

## Chapter 1

# Dawn and Bloom

“You can have a lord, you can have a king, but the man to fear is the tax collector” (Sumerian proverb).<sup>1</sup>



Grotte Chauvet (30,000 years ago)

The oldest evidence that allows us to relate to our ancestors is on the walls of caves in **Indonesia** (40,000 B.C.) and in Europe, where humans migrated during the last Ice Age. Of a life that could not have been only “nasty” and “brutish”, they have left us in the caves of Chauvet (30.000 BC), Altamira, Lascaux, paintings whose subtlety surpasses those of later millennia. They lived by hunting and gathering the natural products of the earth in a region that must have resembled today’s northern Scandinavia. We know that hunting large animals requires cooperation and coordination between individuals who are individually much weaker than their prey. (See how indigenous people hunted buffalo). Neuroscience shows that a critical development in the human brain involves the neocortex and the parts involved in communication.<sup>2</sup> Aristotle emphasized in *Politics* that humans are different from, say, bees because they are endowed with language for complex interactions.

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<sup>1</sup>Kramer, N. S.

<sup>2</sup>See Shultz and Dunbar (2010), McNally et al. (2012). Recent events have shown that solitary confinement is one of the harshest forms of punishment.



A crucial step in human development came with the invention of agriculture shortly after the end of the last Ice Age, 12,000 years ago. The two essential elements for agriculture are water and light (as anyone who has had to tend a lawn knows). After the last ice age, two places offered a perfect combination of light and water. They are clearly visible in a **photo** from space, despite the climate changes that have taken place over the past 15,000 years. The first is the dark green patch in what is now Iraq, in the lower plain of Mesopotamia, a flat area exquisitely embraced by the two arms of the Tigris and Euphrates rivers. (Mesopotamia, in Greek, “between the rivers”). The second is the Nile Valley.

### The fertile crescent



The region stretching from lower Mesopotamia to upper Mesopotamia, the Mediterranean coast, and the Nile Valley has been called the “fertile crescent.”<sup>3</sup> Geography determined the cradle of civilization as we know it. The story begins in the part on the left and at the top of the crescent, from Jericho to the north of Mesopotamia, “which had sufficient rainfall to support dry agriculture” (Garfinkel, 2013). Humans had passed through this hinge between Africa and the Euro-Asian continent for tens of thousands of years. At the end of the last Ice Age, the region offered favorable conditions between deserts, mountains, and oceans, with abundant sunlight for the introduction of sprouting seeds under seasonal rains. Anyone who

knows farmers knows that they are cautious people, reluctant to accept changes that might affect their livelihood, basing their decisions on tradition and long experience. The process of innovation in agriculture was slow and gradual. It probably began by fostering the growth of existing plants. All the archaeological record and common

<sup>3</sup>The term was introduced into high school textbooks by Breasted (1916), of the University of Chicago.

sense show that the first cities could not appear until agriculture produced a sufficient surplus to sustain them.<sup>4</sup> Our knowledge of this period is fragmentary, but good progress is being made. Göbekli Tepe, dated to the 10th millennium, was only discovered in 1963, and most of it is still buried.

### The Sumerian Takeoff



Mesopotamia is divided into two regions. The northern part is relatively high, while the southern part is flat: the elevation of Bagdad, 400 miles from the sea, is only 150 feet.

In northern Mesopotamia, the land is higher than the riverbed. It is rainfed and at the end of the last ice age there was enough rain to develop agriculture. This is where the oldest human constructions have been found. In this geographical context, villages represent the right scale of concentration of habitat for the capture of positive externalities (social and cultural interactions, cooperation in construction or major works, insurance). The productivity of the land was not sufficient to support cities. Archaeological evidence confirms that the first social organizations took place in villages. Some of

them evolved, through a slow process, into small towns.

In the south, the productive area has the shape of a diamond (or egg) inserted between two rivers. The Tigris (north) and the Euphrates, which originate in the mountains of present-day eastern Turkey, are subject to a strong annual cycle with a variation of more than sevenfold between the low (in September) and the high (around April-May), as shown in Figure ??.

