perspectives* 42, no. 2 (2003): 207-223; Monica L. Smith, "The role of local trade networks in the Indian subcontinent during the Early Historic period", *Man and Environment* 27, no. 1 (2002): 139-151; Monica L. Smith, "Archaeological research at Sisupalgarh, an Early Historic city in eastern India", *South Asian Archaeology* (2003): 297-306.

[5] For more on Satavahanas, see: Carla Sinopoli, "On the edge of empire: Form and substance in the Satavahana dynasty", in *Empires: Perspectives from archaeology and history*, eds. Susan E. Alcock et. al. (Cambridge: Cambridge University Press, 2001),155-178; Vasudev V. Mirashi, *The History and Inscriptions of the Sātavāhanas and the Western Kshatrapas*. (Bombay: Maharashtra State Board for Literature and Culture, 1981). For a broader history of the Deccan, see Ghulam Yazdani, ed., *The Early History of the Deccan*. (London: Oxford University Press, 1960).

[6] See, Krishna M. Shrimali, *Agrarian Structure in Central India and the Northern Deccan, C. Ad 300-500: A Study of Vākāṭaka Inscriptions*. (New Delhi: Munshiram Manoharlal Publishers, 1987.)

[7] For more on Guptas, see: Radhakumud Mookerji, *The Gupta Empire*. (Delhi: Motilal Banarsidass, 1969.); Manabendu Banerjee, *Historical and social interpretations of the Gupta inscriptions*. (Calcutta: Sanskrit Pustak Bhandar, 1989.); Jeannine Auboyer, *Daily Life in Ancient India, from 200 BC to 700 AD* (New York: Macmillan, 1965.)

[8] Catherine B. Asher and Cynthia Talbot. *India Before Europe* (Cambridge: Cambridge University Press, 2006), 4. Chapter 4 of this dissertation discusses issues with this periodization in greater detail.

Vakataka kingdom in peninsular India were succeeded by various regional polities and dynasties all across the Indian sub-continent. Most of these regional dynasties were hitherto feudatories under the larger monarchies of the previous era. The prominent polities in India from the seventh century to the thirteenth century AD were the Rashtrakutas, Palas, the Chalukya, Cholas, Pallavas, the Pratiharas, Rajputs, Cheras, and Pandyas. The regional polities engaged in constant inter-regional warfare to control intermediate regions, but within their areas they were politically stable. This period, from ca. 6th century to 12/13th century AD is identified as the early medieval period of Indian history.
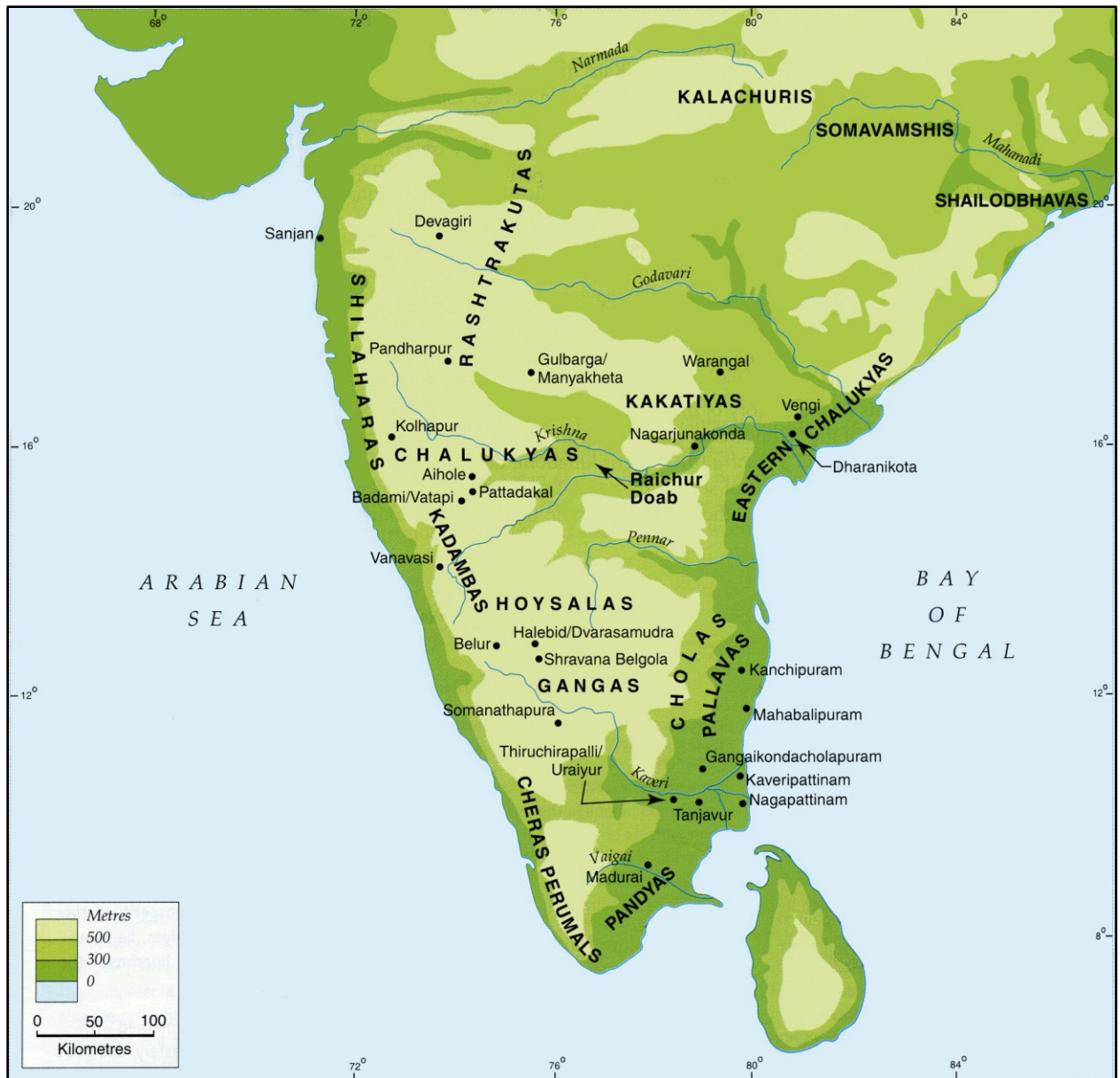
Fig. 1-1: Polities between 700-1300 AD century Peninsular India (after Singh 2008)

By the 13th century AD, the beginning of the late medieval period, once again polities with large territorial extent emerge in the Deccan and in other parts of the subcontinent. The rulers of the Delhi Sultanate, of Turkic origin, established their political supremacy in northern

India by the beginning of the 13th century[9]. The Sultans of Delhi practiced Islam and brought with them the Islamicate culture[10] that contributed to Indian culture, and was in-turn transformed by interactions with the Indic cultures. This hybrid Islamicate culture flourished in India under royal patronage for about eight centuries. Some of the significant contemporary polities in southern India, around the time Delhi Sultanate was established, were the Hoysalas (10th -14th cent. AD, Karnataka), Kakatiyas (12th -14th cent. AD, Andhra region), Yadavas or Seunas of Devagiri (11th -14th cent. AD, Maharashtra and Karnataka), the Vijayanagara (14th -17th cent. AD, Karnataka, Andhra, Tamil Nadu, and parts of Kerala), and the Bahmani Empire (14th -16th cent. AD, Maharashtra, Andhra, Karnataka).[11]

The historical narrative of South India from circa fifteenth century is dominated by the rivalry between the two neighboring Vijayanagara and Bahmani states (and later its successor states) over the Raichur region lying between the rivers Krishna and Tungabhadra. The Bahmani Sultanate declined by late fifteenth century, giving rise to five independent sultanates of the Deccan: the Adil Shahis of Bijapur (c. 1490-1686), the Barid Shahis of Bidar (c. 1490-1619), the Qutub Shahis of Golkonda (c. 1495-1687), the Ahmad Shahis of Ahmadnagar (c. 1490-1636), and the Imad Shahis of Berar (ca. 1490-1574). While the Deccan Sultanates competed among

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[9] See Sunil Kumar, *The Emergence of the Delhi Sultanate, 1192-1286* (Delhi: Permanent Black, 2007); Simon Digby, "Before Timur Came: Provincialization of the Delhi Sultanate through the Fourteenth Century", *Journal of the Economic and Social History of the Orient*, Vol. 47, No. 3, Between the Flux and Facts of Indian History: Papers in Honor of Dirk Kolff (2004): 298-356.

[10] Marshall Hodgson, "Introduction to the Study of Islamic Civilization chapter", *The Venture of Islam, Volume 1: The classical age of Islam* (Chicago: Chicago University Press, 1977), 3-70.

[11] For Hoysalas see, R. Gopal, *Cultural study of Hoysaḷa inscriptions* (Mysore: Directorate of Archaeology and Museums, Government of Karnataka, 2000), and S. Settar, *The Hoysaḷa Temples*. Vols. 1&2. Bangalore: Kala Yatra Publications, 1992. On Kakatiyas see, Cynthia Talbot, *Precolonial India in Practice: Society, Religion, and Identity in Medieval Andhra* (Oxford, New York: Oxford University Press, 2001). See Shrinivas Ritti, *The Seuna: The Yadavas of Devagiri,* (Dharwar: Karnataka University, 1973). For an overview of the history of the Bahmanis, see H.K. Sherwani, *The Bahmanis of the Deccan*, 2nd Edition (Delhi: Munshiram Manoharlal, 1985). For general history of the Vijanagara empire, see Burton Stein, *The New Cambridge History of India: Vijayanagara*.Part 1 Vol. 2 (Cambridge: Cambridge University Press, 1989).

themselves, they entered in an alliance in the middle of the 16th century to defeat the

Vijayanagara Empire at the so-called 'Battle of Talikota'[12]. The 16th century marked a period of

flux in northern India as well, where Babur established the Mughal dynasty over Delhi and large

parts of northern India after overthrowing the Lodhi rulers of the Delhi Sultanate.
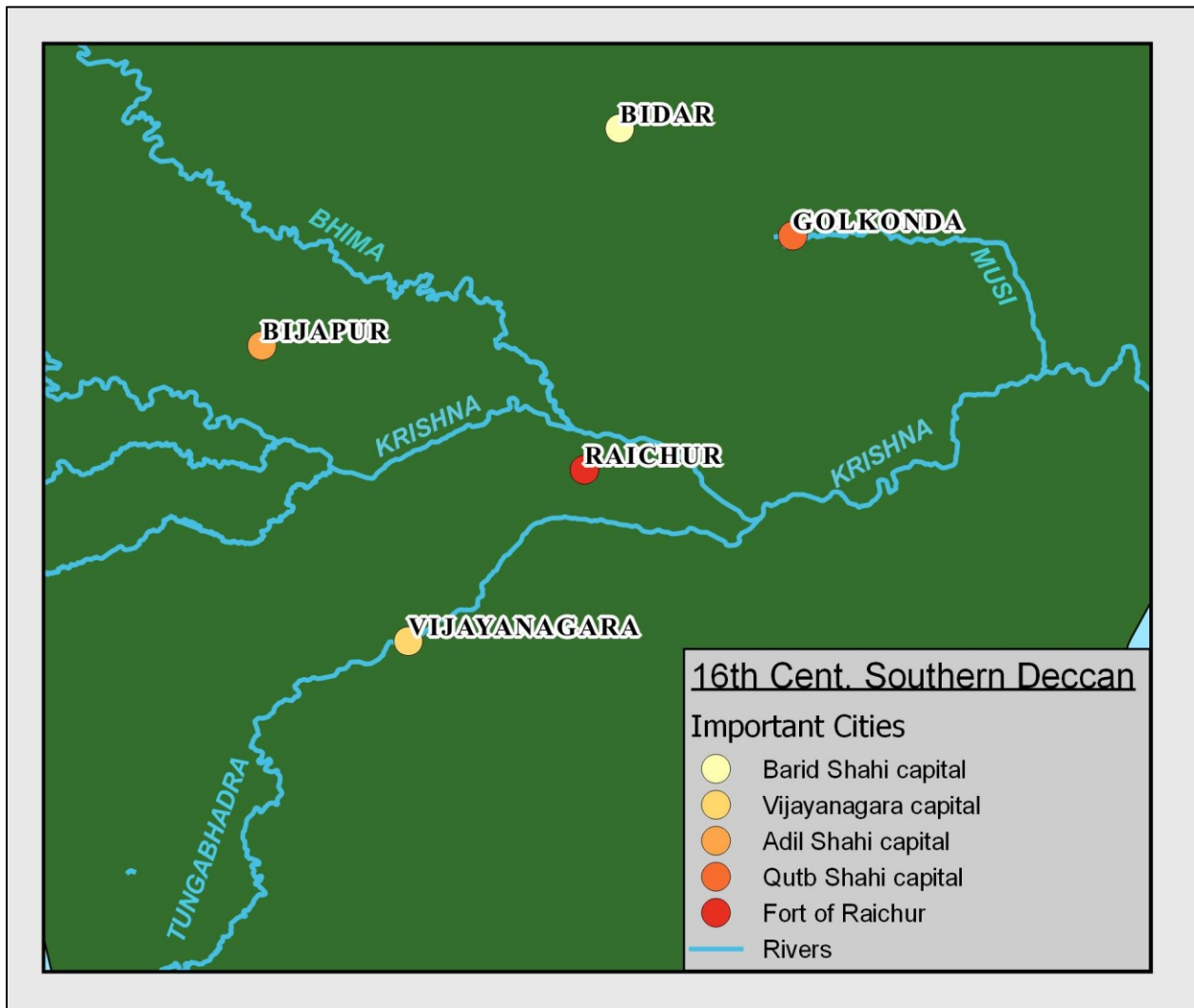
Fig. 1-2: Raichur fort city in the Raichur *doab* and the capital cities of 16th century southern Deccan.

Much like the beginning of the medieval period, scholars have held different views about

when the medieval period ends, although there is growing consensus that there is a discernible

change in aspects of economic, political, and social life in India from at least the sixteenth

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[12] The battle was fought south of Talikota and the Krishna River at a place called Banihatti.

century, perhaps a pattern noticed at a global scale identified with the early modern period.[13] As will be discussed in Chapter 4, issues of periodization of Indian history, especially the medieval period, affect archaeological research and methods in India.

Research Question and methods

Among the many changes that took place in early medieval and late medieval India were changes in agricultural practices that had a far-reaching impact on the economy, polity, and society of those times. Inscriptions of early medieval period suggest a process of agricultural expansion through irrigation technology, rather than intensification proper. However, the process of agricultural intensification *can* include expansion as a component strategy.[14] Most writings on medieval (early and late) period agricultural change rely primarily on texts and inscriptions and only secondarily use archaeological data.[15]

Inscriptions represent an immensely useful set of evidence, especially for early and late medieval India. They help date structures and features, and record some of those events in the past that leave a weak archaeological signature. However, most inscriptions by their very nature are generated to record specific events for highlighting certain individuals and their specific actions. Both texts and inscriptions are crafted for an audience with specific purposes that may

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[13] See, John F. Richards, "Early modern India and world history", *Journal of World History* 8, no. 2 (1997): 197-209; Sanjay Subrahmanyam and C.A. Bayly, "Portfolio capitalists and the political economy of early modern India", *Indian Economic and Social History Review* 25, no. 4 (1988): 401-424; and Sanjay Subrahmanyam, *Penumbral Visions: Making Polities in Early Modern South India* (Ann Arbor: University of Michigan Press, 2001).

[14] Katheleen D. Morrison, "Intensification of production: Archaeological approaches", 142, *Journal of Archaeological Method and Theory* 1, no. 2 (1994).

[15] For example see: Harbans Mukhia, "Peasant production and medieval Indian society", *The Journal of Peasant Studies* 12, no. 2-3 (1985): 228-251; and B.D. Chattopadhyaya, "Irrigation in early medieval Rajasthan." *Journal of the Economic and Social History of the Orient* (1973): 298-316. Contrast from: Kathleen Morrison, *Fields of Victory: Vijayanagara and the Course of Intensification* (Berkeley: University of California, 1995).

not necessarily be made explicit in the sources themselves. By complementing insights from inscriptions with with those from other sources, including texts, numismatics, and archaeology, can expand the interpretive potential of each of these sources.

In this dissertation I rely primarily on archaeological surface survey data, juxtaposed with epigraphic information and remote sensing to understand the political economy of water in a frontier area of medieval South India. I specifically look into water management and agricultural intensification in the context of changing political complexity of early medieval India, to reflect on local historical processes. In so doing, I also investigate the use-life and after-life of these structures and the landscape in which they are embedded and the impact of battles and wars on the construction, use, maintenance, and destruction of irrigations systems. More broadly I hope to demonstrate that a multi-source approach is especially useful in studying a period that is rich in a variety of materials, is identified with marking a new phase of history, and has hitherto been understood primarily through inscriptions and secondarily through texts.

Organization of chapters

Chapter 2 introduces the theoretical theme of political economy of water that frames the specific research questions in a broader anthropological context. Chapter 3 lays out the methods of landscape archaeology and historical archaeology that I follow to record and study the surface remains at the three places selected for intensive systematic survey. Chapter 4 discusses the current historiography of medieval India and what it has meant in archaeological studies. This chapter also presents the challenges in trying to compare and contrast archaeological data from different sites and regions. Chapters 5, 6, and 7 discuss the archaeological data recorded at Gabbur, Maliabad, and Kalmala respectively. Chapter 8 considers archaeological and epigraphic evidence from all the three places to answer specific research questions.

Chapter 2: Political Economy of Water: the theoretical underpinnings of this research

Water can be and has been studied in a wide range of disciplines that exemplify the many issues that be analyzed and problematized through an investigation into the political, economic, social, and environmental (and such) aspects of water. This chapter reviews some of the theories on managing water that are pertinent to investigating its political economy. It includes a discussion of theories utilized in interdisciplinary research on water or related themes, such as agricultural practices, expansion, and intensification, sustainability and resilience issues, that can help conceptualize these themes for past societies.

About 70% of the Earth's surface is covered with water, but only 2.5% of the total volume of water on Earth is freshwater and is fit for human, animal, and plant consumption.[16] Most of the freshwater on Earth, around 70%, is in the form of ice or snow cover, while freshwater lakes and river account for 0.3% of Earth's freshwater. According to the United Nations Environment Programme, "the total usable freshwater supply for ecosystem and humans is less than 1% of all the freshwater resources". These statistics underline the fact that water (fit for consumption) is a finite resource and one that is not found at all the places on the earth. In addition to freshwater lakes and rivers, rainfall is another major source of freshwater. Water is critical to most, if not all, life-forms on Earth. Most nutrients are soluble in water and therefore adequate amounts of water are needed for humans, animals, and plants for nourishment.

The most significant property of water that impacts its utilization by people is its ability to flow. Water can flow from one location to another depending on the slope or the gradient of the landscape, under the influence of gravity. This allows people to construct mechanisms to transport water from higher areas to lower areas, even if these lower areas are at a considerable

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[16] www.unwater.org/statistics_res.html accessed on July 12 2013.

distance from the river or lakes. In certain situations where water had to be transported from a low-lying area to a high one, people devised instruments to lift water. In much of the world, prior to the advent of the electricity and motors, gravity was the only way water could be transported to areas away from the sources of water, where societies could settle and flourish.

People use naturally flowing and occurring water for all sorts of purposes such as drinking, washing, bathing, at streams, or river-banks, or ponds and lakes. Subsurface water utilization requires knowledge of the availability of subsurface water and then investing in digging a well. Other than dry farming, rainfed agriculture, and seasonal farming on river floodplains, artificial irrigation has been significant to agricultural societies in the past and today. Whether it is done by constructing canals from streams, rivers, reservoirs, or wells, or by constructing earthen fearures that either enhance the water retention capacity or drainage of the fields, such as terraces, embankments, raised fields, or causeways, most forms of large-scale irrigation systems require collective action or high labor costs. It is the nature of this collective action and its relationship with political power that scholars studying irrigation and agricultrural practices (both in the past and the present) debate and theorize about. In the following section, I review some of the important works that address the irrigation—agricultural intensification or irrigation—political power nexus.

Certain concepts are often used in anthropological studies of irrigation and therefore these must be defined clearly to avoid incongruence between arguments built on these concepts. There is more to irrigation than just hydraulic engineering. William Kelly[17] explicated the many components of what constitutes an 'irrigation system', and what kind of analysis can these

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[17] William W. Kelly, "Concepts in Anthropological Study of Irrigation", *American Anthropologist* 85, No. 4, (1983): 880-886.

constituents be subjected to in an anthropological study. He argued that analyzing an irrigation system can be misleading because it consists of hydrological, physical, and social units of irrigation that must be treated as discrete analytical units. The first refers to the natural water flow patterns, the second to the network of infrastructure or facilities and environmental modifications, and the last to the organizational configuration of irrigation roles. Of the four phases of irrigation, Kelly asserts that water delivery had been at the center of inquiry whereas other equally significant phases, that include water source control, water use, and water drainage were marginal points of inquiry. An irrigation infrastructure requires social organization to accomplish key tasks such as construction, maintenance, operation, water allocation and conflict resolution, all of which ought to be investigated. At a fundamental level Kelly questioned using the stochasticity of environmental conditions, such as aridity, as the prime cause of how irrigation is organized in a society. It is an argument against environmental determinism and in favor of understanding irrigation organization as "a social expression of culturally defined water resource needs and characteristics."[18]

In addition to the above issues, irrigation studies often focus on the relationship between irrigation and political power through terms such as 'centralization' or 'decentralization'. About a decade and a half before Kelly's article was published, that did not propound any causal relationship between irrigation organization and political centralization, an incredibly impactful and politically charged work of Karl Wittfogel was published in 1957.[19] Wittfogel's treatise *Oriental Despotism: A Comparative Study of Total Power* argued for a strong positive correlation between large-scale irrigation infrastructure and despotic states. He identified the

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[18] Kelly, "Concepts in Anthropological Study of Irrigation," 885.

[19] Karl Wittfogel, *Oriental Despotism: A Comparative Study of Total Power* (New Haven: Yale University Press, 1957).

managerial requirements of large-scale irrigation infrastructure with the development of political complexity, and more specifically, with despotic states.

Wittfogel was a Marxist until the Nazi-Soviet Non-Aggression Pact of 193l. He was disillusioned by the authoritarian regimes in Stalinist Russia and Maoist China that hoped to overthrow despotism of monarchies but instead brought about a new form of despotism. In his quest to explain the cause of despotism in the 'Orient' as distinctly more comprehensive and oppressive than its Western counterpart, he propounded the concept of a 'hydraulic state'. He argued that the basis of 'Oriental despotism' in non-Western regions, such as China, India, and Egypt, was the state's monopolized control over and administration of large-scale irrigation and flood-control mechanisms.

At the beginning of the narrative itself Wittfogel points out the unique nature of water as one of the factors affecting agriculture. Temperature was seen as a constant and the surface or landscape relief, more or less a constant in pre-gunpowder days. At the other end of this spectrum were soil and vegetation, two variables that could be altered by human action that did not necessarily require group action. Water, with its specific properties could be placed somewhere in the middle of the spectrum. People can easily impact water by their actions, but water by nature is prone to movement and therefore requires specific techniques to manage it. It can be moved using the force of gravity but this technical task demands heavy labor input.[20]

Scale was an important variable in the equation Wittfogel was proposing although he does not propose a practical way to distinguish between the different scales. He argued, nevertheless, that the construction of large-scale irrigation works required totalitarian power of the state to organize and coerce labor. He stressed the distinction between hydroagriculture, or a

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[20] Wittfogel, *Oriental Despotism*, 13-15.

farming economy dependent on small-scale irrigation versus one that requires large-scale irrigation or flood control mechanisms managed by the state, which can aptly be called agrobureaucratic or agromanagerial. Additionally, large-scale irrigation works were deemed to play a significant role in agricultural intensification in 'water-deficient landscapes'.[21] Kelly on the other hand, warned against taking natural condition, such as water deficiency, as the prime factor for organizing irrigation. For Wittfogel, however, a state that made such intensification possible, characterized by agromanagerial and agrobureaucratic qualities, could be called a 'hydraulic state', interchangeable with 'Oriental despotism'.[22]

In addition to emphasizing the historical depth of Wiffogel's essential concept, the title *Oriental Despotism* seemed apt because most of the societies that Wittfogel identified as being hydraulic were located in what was broadly understood as the 'Orient'. Interestingly, what may appear to be a rather simplistic central argument harbors in its long and complex explanations a history of mid-20th century politics and history writing.

In the 1950s, anthropologist Julian Steward, heavily influenced by Wittfogel's ideas, also argued for a deterministic and causal relationship between large-scale irrigation systems and the emergence of complex political organization.[23] These ideas are referred to as the 'Hydraulic Hypothesis' because they portray irrigation as the prime mover of historical and political development. Anthropological and archaeological research in more recent times, however, does not hold the Hydraulic Hypothesis in a favorable light, however, scholarly response to this theoretical framework is far from being united.

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[21] Wittfogel, *Oriental Despotism*, 12.

[22] Wittfogel, Oriental Despotism, 3.

[23] Julian H. Steward, ed., *Irrigation Civilizations: A Comparative Study; A symposium on method and result in cross-cultural regularities* (Washington: Department of Cultural Affairs, Pan American Union, 1955).

Without addressing Wittfogel's thesis directly, William Kelly argues for a distinction between 'the internal configuration of authority among the various irrigation roles' and 'the external relationship of these irrigation roles to those in other social systems, most notably the general political system (the state)'.[24] For instance, irrigation tasks can be configured hierarchically and authority can be concentrated, and yet be devoid of elite control. To indicate control over irrigation by political, economic, or social elites, Kelly proposed to use the terms "articulation/autonomy" in place of centralization that indicates hierarchy and centralization within the internal roles and tasks of irrigation. Kelly's emphasis on clearly defining concepts used in anthropological study of irrigation has found acceptance and adaption in later research on the subject. While the main challenge of framing and answering archaeological questions through Kelly's methodological contribution lies in the fleeting and evasive nature of the evidence itself, it can be useful to consider the impact of both physical and cultural actions at the multiple phases of irrigation in their material manifestation.

Some anthropologists and archaeologists argue that Wittfogel was correct in pointing out the nexus between irrigation systems and the centralized state, even though he may have been incorrect about the specifics of this relationship.[25] Jonathan Mabry (2000) argues that ethnological data support Wittfogel's basic contention that only hierarchical administrative institutions can manage large-scale irrigation systems, an argument that would explain why extensive irrigation systems were coterminous with other signs of increasing cultural

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[24] Kelly, "Concepts in Anthropological Study of Irrigation," 881-83.

[25] For examples, Jonathan Mabry, "Wittfogel was half right: The ethnology of consensual and nonconsensual hierarchies in irrigation management," in *Hierarchies in Action: Cui Bono?*, ed. M.W. Diehl (Carbondale, Illinois: Southern Illinois University, 2000), 284-294.; and Charles Stanish, "The Hydraulic Hypothesis Revisited: Lake Titicaca Basin Raised Fields in Theoretical Perspective," *Latin American Antiquity* 5, no. 4 (1994) :312-332.

complexities in 'all independent cradles of civilization'.[26] However, Mabry accepts that Wittfogel was wrong in assuming the inevitable evolution of authoritarianism. Clarifying on the issue of scale, Mabry adds that cross-cultural comparisons indicate that the scalar stress in irrigation organization is related to the number of irrigators that require coordination; the scalar stress is not a function of the absolute scale of the system or the total population supported by the system. This stress can be alleviated by either consensual or non-consensual managerial hierarchies. He pointed out, though, that consensual hierarchies are more likely to succeed and survive longer because of better costs and benefits between different levels.[27]

Empirical research on the theme of managing water and the often related phenomenon of agricultural intensification help refine the broad ideas Wittfogel introduced by bringing out the local, as opposed to global, characteristics of irrigation and agricultural works. For instance, Charles Stanish surveyed the Lake Titicaca Basin in southern Peru to identify settlement patterns and demographic trends in relation to raised-field farms.[28] His findings, complemented by Clark Erickson's dating of the raised-fields[29], indicate that these fields were constructed *prior* to the emergence of strong centralized polities in the region. For Erickson, this is evidence that these raised-fields were constructed at the household level and did not involve large-scale labor mobilization and management. In stark contrast to Erickson's argument, Stanish asserts that when complex leadership developed, the elites provided incentives or coerced village-level farmers to use the existing technology and increase production above the household level

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[26] Mabry, "Wittfogel was half right", 289.

[27] Mabry, "Wittfogel was half right", 290-94.

[28] Stanish, "The Hydraulic Hypothesis Revisited".

[29] Clark Erickson, "The Dating of Raised-Field Agriculture in the Lake Titicaca Basin, Peru",in *Pre-hispanic Agricultural Fields in the Andean Region*, Part 1, eds. William M. Denevan et. al. (Oxford: British Archaeological Reports Publishing, 1987), 373-384.

characterized by relatively low-risk, low labor-input strategies. The increased surplus supported

the non-producing elite class. Stanish, therefore, argues that there *is* a causal relationship

between complex political organization and labor-intensive raised-field systems.[30] But the

dynamics of this relationship are different from that proposed by Wittfogel—leaders later take

over rather than create irrigation. Stanish considers "political complexity and intensive

agriculture [to] *co-vary*," in archaeological contexts that are characterized by relatively long time

frames.[31] Similarly, processes were observed in Yemen by Michael Harrower who argued that

irrigation enabled elites in ancient Yemen to claim ideological credit for managing irrigation

systems.[32] Although Harrower stressed that "large-scale systems were not agriculturally

necessary to provision ...states" since small-scale irrigation would have been sufficient to sustain

large populations, he identifies irrigation as a "source of social magnetism that maintained and

justified the economic disparities and religiosity that sustained Southwest Arabian states."[33]

       There is a significant amount of scholarship that has responded more critically to

Wittfogel's hypothesis. On studying terrace farming and water management in Bali, an example

Wittfogel cited as a hydraulic state, J. Stephen Lansing[34] presented an argument diametrically

opposite of Wittfogel's. Lansing argued that Bali was not a highly centralized state and that the

extensive irrigation system was not controlled by political elites, which means that the top-down,

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[30] Stanish, "The Hydraulic Hypothesis Revisited", 312.

[31] Stanish, "The Hydraulic Hypothesis Revisited", 313.

[32] Michael Harrower, "Is the hydraulic hypothesis dead yet? Irrigation and social change in ancient Yemen," *World Archaeology* 41, no. 1, (2009): 58-72.

[33] Harrower, "Is the hydraulic hypothesis dead yet?", 66-67. For a more detailed discussion on Yemen see Michael Harrower, *Water Histories and Spatial Archaeology: Ancient Yemen and the American West* (New York: Cambridge University Press, 2016).

[34] J. Stephen Lansing, "Balinese "Water Temples" and the Management of Irrigation", *American Anthropologist* 89, no. 2 (1987): 326-41; J. Stephen Lansing, *Priests and Programmers: Technologies of Power in the Engineered Landscape of Bali* (Princeton: Princeton University Press, 1991).

hierarchical modes of production did not apply to the Balinese economy. In fact, he argued, the engineering structure of the irrigation systems itself necessitated hydrological interdependency among regional networks of temples as managers of irrigation.[35] Temples were located at each level of irrigation. For instance, there was a small shrine at the point where irrigation water entered the farm of an individual. Association of farmers at the local-level, called *subaks*, had their own temples too, where they performed collective rites and held meetings. There used to be another temple that coordinated irrigation at the entrance of irrigation water to each group of *subaks*, and nd then, there may also have been regional temples, and temples or shrines for each river, lake, and weir.[36] Most importantly, this network of "water" temples was detached from the Balinese political order, which explained why the irrigation system did not collapse, even when the traditional states did.[37] If Lansing's argument could be re-phrased using Kelly's concepts, it may imply that while the Balinese system of irrigation was autonomous from political elites, it was still centralized in terms of its nested internal organization and distribution of both water and roles.

Archaeological research in the central floodplain of the Euphrates presents another case study where the hydraulic hypothesis is challenged. By means of a diachronic record of settlement patterns, Robert McCormick Adams demonstrated that there was development of urban and state organizations in the region long before large-scale complex irrigation systems were put in place.[38] In the period from 3rd-1st millennium BC local groups constructed water

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[35] Lansing, *Priests and Programmers*, 48.

[36] Lansing, "Balinese "Water Temples"", 332.

[37] Lansing, "Balinese "Water Temples"", 339.

[38] Robert McCormick Adams, *Heartland of cities: surveys of ancient settlement and land use on the central floodplain of the Euphrates* (Chicago: University of Chicago Press, 1981).

canals, since there is no evidence of "state involvement in the process of water-sharing and allocation at the local level, [nor] more than rare state intervention in the resolution of small-scale, local water-disputes".[39] The Sasanian period (3rd – mid-7th century AD) irrigation systems covering large areas were constructed by specialized labor, but written evidence does not indicate strong state managerial control over secondary and tertiary networks of canals. However, written records mention the state's involvement in construction and maintenance of primary irrigation networks.[40] In the last two decades, Adams has refined his position on the Sasanian irrigation practices by arguing that the initial impetus for their construction was provided by centralized, politico-military factors.[41]

Critique of a positive correlation between large-scale irrigation systems and centralized, totalitarian polities also came from scholars who argued for a range of motivations for polities to exercise centralized control over irrigation, irrespective of the *scale* or *technological requirements* of irrigation systems. Warfare, for instance, was as a possible *cause* for agricultural intensification through irrigation is exhibited in the Kauai irrigation system in Hawaii between 800-1824 AD. Timothy Earle[42] challenged Wittfogel's assertion that the technological complexity of irrigation causes managerial problems that can only be addressed by centralized administration. He pointed out that in Kauai the irrigation system is small-scaled and simple, and did not require large scale mobilization of labor or central chiefly management. Yet, chiefs

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[39] Robert M. Adams, *Heartland of cities*, 246.

[40] Robert M. Adams, *Heartland of cities*, 200-202.

[41] Robert McCormick Adams, "Intensified Large Scale Irrigation as an Aspect of Imperial Policy: Strategies of Statecraft on the Late Sasanian Mesopotamian Plain", in *Agricultural Strategies*, eds. Joyce Marcus and Charles Stanish (Los Angeles: Cotsen Institute of Archaeology, 2006), 17-37.

[42] Timothy Earle, *How Chiefs Come to Power: The Political Economy in Prehistory* (Stanford: Stanford University Press, 1997).

oversaw construction and management of irrigation works through administrative officers or managers. Irrigation technology was administered because it was a source of economic control when complex chiefdoms were emerging. Additionally, irrigated agricultural production provided surplus that could support chiefs or elites. Historical and ethnographic evidence suggest that the construction and use of irrigation system was stimulated by an increase in warfare among chiefs between 1400 and 1650 AD. The political strategy to increase production was not in response to population pressure but rather because of the development of the system of staple finance. Staple finance was the system through which the political elites charged an obligatory payment in kind as a rent or a levy from the farmers in lieu of access to subsistence resources, or the produce from land worked with corvée labor.[43] The staple finance was significant in supporting elite activities such as rituals, craft production, and warfare. The fact that chiefs gave land around newly constructed ponds to warriors indicates that elite control over irrigation contributed directly to the maintenance of the military.

Another key factor that features prominently in discussions about the political economy of irrigation organization is that of labor—labor that could both require and help achieve agricultural intensification. Intensification, more broadly, can be understood as an activity that involves organization of high labor inputs above the household level.[44] Intensification of production must ideally lead to increase in productive output per unit of land or labor,[45] which can be realized in more ways than one. The concepts of efficiency along with increased input are

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[43] Earle, *How Chiefs Come to Power*, 70-71.

[44] Stanish, "The Hydraulic Hypothesis Revisited"314

[45] Morrison, "Intensification of production", 115.

both central to intensification.[46] While there are a number of theories about what leads to

agricultural intensification, a foundational thesis was proposed by Danish scholar Ester Boserup.

According to Boserup, cultivation systems can be understood as a function of the

difference in population density, in which population is an independent variable. [47] She argued

that with an increase in the density of population in an area (distinct from population growth),

leading to migration of people to urban areas, there is increasing pressure on rural populations to

raise agricultural productivity. People introduce labor intensive mechanisms to perform intensive

agricultural practices. Since land is a limited resource, one way to increase production is to

decrease the time for which land remains fallow. Boserup used this yardstick to identify and

measure intensification. She contended that irrigation, when combined with multiple-cropping,

drastically reduces the time for which land is left fallow—a sign of agricultural intensity.[48]

Based on statistical data from 20th century India and China, Boserup argued that there

was a direct relationship between the high population densities in these countries and their

widespread use of irrigation in dry areas. This is important because artificial irrigation implies a

continual supply of water in all months of the year in dry areas. Rural employment figures in

India and China indicated that the labor required for irrigation in wet-farmed areas accounted for

about 50% of all the labor required per hectare of a crop in those areas.[49] Both the construction

and maintenance of irrigation infrastructure requires intensive labor, and scholars have presented

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[46] Harold C. Brookfield, "Intensification and disintensification in Pacific agriculture: A theoretical approach",
Pacific Viewpoint 13 (1972): 211-238.

[47] Ester Boserup, *The Conditions of Agricultural Growth: The Economics of Agrarian Change Under Population
Pressure* (London: G Allen and Unwin, 1965).

[48] Boserup, *The Conditions of Agricultural Growth*, 51-53.

[49] Boserup, *The Conditions of Agricultural Growth*.

divergent opinions about the relationship between intensive labor needs and the role of the state (as has been discussed above).

Boserup's model for explaining productive intensification assumes a unilinear path and has been criticized for explaining agricultural change in terms of cultural, technological, and organizational characteristics.[50] Kathleen Morrison argues that while Boserup's focus on population has received strongest criticism, that aspect of her argument is supported by empirical evidence. In fact, Boserup made a major contribution to intensification studies by suggesting a link between population dynamics and agricultural change. However, Morrison[51] points out that Boserup's model does not help explain the multivariate nature of the process of intensification since it does not account for the internally diverse strategies that a single household can practice at any one point in time nor does it incorporate the range of strategies in use over long periods of time. To add to this critique, it is not easy to identify Boserup's criterion of intensification, i.e. frequency of cropping, in archaeological records.

Morrison calls for agricultural intensification to be understood and analyzed as a process rather than through its cause(s). Morrison studied archaeological intensification in and around the historical city of Vijayanagara in northern Karnataka, about 160 km. away from Raichur.[52] Through a multi-source approach, utilizing archaeological, historical, and palaeobotanical data, Morrison demonstrated that the people of Vijayanagara (between 14th and 16th centuries) practiced multiple strategies of agricultural production simultaneously. The course of change itself was complex, involving diverse scales and forms of production that were differentially

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[50] Kathleen D. Morrison, "Typological Schemes and Agricultural Change: Beyond Boserup in Precolonial South India", *Current Anthropology* 37, no. 4 (1996): 583-608.

[51] Kathleen D. Morrison, "Intensification of production", 144-145.

[52] Morrison, *Fields of Victory*.

used by producers at all levels of society. Intensification can take different courses, she argued, since "diversity and variability are critical aspects of both the structure of agricultural production and the process of intensification."[53] Agricultural change involves both expansion and intensification, and people may respond with either of these under pressure to increase production.

It may be contended that crisis, calamities, and pressures – internal, external, natural or human-induced – create conditions for people to expand and/or intensify agricultural production. Archaeological and anthropological research in some areas suggests that war is a possible factor that necessitated agricultural intensification. For instance, Robert M. Adams attirbutes investment in large-scale irrigation systems during the late Sassanian period in the Near East to an increasing pressure to raise revenue for military purposes.[54] Thus, "large scale irrigation [was] primarily [a] recourse of statecraft and military strategy and only in a longer-term secondary way … a possible response also to demographic pressures and technological/managerial advances."[55] Similarly, Timothy Earle[56] and Patrick Kirch[57] argue that the emergent leadership in 15th -17th century Hawaii controlled and encouraged agricultural intensification supported by irrigation systems to sustain military exploits.

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[53] Kathleen D. Morrison, "Typological Schemes and Agricultural Change", 583.

[54] Adams, "Intensified Large Scale Irrigation".

[55] Adams, "Intensified Large Scale Irrigation", 35.

[56] Earle, *How Chiefs Come to Power.*

[57] Patrick V. Kirch, "Production, Intensification, and the Early Hawaiian Kingdom", in *Pacific Production Systems: Approaches to Economic Prehistory,* Occasional Papers in Prehistory No. 18, eds. D.E. Yen and M.J. Mummery. (Canberra: Australian National University, 1990), 190-209.

Archaeological study of two key regions of Yemen, the desert fringes and the highlands, demonstrate the diverse agricultural practices people followed to intensify agriculture.[58] T.J. Wilkinson noted that the settlement trajectories in these two regions were significantly different, as were production strategies. People in the highlands practiced flexible agricultural strategies, a combination of terrace farming and flood (*sayl*) irrigation (using dams). In the event that the dams gave way to flooding, people could depend on terrace farming and small-scale run-offs, which enabled them to rebound from calamities. The desert fringes (*sahyad*) on the other hand were characterized by the use of large-scale dams for irrigation, an inflexible production strategy that could lead to the decline of settlements and societies in this area in case of flooding.

Themes of diversity and variability in the context of agricultural intensification and managing water run opposite to the idea of a centralized system of agrarian and water control. In fact, one could argue that in the case of water management, which is only one component of agricultural intensification, some degree of decentralized, local control over resources and their management is necessary if these systems have to last. Vernon Scarborough proposes that highly stratified and hegemonic states are a rare phenomenon;[59] he introduces the idea of a segmental state[60] characterized by heterarchy, or a network of groups settled in the hinterland and interacting largely among themselves and depending on nodal centers such as cities for trade or

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[58] Tony J. Wilkinson, "From Highland to Desert: The Organization of Landscape and Irrigation in Southern Arabia", in *Agricultural Strategies*, eds. Joyce Marcus and Charles Stanish (Los Angeles: Cotsen Institute of Archaeology, 2006), 38-68.

[59] Vernon Scarborough, *The Flow of Power: Ancient Water Systems* (Santa Fe: Society for American Research, 2003), 157.

[60] Not to be confused with Aidan Southall's 'segmentary state'. Segmentary state model was proposed in the Indian context by Burton Stein who analyzed inscriptions from South India. Burton Stein, *Peasant State and Society in Medieval South India* (Delhi: Oxford University Press, 1980). See Chapter 4 of this dissertation for more on segmentary state and Indian historiography. For segmentary state, see Aidan Southall, *Alur Society: A Study in Processes and Types of Domination* (Cambridge: Heffer, 1956).

other economic activities.[61] Scarborough suggests approaching issues of centralization through the rate and process of change (whether accretional or expansionist) and the alignment of different components of culture such as economy, politics, kinship/other social order, and ideology/religion.[62] A greater number and degree of alignment of among these factors would indicate greater centralization. Scarborough adds that in reality there is considerable variability over both time and space in the social order, process of change, and how different components are aligned. Through a comparative study of water management systems from different parts of the pre-modern world, Scarborough demonstrates the wider applicabilityof a complex but flexible approach to understanding change and its relationship to different forms and degrees of centralization.

In the above discussion, I have focused on two inter-related phenomenon: intensification and irrigation/hydraulic systems. A brief survey of some of the studies covering either or both of these phenomenon exhibit the many ways in which societies in the past have dealt with pressure to intensify agriculture. Therefore, it is unlikely that any one theoretical model will sufficiently explain agricultural intensification in widely varying historical contexts. As has been suggested by Morrison, approaching irrigation as a process allows scholars to capture subtle diachronic changes in irrigation instead of binary changes of beginning and end.[63] A processual approach also accommodates the diversity in various aspects of agricultural production: in practices of

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[61] Vernon Scarborough, *The Flow of Power*, 9-12.

[62] According to Scarborough, accretional approach to change or water management, in this case, modifies the landscape with few risks while the expansionist approach introduces rapid and radical changes. The former is suited for a heterarchical system of organization where settlements are interdependent, while the expansionist approach is better suited for a hierarchical system. Scarborough, *The Flow of Power*, 13.

[63] Morrison, "Intensification of production".

agricultural intensification that may be at work at the same time in different areas of a region; in actors involved in agricultural intensification; and in causes of agricultural intensification.

This dissertation focuses on the irrigation component of agricultural intensification, in a semi- arid area of peninsular India. My area of research, Raichur district, was on the periphery of important regional and supra-regional political powers. While some of the research discussed in this chapter study wider communities and settlements, most concentrate on understanding the political economy at and around the seats of power. I approach the dialectical relationship between state and society through a strategically significant and spatially distant area, between 11th and 16th centuries AD. Relying primarily on surface remains of water infrastructure, and other religious and secular remains, I argue that in a frontier area like Raichur, local elites played a critical role in contructing and maintaining water infrastructure. In doing so, I navigate through the methodological factors guiding my research and discuss issues of historiography and archarological practice in India for this space and time.

Chapter 3: Methods and Tools of Inquiry: Landscape Archaeology

The previous chapter discussed how the theme of political economy can be investigated through the management of water or processes of agricultural intensification by past societies. This chapter lays out the archaeological methods that allow us to study water management in an area, and specific details of the archaeological surface survey carried out in the area of study. The concept of landscape archaeology guides the methods adopted in this research. Landscape studies address both cultural and physical records over large geographic areas. In addition to field surveys, satellite imagery has come to play an important role in studying various aspects of the archaeological landscape. In my research, I used GoogleEarth to inform the organization of the field surveys while LANDSAT imagery helped me to observe changes in the landscape over small periods of time, such as 5 or 10 years.

