

The Regional Landscapes of the Imperial City of Vijayanagara

Report on the Vijayanagara Metropolitan Survey Project

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From its founding in the mid-14th century AD, the Vijayanagara empire radically altered South Indian political, social, economic and ecological landscapes. Nowhere was this more the case than at its first capital, which over a few decades was transformed from a sparsely populated semi-arid rural landscape to one of Asia's largest and most cosmopolitan urban centres. As rapidly as it grew, the city collapsed even more abruptly – in a matter of months in AD 1565, following a major military defeat by the armies of the Deccani Sultanates that bordered the empire to the North. The archaeological remains of Vijayanagara and its Greater Metropolitan Region provide an extraordinary opportunity to explore the growth, transformation and abandonment of a large urban site. That Vijayanagara was simultaneously the political centre of a vast empire and a frontier settlement, located on the northern boundary of the Vijayanagara polity, enables us to explore processes of imperial growth and consolidation at what is arguably the most important location in any empire, *viz.*, the imperial capital.

Vijayanagara has attracted commentary and archaeological documentation from as early as 1800. Since the mid-1970s, intensive archaeological research at the site has been carried out by the Archaeological Survey of India, the Karnataka Department of Archaeology and Museums, and an international team of archaeologists, architects and art historians directed by John Fritz and George Michell.¹ The vast majority of this research has focused on the core of Vijayanagara, a roughly 20 km² region containing administrative and sacred architecture and dense residential zones. It is only since the late 1980s that areas beyond the city core have been the focus of systematic archaeological research, through the efforts of the Vijayanagara Metropolitan Survey (VMS) project.

The VMS began in 1987 as a program of systematic archaeological survey in the more than 400 km² area that we termed the Greater Metropolitan Region of Vijayanagara (GMR). Our goal was to situate Vijayanagara in its regional landscape and to understand how that region was transformed over its entire history, but with a special focus on the period following the foundation and expansion of the Vijayanagara state. We were particularly interested in the economic infrastructure of the capital, including the scale and organization of agricultural production and investment, and craft production activities in the

region. How was a city of a quarter-to-half a million people provisioned in this semi-arid, inland landscape? How was the landscape itself transformed as a result?

We were also interested in examining the region's settlement organization, defensive infrastructure, transportation routes and ideological and sacred transformations, both as an imperial landscape and as a region inhabited by a large, and culturally diverse, population.

Between 1988 and 1997, we carried out eight seasons of fieldwork and documented 736 archaeological sites. The fieldwork phase of the project was completed in December 1997. We are currently engaged in analysis and publication of the survey data. In this paper, we present a brief overview of the project and its results, and of our current understandings of settlement, land use and site distributions in the hinterland of the Vijayanagara imperial capital.

The Vijayanagara Metropolitan Survey

The Metropolitan Region

All field archaeologists are aware of the challenges of defining meaningful boundaries, whether of features,

¹ See e.g., Devaraj and Patil 1991a, 1991b; Fritz, Michell and Nagaraja Rao 1985; Nagaraja Rao 1983, 1985; Narasimhaiah 1992.

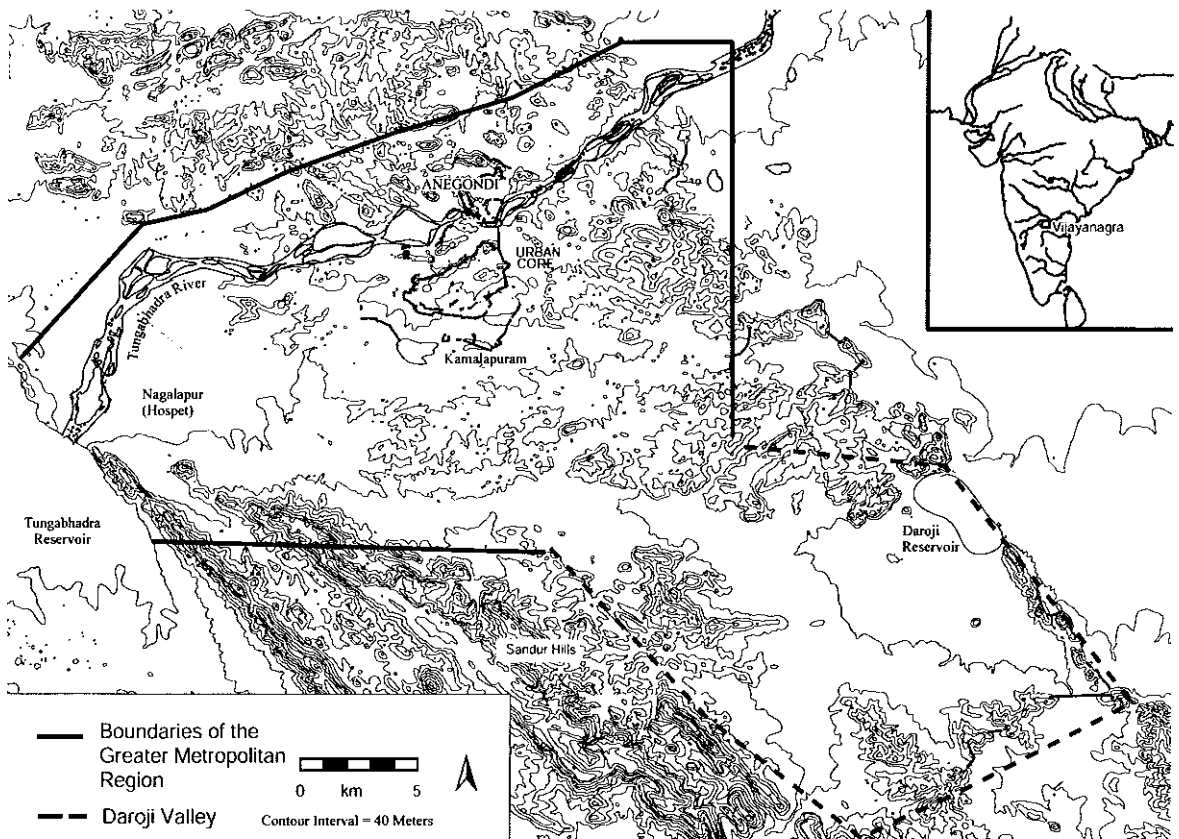


Fig. 50.1 The Greater Metropolitan Region of Vijayanagara

sites or survey regions. In identifying the bounds of the Vijayanagara Metropolitan Region (fig. 50.1) we took into account both natural and cultural features. The natural features were topographic, particularly the steep and dramatic ranges of outcropping granitic hills North of the Tungabhadra river. The southern slopes of these hills defined the northern boundary of our survey region. To the South, the metamorphic Sandur hills defined the region's southern boundary. Cultural features included both Vijayanagara-period constructions and more recent ones. To the West and Southwest, the modern Tungabhadra reservoir and city of Hospet (founded as a Vijayanagara suburb) have largely obscured Vijayanagara-period features.

