

# 1 The Birth of the State

## The Neolithic Center of the Fertile Crescent

Western Asia was the first primary center of domestication of plants and animals, followed closely by China (Smith 1998; Harlan 1998; Bellwood 2005a).<sup>1</sup> The presence in the Fertile Crescent of vegetal and animal species that could be domesticated, along with the Crescent's situation as hub, were factors favoring the emergence of what has been called the "Neolithic Revolution." During the ninth millennium BCE, cereals (emmer wheat, einkorn wheat, barley), pulses (pea, lentil, bitter vetch, chickpea), and a fiber crop (flax) were grown and then domesticated (Tanno and Willcox 2006; Feldman and Kislev 2007; Colledge and Conolly 2007; Fu *et al.* 2012). Animals (goats, sheep, cattle, and pigs) were domesticated at the same time or slightly later. Agriculture and livestock farming encouraged a process of sedentarization of communities, rendering them able to harvest and to store food that could feed larger populations, and enabling them also to produce textiles and work leather. A change in social organization and a transformation in belief systems accompanied this revolution (Cauvin 1997). Cohabiting with domesticated animals brought in new diseases that would prove to be efficient weapons for the Neolithic centers in their relations with foreign countries (McNeill 1998b; Diamond 1997). From western Asia, cultivated plants and animals arrived in Turkmenistan and in the Indus valley (Mehrgarh) during the seventh millennium; these arrivals reveal terrestrial and perhaps maritime contacts. The diffusion of Asian species occurred as early as the eighth or seventh millennium in Egypt, Greece, and Crete. Even before the expansion of highly stratified societies, long-distance trade was noticeable; obsidian from Anatolia arrived in the Levant and in Mesopotamia, and shells were carried from the Persian Gulf to Mesopotamia, or from coastal Sind to Mehrgarh, during the fifth millennium. Lapis lazuli (originating in northern Afghanistan [Badakshan]), turquoise, and copper have been discovered at Mehrgarh and can be dated to the same period.<sup>2</sup> Lapis lazuli may have been traded as early as the sixth millennium.<sup>3</sup>

<sup>1</sup> The Highlands of New Guinea were another primary center for agricultural development in the ancient world. Unlike the Asian centers, New Guinea was too isolated – though Denham (2004) shows that this isolation was only relative – and it was technically limited in its ability to transform New Guinea into a pole of development and future core of a world-system. See Golson 1991; Bayliss-Smith 1996; Diamond 1997: 305ff. It is possible that vegeticulture – based on plants reproduced by vegetative propagation – also developed in early times in Insular Southeast Asia, before the Austroasiatic and Austronesian arrivals (Barton and Denham 2011).

<sup>2</sup> Discoveries in the earliest layers at Mehrgarh of beads made of lapis lazuli, a stone originating in Afghanistan, of turquoise, brought from Iran or Central Asia, or of shells, all point to a certain amount of social differentiation and long-distance trade.

<sup>3</sup> Moorey 1994: 85–92. The identification of lapis lazuli at Tell Sotto (Yoffee and Clark 1993: 69) and at Yarim Tepe I (Iraq), around 6000 BCE, has been cast into doubt (Warburton 2003: 121), although these

When did the first maritime journeys in the Persian Gulf and along the coasts of South Asia occur? Probably very early on, if we consider the prehistory of the Mediterranean Sea (on Cyprus, the site of Aetokremnos, inhabited by hunter-gatherers, is dated to the tenth millennium BCE). There is no reason to suppose that the (pre-) Neolithic Arab and Asian societies did not develop the same skills in navigation.

### ‘Ubaid, a Proto-State Phase

Favored by progress in irrigation, visible at Eridu, Larsa, and Choga Mami (marks left by the use of the ard have been discovered, dated to 4500 BCE), demographic and economic growth, and increasing long-distance trade in Mesopotamia: all fueled a first expansionary process from the sixth millennium onward, in the ‘Ubaid period (c. 5300–4100 BCE), at least during its phases 3 and 4. This expansion was also based on organizational innovations and a shared ideology, as shown in architecture, and in “seals with near-identical motifs at widely separated sites” (Stein 2009: 135). These changes led to competition between “households” as well as to hierarchies and growing social complexity (Lamberg-Karlovsky 1999: 181), which in turn encouraged the populations to invest in new techniques. A monumental architecture developed with the first proto-urban centers. As Stein expresses it, sites such as Eridu, Uqair (Iraq), and Zeidan (Syria) were “ancient towns on the threshold of urban civilization” (2009: 136). The Late ‘Ubaid phases clearly “provide the prototype for the Mesopotamian city” (Oates 2014a: 1484). The successive “temples” at Eridu in particular – public buildings probably serving various functions – marked the emergence of a new type of social organization, overtaking kinship-based structures. Exhibiting niches and buttresses, erected on terraces (prefiguring the later ziggurat),<sup>4</sup> temples became larger during the ‘Ubaid 4 period, toward the end of the fifth millennium. It is likely that a private sector already coexisted with a public sector, with interactions and structuring of power relations among the rulers of family households (extended families and their dependants), temples, and councils representing territorial communities. Within the concurrent process of political centralization, control over the temples may have already been a crucial issue (Lamberg-Karlovsky 1996: 82–84). The presence of fine ceramics and of stamp seals as well as evidence for a weaving industry in the “temples” of the urban center of Eridu<sup>5</sup> reveal an economic role that goes well beyond that of “food banks” redistributing agricultural resources.<sup>6</sup> “A Late ‘Ubaid cemetery at Eridu, however, reveals little evidence of the social differentiation attested to in the architecture of either Eridu or sites like Zeidan and Uqair” (Oates 2014: 1481).