Archaeologists have used landscape archaeology to answer environmental, economic, and social questions, a contribution of the significant change from treating discrete 'sites' as the performance platform for ancient societies. Over the years, there has been a change in the way scholars perceive the landscape. Instead of treating it as a "passive backdrop or forcible determinant of culture", scholars now view landscape as a complex and active entity that cultures engage with, be influenced by, and alter it.[64] The initial interest in landscape approaches grew out of an interest in addressing questions of regional change and variation, signifying a shift away from the study of individual sites.[65] During the 1940s and early 1950s, scholars were increasingly conducting regional settlement pattern research, influenced by the idea that

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[64] A. Bernard Knapp and Wendy Ashmore, "Archaeological Landscapes: Constructed, Conceptualized, Ideational", in *Archaeologies of Landscape: Contemporary Perspectives*, eds. Wendy Ashmore and A. Bernard Knapp (Massachusetts and Oxford: Wiley-Blackwell, 1999), 2.

[65] Kurt Anschuetz, et. al., "An Archaeology of Landscape: Perspectives and Directions," *Journal of Archaeological Research* 9, no. 2 (2001):161.

settlement patterns are shaped by both natural environment and cultural needs. A pioneering

example of this is Gordon Willey's work in the Virú Valley in Peru, where he documented sites

and developed a settlement typology based on dwellings, cemeteries, hilltop redoubts, pyramids,

and compounds.[66] He examined aerial photographs and site drawings made from those photos to

identify and analyze settlement pattern over a large area. In the past three decades scholars have

identified a greater diversity of reasons for and ways of investigating archaeological landscapes.

Some of these, compiled by T.J. Wilkinson, are listed below:

> (i) the landscape provides the economic infrastructure and support system for settlements and
> society; (ii) it provides a receptacle for records of environmental change and contributes fundamental data
> concerning transformations of the earth's land surface; (iii) the landscape provides evidence for long-term
> changes in settlement, economic patterning, and features that relate to social and religious changes…; [it]
> provides a context for features such as religious monuments or many inscriptions; (iv) it provides the
> context for people's lives throughout history and therefore shapes their perceptions and way of life; (v)
> landscape archaeology provides evidence for long-term human activity beyond the actual living areas
> themselves.[67]

Landscape is neither exclusively natural nor solely cultural but rather mediates between

the two. Scholars now argue that there exists a reciprocal relationship between a landscape and

the people inhabiting it. Additionally, the landscape we see today is a palimpsest of many

landscapes that are superimposed on one another, with parts of the earlier landscapes selectively

removed by the later ones. The concept of landscape as a palimpsest, like stratigraphy, allows

archaeologists to identify "multiple meaningful cultural patterns and disjunctures embedded in

anthropogenic landscapes."[68] Archaeologists must, therefore, be sensitive to landscape

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[66] Gordon R. Willey, *Prehistoric Settlement Patterns in the Virú Valley, Peru.* Bulletin No. 155 (Washington DC: Bureau of American Ethnology, 1953).

[67] Tony J. Wilkinson, *Archaeological Landscapes of the Ancient Near East* (Tucson: The University of Arizona Press, 2003), 4.

[68] Clark Erickson, "Intensification, Political Economy, and the Farming Community: in defense of a bottom-up perspective of the past," in *Agricultural Strategies*, eds. Joyce Marcus and Charles Stanish (Los Angeles: Cotsen Institute of Archaeology, 2006), 350.

taphonomy, i.e., "the process by which elements of the landscape become selectively removed by both physical and cultural processes, leaving a biased and misleading record of earlier landscapes."[69] The principles governing selective preservation or destruction of certain landscape features depend on the "meaningfulness" that people associate with places.[70] Landscape archaeology takes account of individual sites along with the space between them, which can include fields, roads, tracks, irrigation canals, and channels.

Landscapes can be classified into three classes that highlight variation along a continuum of human material intervention in landscapes, and thus must not be treated as completely discrete: constructed, conceptualized, and ideational.[71] Constructed landscapes, the human mediated physical alterations effected in the landscape, embody the ways in ways in which people order places and are relatively easy to identify. Conceptualized landscapes, which are "interpreted and given meaning through social practices and experience",[72] are rooted in the social processes they sustain and reproduce. These are more difficult to identify archaeologically. Ideational landscapes are both imaginative and emotional, encompassing "both the range of meaning archaeologists recognize in landscapes, and the pair of analytic 'realms'— conceptualized, and constructed".[73] Ideational landscapes are the most difficult to identify. The situation is further complicated if we accept that a landscape can be interpreted in more ways than one since people in the past, like the present, read multiple meanings embedded in the landscape through a variety of experiences and given cultural context. Each landscape, therefore,

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[69] Wilkinson, Archaeological Landscapes of the Near East, 8.

[70] Bruno David and Julian Thomas, "Landscape Archaeology: Introduction," in *Handbook of Landscape Archaeology*, eds. Bruno David and Julian Thomas (Walnut Creek, California: Left Coast Press, 2008), 38.

[71] Knapp and Ashmore, "Archaeological Landscapes,"10-13.

[72] Knapp and Ashmore, "Archaeological Landscapes,"11.

[73] Knapp and Ashmore, "Archaeological Landscapes," 12.

embodies a wealth of information on the social, economic, political, technological, and religious life of the people that inhabited and shaped the landscape.

Having recognized the potentials of examining the landscape, the next step is to discern specific archaeological methods to recover a range of data. One of the most widely-used methods within landscape archaeology and one that is particularly well suited to questions about agricultural change is surface survey. Highlighting the contribution of regional data collected through survey, E. B. Banning wrote:

… Pre-industrial central places could have drawn on large agricultural and pastoral hinterlands, potentially populated by small settlements, camps and farm outbuildings that excavations have typically underrespresented… Only regional data that reflect the spatial organization of rural activities will inform us in detail about economic basis of ancient agricultural societies.[74]

Similar views were echoed by Clark Erickson who went a step further to argue that "archaeology of landscapes and historical ecology can provide a bottom-up farmer-centric perspective of the past... [it] builds arguments from patterned physical evidence from the scale of activity area, to region, and beyond."[75]

In designing the methods I use for my research, I rely on ideas from a number of previous studies on research questions similar to mine. Tony Wilkinson identified three major steps to landscape research: first, data collection prior to field work, through maps of different scales and kinds, satellite images, and other data sources; second, data recovery in the field, through survey and collection of samples for geological or chemical or other testing; and third, analysis of samples collected in the field.[76] He points out that with technologies like Geographic Information Systems that enable recording and manipulation of spatial data sets, one can visualize ideational

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[74] E. B. Banning, *Archaeological Survey* (New York: Kluwer Academic/Plenum Publishers, 2002), 10.

[75] Erickson, "Intensification, Political Economy, and the Farming Community", 348.

[76] Wilkinson, *Archaeological Landscapes of the Ancient Near East*.

landscapes and perceptions of terrain can be implemented from the start of the project. Thus, surface survey as a technique for practicing landscape archaeology is often complemented with other techniques.

Robert McCormick Adams used different kinds of maps to identify ancient embankments in the Diyala plains in the Near East.[77] He then visited some of the places identified on the map, and plotted the ancient settlements he came across on the surface. Adams covered a large area, roughly 8000 km. sq. in his study, and therefore he identified places on the landscape that he targeted for survey and study. Such specificities are tailored for each research project depending on the research questions. Charles Stanish's survey of the Lake Titicaca region of southern Peru mapped the distribution of settlements and their association with ancient raised-fields over a long time period.[78] He dated the ancient mounds or settlement remains in the region on the basis of ceramic chronology. To date the raised-fields, he utilized the law of superposition: for instance, if settlements of a certain period were constructed on the raised-fields or their associated features, then it meant that the raised field was long defunct when houses of that certain period were built on it. This is a useful technique, especially if there are limited or no inscriptions to assist in dating irrigation infrastructures. Other potential ways of dating water channels include: Optically Stimulated Luminescence (OSL) dating of pottery deposited on the floor of water channels or reservoirs, radiocarbon dating of fresh-water mollusks, radiocarbon dating of calcium carbonate coatings; OSL dating of sedimentary fills; and, C-14 dating of mortar that includes carbon containing ash[79].

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[77] Robert McCormick Adams, *Land behind Baghdad: a history of settlement on the Diyala Plains* (Chicago: University of Chicago Press, 1965).

[78] Stanish, "The Hydraulic Hypothesis Revisited."

[79] Wilkinson, *Archaeological Landscapes of the Near East*.

Just as there are advantages of treating archaeological remains in less discrete and more contiguous spatial entities (a landscape) there is reason to argue for a similar flexibility in temporal scales of analysis. Kathleen Morrison surveyed Daroji valley, in the outskirts of the Vijaynagara city's core area, to understand how people in the Vijayanagara period (14-16th centuries AD) interpreted and affected the landscape that they came to inhabit but one that had been home to prehistoric societies as well.[80] Much like today, Morrison argues, the ash-mounds of the Neolithic period formed a visible part of the landscape, and features such as these were assigned historicity by later societies, such as those from the Iron Age (1200 – 300 BC) or the Megalithic societies. These later societies appropriated archaeological features within their own cultural discourse and performative behavior. For example, at Kudatini in the Iron Age, people used a Neolithic ash-mound to inter a burial in a sarcophagus. Similarly, the Vijayanagara reservoirs, Morrison argued, were deemed significant in more ways than one—as monuments, as (eternal) oceans, temples, technological devices, and expressions of elite power and influence— and one or more of these meanings outlived the use-life of the reservoir.[81] For instance, sluice gates of Vijayanagara period are still worshipped in the region. It is this afterlife of structures and natural elements that should be and can be captured by a landscape approach to archaeological remains, and by moving beyond the archaeological practice of focusing on periodization to indentify processes unfolding in the *longue durée*.

In addition to surface survey guided by maps, archaeologists are increasingly utilizing satellite imagery for the analyzing large spatial zones. Remote sensing may have had its origins in the field of military, but social scientists, including archaeologists, have since then utilized it

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[80] Kathleen Morrison, *Daroji Valley: Landscape History, Place and the Making of a Dryland Reservoir System*. Vijayanagara Research Project Monographs (Delhi: Manohar Press, 2009).

[81] Morrison, *Daroji Valley*, Chapter 3.

more and more for their research interests. Archaeologists often use satellite remote sensing for observing surface and sub-surface archaeological features.[82] The last few decades have witnessed an upsurge in archaeological studies that study the landscape through GoogleEarth.[83]

Jason Ur used the declassified CORONA satellite images of the mid-20th century to identify hollow-ways or ancient pathways in the north-eastern Syrian landscape.[84] These sunken lanes are linear depressions in the landscape that are likely to have been formed by continuous use for travel by humans. These hollow-ways are difficult to observe and identify on the ground, but are easily visible as a pattern on satellite imagery like CORONA. A major strength of the CORONA images is that they were taken before the onset of industrial, agricultural, and commercial development in many parts of the developing or underdeveloped world—prior to widespread destruction of archaeological evidence. Karim Alizadeh and Jason Ur demonstrated through CORONA imagery of north-western Iran that expansion of modern irrigation led to selective removal of traces of pastoral nomads, leaving behind an archaeological pattern prone to misinterpretation.[85] After the end of the Sasanian period in the 7th century AD, the pastoral communities came to occupy this landscape and they have not left a strong archaeological signature of their activities. Their presence, however, can be recognized through the sunken

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[82] For example: Carl Lipo and Terry Hunt, "Mapping prehistoric statue roads on Easter Island," *Antiquity* 79, no. 303 (2005): 158-168; Sarah Parcak, "New methods for archaeological site detection via satellite image analysis: case studies from Sinai and the Delta," *Archaeologia Polonia* 41 (2003): 243-5; Wilkinson, *Archaeological Landscapes of the Near East*.

[83] For example: Jason Ur, "Google Earth and archaeology," *The SAA archaeological record* 6, no. 3 (2006): 35-38; David Kennedy and M. C. Bishop, "Google earth and the archaeology of Saudi Arabia. A case study from the Jeddah area," *Journal of Archaeological Science* 38, no. 6 (2011): 1284-1293; Tilok Thakuria, et. al., "Google Earth as an archaeological tool in the developing world: An example from India," *The SAA Archaeological Record* 13, no. 1 (2013): 20-24.

[84] Jason Ur, "CORONA satellite photography and ancient road networks: a northern Mesopotamian case study," *Antiquity* 77, no. 295 (2003): 102-115.

[85] Karim Alizadeh and Jason Ur, "Formation and destruction of pastoral and irrigation landscapes on the Mughan Steppe, north-western Iran," *Antiquity* 81, no. 311 (2007): 148-160.

circular pens they constructed for their animals. Heaps of back dirt, excavated out to make the circular structures, show up as bright spots on CORONA images of the area, providing valuable data about the activities of these pastoral groups. Most of these features no longer exist on the landscape due to recent irrigation projects—a trend that Alizadeh and Ur believe existed in antiquity as well. Thus they argue that archeologists must be cautious of interpreting landscape through ground-survey without historical imagery of the landscape.

Satellite imagery is extremely useful in imagining the dynamic landscape of which archaeological remains are a part. I found during my research that Google Earth's time slider feature is immensely useful in observing some of the more recent changes to the landscape in the last decade that, in some cases, led to a complete destruction and vanishing of archaeological features. Archaeologists interested in observing similar changes over the last 5 decades turn to CORONA satellite imagery. There are certain limitations to CORONA satellite imagery, however, especialy in comparison to the more easily-available record supplied by Google Earth. For one, these need to be rectified to represent correctly the distances between points on Earth. Second, the resolution of this imagery is not as high as those that are available today. Third, for some areas of the world, there are very few clear images that can be used to observe landscape features on the ground. In the last few decades, the technology of satellite imagery has developed enough to enable a very high-resolution coverage of all the land cover. The ability to look at changes in the landscape without having to process large-sized satellite imagery or locating the study area every time a new imagery is processed makes this process much easier and faster. Google Earth time slider feature does just that. In my own research, I benefitted from this feature of GoogleEarth to observe specific points on the ground over time through satellite imagery. I share one such example later in this chapter.

This dissertation uses both archaeological surface survey and satellite imagery to understand the static and the dynamic aspects of the historical-cultural landscape of Raichur. A preliminary reconnaissance survey was conduced in an area of twenty-five kilometers radius around the modern city of Raichur with the aim to understand the geology, topography, and pattern of water management constructions and their relationship to modern settlements. The area covered was mostly accessible through roads or dirt-paths. Modern villages and reservoirs studied during the preliminary survey were identified through topographic maps published by the Survey of India for the Raichur district with the scale of 1:50,000, as well as information collected from the Soil and Water Engineering (SWE) department of the Agricultural University of Raichur and Mr. Durga, a local scholar. Most of the reservoirs were located in the eastern part of the district, both north and south of the Raichur city. This pattern is closely related to the topography of the region where Raichur is located at the center of the doab and the landscape slopes northwards, towards river Krishna, and southwards, towards river Tungabhadra. The data collected during this survey related to the form of the reservoirs, their construction, the placement of sluice gates and waste weir, the slope of the landscape, spatial relationship between reservoirs and village settlements, temples, and wells.

The preliminary reconnaissance survey as well as the inscriptional occurrence at the sites in eastern Raichur district informed the selection of areas that were taken up for more intensive, systematic surface survey. The aim of this second phase of survey was to record any archaeological materials visible on the surface through a systematic survey at a few key areas in the region to map and understand the nature of water management techniques practiced in the region and relate them to the settlement pattern and history of the region. Three archaeological sites that were not historically important and that brought out the variability of settlements in the

region over time were selected for the enquiry in the second phase: Gabbur, Maliabad, and Kalmala. Other pragmatic factors that influenced the selection process include relative ease of travel and relationship to the local village population.

The survey used a hand-held Garmin GPS for collecting coordinates of data points, and qualitative data was recorded on a digital voice recorder. This data was entered in a tabular form and with each data point consisting of one or more features that are not assigned individual identifying numbers, as the appendix will make clear. The attached appendix is the primary datasheet through which all the maps in this dissertation have been made. Complementing the appendix are photographs that proved useful for both comparative analysis (on and off the field) as well illustration of the data.

<u>Survey areas</u>

Gabbur can be described today as a big village or a small town site, but in the 12th century it was a *brahmadeya* or a donated Brahmin settlement that at some point acquired a fortification wall around it. While the nature of settlement and water resources have changed in Gabbur from the last eight hundred years, the presence of a number of temples and donative inscriptions in the village provide a material link to its past. Since the modern houses are built in the same place as the historic settlement, surface remains other than stone structures are disturbed and damaged. However, given its significant role in attracting donations and construction of temples and other infrastructure that is mandatory in maintaining a large settlement such as this in both the past and the present, Gabbur was taken up for intensive surface survey. The survey covered the modern settlement and temple remains in the village precincts and extended to the adjoining fields. In the village itself, each street was covered by the survey and archaeological remains such as temples, inscriptions, sculptures, artifact scatter, and

wells were recorded and studied. Outside the village, the survey was conducted systematically by walking in transects that were 50 meters apart. The survey team never exceeded two in number and consistency was maintained while recording data.

The much smaller site of Kalmala was also selected for similar systematic surface survey because four inscriptions were reported from here, even though it is today a modest-sized village. In some ways, it represented the liminal space between larger settlements such as Gabbur and Raichur. There are three hills at Kalmala and the modern village is located along the foothills of the central and the easternmost hill. The area covered during survey at Kalmala was substantially smaller than that at the other two sites, due to the nature of remains here. The hills and the village areas were not surveyed systematically due to constraints on movement. In all other areas the same distance between the transects was maintained, i.e. 50 meters, to cover around one and a half kilometers around the village of Kalmala.

The third site identified for systematic surface survey was Maliabad, located less than 10 kilometers south of Raichur city. Before the survey, there was only one bilingual inscription reported from Maliabad, despite it being a significant fort site that was probably constructed in the 14th century but continued to play a role in the history of the Deccan until the 16th century. During preliminary survey, it was found that the fort site of Maliabad evidenced a high density of artifact scatter on the surface, given the modern agricultural activity and frequent turning of soil. In a short distance from the fort are two linked water reservoirs that till today provide the main source of irrigation to the agricultural fields of Maliabad. Here too the same method of survey, i.e. transect walking was adopted to record archaeological remains on the surface.

Artifacts from the Raichur area were not collected during the preliminary survey to avoid expanding the collections without a strong research question. During the systematic survey,

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however, collections of diagnostic ceramic sherds and some other artifacts were made to record them for comparison with those reported from other archaeological sites in the Deccan. In Gabbur, all the collections were made from already disturbed contexts and areas where the materials would have otherwise been destroyed completely in the days to come. In Kalmala, collections were made from a few natural terraces on the hill, where pottery scatter was noticed (most of which were small and rolled) and the foothills to ascertain the chronology of settlement at Kalmala in early times. Diagnostic sherds were collected from different places in and around Maliabad fort, primarily from or near the fort walls since they were under reconstruction,[86] to ascertain the chronology of settlement at the site. There was only one case what could possibly be *in situ* deposit, to the west of Maliabad fort in a ditch where a section was exposed with ceramic deposit.[87] After I photographed and recorded the collected artifacts, I deposited them with the Museum Curator at the Raichur Museum at Naurang Darwaza, under the administration of Karnataka State Department of Archaeology, Museums and Heritage.

In my survey of the modern village of Gabbur, located where there once was a thriving medieval settlement, I recorded temples, structures, inscriptions, sculptures, and wells. In addition to the challenges posed by reuse of older architectural materials and damage or destruction of sculptures and inscriptions, the covering of wells by people posed a challenge in identifying and recording old wells. In one such case in the village, the survey team identified large blocks of stone, typically used in construction of some structure, around an open area located between modern houses. One such slab had a horizontal panel of elephants in square

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[86] The fort walls were being renovated and reconstructed at some places by the Office of the District Magistrate of Raichur. In order to do so, earth was being brought from a nearby reservoir, Peetalcheru, located north-west of the Maliabad fort. In an attempt to salvage some of the ceramics that were already in a disturbed context and were going to be covered by earth and then cement, I collected some diagnostics randomly, mainly along the northern and eastern fort walls of Maliabad.

[87] See Chapter 6 of this dissertation for a detailed description of material remains at Maliabad.

boxes. This panel of elephants is identical to those found in the Elu Bavi temple complex on the southern boundary of the settlement at Gabbur, and fixed in a well outside Gabbur in the fields to its South. At the analysis stage of the survey data, after the survey was complete, it was found that an arrangement of stone-slabs at this side curiously resembled a similar arrangement seen at a number of old wells. These similarities prompted further inquiry into what was at this location in the recent past, since it is relatively more difficult to go as far back in time as the medieval period. Satellite imagery taken of the same area from 2010 to 2014 revealed that there existed a well at the location of study at least as far back in time as 2010, but it was filled up by 2012. The earth used to fill the well was comparatively lighter in color in the 2012 imagery, but by 2014 it was indistinguishable from the surrounding ground, at least in the satellite imagery.

This is not to say that satellite imagery can replace field surveys but that satellite imagery can distend the significance of both ethnographic and archaeological data collected in the field. I will use another example to demonstrate this. During survey of areas outside the boundaries of the modern village of Gabbur, I came across one large well which was constructed using some of older temple architecture. What would have been door jambs in one or more temples are neatly arranged to form the south-western wall of the well, while the pillars and pilasters are used in constructing a sub-surface passageway along the northern edge of the well, steps leading from the ground level to this passageway. There is another set of steps on the south-eastern corner of the well that facilitates access to its water. The owners of this well, a farming family, told the survey team that this was a *haLe kAla* well; in other words, they did not know when the well was last repaired and if the door jambs were moved here from a temple complex. The question of where such a temple existed is much easier to answer. The survey team identified remains of an older temple reused to construct a modern temple about 60 meters north of the well. The farmers

mentioned the strong relationship that existed between the well and snakes, referring to numerous sighting of large snakes in the vicinity of the well. This isn't surprising given a large number of naga stones that have been spotted in Gabbur more specifically, and in the region more generally. The farmers also informed the survey team about another hale kala well that existed about a hundred meters due east of their well, but which was covered by the people living its vicinity because of the large number of snakes that inhabited it and the resulting threat from snakes. At the location of the second well the earth looked like any other part of the field surrounding it. There were no surface remains indicating that there was a well at that location. Here too, I used GoogleEarth imagery to observer the earlier landscape features that had been erased from the ground in modern times. The satellite image of the place in 2010 shows a well, but it was covered by 2012. Despite this, since the well's topographic location is lower than the adjoining ground, this location appears wetter / darker in the satellite imageries from 2012 onward. The closing of the well seems to have been preceded by another phenomenon-- the emergence of a small settlement in the close vicinity of the well. The people living here do not belong to the village of Gabbur but have come from some place else and settled here for better livelihood. Many of them work as day laborers in the farms around the harvest and sowing season, while the others work as performance artists and earn their livelihood by enacting stories of legends that are popular in the region, especially during *jatre* or annual fair of the village.

While it is not possible to observe this second well today or comment on its chronology, what is clear is that the landscape is a dynamic entity, even though archaeologists look for static remains of the past when surveying it. And therefore, it is important that archaeologists utilize all kinds of information, such as archaeological, historical, ethnographic, and archival, to know the formation processes that result in the contemporary landscape. Additionally, I used GoogleEarth

to demarcate contiguous areas that could easily be surveyed each day. Therefore, even though there is no uniformity in the shape of the survey units and their distribution appears to be random, there is a guiding principle behind it.

In addition to GoogleEarth imagery, I use Landsat7 images to highlight how the landscape responds to the differential rainfall and what the people must have prepared for, in the present and the past. Landsat images also allow studying change in land-cover over time for the same region since its temporal resolution is finer compared to high spatial resolution sensors. Landsat7 images of 6th May 2001 and 28th May 2003 were compared for change in vegetation, using the Normalized Differential Vegetation Index (NDVI). Images from roughly the same time in the year were chosen for comparison to eliminate seasonal differences. These comparisons are helpful for archaeologists to imagine and realize some of the annular dynamics of the landscape and the challenges they provided for the people to respond or adapt to. The NDVI change over two years from 2001 to 2003 in the Raichur doab is exemplified in Figs. 3-1 & 3-2.
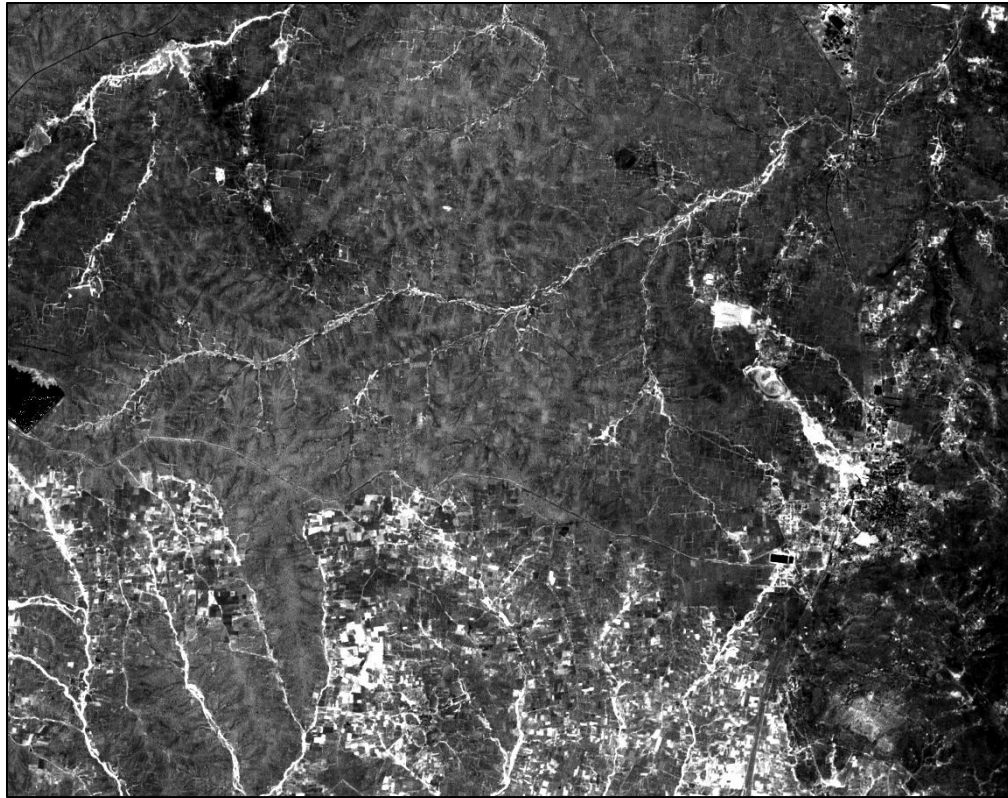
Fig. 3-1: NDVI of May 2001 Landsat7 image of Raichur.
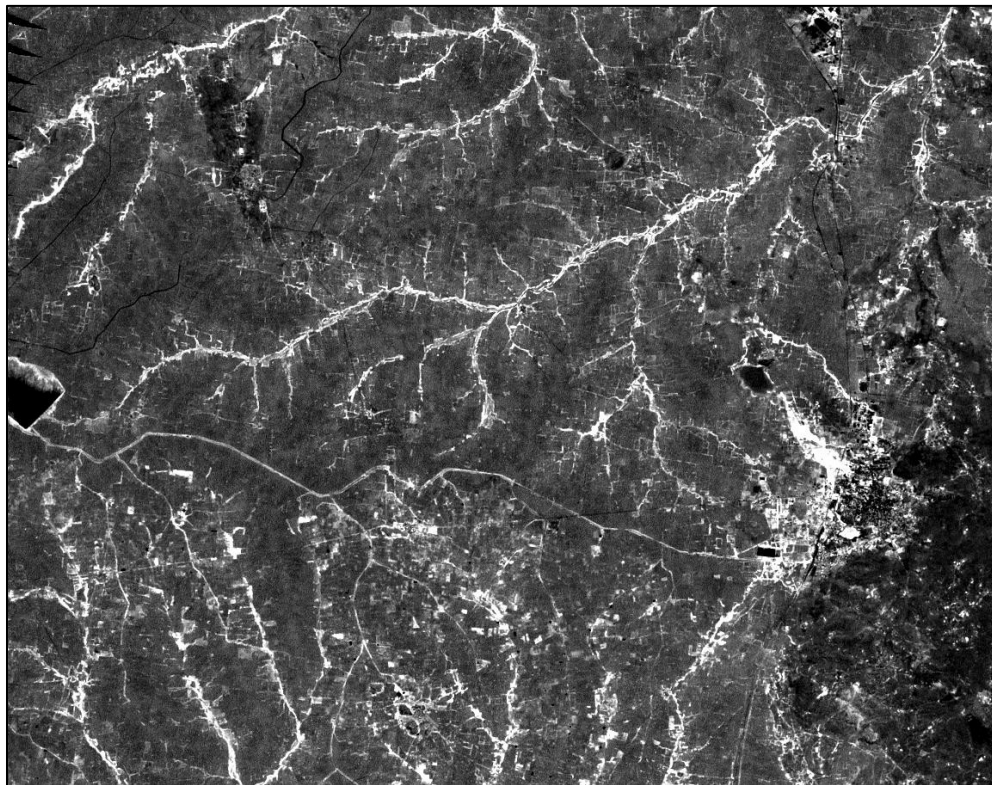
Fig. 3-2: NDVI of May 2003 Landsat7 image of Raichur.

The NDVI analysis of both the images clearly shows that there is more healthy vegetation (bright pixels) in 2001 compared to 2003. In 2003 we can notice the shrinking of water reservoirs, however there is more wild vegetation around the seasonal streams.

While monsoons start in India around early July, Raichur receives its maximum rainfall during the month of September. May is, therefore, one of the driest months in Raichur; the time by when most of the reservoirs run dry. Before the advent of modern canal-fed irrigation (carrying water from the rivers), farmers would usually leave their fields fallow during this season, and only begin the sowing after monsoons. Rice is culturally a preferred form of cereal despite the fact that this is a semi-arid region. Rice requires high water and labor investment from even before the sowing, such as field preparation (that requires inundating the fields for days). Therefore increased vegetation in the driest month of May is greater in 2001 compared to 2003, because of more water in the reservoirs from the 2000 monsoons compared to 2003 when we see the reservoirs have also shrunk in size and therefore the farmers are forced to leave the fields fallow for one cropping season. Considering that the medieval climate in a tropical region such as Raichur was not very different from what it is today, we can safely assume that people in medieval times would have faced similar challenges. This leads us to the more interesting questions of water distribution especially in years when there was stress on resources. What this means is that, while satellite imagery helps archaeologists identify archaeological features on the landscape that may be imperceptible while one is walking on the ground, archaeologists can use satellite imagery to also observe the dynamism of the landscape that may have informed some of the decisions that people made in the past.

Chapter 4: Indian Historiography and Archaeological Research on Medieval India.

The last few decades have seen an upsurge in archaeological investigations into the centuries following the decline of the Gupta Empire in North India and the Vakatakas in South India, i.e. after ca. 6th century AD. Hitherto understood primarily on the basis of historical texts and inscriptions, analyses of the spatial distribution of a range of archaeological materials and their relationship to each other is beginning to increase the resolution with which scholars have viewed India of 6th century AD onward. This chapter reviews such archaeological research in the light of developments in both historiography and in archaeological methods and research. The focus is on the period from ca. 6th–15th centuries AD—a period that arguably falls within one of the ways of defining 'medieval' India.

The foremost challenge confronting scholars working on the 'medieval' period of Indian history is defining what the term means in the Indian context in a way that it is applicable to all or most parts of the subcontinent, which is large and diverse. Periodization or classifying the past using chronological markers is not only a heuristic exercise but also forces its proponent(s) to identify broad patterns of continuity and change in a region. Often times, the terminologies used for periodization betray their theoretical underpinnings. In the case of India, the past was generally divided into three stages. The early set of categories of Hindu, Muslim, and British were replaced by Ancient, Medieval, and Modern by the middle of the twentieth century although the basis of classification remained roughly intact.[88] It was not until the early decades

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[88] For a sample of writings produced on Indian history within the colonial discourse see: Vincent A. Smith, *Early history of India* (Oxford: Oxford University Press, 1924); and James Mill, *The History of British India.* Vol. 1 (London: Baldwin, Cradock, and Joy, 1817). Early Indian writings were in stark contrast to colonial histories of India in that the former highlighted the ancient achievements and the gloriousness of Indian culture and society. The most ambitious and perhaps influential project representing a nationalist narrative of Indian history was R.C. Majumdar ed., *The History and Culture of the Indian People*, 11 Vols. (Mumbai: Bharatiya Vidya Bhawan, 1951). The broad periodization that dominated Indian history writing in these early writings is: Ancient, Medieval, and Modern.These terminologies still govern how history departments are organized and taught in universities in India.

of post-independence India when historians such as D. D. Kosambi[89] and R.S. Sharma[90]

redefined, in a radically different way, what the 'medieval' was in the context of India. Using

epigraphic data from many parts of India and texts such as the *puranas* and the *dharmasastras*,

Sharma argued that around 4th century AD, the royal practice of issuing land grants and

relinquishing economic and, in some cases, administrative and juridical rights over large swathes

of land led to drastic changes in the economic relations of production. The tiller was alienated

from land, the means of production, and there grew an intermediary class of funcitonaries and

administrators altered the nature of society, akin to what would have been in feudal Europe. In

India, Sharma argued that by the 12th century feudalism was at its peak. By privileging socio-

economic processes over dynastic history, those who propound the feudalism model brought

economically and politically marginalized sections of society into the purview of history

writing.[91] Like other models, the feudalism model was also meant to explain historical changes at

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[89] Kosambi was a mathematician, numismatist, and a historian. He was deeply influenced by Marxist thought. His classic work is D.D. Kosambi, *An Introduction to the Study of Indian History* (Bombay: Popular Prakashan, 1975). For more recent take on Kosambi, see: Romila Thapar, "Early Indian History and the Legacy of D.D. Kosambi," *Economic and Political Weekly* 43, no. 30 (2008): 43-51.

[90] Ram Sharan Sharma, "The Origin of Feudalism in India," *Journal of the Economic and Social History of the Orient* 1, no. 3 (1958): 297-328; and, Ram S. Sharma, *Indian Feudalism, c. 300-1200* (Calcutta: University of Calcutta, 1965).

[91] For example: Kesavan Veluthat, *The Political Structure of Early Medieval South India* (Delhi: Orient Longman, 1993); and R.N. Nandi, *State Formation, Agrarian Growth and Social Change in Feudal South India c. AD 600—1200* (New Delhi: Manohar, 2000).

the scale of the entire Indian subcontinent, however it has been challenged on both theoretical[92] and empirical grounds.[93]

Brajadulal Chattopadhyaya[94] argues that the period from the 3rd/4th centuries to the 6th century AD, was marked by regional state formation and this process intensified in the early medieval period of Indian history from about the 6th/7th to the 12th/13th centuries AD. Emergence of regional polities is taken as indicative of expansion of state society to hitherto peripheral areas, leading to integration rather than disintegration of the state. Inscriptions show that in this period people intensified agriculture by expanding irrigation to new areas, leading to the growth of agrarian societies and the rise of regional polities and cultures in different parts of India.[95] Most of these inscriptions, written in Sanskrit, record royal land grants to Brahmans or non-royal and royal gifts made to different religious establishments. They inform us about political structures, administrative and revenue systems, and class and caste structures, and yet, their fragmentary, stylized and standardized nature permits that only certain kinds of questions that

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[92] Harbans Mukhia, "Was there Feudalism in Indian History?", in *The Feudalism Debate*, ed. Harbans Mukhia, 34-80 (Delhi: Manohar, 1999).

[93] In the 1980s and the 90s, a large number of historical studies of smaller regions were published relying primarily on inscriptional evidence. One of the most influential writings were by Brajadulal Chattopadhyaya, "Origin of the Rajputs: The Political, Economic and Social Processes in Early Medieval Rajasthan," *The Indian Historical Review* 3, no. 1(1976): 59-82; and by the same author "Urban Centers in Early Medieval India: An Overview", in *Situating Indian History*, eds. S. Bhattacharya and Romila Thapar, 8-33 (New Delhi: Oxford University Press, 1986). The Feudalism model had fewer takers among historians of South India. See, Burton Stein, *Peasant State and Society in Medieval South India* (Delhi: Oxford University Press, 1980); Burton Stein, "The Segmentary State: Interim Reflections," in *The State in India 1000-1700,* ed. Hermann Kulke, 134-61 (New Delhi: Oxford University Press, 1997); and, Hermann Kulke, "Fragmentation and Segmentation Versus Integration? Reflections on the Concepts of Indian Feudalism and the Segmentary State in Indian History," *Studies in History* 4, no. 2 (1982): 237-63.

[94] Brajadulal Chattopadhyaya, *The Making of Early Medieval India* (New Delhi: Oxford University Press, 1994), Introductory chapter.

[95] Upinder Singh, *Kings, Brahmanas and Temples in Orissa: An Epigraphic Study, AD 300-1147* (New Delhi: Munshiram Manoharlal, 1994); Talbot, *Precolonial India in Practice*; Nandini Sinha Kapur, *State Formation in Rajasthan: Mewar during the Seventh--Fifteenth Centuries* (Delhi: Manohar, 2002).

can be posed to these inscriptions. The same insceriptional body of evidence can be and have

been interpreted to indicate very different phenomena.

In the case of South India, Burton Stein [96]interpreted Chola inscriptions (c. $9^{th} – 11^{th}$

centuries AD) to suggest the segmentary nature of the Chola administration, in contrast to the

image of a centralized and glorified Chola Empire. The idea of a segmentary state, borrowed

from anthropologist Aidan Southall[97], proposes a dichotomy between ritual sovereignty and

actual political power or control, expressed through a pyramid of political and ritual

relationships. Its overemphasis on segmentation versus integrative elements invited criticism

from scholarship arguing that Chola rulers tried to centralize administration and maximize tax

collections.[98]

Socially, the early medieval period was marked by the rise of new castes due to the

assimilation of previously tribal societies. Linguistically, Sanskrit, the hitherto elite language of

literary and political expression was challenged and eventually replaced by a number of

vernacular languages in the second millennium. The rise of vernacular languages was intricately

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[96] Burton Stein, "The State and the Agrarian Order in Medieval South Asia: A Historiographical Critique," in *Essays on South India*, ed. B. Stein, 64-91 (Honolulu: University of Hawaii, 1975). Stein's insistence on seeing the Chola state as essentially decentralized challenged the nationalist writings on the Cholas, such as K.A. N. Sastri Sastri, *The Cōḷas*. Madras University Historical Series No. 9 (Madras: Madras University, 1935); and, A. Appadorai, "Economic Conditions in Southern India (1000 – 1500)" (PhD diss., University of Madras, 1936).

[97] Southall, *Alur Society*.

[98] Studies that challenged the segementary state model or provided an alternative include: Y. Subbarayalu, "The Chola State," *Studies in History* 4, no. 2 (1982): 265—306; Noboru Karashima, *South Indian History and Society: Studies from Inscriptions AD 850—1800* (Delhi: Oxford University Press, 1984); P. Shanmugam, *The Revenue System of the Cholas, 850—1279* (Madras: New Era Publications, 1987); and, James Heitzman, *Gifts of Power: Lordship in an Early Indian State* (Delhi: Oxford University Press, 1997).

tied to the rise of regional polities.[99] Cynthia Talbot, for instance, studied Andhra Pradesh (including the recently declared [2014] state of Telangana) under the Kakatiya rule between 1175 and 1325 AD through the distribution of inscriptions in Telugu, Kannada, and Tamil languages and found out that trends in inscriptions were tied to political developments of this time. The maximum number of inscriptions date to the period from 1175 to 1325 and this is also the period when the territorial dispersion of inscriptions increased. She argues that the rise of Telugu at the expense of Kannada was possible because of the patronage given to the latter by the Kakatiya ruler.[100]

In short then, there are certain political, social, and linguistic trends that seemed to pervade throughout the subcontinent from 6th – 14th century AD, despite the varied interpretations of such trends and historical processes. Another event that is often seen as a major chronological marker is the establishment of the Delhi Sultanate in north India in ca. 13th century. The Mamluk sultans of Delhi established Islamicate culture, statecraft, and architecture in northern India. More importantly, for historians, new genres of literature emerged that reflected a shift in the nature of sources that the historians can now study for this period.[101] While the early medieval period is largely studied through inscriptions and religious texts especially in non-Delhi Sultanate areas, court chronicles written in Persian from 12th/13th centuries furnish details about court politics, administration, economy, history, and personalities

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[99] S. Nagaraju, "Emergence of Regional Identity and Beginnings of Vernacular Literature: A Case Study of Telugu," *Social Scientist* 23, no. 10/12 (1995): 8-23; Sheldon Pollock, "India in the vernacular millennium: literary culture and polity, 1000-1500," *Daedalus* 127, no. 3 (1998): 41-74; and, Pollock, *The language of the gods in the world of men: Sanskrit, culture, and power in premodern India* (Berkeley and Los Angeles: University of California Press, 2006).

[100] Talbot, "Chapter 1: Andhra's Age of Inscriptions, 1000-1650", *Precolonial India in Practice*, 18-47.

[101] For a historiographic survey of writings on the Delhi Sultanate see: Sunil Kumar, Chapter 1, *The Emergence of the Delhi Sultanate, 1192-1286* (Delhi: Permanent Black, 2007).

of rulers. The chroniclers, historians argue, self-consciously record historical events related to a

certain ruler or dynasty, allowing scholars to ask specific or individualized questions regarding

the different aspects of history of the period. The case of Kalhana's *Rajatarangini,* a c. 12th

century Sanskrit historical text composed in Kashmir, further complicates the pursuit of

periodization following the writing of self-conscious historical texts.[102] Moreover, the practice

of writing historical chronicles was not practiced until much later in other parts of India, such as

the Deccan, where dynasties like Western Chalukyas and Kakatiyas used donative and

commemorative inscriptions in Sanskrit and regional languages to construct their political and

social identities in addition to patronizing texts in vernacular languages. And herein lies a critical

challenge to periodization from around 6th/7th century AD onwards—the chronological markers

that may be applicable to one region may not necessarily do justice to another.

The issue of greater pertinence for archaeological practice is that all of these

periodizations emerge primarily from the study of texts. And thus, it is problematic when these

periodizations are assumed for or expected to reflect in the archaeological record. This is not to

argue that broad historical changes are not reflected in the archaeological record or that the

archaeologists must not seek the material response to historical change. However, in order to be

sensitive to how and why people in the past created, used, and discarded objects, we must also

understand the intrinsic patterns within the material world. Both texts and objects were

influenced by people's social, political, and religious belief systems, and were also shaped by

these systems. To acquire this information, John Moreland suggests practicing contextual

archaeology. He argues that "just as the people in the historical past did not rely totally on

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[102] One of the earliest translations of Rajatarangini to appear: M.A. Stein, *Kalhana's Rajatarangini: A Chronicle of the Kings of Kashmir*, 3 vols. (Delhi: Motilal Banarsidass, 1986 [1900]).For a brief introduction to the text see, David Shulman, "Preface: Kalhana's Rajatarangini: What is it?" *IESHR* 50 (2013): 127-130. For a closer study as the text as a source, see Whitney M. Cox, "Literary register and historical consciousness in Kalhaṇa: A hypothesis," *IESHR* 50 (2013): 131-160.

written sources in the construction of self and society, so we in the present do not have to privilege the written word in our attempts to access meaningful worlds they constructed – a fully contextual archaeology allows us to do this."[103]

Contextual archaeology entails identifying the similarities and differences among various groups of artifacts, since the meaning of the objects emerges out of its relationship with other objects. The ultimate goal is to be able to "reconstruct the details of [people's] entanglement with words and things, and write the kind of 'thick descriptions' which allow the variety and ingenuity of human creativity, and the difference of the past, to shine through."[104] The issues raised by Moreland can be applied universally to archaeological research of historical periods. In the Indian context, similar sentiments are voiced by Upinder Singh who argues that "the strategy of using one kind of primary source and looking to others only for corroboration has to be replaced by a much more self-conscious and sophisticated methodology of inter-textuality."[105] In other words, texts and archaeological materials encode different systems of knowledge that when juxtaposed reveal the patterns in a mosaic that are otherwise not discernible.

A major caveat of slicing out a definite period of time as 'medieval' within India is that each region had its own trajectory of historical change, and so privileging one over the other to achieve some sort of generalization is not free of issues. However, a flexible working definition is adopted here in order to give some structure and temporal limits to this research. For the purposes of the dissertation, I consider a rather wide section of time to define medieval India, from c. 6th – 15th centuries AD, with the 16th century as a chronological marker for the beginning

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[103] John F. Moreland, *Archaeology and Text*. Duckworth Debates in Archaeology Series (London: Bloomsbury Academic, 2001), 39- 41.

[104] Moreland, *Archaeology and Text*, 97.

[105] Upinder Singh, "Introduction," in *Rethinking Early Medieval India: A Reader*, edited by Upinder Singh, 1-44 (Delhi: Oxford University Press, 2011).

of the early modern period in the India.[106] Within this long period two phases of early medieval (c. 6th – 11th/12th century) and late medieval (c. 11th/12th – 15th century) can be identified, on purely literary evidence of the emergence of larger regional political units in the Indian subcontinent. In this section I review research literature on the material remains of the medieval India and discuss their significance. It must be pointed out that this review is for all practical purposes limited to literature published in English, although we do now know of texts written in other foreign and regional Indian languages that explored the archaeological remains of medieval India, among other things. I will briefly discuss a couple examples of such historical—archaeological literature published in languages other than English later in this paper.

