ONE

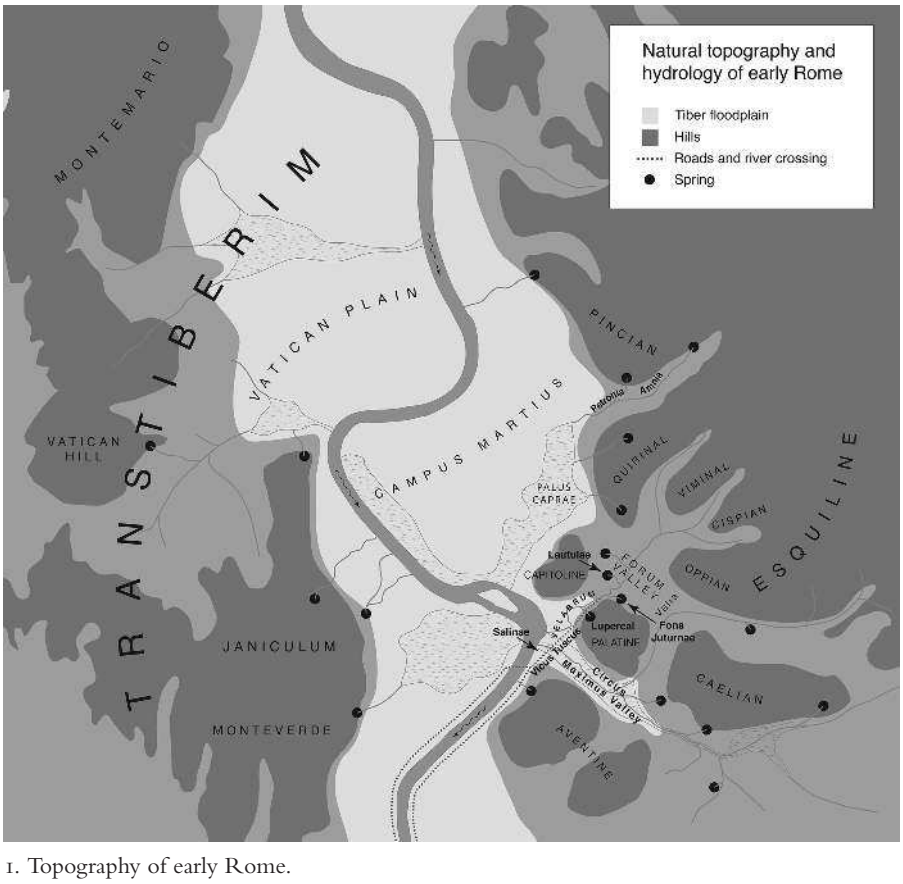
A BEND IN THE RIVER

δὶς ἐς τὸν αὐτὸν ποταμὸν οὐκ ἂν ἐμβαίης.

You could not step twice into the same river.

–Heraclitus

Whatever the genealogy of Rome's greatness, it is not premised on geography. The city's physical advantages are undeniably significant, but hardly peremptory; when all is said and done, the natural setting seems a poor match for such a glorious destiny. Ancient Rome had no natural seaport and never dominated Mediterranean trade or transport in the manner of Carthage, Rhodes, Syracuse, or Alexandria. Nor did it command a fabulously fertile hinterland. It enjoyed no natural resources of note except clay, tolerably decent building stone, several small springs, and (we may presume) some quickly depleted timberland. Its hills were defensible but its valleys marshy or flood-prone. In its favor, Rome stood near the middle of the bustling Mediterranean basin at an important intersection of land routes and the Tiber, the largest and most navigable river in the region. This was an important, if hardly decisive, catalyst for the city's rise. The city occupies the lowest viable location for a major settlement in the river basin. Along its final run to the sea, the Tiber's banks are low, unstable, and prone to shifting during heavy floods. The ruins of Ostia, the ancient port town at the river's mouth 25 km below Rome, tell a cautionary tale: it was gradually buried in alluvium over time and its northern district was washed away by the sidewinding current.