Agriculture and livestock farming progressed during this period. Culture of the date palm (*Phoenix dactylifera* L.) probably began during the sixth millennium (see below). The fifth millennium saw the development of the olive tree in the Levant, and of grapevine culture in

sites did also yield carnelian and turquoise, stones imported from eastern routes. The blue stone at Yarim Tepe is most likely azurite rather than lapis lazuli (Casanova 2013: 24).

<sup>4</sup> Unlike the high terrace of Susa I, however, the Eridu terrace was apparently not stepped (Potts 2014: 26).

<sup>5</sup> Also observed at Tepe Gawra XIII (Pollock 1999: 87).

<sup>6</sup> Matthews 2003: 104, versus Stein 1994: 44. For mass-produced decorated pottery, there is no evidence of any general control by the elite over production, but vessels were indeed produced for this elite (Matthews 2003: 108).

Georgia, southern Turkey, Iran, and the Levant (McGovern 2003). The rise of tree fruit production went along with exchanges. This would become more apparent during the period of urbanization. Moreover, sheep farming developed in Iran and neighboring regions for the production of wool, thus laying the foundation for a textile industry.

The 'Ubaid culture expanded in different directions during the 'Ubaid 3 phase. The Mesopotamians acquired prestige goods and the raw materials they needed by building maritime and terrestrial networks, probably by exporting textiles, leather, and agricultural products. In the Persian Gulf, the Ubaidians practiced fishing and exchanged goods with coastal Arab communities. They brought in domesticated animals and plants, and allowed for the spread of shipbuilding techniques. 'Ubaid pottery has been discovered at over sixty sites in eastern Saudi Arabia and Oman; it is mainly dated to the 'Ubaid 2/3, 'Ubaid 3 periods and to a lesser extent 'Ubaid 4 (Carter 2006).<sup>7</sup> Contacts stopped during the 'Ubaid 5 period. Arab communities played an active role in exchanges, along the coasts and in the Arabian interior (Boivin and Fuller 2009), where trade networks carried myrrh and incense from the Dhofar and the Hadramawt (Zarins 2002). Large quantities of 'Ubaid (3–4, *c.* 4500–4100) pottery have been found at Ain Qannas (al-Hufuf oasis), located inland, as well as some remains of cattle and goats (Potts 1990: 44). Also traded were obsidian (from Yemen or Ethiopia?), shells, shell beads, dried fish, and stone vessels, through the oasis of Yabrin and al-Hasa.<sup>8</sup> Shells of the *Cypraea* type have been discovered in fifth-millennium levels at Chaga Bazar in northern Syria, imported from the Gulf.<sup>9</sup> An interesting result of the excavation on Dalma Island is the discovery of charred date pits (probably from cultivated date palms); these dates may have been brought there via trade exchanges, or perhaps they were cultivated on the island (they are dated to the end of the sixth/beginning of the fifth millennium). Remains of fruit have also been unearthed at as-Şabiya (Kuwait) dated to the second half of the sixth millennium (dates would have great importance in food and trade from the third millennium onward).<sup>10</sup> Recent genetic research tends to support a Mesopotamian origin for date-palm domestication (Rhouma *et al.* 2008). The presence of carnelian beads (a stone originating in Iran or the Indus) is noteworthy at Qatari sites, along with Mesopotamian pottery. Carnelian beads have also been discovered in Mesopotamia dating from the 'Ubaid period (Inizan 1999).

At that time, Arabia was undergoing a subpluvial phase (7000–4000 BCE) marked by a strong summer monsoon; the Intertropical Convergence Zone was located 10° north of

<sup>7</sup> Some sites, on Dalma Island for example, may date as far back as 'Ubaid 1/2, end of the sixth – beginning of the fifth millennium (Beech *et al.* 2000: 42–43). However, for Carter (2006: 58), the assemblage of Dalma Island belongs to the 'Ubaid 4 period, and according to H. Crawford (p.c.) to the 'Ubaid 3 period. Gypsum vessels found on Dalma Island, however, are similar to those discovered on Marawah Island, dated to the sixth millennium (Beech *et al.* 2005: 48). A site on Marawah Island yielded 'Ubaid 1 or 2 pottery that may have originated in southwestern Iran (mid-sixth millennium) (Beech *et al.* 2005: 46). 'Ubaid 1–2 pottery has been found at Halili, on the Bushire peninsula (Oates 2014a: 1490).

<sup>8</sup> Zarins 1997: 257–258 and fig. 1, 2002: 428.

<sup>9</sup> A necklace with obsidian beads from Anatolia and cowries from the Persian Gulf has been found at Arpachiyah (British Museum WA 127814). We have evidence of exchanges with Umm Dabaghiyah, in northern Mesopotamia, that show a specialized trade in hides as early as the sixth millennium (onager, gazelle) (Silver 1995: 144). Rice (1994: 217) considers obsidian blades found at the site of Dosariyah as coming from Anatolia.