Archaeology of India from ca. 6th – 15th centuries A.D.

In the earliest phase of archaeological research in India, curious collectors and surveyors recorded archaeological, historical, and anthropological information about specific regions or areas during colonial India. They were not specifically interested in investigating the material remains of medieval India, but observed them as part of the landscape they came to survey and record information about. The most prominent such collector/surveyor was Colin Mackenzie. He was the first surveyor general of India and was one of the first people to collect both drawings and manuscripts recording all sorts of information that he and/or his informants could gather from places in South India between 1780s between 1840s.[107] These included, among other things, copies of inscriptions, collection of coins, description of archaeological remains, and drawings of monuments and sculptures. A large part of this collection is today housed at the

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[106] Sanjay Subrahmanyam and C. A. Bayly, "Portfolio capitalists and the political economy of early modern India."

[107] A. Johnston and Colin Mackenzie, "Biographical Sketch of the late Colonel Colin Mackenzie, Surveyor-General of India," *Journal of the Royal Asiatic Society of Great Britain and Ireland* 1 (1834): 333-64.

British Library, London (earlier called the India Office Library), and is yet to be organized in its entirety (while the rest presumably is still in the Government Museum at Chennai). The Mackenzie Collection is a relatively under-utilized source for the study of Indian art, history, and archaeology because of a great many variables that make it hard to establish the nature the collection.[108] For one, Mackenzie was not the only person to collect the materials—there were a number of local informants and assistants working for him over the years. They collected objects and recorded both visual and descriptive information on history, geography, and culture of places south of Krishna River. Of course, like most colonial era writings on Indian society both past and contemporary, there is a strong orientalist thought behind the collection. Nevertheless, Mackenzie's deep interest in Jainism, religious sculptures, coins and inscriptions motivated him to record a large number of material remains that otherwise would either be lost or unreported.

A contemporary of Mackenzie but one who surveyed a wider geographic area was Francis Buchanan.[109] A physician by training, Buchanan was employed by the East India Company to survey parts of south and north India and produce reports not only on settlements, customs, and practices, but more importantly a detailed account of the economy, including agricultural practices and social aspects of agriculture and animal husbandry. While the practice of archaeology was not central to his survey project, Buchanan records information such as location of forts and other archaeological remains. James Fergusson collaborated with his colleagues Meadows Taylor and Theodore Hope to analyze the architecture at key historical

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[108] This has started to change in the last couple of decades. See, Jennifer Howes, *Illustrating India: The Early Colonial Investigations of Colin Mackenzie (1784-1821)* (Delhi: Oxford University Press, 2010).

[109] Dilip K. Chakrabarti, *A History of Indian Archaeology: from the beginning to 1947* (Delhi: Munshiram Manoharlal, 1988).

places such as Dharwar and Ahmedabad.[110] Fergusson also published a number of illustrated

books that analyzed religious architecture in both North and South India, as well as rock-cut

temples of India (Fergusson 1845; Fergusson and Burgess 1880).[111] Illustrated articles and books

written by Fergusson were used for instruction in Indian art in contemporary Britain. While his

interpretation and method may be questioned, Fergusson's detailed drawings of the monuments

are a valuable resource for conservators and students of art and architecture.

    In a similar vein, Alexander Cunningham, the first Director General of Archaeology in

India, carried out extensive surveys in north and central India and recorded a broad range of

archaeological remains. Despite being primarily interested in early Indian archaeological remains

with a keen interest in Buddhist material remains such as stupas, Cunningham maintained a

detailed record of other archaeological places that were relevant in later periods of Indian

history.[112] Again, the annual reports of Cunningham's survey can today function as a basic

resource for more intensive archaeological research on medieval India, even if that was not what

Cunningham was most interested in during his time.[113] The same can be said of a number of

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[110] T.C. Hope and James Fergusson, *Architecture at Ahmedabad, the capital of Goozerat, photographed by Colonel Biggs* (London: R.A. John Murray, 1866.); Meadows Taylor and James Fergusson, *Architecture and Dharwar and Mysore* (London: John Murray, 1866).

[111] James Fergusson, *Picturesque Illustrations of Ancient Architecture of Hindostan* (London: J. Hogarth, 1848); J. Fergusson, *Illustrations of the Rock-Cut Temples of India* (London: John Weale, 1845); J. Fergusson and J. Burgess, *The Cave Temples of India* (London: W.H. Allen, 1880).

[112] For Cunningham's archaeological program see Upinder Singh, *The Discovery of Ancient India: Early Archaeologists and the beginning of Archaeology* (Delhi: Permanent Black, 2004), 23-134.

[113] Cunningham published a total of 23 volumes of reports on his surveys in different parts of the country. These were published over a period of time by the Archaeological Survey of India. See, *Cunningham's Reports* 1871 to 1887, Archaeological Survey of India.

surveyors and archaeologists who operated long after Cunningham's surveys to record a wide

range of archaeological materials beyond their immediate topical and temporal concerns.[114]

The field of archaeology was still in its infancy in the early 20th century and

archaeologists were only beginning to reflect on the methods of their craft. This is noticeable in

how data was collected and communicated. Most of these surveys were conducted from village-

to-village to report the relative spatial location of archaeological or historical sites along with

descriptions of archaeological remains found there. The systematic and intensive surveys of

today were not suited to the kind of questions scholars were seeking to answer in the late

nineteenth and early twentieth centuries. The main task, in many cases, was to establish the basic

culture-history of the vast regions of India. Surveys conducted in the 1930s and 1940s were

guided by the older survey reports in terms of identifying areas and sites to be investigated. For

instance, it is likely that when the Archaeology Department of the Nizam of Hyderabad, carried

out their survey of the areas west of Hyderabad, the officials were aware of the key sites in the

region reported by Cousens almost three decades earlier. [115] Both Henry Cousens[116] and Ghulam

Yazdani,[117] the Director of Archaeology in the Nizam's government, published monographs on

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[114] For example, see Henry Cousens, *Lists of Antiquarian Remains in His Highness the Nizam's Territories* (Calcutta: ASI, 1900); H. Cousens, *Somanātha and other mediaeval temples in Kāṭhiāwād* (Calcutta: Government of India Publication, 1931); H. Cousens, *Medieval Temples of the Dakhan* (Calcutta: AS I, 1931); Frank R. Allchin, "The Development of Early Cultures in the Raichur District of Hyderabad." PhD Diss., School of Oriental and African Studies, University of London, 1954. Examples of excavation reports that devote substantial discussion of the stratigraphic layers and archaeological remains assignable to the medieval period: B. B. Lal, "Excavation at Hastinapur and other explorations in the Upper Ganga and Sutlej Basins 1950-52," *Ancient India* Nos. 10 & 11 (1954): 4-151; H. Härtel, *Excavations at Sonkh: 2500 Years of a Town in Mathura District* (Berlin: Dietrich Reimer Verlag, 1993).

[115] *Annual Report of the Archaeology Department of H.H. the Nizam of Hyderabad 1929-30*(Calcutta: Baptist Mission Press, 1933); Cousins, *List of Antiquarian Remains in His Highness the Nizam's Territories.*

[116] In addition to Cousens' other publications see, H. Cousens, *Lists of Antiquarian Remains in the Central Provinces and Berar* (Calcutta: ASI, 1897); and, Cousens, *Bijapur, The old capital of the Adil Shahi kings: A guide to its ruins with historical outline* (Poona: Orphanage Press, 1889).

[117] Ghulam Yazdani, *Mandu, the City of Joy* (Oxford: University Press, 1929); and Ghulam Yazdani, *Bidar: Its History and Monuments* (Oxford: Oxford University Press, 1947).

places such as Mandu, Bidar, Bijapur, and Somnath, of use to both scholars and non-academic readers alike. Yazdani's tome on Bidar is unmatched in its style and attention to detail of both the built environment and landscape features, making this an essential text for subsequent research on Bidar. In addition to architectural studies and explorations, there were excavations at a few medieval sites such as at Bijai Mandal or Vijaya Mandal,[118] Adilabad,[119] and Khilokhri,[120] all in or around Delhi. These reports were quite brief but, with the exception of Bijai Mandal, included information of both structural and artifactual remains at these sites.

This chapter has so far dealt with archaeological and architectural literature on India published in English by the middle of the twentieth century. However, in addition to English, at least by mid-nineteenth and early twentieth century, there was an emerging literature on Indian archaeological and historical remains in the Indian vernacular languages. The first scholar to do so was Syed Ahmad Khan with his book called *Asar-al-Sanadid*, written as a guide to the monuments of Delhi such as forts, temples, *dargahs*, and tombs.[121] The 1847 publication is remarkable in its inclusion of illustrations of structures in the form of line drawings. While scholars debate the authorship, inspiration, and intention behind the writing of these books,[122] there is no doubt that these mark a noteworthy point in the writing and publishing of historical--archaeological literature in the sub-continent. *Asar al-Sanadid* provided the prototype for later

[118] H. L. Srivastava, "Excavations at the Bijai Mandal, Delhi," *Annual Report of the Archaeological Survey of India 1930-34* (1936): 146-49.

[119] H. Waddington, "Adilabad: A Part of the 'Fourth' Delhi," *Ancient India* 1 (1946): 60-76.

[120] Olaf F. Prufer, *Report of the Trial Excavations Carried out at Khilokhri* (New Delhi: Jamia Millia Islamia Historical Research Foundation, 1952).

[121] Syed Ahmad Khan, *Asar al-Sanadid*, 2nd edition (Delhi: Urdu Academy, 2000 [1854]); S.A. Khan, *Asar al-Sanadid* 1st edition (Aligarh: 2007 [1847]).

[122] A detailed analysis of the text, see Naim, C.M., 2011. Syed Ahmad and His Two Books Called 'Asar-al-Sanadid'. *Modern Asian Studies* 45: 669-708. doi:10.1017/S0026749X10000156.

Urdu writings on historical places and associated material culture. For instance, Bashiruddin Ahmad published a three-volume compendium on the history and historical remains of Delhi from 1450 to 1919, titled *Waq'iat-i Darulhukumat Dehli*.[123] In addition to an account of historical events that impacted Delhi from the mid-fifteenth century to the beginning of the twentieth century, Ahmad's work includes not just descriptions of historical buildings in the city of Delhi, but also their date of construction, traits, significance, and the lineages or families associated with these buildings and endowments (both religious and non-religious). This, however, was not Ahmad's first venture into historical writing. In 1915, he published *Waqi'yāt Mamlakāt-i Bijāpūr* that delineated the history and historical remains of the Adil Shahi rulers of Deccan, and included some illustrations of extant monuments in the region.[124]

The reason for this brief diversion into Urdu writings on historical and archaeological accounts is to point out that there was, and still is, a body of scholarly literature in languages other than English that most archaeologists in India have ignored thus far. Certainly, these texts were composed in a knowledge system very different from our times with very different expectations, and yet these can be treated in the same way as similar works produced in English around the same time. However, the place of such texts in Indian historiography is yet to be investigated, with the exception of Syed Ahmad's *Asar al-Sanadid*. Additionally, the lack of training in different modern Indian languages for archaeologists in academic and research departments limits their ability to access and use much of primary and secondary sources in the regional Indian languages.

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[123] Bashiruddin Ahmad, *Waq'iat-i Darulhukumat Dehli*, 3 vols. (Delhi: Urdu Academy, 1990[1919]).

[124] Bashiruddin Ahmad, *Waqiyate Mumlikate Bijapur*,2 vols.(Bangalore: Karnataka Urdu Academy, 2004[1915])

The scholarship reviewed thus far can be of use to archaeologists studying medieval India but it does not engage with the subject in a methodical manner, or discusses what such a study involves, its methods, and issues. The first archaeologist who proposed specific methods to study the material remains and settlements of 'medieval' India was Ramanlal Nagarji Mehta. Mehta, a Sanskritist, joined the M.S. University of Baroda for training in archaeology under the guidance of H.D. Sankalia and B. Subbarao in 1950. And like most archaeologists at the time, he started out investigating the prehistoric and early historic archaeological remains at sites in Gujarat.[125] It is likely that at many such occasions of archaeological reconnaissance and excavations Mehta observed the widespread medieval remains, in addition to architecture, and how understudied these were by the archaeologists. He then formulated his approach to the subject, which is most clearly delineated in a monograph titled *Medieval Archaeology*, wherein he recognized the fundamental difficulty in assigning definite boundaries to the period of his interest and advocated a multiple-source approach for the study of historical sites.

Mehta stressed the importance of using literary and oral data, as well as the evidence of toponyms derived from these oral and literary traditions, to interpret archaeological data.[126] From the general methods he described for both surface explorations and excavations of sites, it appears that his intention was to reach out to scholars of medieval India who are not necessarily trained as archaeologists. He included a broad survey of the range of structural remains and their

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[125] Some of Mehta's early works include: *Excavations at Timbarva, 1953*. M.S. University Baroda Archaeological Series No. 2. (Baroda: M.S. University, 1955); *Excavation at Devnimori: A Report of the excavation conducted from 1960 to 1963* (Baroda: M.S. University,1966); and, *Excavation at Nagara* (Baroda: M.S. University, 1968). See also, R. N. Mehta et. al. *Excavation at Jokha : being the report of the excavation at Jokha, Taluka Kamrej, District Surat* (Baroda: M.S. University, 1971); R.N. Mehta and A.J. Patel, *Excavation at Shamalaji* (Baroda: M.S. University, 1967); and, J.M. Nanavati et. al., *Somnath, 1956; being a report of excavations* (Department of Archaeology, Gujarat State, 1971).

[126] Ramanlal Mehta, *Medieval Archaeology* (Delhi: Ajanta Publications, 1979).

kinds, such as forts, wells, reservoirs, bridges, religious and non-religious structures that one

might encounter in the field. Additionally, he discussed a wide range of artifacts or minor

antiquities that had been found in excavated layers at medieval sites, including dominant ceramic

shapes and wares, bricks, tiles, glass (bangles and beads), stone (mortars, pestles, querns, mace

heads, beads, sculpture) and metal (tools, implements, images, ornaments) objects, and objects

made out of bone, ivory and shell. For Mehta, a close study of such archaeological materials

must be complemented with both literary and oral "traditions", i.e. texts as well as local folklore.

He insisted that historians of be mindful of these two issues: one, selective analysis of certain

texts while disregarding others, and two, the subjective nature of interpretation of historical texts

which is influenced both by the author's and historian's cultural or political biases. There is far

less of a divide in his mind then between a historian, working primarily with texts, and an

archaeologist, with the main focus on material remains. And therefore, he laments the lack of

training in languages in educational institutions, since without "an advanced refined

understanding of [a language's] finer shades, symbols and variety of meanings, it is very difficult

to interpret [texts]".[127]

The case studies in *Medieval Archaeology* are indicative of Mehta's own training and

research interests and comprise of both archaeological investigation of sites and texts. For

instance, in the context of the medieval site of Champaner in western India, Mehta pursued

enquiry into both specific historical incidents, for example the Mughal ruler Humayun's

conquest of Champaner and where events took place, as well as the key features of town

planning at Champaner. Similarly, he traced the growth of settlement at Surat from the thirteenth

to the eighteenth century using archaeological survey, a study of place names (toponymy), and

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[127] Mehta, *Medieval Archaeology,* 64.

translated historical texts. Mehta used archaeological data to establish the early modern

chronology of certain parts of the *Skanda Purana* (*Kaumarika khanda and Nagarakhanda*). He

extracted spatial information on the brahmanical pilgrimage sites (*tirthas*), types of settlements,

and construction events mentioned in the texts and juxtaposed it against exploration data from

Khambat and Vadnagar. Mehta continued his work on medieval India with explorations at

Chadravati, an early medieval town in Rajasthan.[128]

Mehta's work and interest was echoed by that of Madhukar Shripad Mate who advocated

that the archaeology of medieval India must go beyond the study of 'artistic remains' and access

"the ordinary man and his lifestyle."[129] Mate and his team surveyed and excavated Daulatabad

in central India, which rose to prominence when Muhammad bin Tughlaq (r.1325-1351) moved

his capital there for roughly two years from Delhi, and it continued to be the seat of power under

the Bahmanis who came to power in the Deccan after Tughlaq dominance receded. The report on

Daulatabad[130] is a brief summary of the archaeological investigations at the site with discrete

sections on structures, antiquities, and water management. Questions of 'where' and 'when'

dominate the research narrative leaving a lot to be said about 'how' and 'why'. Mate raised some

issues pertinent to the archaeology of medieval India or, more specifically, to what he called

"Islamic archaeology in India"[131]. He observed that the Islamic townships grew horizontally and

covered large areas with occupation that clustered around certain monumental features, resulting

in thin deposits or stratigraphic layers. He therefore advocated a landscape approach to medieval

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[128] Ramanlal N. Mehta, *Chandravati: Being a report of explorations conducted in March 1968*. (Baroda: M.S. University, 1980).

[129] Madhukar S. Mate, "Daulatabad: road to Islamic Archaeology in India," *World Archaeology* 14, no. 3 (1983): 335.

[130] M.S. Mate and T.V. Pathy, eds., *Daulatabad: A Report on the Archaeological Investigation* (Pune: Deccan College Post Graduate and Research Institute, 1992).

[131] Mate, "Daulatabad: road to Islamic Archaeology in India," 341.

remains to analyze features over a wide area through surface survey and accurate contour maps before excavations of the targeted area. Like R.N. Mehta, Mate also believed that expertise in a wide range of sources was a prerequisite for archaeological research into medieval India. This is reflected in the collaborative nature of the excavation project carried out at Daulatabad, where three different institutes worked together to investigate the archaeology and history of the site of Daulatabad. The report, however, is rather anticlimactic in that it does not juxtapose material evidence with that from texts or epigraphs, some of which infuse life into the unearthed ruins.

In his most recent work on the subject, Mate[132] reviews some of the key archaeological projects on medieval sites in India, such as Hampi, Champaner, Fatehpur Sikri, Thanesar, Lal Kot, and Barabati. He also compared the reports on explorations and excavations published by the Archaeological Survey of India from 1985 – 95 to indicate the preference for archaeological research investigating the pre/proto-historic and early historic period, compared to later centuries. Additionally, Mate listed the kinds of remains that can be studied for this period and their essential features. For instance, the bastions on fort-walls constructed in medieval India could be, according to Mate, indicative of their relative chronology with the fourteenth century marking the stylistic threshold after which builders preferred round bastions over square ones.[133] However, evidence from some parts of India, such as northern Deccan where both square and round bastions were constructed on fort walls until at least the 15th or 16th centuries, challenges such an assertion.[134] In the section on artifacts, such as ceramics and glass objects, Mate attributed the origin of polychrome glass bangles to India, since these were not reported from

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[132] M.S. Mate, *Archaeology of Medieval India* (Delhi: B.R. Publishing House, 2005).

[133] Mate, *Archaeology of Medieval India*, 57.

[134] For example, Robert Brubaker, "Cornerstones of Control: The infrastructure of imperial security at Vijayanagara, South India." (PhD Diss., University of Michigan, 2004).

Persia or China—two areas that were known to have produced both glass and glazed ware. Mate specifically noted that the glass bangles from "Islamic layers" were round in cross-section and usually bi or polychrome. In the case of ceramics at Daulatabad, however, he could not differentiate between what he called the "Yadav" remains (implying "Hindu" remains) from the "late Sultanate remains"[135] on account of continuous occupation at the site. In addition, he suggested that the use of metal pots in cooking during medieval times could explain a decrease in the types of earthenware cooking vessels vis-à-vis other kinds of vessels.[136]

Both R.N. Mehta and M.S. Mate understood the medieval period as that marked by the dominance of Perso-Islamic political culture in India, beginning in the 12th/13th century AD and ending in ca. 18th century AD. The implicit assumption is that a change in religion of the ruling classes comes to dominate a range of material remains as well. Both Mehta and Mate articulate the material culture of this period primarily in terms of being "Islamic", which is a problematic characterization for more reasons than one. First, the Perso-Islamic political culture did not come to dominate large parts of India until the time of the Mughals (16th century AD) and this political culture itself went through much transformation and regionalization after the 12th/13th century AD. Nor was there a monolithic "Islamic" culture that pervaded the entire range of archaeological materials. Lastly, such periodization favors religion over economic and social factors that could equally influence material culture of medieval India.

Supriya Varma and Jaya Menon discussed the ceramics from the site of Indor Khera (in Uttar Pradesh, northern India) within the context of the dispute surrounding the site of Babri

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[135] Mate, *Archaeology of Medieval India*, 68.

[136] Mate, *Archaeology of Medieval India*, 81.

Masjid—Ram Janmabhoomi.[137] They highlighted the issues with investigating identity through material remains, especially in the context of medieval India, and how such research feeds into the current politics of knowledge and the writing of history in India. They argue that it is both difficult and problematic to talk about identities using material remains like bricks and ceramics without knowing their archaeological context. They contend that certain pottery forms like the knife-edged bowls were used in northern India from the 4th to 15th century and cannot therefore be attributed to any one period of history, nor can these ceramics or bricks be considered to signify the religious identity of the people who produced or used these vessels.[138] Moreover, it is unclear whether trends in ceramic production and consumption at one site were representative of the same operating at a larger scale or whether these trends were site or region specific.

Since the work of R.N. Mehta and M.S. Mate, there has been an increase in the number of archaeological studies directed to study India from 6th century onwards, while casual reference to medieval or later remains continued as part of annual reports on explorations and excavations. In the 1980s, however, a long-term archaeological project was launched to study the material remains of one of the m ost significant polities of the Vijayanagara Empire. Located in northern Karnataka, Vijayanagara was an important political player in the Deccan from the fourteenth to the mid-sixteenth century. Historians have a wide range of written sources at their disposal to study different aspects of the Vijayanagara Empire, such as inscriptions,[139] texts in

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[137] Supriya Varma and Jaya Menon, "Archaeology and the Construction of Identities in Medieval North India," *Studies in History* 24, no. 2 (2008): 173–193.

[138] Varma and Menon, "Archaeology and the Construction of Identities," 191.

[139] B. R. Gopal, *Vijayanagara Inscriptions: Volume I* (Mysore: Directorate of Archaeology and Museums, Government of Karnataka, 1985) and *Vijayanagara Inscriptions: Volume 2* (Mysore: Directorate of Archaeology and Museums, Government of Karnataka, 1986); C.S. Patil and V. C. Patil, *Inscriptions at Vijayanagara (Hampi)* (Mysore: Directorate of Archaeology and Museums, 1995).

Indic languages produced by court poets,[140] travel accounts in various languages,[141] and archives

of correspondences between different actors in the contemporary Deccan politics.

The Vijayanagara Research Project focused on the life of people in the capital city of

Hampi by studying its art and architecture, religious practices, agricultural landscapes and water

management, ceramics and craft production. [142] Research into the dynamics of the Vijayanagara

landscape was subsequently taken up to understand urban economies, identify areas of

production and how these related to other parts of the Vijayanagara metropolitan region, and to

conduct more focused research regarding production itself.[143] Of particular mention is Sinopoli's

study of ceramics excavated from different parts of the royal city of Hampi to (a) develop a

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[140] A good resource for primary sources is S. K. Ayyangar, *Sources of Vijayanagara History: Selected and Edited for the University* (Madras: University of Madras, 1919). For recent translations and analysis of some of the textual material for Vijayanagara and contemporary states, see Phillip B. Wagoner, *Tidings of the King: A Translation and Ethnohistorical Analysis of the Rayavacakami* (Honolulu: University of Hawaii Press, 1993); C.T.M. Kotraiah and A.L. Dallapiccola, *King, Court and Capital: Anthology of Kannada Literary Sources from the Vijayanagara Period* (New Delhi: Manohar and American Institute of Indian Studies, 2003).

[141] For standard travel texts see, Robert Sewell, *A Forgotten Empire: Vijayanagara* (London: Swan Sonnenschein & Co. Ltd., 1900); and Joan-Pau Rubiés, *Travel and Ethnology in the Renaissance: South India through European Eyes, 1250-1625* (Cambridge: Cambridge University Press, 2000). See Wheeler M. Thackston, "Kamaluddin Abdul-Razzaq Samarqandi: mission to Calicut and Vijayanagar," *A century of princes: sources on Timurid history and art*, 299–321(Cambridge: Aga Khan Program, 1989) as an example of a non-Western travel account of Vijayanagara.

[142] This is not a compreghensive list but highlights the breadth and depth of research on Vijayanagara.Art and Architecture: R. N. Saletore, *Vijayanagara art* (Delhi: Sundeep Prakashan, 1982); Fritz, John, et. al., *Where kings and gods meet: the Royal Center at Vijayanagara, India* (Tucson: University of Arizona Press, 1984); G. Michell, *Architecture and Art of Southern India: Vijayanagara and the Successor States 1350-1750*. The New Cambridge History of India, Vol. 6 (New York: Cambridge University Press, 1995); A. L. Dallapiccola and A. Verghese, *Sculpture at Vijayanagara: Iconography and Style* (New Delhi: Manohar and AIIS, 1998); N. Tobert, *Anegondi: Architectural Ethnography of a Royal Village* (New Delhi: Manohar and American Institute of Indian Studies, 2000). For religious practices: Anila Verghese, *Religious Traditions at Vijayanagara: As Revealed Through its Monument* (New Delhi: Manohar and American Institute of Indian Studies, 1995); and Alexandra Mack, *Spiritual Journey, Imperial City: Pilgrimage to the Temples of Vijayanagara* (Delhi: Vedams, 2002). Water management and agricultural landscapes: D. J. Davison-Jenkins, *The Irrigation System and Water Supply System of Vijayanagara*. (New Delhi: Manohar and AIIS, 1997); and Morrison, *Daroji Valley*. Ceramics and craft production: Carla Sinopoli, *Pots and Palaces: The Earthenware Ceramics of the Noblemen's Quarter of Vijayanagara* (New Delhi: Manohar and AIIS, 1993); and Carla Sinopoli, *The Political Economy of Craft Production: Crafting Empire in South India, c. 1350-1650* (Cambridge: Cambridge University Press, 2003).

[143] Carla Sinopoli and Kathleen D. Morrison, *The Vijayanagara Metropolitan Survey: Volume I* (Ann Arbor: University of Michigan, 2007).

method to classify the ceramics, (b) detect areas for distinct activities, and (c) examine the relationship between ceramic variation and social organization.[144] Such a classification of ceramics for post-Gupta archaeological deposits is wanting for other parts of India. In the absence of such ceramic chronology and classification it is hard to conduct vast comparative studies and to establish regional trends in material culture.

Excavations and explorations at medieval sites in different parts of the country in the last two decades is helping build an improved understanding of medieval material culture and its patterns. The sequence of archaeological cultures and their spatial distribution continue to be the most important questions for archaeologists, which encourages vertical excavations and recording of remains that may not necessarily be of prime interest of the investigators. For instance, Purana Qila,[145] Sonkh,[146] and Hastinapur,[147] were all excavated to study early historic or proto-historic remains, nevertheless their reports provide an insight into medieval artifacts and structural remains as well. A few important sites that have yielded stratigraphically referenced materials that can be used for intra and inter regional studies, besides the ones already discussed so far, are Barabati, Thanesar, Lal Kot, Gaur, and Tughlaqabad, Sanjan, and Chaul.

The early historic and medieval remains at the mound called Harsh-ka-Tila, at the city of Thanesar (Haryana), were excavated to establish the chronology of occupation at the site going as far back as about two thousand years.[148] Despite the tentative classification of phases or periods of activity at the site, the material remains from Thanesar are significant in delineating

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[144] Sinopoli, *Pots and Palaces*.

[145] *Indian Archaeology – a Review* (henceforth, IAR) 1954-55 and *IAR 1969-73*.

[146] Härtel, *Excavations at Sonkh*.

[147] Lal, "Excavations at Hastinapur."

[148] B. M. Pande, "Archaeology of Thanesar: A Brief Report on Excavations at Harsh-Ka-Tila," *Puratattva* 19 (1990): 1-5.

material culture in north India from around seventh century onward. This might explain why archaeologists have resumed excavating the medieval and early modern layers at Thanesar in the last decade.[149] About two hundred kilometers south of Thanesar are medieval cities of Lal Kot and Tughlaqabad, now embedded in the urban sprawl of Delhi.

B.R. Mani excavated the remains of Lal Kot, one of the earliest forts built in the area occupied by modern Delhi, in the early 1990s.[150] The excavations were directed to identify the citadel or the place of elite residence at the site, understand the layout and settlement pattern of structures, and correlate it with what was known of the Rajput history in the region. The report not only elucidates the materials unearthed at Lal Kot but also invokes archaeological findings from other excavated or explored areas in or around Delhi. Excavations at Tughlaqabad did not begin until the beginning of the twenty-first century, for which only brief reports are accessible in the yearly review of Indian archaeology.[151]

In eastern India, two medieval sites that have been studied archaeologically are Barabati fort, in Odisha, and Gaur, in West Bengal. The remains of Barabati fort form a part of the modern city of Cuttack with only the revetment of the fort, arched gateway, and a mosque left standing.[152] In the early 1990s, Aniruddha Ray used published historical literature to identify the remains of the city of Gaur-Lakhnauti, in West Bengal.[153] Gaur functioned as a regional political

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[149] IAR 2002-03 and IAR 2003-04.

[150] B. R. Mani, *Delhi Threshold of the Orient: Studies in Archaeological Investigations* New Delhi: Aryan Books International, 1997).

[151] IAR 2002-2003. For an architectural study of the fort at Tughlaqabad, see M. Shokoohy and N.H. Shokoohy, *Tughluqabad: A Paradigm for Indo-Islamic Urban Planning and Its Architectural Components* (London: Araxus Books, The British Academy, 2007).

[152] P. Mukherjee, "History of the Barabati Fort," *The Orissa Historical Research Journal* 5(1956): 127-134.

[153] Aniruddha Ray, "The Archaeological Reconnaissance at the City of Gaur: A Preliminary Report," *Pratna-Samiksha* 2&3 (1993).

center intermittently from the 13th century onwards, as is evident in the widespread

archaeological remains at the site. Today, the international border between India and Bangladesh

runs through the site, and therefore archaeologists on both sides of the border have attempted to

survey the area and record spatial distribution of its remains.[154] A significant monograph on the

history, environment, settlement distribution, and monuments of Gaur on the Indian side was

published recently,[155] with the objective of understanding the process of urbanism and desertion

of Gaur. Another spell of archaeological research at Gaur was launched in the early twenty-first

century when the ASI began excavations at some parts of the city.[156]

Chaul, a port-town along the west coast of India about a hundred kilometers south of

Mumbai (Bombay), played an important role in trade across the Indian Ocean from the early

historic to modern times. Historical interest in Chaul has a long history, beginning with early

modern travel accounts in European languages, but archaeological studies began much later

beginning with reports on structural remains.[157] Excavations at Chaul attested that Chaul was a

trading port town over many centuries as well as a production site for glass beads that may have

found their way to as far a place as the eastern coast of Africa.[158] Around the same time,

archaeological interest grew around Sanjan, located south of the Portuguese colony Daman in

Gujarat. Investigations at Sanjan were directed towards a specific historic event—that of

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[154] A. B. M. Husain, ed., *Gawr-Lakhnawti: A Survey of Historical Monuments and Sites in Bangladesh* (Dhaka: Asiatic Society of Bangladesh, 1997).

[155] Suchira Roychoudhury, ed., *Gaur, The Medieval City of Bengal*, Special Issue of Pratna Samiksha (Kolkata: Centre for Archaeological Studies & Training, Eastern India, 2012).

[156] IAR 2002-03, 2003-04

[157] J. G. Da Cunha, *Notes on the History and Antiquities of Chaul and Bassein* (Bombay: Thacker, Vining & Co., 1876)

[158] Vishwas Gogte, et. al., "The Ancient Port at Chaul," *Journal of Indian Ocean Archaeology* 3 (2006): 62-80.

migrations of Zoroastrians from Persia to India after eighth century.[159] The material remains

from Sanjan constitute an important comparative evidence to study contemporary sites in

western India as well as trade across the Indian Ocean.[160] Significant architectural and art

historical studies of early modern cities of Golconda[161] and Ahmadnagar[162] provide useful

methodological insights into historical archaeology.

The archaeological data and insights offered by excavations and surface surveys are

opening new areas of research into medieval India. Survey reports on settlement patterns in early

medieval eastern India and peninsular India indicate a significant increase in the number of

settlements. [163] A team of social scientists surveyed and mapped historical remains at Chanderi in

central India to understand its urban morphology from about tenth to the eighteenth century.[164]

Sections of the report trace changes in the built environment in different parts of Chanderi over

distinct chronological markers. The classificatory labels used by the scholars to characterize

[159] S. P. Gupta, et.al., "Preliminary Report of the Third Season of Excavations at Sanjan—2004," *Journal of Indian Ocean Archaeology* 2 (2005):55-61. Rukshana Nanji and H. Dhalla, "The landing of the Zoroastrians at Sanjan: The archaeological evidence," in *Parsis in India and the diaspora,* eds. John R. Hinnells and Alan Williams, 35-58 (New York: Routlege, 2008).

[160] S. P. Gupta et. al., "Early Medieval Indian Ocean Trade: Excavations at Sanjan, India," *Circle of Inner Asian Art Newsletter* 17 (2003):26-34.Rukshana Nanji, *Mariners and merchants: A study of the Ceramics from Sanjan (Gujarat)*. BAR International Series 2231 (Oxford: Archaeopress, 2011).

[161] Robert Simpkins, "The Road to Golconda: European Travellers' Routes, Political Organization and Archaeologt in the Golconda Kingdom (1518-1687)" (PhD Diss., University of Wisconsin-Madison, 2011).

[162] Pushkar Sohoni, "Local idioms and global designs: Architecture of the Nizam Shahs" (PhD Diss., University of Pennsylvania, 2010).

[163] Sheena Panja, "Understanding Early Medieval Sites of North Bengal," in *Archaeology of Eastern India: New Perspectives*, eds. Gautam Sengupta and Sheena Panja (Kolkata: Center for Archaeological Studies and Training, 2002); Suchi Dayal, "Towns, Villages and Desertion: Exploring the Early Medieval Phase in Indian Archaeology," *Man and Environment* 30, no. 1(2005):61-66.

[164] Gerard Fussman and K.L. Sharma, eds., *Naissance et déclin d'une qasba Chanderi du Xe au XVIIIe siècle* (Paris: Diffusion De Boccard, 2003).

phases of the town are "pre-Islamic" and "Islamic conquest/Malwa Sultanate", among other dynastic labels.[165]

A growing number of studies look into specific research questions using more than one kind of evidence, something that R.N. Mehta prescribed over three decades ago. It is evident that such multiple-source approach allows scholars to realize hitherto evasive historical phenomena. For instance, Lahiri used both surface survey and oral history to illustrate the dissonance between articulation of religious spaces in texts and that on the ground.[166] More recently, Suvrathan studied the sacred landscapes of Banavasi, in Karnataka, through archaeological and epigraphic data to demonstrate how the practice of both traditional religious institutions as well as local cults and religious traditions in ancient and medieval Banavasi reflects patterns in their replacement, competition, appropriation and abandonment.[167] As has been discussed in Chapter 2 above, Morrison's research on the process of agricultural intensification in the Vijayanagara Empire indicated increased construction of irrigation facilities during the early phase of the Vijayanagara state in 14th century but a period of relative lull followed in the 15th century, only to gain momentum and vigor in the 16th century.[168] She argued that the farmers in Vijayanagara practiced multiple strategies of agricultural production simultaneously, and the process of agricultural intensification involved diverse scales and forms of production that were differentially used by producers at all levels of society.

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[165] See Alka Patel, *Building Communities in Gujarāt: Architecture and Society During the Twelfth Through Fourteenth Centuries* (Leiden: Brill, 2004) for a detailed discussion on classification of architecture of the early medieval period.

[166] Nayanjot Lahiri, "Archaeological Landscapes and Textual Images: A study of the sacred geography of late medieval Ballabgarh," *World Archaeology* 28, no. 2 (1996): 244 - 264.

[167] Uthara Suvrathan, "Spoiled for Choice? The Sacred Landscapes of Ancient and Early Medieval Banavasi," *South Asian Studies* 30, no. 2 (2014): 206-229.

[168] Morrison, *Fields of Victory*, 166.

The most recent example of multi-source research on medieval and early modern India focuses on the Deccan and utilizes textual, inscriptional, and architectural insights to understand how power was articulated, memorialized, and invoked in texts as well as architecture from 1300 to 1600. Marking a significant shift from conventional archaeological inquiries into the same region and time period, Richard Eaton and Phillip Wagoner concentrate on what are identified as the "secondary centers of power", or areas that provided the economic base for the growth and sustenance of power in the primary centers.[169] However, the themes they trace throughout the Deccan landscape emerge out of scholarly interest in the primary centers. In other words, the contested and peripheral zones are understood through the interests of the primary centers in these areas, especially as Persian court chronicles or political histories written at the centers are the abiding guides that led the authors to select certain routes and sites for their study. One of the main aims of their project was to understand the reasons and mechanisms of remembering and forgetting certain elements of the past reflected in architecture; how people in history reconceived their remembered past, and transformed pre-existing structures, motifs, and objects to convey certain political ideas. Although this work covers a wide geo-political region and chronology, it provides very useful and detailed architectural studies primarily of Kalyana, Raichur, and Warangal.

Besides archaeological studies on medieval India, there is a growing body of literature on understanding water management. In addition to a brief overview of history of water technology in India by M.S. Mate[170], recent historical and archaeological studies explore other related themes, such as gardens. A useful volume in this regard is one by Daud Ali and Emma Flatt

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[169] Richard M. Eaton and Phillip B. Wagoner. *Power, Memory, Architecture: Contested sites on India's Deccan Plateau, 1300 – 1600* (Delhi: Oxford University Press, 2014).

[170] Madhukar S. Mate. *A History of Water Management and Hydraulic Technology in India, 1500 BC to 1800 AD.* (Delhi: BR Publishing, 1998).

where the editors select paper brodly aimed at Ali and Flatt moving away from the notions of 'Islamic' and 'Timurid' gardens that are based on specific features of a garden-plan, towards a more social understanding of the garden, its life and after-life.[171] Rötzer and Sohoni decipher the palimpsest of garden architecture and their associated water systems in and around Bidar (the Bahmanis city from 1424 to 1527). They argue that the technique of constructing qanats was first utilized at Bidar and only later adapted to other places such as Burhanpur and Bijapur, both in the basaltic traps of the Deccan.[172]

This review of archaeological research on India of the period between ca. 6th to 15th centuries is far from comprehensive, but it enables us to highlight certain methods that are critical for further research in the field. The current historiography of medieval India engages predominantly with literary cultures, textual and inscriptional, where a trend towards linguistic vernacularization and regional state formation has been noticed. However, we are yet to understand what these changes in literary cultures meant in archaeological terms; whether they translate into similar changes in the material culture or not, and what this might say about the relationship between the state and its network and actors (certainly visible in literary sources), and the society (only part of which is evident in literary sources). What is clear from the review above is that multi-source approach and interdisciplinary research is the only way to answer even basic historical and historiographic questions, and explore hitherto understudied themes of medieval history.

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[171] Ali, Daud and Emma J. Flatt. "Introduction." In *Garden and Landscape Practices in Pre-colonial India: Histories from the Deccan* edited by Daud Ali and Emma J. Flatt, 1-17. London: Routledge, 2012.

[172] Qanats tapped into underground sources of water and carried them to cities and their environs through underground channels with gentle gradients and holes/shafts along the way for ease of access. Qanats could be used for both drinking and irrigation purposes. Klaus Rötzer and Pushkar Sohoni, "Nature, Dams, Wells, and Gardens: The Route of Water in and around Bidar," in *Gardens and Landscape Practices in Pre-colonial India: Histories from the* Deccan, eds. Daud Ali and Emma J. Flatt, 54-73.(London: Routledge, 2012).

Knowledge of both the text and the material is critical to understand the ways in which past societies used language, writing, and objects to further their roles or positions in society. Linguistic skills in not just classical Sanskrit, traditionally associated with archaeological training in India, but other regional languages as well are prerequisites for meaningful intellectual dialogue between the archaeologist and the philologist. Inscriptions represent a unique source because they possess both materiality and textuality. As discussed above, inscriptions inscribed on either copper plates or on stone have been studied in great detail for certain aspects of political, religious, economic, and social order. Aggregative studies of inscriptions expose patterns over large scales, but it can be problematic to assume that the inscriptional record translates directly into the archaeological record.[173] Contextualizing inscriptions in their archaeological milieu is imperative to understand the meanings and implications of such inscriptions that memorialize events or the donations they record. Morrison and Lycett draw attention to relatively short inscriptions in agrarian contexts, outside the realm of temples to highlight the bias in sampling and recovering the wide range of inscriptions in the Vijanagara landscape.[174]

Advances in historical and archaeological theoretical frameworks and methods have together made it possible to investigate broader issues, spaces, and time periods. A comprehensive coverage of them all is beyond the scope of this dissertation, but it is hoped that a review of important archaeological research in the field of early medieval and later medieval periods has indicated the new questions and new means to answer those questions that we have

[173] Kathleen D. Morrison and Mark T. Lycett, "Centralized Power, Centralized Authority? Ideological Claims and Archaeological Patterns," *Asian Perspectives* 33, no. 2 (1994): 334.

[174] Kathleen D. Morrison and Mark T. Lycett, "Inscriptions as Artifacts: Precolonial South India and the Analysis of Texts," *Journal of Archaeological Method and Theory* 4, no. 3/4 (1997): 215 – 237.

at our disposal today. In archeology, improved scientific dating techniques, advances in palynology, zooarchaeology, satellite remote sensing and their many applications, are all methods and means that have proved to be of relevance not only for the study of early, ancient, or pre-historic societies, but just as much for later and much more complex societies with a wide-range of sources.

Chapter 5: Archaeological Survey at Gabbur: an *agrahāra* through time

The history of early medieval India relies heavily on the epigraphic materials both on

copper plates and those on stone recording donations of land, usually to religious institutions and

individuals. This phenomenon of issuing landgrants and setting up of *agrahāras* is least

understood in terms of their material culture, as discussed in the previous chapter. This project's

archaeological survey at Gabbur, an *agrahāra* settlement in the Raichur district, tells us what

such a settlement may have looked like as a functioning entity, besides enabling us to address

questions regarding the political economy of water in the Raichur district. Gabbur stands out

among other villages in the Devdurg taluk not only because of its relatively large size but also

due to a concentration of temples and inscriptions going as far back as the late eleventh century.

There is evidence of earlier occupation and human activity in the form of microliths

manufacturing debitage just north of Gabbur village, although quarrying for stone, both in

historical times and today, seems to have impacted surface remains of earlier societies in and

around Gabbur. Both architecturally and epigraphically the 11th century represents a gradual but

definite change in the history of Gabbur and the region. One of the earliest inscriptions, dated

A.D. 1084 (G16) [175], located on the hill west of Gabbur village, refers to the place as

śrimadagrahāram piriyagobbura, or as an *agrahāra* settlement known by the name of Piriya

Gobbur[176]. Another inscription (G10) from about a decade later, today found next to a ruined

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[175] In this chapter, the number preceded by the letter 'G' refers to the data-point at which its details are recorded and can be looked up in the accompanying appendices and maps.

[176] Devarakonda Reddy, ed. *Inscriptions of Raichur*, Kannada University Epigraphical Series, volume VII (Hampi: Kannada University, 2003), 87-90. This volume of inscriptions is one of the latest published on Raichur that includes summary translations of the inscriptions in English. Henceforth this publication will be cited using the acronym IRKUH (Inscriptions of Raichur, Kannada University Hampi). A similar but earlier compendium of Raichur inscriptions is Channabasappa Patil and Vinoda C. Patil, eds., *Inscriptions of Karnataka Volume IV, Inscriptions of Raichur District* (Mysore: Directorate of Archaeology and Museums, 1998), henceforth IK.IV followed by a number indicating the number assigned to the inscription in this volume. See, Inscription No. 18, p. 6.

temple in the village mentions that Chalukya king Āhavamalla (title borne by king Someśvara I), had donated the village of Gobbur to *mahājanas*/brahmins for performing a sacrificial offering (*koti homa*),[177] presumably creating the *agrahāra* of Gabbur.

Before discussing the archaeology of Gabbur, it might be useful to discuss what we mean by an *agrahāra* settlement. In short, an *agrahāra* settlement is a village or settlement on a land that is a part of a royal donation to Brahmanas.[178] Historians have noted a significant increase in instances of *agrahāra* being mentioned in inscriptions from about 6th century AD across the Indian subcontinent. Until the 10th century AD most such royal land grants were made in favor of Brahmanas, while others were made to institutions such as temples (Vaishnava and Shaiva), and monasteries (Buddhist and Jaina). In most cases, the donated land, either called *agrahāra* or *brahmadeya*, was free of tax obligations. Inscriptions from Gabbur provide us with a glimpse into the politics of gift-giving and donations in an *agrahāra* settlement from late eleventh to the thirteenth century. There are some inscriptions that were issued after the thirteenth century, but they are fewer in number and document things different from issuing of grants.

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[177] IRKUH, 69-70; IK.IV, No. 4, 2.