Humans did not settle in the southern part until the late 4th millennium BC. This development may have been caused by two factors. First, a reduction in rainfall led to a receding of the water in the swamps of the plain (verify). Second, and more importantly, the geographical conditions required an evolution of social relations for strong coordination between individuals. Unlike in the north, the ground is not higher than the rivers (in some seasons it can be lower) and there is little rain. Protection

<sup>4</sup>See the condensed discussion in [Smith et al. \(2019\)](#), especially pp. 1529-130 and Figure 1.

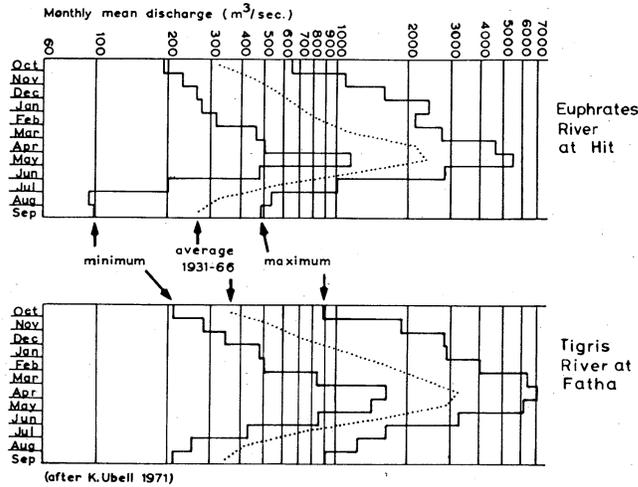


Fig. 1. Variations in Euphrates and Tigris River discharge.

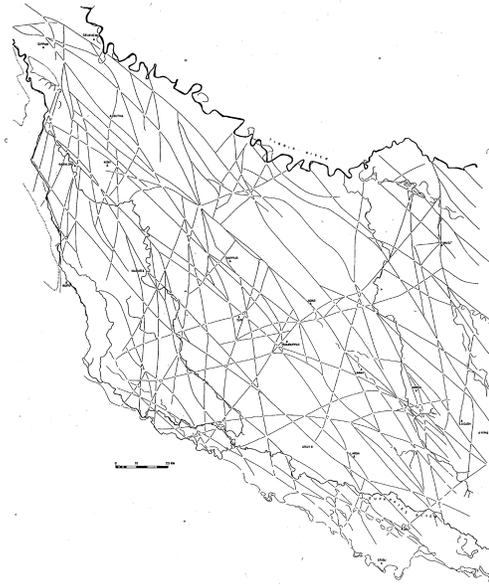


Fig. 6. Major ancient levees identifiable in LANDSAT imagery.

Figure 1.1: Discharge profiles and canals networks

Source: Adams (1981), Fig 1, p. 4, Fig 6, p. 34.

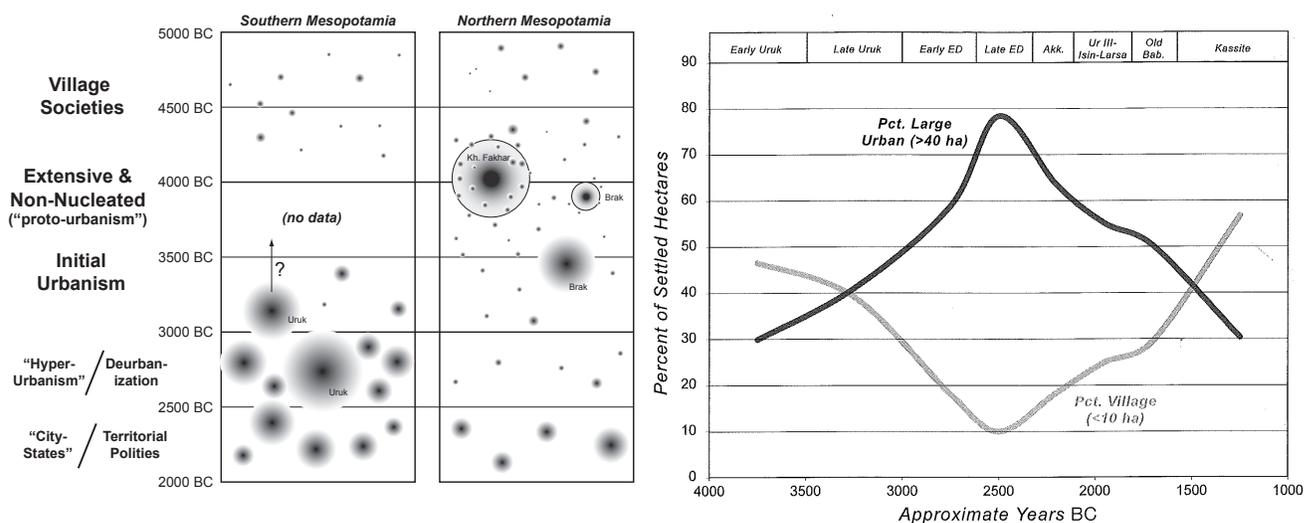
from the dangerous rivers, adaptation to the strong annual cycle (left part of figure ??) that could alter their course, and capturing the water when it was needed for irrigation required the construction of an elaborate system of dikes and levees. Traces of these networks are shown on the right side of the figure ??.