<sup>10</sup> Beech *et al.* 2000: 42; Tengberg 2004: 59.

its modern position. Weaker monsoons and a southward shift of the Intertropical Convergence Zone were accompanied by growing aridization; this put an end to the use of the inland routes at the start of the third millennium (Zarins 2002: 409ff.).<sup>11</sup>

The first Mesopotamian explorations in what was known as the “Lower Sea” favored the diffusion of shipbuilding techniques. Excavations at as-Şabiya (Kuwait, ‘Ubaid 2/3 period) have unearthed bitumen which was used to caulk reed ships. The site yielded a terracotta model of these boats, which were of Mesopotamian design.<sup>12</sup> Probably carried on the inland routes of Arabia, obsidian which may have come from Yemen was discovered along with the remains of these boats. As-Şabiya yielded a painted disc featuring a boat with a sail supported by a bipod mast (Carter 2006: 54–55 figs. 3 and 4). Clay boat models from the cemetery of Eridu also show the use of a sail at the end of the ‘Ubaid period;<sup>13</sup> these models appear to represent wooden ships, as does the model found in Syria at Tell Mashnaqa (Potts 1997: 125). The role of the ‘Ubaidians should not obscure the existence of other networks, operated by Arab communities, along the coasts and in the interior of the Arabian peninsula (Cleuziou and Méry 2002: 303; Boivin and Fuller 2009: 126ff.). The location of the sites in the Gulf suggests that the ‘Ubaid pottery found beyond Bahrain was probably carried by local communities, who used seagoing ships,<sup>14</sup> as revealed by tuna fishing – tuna was eaten and prepared for export by Omani communities during the fourth millennium. This pottery was considered a luxury item: sites in outlying areas produced imitations of the ‘Ubaid pottery (Carter 2006: 59).

The ‘Ubaid culture also extended eastward into Khuzistan, where Susa constituted a proto-urban center. It also extended north of Mesopotamia (especially during the Late ‘Ubaid phase), toward routes already linking Central Asia, Afghanistan, and the upper valleys of the Tigris and the Euphrates: one finds Ubaid pottery as far as the Transcaucasus region, and lapis lazuli from Afghanistan is present at Tell Arpachiyah and Nineveh, in northeast Iraq; Tepe Gawra yielded lapis lazuli, as well as carnelian from Iran, but the blue stone could be more recent at this site.<sup>15</sup> Pottery from Susa, dated to the late fifth millennium, has been found further east in Iran, in a

<sup>11</sup> In fact, the phase of aridization began around 3200/3100 BCE; see below. The abandonment of trans-Arabian routes during the third millennium would be accompanied by the rise of maritime routes (first located on the Arabian coast, Dilmun was situated on Bahrain Island as of the middle of the third millennium).

<sup>12</sup> Carter 2002: 20, 21–23. Bitumen had been mixed with other substances, to make it easier to use. Moreover, the site yielded pits of dates. At ‘Ain as-Sayh, a coastal site near Bahrain, ships were caulked with Mesopotamian bitumen, during a period lasting from the end of the sixth to the early fifth millennium, but this dating remains uncertain (Carter 2002: 16, 24).

<sup>13</sup> Qualls 1981, quoted by Cleuziou and Tosi 1994: 746. Qualls studied 403 representations of boats prior to 2000 BCE.

<sup>14</sup> Carter 2002: 14, 24 (see the coastal sites with ‘Ubaid pottery on Dalma Island and on the west coast of Oman; in the central gulf region, the sites with ‘Ubaid pottery “demonstrate a true settlement hierarchy,” from the coast to the interior).

<sup>15</sup> Potts notes the appearance of lapis lazuli in Level XIII (4500–3900), but Casanova places it in Level XI (beginning of the Late Uruk, c. 3200 BCE) (2013: 29). Tepe Gawra also yielded alabaster, “steatite” and serpentine, which came via the Khorassan route; Gawra and other sites, such as Sialk, also contain turquoise, probably from Ma’dan (Nishāpūr) as early as 4000 BCE (and even earlier at Gawra). Gold and silver artifacts were present at Gawra during the fourth millennium; copper objects (from melted copper) appear in Level XII dated to the late fifth millennium.

region rich in copper. The quest for copper obviously played a crucial role in ‘Ubaid and ‘Ubaid-related expansion, as shown by the ‘Ubaid “colony” of Değirmentepe, which was located near substantial copper, lead, and silver sources (Oates and Oates 2004).<sup>16</sup> Trade in copper and exotic goods favored a process of social differentiation, not only at Gawra, which Oates (2014: 1481) considers as “a northern Ubaid settlement,” but also at Zeidan (12.5 ha), in northern Syria (Euphrates River valley), a site revealing monumental architecture.<sup>17</sup> Zeidan yielded evidence for copper metallurgy and administrative activity (a stamp seal has been found, dated to *c.* 4100 BCE) (Stein 2009: 134). At Susa, a settlement founded around the end of the ‘Ubaid period rapidly grew to cover 10 ha. It included a high platform bearing a building (residence, warehouse). Seals and imprints have been discovered, with geometric and sometimes figurative designs (the motif of the “master of animals” is already present) (Pollock 1999: 90ff.).<sup>18</sup> During this period, Mesopotamia formed itself into a “central civilization” (Wilkinson 1995a). This expansion was accompanied by new social complexity in different regions, with the probable emergence of servile labor regulated by family chiefs.<sup>19</sup> One notes the use of stamp seals in Khuzistan, Luristan and Fars,<sup>20</sup> as well as in areas north of Mesopotamia.

The homogeneity of the material ‘Ubaid culture implies active exchange networks, at the local level and between regions. Parallels established between the northern temple at Tepe Gawra XIII and buildings at Uruk (tripartite floor plan,<sup>21</sup> orientation, elaboration) reflect some cultural community and shared beliefs. Religion must have played an important role controlling communities and exchange networks. In 1936, 1952, and 1954, A. Hocart had already pointed out the possible religious origin of trade, and of social and state institutions. Moreover, ceramics made on the turnette (slow wheel) and the use of stamp seals can be observed throughout the ‘Ubaid area: the diffusion of these technologies contributed to the homogenization of this space (Nissen 2001). A marked increase in the use of seals and mass-produced pottery (suggesting the distribution of rations) signal new social complexity. Seals and other devices reveal administrative activity. At Tell Abada, in east central Iraq, in ‘Ubaid buildings, tokens have been found in pottery vessels, probably reflecting the keeping of records (Oates 2014: 1482).