The eastern and southeastern boundaries of the region proved the most difficult to clearly delimit, as here the terrain is more open, and traces of Vijayanagara fortifications extend out for a considerable distance. In the Southeast, the Daroji valley was bounded by both natural hill ranges and numerous fortification walls. The valley is also the site of a complex system of interlinked Vijayanagara-period irrigation reservoirs that has been studied by Morrison (in prep.). A conservative estimate of the GMR, that treats the Daroji valley as a separate topographic unit, yields an area of approximately 435 km²; including the valley, the Metropolitan Area extends over approximately 650 km².

Survey methods

In developing a strategy for surveying the large area encompassed within the Vijayanagara Metropolitan Region, we sought to balance practical and logistical concerns with a desire for comprehensive survey coverage. In particular, we wanted to attain a level of coverage that would allow us to locate and identify small, unobtrusive cultural deposits as well as larger and more dramatic remains such as settlements and structures. Since ours was the first project to consider Vijayanagara landscapes outside of urban contexts, we sought to document the broadest possible range of archaeological remains. Given this priority, it was quickly apparent that we would not be able to cover the entire region with equal intensity. We therefore developed a two-tiered sampling strategy, dividing the GMR into two sampling strata.

The first was a zone of intensive survey focused on the eight blocks immediately surrounding the urban core. The remaining blocks formed the second sampling stratum, for which we chose a more extensive survey strategy of focusing only on major cultural features of particular interest to various project members.

Regional survey is certainly not new to South Asia, though most such projects have focused on prehistoric remains. Our survey is unusual, however, both in the intensity of coverage and in the applica-

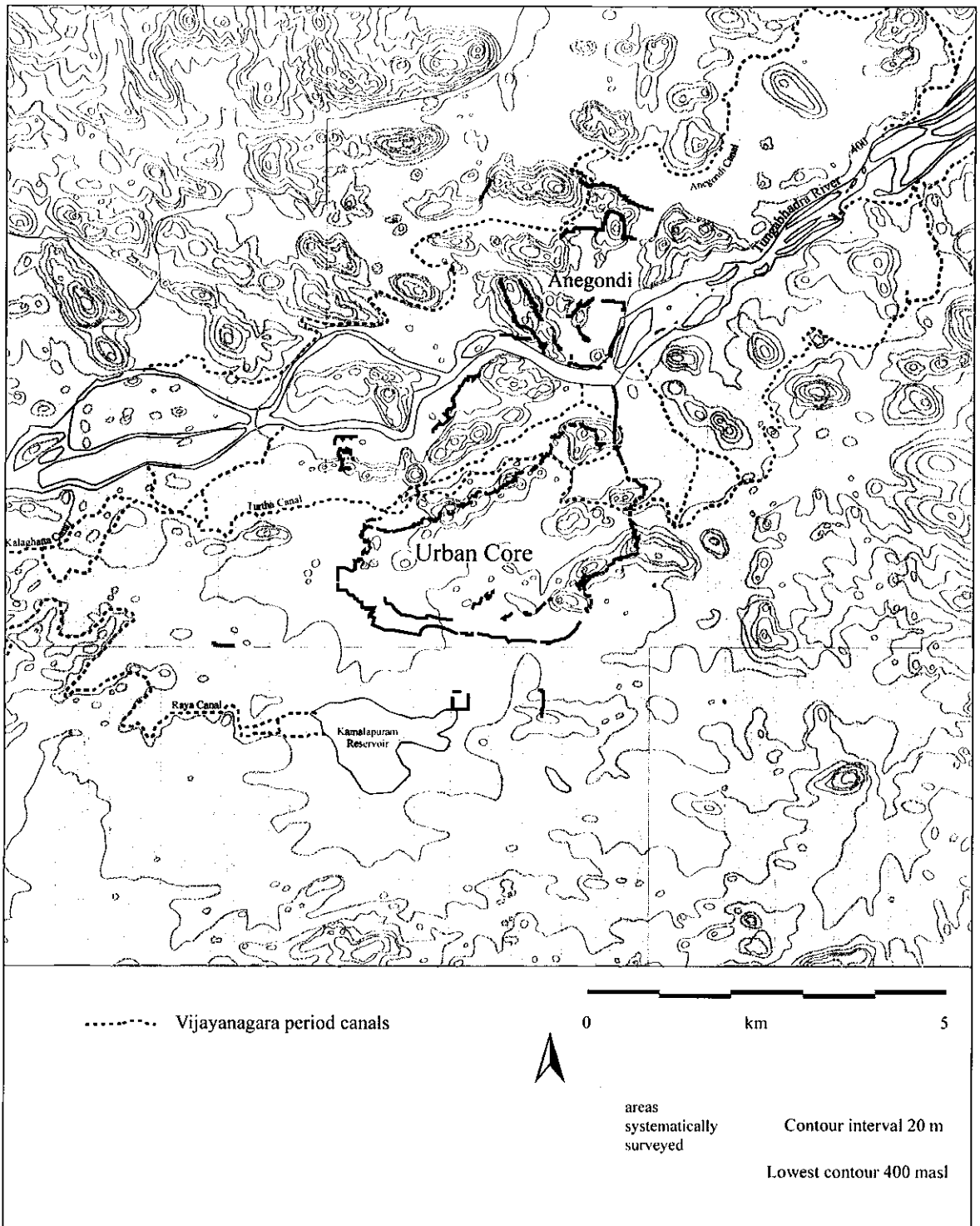


Fig. 50.2 Sample transects in the intensive survey area

tion of sampling strategies derived from statistical theory to assure representative coverage of the region. A 50 percent systematic survey was conducted in each of the eight blocks in the intensive survey area. This was accomplished by dividing each block into 18 North-South transects, each 250 m wide x 4.5 km long. Nine transects were selected for survey from each block, using a random numbers table

(fig. 50.2). Survey teams of three to five archaeologists systematically walked over each transect, recording all cultural features. Team members were spaced at intervals of 20 m and proceeded systematically in a South-North (or North-South) direction. In this way, even coverage was achieved. The close spacing of team members permitted the recovery of sites smaller than 20 m in diameter (in fact, more