[178] M. Monier-Williams, *A Sanskrit English Dictionary* (Delhi: Motilal Banarsidass, 2005 [2002]), 6.
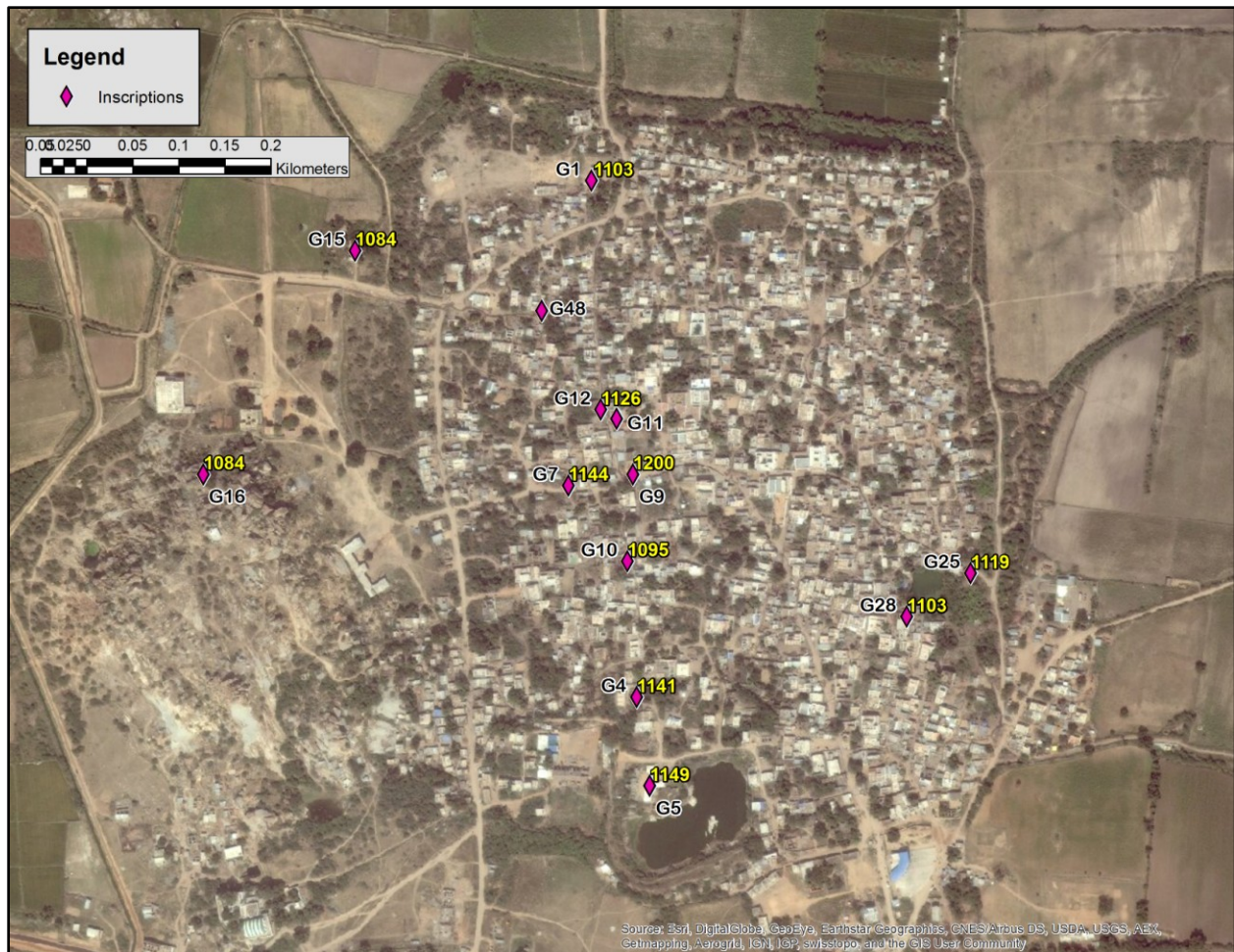
Fig. 5-1: Map of inscriptions in and around the modern village of Gabbur. The dates are mentioned in yellow. At data points where there is more than one inscription the date of the earliest inscription is mentioned on the map.

While the practice of issuing royal land grants to *brahmanas* and other religious beneficiaries emerged and became widespread in the early medieval period, there is strong evidence that argues for the continuity of these landgrants into the medieval and early modern periods. It is generally presumed that the foundation of Islamicate polities across South Asia led to drastic changes in architecture, religion, and culture. Over the last decade scholars have challenged such notions and neat periodization arising out of it. This dissertation demonstrates how a study of archaeological and epigraphic material from locales such as Gabbur, that were

not centers of political power, allows us to see far more enduring patterns of settlement as well as investment in water infrastructure.

Generally, in both archaeology and history of South Asia, institutions that were already in place before the rise of Islamicate states in the Deccan, classified as 'Hindu' institutions, are rarely analyzed or considered while writing histories of and after the rise of Islamicate polities, under the assumption that changes in the fundamental social and political fabric of the Deccan (and in South Asia, more broadly) were wrought by 'Muslim' institutions and culture. The fact that, in the case of the southern Deccan, *agrahāra* grants continued to be mentioned as late as the time of the Nizams of Hyderabad (c. 1724 – 1948), ruling over the Raichur district from their capital at Hyderabad, challenges such notions and highlights the resilience of older institutions and their continuous endowments by many different polities over time, irrespective of their socio-religious and cultural orientation.

Officials of the Nizam's state, writing on typology of land grants and administrative classifications in the nineteenth century, categorically confirm such continuity of pre-Islamic institutions that survived well beyond their early medieval foundations into the modern period, albeit with some modifications.[179] Here, *agrahāra* is understood as one of the religious grants issued to Hindus, the equivalent of similar religious grants issued to Muslims. A clear distinction is made between *agrahāra* and *jagīrs* or land revenue assignments in use under the Mughals. Unlike *jagīrs*, *agrahāras* were not revenue assignments; *agrahāras* were lands gifted to *brahamnas* in perpetuity for the benefit of the temple, including the service of both *agarbatti/agar*, a fragrant wood from the hills of the Deccan, and garlands of flowers.[180] While

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[179] I am indebted to Mohd. Ziauddin Ahmed Shakeb for M. Z. A. Shakeb, *Jami'-ul-'atiyāt: A compendium of feudal grants based on various works of Nawab Aziz Jung Vila* (Hyderabad: Vila Academy, 1974).

[180] *Jami'-ul-'atiyāt*, p. 51, 99-100.

the inscriptions from Gabbur mention the case of a *brahmana* who received a grant and later donated or transferred it further[181], by the nineteenth century, *agrahāra* land was considered non-transferable.[182] The continuity of this institution was, therefore, not without some changes. For instance, *Jami'-ul-'atiyāt* informs us that in cases where the beneficiaries were appointed by the government, i.e. those who were not the inheritors of older *agrahāra* grants, the grants were not issued in perpetuity and were disregarded if the conditions they were given on were not fully established or proven. Additionally, these grants issued by the Nizam's government were also subject to a small number of taxes. Such measures were intended to check the concentration of wealth in the hands of such landgrant holders[183], perhaps in response to already established and, therefore, economically and politically powerful landed classes (*brahmanas/mahājanas*) in the countryside. Archaeological remains recorded through a systematic surface survey at Gabbur, discussed in this chapter, offer a third largely unexamined dimension to the continuity of *agrahāras* in the medieval landscape of northern Karnataka.

The temples of Gabbur are only one kind of remains that provide a material link to its past. Most of the temples within the village are constructed along a street that connects the largest water body of the village, in the south, to the northern entrance of the village. Accompanying some of the temples are inscriptions etched on stone slabs. Nearly all of them were recorded, transcribed, and published by surveys conducted by epigraphists in the twentieth century, because inscriptions were viewed as sources of the past that could converse directly with the present; inscriptions in some ways were the voice of the past that only had to be retrieved. One of the aims of the systematic survey at Gabbur, among recording spatial

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[181] IRKUH, pp. 69-70. IK.IV, p. 2.

[182] *Jami'-ul-'atiyāt*, p. 52.

[183] *Jami'-ul-'atiyāt*, p. 100.

distribution of temples, inscriptions, sculptures, other structural remains, wells, and embankments in and around the modern settlement, was to reconstruct the archaeological context in which these inscriptions were first written.

The historical settlement of Gabbur appears to have been enclosed by a wall that once ran around it on all four sides, enclosing an area of 42 hectares and a large tank or cistern on the south side. This wall is damaged at most places, although rectilinear bastions and gateways are intact at some places along the western, eastern, and southern sides. Most, if not all, of the modern entryways into Gabbur correspond to the historical gateways that are named after important contemporary villages or places they lead to, such as Raichur Agassi (facing east) and Kallur[184] Agassi (facing south-east). While most of the temples from the survey area were recorded inside the walled settlement of Gabbur, there were others spread out in the agricultural areas outside the village. I develop a chronology for Gabbur not just through a stylistic study of temple architecture or methods of construction, but also through inscriptions and indirect dating that relates material remains from one place to those from others.

Let us first turn to the outer-most features including walls, the moat and fortification structures of Gabbur. The wall around Gabbur is made up of dressed and undressed boulders that line a thick earthen core. The earthen fill would also have enabled movement around the settlement on the wall itself, akin to the outer fortification at Maliabad we will discuss in the following chapter. The fortification wall of Gabbur is damaged or destroyed at many places and there are parts of what could have been a moat along the wall on the north. Today, parts of this moat contain stagnant water, that mostly appears to collect from annual monsoon rains. Such a moat was not found at Maliabad, except there were water collection areas along the outer

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[184] Kallur was a contemporary *agrahara* settlement south of Gabbur. Ten inscriptions from Kallur have been reported. IRKUH, pp. 280-292.

fortification on the south, possibly predating the need and use of moats found at many forts of the Deccan, including the one at Raichur. Since the masonry of the fort wall at Gabbur is stylistically similar to the outer fort wall of Maliabad, the two fort walls may have been built according to conventions followed during the same time period, with the caveat that a technique can be practiced over very long periods of time with or without continuity in other aspects of culture, and that different techniques can be followed within a single culture or time period.

A fragmentary inscription from a temple complex in the southern part of Gabbur, recorded in the second half of the twelfth century (ca. 1171 AD), mentions gifts to a certain deity consecrated in the *nirakote* (ನೀರಕೋಟೆ)*, literally 'water fort', of Hiriya Gobbūr (ಹಿರಿಯ ಗೊಬ್ಬೂರ).[185] It implies that there was a wall or fortification around a water body and/or the settlement of Gabbur by the late twelfth century. It is likely the same wall that we see today around the settlement. There are few archaeological studies that record and provide detailed descriptions of forts in northern Karnataka, such as from Banavasi[186], Vijayanagara and Kummata[187], and a recent study on forts of the Deccan[188]. No comparable examples of fortification similar to that of Gabbur were found at any of these places (except from Maliabad)[189], making it difficult to analyze the fortification at Gabbur. It must also be pointed out that most of these other places were centers of

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[185] IRKUH, pp. 58-60. This inscription was recorded in the fifth year of Kalachuri king Rayamurari Sovideva. He is given the title of *chakravartin* in the inscription.

[186] Uthara Suvrathan, "Complexity on the Periphery: A study of regional organization at Banavasi, c. 1st – 18th century A.D.", PhD Diss., University of Michigan, 2013. (Accessed at http://hdl.handle.net/2027.42/97865)

[187] Brubaker, *Cornerstones of Control*.

[188] Eaton and Wagoner, *Power, Memory, Architecture*.

[189] Maliabad is mentioned by Eaton and Wagoner, *Power, Memory, Architecture*, p. xxv, fn. 2) only summarily. An earlier article, Richard Eaton, "'Kiss My Foot,' Said the King: Firearms, Diplomacy, and the Battle for Raichur, 1520," *Modern Asian Studies*, 43 (2009): 289-313, cites the account of Nunes mentioning Maliabad as the town/village where the Vijayanagara forces camped before attacking Raichur in 1520. It is to be noted that the authors do not mention any guns at Maliabad.

political control and therefore the nature of these settlements would have been very different from that of a place like Gabbur. Despite strong material indications that Gabbur was an important settlement in medieval times, there is no mention of it in inscriptions or texts as a political or administrative center. Like Maliabad's outer fort wall (discussed in the next chapter) the bastions along the fort wall at Gabbur are rectilinear. The entryways or gateways on Gabbur's fortification, are however, very different from those encountered at military hill forts of the Deccan where curtain walls and bent-axis approach are incorporated in the architectural design. The gateways of Gabbur have bastions on both sides and open into the main streets of the village. The construction of temples outside the fort wall and the existence of a fort wall that excludes an adjacent hill that would have, in times of siege or war, provided a vantage point, support the interpretation that Gabbur fort was not constructed as a military fort but may have been built for prestige among simililar such settlements in the region.[190] Kallur, another *agrahāra* settlement, less than 20 kilometers south of Gabbur, does not appear to have been enclosed in a similar fort wall. Inscriptions indicate that regional political elites donated lands to religious functionaries in Kallur since an early time, a trend that picked up again in the early modern period. This is in contrast to Gabbur where over time most donations were made either by local elites such as the Mahajanas and merchants or intermediate political functionaries.

The historical settlement of Gabbur, remains of which are mitigated with modern construction, destruction, and appropriation, reflects the dominance of Shaiva and Vaishnav traditions in its religious landscape, although examples of patronage to Jaina establishments are also visible. One of the two Jaina inscriptions has been removed from its context to the Y.S.R. Reddy Archaeology Museum at Hyderabad. An abridged translation of this Jaina inscription

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[190] For more on village defenses in Karnataka, see Barry Lewis, "Village Defenses of the Karnataka Maidan, AD 1600–1800," *South Asian Studies* 25, no. 1 (2009): 91-111.

refers to a group of merchants, mint-officers, and mint-owners who made a gift of levies collected on minting and sales of commodities to a Jaina temple called Brahma-jinalaya or nagara-jinalaya dated in Chalukya Vikrama years corresponding to 1109 A.D.[191] An inscription that today lies next to a temple and well, known by the name Hamapayyana *gudi* (G15), just outside the Gabbur village on the north-west, recorded in A.D. 1084, that a subordinate of the Chalukya ruler Tribhuvanamalla (Vikramaditya VI) and his brother gifted two taxes to the Muliga Mahajans of Gobburu for the worship of the God Jina.[192] Today, Hampayyana temple houses a shiva-linga but it appears that when the structure was first constructed in the late eleventh century, it was a Jaina shrine. It is likely that the appropriation of a Jaina structure for use as a Shiva temple happened in historical times as well, in a period when Shaivism and Jainism were competing for patronage and popularity in the Deccan, as is evident through both texts and inscriptions from different parts of the Deccan. The only other archaeological evidence that alludes to a Jaina community at Gabbur is outside the fort-wall of Gabbur on the east side in the form of an architectural fragment with a *jina* transcribed in an arch (*nāsi* architectural component), possibly Bahubali[193]. The structure it would have been a part of has left no other trace, but the space continues to be sacred with a small shrine of Pidamma (G26) housing an image of what appears to be a female figure with folded hands in a standing posture. Behind it can be seen a reused roof slab with possibly flower/lotus design transcribed by two rotating squares forming a star-like figure. Outside the shrine are two hero stones, a fragmentary *naga-nagini* stone, and a pair of feet carved on stone (for worship). In other words, there is no

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[191] IK.IV. p.7; IRKUH, pp. 74-75. Both these compendia of inscriptions mention that brahm-jinalaya was also referred to as nagara-jinalaya. The transcription reads it as ನಖರಜಿನಾಲಯ or nakhara-jinalaya.

[192] IRKUH., pp.85-87.

[193] Vibha Tayal, a graduate student at the University of Delhi, believes this could possibly be Bahubali, although the image is too small to carry any signature artistic traits of Bahubali. Tayal, personal communication, 2014.

indication that an earlier and older Jaina structure was taken over by another dominant or challenging religious order in medieval times. What it does add to is the archaeological presence of Jaina communities in Gabbur, despite it being a Brahmin dominant settlement.

Fig. 5-2: Jina inside a *nasi* arch at G26, modern Pidamma shrine.

Water infrastructure

Out of the wells, embankments, reservoirs, and farm ponds surveyed in Gabbur, only wells and embankments can be studied for their antiquity. Almost all the farm ponds appear to have been constructed in modern times. The distribution of water features suggests that the historical settlement at Gabbur would have relied on wells alone for personal consumption. The embankments and the resulting reservoirs, on the other hand, were constructed primarily to irrigate agricultural fields around the settlement. This is not to imply that wells and reservoirs are mutually exclusive structures; in fact, the survey brought out the complementary relationship between these two kinds of water infrastructure.
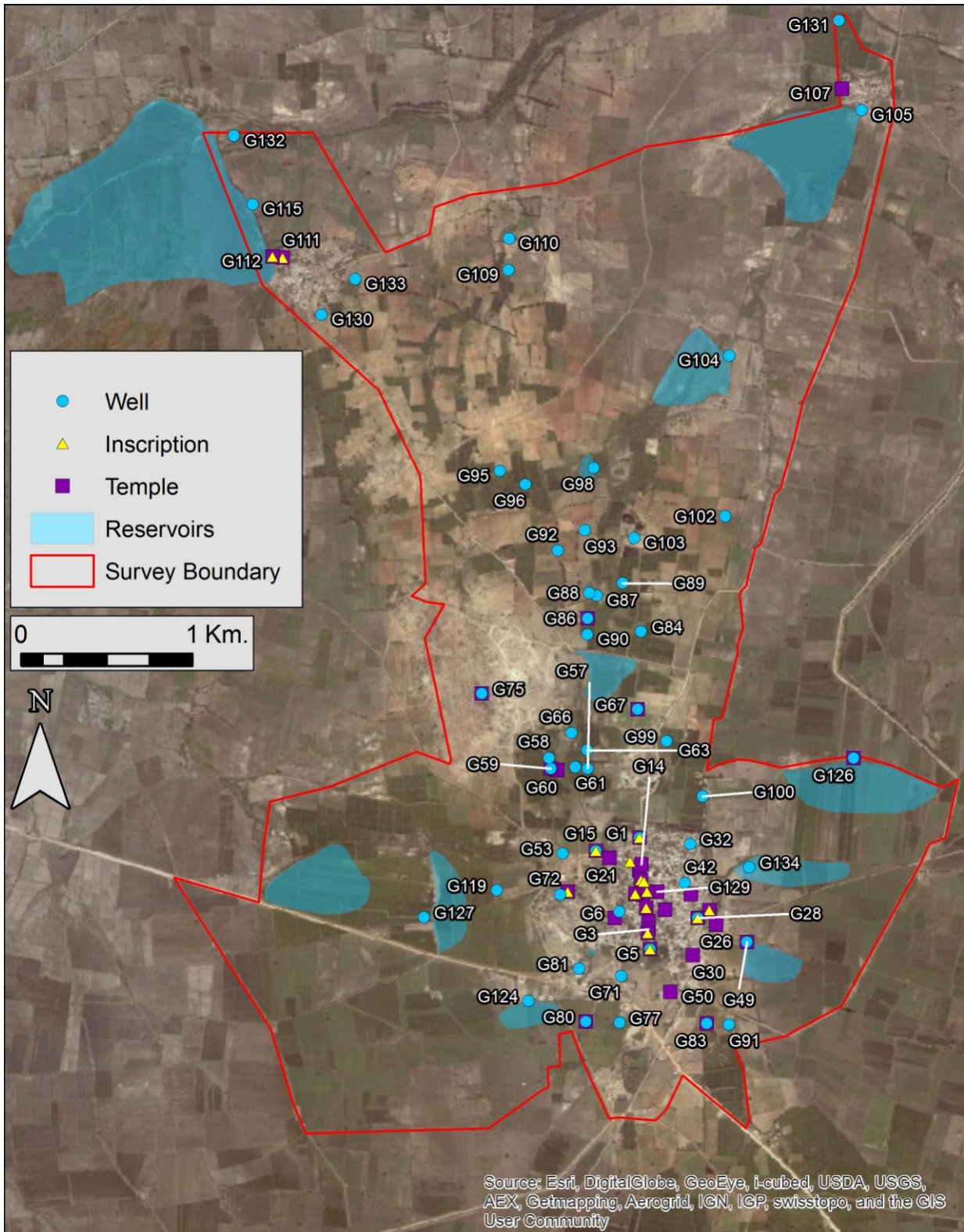
Fig. 5-3: Map showing some of the key features recorded during the systematic survey at Gabbur as well as the survey boundary. The labels refer to the data points in the attached appendix containing more details.
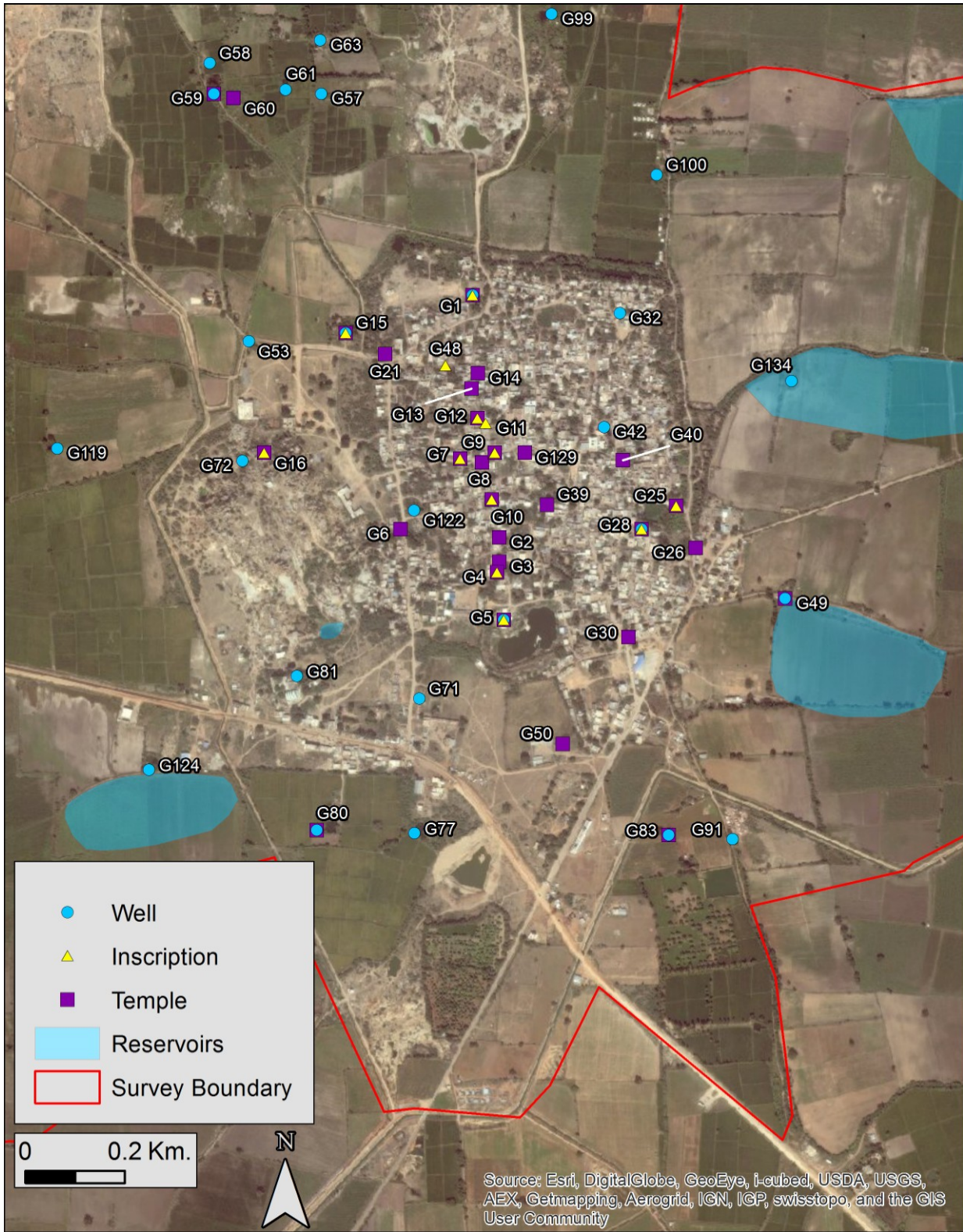
Fig. 5-4: Key features recorded in the Gabbur village and its immediate vicinity.

Within the walled settlement of Gabbur, the survey recorded five water bodies. The largest of these is what is today known as Elu Bavi, or 'Seven-Well'. It is irregular in shape, and is about 138 meters in length, with a maximum width of about 90 meters. People in Gabbur believe that Elu Bavi is made up of seven wells at its bottom, a claim that could not be established during the survey because this water body was never found dry during the field research period. It is possible that the name Elu Bavi came to be associated with this water body in modern times, given the size of the water body and the fact that it seldom goes dry. While there is possibly a source of subsurface water at the bottom of this water body, surface run-off from monsoons would also have contributed to the water level in Elu Bavi. Elu Bavi is built at one of the lowest elevation areas in Gabbur, which would have facilitated collection of surface run-off.

The second largest well in Gabbur is located north-east of Elu Bavi in the eastern part of the village. It is called Sakkar Bavi (G28) and is opposite a temple known as Mel Sankara gudi. One of the inscriptional surveys in the 1990s (IK.IV) recorded a twelfth century inscription from this well, but it could not be located at the time of my archaeological survey. Sakkar bavi has a square layout with a length of about 40 meters, and access from at least two sides. It is currently in use by people living in its vicinity for washing and, sometimes, bathing purposes.

Other smaller wells are distributed around the village, although in no discernible pattern. At roughly the same latitude but along the western edge of the village is another rectilinear well, called Naikar bavi (G122). It is now out of use and is covered with dense vegetation, with approximate dimensions of 22 m by 16.5 m, oriented along a N-S direction. While the western boundary wall of Gabbur is no longer intact, this well may have been located just inside this wall. A little north-west of Sakkar Bavi is another rectilinear well measuring about 18.5 m x 9 m,

today called Andana Bavi (G42). While it still had water at the time of survey, it was out of use for most purposes, it has been abandoned for the modern water supply system through pipes. Both Naikar and Andana Bavi were not associated with any standing religious structures, but in their vicinities were sculptural remains that allude to the sacredness of their immediate vicinity. At roughly 35 meters south-west of Naikar Bavi were found remains of a door jamb resting against a boulder with a Ganesh relief sculpture of the style found commonly at both Gabbur and Maliabad. At Andana Bavi too, a few religious sculptures were found collected under an adjacent tree, comprising an image of Ganesh, a Nandi, a pair of feet in relief (wearing anklet), and an image of a couple riding a *makara*[194].[195]About 220 m north of Andana Bavi, close to the north-eastern edge of the village lie remains of a well (G32) now filled with earth, behind the modern Methodist Church in Gabbur. Remains of a water-lifting area and a panel of elephants sculpted on a slab of granite lying around an open area indicated that there might have been a well at this place. Satellite imagery of the area from 2010 shows a water body at this place, which was filled up by 2012. The northernmost well (G1) in Gabbur village is constructed next to a temple complex, dedicated to Balanjaneya, or young Hanuman. It is rectilinear in shape, measuring about 14 m x 10 m, and a flight of stairs leading into the well along its southern edge. The inscriptions associated with the temple date to the early 12th century. This well, too, is out of use today.

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[194] *Makara* is a mythical chimera creature associated with oceans, rivers, or water bodies. It is usually depicted with a long trunk, like that of an elephant, and the body of a fish or crocodile, with an ornamental foliage tail. *Makaras* are famously seen incorporated at the ends of gateways, called *toranas*, and are a part of both Buddhist and Hindu iconography. In South India they are often incorporated as depictions on door-jambs of temples, particularly the sanctum sanctorum. The *makara* is considered to be the vehicle of Ganga, a river goddess, and also the Vedic deity Varuna. There are multiple meanings associated with the *makara* mostly relating to water and darkness. Useful typologies of *makaras* are discussed by: Odette Viennot, "Typologie Du Makara Et Essai De Chronologie,"*Arts Asiatiques* 1, no. 3 (195): 189–208; B.D. Robins and R.F. Bussabarger, "The Makara: A Mythical Monster from India," *Archaeology* 23, no.1 (1970): 38–43.

[195] I was informed that ruins of a temple located next to Andana Bavi were enclosed in a private compound today. These ruins could not be surveyed due to lack of access.

Fig. 5-5: A couple seated atop a Makara: two relief sculptures, A) at Elu Bavi and B) next to Andana Bavi.

In addition to these wells, one of the inscriptional surveys mentions a pond[196] behind a temple (G12) that lies roughly in the center along the main street of Gabbur oriented N-S. This pond, however, could not be located during the archaeological survey, presumably because it has been covered and the space is being used for other purposes. Besides the wells mentioned above, there is a moat kind of feature along the northern boundary of the village. In modern times, it appears that part of it functions as a water cistern, but it is unclear if structural changes were made to the existent moat or whether it degenerated into its current state. It is likely that it was not intended as a cistern when the wall and the moat were first constructed.

There is a positive correlation between religious structures, such as temples, and water bodies such as wells/tanks and reservoirs both inside the village and outside of it. However, not all temples in the Gabbur village have an associated water body. For instance, most of the temples constructed along the Temple Street in Gabbur are devoid of any wells, except the pond mentioned behind a temple called Bhogesvara/Bhutesvara/Bukkittinavara temple (G12). This could either mean that there were more such water structures that were covered and built over in

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[196] I.K. IV, No. 14, p.5; this inscription was not reported in the epigraphic survey conducted by Kannada University, Hampi. It is likely that the pond and the associated inscription were covered with earth before the KUH's survey.

subsequent centuries, or that Elu Bavi indeed functioned as the primary water body catering to the needs of the people and temples along the main N-S running street of Gabbur. It is possible that access to Elu Bavi and its adjacent temple complex was limited to a certain section of the society, presumably those that were ritually and/or politically superior to most other people. We so far do not have any inscriptional or textual evidence to support this hypothesis.

Wells were constructed next to temples for a number of reasons, including irrigation and supporting a center of religious learning (*matha*[197]). This is especially true of wells outside the Gabbur village that are associated with a religious structure. Both the inscriptions and archaeological survey indicate that temples acquired arable land that helped sustain the everyday functioning of these temple institutions and *mathas*.

Most of the wells outside the village were likely constructed for irrigation purposes. It is also possible in some cases that the well/tank, or another water source such as a reservoir/embankment, lent sanctity to the space it occupied. The archaeological survey at Gabbur and its vicinity (going as far north as Honnatgi and Khanapur) recorded a total of 46 wells of which 9 were associated with *naga* stones, 6 were associated with idols of specific Brahmanical deities, 3 were associated with a *pitha*, and 9 were associated with temples/mathas or other shrines. The modern ritual practices at water sources today betray the sanctity of such spaces even when there is an absence of material remains that suggest the same.

At least two unique well constructions were recorded from the agricultural fields around Gabbur. One of these (G61) located in the fields north of Gabbur, east of Nagara Bavi, houses a shrine dedicated to goddess Yellamma in a niche built into the western masonry of the well. Only the top of the niche was visible at the time of survey, because this well is usually full of

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[197] In this dissertation I also classify *mathas* as religious structures because in archaeological contexts it is hard to distinguish between a temple and a *matha*.

water. This well, like most wells in the region, is roughly square in plan with stone masonry, stairs along the northern edge and a water lifting area along eastern edge.

The other unique well construction was found close to Gabbur village, less than half a kilometer in the south-west, next to a modern temple dedicated to goddess Maremma. Structural remains lying about the temple and the agricultural field include large stone slabs including one with a large floral design that would have capped the stepped, rotating square roof design, part of a door jamb, and a relief sculpture of feet. The rectilinear well (G83), measuring about 23 m x 16 m and with a stone masonry, incorporates within its southern masonry 14 door jambs similar to those found in temple contexts at Gabbur. It is the only example of a well where stairs lead into a gallery along one of the edges of the wells. This gallery allows access to water in the well when it goes below a certain level. Usually the well is full after monsoons so that the gallery is inundated and inaccessible. The gallery has been constructed using pillars from a historical temple. A floor slab with conch design usually found at entrances was found lying in the gallery. Stylistically similar floor slabs were found at Suguresvara temple on the hills west of Gabbur as well as at temple ruins inside Maliabad fort.[198] There is another flight of stairs that allows access to the well at its south-eastern corner. The masonry of the well, which is damaged along the western edge, is otherwise made of stone blocks of varying dimensions. A temple must have existed where the well and modern temple are today. It appears that those who constructed the well considered using temple remains in a well rather than reconstructing a temple, and they brought their own aesthetic sensibilities to the design of the well. While the temple may date to the medieval period, it appears that the well construction does not. It is possible, however that

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[198] A study of door jambs might help us identify if the door jambs at Suguresvara were made according to the same style as that of this well. If the inscription associated with Suguresvara gudi lends it a late 11th century chronology, we might extend this chronology to this well as well, since no other temple in Gabbur exhibited this floor design. Such entrance floor designs may be associated with temples constructed at the time of the Rashtrakutas (8th -10th centuries AD).

there existed a smaller well where the modern one is, but which was later expanded and decorated with temple door jambs.

Fig. 5-6: Well at G83, looking south, about seven pairs of door-jambs arranged to form the masonry. Every year after the monsoons the well fills up enough to submerge the door-jambs.

Wells/tanks can further be analyzed on the basis of their attributes, such as shape, size, masonry, and access. Most of the wells in the region conform to a rectilinear plan, especially those that were constructed in pre-modern times. One exception to this observation is Elu Bavi, which is irregular in shape. A 12th century inscription from the temple complex adjacent to it establishes its antiquity.[199] Usually wells built in modern times are round in shape, plastered with cement, and have a pulley system in place.

Within the category of rectilinear wells/tanks are those with a square plan, the oldest of which is Sakkar Bavi (G28) in the eastern part of the village, adjacent to an entrance called Raichur Agassi (G25) to its north and Mel Shankara temple (G28) on its south. The preference for rectangular shape is further exemplified in Andana Bavi (G42), the well next to Balanjaneya

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[199] IRKUH, Devadurg No.7, pp. 58-60.See p. 5 of this dissertation.

temple (G1) in the northern part of Gabbur, as also some wells in the fields north of Gabbur.

Some of the other wells that were either covered in dense vegetation or were altered in the last

decade or so displayed a squarish plan in satellite imagery, such as Hampayyana Bavi (G15)

located west of Gabbur, Nagara Bavi (G59) in the fields north of Gabbur, a well south of Gabbur

(G77), a well on a hill north of Gabbur (G75), and the ones at G61 and G83.

Fig. 5-7: Sakkar Bavi (G28), north of Mel Sankara temple, on the left, and Nagara Bavi (G59), north of Gabbur, on the right. While the rectilinear shape of Sakkar Bavi is clearly visible, that of Nagara Bavi can be discerned from vegetation cover around it. (Image Courtesy: GoogleEarth, 2005)

Fig. 5-8: Hampayyana Bavi (G15), with a rectilinear plan in 2005 but overgrown with vegetation by 2010.

Fig. 5-9: Wells south of Gabbur. One on the right (G77) can be seen as rectangular or square shaped in 2005, but by 2010 people had expanded it into a circular or oval shape.

Fig. 5-10: Nagabusappa Gudi (G75), in white, on a hill north of the village Gabbur, and the associated well to its south. The well appears to be empty in the image, but its shape is discernible.

In addition to a preference for rectilinear plans, most wells in the region are lined with stone masonry and display a variety of masonry types. Stone masonry helps reduce loss of water to adjacent soil in case of both the wells/tanks and reservoirs. Some of the wells only had masonry along the edge from where water was lifted, with either no masonry along the other edges or with an ill-defined well boundary. The wells in and around Gabbur were constructed using at least four masonry styles: one, long slender slabs of stone forming a gradual descent into the well; two, medium-small sized, unworked, boulders; three, worked blocks of stone, sometimes irregular in shape; four, thin brick-like broad stone slabs. These styles, as witnessed during fieldwork, are not mutually exclusive.

Sakkar Bavi (G28), one of the oldest wells at Gabbur, is lined with long slender slabs of granite, visible most clearly along its eastern edge. Similar masonry is seen along the northern edge of Elu Bavi, as well as at a portion of a reservoir embankment close to the village of Devanapalli, about 40 kilometers south-east of Gabbur.[200] This may appear as a chronologically distinct style of masonry at first, but it may as well indicate a functional difference wherein the use of long slabs versus smaller sized cuboidal blocks of stone provided better access to the well or reservoir for a number of people at the same time. These steps may be akin to *ghats* in northern India at riverbanks, or around tanks, where people would likely have accessed water in significant numbers for either ritual cleansing or bathing, washing, and drinking. Further, the fact that the long stone slab masonry is used in only a small section of the embankment at Devanapalli suggests that they functioned as steps. It is worth noting that these 'steps' are

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[200] Devanapalli is only a few kilometers east of the reservoirs at Maliabad. For more on Maliabad, see chapter 6.

opposite sculptural remains on a rocky outcrop inside the reservoir.[201]This short analysis of masonry made of long slender slabs of stone implies that this style had a functional role of providing ease of access to a water source for a number of people, mostly in the vicinity of sacred sites. This, however, does not mean that all wells constructed as part of a temple complex necessarily employed this masonry style. In fact, most wells recorded next to temples in all the three survey areas do not evidence masonry of long-slender stone slabs. A chronological explanation for the masonry style is further weakened by wells that may be older than Sakkar Bavi (G28) and Elu Bavi, such as Hampayyana Bavi, but with a different style of masonry.

Fig. 5-11: Sakkar Bavi (G28) masonry along eastern edge.

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[201] Today these sculptures of Nandi are visible only when the reservoir is empty after consecutive years of drought. A damaged image of Ganesha and head of another deity is kept outside the modern temple constructed over the rocky outcrop and is approachable from the embankment through a modern bridge, especially when the reservoir is full. In addition to the modern temple inside the reservoir, there is another modern temple and a grave site on the embankment itself close to the long-slab masonry. A few naga stones were also recorded this embankment facing the downstream. Another modern temple reusing some of older temple materials such as slabs and an adjoining pre-modern mosque are also located south-west of the reservoir. These further strengthen the hypothesis that the area close to Devanapalli reservoir constituted a sacred space, like most pre-modern and early modern reservoirs across Karnataka.

Fig. 5-12: Northern edge masonry of Elu Bavi.

Fig. 5-13: Devanapalli embankment masonry from inside the dry reservoir; damaged Nandi bull image on a rocky outcrop in the foreground.

The southern edge of Elu Bavi is also the southern edge of the wall that goes around the settlement of Gabbur, and therefore its masonry, made of dressed and undressed boulders lining a thick earthen core, is very different from the northern edge, and that of Sakkar Bavi. The wall on the outside, i.e. the surface facing the south, is also made mostly of dressed boulders, like the

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rest of the wall around Gabbur. Similar masonry can be seen around the inside walls of Elu Bavi on the western and north-western edges, as if they were initially constructed like fort walls with bastions but were later incorporated to form edges of a water body.

Fig. 5-14: Elu Bavi masonry, looking South.

Fig. 5-15: Elu Bavi masonry, looking North-West. The ornatel reliefs of Vekatesvara Gudi are also visible in a distance.

Besides Elu Bavi, a few more wells display similar masonry involving medium to small sized boulders (some worked and some unworked) that are arranged with or without mud mortar or in some cases using smaller stone pieces as a chinking material, for instance, the well on the hill north-west of Gabbur (G75), Hampayyana Bavi (G15), one (G77) south of Gabbur, and another north of Gabbur (G100). The first of these is next to a modern temple called Nagabusappa gudi, which finds mention in a mid-12th century inscription from the Gabbur village.[202]

Fig. 5-16: Well (G75) next to Nagabusappa Gudi, atop a hill north-west of Gabbur.

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[202] IRKUH, pp. 71-72; A.R. No. B 664 of 1958-59; I.K. IV. No. 8.

Fig. 5-17: Masonry of a well in the fields South of Gabbur village (G77)

Fig. 5-18: Well (G100) north of Gabbur on the East.

Fig. 5-19: Hampayyanna Bavi (G15) masonry (magnified inside the circle), overgrown with vegetation. This is located to the north-west of the village.

The third style of stone masonry employed in constructing wells uses worked blocks of stone arranged with or without mortar. Examples of such masonry can be seen at wells at G1 (next to Balanjaneya temple, north Gabbur), G42 (Andana Bavi), G122 (western Gabbur), G71 (well south of Elu Bavi), G63 (a well north of Gabbur), G86 (Taiamma Bavi, north of Gabbur), and G90 (north of Khane Kere).

Fig. 5-20: Well at G1, in the complex of Balanjaneya temple, next to the northern boundary and entrance of the Gabbur village.

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Fig. 5-21: Andana Bavi, at G42, in the eastern part of the village.

Fig. 5-22: A well (G71) located South-West of Elu Bavi.

Fig. 5-23: Well (G63) North of Gabbur in the agricultural fields, north-east of Yellamma Bavi.

Fig. 5-24: Taiamma Bavi (G86) masonry. This well is located in the fields between Gabbur and Khanapur.

Fig. 5-25: Well (G90) just North of Khane Kere with evidence of repair over time and two styles of masonry.

Thinner, brick-like stone slabs mark the fourth style of well masonry in not only Gabbur but the broader research areas as well. It is however, only in Gabbur, that due to i) a larger number of wells being dug, and ii) probably longer history of well digging, we can identify possible chronological markers through masonry styles. It is worth noting that most of the wells constructed completely out of the fourth style of masonry are located away from the historical settlement of Gabbur, for instance at data points G130, G98, G104, G131, G115, and G132. The only exception to this is the well next to modern Mahanandisvara temple (G81) to the west of Gabbur, where an inscription in the well refers to it being constructed/repaired/altered in the eighteenth century[203]. Of course a number of wells cannot be explained using any of the above

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[203] This inscription was mostly readable by people in Gabbur today. A couple of them read and communicated the content of the inscription to me. The inscription reportedly mentioned an individual by the name of Benagappa Sivarana. While the Mahanandisvara temple has a modern structure today both architectural and sculptural remains that could be ascribed to the 13th or 14th centuries were found in its vicinity and inside the temple as well. In fact the door jambs and lintel to the central deity of the temple are medieval. Interestingly, Bashiruddin Ahmad, *Waq'iat-i Mumlikat Bijapur*, 477, refers to there being an inscription on a rock outside this temple. This is not reported in either of the earlier epigraphic surveys, nor did I find it at the time of my survey.

masonry styles, and then there are others that were either closed, covered with vegetation, inundated, or where the masonry had given way. And yet, these styles might help us identify places where different masonry styles indicate a different date of construction/ renovation/ expansion of wells in and around Gabbur.

Fig. 5-26: Well (G130) called Beygar Bavi, south of Khanapur village.

Fig. 5-27: Ragam Bavi (G131) with a sluice opening and the older water lifting area (where the two boys stand).

Fig. 5-28: Basavanna Bavi (G98), along the embankment of Basavanna Kere, with stone masonry

Fig. 5-29: Well (G104) next to a tall embankment in the catchment area of Honnatgi Kere.

Fig: 5-30: A well (G132) downstream of Khanapur Kere.

At least two wells within the historical settlement demonstrate the temporal aspect of these masonry styles. At Andana Bavi (G42), while the south-eastern edge displays third style of masonry, the western edge and the stairs at the north-western corner are constructed using fourth style of masonry. The third style of masonry is mostly visible closer to the water level and possibly continues below, but the fourth style of masonry is mostly restricted to the southern and western edge, and was possibly introduced at a time when the well was undergoing renovation. Similarly, the western edge of the well next to Balanjaneya temple (G1) displays third masonry style, while the southern edge and the stairs appear to have been added later in fourth style of masonry.

Fig. 5-31: Andana Bavi (G42) western edge.

Fig. 5-32: Southern masonry and stairs of the well next to Balanjaneya temple (G1)

A couple of wells outside the village also display similar patterns of renovation/ reinforcement of well structures. The well (G90) north of Khane Kere is used for irrigation today, and traces of older third style masonry can be seen along its western edge, where there is also a water lifting area. The southern edge of this well was probably renovated much after its first construction, by using fourth style masonry and building another water lifting area that would feed water into a raised slender canal that would irrigate the adjacent fields. Another well (G93) located in the fields between Gabbur and Khanapur used larger slabs for masonry, but it appears to have been reconstructed long after the first period of construction. This might explain some of the brick-like stone slabs forming layers in between broader slabs of stone. Most such stone bricks can be seen in the upper sections of the masonry.

Fig. 5-33: Another well (G93) between Gabbur and Khanapur. The inset shows fourth type of masonry at the upper portions of the water lifting area.

In addition to masonry, people construct different ways of accessing water in a well usually depending on the main purpose of the well. The various needs dictate how wells are constructed. Water in wells can be accessed either through stairs or by lifting the water. Wells that evidence long gradual stairs, such as at Sakkar (G28) and Elu Bavi (G5) provide a wide access area, likely for devotees to perform their ablutions before visiting the adjacent temples. People who constructed these wells would have excluded elaborate water lifting areas from their designs, because the purpose was not to transport well-water but facilitate movement of people to it. However, there can be wells that were built for similar purposes but without the elaborate masonry noticeable at G5 and G28. For instance, Nagara bavi (G59), west of a temple in ruins (G60) north of Gabbur, is devoid of elaborate masonry, but can be accessed through a gradual

slope of ill-maintained stairs on the south-eastern side. A number of sacred sculptures[204] and two temple fragments lay about the well, highlighting its sacredness. The nearby temple (G60), architecturally similar to Chalukyan temples from Gabbur, is only 35 meters south-east of this well. While it appears that Nagara bavi was likely used for both ritual and personal use, it is not impossible that water from this well irrigated adjacent agricultural fields. In the absence of a raised water lifting area people may have carried water manually from this well to the fields. It is possible that performing manual labor was one of the offerings people made to the deity or the temple institution.