<sup>16</sup> ‘Ubaid material has also been recovered at Kara Höyük and Norşuntepe.

<sup>17</sup> The site is dated to about 6000 to 3800 BCE (Stein 2009).

<sup>18</sup> A cemetery of this period contained copper material (see below).

<sup>19</sup> McGuire Gibson, [http://oi.uchicago.edu/OI/AR/01-02/01-02\\_Hamoukar.html](http://oi.uchicago.edu/OI/AR/01-02/01-02_Hamoukar.html). Frangipane 2000: 226–227.

<sup>20</sup> Pittman 2001a: 229. A much earlier use of stamp seals can be observed in villages of the Hassuna culture (Syria and northern Mesopotamia). For Lamberg-Karlovsky (1999: 177), this “revolution in communication” intervened “in the ‘domestic mode of production,’” at the level of extended families. These stamp seals were later used in the Halaf culture, which came after the Hassuna culture. The Hassuna culture was the first to exhibit social differentiation; Halaf pottery was produced by specialists (Pittman 2001b: 411). Stamp seals were also used in the Samarra culture (as found at the site of Tell es-Sawaan, 5500–4800). The site of Arpachiyah yielded a sealed bulla. The Samarra culture shows distinct “households” (extended families), in tripartite houses with T-shaped floor plans, each containing ten to twelve rooms. These households must have included clients and dependants.

<sup>21</sup> “The standard Mesopotamian tripartite building first appears on the early Pre-Samaritan levels of Central Mesopotamia (Tell es-Sawaan). It is also present in the south in the earliest level at ‘Ouei” (Oates 2014: 1487).

The expansion of the 'Ubaid culture during the fifth millennium clearly shows the new dimension of the exchange networks, brought about principally by the rise of copper metallurgy. This technology appeared during the sixth millennium in Anatolia, and during the fifth millennium in Mesopotamia, Iran, Pakistan, and southeastern Europe.<sup>22</sup> It then spread to the north of the Black Sea (4400 BCE), and on to the Middle Danube valley (4000 BCE), to Sicily and the southern Iberian peninsula (3800 BCE).<sup>23</sup> This progression provides clear evidence for the expansion of exchange networks. Metalworking reached the Asian steppes from southern Russia during the fourth millennium. It would later spread to northwestern Europe around 2500 BCE. Copper and then bronze metallurgy required a supply of metal ore and an ability to transport it; thus new trade networks were set up on a larger scale, within social contexts that implied profound ideological and organizational changes. The 'Ubaid civilization acted as a catalyst for societies further north and east of Mesopotamia, with long-distance trade now involving a large area.

The end of the 'Ubaid phase *c.* 4100 BCE seems to have coincided with a period of global cooling and aridization in the eastern Mediterranean region and the Levant (Staubwasser and Weiss 2006). In Susiana, "even the Acropole of Susa was abandoned *ca.* 4000" (Wright 2013: 52). The 'Ubaid period prefigures the flowering of the Sumerian civilization during the Urukian period.

## The Urban Revolution and the Development of the State in Mesopotamia

### *The First Half of the Fourth Millennium BCE*

New progress in metallurgy was noteworthy during the fourth millennium. Anatolian sites operated mines (mainly in the region of Ergani) and practiced ore smelting (Çatal Hüyük, Tepeçik, Değirmentepe, Norşuntepe ...). There are clues indicating copper metallurgy at Mehrgarh (Pakistan) before 4000 BCE. A wheel-shaped amulet from Mehrgarh has recently been identified as the oldest known artifact made by lost-wax casting (it is dated to between 4500 and 3600 BCE) (Thoury *et al.* 2016). It had been thought that tin bronze was produced at Mundigak (Afghanistan) during the second half of the fourth millennium, but recent reanalyses show no evidence of tin bronze (Pigott 2012a).<sup>24</sup> Feinan (Jordan) has been dated to between 3600 and 3100 BCE for copper ore mining (Hauptmann 2003: 91). This progress in metallurgy and the

<sup>22</sup> Copper metallurgy was present around 6000 BCE at Çatal Hüyük. The emergence of this large village, from 6700 to 5700 BCE, was first based on simple techniques of irrigation and trade exchanges (textiles and a long-distance trade in obsidian). Değirmentepe was another early center of copper metallurgy. Copper metallurgy has been dated to 5000 BCE at Tall-i Iblis (Iran) (Muhly 1995: 1503). As for the copper items of Susa I (dated between 4200 and 3800 BCE), we do not know if these were made from native copper, or from copper obtained after an ore-reducing process requiring a temperature of 1100°C (Benoit 2003: 53).

<sup>23</sup> The southern Iberian peninsula saw the development of a significant copper industry, which spread northward starting in 3500 BCE, reaching northwestern Europe around 2500.

<sup>24</sup> "The lack of evidence for tin-bronzes on the Iranian plateau before the late 3rd millennium BC and the [absence of] early (4th millennium) tin-bronze use at Mundigak mean that Afghanistan should no longer be cited as a possible source of the earliest tin in SW Asia" (Pigott 2012b).

transportation of various goods (not only raw materials but also manufactured products) probably explains why active trade routes were established during this period. These routes would remain of importance throughout the ensuing two millennia. The first bronze tools appear at Beycesultan around 4000 BCE, and at Aphrodisias around 4300 BCE (southwestern Turkey) (Joukowsky 1996: 143). Beycesultan also yields silver items very early on.