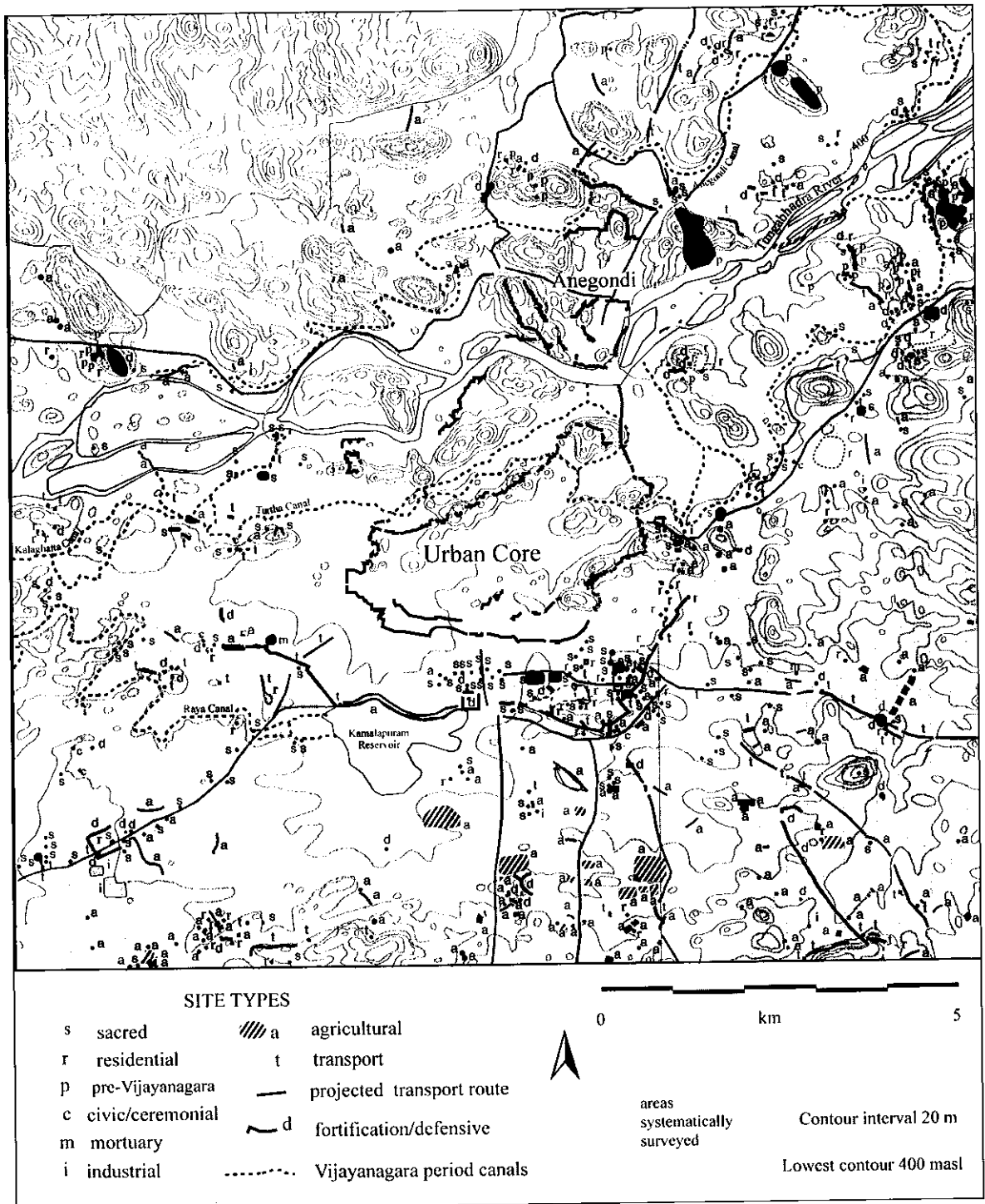


Fig. 50.3 Sites documented in the intensive survey area

than a third of the sites recorded were less than 10 m in diameter). A number of sites that fell outside of the sample transects were also documented, so our total coverage of the eight blocks is closer to 65-70 percent of the total area.

Site documentation involved recording site location on 1:25,000 base maps of the region; in later seasons we also used a Global Positioning System (GPS) to document site latitude and longitude. Sites were

mapped and photographed, and information on environmental and topographic setting, site layout, architectural remains, surface artifacts, and current land use and disturbance was recorded on standardized field forms. Systematic artefact collections were conducted. Preliminary interpretations of site function and chronology were also recorded.

A total of 657 sites was recorded in the eight blocks (fig. 50.3), with an additional 79 sites recorded in the

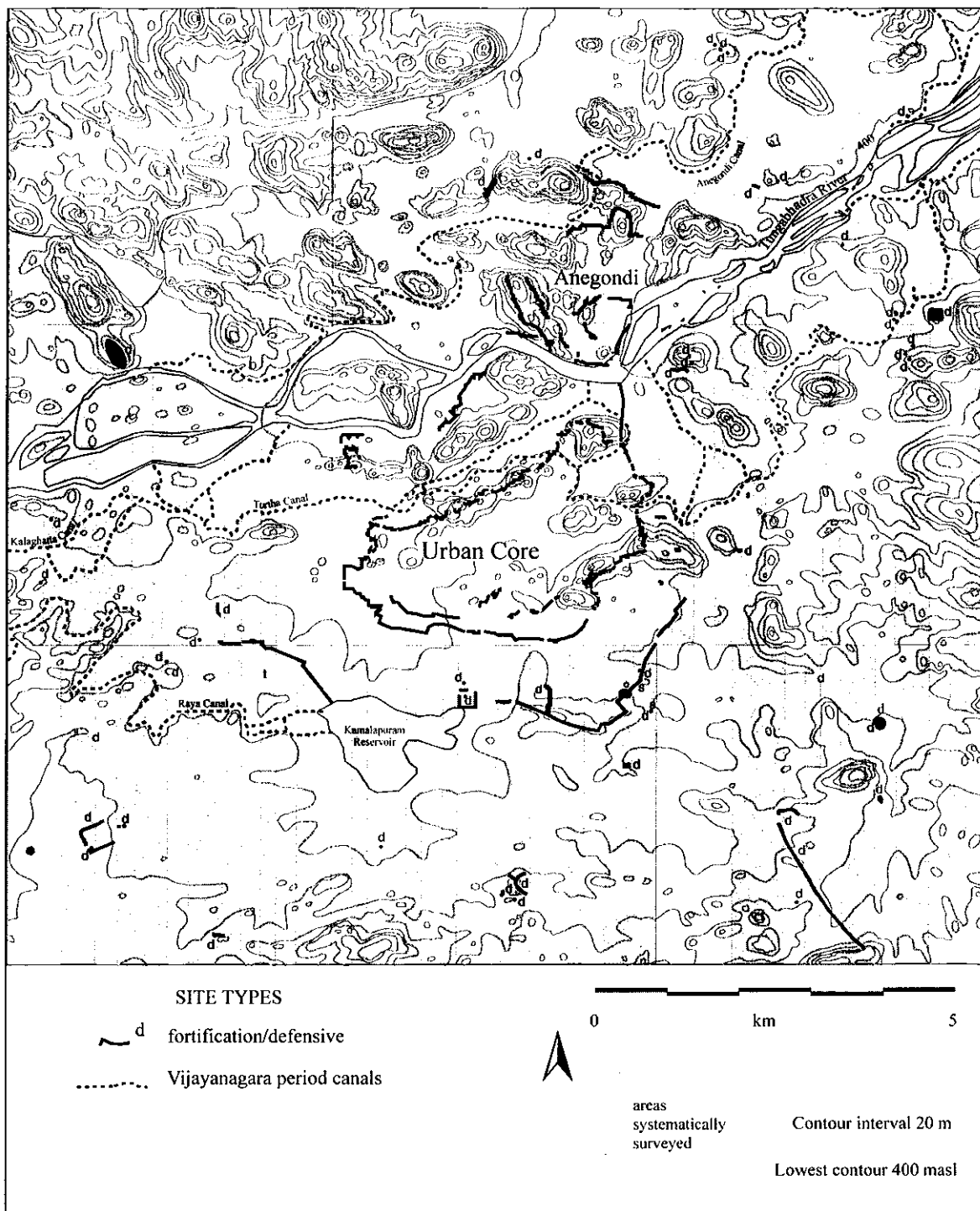


Fig. 50.4 Defensive sites in the intensive survey area

extensive survey region. Since this was a sample survey and we did not cover 100 percent of the survey area, the total number of sites in the region is significantly higher. Nonetheless, the patterns of site distribution were strong and representative of the entire region, so that from the sample we have an excellent understanding of the diverse cultural landscapes of the Metropolitan Region.