Lifting of water from the wells is primarily useful if the water level is very deep. Additionally, lifting water above the immediate ground also facilitates moving water from the well to a distance by exploiting the gravitational force. The survey recorded most such water lifting areas constructed at wells in agricultural fields. The only exception to this was the remains of a closed well (G32) within the village suggesting that water-lifting technology could also be constructed in a settlement context.

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[204] These sculptures include about ten naga stones, three damaged idols (one of these is likely a Shiva sculpture with a bull shown as the deity's vehicle), two hero stones, and two architectural fragments (one door jamb and one part of a niche aedicule).

Fig. 5-34: Water lifting area of a well (G32) in the Gabbur village now filled up with earth. Scale is1 m.

Thus irrigation from wells could be carried out either manually, that is by carrying water from the well through a flight of stairs and pouring it into the fields, or by through a mechanism to lift water up to a certain height and pouring it into canals that water the fields. Many wells recorded during the survey in and around Gabbur came equipped with a lifting area, and there was quite some variation in their height, slopes, and styles. Two construction styles of the water-lifting edge can be identified, each of which could be constructed either a meter or two above the ground, or just a few inches or a foot above the immediate ground. One kind of waterlifting had the edge with the lifting area outdented along one of the edges, constructed using stone slabs arranged in what can be called cross-bar masonry, which can be seen in wells at G15 (Hampayyana Bavi), G61 (Yellamma Bavi), G63 (south of Khane Kere), G71 (south of Gabbur), G77 (south of Gabbur), G86 (north of Khane Kere), G90 (north of Khane Kere, see p.25), G103 (Gopam Bavi, north of Khane Kere), G109 (Denkana Bavi, east of Khanapur), G110 (Dasara Bavi, east of Khanapur), G124 (south-west of Gabbur), and G126 (north-east of Gabbur).

Fig. 5-35: Hampayyana Bavi (G15) water lifting area.

Fig. 5-36: Yellamma Bavi (G61) water lifting edge. Opposite the edge is a niche with presumably an image of what is today worshipped as goddess Yellamma.

Fig. 5-37: Well (G63), water lifting area connected to a channel/narrow canal for field irrigation. A few naga stones and a Nandi sculpture were also found next to this well.

Fig. 5-38: Well (G71) water lifting area connected to a narrow channel made carved out of stone; a hero-stone was also found next to this well.

Fig. 5-39: Well (G77) water lifting area, next to the newly constructed room on the right. This is about 60m NE of a single chamber medieval structure.

Fig. 5-40: Taiamma Bavi (G86), new masonry repair work visible along the southern edge. A broken pitha and water channel were found next to this well.

Fig. 5-41: Well (G124) and water lifting area next to a small embankment. A naga stone was found close to this well on the embankment. Older structural remains can be seen incorporated into the new well masonry.

Fig. 5-42: Remains of a water lifting part of a well (G126). Damaged sculptures of Ganesh, Shiva, and Nandi (seen on the right) were next to this well.

Fig. 5-43: G109 (left) and G110 (right) are in the agricultural fields between Gabbur and Khanapur.

In most other wells, the edge with the water lifting area is constructed in the same or similar masonry and shares the edge with the well, although it could be raised off the immediate ground and the rest of the well. Two slender slabs with perforation on one end extend out perpendicular to the water lifting edge, aiding in accessing water off the edge of the well. This style of waterlifitng areas were found to be more common in wells with the fourth style of masonry, for instance at G90 (see p.25), G81 (next to Mahanandisvara temple; more modern style with pulleys), G88 (Sugana Gowda Bavi), G93 (Mallaya Bavi, see p.32), G98 (covered with vegetation and therefore hard to picture), G104, G130 (slight curve at the water lifting edge), and G132 (see p.28).

Another kind of wells found between Gabbur, Khanapur, and Honnatgi, is one with stone masonry only on the water lifting edge of the well. This is especially so in cases where the wells have been dug into the bedrock, as they do not require elaborate masonry to prevent water from getting absorbed into the soil. These are the hardest to date stylistically although they may appear to be very recent. The masonry usually comprises of cuboidal, roughly same sized blocks of stone, or in some cases irregularly shaped stone, arranged to form a slightly raised platform.
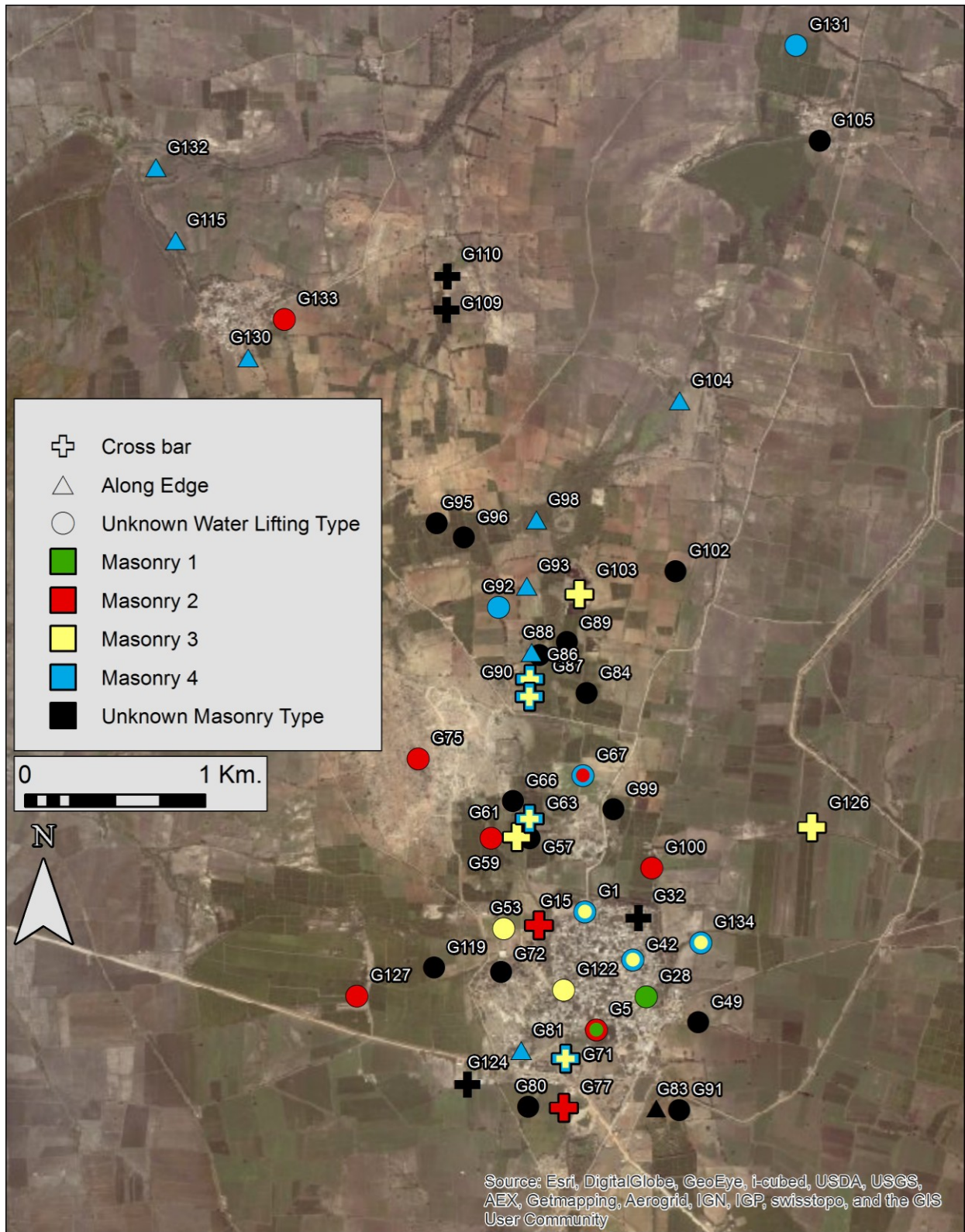
Fig. 5-44: Map showing the distribution of wells in and around Gabbur. The ones that are marked 'Unknown Water Lifting Type' i.e., indicated by a circle also include wells without a clear water lifting area along the edge of the well.

In addition to wells, farmers in Gabbur area today construct farm ponds, which are open storage tanks for water procured either through underground water or from a nearby canal. It was found that the practice of using small stone blocks for masonry of such ponds was widespread, making it difficult to ascertain whether a water feature was a well or a human-made pond. These ponds are almost always rectangular or square in shape, sometimes with rounded edges. They usually do not have a water lifting edge but sometimes include steps. These structures are easy to confuse with older wells because their masonry styles can appear to be similar. However, no such wells were encountered within the walled settlement of Gabbur.

In addition to lifting water from wells, people built and used stairs to access water from wells. Unlike the masonry and the style of water lifting areas constructed in wells, the varying kinds of stairs did not display any discernible chronological pattern. There is no standard as to where the steps are placed. One would imagine that it is dependent on the layout of the agricultural fields or settlements they are constructed for.

One of the ways of dating wells would be to date the backdirt that built up during its construction, but in many instances we did not find associated backdirt piles. Probably people used the backdirt for other construction projects or just for preparing the inclination of the agricultural field. In fact, the presence of a backdirt pile next to some of the wells looked like freshly quarried stone and soil, and therefore indicated their modern construction.

Embankments and reservoirs:

The archaeological survey of the area in and around Gabbur identified twelve embankments, or raised banks to control movement of water over a landscape, of varying lengths and heights. Some still function as dams and cause reservoirs to form that have irrigated the agricultural fields in the area, while others function more like check dams with the reservoirs

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being filled up and converted to arable land. While water is absent today, its presence in the past

has left its indelible mark on the landscape that can be identified through clues visible or

embedded in the same landscape. In the context of reservoirs, a survey of landscape for

embankments combined with satellite imagery of the area over time helped identify some of the

older reservoirs that not conspicuous anymore on the landscape. Embankments of reservoirs

have particularly long lives in semi-arid areas such as the Raichur doab, and therefore their

original masonry is seldom visible for analysis. Most embankments in and around Gabbur have

been repaired over the centuries and sport an earthen look today, unlike some of the ones in

Maliabad that will be discussed in the following chapter, and Devanapalli (see above). Therefore,

while in the case of wells it was possible to establish a relative chronology based on the masonry

and access features, the smaller number of reservoirs and even more reduced chances of

observing their original masonry makes it harder to attempt a similar exercise for the reservoir

embankments.

Before I discuss the kinds of reservoirs and the patterns that emerge out of their

distribution over the landscape, let me first mention why Elu Bavi presents a unique case of a

water body. While it is today understood more as a well: a defined water body with stairs

providing a gradually sloping access to the water, Elu Bavi also exhibits features characteristic of

a reservoir. For instance, unlike wells that are dug into the earth, reservoirs are constructed by

building earthen or stone 'walls' to collect surface run-off. The southern, eastern, and western

edges of Elu Bavi are all constructed walls, albeit they also form part of the fortification wall

around Gabbur. Like reservoirs, where there is a sluice gate that channels water out to the

agricultural fields, there is a gate in the southern wall of Elu Bavi that may have allowed water to

be released south-east of Elu Bavi, either into what would have been fields, or more fittingly, a

moat feature. While the survey could not ascertain the underground source of water for Elu Bavi, it was observed that the water level at Elu Bavi increased after the yearly monsoons. The location of Elu Bavi at one of the lowest elevation areas in Gabbur would facilitate movement of surface run-off towards this water body. Despite these similarities, Elu Bavi would never have functioned like a true reservoir, given the very small catchment area and absence of a proper sluice system.

The largest reservoir around Gabbur, called Khanapur Kere, is located to the west of the modern village of Khanapur, located north-west of Gabbur. The reservoir embankment is about a kilometer and a half long, extending north from the western edge of Khanapur village, with just one sluice gate that today lies out of use. In the last few decades this reservoir, like many others in the Raichur doab, started being fed by canal water rather than just river water. In fact, the large area which would hitherto be inundated with collected water were brought under cultivation with the embankment functioning primarily to route the canal water downstream to fields and other villages, before draining into the river Krishna.[205] None of the inscriptions published from Gabbur mention this large reservoir and continued use and repair of the embankment has masked any evidence of the original construction work. It is therefore hard to ascertain the chronology of this, and other, reservoirs without resorting to scientific dating. What is possible is contextualizing the reservoirs within the broader archaeological milieu, such that we can relate multiple features as part of the same social, political, and cultural fabric.

Often there is juxtaposition or overlapping of sacred features with water features across the world, and the case of medieval Raichur is no different. There are multiple loci of ritualistic/religious/sacred spaces in close proximity of the Khanapur Kere. The most

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[205] The Minor Irrigation Department has opened up a substantial gap in the embankment, further north of the sluice gate, to allow uninterrupted flow of canal water past the embankment.

conspicuous of these is a modern shrine dedicated to Anjaneya/Hanuman made out of medieval temple structural remains, resembling temples in Gabbur village. Fragments of pillars, naga stones, elephant panels, an unpublished half-buried inscription (resembling Kalyani Chalukya script), a pitha, and a damaged Nandi sculpture were also found in the vicinity of the modern shrine. Further south on the embankment is a modern Lingayat temple with nandi sculptures and a medieval/early modern hero stone, in worship. Closer to the sluice gate on the embankment are remains of a round-shaped pitha, nandi, and an elephant sculpture, all of which are painted over and therefore harder to study for artistic style. In the atchakat/command area of the reservoir, within 100 meters, are usually wells that harness the relatively higher underground water levels around the reservoirs.

The close association of reservoirs, religious/ritual spaces, and wells is a recurring pattern in the survey areas, and thus a landscape approach to these features is imperative. While a reservoir of the size of Khanapur Kere would have greater potential to irrigate fields throughout the year or even through a year or two of drought (depending on the crop type, crops per year, and the area under wet-farming), it is unlikely that Khanapur Kere irrigated the fields closer to Gabbur. It is clear from the distribution of smaller reservoirs/embankments closer to Gabbur, that the residents of Gabbur relied more on smaller more discrete management of water across their landscape, which could be for a number of reasons. The first and foremost, the topography around the village is such that there are multiple smaller catchment areas versus a wider valley that slopes towards a single direction. Second, smaller reservoirs require relatively low labor investment in both construction and maintenance. Third, smaller reservoirs allow for greater flexibility in terms of its administration with lesser people to involve in decision making processes, such the height and capacity of the reservoir and distribution of water.

Not all embankments identified at the time of survey would have functioned as a full-fledged reservoir irrigation system. Most smaller embankments that were found close to Gabbur did not have sluice gates. It appears that their primary function was to replenish sub-surface water and increasing soil moisture for one season of cropping. The smallest embankment or bund is constructed south of suguresvara hill, west of Gabbur. It measures about 80 meters, and is made of stone masonry, resembling the Gabbur fortification wall. This too would have functioned primarily as a 'percolation tank', a term often used by the Minor Irrigation Department today to describe such reservoirs that do not facilitate irrigation over a wide area.

Fig. 5-45: A bund constructed out of boulders, south-west of Gabbur and south of the Suguresvara hill.

There are three embankments/bunds in the fields to the east of Gabbur, all of which have fallen out of use now. The lands which would otherwise get inundated by water collected over their respective catchment areas were at some point raised to decrease the slope for use as year-round agricultural land. The southernmost of these, called Kesaru Kere, has a modern shrine dedicated to goddess Yellamma on the embankment itself, next to which are remains of an older religious structure (G49) known by differing names to the current occupants of Gabbur. This structure is on a raised platform along the embankment that reuses structural remains from an earlier temple at or around this place, which stylistically resemble those from medieval temples of Gabbur. No sluice was identified along this embankment, measuring about 350 m from E-W,

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but there was a channel chiseled out of stone, similar to the one found at Taiamma Bavi in the fields north of Gabbur.

North of Kesaru Kere is another embankment about 700 m E-W but, contrary to the pattern seen elsewhere, with a well (G134) just upstream, close to the western end of the embankment. The well is linked to a raised canal to irrigate fields upstream of the embankment, something unique to this example. The well masonry, although shrouded in dense vegetation, appears to have undergone drastic repair/reconstruction work, with slightly larger slabs used in the lower portion while smaller cuboids are used further up. A mortar on a stone was found in its vicinity along with some ceramic scatter, both reduced and oxidized. About half kilometer north of this embankment is another one, stretching about 850 m E-W, with the remains of a well (G126; see p.38 above) and associated sculptural remains. This embankment is being repaired today. A recently constructed/repaired sluice made of pillar fragments from an older (medieval) temple was also recorded at this embankment.

Fig. 5-46: Embankment north-east of Gabbur village with older pillar fragments reused to mark the sluice opening. This is close to a well (G126) with sculptural remains.

In the fields south of Gabbur there is one such embankment with an associated well (G124) and a naga stone. To the west of Suguresvara hill, i.e. north-west of this embankment, are

two embankments, one broader than the other. The one closer to Suguresvara hill, roughly oriented N-S, did not seem to have any sluice gates, although at least one well was recorded immediately downstream, made of medium sized boulders and stone blocks, akin to second type masonry noticed at other wells. The other embankment, further west, is a little over half kilometer and has been raised to the point that it is hard to identify the embankment from its catchment area. Satellite imagery helped identify topographic attributes that were otherwise hard to observe, through differential color of vegetation. Today this embankment has a check-dam at its southern end that allows excess water to flow out to a couple more small bunds (about 400 m long) before flowing into Khanapur Kere, about 3.5 km north of the embankment.

Connectedness therefore characterizes the water infrastructure in the agrarian landscape of Gabbur. Smaller bunds or embankments would likely have functioned as silt-traps that reduce the amount of silt that would flow into the larger reservoirs, such as Khanapur Kere. Wells, too, are closely tied to embankments and reservoirs, in that the former are usually dug close to the latter. This pattern continues in the fields north of Gabbur.

A 440 m long embankment running E-W forms what is called Khane Kere, just east of a hill on the way from Gabbur to Khanapur. Today the reservoir has ceased to function like one since it is cultivated upon and functions only as a way to distribute canal water across the landscape. The one sluice gate that can still be seen across this embankment seems to have been repaired using older temple pilasters. There is a sudden drop in elevation at the western end of the embankment which was perhaps the waste weir of the reservoir. A number of wells (e.g. G90 and G86) showing both third and fourth type masonry and cross-bar style water lifting areas are located downstream of Khane Kere. The hill west of this embankment is referred to in one of the

inscriptions at Gabbur as 'Kanakagiri', where modern Nagabusappa temple and the adjoining well (G75) are located.

Fig. 5-47: Sluice opening of Khane Kere, north of Gabbur.

There are two bunds oriented N-S located North of Khane Kere. The one on the west is about 250 meters long but less than a meter high. The eastern one is about 220 meters long but is about two meters high with what appears to be a sluice gate. The differential vegetal colors in satellite images of this area from the last ten years give the impression that little water collected at the western low-rising bund, which otherwise performed two functions: one, it disallowed excess water discharged from Khane Kere's waste weird to move further west, and, two, it acted as a silt trap for water flowing from the catchment area on the west before it flows to

embankments downstream on the east. The eastern embankment evidences a fairly large well (G98) with stone masonry and a sculpture of Nandi/Basava next to it, giving it the name Basavanna Kere. This reservoir too does not hold any water these days as it is allowed to flow right through it towards a longer, higher embankment on the north-east. Satellite imagery, in addition to aiding in identifying the smaller bund, indicated that excess water from Khanapur Kere to its north-west also could have flown through this area to fill Basavanna Kere. If this is true, then it means that Basavanna Kere embankment as well as another embankment downstream of it was constructed after Khanapur Kere. Khanapur Kere thus appears to have been a significant construction project that had a wide ranging impact on its immediate and extended area.

Unlike any other embankment or reservoir remains surveyed at Gabbur, the embankment downstream of Basavanna Kere and its once inundated area was full of bushes, trees, and other wild vegetation.[206] It was only possible to walk over the embankment that measured about half kilometer in length and between 2.5 – 3 m in height. Water entering this reservoir flows through a breach in this embankment at roughly its center. This implies that people did not convert this reservoir into arable land when the breach was made into the embankment and it stopped performing its primary function. A small rectilinear well (G104) adjoin the embankment on the east. From here the water flows to Honnatgi Kere, which is still in use, adjoining the modern village of Honnatgi. A number of modern wells have been dug up along the edge of what would be a full reservoir, cashing on the higher water levels in the area. One relatively older well (G105), rectilinear in shape and measuring about 19 m x 11 m, is located near the eastern end of the embankment. About a 100 m north of the embankment is the modern Ramalingesvara temple

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[206] This reservoir is in the process of being reclaimed by the local farmers for cultivation.

that reuses medieval temple pillar and doorjambs in its construction. Even though tenuous, there is evidence of a temple establishment at Honnatgi in the medieval period, and one which might also hint at the chronology of the Honnatgi reservoir.[207]

The embankments and reservoirs along with the wells recorded in and around Gabbur paint this landscape as technologically well-equipped to harness the monsoon potential. By connecting the various hydrological features people reduce the amount of surface run-off that is discarded into the Krishna river to the north. This physical arrangement forces social scientists to envisage socio-economic and political conditions prerequisite for managing a group of networks, such as this.

<u>Sacred landscape of Gabbur: Temples, shrines, and local beliefs and practices</u>

A study of water management is incomplete without talking about the people who constructed, managed, financed, or administered its many components. Nor can we ignore the institutions that not only shaped such practices but were in-turn shaped by the water infrastructure as well. This section discusses the most ubiquitous structural remains from Gabbur—the temples—and their associated inscriptions. The temples of Gabbur draw on classic dynastic types but they are also different they are to classic temple types such as those of the Early or the Late Chalukyas, or the Rashtrakutas. Most temples of Gabbur have undergone a series of changes over time and many have fallen out of use and are therefore in a dilapidated state. There are examples of a few that were converted to residential structures in modern times. Nevertheless, a study of structural remains in and around Gabbur indicates a mediated influence of the regional dynasties that came to rule over larger parts of southern Deccan from ca. 12th century AD.

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[207] Besides Ramalingesvara temple, an old *naga* stone was also spotted in the Honnatgi village. Access to certain parts of the village was denied and therefore this village was not surveyed intensively.

One way to analyze the temples at Gabbur is to conduct a formal analysis of the temples to try to fit them into specific dynastic type sets. However, studies on Indian temple architecture are yet to identify typesets that can accommodate deviations from the dynastic type sets already in place. This is not to say that formulating type sets is inherently a futile exercise; type sets, like any other classificatory scheme, perform a heuristic function for analyzing new data; it is useful to observe the magnitude and the nature of deviations from the standard. What is needed is a rigorous typological analysis of different components or attributes of all sort of structural remains from a given period, by referring to well-documented and analyzed temples.

One of the salient features of Indian temple architecture is the towering superstructure over the shrine, called the *shikhara*. At Gabbur, however, the temples go only as high as the first tala or till the parapet, and therefore lack the towering superstructures. In some cases they were added in the modern period. For instance, while the internal structure of Mel Sankara temple (G28) seems to be original in plan, the superstructure is completely modern. In temples where there are no such modern constructions, the ceiling constructions over bays of temples are visible; the ceilings over bays of nave and chambers are made of triangular slabs arranged into stepped, rotating squares topped with a square slab, usually with a rosette design, but sometimes with a star (made out of two squares). Only at Venkateshvara temple (G5), the *mandapa* has an elaborate design wherein lamps can be placed on successive levels of the dome arch.

Fig. 5-48: Ceiling constructions at Mel Sankara temple (A and B) at G28 and Venkateshvara temple (C) at G5.

Of the many temples in Gabbur, some have retained their original plan but others have been heavily reconstructed. Following the regional pattern, people constructed temples in Gabbur with a single or multiple (two-three) chamber/s. The central deities at most temples are either modern or non-existent. In some cases older sculptures are re-installed inside the chambers in modern times. The architecture of temples is ornate in some cases, such as Venkatesvara temple (G5)[208], Hampayyana temple (G15), Suguresvara temple (G16), with staggered square *vimāna*[209] (without the tower) plan, but plain in others, with simple square *vimāna* (without the tower) plan, such as Elu Bavi Basavanna temple (G5), Isvara temple (G4), Bangaru Basavanna temple (G10), and a temple south of Gabbur (G80). Most temples at Gabbur conform to the style of non-mainstream Later Chalukyas, as discussed by Hardy[210].

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[208] A detailed account of the Venkatesvara temple can be found in Channabasappa S. Patil, *Temples of Raichur and Bellary Districts, Karnataka, 1000-1325 A.D.* (Mysore: Directorate of Archaeology and Museums, Government of Karnataka, 1992), 75-80, 191-219.

[209] A *vimāna* is the structure enclosing a chamber housing a deity, i.e. the sanctum sanctorum of a temple. It usually includes both the shrine and the tower, but in the case of Gabbur temples there are no towers.

[210] Adam Hardy, *Indian Temple Architecture: Form and Transformation, The Karṇāṭa-Drāviḍa Tradition from 7th to 17th Centuries* (Delhi: Indira Gandhi National Center for the Arts, 1995).

Fig. 5-49: Mel Sankara temple (G28), western side. Note the modern constructions (e.g., the parapet) are incorporated into the medieval architecture. Plain slabs of stone are used in constructing the *vimāna*, which is of a square plan.

Fig. 5-50: Venkatesvara temple, entrance, and a Nagari script inscription on stone at the side. The walls are made of screens and aediculae.

Fig. 5-51: Venkatesvara temple, wall-shrine enclosing a niche, aedicular components, and double nasi on a staggered wall-shrine projection, around the eastern shrine.

Fig. 5-52: Staggered square plan of the shrine at Hampayyana temple, with kuta stambha as the aedicular component.

Fig. 5-53: Staggered square plan of the shrine at Suguresvara temple, looking NE. Only part of the original architecture around the shrine is preserved, but one can spot *kuta-stambha* aedicular component being used here.

Fig. 5-54: A *tri-kuta*, or three chamber temple (G80) in the fields south of Gabbur.

Fig. 5-55: Bangaru Basavanna temple (G10), western side, along with the inscription slab on the right and a hero stone

Fig. 5-56: Isvara temple (G4), with an inscription on the left, ornate pillars but plain slab exterior.

In my survey of Gabbur I do not distinguish between temples and mathas because architectural studies on early medieval and medieval Brahmanical temples do not spell out the differences in their architecture. Beyond the structural differences among temples, there is

immense eclecticism of religious beliefs and practices in the Raichur region, much like other parts of the Indian sub-continent from the early medieval period onwards. Shaivism (worship of Shiva and his pantheon) in various manifestations is the most dominant religious practice in Gabbur today. There some temples dedicated to Vishu and his pantheon as well. Most Lingayat temples[211] in Gabbur today are housed in structures that seem to have been Brahmanical or Jain temples at first. At one of the Lingayat temple and matha (G7) in Gabbur, the Gaja-lakshmi over the door-frame to the central chamber is carefully chiseled out. Similarly, the Hampayyana temple may have been a Jaina structure in late 11th century (according to an inscription) but was later converted into a Shaiva shrine. Some of the earlier sects within Shaivism are harder to identify based solely on the architecture, such as the Kalamukhas, Pasupatas, and Kapalikas, that represent synthesis of local belief systems with the Brahmanical religious practices in varying degrees and ways. Shiva was almost always worshipped in the form of a *linga* placed on a *pitha* (pedestal) in both brahmanical shaivite and lingayat temples, while Vishnu is worshipped in human form. Within the Shaiva pantheon, the Nandi bull or the vehicle of Shiva is the most prominent at temples in Gabbur. Hanuman (or Anjaneya), another member of Shiva's pantheon gained popularity in the region presumably from the 14th century onwards in the wider region of southern Deccan.

If the temples and shrines in the village are dominated by institutionalized religions, the agrarian landscape is the domain of the local goddesses and cultic beliefs and practices.[212] These include shrines dedicated to goddesses such as Maremma (or Mareamma), Soramma,

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[211] Lingayats are followers of Virashaivism, cult of Shiva that emerged in the 12th century and grew in popularity in northern Deccan, especially after Basavanna (a minister under Kalachuri king Bijjala, and a Virashaiva saint). Virashaivism does not recognize caste differentiation and therefore questions the central role of *brahmanas* and temples in attaining religious or spiritual merit. Each person can carry her/his deity with them in the form of a linga that can be tied around their neck.

[212] Suvrathan, "Spoiled for choice?" found that this is true of Banavasi and surrounding areas as well.

Pulomma/Palamma, Taiamma, Pidamma, and Yellamma, all goddesses who cure ailments and diseases, or bestow health or fertility (to crops and couples) but perhaps are equally capable of inflicting disease and destroying fertility, and therefore must be housed away from the settlements. Yellamma goddess shrines, specifically, are found in close proximity of water features and in her modern depictions she carries a pot of water on her head and lotus flowers in one hand. Shrines of these goddess do not adhere to codified rules of shrine or temple construction; some are made of lose stone slabs arranged make a small covered shrine large enough for lighting lamps and place other offerings such as flowers, bangles, and coconuts. Most shrines are modern constructions, some made into permanent single-roomed structures. Re-use of older structural remains or even hero-stones in a new context is fairly common. Some are even carved out of wood and painted over when they are taken out on an annual procession (*jātre*). However, these goddesses need not take a human form; they are sometimes indicated through just a lamp, or a small clay pot with a coconut on top of it. Offerings are made at these shrines at specific days of the lunar calendar. The materiality of these shrines may be dated to the modern period but it does not disprove that such and similar goddesses may have been a part of the sacred landscape of Gabbur before 17th or 18th centuries.

Fig. 5-57: Modern Pidamma/Veerappa shrine (G26) with a collection of hero stones and a naga stone outside it. It is likely that a Jaina shrine once stood here, indicated by an architectural fragment showing a Jina in a *nāsi*.

Fig. 5-58: Palamma shrine at Nagara Bavi (G59), worshipped in the form of an older hero-stone. Two tiny wooden figures are also visible.

Fig. 5-59: Modern Yellamma shrine next to Isvara temple (G49) on an embankment east of Gabbur.

Fig. 5-60: Modern Soramma shrine where Soramma and her consort are carved out of wood and given offerings of cloth, green bangles, and field produce such as raw cotton and green chillies.

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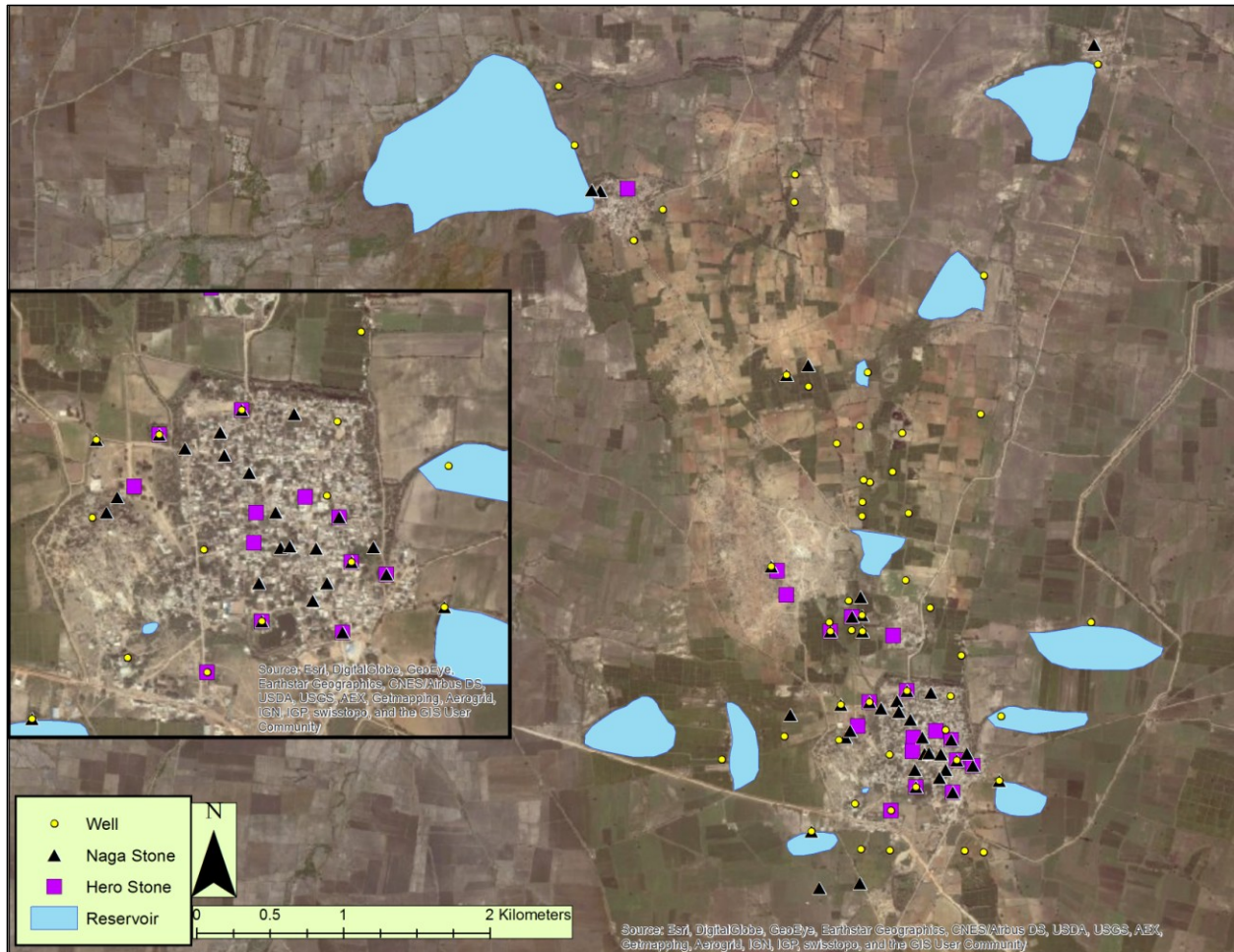
Fig. 5-61: Distribution map of Naga and Hero stones in and around Gabbur, in relation to water bodies.

Naga stones or stones with snake depictions are also ubiquitous in the Deccan, and

Gabbur is no different. While a number of naga stones were recorded from within the Gabbur

village, displaying a variety of sculptural depictions, at least two loci with large concentrations of

naga stones were recorded outside of the village. A collection of 21 naga stones (G79) is located

next to a modern canal south of Gabbur, arranged under a tamarind tree, presumably relocated

from their respective primary locations. I was informed that there once existed a reservoir by the

name of Naga Kere some distance south of this shrine, where there is a modern electrical station.

The other is next to Nagabusappa temple (G75) on a hill north of Gabbur. In addition to 26

individually carved naga stones, of the like found most commonly, there is a large boulder with

nine naga relief sculptures, next to the well and in close proximity of temple ruins. The positioning of most of the individual naga stones close to the well also suggests a strong correlation between water bodies and worship of nagas through naga stones. The group of nine nagas on a boulder strengthens the argument that this is the primary location of these naga stones. While it is hard to date naga stones based on their sculptural styles, it is clear that their association with water features has historical depth and a wide spatial coverage.[213] The survey recorded 11 other wells that were associated with naga stones.

Fig. 5-62: Nagas (n=21) collected under a tamarind tree next to a modern canal, south of Gabbur (G79).

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[213] A 12th century inscription from Gabbur village mentions donations made to this temple, and also attributed the name Kanakagiri to the hill it is on. See fn. 244 of this dissertation.

Fig. 5-63: A group of naga reliefs on a boulder in the Nagabusappa temple (G75) on a hill north of Gabbur.

Fig. 5-64: Naga stones around the well next to Nagabusappa temple (G75) on a hill north of Gabbur.

Hero stones are commemorative relief sculptures and are a constituent of Gabbur's sacred

landscape. They commemorate individuals who get slain fighting for a larger cause, either

protecting the village, cattle, reservoir, honor of women, faith, or other reasons. Hero stones are

understood to have a broad chronology, from ca. 8ᵗʰ – 18ᵗʰ centuries AD and were carved abundantly in the Deccan and South India. [214] Like the naga stones, it is hard to date hero stones based purely on their artistic style. Hero stones from Gabbur were executed following a variety of organization schema. The most common type of hero stone in Karnataka is one divided into three or two registers: the lowest (or lower) shows the hero in the act of fighting, in the middle he is escorted by the celestial women, and in the top-most (or upper) section he is seen in heaven, usually worshipping a siva linga. At Gabbur, there are many hero stones that depict the hero brandishing his weapons or in battle context alone. Both sun and moon are also almost always represented on a hero stone, probably signifying that the hero be remembered and revered for eternity, as also hero's place in heaven for eternity. Some hero stones from Gabbur follow the style that depicts the hero in battle as well as his transition to heaven. In some cases the registers are not clearly defined and depictions of the hero in heaven or being flanked by celestial women are included in diminutive form. There is only one example of a hero stone with an inscription from Gabbur. It is located in the open area north of Budibasava matha, west of Gabbur, north of Suguresvara temple hill. The inscription, in Kannada, is barely visible with parts of it already eroded. It does not conform to the dominant style of incorporating text on a hero stone, i.e. in between registers. It appears to be one of the earliest hero stones from Gabbur where devotion to Shiva is expressed not through reverence to sivalinga but to Nandi.

The survey identified one hero stone that is distinctly different from all the rest, and appears to be early modern or modern. It is found next to a modern Lingayat shrine at the southern end of Khanapur kere, and measures about 2 meters long. Unlike all the other hero

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[214] S. Settar and G. Sontheimer,eds., *Memorial Stones: A study of their origin, significance, and variety* (Dharwad: Institute of Indian Art History, Karnataka University, 1982). Stuart Blackburn, "Death and Deification: Folk Cults in Hinduism," *History of Religions* 24, no. 3 (1985): 255-74. These writings gear towards a general understanding of hero stones, their characteristics, and roles. Blackburn specifically explains why hero stones were/are worshipped or why the dead heroes are deified in Hinduism.

stones from Gabbur, where men are depicted with a hair bun on one side, wearing a cloth wrapped around the lower body above the knees, the one at Khanapur depicts men in Turkish attire of long tunics and trousers, along with a distinctive cap on the head. Among other things it also depicts a smoking pipe, something unseen in any other hero stone from the survey area. It depicts four individuals, the one in the front wearing the tradition cloth around waist and a shirt, while the other three behind him wear the long tunics and trousers. It is unclear what this hero stone might commemorate, but what is certain is that it is not the same as the other hero stones in the region.

Fig. 5-65: Two of the hero stones outside Mel Sankara temple (G28), along the edge of Sakkar Bavi.

Fig. 5-66: A hero stone in the compound of Hanumappa temple (G30) at the edge of the village, on the left. Hero stone at Pete Anjaneya temple (G9) in Gabbur village, on the right.

Fig. 5-67: Two of the hero stones outside Hampayyana temple (G15)

Fig. 5-68: Hero stone close to modern Budibasava Matha (G54). Note the inscription on the top left portion of the slab.

Fig. 5-69: Hero stone (G113) close to Khanapur Kere.

Of all the areas surveyed in this project, Gabbur has the highest number of them. Almost all of these are recorded and transcribed, but complete translations in English are not available.

While these inscriptions can add a unique interpretive dimension to the archaeology of Gabbur, not having complete translations hampers any exercise in weaving larger arguments based on them. Nevertheless, the summary translations allow us to notice the kind of people, places, and institutions that are mentioned in these inscriptions. Most inscriptions from Gabbur were inscribed from ca. 12th to 13th centuries AD, but the earliest inscriptions, dating to late 11th century and associated with religious structures, were found outside the fortified settlement of Gabbur.

Inscriptions from Gabbur mostly record donations made by individuals or a group of individuals at a certain time to either religious functionaries, such as *brahmanas/mahajanas*, or to a temple deity more directly. It should be mentioned that Gabbur is the only known agrahara settlement in Deodurg taluk. However, Kallur (Manvi taluk), located about 20 km south of Gabbur, is another agrahara in this area. What is interesting is that donations made by the ruling families and high level officials do not constitute a significant number of donations made in Gabbur, and the *mahajanas* feature as the major donors and perhaps administrators. This pattern is very different from what we see at Kallur, for instance, where most early medieval donations recorded in inscriptions were issued by ruling chiefs, their families, or high officials. This will be of significance when juxtaposed with archaeological evidence of settlement and water management at Gabbur, and at other survey areas, to develop an understanding of the political economy of water in the region.

Chapter 6: Archaeological Survey at Maliabad: settlement, defense, and water

The kinds of settlements that existed in early medieval Raichur are visible on its landscape. Maliabad the second area that I surveyed exemplifies such variation of archaeological sites in Raichur district. Like the surface survey at Gabbur, the systematic surface survey at Maliabad was aimed at studying its settlement history and water management to reflect on the political processes operating on a larger regional scale. The archaeological evidence from Maliabad reveals the attempts made by elites, local and regional, to intensify agricultural production. This chapter analyzes the archaeological remains from Maliabad in their historical context to recover the many ways in which different actors tried to maximize the economic and political potential of frontier areas such as Maliabad.

The two-tiered concentric fortification at Maliabad represents the most conspicuous feature of its landscape, accompanied by temple ruins, a dense pottery scatter, and two connected reservoirs.
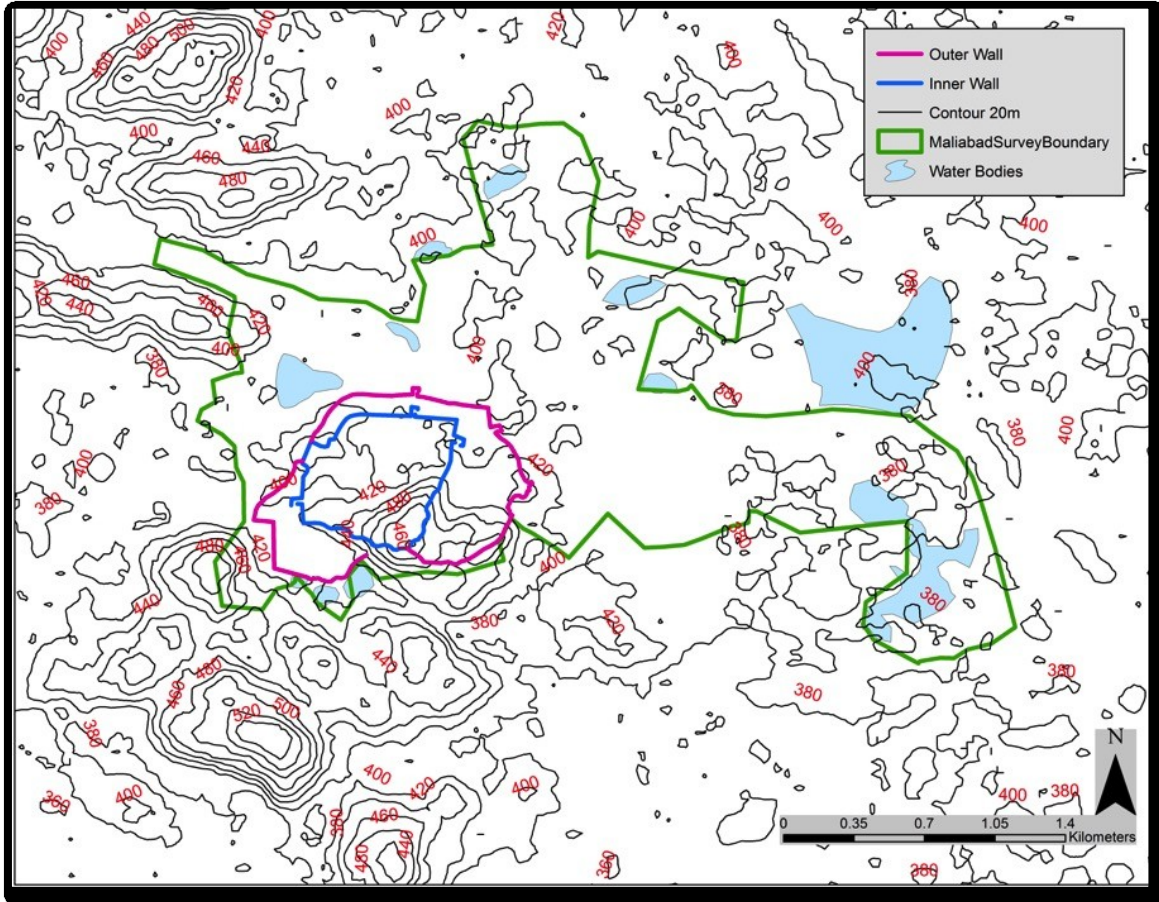
Fig. 6-1: Map of the survey area marked in green, overlaid on a 20m contour map of Maliabad.

The survey area of Maliabad covered the fortified area, agricultural fields in its vicinity, and modern villages. Unlike Gabbur where the modern settlement occupies the same place as the historical one, the fort in Maliabad does not seem to have been inhabited after the final period of desertion, which might date to around sixteenth or seventeenth century. Through a systematic survey we recorded the distribution of wells and reservoirs, structures, sculptures, artifact density, and topographic features in and around Maliabad. Without excavated contexts and lab-based dating of stratified deposits, this project relied on relational dating to establish chronologies of archaeological features at Maliabad. The archaeological survey at Maliabad recorded temple remains, floor or foundation plans of other structures, and items related to food processing, such as mortars.