Thanks to good water management, these lands became extraordinarily productive with more than one crop per year. The yields, much higher than in the north, led to a population explosion, and the agricultural surplus enabled to the birth and growth of cities.

### Cities

The distinct and sequential development of cities in northern and southern Mesopotamia has been summarized by Jason Ur (2010) in a remarkable diagram, (Figure ??).<sup>5</sup> In the right panel, cities are defined by an area of more than 40 hectares, while villages are less than 10 hectares (1 hectare equals 2.5 acres). Therefore, the sum of the two populated areas is less than 100 percent. Note, however, that the “intermediate size” between 10 and 40 hectares is only 10 to 20 percent of the populated area. Cities must be at least this size to benefit from the increasing returns to positive externalities.

<sup>5</sup>Ur, Jason (2010). "Southern Mesopotamia," text. Focus on Sections 3 and 4 (540-545).



Source: Ur (2010, 2012).

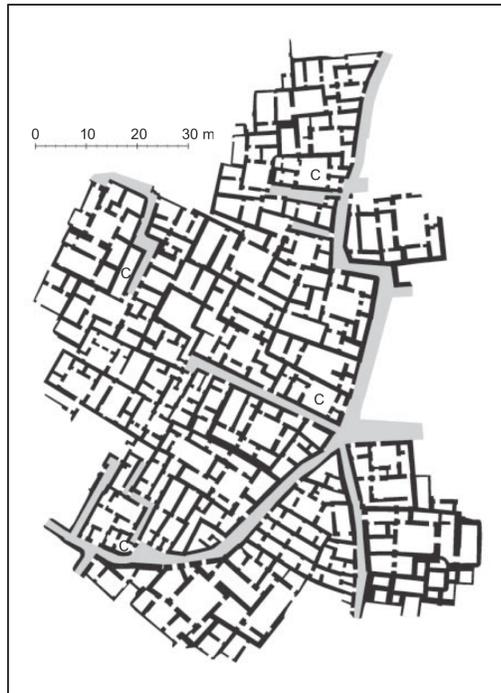
Figure 1.2: Urban evolutions and cities (3500-1000 BCE)

Lower Mesopotamia after 3000 B.C. was a hotbed for the first network of cities in human history. These cities were autonomous and formed independent states. In their contribution to the development of civilization, the city-states of Mesopotamia rivaled the city-states of pre-Renaissance Italy.

The interaction in cities and the emulation of people living in close proximity to each other stimulated innovation. The most spectacular was the invention of writing, which began as an accounting tool needed to manage agricultural resources (see below). However, emulation and rivalry between cities also lead to costly wars. These elements, along with changes in water regimes,<sup>6</sup> eventually weakened the cities, which became prey to foreigners attracted by their wealth. They ended up decaying in the midst of exploitative empires.

The next figure shows the remarkable similarity between neighborhoods in Ur, 2000 BC, and Ghadames today, at the crossroads of Libya, Tunisia, and Algeria. On the left, gray areas are public space; buildings identified as neighborhood chapels are marked 'C'.

<sup>6</sup>MORE on the Euphrates changing course, salinization, etc...



Neighborhood, Ur around 2000 BC  
day



Neighborhood, Ghadames (Lybia) to-  
day

Source: on the left: Ur (2012), Fig. 28.6, p. 547, based on Woolley and Mallowan (1976): Pl. 24).