Vijayanagara urban landscapes

The following discussion is organized by site function. Many sites no doubt served multiple functions – agricultural reservoirs that supported roadbeds, for example. In this preliminary summary, we consider each site only once, according to its *primary* function; future analyses will take into account the full range of activities that occurred at each documented site.

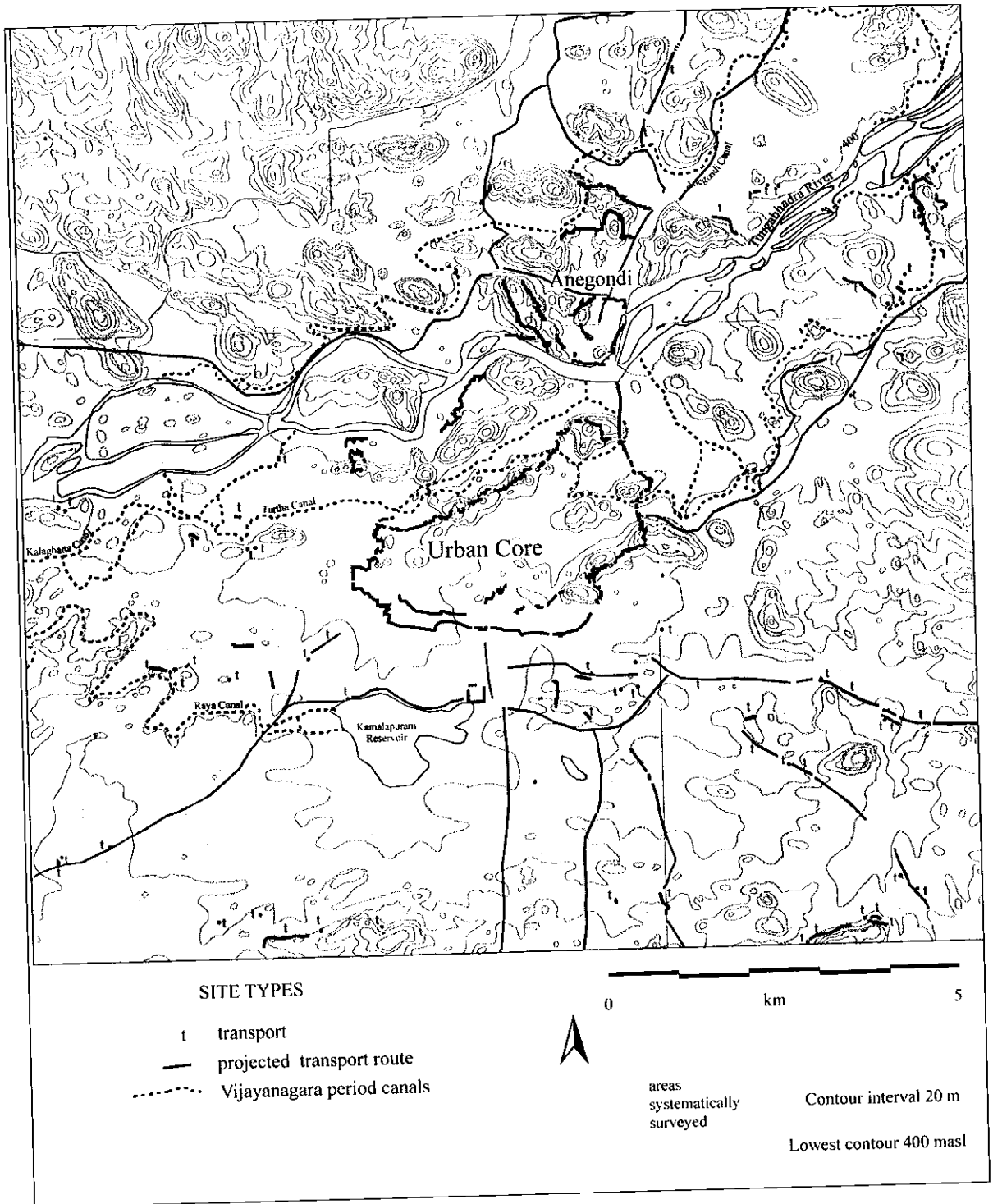


Fig. 50.5 Transport sites in the intensive survey area

Defence

Throughout Vijayanagara history, militarism and warfare played prominent roles in creating and shaping the empire and the Metropolitan Region. Although the widespread belief that Vijayanagara was enclosed within seven concentric rings of fortifications is incorrect (reflecting literary convention rather than actual layout), the capital was heavily fortified (Brubaker 2000). We recorded 62 defensive

sites in the intensive survey area (fig. 50.4) and the outermost fortifications extend nearly 30 km from the city core.

Defensive sites include fortification walls, hilltop forts, outposts, isolated bastions and horse stones. The impressive dry-stone masonry walls of the Vijayanagara Urban Core were probably largely completed by the early 15th century. By the early 16th century, this core area of dense settlement had expanded