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The fort walls at Maliabad follow the natural topography and therefore are irregular in shape. They climb up the hills on the south and west, at times merging together before branching off into different directions. In addition to the fort walls, there are raised walkways or stone works that make it easier to navigate the fort and the hills. The outer side of the fort walls is constructed of stone masonry using long, chiseled, heavy blocks of stone, which is then filled with earth on the inside, making a path on top of the wall that people could walk on. It is likely, therefore, that the fort walls required periodic reinforcing and maintenance on the inside because of continuous use and weathering of the earthen fill. The stone masonry of the outer fort wall is not the same as the inner one. The inner fort wall at Maliabad is constructed of large stone blocks and while there is variation in the size of blocks, most blocks measure about 2.6 m high and 8 m long, while the longest blocks can be between twenty and twenty-two meters, with edges chiseled to align exactly against the edges of other blocks without the use of mortar. It resembles closely with the inner fort wall at Raichur, located about six kilometers north of Maliabad. At Raichur, a foundation inscription next to the western entrance of the inner fort wall records[215] that the fort of Raichur was constructed during the time of Kakatiya king Rudradeva by a subordinate chief Vithalanatha in 1294 A.D. after seizing a series of important forts of southern Deccan from Yadava control who were ruling the Deccan from Devagiri or later Daulatabad. Given the similarities in the construction of these fort walls at Raichur and Maliabad, it appears that the inner fort wall at Maliabad would have been constructed around late thirteenth or early fourteenth century. Even if that was not the case, we can safely assume that by the end of the thirteenth century, there were skilled stone workers circulating or living in the Raichur region

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[215] P. Sreenivasachar, "Note on the Raichūr inscription of ViThāla-nātha, dated Śaka 1216 (C. 1294 A.D.)," *Annual Reports of the Archaeological Department of Hyderabad (ARADH) 1935-36*, Appendix E, 32–5.

who were familiar with construction of fort walls using large blocks of dressed stone without the use of mortar.

Unlike Raichur, however, there is no such foundation inscription at Maliabad that details who and when built this fort. Some of the powers that may have had stakes in the Raichur doab in the post-Chalukyan centuries were the Hoysalas, the Yadavas, and the Kakatiyas. It is possible that officials or local potentates under the tutelage of any of these regional powers constructed the inner fort of Maliabad. Epigraphic studies are replete with examples of scribes, a skilled professional class, who were circulating in the Deccan by the time of Chalukyas of Kalyan and came from areas as far away as Kashmir.[216] It is probable that similarly skilled stone workers involved in construction of temples were also circulating in this region by the 11th century, procuring livelihood wherever their skills were required. It will therefore be naïve to attribute a certain style of stone masonry to one ruling dynasty of the Deccan or the other. Of course, the needs and tastes of patrons would have been important and may feature prominently in certain kinds of construction projects. However, the insufficient data on forts for such an early period prevents any attempt at identifying distinctive dynastic signature on fort masonry styles This issue is further complicated by selective preservation or destruction of older forts by political actors of later centuries in the Deccan, making it difficult to study forts built between 11th to 14th centuries for comparative analysis of fortifications built by contemporary states.[217] It is hard to know whether the fort here was constructed directly by a regional state, or by a local elite through complex relationships of patronage and power.

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[216] Whitney M. Cox, "Scribe and script in the Cālukya West Deccan," *Indian Economic & Social History Review* 47, no. 1 (2010): 1-28.

[217] See Jean Deloche, *Studies on Fortification in India* (Pondicherry: Institut Français de Pondichéry, 2007) for a broad coverage of fortification in India from the earliest times to the 18th century, although it adopts an archaic classificatory scheme of 'Hindu' and 'Muslim' fortifications. A more nuanced approach to architecture in the Deccan can be seen in Eaton and Wagoner, *Power, Memory, and Architecture*.

In the absence of a foundation inscription it can be said that the Yadavas or the Kakatiyas

constructed the inner fort at Maliabad, since the Hoysalas have not left a strong evidence of

fortification even at the primary centers that they came to rule over. The only evidence from

Maliabad that may indicate some degree of Hoysala influence in the region is a sculpture of a

man (Sala ?) fighting the lion (see below), now reused in a modern *matha* structure, but with no

other structural features commonly associated with the Hoysalas. Eaton[218] attributes the

Maliabad fort to the Kakatiyas, whose subordinate constructed the fort at Raichur, barely six

kilometers from Maliabad. While the similarity in construction of these two forts is clearly

visible, it is not clear why the Kakatiyas would have sponsored construction of two equally large

forts[219] so close to each other. One possible explanation is that the hills of Maliabad provide the

last such vantage point overlooking the possible route of communication between Raichur and

areas south of Tungabhadra. Since these forts fall in each other's line of sight it would have been

easier to signal critical messages through the use of fire.

The outer fort wall at Maliabad, however, does not resemble anything like the outer fort

wall at Raichur. The latter is attributed to the Bahmani state (on account of inscriptions along the

fortification) and is constructed of smaller stone blocks with chinking of rubble, with massive

loopholed and battlemented ramparts and bastions with parapets. At Maliabad, the outer fort wall

is constructed of smaller stone blocks or boulders some of which are shaped while others are not.

There is some evidence of chinking at some places where the gaps between slabs or boulders is

too wide and was therefore filled with smaller pieces stone. Like the inner fort wall, it has an

earthen or pressed-earth fill on the inside, with square bastions. Both inner and outer fortification

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[218] Eaton, "'Kiss My Foot,' Said the King," 302.

[219] Eaton and Wagoner, *Power, Memory, Architecture,* p. xxv, fn 2. The perimeter in kilometers of the forts of Raichur and Malaibad are reported to be 4.29 and 4.69 respectively, while the corresponding area enclosed (in hectares) by these forts is 99.87 and 91.82 respectively.

walls are devoid of battlemented ramparts or parapets. Curiously, unlike many forts in the

Deccan, the fort at Maliabad did not evidence use of guns or cannons at the site, nor was there a

moat along the fort. It therefore appears to be a fort meant more for surveillance and protection

than for launching attacks from and seems to have lost its importance by the seventeenth century.

The chronology of the outer fortification of Maliabad is harder to place compared to the inner

one. For one, the masonry changes from the eastern to the western side. On the eastern side the

masonry (Fig. 6-2) consists of 0.5 m. by 1 m. stone blocks that don't exactly fit next to each

other, leaving gaps that are either filled by the earthen fill or chinking with rubble or mud. On the

western side, however, the fort wall is made of boulders with minimal work along the edges,

leaving larger gaps in between the boulders. Here too, the earthen fill provides the support to this

wall although it seems to require greater maintenance since there are crevices where drought-

resistant plants can easily grow. This might explain why the outer fort wall is damaged at many

places today. The stylistic difference in masonry style between the eastern and the western outer

fort wall at Maliabad may not necessarily indicate a significant chronological gap, but rather the

exigencies of the historical context in which they were constructed—a possible shortage of labor

or time, or perhaps differently skilled laborers hired for its construction. The chronological

relationship between the inner and the outer walls is also uncertain.

Fig. 6-2: Maliabad outer fortification wall, facing East.

Fig. 6-3: Maliabad outer fortification wall, facing South-West. The height of the wall here is about two and a half meters and the boulders are more or less piled on top of each other without being worked into a geometric shape.

The inner and outer walls converge wherever the slope is steep, such as on hills, and diverge in gradual sloped areas. In addition to the fort walls, there are raised paths that mark routes of communication across the Maliabad fort. These elevated paths are more frequent in and around the hilly parts of the fort and much less frequent in the northern part of the fort where the slope is negligible or gradual. Another point of comparison between the inner and the outer fort walls at Maliabad are the gates or entrances. The inner fort can be entered through gates on three directions, the east, the north, and the southwest, but the outer fort wall has provisions of just two, one each on the north and the east. In the Southwest the outer fort wall barely touches a hill before turning southeast and continuing to form the southern boundary of the fort. It is possible that there was one a gateway here as well, but it was either altered in historical times or in the modern period. There seemed some attempt at facilitating movement on the hill southwest of Maliabad through an earth-filled path, but it terminates where huge boulders dominate the hill slope and there is negligent fluvial deposit as one goes up. On the south the rocky hills provide natural defense and thus obviate the need for elaborate gates. All the gates at Maliabad are L-shaped and thus have a bent-axis approach, suggesting that movement was controlled and restricted across these gates, a common feature of military forts. The gate on outer wall aligns with that on the inner one only in the north. The gates were constructed by leaving out space between two bastions and then appending an L-shaped entrance to the fort wall, that channeled and restricted movement of people from the outer areas to the inner ones.

Breaches in the fort wall or bastions were identified along both the inner and the outer fort wall during the survey, affording a section view of the fort walls at Maliabad. The fill of the fortifications is devoid of any significant artifact deposit except for the top layers where dense pottery scatter was noticed, indicating repeated maintenance activities likely using dirt from

either inside or just outside the fort. The artifact density in the fill was drastically low compared to that on the top of the fortifications. A case can be made therefore that the two fortifications at Maliabad, although displaying different masonry, were constructed as part of a single project, when the occupation inside or around the fort area was not dense. This is not to say that the construction of the fort was accomplished within a short period of time, but that it is unlikely that there was a substantial chronological gap between the construction of the inner and the outer fortifications of Maliabad.
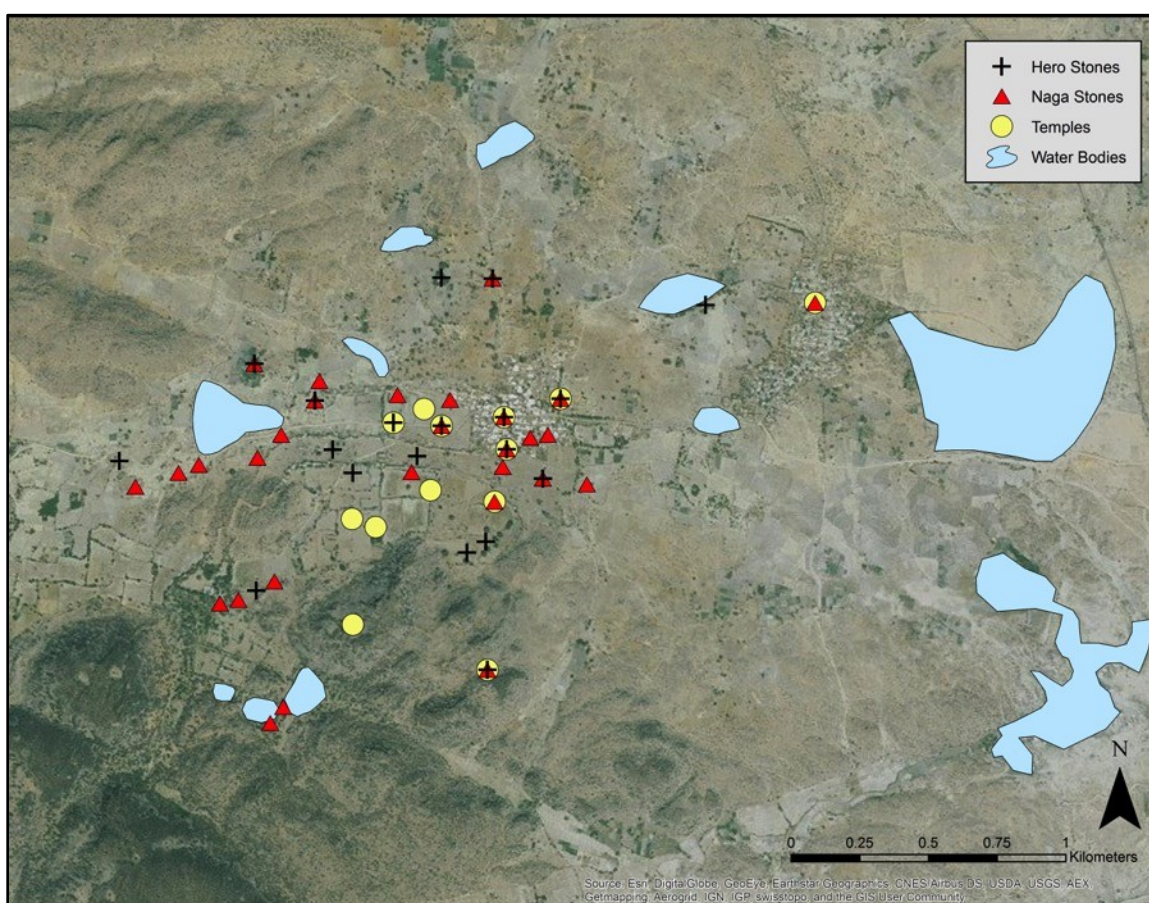
Fig. 6-4: Distribution map of temples, naga (snake) stones, and hero stones, with respect to water bodies in Maliabad.

In the systematic survey at Maliabad we recorded thirteen sacred spaces and temples at Maliabad. There seemed to be no correlation between the distribution of these religious structures and the fortification wall (Fig. 6-4). At least three such structures were found inside

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the inner fort, two of which are in the center of the inner fort. Their structures are either buried or have been reused in other contexts. For instance, a broken *linga* made of polished dark stone, possibly dolerite, was reused in a modern context to form a field boundary. One of these temples was constructed on a raised platform and had two or three chambers attached to a central covered courtyard, called a *mandapa*. A fragment of a floor design at this temple resembled those found at Gabbur. (Figs. 6-5 and 6-6) An inscription in proximity of one of these temples from Gabbur is dated to the late 11th century, recording donations made by a Chalukyan official to the services of a deity in *piriya agrahara* of Gobburu.[220] These temples likely date to about the end of the eleventh or the beginning of the twelfth centuries AD.

Fig. 6-5: Floor slab of a temple in the inner fort of Maliabad.

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[220] IK. IV, Raichur Inscriptions No. 18, p.6.

Fig. 6-6: The entrance to the *garbha griha* of Suguresvara temple on the hill to the west of Gabbur village, showing also the moulding at the floor of the entrance, in the *antarala* or the ante-chamber.

The most substantial temple inside the fort of Maliabad is in its northeast quadrant where

two sculptures of elephants stand next to structural remains. (Fig. 6-7) The architectural style,

visible in the broken structural members, resembles that of some temples in Gabbur. (Fig. 6-8)

Fig. 6-7: Elephant sculptures next to temple remains inside the inner fort of Maliabad.

As discussed earlier, the Gabbur temples are dated primarily through the associated inscriptions, to a period between 12th and 13th centuries. It is likely, therefore that similar temple construction projects were launched in Maliabad as well, among other places in the Deccan, around the same time. Unlike Gabbur, however, there are not as many stone inscriptions reported from Maliabad. The only published inscription from Maliabad was inscribed in the 16th century when the region was under the rule of the Adil Shahis of Bijapur, mentioning the taxes to be extracted from different occupational groups irrespective of their religion. In my systematic surface survey at Maliabad, two inscriptions were found that so far have not been recorded or translated, but the script they are written in is similar to that used in other inscriptions issued during the time of the Kalyani Chalukyas. Both the evidence from the temple architecture and

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the inscriptions, therefore, suggest that temples and the first settlement of people would have

emerged at Maliabad at around 12th century AD.
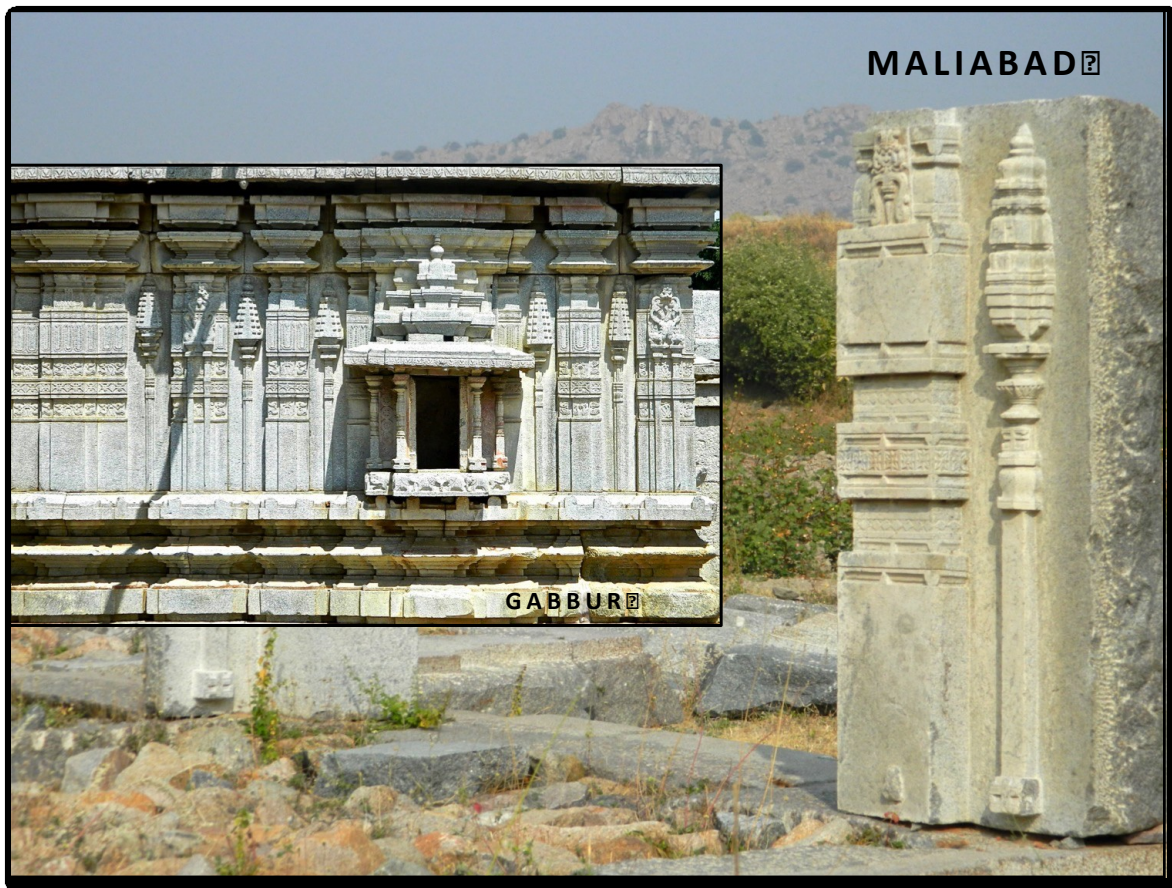
Fig. 6-8: Comparison of sculptural style at Maliabad and Venkatesvara temple of Gabbur.

Other temples that may be dated to the same time period in Maliabad can be found in and

around the modern village of Maliabad, as well as on the hill south of the temples discussed

above. The Ramalingesvara temple on the Maliabad hill, but just outside the outer fort wall on

the southeast, is a modern construction but reuses older pillars, slabs, and doorjambs. A number

of hero stones and *naga* stones were found collected outside the temple, overlooking a well about

ten meters below where water seems to emerge out of the hill and is used by visitors for

cleansing and drinking purposes. The doorjambs include both the ones with *purna-ghata/kalasha*

and those with *dvarapalas*[221]. An undocumented inscription has been inscribed on a large boulder that hangs over the entrance to a cave at a distance of about 160 meters north of the temple, in characters that can be identified as Kalyani Chalukya. It appears that the temple that would have existed here was built in the style prevalent at the time of the Rashtrakutas or the Chalukyas.

Another sacred space on the hill is located about 480 meters west of Ramalingesvara Gudi where there is no modern temple but structural and sculptural remains of an older period can be seen next to a depression area where water collected after the rains. Older corners and pilasters were used to construct a stepped masonry along the western edge of the water collection area to prevent water seepage into the surrounding sandy soil. A square slab with etched rosette, which is often used in roofs over *mandapas* and *garbha grihas* is seen lying next to the cistern, and so is a relief sculpture of Ganesh carved on a small boulder. There was an etched Anjaneya image on a boulder about 40 meters south of the cistern. It appears that the cistern was constructed after the temple was out of use and its materials could be reused in a secular context. It is likely therefore that by the time the fort and the cistern were constructed the temples, especially those located outside the fort, had lost their significance or importance, and that these were probably replaced by other temples elsewhere. The temples inside the fort, the ruins of which were recorded during the survey might have continued to be in use even after the construction of the fort.

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[221] *Kalasha* is literally translated as a pot or a pitcher. *Purna ghata* or an overflowing pot or jar is the symbol of prosperity and abundance in Indic art cutting across religions. In this context it refers specifically to a relief design carved on doorjambs, displaying a pot with a coconut and leaves emerging from its mouth. A *dvarapala* is literally a doorkeeper, usually a human figure, sometimes with attendants. This too is carved in relief on doorjambs at the entrance of temples and chambers in temples. These representations are commonly found in early medieval temples of India, and more specifically in the Deccan.

Inside the fort on the east side are architectural remains of what might have been a small shrine, close to the outer fort wall. Slabs of stone can be seen partially buried in the cotton fields but a few architectural and sculptural members were found together, probably as a result of farmers clearing the fields for agricultural purposes. There are two fragmentary sculptures made of dolerite, one depicting a deity wearing jewels from the waist down, while the other shows two right hands of a (or the same) deity holding a sword and a small two-headed drum (*damru*), likely a representation of a female goddess. There is a *naga* stone in its vicinity, which have traditionally been associated with temples or sacred spaces all across the Deccan. A few pillar bases are also visible, but they do not reveal any specific architectural style that may help in ascertaining their chronology.

There are three old temples in the precincts of the Old Maliabad village, located to the northeast of the fort. One of them, called the Virabhadresvara temple, is put together using architectural remains of a much older temple evident in the *srikara* pillars used in the *mandapa*. For instance, a panel of four-petal flowers is used awkwardly as an extension of the roof along with other slabs of stone. The four pillars making the open *mandapa* are shaped but plain. Unlike most temples that were built in this region at around twelfth century AD, there is no antechamber connecting the chamber with the *mandapa*. The exterior of the temple seems to have either been destroyed or might indicate that this temple was never completed. Outside the chamber is a hero stone divided into two panels: the lower panel shows one person mounted on a horse and attacking another person. The upper panel depicts a person sitting crossed-legged with folded hands before a *siva linga* and two female figures, one waving a flywhisk over the seated figure and the other over the *linga*. Inside the chamber are a number of sculptures, most of which appear to have been collected and deposited here in modern times. There is fragmentary pillar

and a pillar base, a pitha, one relief sculpture of a man and a woman, possibly a sati stone[222], one image each of a male and a female deity with four arms holding weapons such as a trident and a sword, a broken head of a male figure with long slender moustache and big eyes, *naga* stones (most of which seem modern), and two footprints on stone blocks. In addition to these, there are what appear to be grinding stones (flat rectilinear slabs with one shorter edge tapering to form a angle, measuring about 35-40 cm) inside the chamber—a case of seemingly non-secular items being absorbed in a sacred context. (Fig. 6-9) It is hard to ascertain the precise chronology of this temple given its damaged and/or incomplete state, but the pillars of the open courtyard indicate 11th -13th century AD chronology.

Fig. 6-9: Virabhadresvara temple in Old Maliabad with pillars and a hero stone outside the chamber.

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[222] Suvrathan, "Spoiled for Choice?", identified similar sculptures in the Banavasi area as a kind of sati stones.

Fig. 6-10: Chamber of Virabhadresvara temple in Old Maliabad with *pitha*, sculptures of local deities, and what seem to be grinding stones.

The modern temple of Anjaneya in Old Maliabad village reuses older temple architecture

and sculptures, such as *citrakhanda* pillar type with floral pattern on the octagonal band, also

found in use during the sway of the Chalukayas of Kalyana. Additionally, the temple reuses

older pilasters, panels of animals such as elephants and rider-on-horse, hero-stones, sculpture of

Ganesha, a door-lintel with five Dravidian inspired *gopura* design (Fig. 6-11), sculptures of

Nandi, *naga* stones, and grinding stones similar to the ones found in Virabhadresvara temple.

There is a modern relief sculpture of Anjaneya or Hanuman in the *garbha griha*; this temple

lacks an antechamber, attesting to its modern plan. The panel of elephants found here is similar

to the one encountered at the temple remains inside the inner fortification at Maliabad and some

of the temples in Gabbur (such as the Surugresvara temple and Venkatesvara temple). There are

no accompanying inscriptions at Maliabad temples, but the stylistic similarities might indicate either a late eleventh or early twelfth century chronology.

Fig. 6-11: . Reused older sculptures and gopura lintel in the compound of Anjaneya temple in Old Maliabad village.

Along the eastern edge of Old Maliabad village is the Virabrahmesvara Matha. The structure is completely modern but it reuses older sculptures, predominantly *naga* stones and hero stones. In addition to these there is a panel of elephants like the one at Anjaneya temple and temple remains inside the fort. The most curious of all is a sculpture of a man fighting a lion, reminiscent of the Hoysala emblem of 'Sala fighting the lion' to kill it at the behest of his Jain teacher. As mentioned earlier, while the Hoysalas are likely to have exercised some control, either direct or indirect, over this area at some point, there is little evidence in the Raichur taluk of temples or forts built directly under the patronage of Hoysala royalty. Unlike the Chalukyas and the Kakatiyas, there are fewer or no inscriptions in this region that refer to the Hoysalas ruling this region. It is therefore interesting that such a sculptural figure is found north of

Tungabhadra.[223] It is possible that local elites that owed allegiance to Hoysala rulers appropriated some of the stately symbols of the regional power either as a sign of allegiance or to leverage their own political currency in the region by associating with the Hoysalas. Whatever the precise reason may be, it appears that even when the Hoysalas extended control over this area, they either were not interested in or were not able to leave a strong archaeological signature of their presence.

In the area just north of the Maliabad fort are remains of a few temples. Walking west from the village, the first temple is known today as Basappa temple, or the temple with a *basavanna*, i.e. the bull, signifying Nandi of the Siva pantheon. There is a hero stone and a few *naga* stones lying outside the temple structure. The hero stone is divided into three registers. The lowermost depicts three people brandishing swords, and the middle register shows the three people again with their swords, only this time the central figure is larger than the other two. On the top register are the three persons sitting crossed legged and with folded hands before a *siva linga* and sun and moon symbols, indicating their place in heaven and their eternal reverence to Siva. There are two *naga* stones, one of anthropomorphic style, next to the hero stone. The temple structure is made of older slabs, lintel and doorjambs, housing a large polished *nandi* sculpture in the antechamber and a *siva linga* in the *garbha griha*. The *nandi* sculpture is damaged and therefore technically is out of worship, suggesting the strong possibility that this structure was brought together using older remains in modern times. Panels of four-petal flowers and rider-on-horse are incorporated in the external masonry of the structure.

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[223] I am indebted to Mr. Siddeshwar Prasad of Dharwar, who first brought the 'Sala fighting a lion' sculpture from Balligavi (Shimoga district, Karnataka) to my notice. He also shared his observation that this particular sculpture is uncommon in areas north of the Tungabhadra.Siddeshwar Prasad, personal communication (2015).

About 85 meters northwest of Basappa temple is a structure commonly known as Renukamma temple. Like Basappa temple, this structure has an antechamber and a chamber. The main entrance has a tri-*gopura* style lintel and *dvarapalas* on doorjambs. A sculpture of an elephant, less than half a meter long, with flattened profile is positioned outside the entrance on one side, while a damaged or unfinished small sculpture of *nandi* is on the other. The chamber has a broken dolerite *siva linga*, similar to one found inside the fort and a few other unidentifiable sculptural remains. To the west of Renukamma temple, is a damaged sculpture of *nandi*, fragment of a *gopura*-style lintel, head of a deity figure, a hero stone, and two mortars on large block of stone. The hero stone, like some others from the Deccan is divided into three registers, with a human figure in fight on the bottom, the same person being flanked by two attendants, each with a flywhisk on the middle, and a person with folded hands before a *siva linga* on the top. Far west of this locus, close to the inundated area of Peetalcheru reservoir, are structural remains of what could have been another religious structure, arranged to function as a farm boundary. While no structures are intact at these places, it is possible that there was at least one more temple in this vicinity, the remains of which are now scattered in the landscape.

The other significant temple recorded during survey at Maliabad is in the New Maliabad village, about a kilometer northeast of the Old Maliabad Village. The structure, like most temples in Maliabad, is a modern one but older sculptural and structural material can be seen arranged outside the modern temple. These include fragmentary *citrakhanda* and *srikara* pillars, panel of elephants, *naga* stones, two elephant sculptures on either side of the entrance, and a meter long lingam. As with some other temple remains, it is hard to date this temple in the absence of significant structural remains.

Temples are not the only manifestation of the sacred realm from this region. A greater number of open-air sacred shrines or spaces also were recorded in the survey at Maliabad. While some of the sculptures at these shrines are today found in close proximity to structures belonging to canonical religious systems (i.e. temples), many of these are found in contexts where no such structures were constructed, akin to the pattern noticed at Gabbur. These are taken to represent local religious practices, traditions, and deities, such as *naga* stones and sculptures of female deities. Hero stones (memorializing individuals who die in battles) can also be found in close proximity of temples indicating their relative importance in the sacred landscape of Maliabad over time.

Figure 6-4 shows the distribution of the naga and hero stones in Maliabad. Before observing and explaining the distribution of these sculptures, it must be mentioned that these sculptures can be moved around. Their sizes vary, but most of the naga stones are slightly over a meter long and less than half a meter wide. They can be lifted by a group of people and moved around to another location, probably not too far from the earlier one, for a number of reasons.

Fig. 6-12: A *naga* stone located North of the Maliabad fort along with other such *naga* stones and hero stones. Scale is one meter.
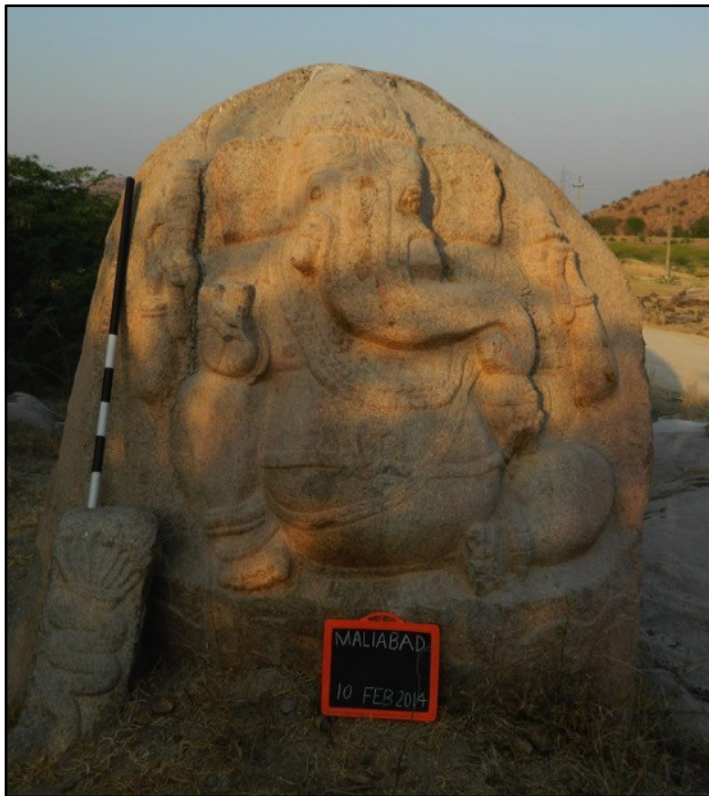
Fig. 6-13: Ganesh relief sculpture on a boulder North of the outer fort wall at Maliabad, and a *naga* stone next to it. Scale is one meter.

The distribution of *naga* stones, which seemed to have functioned purely in the sacred realm, does not conform to that of any other archaeological feature recorded during the survey. Their density is lower inside the fort than outside, probably because areas of lower population densities were favorable locations for snakes to inhabit, suggesting greater sighting of snakes and perhaps relational sanctity. It is also possible that the *naga* stones inside the fort were removed in modern times to make way for agricultural fields, but this is unlikely to have been the case because they would still be found inside the fort area, albeit kept along the field boundaries. Only at one locus do we find a high concentration of *nag*a stones (n=70), located south of the Maliabad fort, across one of the ponds. The water running off the adjacent hills collects here and now herds of cattle graze in this area and use this pond for drinking purposes. This area is home to snakes even today, evident from the numerous holes in the ground. These *naga* stones do not conform to a single style, a trend noticed across Deccan. It does not appear that people today worship this set of *naga* stones, but it cannot be taken to mean that people did not consider them sacred. In fact, the act of installing a *naga* stone itself could be a sacred one. Besides the nature of this place, it is hard to establish is the relationship of this sacred site with the temples in Maliabad, its fort, and the settlement inside the fort.

Other sacred shrines include more than one type of sculptures, such as *naga* stones, hero stones, and small relief sculptures of *siva lingas* on boulders. In addition to this, people carved relief sculptures of Ganesha on boulders, especially at or close to boundaries, although there was at least one etching of Anjaneya (Hanuman) on the hill at Maliabad. Stand-alone Nandi sculptures were also found outside of temples, mostly association with wells, similar to the trend noted in Gabbur. There appears to be a predominance of Shaivism among the sculptural remains

at Maliabad, although the nature of temples at the modern village and inside the inner fort wall is yet to be ascertained.

Concurrent with the practice of worshipping deities and *nagas* was the practice of memorializing the dead in the form of hero-stones. The hero stones at Maliabad are of two kinds. The first kind depicts the person being memorialized in arms, sometimes mounted on a horse, sometimes assisted by other people or women, presumably who died with them or, in the case of women, performed *sati*. The other dominant type of hero stones are divided into two or three registers, the lowermost depicting the 'hero' in the act of fighting, the middle showing the hero being escorted by *apsaras* (celestial women) to heaven, and the top in which the hero is in the heaven and usually sitting with folded hands and cross-legged, sometimes before a *siva linga*. A third kind, of which there is just one example at Maliabad, are hero stones that are oriented horizontally, possibly memorializing more than one person. The largest example of hero stone at Maliabad, measuring about 1.3 meters in length, is located north of the fort, where there is a collection of *naga* stones as well as hero stones. This hero stone is divided into two registers. The lower shows a man fighting a number of other men, with the latter reduced in scale to fit as many of these men as possible in the limited space available on the stone slab, indicating the challenge faced by the hero. The upper register depicts the hero seating cross-legged with folded hands, flanked by women attendants, likely *apsaras* (celestial women), on either side that support a cupola over the hero. A few peculiar features of this hero stone are the hairstyle of the people depicted on it, with hair tied into a bun on top of their heads rather than to one side or back of the head, and the absence of a *siva linga*. What it could say about those memorialized or those who worshipped this stone is not known. Unlike many such hero or memorial stones across India, the ones at Maliabad are not inscribed, limiting any detailed social analysis using them.

A total of twenty-seven hero stones were recorded at Maliabad during the survey, twelve of which were found in or around temples. There were seven hero stones next to wells or small reservoirs, three of which were located at a place with both a temple and well. The extent and space of distribution of both naga stones and hero stones is roughly the same, but it is worthy to question if the hero stones were installed where battles were fought and conflicts resolved, or areas of residence and/or daily activity. The relationship between the hero stones and the fort too is not clear. Only seven hero stones are found within the precincts of the fort, while most others are spread in an area within 400 meters of the fort. Interestingly, none of the temples remains inside the Maliabad fort were found associated with hero stones. It appears that placing the hero stones along the temple complexes was a later activity. It is therefore difficult to establish a chronological relationship between the fort and the hero stones. Elsewhere in the Deccan hero stones have been found within or close to settlements, where again there are issues of modern disturbance.[224]

At Maliabad, evidence of settlement comes primarily from inside the fort and areas north of the fort. The Old Maliabad village located in close vicinity of the fort could not be surveyed for ceramic scatter because of excessive disturbance of surface remains. However, it is worth noting that areas on the fringes of the modern village, where the ground surface is more clear, also did not contain noticeable ceramic scatter that might indicate a residential settlement. The most dense artifact scatter (85% of the visible surface), in the form of ceramics and roof tiles were found inside the inner fort of Maliabad, and yet, as mentioned above, similar density was absent in the fill of the fort walls. Broken L-shaped roof-tiles, baked after being molded, were found in the northeast quadrant of the inner fort and were conspicuous by their absence in other areas. This is also the area where remains of two granite elephants and temple remains are visible

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[224] Suvrathan, "Spoiled for choice?", 135-36.

on the surface. The ceramic scatter decreases on the hill, but was of high density on the surface of wall-fill near the foothills, where it was possible to bring earth from below to repair or reinforce the fort walls. Similarly high density of artifact scatter is visible all over the surface of both the outer and inner fort walls, indicating repeated repairs during or after the period of settlement inside the fort. Inside the fort the ceramic density decreases towards the foothills, which might be explained by less surface disturbance. The areas that are subjected to agriculture go through repeated ploughing thereby disturbing the upper layers and leading to greater visibility of ceramic remains on the surface of the fields compared to rocky areas that are not subjected to cultivation. Despite this, a certain trend in ceramic distribution can be noticed across the survey area at Maliabad. The ceramic density decreases to about 50-60% percent in the areas between the inner and outer fortification walls. Outside the fort on the north, the ceramic density further drops to 20-30% for about 200 meters. In the area west of the fort too the ceramic density dropped drastically compared to fortified area, ranging from 10-30%. From the southwest corner of the outer fort wall runs a meter and a half deep channel that drains water from south of the fort towards Peetalcheru reservoir in the north. This ditch afforded a section view of area west of the fort where ceramics were either discarded or stored in what looked like a shallow pit or deposit (Fig.6-14). Ceramic deposit in a stratified context provided definitive evidence for use of this area for either storage or discard purposes, and probably residence as well, despite there not being substantial surface remains of secular structures outside the fort.

Fig. 6-14: Section view of an area West of the Maliabad fort, with ceramic remains.

Other evidence for residential activity at Maliabad include floor plans of structures, all located inside the fort. All together the survey recorded twenty-seven loci where floor plans of one-roomed structures, usually along the foothills of the Maliabad hills, on the north side. There were raised prepared surfaces identified in between the inner and outer fort wall on the east side as well. In the absence of any sculptural remains that are iconographically associated with religious structures, it appears that these were secular structures. While stone alignments demarcated their floor plan, it is likely that the superstructure was constructed out of relatively ephemeral materials such as wattle-and-daub. There was no evidence of brick use at these places, however, on the northern slope of the hill, eroded pieces of baked terracotta were found. Brick use does not seem prominent in historical Malaibad. However, it is possible that some sort of baked terracotta material, such as roof-tiles found in the northeastern quadrant of the fort were used in places on the hill. The survey did not record any evidence of such structures on the hill,

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given the partial coverage of the hill during survey, due to limitations exerted by topography and time. The precise nature of the one-roomed structures at foothills is not completely clear. It, however, seems unlikely that these too were religious structures albeit representing the unorthodox or non-canonical religious traditions, primarily because such shrines are usually located away from or at the peripheries of settlement areas. The only other possibility could be that these structures were inhabited over a period of time, along with other structures that no longer exist, and would have likely resulted in the dense artifact scatter inside and around the Maliabad fort.
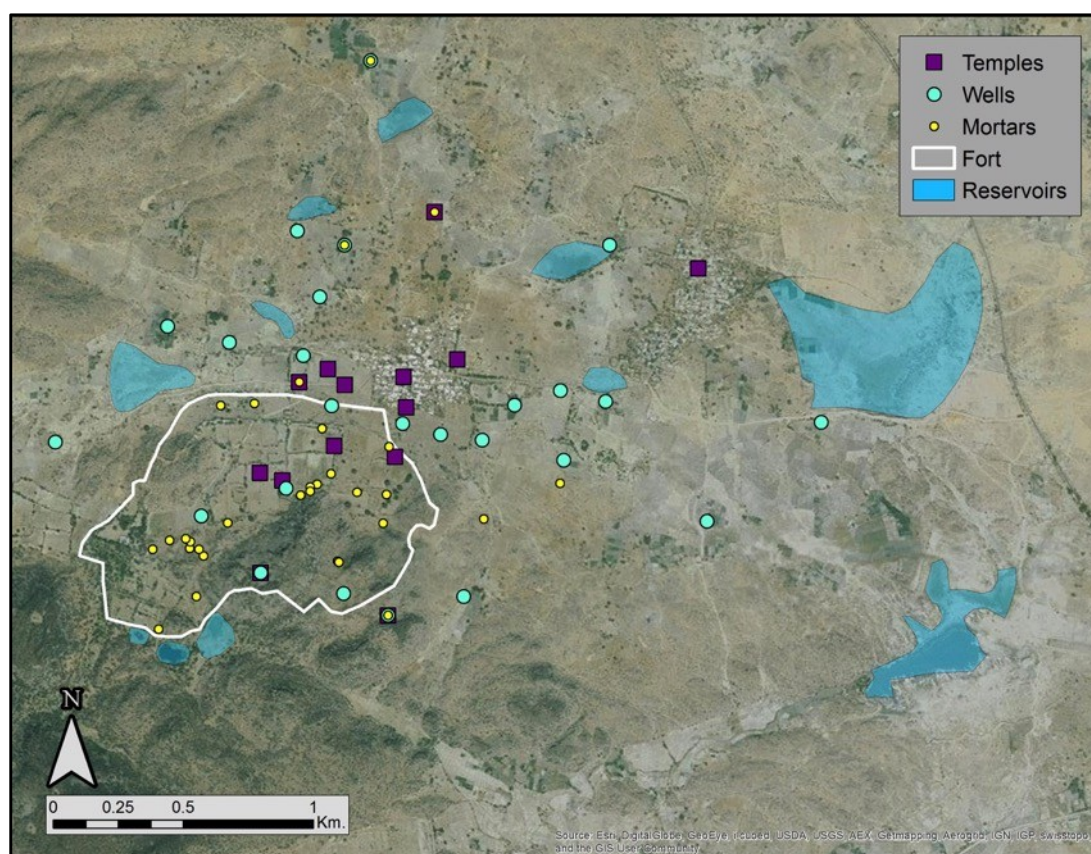
Fig. 6-15: Distribution map of temples, wells, and mortars with respect to the fort wall at Maliabad.

Some of the activities signified in the archaeological repertoire at Maliabad include small-scale metal processing (indicated by two examples of slag), glass manufacturing (fragments of turquoise-green colored glass about 600 meters away from the fort), and food

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processing (mortars found both inside and outside the fort). For the purpose of this discussion, the most important of these are the mortars carved into boulders or blocks of stone, encountered over a wide area but concentrated inside and around the fort. Most of these occur as singular or in pairs on stone blocks or boulders, collected in two locations along foothills on the north and northwest, strengthening the argument that there was a significant settlement inside the inner fort evidenced by not just floor-plans of structures and a dense artifact scatter in adjacent areas, but also mortars that were likely used for grinding pulses and grains. Some of the these mortars on stone blocks, like hero stones, can be moved around by a group of people, but it is unlikely that they were moved a significant distance within the settlement area in modern times, given how heavy they are.

In addition to single or double-mortars, the survey recorded two instances where a large number of mortars or mortar-like depressions were carved into large boulders. In one instance, about twenty-three mortars were located along the western inner fortification wall (Fig. 6-15) close to a relief sculpture of Ganesh. These could be accessed from inside the inner fort, although this is close to the southwest gateway into the inner fort. Eighteen of these mortars were carved on a single boulder with another upright boulder providing a slight shelter. Distinctive quarry marks were recorded on adjacent boulders, some with more mortars.

Fig. 6-16 shows eighteen mortars carved onto a single rock close to the western gateway on the inner fort wall.

At another location, outside the Maliabad fort on the east, there were fifty-four such mortars carved into boulders (Fig. 6-16), some of which have quarry marks on them. It is hard to know if the quarry marks date to the same period as the mortars. One possibility could be that this was the production site for individual mortars that were first carved into boulders, which were then quarried before being transported to settlements in the area. However, the close placement of mortars on the boulders does not support that hypothesis. It appears that these were not put to much use, because frequent use would have resulted in wear and deepening of the mortar over time. The fact that there are so many of these mortars in a single locality might suggest some form of communal activity. These mortars are hard to date and therefore it is hard to analyze them in their historical context.

Fig. 6-17: A) and B) show two views of the same boulder with multiple mortars located outside the Maliabad fort on the east. B) shows the quarry mark that cuts through one of the mortars on the boulder.

My working hypothesis regarding these mortars is that they were already built into the landscape before the large scale quarrying began when the fort was being constructed. This might explain why there is no clear correlation between these numerous mortars and the fortification—if one such locality is inside the inner fort, there is one that is outside the fort at a distance. There were no structural remains associated with these mortars either because people were living elsewhere but visited these mortars only at certain times of the year or they lived around this area but did not construct elaborate residential structures. The fact that there are quarry marks on one of the boulders with mortars, cutting through the rock while damaging one of the mortars (Fig. 6-16B), might further strengthen this idea. It is likely, however, that people who later came to settle in the fort continued to use the mortars inside the fort, either occasionally or regularly.

Historical evidence in the form of accounts by European travelers such as Fernao Nuniz mentions that Maliabad as a town where Krishnadeva Raya camped when he attacked Raichur in

about 1520.[225] Maliabad seems to have been a thriving town at least until the beginning of the sixteenth century. The mosque in Maliabad seems to be modern and not dating to 16th century. The only other Islamic architecture recorded during survey at Maliabad is the grave of a saint located to the north of the Maliabad village next to a well, other structural remains (possibly those of a temple but reused in the masonry of the well) and a hero stone. It has been plastered and has stucco reliefs on it. Next to the grave is a small tower with niches on all sides, likely for visitors to light lamps for the saint buried in the grave. This shrine is not important to the people of Maliabad today and so it lies covered in hay next to a resting place for cows. The stucco design on the grave resembles those prevalent in this part of the Deccan in the sixteenth and seventeenth centuries. Barring this one example, there were no sixteenth century structural remains identified during survey, or those that could be ascribed to the artistic conventions of any one of the regional states of Deccan, either Vijayanagara, Adil Shahs, or Qutb Shahs.