After the 'Ubaid period, eastern Anatolia took advantage of improved climate conditions and a fresh increase in exchanges. This region, along with northern Mesopotamia, saw the formation of proto-urban centers (Arslantepe, Hacinebi, Tepe Gawra, and most importantly, Khirbat al-Fakhar and Tell Brak)<sup>25</sup> (see Map 1.1). Societies in Syria and Anatolia were already showing complex organizational characteristics during the first half of the fourth millennium, before “the documentation of regular contacts with the southern Uruk world” (Philip 2004: 209).<sup>26</sup> Public buildings were erected at Arslantepe during phase VII, before the period of contact with the Urukian world.<sup>27</sup> Godin (VI) was also expanding during the first half of the fourth millennium.<sup>28</sup> Hacinebi shows some social complexity during a phase dated 4100–3700 BCE, with stone architecture, administrative activity (stamp seals,<sup>29</sup> also found at Gawra, Tell Brak, Arslantepe, Değirmentepe), and metallurgy. Hacinebi was involved in exchanges between the Mediterranean, the Euphrates and Tigris valleys, and regions further east; it yielded artifacts made from chlorite, a stone imported from a region located 300 km to the east, shells termed “cowries” (Mediterranean shells?), some bitumen (from Mesopotamia), copper items (the metal probably came from the region of Ergani and/or from the Caucasus), and even silver earrings.<sup>30</sup> In northeastern Iraq, Khirbat al-Fakhar was a much larger proto-urban settlement – of low density – covering 300 ha, whereas the total area of the Late Chalcolithic 2 (LC2) (4100–3800 BCE) settlement at Brak reached at least 55 ha (Ur 2010: 395). At this time, Rothman has reported the existence of specialized “temple” institutions at Tepe Gawra (Rothman 2001b: 387–389), Tell Hammam et-Turkman, and Tell Brak (McMahon and Oates 2007: 148–155). “At Tell Brak, adjacent to a monumental building was a structure with abundant evidence for the manufacture of various craft items. The structure itself contained obsidian, spindle whorls, mother-of-pearl inlays, ...” (Ur 2010: 394; see Oates *et al.* 2007). Mass-produced ceramics have been found, along with “a unique, obsidian and white marble ‘chalice’” (Oates *et al.* 2007: 591, 594), showing the existence of social differentiation and organized labor.

<sup>25</sup> On Hacinebi, see Stein 1999: 125ff. On Arslantepe, see Frangipane 2001.

<sup>26</sup> See Stein 1999: 92, 103; Frangipane 2004a: 124.

<sup>27</sup> The presence of mass-produced bowls signals the existence of a centralized system based on corvée labor (Frangipane 2001: 329; 2004a: 124).

<sup>28</sup> Edens 2002b: 32. It is true that Godin VI exhibits an influence from southern Mesopotamia – or Susa – during the Middle Uruk (Badler 2004: 81) and that the exchanges with the Urukian world may have played a role in the expansion of the site.

<sup>29</sup> As mentioned, stamp seals were already present in villages of the Halaf culture during the sixth millennium. Stein (2004: 150) notes the existence at Hacinebi of two types of seals, possibly indicating the different status of their owners or different functions for the seals.

<sup>30</sup> Stein 1999: 125ff. Stein (2004: 150) also notes the discovery of ceramics comparable to the Amuq F assemblage (Orontes valley region).

These (proto-)urban centers constituted nodes along east–west networks that extended further into Iran and Afghanistan, in one direction, and to the Syrian coast in the other. Lapis lazuli has been found at Iranian sites such as Tepe Sialk, Tepe Giyan (first half of the fourth millennium BCE), Tepe Yahya (3750–3650 BCE), and in northern Mesopotamia, at Tepe Gawra (3200 BCE?), Nineveh, Arpachiyah (4500–3900 BCE) (Casanova 2013: 27ff.). “There was extensive evidence for exploitation of lapis lazuli at Tepe Hissar during the 4th millennium BCE” (Petrie 2013a: 7). The presence of lapis lazuli reveals the existence of routes linking Central Asia, Iran, and northern Mesopotamia; it is rare, however, during the ‘Ubaid period and the first half of the fourth millennium. Moreover, trade networks formed with northern regions: obsidian came from central or eastern Anatolia, and “ceramics [from northern Mesopotamia] have been found in eastern Anatolia (Marro 2007) and in Azerbaijan (Akhundov 2007)” (Ur 2010: 395). Interactions between the spheres of Anatolia–Levant and Mesopotamia took place during the flourishing of the ‘Ubaid culture; they continued after its demise. On the basis of glyptic art, H. Pittman notes “a shared symbolic ideology” during the Late ‘Ubaid–Early Uruk in Syria, northern Mesopotamia, and Khuzistan (2001b: 418).

During the LC<sub>2</sub> period, the first proto-urban centers seem to have lacked internal political centralization. But from the LC<sub>3</sub> period (3800–3600 BCE), Tell Brak grew into a large urban center, becoming a dense settlement of 130 ha, “prior to the Uruk expansion” (Oates *et al.* 2007, Ur 2010: 396).<sup>31</sup> Another major site was located at al-Hawa, 40 km east of Hamoukar; it may have been as large as 33–50 ha. Hamoukar (near Khirbat al-Fakhar) and Leilan were smaller settlements. According to Algaze, however, Hawa and Samsat – a city now submerged as a result of the construction of the Ataturk dam – truly developed “after the onset of contacts with the Uruk world” (2008: 120).

Domestic structures in Tell Brak “show evidence of high-value items and exotic materials,” and of property-control mechanisms. “A cache from a pit included two stamp seals and 350 beads, mostly of carnelian but also silver, gold, lapis lazuli, and rock crystal (Emberling and McDonald, 2003, p. 9)” (Ur 2010: 396). Seals and sealings have also been discovered at Hamoukar (Reichel 2002).