Figure 1.3: Cities then and now

A necessary condition for a city is the agricultural surplus of the surrounding land. This agricultural surplus has been created by technological progress, the plow, draft animals<sup>7</sup> and especially irrigation. Cities exist because of increasing returns to scale in urban activities. In Egypt, with the late exception of Alexandria, cities remained small. They remained by and large administrative and temple centers, living off the extraordinarily fertile Nile valley. Why does Chicago exist? Going up the waterway of the Great Lakes and aiming for the center of the land mass of the North American continent, the most natural place to disembark is... Chicago. The location provided a starting point for building the city. Many activities generate externalities or require fixed costs that are only profitable if the local market is large enough. Specialization (e.g. Adam Smith's pin factory) increases efficiency. But specialization requires a market larger than the city, and therefore trade with other areas. In the cities of Mesopotamia, the standardization of some ceramics improved the efficiency of production. But this standardization requires trade to reach a variety of customers. The

<sup>7</sup>Garfinkel ch 3 p.100

specialization of a city creates a demand for goods that are not produced in the city. Cities, increasing returns, specialization, and trade are thus closely related, as Jane Jacobs and Paul Krugman have analyzed. Because shipping by water was much cheaper than by land, all the great cities were located near waterways (Fernandez-Armesto, 2001). The mechanism for the emergence of cities in the lower Mesopotamian plain of the fourth millennium B.C. is the same as for cities like Chicago or New York (which took off after the Erie Canal (1817-1825) connected Chicago to the Great Lakes).

The emergence of early Sumerian civilization in the alluvial lowlands of southern Iraq during the Uruk period—roughly the fourth millennium B.C.—...was characterized by the creation of a thriving heartland of several competing but culturally unified city-states, a form of social organization hitherto unparalleled in human history” (Algrave, 342-343).

The hydraulic civilization of Mesopotamia was remarkable in that it was a civilization of cities. This unique feature was made possible by the peculiarity of the two rivers, which covered a relatively large area. In such a plain, cities could find a suitable space around them to provide them with food with low transportation costs. The plain was also ideally located between the Mediterranean world and India, with relatively easy trade routes. (One can imagine the cities providing caravan stops for rest and trade with the local market). By contrast, in Egypt, the narrow valley of the Nile will not generate cities with strong economic activity (see the next chapter).

### **Inventions: accounting and writing**

“Our western civilization is unthinkable without writing. Though much more common for the preparation of bills or balance sheets than for the writing of poetry, in our imagination, writing is more connected with religion or literature. It is therefore natural to see the origin of writing as a desire to write religious or literary texts. But the oldest written documents from Mesopotamia teach us something different.” (Damerow et al. (1991).)

It is the need to account for economic activities that drove the invention of writing, in an evolution over centuries that is summarized in Figure ?? . Note that accounting naturally leads to mathematics, which originated in Mesopotamia.

The need for accounting is obviously a sign of social relationships, and most likely hierarchical relationships. It seems that the use of tokens was the first device. Later, these tokens were enclosed in sealed clay bullae, which protected the integrity of the contents like a piggy bank for children’s savings. In the next stage, the bullae

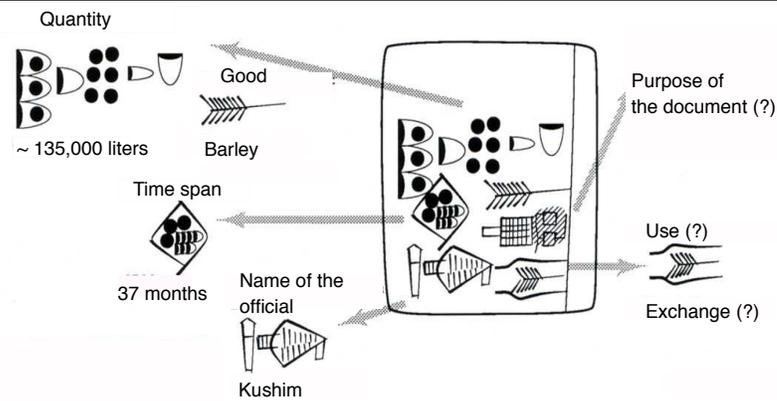


Figure 1.4: Example of cuneiform tablet (around 3000 BC)