1. Topography of early Rome.

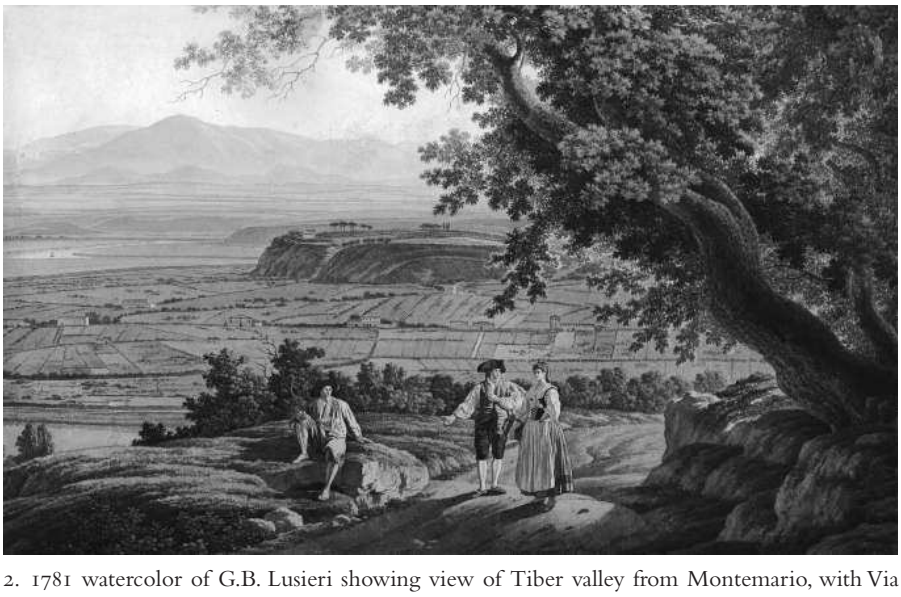
Between Ostia and Rome, no bridge could have kept a grip on the river's wandering banks. Only inland – at the cluster of hills by which the world knows Rome – can some stability be found. Here the Capitoline, Palatine, and Aventine Hills are nested around the outer edge of an easterly elbow bend in the Tiber (Fig. 1). River bends tend to amplify into loops over time, but here the barrier of hills thwarts this tendency, providing a short zone of equilibrium that permits bridging. The loop contains a stable island as well, a rarity for the Tiber. Yet the island provides no advantages for a permanent crossing; in fact, the earliest recorded bridges of Rome, the wooden Pons Sublicius and the stone Pons Aemilius, were both downstream from it. The whole Transtiberim ("trans-Tiber," modern Trastevere) region was foreign territory, controlled by the Etruscans until around 396 B.C.E. If the island had any strategic importance at all, that was because of its vulnerability. The divided river, fordable in low water, had to be watched and if necessary defended.

Rome's principal resource was thus its command over the movement of people and goods. As the population center closest to the Tiber's mouth, it was in a position to police and tax boat traffic heading downstream from a

large, ramified drainage basin (more than 17,000 km²) to the Tyrrhenian Sea routes and to defend the hinterland from either unwanted river crossings or river invasions from the sea. It also controlled desired movement across the Tiber. Doubtless there was a ferry near the river's mouth to serve a coastal road, but most merchants and travelers needing to turn inland from the sea or to reach the coast from the interior would have crossed the river at Rome. Early Rome profited especially from tariffs on salt transport. Precious coastal saltpans existed on both sides of the Tiber's mouth, but they were especially abundant on the right (west) bank. The salt mined there would be packed or towed upriver to the customs zone at the crossing, where presumably a tariff was assessed. At the foot of the Aventine Hill near the crossing was a district called the Salinae, meaning "saltworks" or "salt depots." The tariff was probably collected in kind and stored there for processing, distribution, or sale. The later consular highway called Via Salaria ("Salt Road") ran north from Rome into Latium and Sabine territory, paralleling the Tiber for some distance and eventually traversing the Apennines, the great ridge that forms the backbone of Italy. That road and many others radiating from ancient Rome survive today as modern highways sharing the names of their ancestral routes.