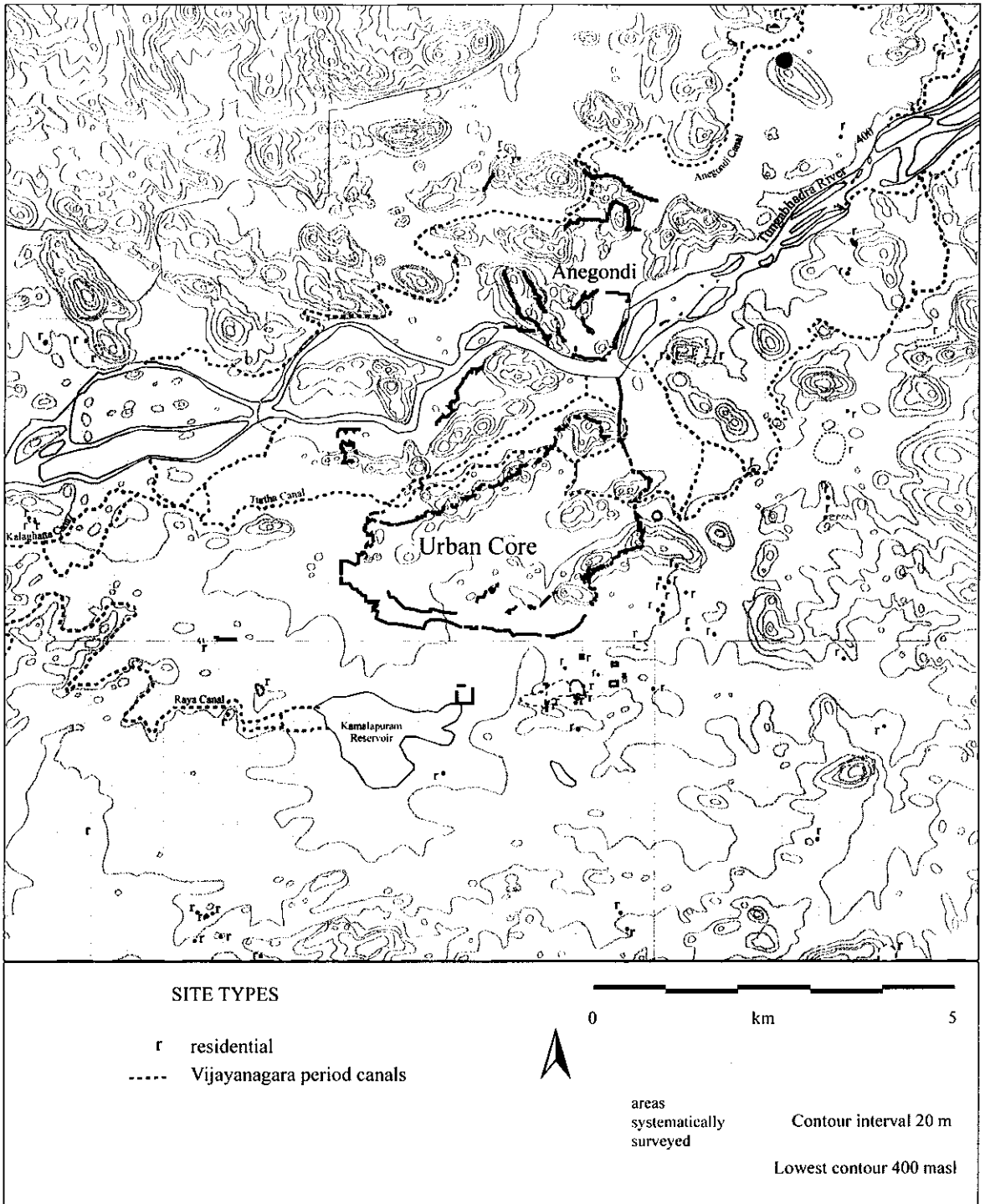


Fig. 50.6 Settlement sites in the intensive survey area

through the addition of an outer fortification wall that encompassed the pre-existing, walled town of Kamalapuram, a new settlement (Varadevi-amma-na-pattana) and the area in between.

However, travelers into Vijayanagara encountered the capital's defensive infrastructure long before reaching either the 15th or the 16th century city centre. Merchants, ambassadors, pilgrims and potential invaders alike moved through a heavily milit-

arized landscape from the moment they entered the Metropolitan Region. Both the defensive features and the troops that manned them would have provided a powerful visual manifestation of the vast military might of the city and the empire that it ruled. Along the northern outskirts of the Metropolitan Region lay a string of hilltop forts, each with excellent visibility of the others and of the urban core and low-lying regions South of the river. Similar forts are

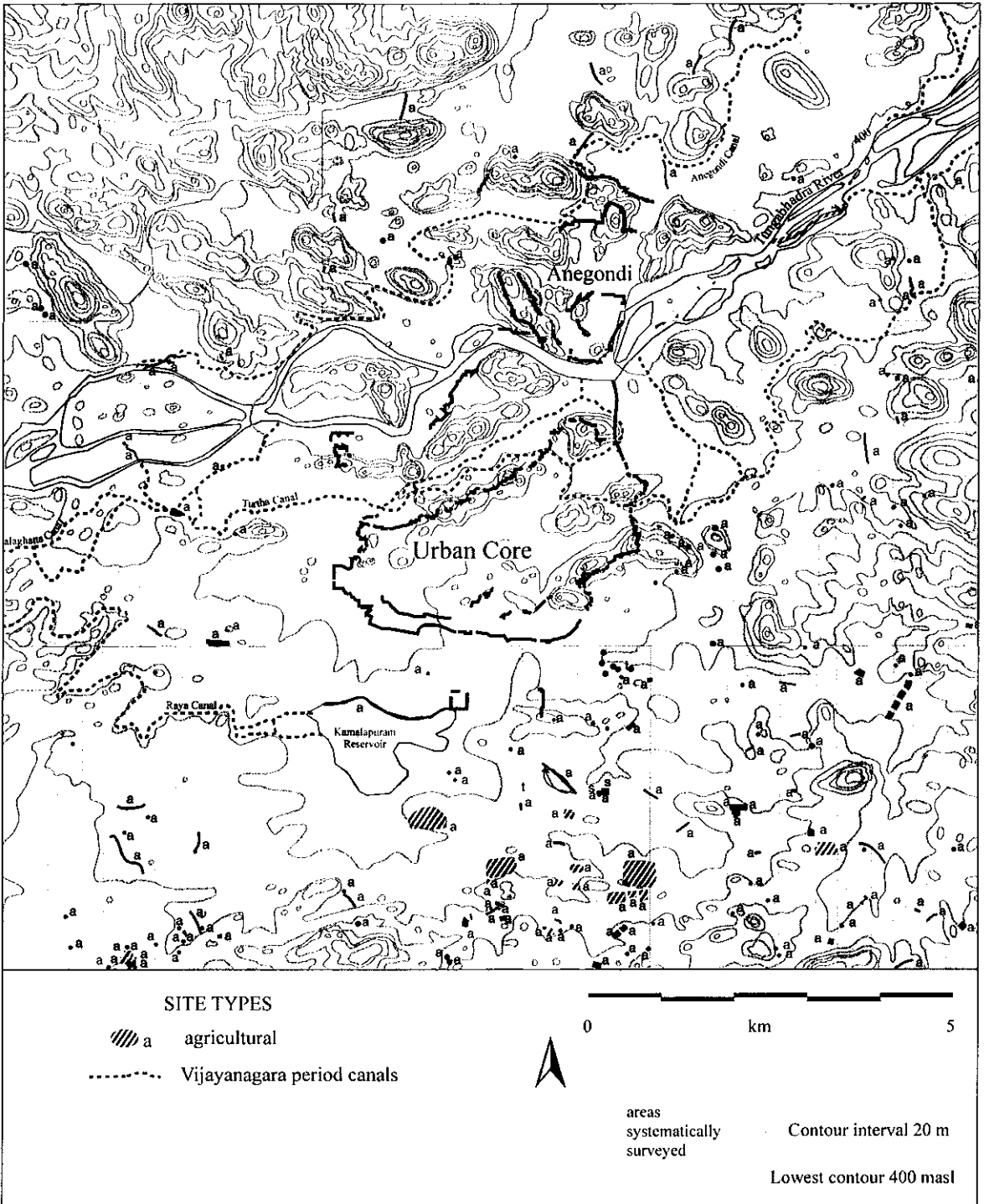


Fig. 50.7 Agricultural sites in the intensive survey area. The lines depict irrigation canals

found in strategic locations throughout the region, including the Daroji valley to the South.

Elsewhere, fortification walls spanned strategic passes and potential access routes. The builders of these walls were clearly concerned both with their strategic effectiveness and with the impact that they would have on those who passed through them. In many areas of the Metropolitan Region the walls were constructed of locally available stones, with

dry stone masonry only on the exterior face. In some more peripheral regions, the walls were less formally constructed, built of locally available unmodified cobbles. However, along major roads, walls and gates were almost always faced with cut or carefully fitted stones and were often quite massive and ornate, designed to impress and intimidate as well as defend.