Any substantial settlement in the Raichur region, including Maliabad, would have to depend on some form of accessing and managing water, both underground and surface runoff. As was the case in Gabbur, the undulating topography of the region has smaller depression areas and shallow valleys that people have been using to harnessing surface runoff. Wells, small water collection areas (called tanks), and reservoirs were recorded at Maliabad during the archaeological survey. The survey did not include wells that were dug in the last 30-40 years, based on information provided by the residents of Maliabad. As mentioned earlier, dating any of the water features is challenging and not without limitations, and yet a certain discretion was adopted while recording wells that were deemed to be older than the last hundred years.

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[225] Eaton, "'Kiss My Foot,' Said the King".

Fig. 6-18: Masonry along the western edge of a tank or a cistern that collects surface runoff on the hill.

In terms of provisioning water for the settlement inside the fort, there were two wells recorded to the north of the hills, both of which were dry today and it appears that the constructors wanted to harness the surface runoff from the hills in the south, along with any subsurface water if there was any. Both of these are lined with stone masonry and one of them reuses a panel of 'a horse rider' in its masonry while there was a Ganesha relief sculpture on a small boulder found next to the other. In addition to these, there was another cistern or tank on the hill (Fig. 6-17) next to some sculptural remains. No water lifting area was identified on this last one, although the western edge is stepped. Similarly the well associated with the Ramalingesvara temple on the hill can be ascribed to the chronology of the temple itself, i.e. about 12th century AD.

There are three depression areas south of the hills that collect surface runoff from adjoining hills. It is likely that people inside the fort used these water resources through exit doors along the fortification such as one that was identified along the southern fort wall, and by constructing channels to transport water from these tanks to fortified areas. The survey recorded a modern sluice gate along the outer fort wall that would have allowed water from the central tank to flow inside the fort. The precise chronology of this channel could not be established, and whether this water was used for agricultural purposes or personal consumption or both is still an open question. Today the water is used to irrigate the fields between the inner and outer fortification walls, where today cattle herds graze the fields. Unlike many forts of the late medieval or early modern Deccan have evidence of moat, no such feature was detected at Maliabad, however, there were instances of shallow tanks along the northern outer fort wall to collect surface runoff for agricultural and pastoral use.

Some of the wells at Maliabad were visibly old, given their association with medieval sculptures such as Nandi sculptures and hero stones, or through their visibly older masonry or reuse of older material. It is also possible that many of the wells that were associated with older remains went through series of repair, renovation, and widening in centuries that followed their initial use. The survey and satellite imagery shows a large number of wells in the areas between the two villages of Maliabad, but many of these were modern and were therefore not recorded.

In the area north of the Maliabad fort, a number of small embankments were recorded. Some of these would have functioned as small reservoirs while others performed the role of either silt-traps or what are today called percolation tanks. A major difference between the former and the latter is that reservoirs have at least one outlet for distribution of collected water, whereas silt-traps and percolation tanks do not have any such mechanism by which water could

be distributed. Silt-traps are significant in that they reduce the siltation of reservoirs by blocking silt from run-off water before it enters the reservoirs. Percolation tanks help replenish the underground water reserves by stalling water. Smaller tanks that thus result from both silt-traps and percolation tanks can also provide water to herds of cattle, or water for washing clothes, if such tanks are close to settlements. It is therefore common to find wells in close vicinity of all such features that utilize an embankment because the level of water is higher in areas adjacent to reservoirs, silt-traps, and percolation tanks. Both wells and reservoirs were likely used for irrigation in historical Maliabad.

Of the three largest reservoirs in Maliabad today, the smallest is located just northwest of the fort. The masonry on its embankment and the sluice gate seem to be modern, indicating that this reservoir has been repaired in the recent past. No signature sculptural or structural remains were recorded in its vicinity except a naga stone at the southern end of its embankment and a large slab with floral pattern which is often found used in roofs of temples in the region, both in the past and the present.

Fig. 6-19: Reservoirs R1 and R2 with respect to the fort at Maliabad. R1 and R2 are connected such that excess water from R1 gets transported to R2.

The two larger reservoirs are connected so that once the reservoir upstream is full of water, the excess water flows through a shallow opening, called a waste-weir, to the second one downstream. We will address them as R1 (upstream) and R2. Both these reservoirs are critical to the modern agriculture at Maliabad, especially because the network of canals bringing river water into this area for irrigation have not yet made their way into Maliabad. Part of the reason can be the higher elevation of Maliabad compared to the surrounding area. The embankments of these reservoirs therefore continue to have been repaired, especially of R1, since its embankment does not have the advantage of support provided by hills, as is the case with R2. Inhabitants of Maliabad recall that in 2009 the embankment of R1 breached due to excessive rains and flooding in the area. Despite repair works involving strengthening the embankment with earth, there are places on the embankment where the older stone masonry is visible. Next to the sluice gate,

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blocks of stone, some with peculiar quarry marks as were seen on boulders and fort slabs, can be recognized. The survey also recorded fragment of a pillar (similar to those at Basappa temple to the west of the Old Maliabad village), and an eroded panel of elephants. Such structural features are identified with temples at Maliabad, and their reuse in a secular context might indicate that by the time the reservoir was constructed, temples of Maliabad had lost their significance and were probably out of use. Similar reuse of older structural remains in constructing embankments was also encountered at the reservoir of Devanapalli, about four kilometers east of R1, during reconnaissance survey phase of this project. We also identified quarry marks on rocky outcrops less than a hundred meters downstream of R1, indicating that along with reuse of older structural members, people who constructed R1 also quarried stone from nearby sources to make the embankment. (Fig. 6-19)

Similar quarry marks can also be found on the stone masonry of R2 (Fig. 6-20), downstream of R1. Structural remains were observed to have been reused in one of the outlets of the reservoir. In comparison to R1, R2 had a wider distribution zone with at least three sluice gates, all in different directions. Channels have been dug to allow water from lower levels to flow to the sluice gates. The outlet channels are lined with stone masonry in some place, but have been repaired with cement in others. In one of the outlets, reuse of temple sculpture is visible, except which the survey did not record any reuse of older structural or sculptural remains in R2.

Fig. 6-20: Quarry marks on a rock south of R1's embankment.

Based on the archaeological survey, we can envision two or three phases of intensive construction activity at Maliabad. In the first phase, from about eleventh to thirteenth centuries, the most resource and labor-intensive construction projects would have been the temples and associated wells or tanks to harness underground and surface runoff water. In the second phase, from about the fourteenth to sixteenth centuries, majority of the people would have been involved in the construction of the fort walls at Maliabad. While the precise relationship between the fort and the two connected reservoirs to the far east of the fort is hard to establish without excavations, two probable courses of development are identified. According to the first, they were constructed not too far in time from one another. Either the reservoirs were a part of the original design that the builders of the fort had in mind or the reservoirs were a later addition to the landscape due to greater pressure to intensify agricultural production in the vicinity of the

fort. The reuse of older temple structural features in constructing R1 indicates that the reservoirs did not predate the temples.

Fig. 6-21 Masonry of R2 embankment and quarry marks on its stone blocks.

One way to understand the archaeological features at Maliabad is to draw on the assumption that increased construction activity in the area created a demand for labor, in the form of either forced labor, hired labor (skilled and unskilled labor), or slave labor.[226] Whether

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[226] While there are no inscriptional references to slave labor from Maliabad, it is not impossible that slavery was prevalent in early medieval India. According to land grant inscriptions, forced labor seems to be a part of state income, and including forced labor (*vishti*) in land grants meant transferring that right to extract forced labor. It is therefore different from slave labor. Normative Brahmanical texts that were composed between 4th –7th centuries, such as *Narada Smriti*, list fifteen types of slaves, and Singh argues that this number is greater than that found in early historical normative texts such as the *Arthasastra* and *Manu Smriti*. (Singh, *A History of Ancient and Early Medieval India,* 508.) In the centuries from eighth to thirteen, Bhakti saints expressed the ideal kind of devotion to one's deity analogous to the relationship between a master and his slave. (Singh, *A History of Ancient and Early Medieval India,* 617). In her study of Chola inscriptions, Leslie Orr points out that there were an increasing number of temple women who functioned as slaves within the temple context, in addition to other kinds of temple women who did not perform any ritual or management roles in temples, and some of whom appear as donors. Leslie Orr, *Donors, devotees, and daughters of God* (New York: Oxford University Press, 2000).

this demand led to a considerable increase in local population is hard to attest, but there is concurrent evidence of interest in intensifying agriculture by the time of the construction of the fort or slightly after it. It is also possible that by the thirteenth and fourteenth centuries, regional powers were trying to turn the frontier areas into profitable zones from where resources could be extracted, primarily agricultural in this case, thereby creating conditions for stronger and more resource centric local elites, as seen in Gabbur.[227] In this scenario, the local elites, who would have been the big landowning classes and often involved in trading activities, were far from being passive recipients of a certain state's political ideology or program. By forging political alliances with one of the regional states, in the context of constantly shifting balance of power, they would have been able to both a) gain leverage against potential local competitors, and b) demand and secure resources for investment in building local infrastructure, in this case, the reservoirs.

The other probable interpretation of the water reservoirs at Maliabad can be that they were constructed or continued to be important in an even later historical context of the early sixteenth century, when the new regional state led by the Adil Shahs of Bijapur was rising from dominions of the Bahmani state. A 16th century inscription, carved on a lose slab of granite, housed inside a modern mosque in the Old Maliabad village provides insight into the economic and political milieu that it was produced in.

The inscription records a *qaulnama,* proclamation or an agreement, inscribed in 1513 A.D. at the orders of a certain Maliku-Sharq Malik Ambar reducing taxes levied on different occupational groups of Maliabad such as cultivators, grocers, oil-sellers, weavers, and artisans.

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[227] Eaton and Wagoner, *Power, Memory, Architecture,* xxi , suggest that forts at secondary centers such as Raichur were the means through which regional states extracted resources from the countryside.

Oppression of people either through excessive demand (of taxation?) or practices such as forced labor was abolished. Officials disregarding the *qaulnama* are warned with imprecation in both Persian and Kannada towards the end of the inscription.[228]

It may be worth pointing out certain observations regarding the physical aspect of the inscription before analyzing its content in greater detail. For one, the inscription is highly worn out from weathering, probably because it was kept in an open space before being moved inside the modern mosque. The preparation of the slab for inscribing the text is very different from those bearing 10th –14th century inscriptions in vernacular languages (Kannada and Telugu). The slabs for early inscriptions (such as those issued during the times of the Rashtrakutas, Chalukyas, Yadavas, and Kakatiyas) are usually thick (about 17-20 cms.) and between 70-120 cm tall, with a polished surface, and the upper edge either tapering to form a vertex or rounded on the top. The top usually contained etched images, usually of a nandi and a shiva linga, and/or other deities, the sun and the moon (sign of eternity), followed below by the body of the text. The 16th century inscription from Maliabad, on the other hand, is about 7-10 cm thick and 1.7 meters tall, with no etched figures except the sun and the moon indicating that the agreement, i.e. the *qaulnama*, being valid for eternity. A striking point of comparison between older inscriptions in Indic languages (such as Kannada, Telugu, and Sanskrit), and the Persian inscriptions of later centuries is their respective stylistic convention of either etching or carving out versus carving the text in relief. In fact, the convention of etching Kannada/Telugu/Sanskrit words into the surface of the media continued well into the early modern period, as evidenced by this inscription, where the Persian text is in relief while the Kannada portion of the inscription, below the Persian one, is etched into the stone surface. These different styles of inscribing on the same surface does not

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[228] *Epigraphia Indica Arabic and Persian Supplement* 1962: 63-65.

necessarily imply that there are different scribes writing these inscriptions but might be taken to indicate the skill of the scribe to pick up different styles of inscribing if needed.

Beyond these physical points of contrast, the content of most early inscriptions, i.e. before the formation of Islamicate states in the Deccan, are donative, commemorative, or memorializing in nature, but this sixteenth century inscription is a kind of tax document or agreement between the administration and the people, what is called a *qaulnam*a. A *qaulnama* (written alternatively as *kaulnama* or *qoulnama*, according to dictionaries compiled in colonial India of important judicial and financial terms, is a written contract granted to tax payers specifying terms of payments. H.H. Wilson lists the term *qaul/kaul* under revenue transactions: "usually means the document granted by the collector, proprietor, or receiver of the revenue to the subordinate payer of the revenue, or the actual cultivator, stating the terms of the agreement and the amount to be paid, and securing him against further demands: it frequently implies, also, that the contract or lease is granted on favourable conditions, as in the case of the cultivation of waste lands, for which a remission of rent is granted for a given period by a Kaul." [229] The Persian inscription from Maliabad then represents one such attempt made by the state to alleviate economic and probably social stress caused by high rates of taxation, forced labor, and other "unauthorized demands" on the people. It suggests, therefore, that before the *qaulnama* was issued the people of Maliabad were expected to not only pay high and probably unrealistic taxes, but also render services such as forced labor. From the terms laid down in the *qaulnama*, it appears that the concept of extracting revenue in the form of forced labor had become ill-suited and not conducive to the highly monetized economy of the sixteenth century, in which smaller

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[229] H. H. Wilson, *A Glossary of Judicial and Revenue Terms* (London:W.H. Allen and Company, 1855), 270.

and peripheral centers of production, such as Maliabad, were also networked into the wider networks of circulation.

The currencies mentioned in the inscription further highlight the degree of monetization of the economy across spatial hierarchies of settlements before the beginning of the sixteenth century in the Deccan. The stipulated taxes may be used to imagine the complex economic hierarchies at Maliabad, and possibly other town-level settlements in sixteenth century Raichur *doab*. All occupational groups at Maliabad that are mentioned in the inscription, some of which are illegible, paid taxes in money. In other words, the transactions were carried out in money and people earned their income in money, and therefore were expected to pay taxes in the form of cash. Table1 presents a summary of the taxes arranged according to their denomination and value, and the state that first issued them[230]. The categories of taxpayers and the taxes they were expected to pay suggest that wealth could be acquired through a range of materials and not just land, which is why grocers/sellers and weavers emerge as some of the high-tax payers, much like the land-owners and cultivators who controlled wealth through traditional means, i.e. land. The fact that weavers were considered a high-income group further might suggest the growing importance of cotton in the agricultural sector of Maliabad before the beginning of the sixteenth century. The inter-regional trade networks were already well-established and experiencing intense activity by this time both over land and ocean. The inscription from Maliabad provides a rare window to observe just how such large-scale processes would have impacted the economy of towns/villages such as Maliabad. Attempt at agricultural intensification in Maliabad could

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[230] This information is compiled using two sources, the translation of the inscription (*EIAPS* 1962: 63-65), and a comparative table of the currencies under the Vijayanaga and Bahmani rulers of the Deccan prepared by Phillip Wagoner, "Money use in the Deccan, c. 1350–1687: The role of Vijayanagara hons in the Bahmani currency system," *IESHR* 51, no. 4 (2014): 461.

therefore have been in response to the growing demand for both staple crops such as millets and rice but also cash crops such as cotton for cloth and sesame for oil.

Coin Name	Metal (weight in grams)	Tax payer (tax)	Issuing State
Hon (Hun)	Gold (3.42)	Grocer A (1), Weaver (1)	Vijayanagara
Partapa	Gold (1.712)	Cultivator (1), Grocer B (1)	Vijayanagara
Tanka	Silver (11.016)[231]	Oil-seller (1.5), Land-owners (7)	Bahmani
Jital	Copper (3.672)	Irregular Weaver (9), Tailor (1)	Vijayanagara

Table 6-1: showing the coins mentioned in the sixteenth century inscription at Maliabad and the corresponding metal, taxpayer and tax, and issuing state information.

The chronology of this inscription, 1513 AD, further opens up the discussion of political processes in lower Deccan. This was a few years after the death of Yusuf Adil Shah, the founder of the Adil Shah dynasty who was a noble under the Bahmani state but started administering his province of Bijapur independently from about 1489 AD. Yusuf Adil Shah was succeeded by Ismail Adil Shah in 1510 but who initially ruled under the regency of Kamal Khan. Ismail Adil Shah is credited with expanding and consolidating the dominions of the Adil Shah state. The inscription from Maliabad was thus issued when the state of Adil Shahs ruling from Bijapur was still struggling to stabilize and when the rulers were probably trying to assess the economic potential of its dominions.

What the inscription says about pre-sixteenth century administration at Maliabad is that the elite classes continued the practice of extracting higher rates of taxes from people of all professions and used the practice of forced labor to further exploit them. Such rigorous demand on local producers would have emerged either in response to the increasing interest of regional powers in capitalizing on resource rich frontier areas, such as the Raichur *doab*, or simply to amass greater wealth at a local level. That such demands were unrealistic and that revenue

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[231] Tankas were issued by the Bahmani state in both gold and silver. The inscription does not mention the specific kind, but in the case of this inscription it would likely have meant a silver coin rather than gold.

collection efforts were both unsuccessful and unpopular are hypotheses supported by the inscription from Maliabad.

In such a context, it may seem like the reservoirs of Maliabad did not contribute significantly to the state revenue even before the Adil Shahs established their rule in the Raichur *doab*. The other argument that can be made is that since agricultural production in Maliabad was lower than its potential, the reservoirs were constructed in the sixteenth century, probably after the inscription was issued, in order to further develop the local economy of Maliabad. It can thus be argued that the frontier zone in this case contributed to the constitution of the region/center. It is through these peripheral areas that power is later consolidated in the hands of Ismail Adil Shah the successor to the founder of the Adil Shah.

Chapter 7: Archaeological Survey at Kalmala: an interstitial settlement

We have so far discussed in detail the archaeological remains at the sites of Gabbur and Maliabad that represent two very different kinds of settlements in the Raichur region. In this chapter I discuss the findings of my systematic survey in and around Kalmala which is a small village today but evidences not only four fragmentary inscriptions but also Neolithic remains, also recorded by F.R. Allchin.[232] In the pre-modern landscape, Kalmala would have stood out in the landscape west of Gabbur with the three connected hills. The land slopes gently to the north and north-east of Kalmala towards the river Krishna, and to the south, towards the Tungabhadra basin. Its topographic location vis-à-vis the two rivers is similar to that of Raichur, except that Raichur has a more undulating surrounding and higher hills, making it suitable for fort and reservoir construction. About six kilometers south of Kalmala is another significant medieval settlement of Kallur, after which one of the gateway of Gabbur village is named.

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[232] Allchin, "The Development of Early Cultures in the Raichur District of Hyderabad."
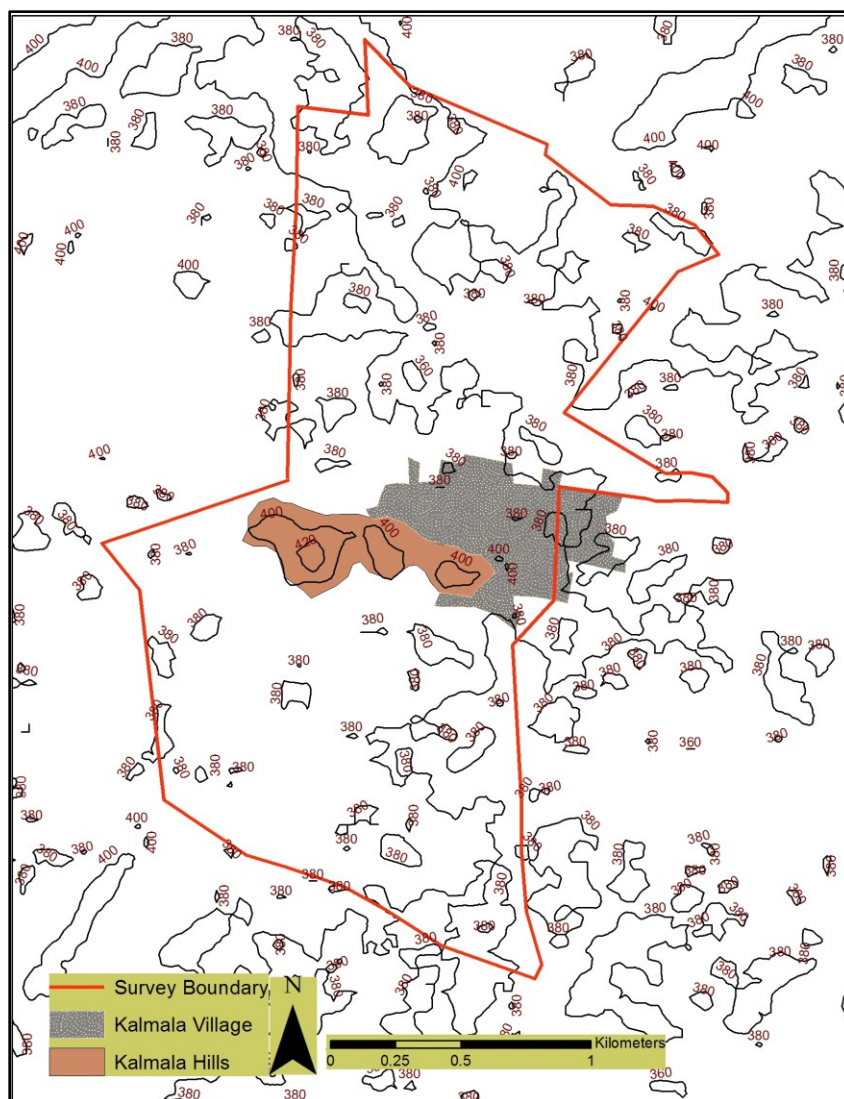
Fig. 7-1: Map showing the survey boundary around Kalmala. Contours are 20 m resolution derived from ASTER GDEM Version2.

I surveyed the village and the fields adjoining it on both the north and the south. The archaeological remains from Kalmala include cores and flakes, inscriptions, structural remains, architectural fragments, sculptures, and a well. Probably the earliest artifacts from Kalmala in the form of chalcedony cores, flakes, a dolorite axe-head come from a slightly raised area (mound?) located at the northern foothills east of the modern village and behind the modern graveyard and idgah. In addition we also find some pottery scatter in both reduced and oxidized ware on the surface of the raised area, which continues north into the modern graveyard before being cut-off

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by the road going east from Raichur to Lingsugur. In fact, flakes and pot-sherds can be identified in the earth used to cover some of the modern graves. Further north across the road we find an area covered in dense vegetation also evidencing pieces of oxidized and reduced wares, and an ashy soil akin to that found at the raised area and the graveyard.
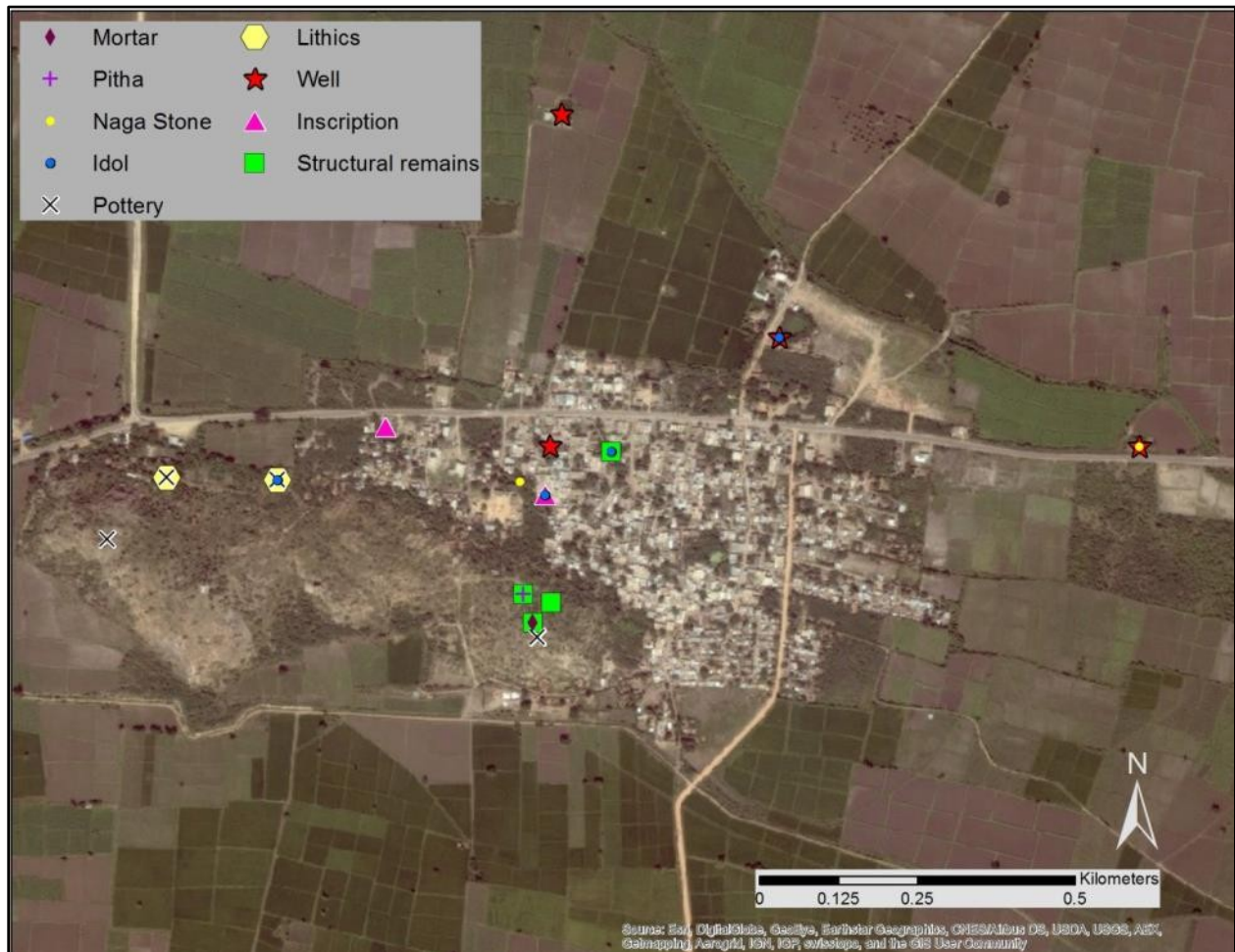
Fig. 7-2: Map showing the distribution of different kinds of archaeological remains recorded during the systematic surface survey at Kalmala, in 2013.

The modern village of Kalmala has two main entryways, one facing the north towards Gabbur and the other facing the south towards Kallur. Under the newly constructed gateway on the north are fragments of a pillar that resemble those from twelfth and thirteenth century temples at Gabbur. The earliest inscriptions from Kalmala date to the first half of the 10th century when the Rashtrakutas were ruling this part of the Deccan. Today they are placed along with

another fragmentary inscription from 12th century in the compound of modern Bhogesvara temple on the road that connects Raichur and Lingsugur. The earlier of these two inscriptions is fragmentary with the mention of a *mahasamantadhipati* (governor or other high-level administrator) under Nityavarsha, a Rashtrakuta king (possibly descendant of / emerging from the (early) Chalukya family, hence the title *chalukyavanshodbhava* (ಚಾಲುಖ್ಯನ್ವಂಪೋದ್ಭವ)). The

other Rashtrakuta inscription at Kalmala dates to c. 940 when Kannaradeva was the ruling Rashtrakuta king. This inscription records a gift of land to a person, Aditya Bhattara[233], of Kalmele, for the worship of a deity (Mallikarjuna) by a minister/feudatory of the king. Besides these two inscriptions the survey did not record any other surface remains that could distinctly be attributed to the tenth century, given the conjectural chronology of architectural remains at this place. The twelfth century inscription (1139) kept next to the earlier ones is also the most fragmentary, mentioning what may be a guild of traders Ainurvasvami (500), and recording a grant.[234] These three inscriptions were probably brought together at a common locus in modern times but likely to have been placed at different locations when they were first installed.

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[233] For the transcription of this inscription see Reddy IRKUH, 33-34. While the summary provided by the editors mentions the name Aditya Bhattara of Kalmele, the transcription provides an incomplete title: "ಕಲ್ಮೆಲೆಯದಿತ್ಯ ಭಟಾ..." It could thus mean either BhattAra or BhattAraka, the former implying an honorable person or a noble lord, and the latter implying a venerable person or, a Buddhist or a Shaiva monk. The fact that this gift was made towards god Mallikarjuna, a form of Shiva, suggests that the title was probably BhattAraka. (Monier Williams Sanskrit Dictionary, Online version, p.745)

[234] IRKUH , 32.

Fig. 7-3: The three inscriptions outside modern Bhogesvara temple; 1 & 2 date to 10th century, while 3 dates to 12th century.

Fig. 7-4: Fragmentary inscription, dating to the 12th century, near Sankarappa's house in Kalmala village, with associated damaged Nandi and a modern shrine.

There is only one other inscription reported from Kalmala, today outside someone's residence, kept next to a modern shrine and what appears to be damaged Nandi sculpture. It records gifts made for stone work, angabhoga, and rangabhoga at a temple in Kalumale in 1179, during the reign of a Yadava king.[235]

The inscriptions assert the presence and importance of temples in Kalmala during the medieval period, an assertion contradicted by structural remains in Kalmala. While the Bhogesvara temple where the three inscriptions are kept is a modern one without any trace of classic Rashtrakuta or Chalukyan architectural styles, the archaeological survey at Kalmala recorded surface remains that may point to distinct sacred spaces. One of them is near or at the northern entrance to Kalmala, facing Gabbur. There are fragments of a pillar and a door-frame, and damaged sculptures of Nandi and Ganesh outside a modern temple construction. Thus, even though structurally there is no continuity, there is a conceptual continuity of sacred space.

Fig. 7-5: Scultural and architectural fragments at Kalmala. A) Nandi, B) Ganesha, C) part of a doorframe, and D) pillar fragment at and near northern entrance to Kalmala.

There are at least four other loci of sacred spaces it the area surveyed in and around Kalmala. One of them is in the village where a number of naga stone (modern and pre-modern)

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[235] IRKUH p. 31-32. The editors mention the name Sankamadeva, but the transcription does not provide the complete name of neither the king nor the dynasty.

are collected together. The second is a modern temple on the eastern-most hill but with a pitha outside and also a door lintel that appears to be pre-modern. Despite being painted over, etched floral designs and a Ganesha are visible on it. This style of door lintel is not common in the area and it is different from door lintels encountered in Gabbur or Maliabad. The survey also recorded two lingas of the style found at Gabbur and Maliabad. One of them (fig.), about a meter tall with almost 0.6 m stub, is located just south of the low ashy mound north of the Kalmala hills, next to a modern Anjaneya/Hanuman relief sculpture. The other (Fig.) lies today in a niche along the stairs going into a well, along with a nandi and some modern naga stones.

Fig. 7-6: Collection of naga stones in Kalmala. (Inset: close-up of a few on the right)

Usually, secular architecture other than those for military purposes are least encountered during archaeological surface surveys in India. At Kalmala, however, we did find some structural remains on the eastern-most hill that appear to be secular. Close to the modern temple structure are remains of intact and destroyed plans of rooms and walls. Small (less than 2 cms), eroded sherds of oxidized and reduced were also encountered in their vicinity, although not in high densities. Similar ceramic scatter was also found on the natural platform areas on the western-

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most hill, as also with lithic remains. Since the sherds were small and weathered they were not collected for analysis.

Fig. 7-7: Lingas from Kalmala A) Linga north of the hills and south of the ashy mound; B) Linga, Nandi, and modern naga stones in a niche along stairs to a well.

The settlement at Kalmala, from the neolithic to the modern period (with possible desertion at some points in time) does not seem to have extended much farther away from the north and east of the hills. The main sources of water for such a settlement may have been either wells or collection of surface runoff. There was only one well recorded within the precincts of the modern Kalmala village. It evidences stone masonry and a water lifting area, but it is covered in dense vegetation and is out of use today. All the other wells are still in use and are located outside the modern village of Kalmala. It is hard to ascertain their chronology.

One of the wells is located in the fields north of Kalmala and today is circular shaped with a maximum diameter of about 17 m. It is filled by canal water today and irrigates pasddy fields adjacent to it. While its stone masonry is visible at some places, it did not have an intact water-lifitng area or steps. Another well, barely north-east of Kalmala village and opposite a modern temple, however, had a wide stairway along its southern edge that led into the well, and

a niche halfway down the stairs that house pre-modern linga and nandi sculpture and modern naga stones. It has stone masonry comprised of medium sized boulders and blocks lining all its edges, measuring 32 m x 22 m in dimension. A fourth well, measuring 22 m x 18 m, was found some distance to the east of Kalmala, with a slightly higher water lifting area along its eastern edge, likely for agricultural use. The stone masonry of the well comprises of thin bricks made of stone, also encountered at many wells recorded around Gabbur. A modern shrine and a naga stone are placed to the east of this well. It is possible that there were more pre-modern wells within the village of Kalmala but were covered when they fell out of use.

My archaeological survey of Kalmala covered areas both north and south of the hills, but there was a conscpicuous absence of embankment constructions around Kalmala, unlike the two other survey zones of Gabbur and Maliabad. In addition to the wells mentioned above, the survey also recorded a water logged area with dense wild vegetation north of the Raichur-Lingsugur highway, opposite the central hill of Kalmala. There is evidence of some ceramic scatter along the western edge of this area with vegetation. Today this area functions as a garbage disposal site for the modern village and therefore it was not possible to survey it with the same intensity as other areas.

Fig. 7-8: Circular well, north of Kalmala with visible older stone masonry.

Fig. 7-9: Well with stairs and a niche, opposite a modern temple, north-east of Kalmala.

Fig. 7-10: Well with two water lifting areas, to the north-east of Kalmala.

Today, the agricultural fields of Kalmala are fed by river water through modern canals, but in the premodern times besides the wells, the water collected along hill slopes would have been an important source of surface water and as well as for replenishing subsurface water levels. The density and expanse of modern settlement at Kalmala is in stark contrast to that at Gabbur, something that appears to have been the case in historical times as well, according to the archaeological remains on the surface. The occurrence of lithic debitage alludes to the deep history of settlement in at Kalmala and this region, and the significance of this can be seen in some of the earliest inscriptions of the region that are found here. It is worth noting that in Gabbur, which features as a significant settlement in the region, inscriptions are being installed not before late 11th century, with a majority of the inscriptions dating to the 12th century. Donative interest in Kalmala seems to have continued into the 12th century as well, although the nature of such donations is unclear due to the fragmentary nature of these inscriptions. Structural

remains that may be ascribed to the 12th century are better preserved/renovated in Gabbur than at Kalmala. In fact, temple architecture similar to that found at Gabbur was also seen at Sultanpur, about three kilometers south of Gabbur and eleven kilometers north of Kalmala, although no inscriptions were encountered or had been reported from there. These findings urge us to further investigate the relationship between inscriptions, material culture, and trajectories of historical change.

Conclusion: Politics and Water in Raichur: from micro to macro

mughal mulk vīrān jo bādan kiyā	The Mughals who then desolated this place
watan sut jo pardes 'ālam kiyā	Leaving their homeland, raising their standard in a foreign land.
karen mār maidān har pent tod	Snakes in the battlefield broke every … …
kate nīr khālī yate hauz phod	It was said, the water tanks were emptied and destroyed
jo pakadyā nadiyā ho ke pānī se bāt	The riverpath that had been forged
falak lak bharyā pūr daryā kon vāt	Up to the heavens, now those rivers lay destroyed
dise daudne yūn ū pānī janjāl	It seemed that water that had once flowed was now all trouble
zamīn hauz huī hor falak tis kanjāl	the bottom of the tanks, all the way up to heavens, now stagnant with green scum
har yek bāyen men sam kalā qahr kā	Each and every well had the curse of poison
rakhe kar piyālah bharyā zehar kā	Each one filled with a cup of poison.

--Mullah Nusrati, *'Alī Nāmah*, 225—226.

During the reign of 'Ali 'Adil Shah II (r. 1656-1672), the poet-laureate of Bijapur, Mullah Nusrati (d. 1672), composed the above verses lamenting the willful destruction of 'Adil Shahi water-based urban infrastructures during war making and conquest. He observed many such occasions of desolation across the Deccan, including when the Mughal general, Jai Singh, attacked the capital city of Bijapur in 1666.[236] Nusrati captures a curious relationship between political events and public infrastructure. On the one hand, during conquest, an invading army could tear down monumental structures of the losing side. On the other hnd, the losing side could destroy its own public infrastructure to deny the enemy access to critical resources. It is an image of this old wartime strategy that Nusrati evokes in the above lines. As the Mughal invasion seemed inevitable, sultan 'Ali 'Adil Shah II ordered the destruction of all buildings and gardens within Bijapur. Most importantly, he commanded that all reservoirs be poisoned, anticipating the water would be the first thing Mughal soldiers would need as they marched into the city. This

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[236] Mullah Nusrati, *'Alī Nāmah*, edited by Abdul Majeed Siddiqi (Hyderabad: Salar Jang Dakkani Publications, 1959)

strategy risked, however, putting one's own subject population at risk of annihilation. In the second half of the seventeenth century, as a result of many regional wars Bijapur would deliberately destroy its own public infrastructure that had taken decades, if not centuries, to build. Urban and rural systems of water management, long before solders and military personnel, were among the first set of collateral damages from war making and conquest in the 17th century Deccan.

Bijapur, like other capital cities of its time such as Golkonda and Vijayanagara, had elaborate water works in and around the city. Political dynasties ruling from these cities came to extend their control over the Raichur doab, including the areas I surveyed, at different times and for varying durations. Of course, the scale of investment in water works in the Raichur doab and the capital cities is quite different. There are also fewer examples of direct involvement of these regional dynasties in large scale water works construction in such frontier areas that were strategically and economically important but were politically unstable. Fort sites, such as Raichur and Mudgal, are the only exception to this.[237] The majority of infrastructure in the region can therefore be attributed to the many competing local elites, whose primary claim to authority was either based on their economic and/or social rank as well as their links to the regional political dynasties. Whether in capital cities or in frontier zones, the salient point here is that 'looking' for water as a historical object of study unveils two contradictory kinds of evidence. On the one hand, built structures, used and rebuilt over centuries, bear testimony to continuities of water systems irrespective of large political changes. On the other hand, we have a partial portrait of

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[237] Vijaynagara's lack of interest in adapting new architectural designs better suited for attacks by guns has been discussed by Eaton and Wagoner, *Power, Memory, Architecture*. For a recent analysis see Pushkar Sohoni, "From Defended Settlements to Fortified Strongholds: Responses to Gunpowder in the Early Modern Deccan," *South Asian Studies* 3, no.1 (2015): 111-126.

water's absence, a resource so indispensable to human life that historical actors contumaciously chose to destroy it.

Battles and wars cuased chaos at nodes of political power, including fort-sites, but it is generally assumed that much of the countryside was untouched by such stresses. What is not recognized in historical literature is the fact that it is the precise nature of socio-political machinery operating at these local levels that allows local elites to safe guard economic interests of these peripheral areas even in times of political duress. I argue that the political authority exerted by local elites enabled them to shift allegiance and form alliances with changing regional dynasties or rulers, and exercise their bargaining power to increase investment in the region, through the process of regional state formation. State formation therefore began from the smaller local elites whose resources intersected with new, larger political players. The socio-economic base of local elites was laid in the early medieval and medieval period when land, subsequently in combination with commerce, fed the incremental control over infrastructure by the Mahajans/Brahmins.

The inscriptions from the sites surveyed in this dissertation reveal that most donations in land, or taxes, or commodities were made to the Mahajans (or the Brahmins) from about 10th to the 12th century AD. While there are a couple examples of donations made to Jaina establishments in the 11th century, Jainism appears to have lost mass appeal by the 12th century in Gabbur. These grants are usually meant to last till eternity, indicated through etched figures of sun and moon at the top of stone inscriptions, and seem to have been honoured even after a change in political dynasty over time.[238] Yerlagadda, who analysed vast number of inscriptions from the entire Raichur doab, points out that inscriptions mention prominent individuals who

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[238] See Chapter 5 of this dissertation.

were non-brahmins but were residents of *agrahāra* settlements, suggesting that there was division or sharing of resources and authority in the newly instituted *agrahāra* settlements. [239]

An interesting pattern observed in inscriptions from a place like Gabbur is that through the 12th century, regional ruling dynasties are featured in decreasing number of donative inscriptions, which reflects their declining and less direct engagement with the hinterland over the years. This pattern is prevalent all across the middle-Raichur doab region.[240] Archaeological data too, as discussed below, suggests diffused influence of regional dynasties over the architectural style of temples as well as the less glamorous though not less significant irrigation reservoirs.

We rely solely on archaeological data for information regarding reservoirs in the region; the inscriptions from the three areas surveyed systematically do not refer to reservoirs or their construction. The embankments of the Raichur and Devadurg taluks, observed during reconnaissance survey in the region, follow a spatial pattern. Land north of Raichur slopes towards the Krishna, and therefore most reservoirs constructed in this area have embankments on the northern edge. Similarly, reservoirs constructed south of Raichur have embankments on their southern edge because the land slopes towards the river Tungabhadra. Usually, the villages settle along one of the corners of the embankment, more downstream than upstream. In modern times, this rule of thumb has been disregarded and modern housing is being constructed upstream of the embankment in the catchment area of the reservoir.

Embankments in the region can be of two types: one where a sluice or an opening in the embankment facilitates distribution of water over a large area for irrigation; and the other, where

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[239] Tejaswini Yarlagadda, *Social History of the Deccan* (Delhi: Bharatiya Kala Prakashan, 2004).

[240] Yarlagadda, *Social History of the Deccan*.

there is no such distribution mechanism. Two primary functions of the latter, today known as percolation tanks, are storing water and making it accessible for personal consumption, such as for cleaning and washing, and second, recharging subsurface water levels and keeping the adjacent soil moist. An embankment with one or more sluice gates and canals, on the other hand, usually called a reservoir, is able to cast a wider impact on the landscape by transporting water to distant fields. The reservoirs, relative to percolation tanks, represent a more complex social phenomenon as well, that of consensus building among a larger number of people on issues such as the height of the embankment and the waste weir, the number and placement of sluice gates, the maintenance of the reservoir, labor, and terms and conditions of water use. The height of the embankment and the waste weir dictate the capacity of the reservoir; a higher capacity demands larger area of arable land to be inundated with water for part of a year, rendering it out of use for those months. Building reservoirs is a labor-intensive exercise, and while there is no direct evidence regarding labor acquisition, conditions, and organization, social scientists suggest that coercive labor may have played a significant role in such construction projects.[241]

In the Deccan, from at least the Iron Age/Megalithic period, people attempted to expand water collected at natural depressions by raising revetments around them.[242] It is possible that people started constructing simple water catchment features (i.e. embankments without sluices and canals) before reservoirs with canals to irrigate vast stretches of land. This is not to say that these water infrastructures are mutually exclusive, but that there may have been a preference for the former over the latter given the socio-economic milieu of early medieval Raichur district. At

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[241] Esha Shah, "Telling Otherwise: A Historical Anthropology of Tank Irrigation Technology in South India," *Technology and Culture* 49, no. 3 (2008): 652-674.

[242] Kadebakale, Upper Terrace Reservoir, excavated in 2009 season. See, Kathleen D. Morrison et. al., "Late Prehistoric & Early Historic Landscapes of the Tungabhadra Corridor: Report of the 2009 Season", Online access: http://static1.1.sqspcdn.com/static/f/814703/10942599/1298673525313/morrison+et+al.+2009+report.pdf?token=hZ HyI1BL%2BI0Jz%2B31tSOS9CoSxuI%3D. (Last accessed: 6/29/2016)

both Gabbur and Maliabad there is an example of such a feature, constructed primarily of stone boulders, although the one at Maliabad has been reinforced with earth on one side and functions as a modern road connecting Old Maliabad and New Maliabad villages. The Maliabad embankment is about 180 meters in length, and has a gradually sloping catchment area that feeds into it. The embankment at Gabbur is south the hill west of Gabbur village, barely 70 meters in length, that collects surface run-off from the hill. Besides this one stone embankment, all of the other catchment features at Gabbur are made of earth. Many of these are now converted into agricultural fields.

The only way to date these features accurately is through lab-based testing, which was outside the scope of this project. However, the spatial distribution of embankments and wells assert the significance of small catchment areas in sustaining the settlement and agriculture in Gabbur from an early date of settlement. Since the modern Gabbur village settlement is at the place of the historical settlement, artefactual assemblages that represent some of the early settlers at Gabbur are not easily discernible. This also includes early medieval secular structures such as residences. Therefore, temples alone represent the first major architectural phase here, many of which were associated with inscriptions dating to the 11th and 12th centuries AD.

A few natural catchment areas were identified south of the fort at Maliabad as well, although these did not require construction of embankments because they are surrounded by hills. A couple of wells at the foothills on the north side, located inside the Maliabad fort were also recorded. The two connected reservoirs east of Maliabad fort, that are still in use, seem to have been constructed after the temples had fallen out of use. The masonry of one of the embankments displays fragments of temple architecture that were (re)used in its construction. Similar reuse was noted at one of the outlets from the reservoir downstream (R2) where part of a

wall-shrine was incorporated into the masonry. Another embankment at Devanapalli (about four kilometres east of reservoir R1 at Maliabad) displayed a similar pattern of reuse. This may indicate that in this area immediately south of Raichur city, people constructed reservoirs not before the late 13th century or the beginning of the 14th. In contrast to both Gabbur and Maliabad, people in Kalmala seem to not have relied on reservoirs for either personal consumption or irrigation. It appears that small catchment areas around the hills, supplemented by a few wells, supported the population there.