Source: Damerow et al. (1991).

were replaced by clay tablets which, after drying, preserved the cuneiform characters (from *cuneus*, wedge in Latin) that had been marked with wedge-shaped styluses. The pictograms evolved into cuneiform phonetic writing during the third millennium BC. An example is shown in Figure ??.<sup>8</sup>

Statements and promises to someone can be communicated directly and verified directly with the person making the statement or promise. But when information needs to be transmitted to a third party who cannot enter into a direct relationship with the members of the original connection, then a written document becomes very valuable. In the transmission of information between people who are not directly connected, writing functions like money, allowing the transmission of purchasing power in transactions between people who are not directly connected. Writing was not invented to transmit stories and legends that were common knowledge and that some could recite by memory. Writing was invented to transmit information and agreements along extended links of people who, although not directly connected, were dependent on a network for their economic activity.

In accounting, there is first “counting”. Mathematics **began** in Mesopotamia. Hence, both writing and mathematics originated in the accounting of economic activities. From an exclusive concern with economic matters in the late 4th millennium BC, the realm of subject matter was gradually expanded to include legal, epistolary, and

<sup>8</sup>The name “Kushim” has been found on 18 tablets. On these tablets, a very rare combination of characters appears to represent a particular person. These characters were later identified as “KU” and “SCHIM”, hence the name “Kushim” for this person. ... From the type of goods handled by Kuschim, it can be assumed that he was in charge of storing goods for beer production. Almost all the texts with his name refer to crushed barley and malt.” (Damerow et al., 1991).



literary subjects in the 3rd and 2nd millennia BC.”<sup>9</sup> Egypt developed another system of writing but it seems to have come a few centuries later. Once the idea of writing was invented it could be adapted.

### **The wheel**

#### **Rulers and hierarchy**

In a city with a self-sustaining economy (together with the surrounding agricultural area and trade), activities of craftsmanship and trade are not routine. They require individual resourcefulness and incentive and generate numerous interactions between people who live in close proximity. Such a community of individuals has to make common decisions that require a delegation of power to a subgroup or a council with some form a representation. This representation does not have to be formal and could take the form of a council of wiser or richer individuals. The regime of autocracy with a single ruler who is supported by a hierarchy and a bureaucracy could never in history have a stable hold over a city.

More . . .

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<sup>9</sup>Jason 2012, p. 535.

	Period	Writing Phase	Historical Developments
3400		Clay bullae and numerical tablets	
3300	Late Uruk	Archaic texts from Uruk:	Beginning of large-scale settlement of Babylonia
3200		Writing Phase Uruk IV,	First urban centers
3100		Writing Phase Uruk III	Age of early civilization
3000	Jemdet Nasr		
2900	Early Dynastic I		
2800		Archaic texts from Ur	
2700	Early Dynastic II		Formation of large irrigation networks
2600			
2500		Texts from Fara	
2400	Early Dynastic III	Old Sumerian texts	Rival city-states

Figure 1.5: The creation of writing

Source: Englund (1991).

### The Temple and the Palace

In a standard configuration, a city had a palace and a main temple (see figure ). The cult of the city’s god clearly contributed to the cohesion of the city. The temples had domains and played an important economic role in production and storage. This “welfare role” that took place with the creation of cities would continue for millennia.

There may also have been rivalries between the temple and the palace, a situation that would recur throughout history. *more*

### Private and Public Property

It is possible that the king of a region, or the pharaoh in Egypt, owned all the land. But this kind of ownership is not the same as, say, state ownership in Soviet Russia. When you “buy” an apartment in London, even for millions, in most cases you are not technically the owner. You are the tenant of a long-term *lease* with an aristocrat. A large estate would be useless if it could not be farmed. Relatively small farms employ workers or sharecroppers. Given the incentives to farm, long-term leases allow investors in land improvement to reap the benefits, and long-term, sometimes very long-term (up to a century) leases make a lot of sense.<sup>10</sup> Thus, there is no clear

<sup>10</sup>Garfinkle (2005): “There are numerous archives in Mesopotamian history that document the crown’s reliance on entrepreneurs to manage its estates.”