Other defensive features included watch posts and bastions located along roads and near gates, often in

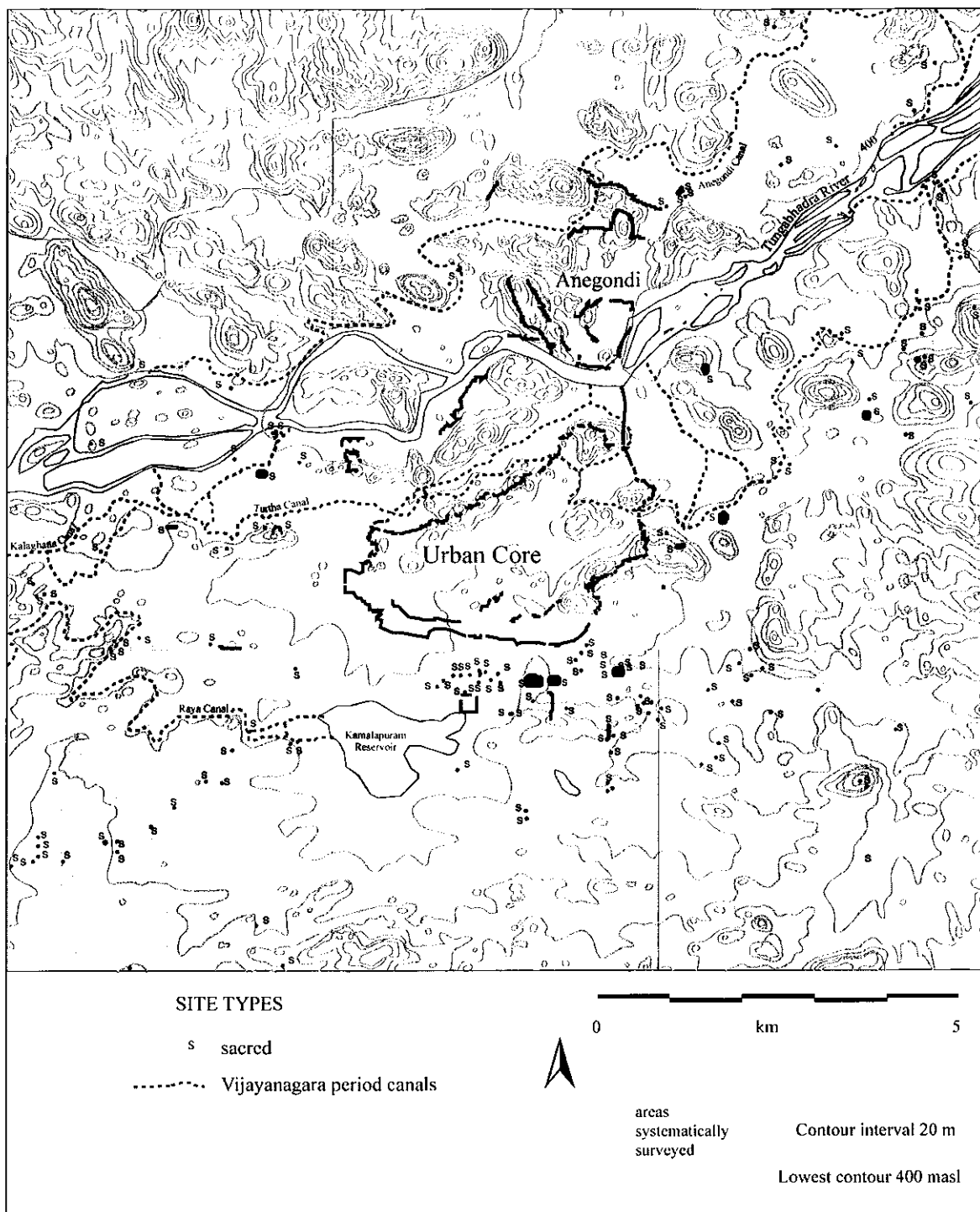


Fig. 50.8 Sacred sites in the intensive survey area

hilltop locations that allowed for high visibility. Also documented were rows of boulders known as 'horse stones'. These are long, closely laid, parallel rows of large boulders, each usually at least 1 m high and 1 m across. The stones were placed in low-lying areas, where they served to slow down or impede movement, particularly by invaders on horseback.

Transport

Control of movement in the Metropolitan Region was intimately related to defence as well as to the flow of resources and people into and out of the capital. Nearly 80 transport-related sites were documented in the intensive survey area (fig. 50.5). These include several broad roads, 30-60 m wide, that were the major routes of movement into the city core, as well as numerous smaller routes leading to temples,