Quoting Algaze (2008: 118ff.), Ur notes that “Brak’s urban significance has been downplayed because, unlike the cities of southern Mesopotamia, it was a primate center without intermediate centers in a proper urban hierarchy” (Ur 2010: 399).

The process of urbanization was accompanied by violence: traces of massacres have been discovered in Tell Brak, and structures were destroyed by fire at Hamoukar and Brak. Whether due to internal disorder<sup>32</sup> or attacks by southerners, the origin of this violence is still debated.<sup>33</sup> Also debated is the dating of the Eye Temple at Tell Brak. For Oates *et al.* (2007: 596), it was built prior to the Uruk expansion, in the LC<sub>3</sub> period

<sup>31</sup> Ur (2010) writes “a few centuries or more” before the Uruk expansion, but this seems to be an exaggeration. Morris (2013: 153) gives an estimate of 8,000 inhabitants in Tell Brak in 3500 BCE, which is probably too low.

<sup>32</sup> Global climate cooling around 3600 BCE may have aggravated the city’s internal problems.

<sup>33</sup> Hamoukar was the site of a battle around the middle of the fourth millennium; in 2005, the Oriental Institute of Chicago discovered more than “1200 smaller, oval-shaped bullets and some 120 larger round clay balls” that must have been used in the defense of the city. “It is likely that the southerners played a role in the destruction of this city” (C. Reichel, [www-news.uchicago.edu/releases/05/051216.hamoukar.shtml](http://www-news.uchicago.edu/releases/05/051216.hamoukar.shtml)).



(3800–3600 BCE), but other archaeologists date the construction of the temple to 3500–3300 BCE. The temple was decorated with clay cones, copper panels, and goldwork, in a style similar to contemporary temples of southern Mesopotamia. “Eye idols have also been found at Tell Hamoukar (Reichel 2002)” (Oates *et al.* 2007: 596).

### *The Urukian Expansion during the Second Half of the Fourth Millennium BCE*

Interactions with southern Mesopotamia can be seen from 3600 BCE onward, when the latter region experienced major urban development accompanying the birth of the state. As Algaze makes clear, “polities in the north hardly equaled their southern counterparts” (2008: 120). This southern urban development was based on agricultural progress generating demographic growth. Increased irrigation, the use of the ard drawn by oxen and the creation of date–palm plantations led to the creation of large estates; only estates of significant size were able to invest on a scale ensuring surpluses that supported urbanization.<sup>34</sup> Sherratt (2006a) has shown convincingly that the ard was developed along with the urbanization process; it may have been first employed to make furrows for irrigation; it required a major investment, which in turn explains its symbolic link with political power. The use of sledges on rollers to remove seed husks heralded the invention of the wheel.

Urbanization was also based on the progress of various crafts, such as ceramics (the invention of the potter’s wheel made mass production possible, and this was linked to new social practices [the use of fermented beverages]<sup>35</sup> and organization [distribution of rations]), metal artifacts, and textiles made of flax or wool (see below). Growth in sheep populations is seen at several Urukian sites at the end of the fourth millennium (such as Tell Rubeidheh); this may have been spurred by the state leadership (Kohl 2007: 222).<sup>36</sup> Sheep production certainly represented one driver of the Uruk expansion.<sup>37</sup> Selected in Iran, wool-bearing sheep breeds spread rapidly westward: some of the first-known wool remains, dated to the late fourth millennium, come from El Omari, in Egypt (Good 1998: 658).

The production of new goods was connected to the building of hierarchized urban societies; not only did exported manufactured goods lay the groundwork for an asymmetric exchange with peripheral regions; they also fostered local developments (the social

<sup>34</sup> Texts from the late fourth millennium describe extensive palm groves (Tengberg 2004). In 2003, a German expedition partially mapped the city of Uruk, and discovered a complex system of channels.

<sup>35</sup> Sherratt 2004. The potter’s (fast) wheel, which speeded up pottery production, may have been a response to two constraints: lack of manpower and increasing demand (Nissen 2004: 9). The wheel was also used in Syria and in southeastern Anatolia. In addition, Pollock (1999: 96) notes the use of the bow drill at this time, for engraving seals.

<sup>36</sup> We will observe this process more clearly during the third millennium, particularly during the Ur III period.

<sup>37</sup> McCriston 1997: 521, 534. Pollock (1999: 107) also points out “an emphasis on sheep and goat in the southern lowlands [during the fourth millennium] ... a sign of the growing importance of secondary products, such as milk, dung, wool, hair, traction and transport.” This evolution had little impact on Egypt, where flax remained predominant.

role of fermented beverages in Mesopotamia, for example, may have led to expansion in grapevine culture on the Mediterranean shores, as Sherratt has suggested).

The Urban Revolution benefited from increased long-distance trade, and helped further its development; commerce first involved textiles, slaves, and copper, which was used to produce weapons and tools. The development of copper and later, bronze metallurgy underlay the emergence of political power: “only elites could organize the long-distance procurements of costly copper and tin, as both were scarce,” and both proved necessary to social reproduction (Ratnagar 2001a: 355). Bronze was initially an alloy of copper and arsenic,<sup>38</sup> then of copper and tin (the latter alloy being harder than the arsenical bronze).<sup>39</sup> Bronze metallurgy spread from the fourth millennium onward, through the trade routes, with a possible diffusion to China between 3000 and 2000 BCE (Pernicka *et al.* 2003). The production of bronze artifacts increased not only agricultural productivity,<sup>40</sup> but also military power: competition between cities was not always peaceful, and the extension of conflicts certainly played an important role in the building of the state.