Architectural styles of temples recorded in the region indicate that many such construction projects were launched in the region from about the 12th century. Most of the temples of the region follow the Karnata Dravida style constructed at the time of Rashtrakutas, the Kalyani Chalukyas, or the Kalachuris. There is a central mandapa with a dome (either rotating squares or a circular dome) with a narrow walkway around it which then opened into one, two or three chambers on each side of the square mandapa, preceded in some cases by an antechamber. Temple exteriors were made of plain, large slabs of stone, fitted without mortar, and elaborately carved in many cases. While there were conventions to follow, the eclecticism of sculptural art at temples in the survey areas indicate that their patrons and sculptors did not restrict themselves to any one of the mainstream architectural assemblage, but rather chose to combine patterns from different mainstream and non-mainstream assemblages.

Fig. 8-1: Structural reuse in embankment masonry. Remains of a pilaster (A) and a panel of elephants (B), reused to construct the embankment of reservoir R1 at Maliabad. Part of a wall-shrine (C) reused in masonry of an outlet from reservoir R2 at Maliabad.

Throughout the Raichur and Devadurg taluks, I found a strong correlation between reservoirs, wells, and sacred spaces, either in the form of sculptural remains of deities, local goddesses, hero stones, or shrines dedicated to them, temples, or early modern and modern Islamic funerary shrines. It was found that in many cases a well (or wells) were constructed within 100-200 m downstream of a reservoir. There were also instances of either a temple or other sacred architecture downstream of the embankment or in some cases on top of it. Curiously, in modern times, children, if they die young, are buried along the embankment. The embankment in many cases also serves as a road or path connecting two places. These patterns

of spatial distribution over large scale helped identify smaller embankments by analogy in the areas surveyed systematically.

In the semi-arid, undulating landscape of southern Deccan reservoirs have come to play a significant role in expansion of agriculture, enabling irrigated farming, and increasing cropping seasons in a year. In other words, agricultural expansion and intensification in this part of India is heavily dependent on artificial irrigation, either through the construction reservoirs or extensive canal systems. In my research area reservoirs were favoured over building canals, although canals played a complementary in the agrarian landscape of Vijayanagara, located on the banks of the Tungabhadra, south-west of Raichur. Canals made their appearance only in the 20th century in Raichur and Devdurg taluks.[243]

A positive correlation was also observed between wells, sacred architecture and/or sculptures, particularly the occurrences of naga stones. At least one specific locus of high concentration of naga stones were observed at all the three survey areas. While the one at Maliabad is along the edge of a catchment feature south of the fort, the one at Kalamala is in the village next to what appears to be a closed well, and the one at Gabbur is next to Nagabusappa temple (G75) and well/catchment feature on a hill north of Gabbur. This hill is referred to Kanakagiri in a mid-12th century inscription mentioning grants made by merchants and mahajans to the service of god Nagabhusana.[244] Besides the association of snake deities with water bodies, shrines dedicated to the local Yellamma goddess were found close on an embankment and wells. In contrast to residential areas where shrines dedicated to the local goddesses or other cultic practices are either few in number or completely absent, water places are where the 'Great'

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[243] Bashiruddin Ahmad, *Wāqi'yāt Mamlakāt-i Bijāpūr*, mentions that then government was planning to construct canals in the region, because none existed previously.

[244] I.K. IV. No. 8; IRKUH, 71-72.

(canonical religious systems) and the 'Little' traditions intersect or coexist.[245] For instance, at the Nagabusappa temple naga stones lie about the adjoining water body, and remains of a few temple structures and sculptural remains of Ganesh and Shiva represent one of the dominant institutionalized religious systems of the time. Similarly, a modern Yellamma shrine and medieval temple structure are found next to each other on an embankment east of Gabbur village.

Most temples at Gabbur were inside the walled settlement, but there were many that were outside of it and in the agricultural fields. There were other temple remains encountered in the fields both north and south of Gabbur (for instance, at G80, G123, G60). At Maliabad, remains of three temples or similar religious structures were found within the inner fort, while there were remains of one, reused to construct a modern temple, were on one of the hills. Temple remains were recorded at both the Old and New Maliabad villages, as well in fields west of the villages and north of the fort. In other words then, the distribution of temples at Maliabad was unrelated to the fort layout. Spatial distance from settlements, however, did not preclude these seemingly isolated temples from participating in the socio-economic and religious networks of their time.

Inscriptions from the study area further provide a unique perspective on the history of the region from ca. 10th century onwards. The earliest inscriptions from the areas surveyed record donations directly by members of the royal family or high officials (e.g. the Rashtrakutas and Kalyani Chalukyas). By the end of the 12th and the beginning of the 13th century most donors mentioned in inscriptions are local potentates or mahajanas/brahmins, the latter by now also indulge in trading activities and are members of merchant guilds. Gabbur, which was donated as

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[245] Suvrathan, "Spoiled for Choice".

an agrahara settlement to mahajans before the end of the 11[246] century, evidenced the highest number of stone inscriptions among the three survey areas. There are a number of instances where mahajans are the donors well into the 13th century, indicating their significance in the administration of the place as well. There is only one intact inscription at Kalmala that mentions land gifted in the assembly of a Rashtrakuta king by one of his high officials to a Bhattara (tr. 'honourable man'; could imply a learned Brahmin), but nothing that matches the prolific donative and building activity at Gabbur. Kallur, barely six kilometres south of Kalmala, was also an *agrahara* settlement donated towards the end of the 11th century to a *brahman* for conducting a certain ritual, around the same time as that of Gabbur. Incidentally, one of the donees mentioned in the inscription at Gabbur bears the same family name (Bhattopadhyaya Somayaji)[247] as the primary donee at Kallur, suggesting that familial ties and political networks were intertwined when these donations were made. Additionally, the same inscription at Gabbur (at G10) also lists Kalmala as one of the villages donated with specific proprietary rights , implying that non-agrahara villages could also be donated along with land meant for an agrahara settlement.[248] The only published inscription from Maliabad, a qaulnama, dates to a much later period, although the survey recorded at least two unpublished inscriptions from here. This 16th century qaulnama lowered the taxes paid by different occupational groups at Maliabad and discouraged excessive exploitation in the form of coercive labor. A 17th century inscription from

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[246] IRKUH, 69-70.

[247] IRKUH, Gabbur, 69-70; mentions an earlier donation of land to 200 mahajanas for a ritual which was not realized. One of the mahajanas, with the name *sarvakritu* Vereyana Bhattopadhyaya Somayaji, gifted his share of the donation to the service of the god Ramesvara. IRKUH, Kallur, 285-287; mentions that the Chalukyan king Vikramaditya VI donated Kallur village to Vikramadityadeva Bhattopadhyaya *sarvakratu* Somayaji for performing a ritual (*pancalangula yaga*), and his brother-in-law also received a smaller gift for certain services. The inscriptions from both Gabbur and Kallur begin with the same invocatory lines in praise of the Chalukyan king and state.

[248] This phenomenon has been identified in inscriptions over the entire central Raichur doab area. See Yarlagadda 2004, 283, for a more detailed discussion on non-agrahara settlements featuring in inscriptions along with agrahara donations.

Gabbur, installed on the plinth of a temple (G9) and written in Kannada with some Urdu words (e.g. qasbe gobur/ ಕಸಬೆ ಗೊಬೂರ), appears to pardon yield from a dry field.[249] This reflects what we know from much later texts, that a change in the ruling dynasty or their religious preferences did not necessarily mean that privileges enjoyed by former donees were discontinued. The inscription from Maliabad, on the other hand, indicates an attempt by the regional rulers and their administration to exert greater fiscal control and override the exigencies of local officials or elites over the masses.

This dissertation has considered a range of evidences from three places in the Raichur district to study the political processes from below in a frontier region of the Deccan through the lens of water management. The end of the 11th and the beginning of the 12th century AD witnesses a spurt in inscribing epigraphs on stone slabs in the Raichur district, recording land grants and other donations and gifts to religious institutions, deities, and functionaries. Elaborate temples begin to be constructed around the same time, which come to play a significant socio-economic and political role. Temple architecture of the region borrows from a wide palette of stylistic templates that are already at the sculptors' disposal with sometimes innovative combinations. The emergent society altered their immediate rolling landscape to harness surface run-off from the yearly monsoons by augmenting natural catchment areas through embankments. There was movement of skilled people, such as scribes and stone workers, along with increased commercial activity, indicated by an increasing number of merchant guilds that feature as donees in inscriptions. The mahajans/brahmins exerted both political and administrative authority at Gabbur, which might explain why many temples of Gabbur (both inside and outside the village) have survived to this day, unlike temples at Kalmala or Maliabad. It may also have depended on

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[249] IRKUH, 72-73.

the effective water management strategies in and around Gabbur over centuries by incremental

construction of connected reservoirs, complemented by digging of wells. The archaeological

remains at Gabbur suggest a long history of continued settlement and attempts at both benefitting

from and altering the landscape it is a part of, whereas Maliabad more likely saw abandonment

or desertion of older settlements and spells of construction phases interspersed with periods of

low construction and agricultural activity.

I argue that issuing land grants did not in and of itself result in successful agricultural

expansion and intensification, but rather that a lot depended on the ability of the donors to

establish their stronghold in the local socio-economic and political milieu. It was more likely for

those with better political networks to sustain through periods of crisis, whether natural or human

induced. Kalmala is probably more representative of early medieval settlements in the region

where the initial political and economic interest in settling and developing the place did not

continue beyond a few hundred years. Whether this was despite or because of being sandwiched

between two agrahara settlements (Kallur in the south and Gabbur in the north) that developed

into proto-urban areas is hard to know with the current data.

What the archaeological and epigraphic evidence suggests is that local elites in the

Raichur district begin commanding greater economic and political influence from about the 12th

century, and was increasingly beyond the direct control of regional political powers that ruled

Raichur over the centuries. By 14th/15th centuries we notice renewed interest of political

dynasties to sponsor basic infrastructure in frontier areas, such as construction of reservoirs south

of Raichur fort and arguably those at Maliabad. This leads us up to the 16th century when

regional political powers such as the 'Adil Shahs of Bijapur, attempt to increase direct

involvement in administering these hinterlands through various means: constructing forts and

increasing physical presence and issuing new grants at places such as Gabbur[250] and Kallur, and

in some cases adopting Indic titles, such as *bhuloka chakravarti*.[251] However, the local elites

with their deep economic and political roots in the hinterland would have proved to be both

beneficial and a challenge to the 'Adil Shahis for controlling and administering the Raichur

district. By shifting the analytical gaze from centres of political authority to the locality and its

water resources, I have been able to investigate the localized process of historical change and

continuity at one of the fiercely sought hinterlands of medieval India. Water is a unique entity to

study archaeologically because it by itself does not take tangible forms that archaeologists can

study, and yet while the people who first constructed the water structures studied in this

dissertation have long been gone, the reservoirs and embankments take on new roles in their

after-lives.

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[250] EIAPS 1962, p. 62.

[251] *Epigraphia Indo Moslemica* 1939-40, p. 17.

Appendices

Gabbur Database

No.	Rel_Struc	Other_St.	Inscription	Naga	Hero	Idol	Pitha	OtherIm.	Well/Cist.	Reservoir	Lithics (1/0)	Pottery (1/0)	Metal (Obj./Slag)	Mortar	Context	Insc.Date	UTM zone	Easting	Northing
G1	2	0	3	3	1	1	3	0	1	0	0	1	0	0	This complex is situated in the north of the village, just inside the fortification of the village. Some of the earliest inscriptions from Gabbur are reported from here.	1103	43Q	730244	1804711
G2	1	0	0	0	0	1	1	1	0	0	0	0	0	0	This is off the main N-S street of Gabbur that connect the Balanjaneya Gudi and Elu Bavi temple complex. It is close to Virabhadresvara Gudi.	NA	43Q	730298	1804222
G3	1	0	0	1	0	1	1	1	0	0	0	0	0	0	According to the records, there was an inscription here, but it was not found at the time of the survey. It appears that this inscription was moved to a temple further south of this one. Virabhadresvara lies on the N-S main street of Gabbur.	NA	43Q	730298	1804173
G4	1	0	1	0	0	1	0	0	0	0	0	0	0	0	There is a buried temple just south-west of this temple. This is located close the Elu Bavi temple complex.	1141	43Q	730293	1804152
G5	5	2	5	5	1	5	2	10	1	0	0	1	0	1	This temple complex is located in the south of Gabbur along its southern fortification. It is one end of a N-S running street along which we find most inscriptions and temples in Gabbur.	1149	43Q	730307	1804056
G6	1	0	0	0	0	1	0	0	0	0	0	0	0	0	Falls just outside the village fortification on the West, but still inside the modern village.	NA	43Q	730099	1804239
G7	1	0	1	0	0	0	0	2	0	0	0	0	0	0	This lies on the main N-S running street in Gabbur. There is a gateway adjacent to this temple on the west that has an inscription built into it. Pete Anjaneya temple is just north of this temple, across the street.	1144	43Q	730219	1804381
G8	1	0	0	0	0	0	1	0	0	0	0	0	0	2	This lies on the main N-S running street in Gabbur. There is a gateway adjacent to this temple on the east, acorss which is Nilakenthesvara temple. To its north-east is Pete Najaneya temple.	NA	43Q	730263	1804374
G9	1	0	3	0	1	1	1	2	0	0	0	0	0	0	This lies on the main N-S running street in Gabbur. This is opposite the Nilakanthesvara temple. South-west of this temple is the Kesavaraya temple.	1200	43Q	730289	1804393

Gabbur Database (cont.)

No.	Rel_Struc	Other_St.	Inscription	Naga	Hero	Idol	Pitha	OtherIm.	Well/Cist.	Reservoir	Lithics (1/0)	Pottery (1/0)	Metal (Obj./Slag)	Mortar	Context	Insc.Date	UTM zone	Easting	Northing
G10	1	0	1	0	1	4	0	1	0	0	0	0	0	0	Lies on the main N-S running street in Gabbur. North of Virabhadresvara temple but south of Nilakanthesvara temple.	1095	43Q	730283	1804299
G11	0	0	1	0	0	0	0	0	0	0	0	0	0	0	Lies on the main N-S running street in Gabbur. North of Nilakanthesvara temple and opposite Bhutesvara/Bhogesvara temple.	NA	43Q	730271	1804453
G12	1	0	2	0	0	3	2	0	0	0	0	0	0	1	Lies on the main N-S running street in Gabbur. Opposite the Akram Shah Dargah.	1126	43Q	730254	1804463
G13	1	0	0	0	0	1	1	0	0	0	0	0	0	0	Lies on the main N-S running street in Gabbur. North of Bhogesvara temple.	NA	43Q	730242	1804523
G14	1	0	0	0	0	1	1	0	0	0	0	0	0	0	Lies on the main N-S running street in Gabbur. North-east of Iruvaradeva temple	NA	43Q	730255	1804554
G15	1	0	1	3	5	0	1	2	1	0	0	1	0	0	Lies just outside the village wall/fortification, on its north-western side.	1084	43Q	729988	1804635
G16	3	1	1	3	0	1	0	0	0	0	0	1	1	0	Lies outside the village on the west, on a hill, on its northern side.	1084	43Q	729824	1804393
G17	0	0	0	5	0	0	0	0	0	0	0	0	0	0	Lies east of Mahisamarda shrine.	NA	43Q	730177	1804642
G18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Lies on the northern fortification of the village Gabbur.	NA	43Q	730256	1804789
G19	0	1	0	0	0	0	0	0	0	0	0	0	0	0	In the fields to the west of village, north of Hampaneyya gudi.	NA	43Q	730046	1804795
G20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Located east of Hampayyana temple.	NA	43Q	730054	1804581
G21	1	0	0	2	0	1	0	0	0	0	1	0	0	0	East of Hampaneyya Gudi, but inside the village enclosure.	NA	43Q	730068	1804592
G22	0	0	0	1	0	0	0	0	0	0	0	1	0	0	North foothill of where Suguresvara Gudi is located; outside the western boundary of the village.	NA	43Q	729857	1804440
G23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Located along the northern fortification wall.	NA	43Q	730424	1804745
G24	0	0	0	1	0	2	0	0	0	0	0	0	0	0	Located in the northern part of the village, close to the fortification	NA	43Q	730407	1804698
G25	1	0	1	1	0	0	0	1	0	0	0	0	0	0	Located along the south-eastern fortification wall of Gabbur.	1119	43Q	730654	1804286
G26	1	0	0	1	2	0	0	1	0	0	0	0	0	0	Outside the village on the east	NA	43Q	730694	1804201
G27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Located in the south part of Gabbur	NA	43Q	730609	1804028
G28	1	0	5	4	5	2	0	0	1	0	0	0	0	1	Located on the eastern side of the village.	1085 / 1103	43Q	730585	1804239
G30	1	0	0	1	2	1	1	3	0	0	0	0	0	0	Located close to Kallur Agasi and the modern bus stand.	NA	43Q	730558	1804021
G31	0	0	0	1	0	0	0	1	0	0	0	0	0	0	South-west of Mel-Sankara Temple	NA	43Q	730509	1804173

Gabbur Database (cont.)

No.	Rel_Struc	Other_St.	Inscription	Naga	Hero	Idol	Pitha	OtherIm.	Well/Cist.	Reservoir	Lithics (1/0)	Pottery (1/0)	Metal (Obj./Slag)	Mortar	Context	Insc.Date	UTM zone	Easting	Northing
G32	0	1	0	0	0	0	0	0	1	0	0	0	0	0	Within the heart of the village.	NA	43Q	730541	1804675
G33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Located along the western fortification wall of the village.	NA	43Q	730061	1804349
G34	0	1	0	0	0	0	0	0	0	0	0	1	0	0	Situated to the west of Kesavaraya and Nilakanthesvara temples.	NA	43Q	730160	1804362
G35	0	0	0	0	0	0	0	0	0	0	0	1	0	0	Located east of Budi Basappa Matha	NA	43Q	730110	1804329
G36	0	0	0	0	0	0	0	0	0	0	0	1	0	0	Located on the western-central part of the village	NA	43Q	730245	1804185
G37	0	0	0	1	0	0	0	0	0	0	0	0	0	0	Situated north of the bus-stand.	NA	43Q	730465	1804119
G38	0	1	0	1	0	0	0	1	0	0	0	0	0	0	Located east of Bangaru Basavanna temple	NA	43Q	730364	1804283
G39	1	0	0	1	0	4	1	1	0	0	0	0	0	1	Located to the north east of the Elu Bavi temple complex.	NA	43Q	730394	1804288
G40	1	0	0	8	1	0	0	0	0	0	0	0	0	0	Located north of Sakkar Bavi and south-east of Andana Bavi in the eastern part of the village	NA	43Q	730547	1804378
G41	0	0	0	2	0	0	0	0	0	0	0	0	0	0	Located to the west of the Sakkar Bavi and Mel-sankara Temple.	NA	43Q	730475	1804281
G42	0	0	0	0	0	3	0	1	1	0	0	0	0	0	Located on the central-eastern side of the village.	NA	43Q	730509	1804445
G43	0	2	0	0	1	0	0	0	0	0	0	0	0	0	Located to the west of Andana Bavi.	NA	43Q	730442	1804441
G44	0	0	0	0	0	1	0	0	0	0	0	0	0	0	Located in the northern part of the village, on a street running West to East.	NA	43Q	730359	1804557
G45	0	1	0	0	0	0	0	1	0	0	0	0	0	0	Located to the south-east of Balanjaneya Gudi.	NA	43Q	730321	1804594
G46	0	1	0	0	0	0	0	0	0	0	0	0	0	0	Located east of the modern bus stand of Gabbur, i.e. to the south-east of the village.	NA	43Q	730670	1804008
G47	0	1	0	4	0	0	0	0	0	0	0	0	0	0	Located to the east of the N-S street of Gabbur, south of Balanjaneya gudi.	NA	43Q	730268	1804516
G48	0	0	1	1	0	0	0	0	0	0	0	0	0	0	Located in the north-west of the village, south-west of Blanajaneya temple.	NA	43Q	730190	1804570
G49	1	0	0	4	0	0	0	0	1	1	0	1	0	0	Located to the east of the village Gabbur, in the cotton fields.	NA	43Q	730874	1804099
G50	1	0	0	0	0	1	0	1	0	0	0	0	0	1	South of Elu Bavi and the village.	NA	43Q	730426	1803805
G51	0	1	0	0	0	0	0	0	0	0	0	0	0	0	north-west of the village of gabbur, not very far from the moat around the fortification.	NA	43Q	730028	1804891
G52	0	1	0	0	0	0	0	1	0	0	0	0	0	0	To the west of the village on the north side; north of the budibasavesvara matha.	NA	43Q	729896	1804861
G53	0	0	0	1	0	0	0	0	1	0	0	0	0	0	West of the village, north-west of the budibasavesvara matha.	NA	43Q	729793	1804618

No.	Rel_Struc	Other_St.	Inscription	Naga	Hero	Idol	Pitha	OtherIm.	Well/Cist.	Reservoir	Lithics (1/0)	Pottery (1/0)	Metal (Obj./Slag)	Mortar	Context	Insc.Date	UTM zone	Easting	Northing
G54	0	1	0	0	1	0	0	2	0	0	0	0	0	0	Next to budibasavesvara Matha, to the west of the village of Gabbur.	NA	43Q	729910	1804474
G55	0	0	0	0	1	0	0	0	0	0	0	0	0	0	North of the village, not too far from the Khanapur-Gabbur road.	NA	43Q	730150	1805090
G56	0	0	0	0	0	0	0	0	0	0	1	1	0	0	North of the village, not too far from the Khanapur-Gabbur road.	NA	43Q	730296	1805059
G57	0	0	0	1	0	0	0	0	1	0	0	0	0	0	This is in survey block AG6, north of block AG5 that had budibasavesvara Matha	NA	43Q	729939	1805118
G58	0	0	0	0	0	0	0	0	1	0	0	1	0	0	Survey area AG6, to the north-west of the village of Gabbur.	NA	43Q	729714	1805180
G59	1	0	0	10	2	3	0	2	1	0	0	0	0	0	Survey area AG6, to the north-west of the village of Gabbur.	NA		729723	1805118
G60	1	0	0	0	0	0	0	0	0	0	0	0	0	1	Survey area AG6, to the north-west of the village of Gabbur, just south-east of nAgara bAvi.	NA	43Q	729762	1805109
G61	0	1	0	0	0	0	0	0	1	0	0	0	0	0	Survey areas AG6, to the north-west of the village Gabbur, and east of Ambaresvara temple.	NA	43Q	729867	1805126
G62	0	0	0	1	0	0	1	0	0	0	0	0	0	0	Survey area AG6, to the north-west of the village Gabbur, and to the north-east of Yellama Gudi and associated well.	NA	43Q	729927	1805352
G63	0	1	0	2	0	0	0	0	1	0	0	0	0	0	Survey area AG6, north-west of the village Gabbur, north-east of Yellama bavi and gudi.	NA	43Q	729937	1805226
G64	0	0	0	1	1	1	0	0	0	0	0	0	0	0	Survey area AG6, north-west of the village Gabbur, and north of Yellama gudi and bavi.	NA	43Q	729869	1805217
G65	0	0	0	0	0	0	0	0	0	1	0	0	0	0	Survey area to the north of AG6.	NA	43Q	730130	1805759
G66	0	0	0	0	0	0	0	0	1	0	0	1	0	0	North of Yellama Gudi and well.	NA	43Q	729846	1805326
G67	1	0	0	0	0	0	0	0	1	0	0	0	0	0	South-east of Khane Kere.	NA	43Q	730234	1805466
G68	0	1	0	0	0	1	0	0	0	0	0	0	0	0	North of Gabbur on the Khanapur Road.	NA	43Q	730511	1805580
G69	0	0	0	0	0	0	0	1	0	0	0	0	0	0	South of Elu Bavi	NA	43Q	730404	1803958
G70	0	0	0	0	0	0	0	1	0	0	0	1	0	0	South of Elu Bavi	NA	43Q	730330	1803930
G71	0	0	0	0	1	0	0	0	1	0	0	0	0	0	South West of Elu Bavi	NA	43Q	730137	1803897
G72	0	0	0	0	0	0	0	0	1	0	0	1	0	0	West of Suguresvara Gudi on the hill to the West of the Gabbur village.	NA	43Q	729780	1804377
G73	0	0	0	0	0	0	0	0	0	1	0	0	0	0	West of Gabbur village wall but south of Suguresvara hill.	NA	43Q	729932	1804056
G74	0	0	0	0	1	0	0	0	0	0	0	0	0	0	It is on the way up the hill where there are temple remains and also a well.	NA	43Q	729359	1805532
G75	2	1	0	37	0	8	1	4	1	0	0	1	0	0	It is located to the west of Khane Kere and this is survey block AG8.	NA	43Q	729319	1805559

No.	Rel_Struc	Other_St.	Inscription	Naga	Hero	Idol	Pitha	OtherIm.	Well/Cist.	Reservoir	Lithics (1/0)	Pottery (1/0)	Metal (Obj./Slag)	Mortar	Context	Insc.Date	UTM zone	Easting	Northing
G76	0	1	0	0	1	0	1	0	0	0	0	1	0	0	Located south of Nagabusappa Gudi in AG8.	NA	43Q	729423	1805368
G77	0	0	0	0	0	0	0	0	1	0	0	0	0	0	Located to the south of Gabbur village in the fields.	NA	43Q	730127	1803625
G78	0	1	0	0	0	0	0	0	0	0	0	0	0	0	Located south of Gabbur village in the fields sourrounded by dense vegetation.	NA	43Q	730070	1803585
G79	0	0	0	21	0	0	0	0	0	0	0	0	0	0	Located along modern canal south of Gabbur village.	NA	43Q	729922	1803402
G80	1	0	0	0	0	0	0	0	1	0	0	0	0	0	Located to the south of Gabbur village.	NA	43Q	729930	1803631
G81	0	1	0	0	0	0	0	0	1	0	0	0	0	1	Located to the west of Gabbur village, south of Suguresvara hill.	NA	43Q	729890	1803942
G82	0	0	0	0	0	1	0	2	0	0	0	0	0	0	Located to the north of Mahanandisvara temple, on the southern side of the Suguresvara hill, to the west of the Gabbur village.	NA	43Q	729867	1804025
G83	1	0	0	0	0	1	0	1	1	0	0	0	0	0	Located to south of Gabbur on the eastern side.	NA	43Q	730639	1803621
G84	0	0	0	0	0	0	0	0	1	0	0	0	0	0	Located to the north of Khane Kere	NA	43Q	730254	1805923
G85	0	0	0	0	0	0	0	0	0	0	1	0	0	0	Located to the north of Khane Kere	NA	43Q	730082	1805952
G86	1	0	0	0	0	0	1	0	1	0	0	1	0	0	Located to the west of the mound and north of Khane Kere.	NA	43Q	729939	1806000
G87	0	0	0	0	0	0	0	0	1	0	0	1	0	0	Located north of Khane Kere and north-east of Thaiamma Bavi.	NA	43Q	729992	1806134
G88	0	0	0	0	0	0	0	0	1	0	0	0	0	0	Located to the west of Valaikkar Bavi and to the north of Thaiamma Bavi.	NA	43Q	729948	1806148
G89	0	0	0	0	0	0	0	0	1	0	0	0	0	0	Located to the east of Suganagowda Bavi and north-east of the mound Haal Mannu	NA	43Q	730145	1806206
G90	0	0	0	0	0	0	0	0	1	0	0	0	0	0	North of Khane Kere and south of Yellama Bavi and shrine.	NA	43Q	729937	1805904
G91	0	1	0	0	0	0	0	0	1	0	0	0	0	0	East of Gabbur village	NA	43Q	730768	1803613
G92	0	0	0	0	0	0	0	0	1	0	0	0	0	0	North of Sugana gowda Bavi.	NA	43Q	729764	1806398
G93	0	0	0	0	0	0	0	0	1	0	0	0	0	0	Further north of mound Haal Mannu.	NA	43Q	729922	1806517
G94	0	0	0	0	0	1	0	0	0	0	0	0	0	0	North-west corner of the Nagabhusappa Hill.	NA	43Q	728931	1806132
G95	0	0	0	1	0	0	0	0	1	0	0	0	0	0	North-west of Khane Kere and south-east of Khanapur village	NA	43Q	729423	1806865
G96	0	0	0	0	0	0	0	0	1	0	0	0	0	0	North-west of Khane Kere and south-east of Khanapur village	NA	43Q	729573	1806786
G97	0	0	0	2	0	0	0	0	0	0	0	0	0	0	North-west of Khane Kere and south-east of Khanapur village	NA	43Q	729570	1806931
G98	0	0	0	0	0	1	0	0	1	1	0	0	0	0	North of Khane Kere and south-east of Khanapur village	NA	43Q	729975	1806883

Gabbur Database (cont.)

No.	Rel_Struc	Other_St.	Inscription	Naga	Hero	Idol	Pitha	OtherIm.	Well/Cist.	Reservoir	Lithics (1/0)	Pottery (1/0)	Metal (Obj./Slag)	Mortar	Context	Insc.Date	UTM zone	Easting	Northing
G99	0	0	0	0	0	0	0	0	1	0	0	0	0	0	North of Gabbur and along the Gabbur Khanapur road	NA	43Q	730403	1805279
G100	0	0	0	0	0	0	0	0	1	0	0	0	0	0	North of Gabbur village	NA	43Q	730615	1804954
G101	0	0	0	0	0	0	0	0	0	0	1	1	0	0	Along the Gabbur Honnatgi road.	NA	43Q	730575	1805583
G102	0	0	0	0	0	0	0	0	1	0	0	0	0	0	Almost mid-way between Gabbur and Honnatgi, close to the road in the fields.	NA	43Q	730748	1806599
G103	0	0	0	0	0	0	0	0	1	0	0	0	0	0	To the west of Konkalam Bavi, north of Khane Kere.	NA	43Q	730213	1806470
G104	0	0	0	0	0	0	0	0	1	1	0	0	0	0	To the south-west of Honnatgi Kere but North-east of Basavanna Kere	NA	43Q	730771	1807543
G105	0	0	0	0	0	0	0	0	1	0	0	0	0	0	To the south-eastern edge of the village Honnatgi.	NA	43Q	731548	1808985
G106	0	1	0	1	0	0	0	0	0	0	0	0	0	0	In the village Honnatgi	NA	43Q	731522	1809116
G107	1	0	0	0	0	1	0	3	0	0	0	0	0	0	In the western part of the village Honnatgi.	NA	43Q	731432	1809110
G109	0	0	0	0	0	0	0	0	1	0	0	0	0	0	To the east of Khanapur village, in the fields between Khanapur and Honnatgi village.	NA	43Q	729475	1808045
G110	0	0	0	0	0	0	0	0	1	0	0	0	0	0	To the east of Khanapur village, in the fields between Khanapur and Honnatgi villages	NA	43Q	729480	1808231
G111	1	0	1	1	0	0	0	0	0	0	0	0	0	0	In the village Khanapur	NA	43Q	728149	1808119
G112	1	0	1	1	0	1	0	0	0	0	0	0	0	0	In western part of Khanapur village	NA	43Q	728091	1808125
G113	0	0	0	0	0	0	0	1	0	0	0	0	0	0	Along southern edge of Khanapur Bavi	NA	43Q	728045	1807964
G114	0	0	0	0	0	0	0	0	0	0	0	0	0	0	In the eastern part of Khanapur village	NA	43Q	728359	1808065
G115	0	0	0	0	0	0	0	0	1	0	0	0	0	0	North of the village and east of the Khanapur Kere	NA	43Q	727973	1808432
G116	0	0	0	0	0	1	1	1	0	1	0	0	0	0	On the embankment of Khanapur Kere	NA	43Q	727745	1808761
G117	0	0	0	0	2	0	0	0	0	0	0	0	0	0	In the northern part of the village Khanapur	NA	43Q	728338	1808136
G118	0	0	0	0	0	0	0	1	0	0	0	0	0	0	To the west of Suguresvara hill	NA	43Q	729620	1804157
G119	0	0	0	0	0	0	0	0	1	0	0	0	0	0	To the north-west of Suguresvara hill	NA	43Q	729407	1804402
G120	0	0	0	1	0	0	0	0	0	0	0	0	0	0	In the fields west of Gabbur village	NA	43Q	729448	1804550
G121	0	0	0	1	0	0	0	0	0	0	0	0	0	0	In the fields to the south-west of Gabbur village	NA	43Q	729645	1803368
G122	0	0	0	0	0	0	0	0	1	0	0	0	0	1	Along the western boundary of the Gabbur village.	NA	43Q	730126	1804277
G123	0	1	0	0	0	0	0	0	0	0	0	0	0	0	South of Nagara Bavi and Ambaresvara Gudi.	NA	43Q	729833	1804992
G124	0	0	0	1	0	0	0	0	1	1	0	0	0	0	South of Gabbur village; behind the petrol pump.	NA	43Q	729592	1803753

No.	Rel_Struc	Other_St.	Inscription	Naga	Hero	Idol	Pitha	OtherIm.	Well/Cist.	Reservoir	Lithics (1/0)	Pottery (1/0)	Metal (Obj./Slag)	Mortar	Context	Insc.Date	UTM zone	Easting	Northing
G125	0	0	0	0	0	0	0	0	0	1	0	0	0	1	North-east of Gabbur village, north of Isvara deva gudi and embankment east of Gabbur village.	NA	43Q	731322	1804566
G126	1	0	0	0	0	3	0	0	1	1	0	0	0	0	North-north-east of Gabbur village.	NA	43Q	731502	1805179
G127	0	0	0	0	0	0	0	0	1	1	0	0	0	0	West of the village Gabbur, north of the petrol pump.	NA	43Q	728979	1804244
G128	0	0	0	0	0	0	0	0	0	1	0	0	0	0	West of Gabbur village, north-west of petrol pump.	NA	43Q	728193	1804546
G129	1	0	0	1	0	1	0	0	0	0	0	0	0	0	East of Nilakanthesvara Gudi and Pete Anjaneya Gudi.	NA	43Q	730349	1804393
G130	0	0	0	0	0	0	0	0	1	0	0	0	0	0	South-east of Khanapur village	NA	43Q	728377	1807782
G131	0	0	0	0	0	0	0	0	1	0	0	0	0	0	North of Honnatgi village	NA	43Q	731415	1809512
G132	0	0	0	0	0	0	0	0	1	0	0	0	0	0	East of Khanapur Kere	NA	43Q	727864	1808835
G133	0	0	0	0	0	0	0	0	1	0	0	0	0	0	East of Khanapur village	NA	43Q	728576	1807993
G134	0	0	0	0	0	0	0	0	1	1	0	1	0	1	North-east of Gabbur village, north of Isvara deva gudi and embankment east of Gabbur village.	NA	43Q	730887	1804538

Maliabad Database

No.	Rel_Struc	Other_St	Inscription	Naga	Hero	Idol	Pitha	OtherIm	Well/Cist.	Reservoir	Lithics (1/0)	Pottery (1/0)	Metal (Obj./Slag)	Mortar	Context	UTM zone	Easting	Northing
M1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	West of the Maliabad village, north of the fort on the east side.	43Q	752248	1787150
M2	1	0	0	1	0	1	0	0	0	0	0	1	0	0	In between the inner and outer fort walls on the east side.	43Q	752492	1786955
M3	1	0	0	11	3	2	2	1	1	0	0	0	0	2	On one of the hills of Maliabad	43Q	752466	1786344
M4	0	0	1	0	0	0	0	0	0	0	0	0	0	0	On one of the hills of Maliabad	43Q	752487	1786471
M5	1	0	0	2	1	2	1	0	0	0	0	0	0	0	To the north of the fort and west of the village.	43Q	752299	1787231
M6	1	0	0	0	0	2	0	2	0	0	0	0	0	0	To the west of the village and the basappa temple.	43Q	752235	1787292
M7	0	0	0	1	0	0	0	0	1	0	0	0	0	0	To the north of the fort and west of the village	43Q	752139	1787343
M8	0	1	0	0	0	0	0	0	0	0	0	1	0	0	To the north of the fort and west of the village	43Q	751972	1787357
M9	0	1	0	0	0	0	0	0	0	0	0	1	0	0	North of the fort and west of the village	43Q	751864	1787284
M10	0	0	0	5	2	0	0	0	0	0	0	1	0	0	North of the fort, and next to a modern hill.	43Q	751838	1787322
M11	0	1	0	1	0	0	0	0	0	1	0	0	0	0	North-west of the fort.	43Q	751416	1787089
M12	0	0	0	0	0	1	0	0	0	0	0	0	0	0	North-west of the fort	43Q	751218	1787671
M13	0	0	0	0	0	0	0	0	0	1	0	0	0	0	North-west of the fort and of Peetalcheru Kere.	43Q	751454	1787665
M14	0	1	0	1	0	1	0	0	1	0	0	0	0	0	North of the fort	43Q	751855	1787394
M15	0	1	0	2	1	0	0	0	1	0	0	1	0	0	North of the fort	43Q	751618	1787456
M16	0	0	0	1	0	1	0	0	0	0	0	0	0	0	In the Gowshala of Maliabad constructed along an inner gateway on the south-western side of the fortification.	43Q	751493	1786585
M17	0	0	0	0	0	0	0	0	0	0	0	1	0	2	In between inner and outer fort walls.	43Q	751583	1786290
M18	0	0	0	5	0	0	0	0	0	1	0	1	0	0	South of the fort	43Q	751723	1786209
M19	0	0	0	70	0	0	0	0	0	1	0	0	0	0	South of the fort	43Q	751676	1786151
M20	0	0	0	1	0	1	0	0	0	0	0	1	0	23	Along the south-western edge of the inner fort wall.	43Q	751560	1786598
M21	0	1	0	0	0	0	0	0	0	0	0	1	0	0	In between inner and outer fortification on the south side.	43Q	751542	1786434
M22	0	0	0	0	0	0	0	0	0	0	0	1	0	1	In between inner and outer fortification on the south side.	43Q	751728	1786416
M23	0	1	0	0	2	0	0	0	0	0	0	1	0	2	In the south-western part of the inner fort.	43Q	751625	1786632
M24	0	1	0	3	0	0	0	0	0	0	0	1	0	0	In the south-western part of the inner fort.	43Q	751691	1786665
M25	0	0	1	0	1	0	0	0	0	0	0	1	0	0	Northern part of the inner fort	43Q	751976	1787059
M26	1	0	0	0	0	0	1	0	0	0	0	1	0	0	In the inner fort	43Q	752059	1786863
M27	1	0	0	0	0	0	0	0	0	0	0	1	0	0	In the inner fort	43Q	751973	1786892
M28	0	0	0	0	0	1	0	1	0	0	0	1	0	0	In the inner fort	43Q	751921	1786913
M29	0	0	0	0	0	0	0	0	1	0	0	0	0	0	In the foothills of one of the hills of Maliabad	43Q	752073	1786832
M30	0	0	0	0	0	0	0	2	0	0	0	1	0	0	In the inner fort	43Q	751971	1786823

Maliabad Database (cont.)

No.	Rel_Struc	Other_St	Inscription	Naga	Hero	Idol	Pitha	OtherIm	Well/Cist.	Reservoir	Lithics (1/0)	Pottery (1/0)	Metal (Obj./Slag)	Mortar	Context	UTM zone	Easting	Northing
M31	0	0	0	0	0	0	0	0	0	0	0	1	0	2	In the inner fort	43Q	751849	1786699
M32	0	1	0	0	0	0	0	1	0	0	0	1	0	0	In the inner fort	43Q	751843	1786838
M33	0	0	0	0	0	1	0	0	1	0	0	1	0	0	In the inner fort	43Q	751747	1786726
M34	0	0	0	0	0	1	0	1	0	0	0	1	0	0	In the inner fort	43Q	751756	1786770
M35	0	1	0	0	0	0	0	0	0	0	0	1	0	0	In the inner fort	43Q	751945	1786965
M36	0	0	0	0	0	0	0	0	0	0	0	1	0	1	In between inner and outer fort walls.	43Q	751951	1787159
M37	0	0	0	0	1	0	0	0	0	0	0	1	0	0	In between inner and outer fort walls.	43Q	751903	1787144
M38	0	0	0	0	0	0	0	0	0	0	0	1	0	1	On a boulder on the outer fortification wall	43Q	751822	1787151
M39	0	0	0	0	0	0	0	2	0	0	0	1	0	0	Between outer and inner fort	43Q	751855	1787109
M40	0	1	0	2	0	0	0	0	0	0	0	0	0	0	Close to foothills inner fort	43Q	751629	1787115
M41	0	1	0	0	0	0	0	0	0	0	0	0	0	0	Between outer and inner fort walls	43Q	751311	1786591
M42	0	0	0	1	0	1	0	0	0	0	0	0	0	0	Ganesh sculpture outside outer fort wall on the north	43Q	751715	1787198
M43	0	1	0	0	0	0	0	0	0	0	0	0	0	0	Dressed Stone	43Q	751402	1786878
M44	0	0	0	0	0	1	0	0	0	0	0	1	0	0	Incomplete Ganesh on a boulder with cupule marks located West of fort.	43Q	751238	1786874
M45	0	0	0	3	0	1	0	0	1	0	0	1	0	0	Slightly North-West of fort	43Q	751185	1787010
M46	0	0	0	0	1	0	0	0	0	0	0	0	0	0	North-West of the fort	43Q	751126	1787103
M47	0	0	0	2	0	0	0	0	0	0	0	0	0	0	North-west of the fort	43Q	751342	1787060
M48	0	0	0	5	0	0	0	0	0	0	0	0	0	0	Naga shrine in Old Maliabad village	43Q	752330	1787325
M49	1	0	0	8	2	0	0	1	0	0	0	0	0	0	Modern matha in Old Maliabad; reuse indicated.	43Q	752732	1787329
M50	0	0	0	0	0	0	0	0	1	0	0	0	0	0	Well to the south-east of the village, just south of the percolation tank	43Q	753303	1787166
M51	0	0	0	2	0	0	0	0	0	0	0	0	0	0	In Old Maliabad village	43Q	752686	1787198
M52	0	1	0	3	0	1	0	0	0	0	0	0	0	0	In Old Maliabad village	43Q	752622	1787187
M53	1	0	0	6	4	3	0	3	0	0	0	0	0	0	Modern Anjaneya temple in Old Maliabad village	43Q	752526	1787262
M54	1	0	0	0	1	2	0	1	0	0	0	1	0	2	Collection of remains to the West of the village North of the fort	43Q	752124	1787242
M55	0	0	0	4	0	1	0	0	1	0	0	0	0	0	To the west of Old Maliabad village	43Q	752522	1787081
M56	1	0	0	2	1	3	1	3	0	0	0	0	0	0	Iranna/Virabhadresvara temple in Old Maliabad	43Q	752536	1787145
M57	0	0	0	1	1	0	0	1	1	0	0	0	0	0	Large horizontal hero stone along the South-eastern edge of Old Maliabad village.	43Q	752668	1787039

Kalmala Database

No.	Rel_Struc	Other_St	Inscription	Naga	Hero	Idol	Pitha	OtherIm.	Well/Cist.	Reservoir	Lithics (1/0)	Pottery (1/0)	Metal (Obj./Slag)	Mortar	Context	UTM zone	Easting	Northing
K1	0	0	3	0	0	0	0	0	0	0	0	0	0	0	Modern temple. The archaeological context is lost.	43Q	735410	1792224
K2	0	0	0	0	0	0	0	0	0	0	1	1	0	0	The section is exposed because of modern digging along the edge of the hill.	43Q	735063	1792144
K3	0	0	0	0	0	1	0	0	0	0	1	1	0	0	A mound to the east of the village and just south of the modern Idgah.	43Q	735239	1792140
K4	0	0	0	6	0	0	0	0	0	0	0	0	0	0	In the modern village close to the school	43Q	735624	1792138
K5	0	0	0	0	0	0	0	0	1	0	0	0	0	0	In the modern village towards the northern edge.	43Q	735672	1792194
K6	0	1	0	0	0	2	0	0	0	0	0	0	0	0	In the modern village towards the northern edge.	43Q	735769	1792185
K7	0	0	0	0	0	0	0	0	1	0	0	0	0	0	Outside the vilage on the North.	43Q	735690	1792720
K8	0	0	0	0	0	2	0	0	1	0	0	0	0	0	To the north of the village	43Q	736035	1792366
K9	0	0	0	0	0	0	0	0	0	0	0	1	0	0	To the south of the village on the easternmost hill	43Q	735651	1791890
K10	0	1	0	0	0	0	0	0	0	0	0	0	0	1	On the easternmost hill of Kalmala	43Q	735644	1791914
K11	0	1	0	0	0	0	1	0	0	0	0	0	0	0	On the easternmost hill of Kalmala on the north facing slope	43Q	735629	1791959
K12	0	1	0	0	0	0	0	0	0	0	0	0	0	0	On the easternmost hill of Kalmala	43Q	735673	1791946
K13	0	0	1	0	0	1	0	0	0	0	0	0	0	0	In the modern village	43Q	735664	1792116
K14	0	0	0	0	0	0	0	0	0	0	1	0	0	0	On the westernmost hill of Kalmala	43Q	734969	1792046
K15	0	0	0	1	0	0	0	0	0	1	0	0	0	0	North-east of Kalmala close to the Raichur-Lingsugur highway.	43Q	736607	1792193

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