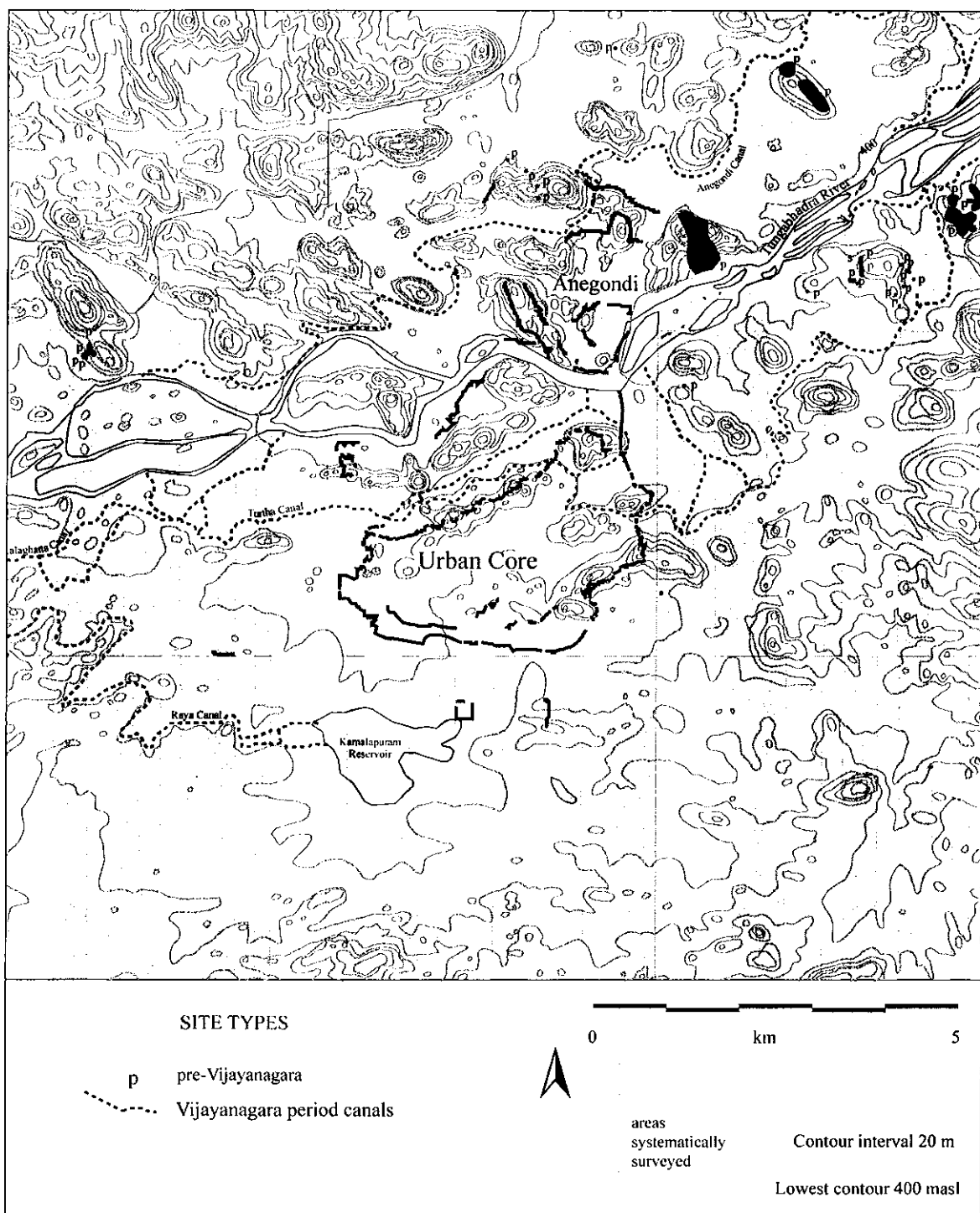


Fig. 50.9 Prehistoric and early Historic sites in the intensive survey area

settlements and agricultural fields. Both topography and cultural features (such as boundary walls) channeled large-scale movement along major roadways, where careful monitoring was possible (Morrison 2000). These routes were lined by gates, watchtowers, administrative structures, wells and shrines. Boundary walls, flagstone pavements or worn areas of sheet rock mark the location of roads. Linear distributions of structures and other features were particularly

important for identifying the major routes into the capital, many of which lie underneath or adjacent to modern paved roads. Rock-cut stairways defined routes of movement across steep outcrop areas, and elevated roadbeds skirted the edges of outcrops above low-lying irrigated fields. Gates in fortification walls ranged from large monumental entries to small passages wide enough only for a single individual to pass through. In many cases, roads ran along the tops

of reservoir embankments. The embankment of the massive, canal-fed Kamalapuram reservoir not only supported a road, but also constituted part of the outer city wall, even supporting several bastions.

Settlement

Inhabitants of the Metropolitan Region included royalty, imperial officers and soldiers, as well as agriculturalists, craft producers, merchants, laborers and even mobile pastoralists. Settlement beyond the urban core was discontinuous, with population mostly clustered into nucleated settlements (Sinopoli 1997). Seventy-three sites in the intensive survey area were classified as residential (fig. 50.6). We have already noted the dense zone of settlement within the outer city walls that emerged in the 16th century as the Vijayanagara Urban Core expanded outwards. Beyond the core area of urban settlement, the largest settlements ranged from 20 to 70 ha in area and were spaced at intervals of 2-4 km along major roads. The populations of these towns ranged from a few thousand to possibly as many as 10,000-15,000 inhabitants. They were typically walled and heavily fortified, and contained multiple temples and shrines. At least one (Venkatapur) revealed traces of an elaborate residential compound, similar in plan to structures that archaeologists in the Urban Core have referred to as 'palaces'. Many of these large Vijayanagara settlements are inhabited today, resulting in the destruction of many Vijayanagara-period features and making precise estimates of site size and content problematic.

Several smaller nucleated villages were also documented in the Metropolitan Region. These ranged from 1.5 to 6 ha in area, and were often located near areas of low-lying agricultural land. Architecture was less elaborate in these sites, and largely consisted of rubble wall foundations to structures that would have had wooden or earthen superstructures. Small one- or two-room shrines were present in most of the sites, as were relatively high densities of domestic artefacts. Some of these smaller settlements also were enclosed within masonry walls.

Other residential sites documented by the VMS included isolated houses or structures, many of which may have been occupied seasonally. Concentrated surface scatters of ceramics and other artefacts have also been interpreted as being associated with residential activities, as have rock shelters containing domestic artefacts. These last two site categories were probably occupied for brief periods by mobile groups, including pastoralists, local farmers engaged in collecting firewood, plants or other resources, and others. Written sources of the Vijayanagara period note that there were large military encampments on the city's outskirts, and some of the diffuse artefact scatters we find in open areas of the Metropolitan Region may relate to such activities.

Agricultural

Numerous sites in the intensive survey area provide strong evidence that a significant portion of the region's inhabitants were engaged in agricultural production. Agricultural sites accounted for nearly a quarter of all sites recorded – 157 (23.89 percent) of the 657 sites documented (fig. 50.7). Although today many of the upland portions of the Metropolitan Region appear dry and barren, during Vijayanagara times agricultural investment in those regions was extensive. Virtually all arable land in the Metropolitan Region was farmed, employing a variety of productive regimes. We have documented extensive deforestation and erosion during and after the Vijayanagara period, some of which posing special problems to local farmers (Morrison 1994; 1995).

Numerous irrigation canals, diverted from the Tungabhadra river, provided a small, but fertile, zone of perennial wet lands in the narrow bands of flat terrain along the river. Most of the Vijayanagara irrigation canals remain in use today, as does the canal-fed Kamalapuram reservoir. Although many of these canals have been modified through the years, some still employ parts of their original headworks.

In areas too high for canal irrigation, reservoir irrigation and dry farming predominated (Morrison 1993). In the eight blocks of the intensive survey, we recorded 63 reservoir embankments, varying from 20 m to more than 2 km in length. These masonry-faced earthen embankments served to impound seasonal runoff from upland zones and feed it through sluices to agricultural fields below. Some of the smaller embankments functioned to retain moisture for agriculture and stock watering within the impoundment basins themselves. Terraces and erosion-control walls were often associated with reservoirs, as were wells, which were constructed to take advantage of elevated water tables created by reservoir impoundments.

Several extensive terrace systems were documented in upland regions South of the city; the largest of these extended over 15-20 ha. The terraces were constructed of low rubble walls that served to limit erosion and retain soil moisture. Numerous smaller agricultural features were also recorded, including check dams, erosion-control walls and wells. As Morrison (1993; 1995) has documented, the net result of agricultural investment was the creation of a complex agricultural landscape, characterized by increased diversification of landscape use into a multitude of agricultural regimes, appropriate to the complex topography, resources, needs and populations of the region.

Industrial

The Sandur hills, which define the southern boundaries of the Metropolitan Region, are rich sources of

iron and hematite ores. Iron slag and other metallurgical debris were documented at more than 30 sites in the Metropolitan Region. In many, slag densities were low and may have resulted from smithing or redeposition from smelting sites. Six sites were identified as smelting sites. One of these was prehistoric (discussed below). The remainder, dated to the Vijayanagara period, are the remains of relatively small-scale smelting workshops, often located near reservoir embankments. Indications of copper working were found at a small, pre-Vijayanagara or early Vijayanagara village in the Daroji valley.

Not surprisingly, the most common evidence for industrial activities in the Metropolitan Region were sites associated with quarrying and construction. Distinctive Vijayanagara quarry marks were identified at nearly 60 sites across the region, and a few sites were classified primarily as quarry sites. In general, quarrying of the ubiquitous local granite took place near construction sites, to minimize transport costs. Evidence of uncompleted structures and images indicates that masons and sculptors traveled around the Metropolitan Region to building sites. Other evidence of craft production activities in the Metropolitan Region is relatively rare (Sinopoli 1998), due both to the ephemeral materials involved in activities as weaving, and to processes such as manuring that led to the redistribution of ash and other organic waste from production sites to fields across the Metropolitan Region.