The rise in exchanges was partly linked to the birth of a new ideology of political control as well as to institutional innovations. The state played a crucial role, organizing production and exchanges, as well as redistributing wealth.

In conjunction with the rise in exchanges and processes of internal development, southern Mesopotamia experienced a radical new flourishing. Already inhabited *c.* 4600 BCE, the site of Uruk (Warka) grew from 3600 BCE (Middle Uruk) and covered 250 ha *c.* 3100 BCE – which may have represented a population of 20,000 to 40,000 – and 600 ha *c.* 2900 BCE at the end of the Jemdet Nasr period (according to Morris [2013: 153], Uruk had 45,000–50,000 inhabitants by the late fourth millennium). During the Early Uruk period, the city of Warka grew “at the expense of the Nippur-Adab and Eridu-Ur areas” and of Upper Mesopotamia (Algaze 2008: 108, 110; Kouchoukos and Wilkinson 2007): the population of the northern Jazirah decreased, especially from 3500 to 3300 BCE; the same held true for the Fars Plain; northern cities (Tell Brak, Hamoukar) grew smaller, leading Algaze to speak here of an “aborted urbanism” (2008: 117, 121). Other southern cities probably expanded during the late fourth millennium, absorbing rural populations: Nippur, Adab, Kish, Girsu, Ur, Umma, Tell al-Hayyad. None of these cities, however, are comparable to Uruk.<sup>41</sup> Algaze rightly emphasizes that “large settlement agglomerations were almost certainly unable to demographically reproduce themselves without a constant stream of new population” (2008: 29).

<sup>38</sup> For Potts (1997: 165), arsenical copper originates from the ores of Anarak, in Iran. Arsenic may have been employed first for the silvery effects it gave to the metal (Sherratt and Sherratt 2001: 34 n. 23).

<sup>39</sup> Early dating (fifth and fourth millennia) had been proposed for bronze objects in a copper-tin alloy found in the caves of Ghar-i Mar and Ghar-i Asp in Afghanistan (Dupree 1972), but this dating has since been put into doubt.

<sup>40</sup> For Ratnagar (2001b: 355 n. 8), “we have no evidence, from any of the great river valleys, that bronze tools were extensively used in agriculture.” Metal recycling and the fact that these tools were not deposited in the tombs make them invisible in archaeology. It is likely, however, that the elites largely controlled bronzeworking and the use of this alloy.

<sup>41</sup> We do not know the actual size of these cities during the different Uruk periods. Further investigation is needed.

(McNeill [2000: 204] “pointed out intensified mortality as a result of crowding, with the appearance of a variety of diseases.”)

Various authors have stressed the importance of the ideological and organizational changes occurring during the birth of the state.<sup>42</sup> The Mesopotamian agglomerations probably meet the criteria proposed by Wengrow for defining a city: “the existence of a class or classes of individuals not directly involved in agrarian production, a high density of permanent residents, access to ports and trade routes, centralized bureaucracy,<sup>43</sup> a concentration of knowledge and specialised crafts, political and/or economic control over a rural hinterland, the existence of institutions that embody civic identity,” and the monumentality of some of its buildings (Wengrow 2006: 76–77). These towns or cities constituted – at one and the same time – political, economic, and religious centers. It is possible that chiefs were primarily religious chiefs. Political power may have emerged as the result of the internal dynamics of the royal system: “It was only when the [various] ritual functions of the [chief] were separated from one another that political power and state organization emerged and developed” (Scubla 2003; Hocart 1970). L. de Heusch also writes: “It is the symbolic construction elaborated on the figure of a magician-chief that allows the genesis of the state, wherever a hierarchy of status or social classes develops” (1997: 230).

Not only was there intensification of labor through biological, technological, and organizational innovations; there was also a more efficient mobilization of the labor force itself. Southern Mesopotamian cities proved better able “to amass and control information, labor and surpluses vis-à-vis those of their immediate neighbors” (Algaze 2001: 70). This efficiency was seen in both economic and political-religious organization. Community lands held by extended families came under the management of “institutional households.” The temples, which owned land, craft workshops and herds, were organized as “profit centers” (Hudson 1996: 37). The growing importance of the temple complex<sup>44</sup> paralleled the emergence of a ruling class that was organized as an assembly of community leaders, who managed most of the production and long-distance trade.<sup>45</sup> According to Pollock, the Uruk rulers probably extracted tribute to feed the city. Uruk was the religious capital of Sumer

<sup>42</sup> Tosi and Lamberg-Karlovsky 2003: 348. This revolution has its roots during the period 4150–3800 BCE, a time of “experimentation with new modes of political organization ... and new strategies and technologies of control,” as H. T. Wright suggests (2001: 145). For the third millennium BCE, M. Liverani (2014: 108) points out “the divine foundations of kingship.”

<sup>43</sup> See Ur 2014 (below), however, for another vision.

<sup>44</sup> Nissen (2004: 14), however, notes that the exact place of the temple itself in the Uruk economy remains unknown. Little can be gleaned from the texts available. The precise relationship between the temples and the political sphere is no clearer. For Lamberg-Karlovsky (2003: 62, 70), there was a “coevolution” of the temple, writing, urbanization, statebuilding, and the development of crafts, with textiles playing a crucial role. During the Jemdet Nasr period (3100–2900 BCE), the temple of Khafajeh yielded seals, jewels, and kilns (Pollock 1999: 100). For Pollock, there is little evidence to suggest a direct involvement of the temple in production during the preceding period of the Late Uruk (1999: 115).