Figure 1.6: Temples, palaces, and domestic houses in Eshnunna, c.2200 BC  
 Source: Ur (2012, Fig. 28.5, p. 542, compiled from Delougaz et al. 1967).

separation between public and private ownership of property. A land tax is also a form of government ownership of land.

More

### Contracts

See the example [financial contracts](#) on a Fordham University web site.

### Money

There were no coins. (Coins are an invention of the 6th century B.C.). But money did exist as a unit of account. See the chapter on money.

### A Text: The Epic of Gilgamesh

The [text](#) is one of the oldest writings in existence. Written in Sumerian on a clay tablet towards the end of the third millennium BC, it contains a narrative of the battle between [Gilgamesh](#), king of Uruk, and Aga, king of the rival city of Kish, which took place in the first half of the third millennium.

In the Prologue,

“In Uruk he built walls, a great rampart, and the temple of blessed Eanna

for Anu, the god of the firmament, and Ishtar, the goddess of love. Look at it today: the outer wall, where the cornice runs, shines with the of copper; and the inner wall, it has no equal. Touch the threshold, it is ancient.”

The walls show that cities were in competition with each other. They had to defend themselves, and that required an appropriate surplus.

Later Gilgamesh to the god Ea:

“Behold, what you have commanded I will honor and carry out. and will do, but what shall I say to the people, the city, the elders?”

The text indicates that the ruler of a city cannot simply rule by himself. There is some accountability, there is a council of elders. Later in the epic, Gilgamesh consults the Council of Elders about the decision to go to war. These are the people who are going to do the fighting. They support the war, while the elders advise against it. These councils can be seen as a form of “primitive democracy.” (Jacobsen, 1943).

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The intensification of fieldwork in northern Mesopotamia, the upper region of the Tigris- Euphrates basin, has revealed two cycles of expansion and reduction in social complexity between 4400-2000 BC. These cycles include developments in social inequality, political centralization, craft production and economic specialization, agropastoral land use, and urbanization. Contrary to earlier assessments, many of these developments proceeded independently from the polities in southern Mesopotamia, although not in isolation. This review considers recent data from excavations and surveys in northern Iraq, northeastern Syria, and southeastern Turkey with particular attention to how they are used to construct models of early urban polities.

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The world’s first cities emerged on the plains of Mesopotamia (modern Iraq and Syria) in the fourth millennium bc. Attempts to understand this settlement process have assumed revolutionary social change, the disappearance of kinship as a structuring principle, and the appearance of a rational bureaucracy. Most assume cities and state-level social organization were deliberate functional adaptations to meet the goals of elite members of society, or society as a whole. This study proposes an alternative model. By reviewing indigenous terminology from later historical periods, it proposes that urbanism evolved in the context of a metaphorical extension of the household that represented a creative transformation of a familiar structure. The first cities were unintended consequences of this transformation, which may seem ‘revolutionary’ to archaeologists but did not to their inhabitants. This alternative model calls into question the applicability of terms like ‘urbanism’ and ‘the state’ for early Mesopotamian society.

Mayshar Joram, Omer Moav and Zvika Neeman (2017), “Geography, Transparency, and Institutions,” *American Political Science Review*, 111 (3) 622-636.

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**Issues in Mesopotamia**

For Mesopotamia, one should have in mind the following general issues:

- Why did civilization begin where it did?
- What are the geographic characteristics of Mesopotamia and why do they matter for the evolution of the “state”?
- Where and why did cities arise?
- Irrigation and social organization; “Hydraulic civilizations”; “Oriental despotism” (Wittfogel).
- Why did accounting arise there?
- Absence of money in coins.

## APPENDIX 1

### Standard Periodization of Early Mesopotamia

Name	Years BCE
Ubaid Period	6000–4200
Uruk Period	
Early/Middle Uruk	4200–3300
Late Uruk	3300–3100
Jemdet Nasr	3100–2900
Early Dynastic Period	
Early Dynastic I	2900–2750
Early Dynastic II	2750–2600
Early Dynastic III	2600–2350
Dynasty of Akkad	2350–2150
Ur III Period	2112–2004
Old Babylonian Period	
Isin-Larsa Dynasties	2000–1800
First Dynasty of Babylon	1800–1600

Source: Garfinkel (201\*\*, Table 3.1).

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