Sacred places

The Vijayanagara Metropolitan Region was a sacred landscape, with 143 sites classified as being religious in function (fig. 50.8). Numerous additional sacred images and structures were found in residential sites and in other site categories. Sacred sites in the Metropolitan Region include large temple complexes with distinctive towered gateways or *gopurams*; several contain royal inscriptions attesting to their elite sponsorship. Many smaller temple complexes are also found throughout the region. These consist of a multi-room temple, often in a walled complex, with some associated shrines or structures. Most common are small single-room shrines and isolated images of deities carved on boulder faces or slabs. Hero stones, upright slabs with commemorative scenes, might also be included here.

Religious sites occur in a variety of locales: along roads and in settlements, near gates and watch posts, on hilltops and in association with reservoirs and agricultural features. In some cases, we can link their locations to areas with powerful associations in local sacred geography. For example, the small temple complex VMS-83 is located near one of the seven sacred gateways to the capital noted in Sanskrit texts. Other sites are linked to local tradi-

tions that this region is the ancient *Kiṣkindhā*, home of the god Hanumān and the site of important events in the *Rāmāyaṇa* epic. Images of Hanumān, carved on slabs and boulders, are common throughout the region and are particularly associated with gateways and entrances. Also widespread are images of fierce protector deities such as Bhairava and Virabhadra, and fierce goddesses. Images from 'folk traditions' are also widespread. Most common of these are Nāga stones associated with women's ritual activities.

Prehistoric landscapes of the Vijayanagara Metropolitan Region

Karnataka's Bellary and Raichur districts are well known for their rich prehistoric and early Historic archaeological remains; the VMS identified more than 30 sites ranging from Neolithic to early Historic in date (fig. 50.9). Isolated finds of prehistoric artefacts and temporally non-diagnostic lithics were also made throughout the survey region. A small number of the pre-Vijayanagara sites had been previously reported, such as the Neolithic ashmound locally known as Wali Ghat (VMS-26). A few others were noted by Bruce Foote in the late 1800s, though it is in some cases difficult to precisely match his reports with sites we have documented. In any case, the vast majority of these sites have not previously been documented.

The majority of pre-Vijayanagara cultural features date to the late Iron Age and early Historic periods. We link these periods together intentionally because of the problematic chronology in this region, where it is clear that megalith construction continued well into historic times. The sites typically lie within 1-2 km of the Tungabhadra river, most often on the slopes or upper terraces of high outcrop hills. We expect that many more such sites once existed in the region, particularly in areas South of the river, where many prehistoric remains were likely destroyed by the Vijayanagara-period building boom of the 14th through 16th centuries. Thirty-three sites were documented in the intensive survey area. Outside the intensive survey area in the Daroji valley is a large iron smelting and settlement site (VMS-110) occupied during the Neolithic and then again in the early Historic period, finally being modified into a reservoir in the Vijayanagara period. In this same general area are megaliths, rock art, artefact scatters, and a, now largely destroyed, Neolithic ash mound site.

Site types identified include seven megalith mortuary complexes – the largest of which may have covered 20-30 ha. Features at the cemetery sites included cairn megaliths as well as circular and other stone alignments, petroglyphs, and enigmatic features that we have tentatively termed 'crack features',

in which large boulders were deliberately placed in fissures in outcrops.

Water basins or small reservoirs were also common at these sites. Nine sites contained isolated cairn megaliths. These were typically located on the edges of high outcrops in areas of high visibility. In several instances, a larger cemetery was found within 100 to 200 m of these isolated cairns.

Five rock art sites were recorded; these were rock shelters or faces containing painted and pecked motifs. In addition, cemetery and settlement sites often contained rock art. Most common were pecked circular images with projecting lines. Small pecked cupules were also common on sheet rock surfaces at many sites.

Perhaps the most exciting of the late prehistoric and early Historic discoveries was the identification of seven settlement sites. It has long been a truism in South Indian archaeology that settlement sites of the late prehistoric period are both rare and difficult to find; we have numerous cemeteries, but cannot find associated settlements. Our work suggests that systematic survey can be used to successfully locate such sites, which at least in this region occur at the same frequency as the megalithic cemeteries.

Settlements were typically located on high outcrops and their slopes, which may contribute to their under-documentation. In several cases, settlements were paired with cemeteries, such as Settlement VMS-541, located on the northern slope of the outcrop containing Cemetery VMS-543. The majority of settlements were small, only 1-2 ha in extent. Others, however, were significantly larger, with one of 20 ha and another 40 ha in area, suggesting a settlement hierarchy of some sort (though site contemporaneity has yet to be conclusively established).

Settlements were identified by high surface densities of artefacts. These include Black-and-Red Ware, polished and unpolished Red Wares, and Black Ware ceramics, as well as Russet-Coated Painted Ware and a small number of Rouletted Ware sherds. Other materials found on the surface and in test excavations at one site (VMS-110) include stone, ivory, and lapis lazuli beads and shell ornaments, as well as lithics, iron slag, and faunal and botanical remains. This site also contained a well-preserved Neolithic component with a distinctive lithic assemblage and micaceous grey and pink ceramics. Radiocarbon dates from our test excavations date the early Historic materials from 175 BC to AD 75, and the Neolithic materials to 2465-2035 BC (two sigma ranges, calibrated). Intensive surface collections were made at all of the settlement sites and detailed analyses of artefact forms and intra- and inter-site distributions are currently underway.

Conclusions

Considerable work remains to be done to fully analyse the abundant evidence recorded by the Vijayanagara Metropolitan Survey project. In this paper we have barely touched on the many results of the project for understanding human occupation and transformations of the region during the Vijayanagara period as well as in earlier times. While research continues, what is already apparent is that the rise of the Vijayanagara capital influenced the region in significant ways. The net result was a complex landscape inhabited and shaped by many and diverse communities: agriculturalists, warriors, religious specialists, kings, craft producers, pastoralists and many others. Studying only the monumental cores of capital cities is not sufficient for understanding the impact of empires on their subjects or on the physical landscapes that those subjects inhabit, or indeed for understanding the ways in which the capital itself was able to exist. If this is true even at the centre of an empire, it is as much or more the case in more distant regions, which, in the case of Vijayanagara, have yet to even be begun to be explored archaeologically.

The VMS project also demonstrates the benefits of intensive and systematic approaches to regional survey. Such work, while labor intensive, allows the systematic and representative documentation of the broadest possible range of archaeological sites and features. This is as true for historic periods, such as Vijayanagara, as it is for prehistoric ones.

Acknowledgments

Over the course of a ten-year field project, many debts are accumulated. We would like to thank the Government of India and the Archaeological Survey of India for permission to conduct this research and the Karnataka Directorate of Archaeology and Museums for our long collaboration. Thanks also the American Institute of Indian Studies (AIIS) and its director, Dr. P.R. Mehendiratta, for supporting and sponsoring our work.

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