The hills of Rome east of the Tiber consist of eroded remnants of a massive tuff plateau overlying a thick layer of permeable river sand and gravel atop impermeable clay stones – a geomorphology congenial to springs, which have helped to sustain the city's population since prehistory (see Fig. 1). The tuff (called *tufo* in Italian, or, inaccurately, "tufa" in many English texts) is a soft, easily quarried igneous building stone. It derives from massive superheated ash flows of volcanic eruptions occurring some 600,000 to 300,000 years ago in the Alban Hills, southeast of Rome, and in the lake district to the northwest. The eruptions also produced basaltic lava, the much harder, charcoal-colored rock that Romans have always preferred for their paving stones. Very little of this *selce* (Latin *silex*) appears naturally in Rome itself. However, a huge lava flow extends from the Alban volcanoes to the famous tomb of Caecilia Metella along the third mile of Rome's most famous consular highway, Via Appia. It was still being quarried in the nineteenth century.

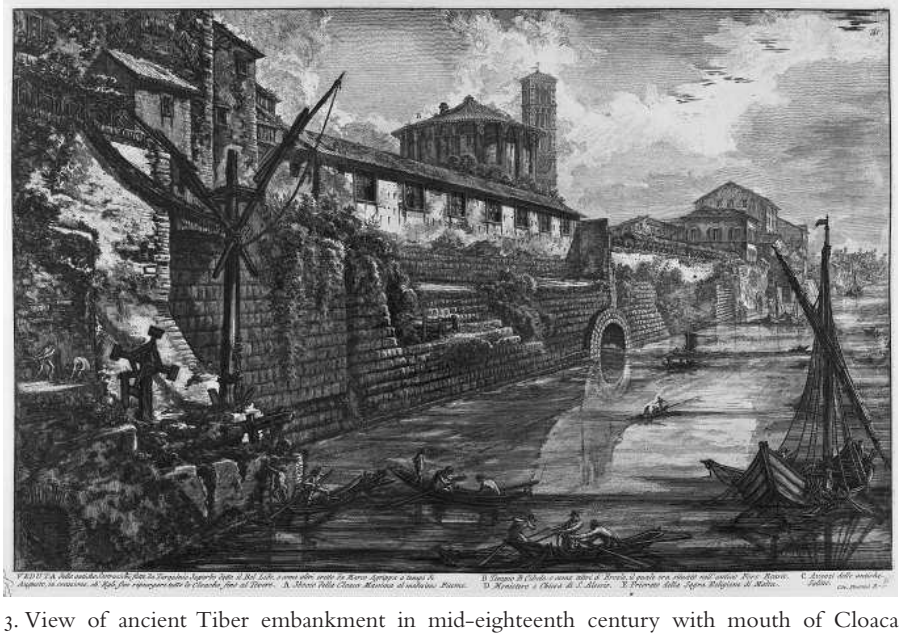
The Capitoline, Palatine, and Aventine Hills hedge in the river's island bend from north to south. Around this cluster rise several lesser hills (see Fig. 1): the Caelian east of the Palatine, and then north of these, four spurs projecting south or southwest from the tuff plateau called the Esquiline: the Oppian, Cispian, Viminal, and Quirinal. The valley that would become the Forum Romanum – or simply the Forum, as we will call it – starts at the southeastern foot of the Capitoline and runs southeast from there between the Palatine and the Esquiline. West of the hills is a large floodplain the ancients called the Campus Martius ("Field of Mars") with yet another spur bounding it to the north: the Pincian, famous to this day as the "Hill of Gardens." Across the river, in the Transtiberim district, rose the city's highest hill, the Janiculum.



2. 1781 watercolor of G.B. Lusieri showing view of Tiber valley from Montemario, with Via Flaminia in distance.
Source: British Museum 1980, 1213.7AN256668. © The Trustees of the British Museum.

Extending from it are the Vatican Hill to the north and Monteverde to the south. Monteverde is noted for its distinctive building tuffs, but the Janiculum, along with Montemario, which hems in the Vatican plain to the northwest, primarily comprise sedimentary mudstones and sandstones formed a million years ago when this region underlay a shallow sea. Montemario, the most imposing mass in the vicinity (Fig. 2), also provides a fine gray clay that has been quarried now for more than two and a half millennia.

The Tiber is a fairly old river. Consequently Rome's three great floodplains, the Campus Martius, the Vatican plain, and the lower Transtiberim, along with all the connecting valleys, are bedded with thick layers of sediment. In some places the alluvial bed can exceed 60 m, as it does under the Column of Marcus Aurelius in the heart of the Campus Martius; more commonly, it is 10–20 m thick. Human activity – the result of building collapses, leveling, terracing, excavation, etc. – has radically altered the terrain further, displacing hills and even creating them. For example, Monte Testaccio, a sizable hill southwest of the Aventine, consists entirely of discarded olive oil amphoras deposited over three centuries in antiquity, whereas the Velia, a natural saddle of land crossing the Forum valley from the Palatine to the Oppian, was excavated away during Mussolini's interventions in the 1930s. The volume of manmade debris within the ancient walls has been estimated to approach 93,000,000 m^3. The hills have also been extensively quarried for building stone and occasionally *pozzolana*, the volcanic sand that constituted an essential ingredient of ancient Roman concrete. Every hill is honeycombed with tunnels and pillared galleries. Occasionally a new one is discovered when a sinkhole collapses into it.



3. View of ancient Tiber embankment in mid-eighteenth century with mouth of Cloaca Maxima.
Source: Piranesi 1747–1778. Wikimedia Commons/PD-Art.

Numerous local springs and brooks drained into the Tiber and adjacent swamps of the Campus Martius, Trastevere, and Forum valley. Some have ancient names: Cati Fons, Petronia Amnis, Lautulae, Camenae, Fons Iuturnae. Others have appeared since antiquity. Thanks to its fairly high water table and permeable strata of sand, gravel, and tuff, Rome was a naturally well-watered locale for a modest population. Where springs did not suffice, wells generally yielded good results until modern times, when the groundwater grew too polluted for safe consumption. But there was a price to pay for such a well-watered site. Exposed to the river's vast drainage basin upstream, the city has always been prone to flooding. In fact Rome's core foundation myth, the tale of Romulus and Remus, begins with a flood that deposits the two infant twins onto the shores of the Lupercal, the wolf's lair beneath the Palatine.

Even under ordinary circumstances ancient Rome was well watered, and in places downright marshy. The Velabrum, a valley extending from the Tiber between the Palatine and Capitoline as far as the Forum (the Vicus Tuscus formed its southeastern boundary), was probably watered by the Lautulae, thermal springs at the north corner of the Forum valley, and other minor springs such as the Lupercal and the Fons Iuturnae. The Forum Brook, later enclosed within the Cloaca Maxima, a great stone-vaulted drain that still operates today (Fig. 3), also emptied into the Tiber here. Ancient authors report that at times the Velabrum could only be crossed by boat, but recent investigations show no geological evidence of a permanent swamp there. An unnamed

brook in the Vallis Murcia between the Palatine and Aventine would later be systematized into a drain running lengthwise under the Circus Maximus. Another ran southwest between the Quirinal and the Pincian; it is called today the Aqua Sallustiana. Farther south, the Petronia Amnis stagnated into a swamp called the Palus Caprae, a site associated with the apotheosis of Romulus. So goes one version of Romulus's tale: Having arrived at Rome in a flood, the founding hero made his exit in a swamp.

Strategically sited though it was from a macroscopic perspective, Rome could not have grown and prospered without mastering its own local landscape. In addition to the necessary skills in trade, diplomacy, and war, this required intensive water management and land reclamation, fortification of the inhabited hills, and the local production and provisioning of food. Such was early Rome's success at achieving these objectives that by the seventh century B.C.E. a tiny federation of hilltop settlements had grown together into a substantive town with pretentions to architectural monumentality, social and geographic cohesion, and the structures of civic life.

MAJOR HILLS OF ROME

Latin	Italian	English
Arx (spur of Capitolium)	Arce	Arx, Citadel
Mons Aventinus	(Monte) Aventino	Aventine
Collis Caelius	Celio	Caelian, Celian
Capitolium, Mons Capitolinus	Campidoglio	Capitoline, Capitol
Mons Esquilinus	Esquilino	Esquiline
Janiculum, Ianiculum	Gianicolo	Janiculum
Palatium, Mons Palatinus	Palatino	Palatine
Mons Oppius	(Colle) Oppio	Oppian
Mons Pincius	(Monte) Pincio	Pincian
Mons/Collis Quirinalis	(Colle) Quirinale	Quirinal
Mons Velia	Velia	Velia, Velian
Collis Viminalis	(Colle) Viminale	Viminal

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