<sup>45</sup> Means of production such as oxen, seed drills, plows, probably belonged to the various state institutions (Ekholm Friedman 2000: 166). One may not follow J. D. Forest, however, when he argues that “free enterprise has not been invented yet and economic logic cannot be observed. The goods transported did not generate any profit.” “The whole system,” adds Forest, “was put in place and managed by the elites of

(Algaze 2008: 114), and may also have been the political capital of a Sumerian state (Yoffee 1995b; Westenholz 2002; Matthews 2003).<sup>46</sup> Various elements, however, do suggest the existence of a league of Sumerian cities around 3100 BCE (rather than a single state), a league perhaps headed – as later in the third millennium – by a LUGAL (“great man”), “ceremonial head of the assembly [UNKEN] of city rulers.”<sup>47</sup> For Glassner, there was no king yet at the head of the state: an assembly of community leaders was “managing the affairs of the city.”<sup>48</sup> Twenty cities are thus mentioned on a seal, from Urum (Tell Uqair) in the north to Ur in the south. Remains of temples and “palaces” have been discovered; they show decorations of niches and pilasters as well as characteristic facade ornamentation using colored “nails” forming geometrical patterns.<sup>49</sup> Algaze (2008: 190), however, believes that kingship was already instituted. The “Titles and professions list” during the Jemdet Nasr period starts with a man called NAM<sub>2</sub>+ESDA, a term translated as “king” during the second half of the 3rd millennium. Moreover, Algaze emphasizes an “iconographic continuity between the 4th and the 3rd millennia for the ‘priest-king/city ruler’” (2008: 190, 153). The true nature of the Urukian institutions, in fact, remains unknown.

Some ceramic objects – beveled-rim bowls – were mass-produced and standardized, probably reflecting the distribution of “rations,”<sup>50</sup> in “a system of mass labor” clearly made visible through the size of public buildings;<sup>51</sup> these rations may also have been linked to workshops producing goods for the state such as textiles. “Many of the Archaic texts record disbursement of textiles and grain to individuals. [They may represent] rations given to some sort of fully or partly dependent workers” (Algaze

the South Mesopotamian city-states who were the only authority able to harness energies” (2003: 128–129).

<sup>46</sup> It is not impossible that the great priest EN of Uruk was also a political ruler (Westenholz 2002: 34). Gilgamesh is called “either EN, or LUGAL, according to his activities” (Joannès 2005: 53).

<sup>47</sup> Westenholz, 2002: 34. We cannot exclude the possibility that this league was (re)constituted after the disintegration of a “state” led by Uruk. In line with established practice, Sumerian ideogrammatic terms are written in capital letters.

<sup>48</sup> Glassner 2000a: 267ff., 2000b: 46. LUGAL would mean “king” from the Sargonic period on, according to Westenholz (2002), but the concept of kingship had appeared earlier (see below).

<sup>49</sup> We are only really aware of Level IVA (Late Uruk); there is little to no information about earlier levels. It is difficult to use the finds at Uruk as a basis for establishing a chronology of the potteries, or to date the appearance of bullae, cylinder seals, or written tablets (Nissen 2004: 7ff.). The enclosures of the Eanna, the “House of Heaven,” dedicated to the goddess Inanna, and of Kullab, dedicated to Anu, included “temples” and “palaces” (Algaze 2001: 33; Nissen 2001: 154; Joannès 2001: 254–255; Huot 2004: 79ff.). The buildings of the Eanna comprised shrines, storerooms, workshops, and administrative centers (McIntosh 2005: 65). The structure of the Mesopotamian temples derives from the “temples” of the Ubaid period. Susa shows the construction of a stepped high terrace, the southern facade of which was decorated with clay nails, as in the Uruk culture (“the high terrace on the Acropole mound at Susa [is] dated to c. 4000 BC ... This monumental structure covered 6,400 sq. m” [Potts 2014: 23, 24]).

<sup>50</sup> Pollock 1999: 94–96. Other hypotheses have been proposed: preparation of bread, and votive offerings (Nissen 2004: 9–10). For Pollock, increased demands for tribute and *corvées* imposed on village communities would explain a migration of the inhabitants to the towns and an extension of other processes of centralization. “The combination of increased tribute demands and growth of an urban-based workforce may have promoted the adoption of time and labor-saving technologies and segmented manufacturing processes” (1999: 96).

<sup>51</sup> See the platforms, terraces, and temples at Eridu (Early Uruk period), Uruk (Middle and Late Uruk), and Brak (Middle Uruk); Wright 2001: 141, 143, Nissen 1988: 83–85.

2008: 130). In S. Pollock's view, during the third millennium, the economy moved from a tributary system (tributes were extracted from the rural sector) to a system of "households" employing their own labor forces, servile or not; these "houses" were not only temples and palaces, but also estates belonging to high-level officials or the rulers of extended families.<sup>52</sup> As early as the Urukian period, the archives of the institutional estates evoke the management of land, of herds, and of the labor force (Glassner 2000a: 238ff.), probably with economic viability in mind: here we are outside the context of a simple tributary system.

The emergence of the state and the rise of exchanges brought about the use of new techniques that spread widely, allowing for growing control over the movement of goods, information, and individuals. Calculi and seals on clay bullae containing these calculi represent systems noting quantities that reveal accounting management. They can be found in a vast zone going from Iran to Mesopotamia and Syria: all of western Asia was involved.<sup>53</sup> At Uruk, then at Susa, around 3500 BCE (or slightly later?),<sup>54</sup> cylinder seals appeared (only stamp seals had been used in earlier times) to seal merchandise (bales or jars) and doors.<sup>55</sup> Numerical tablets, each one sealed by the imprint of a cylinder seal, have been unearthed in levels belonging to this period.<sup>56</sup> With the development of cylinder seals, a new iconography flourished that legitimated the power of the elite: it often figures a hero – perhaps already a "priest-king" or deity? (see above) – who is a master of wild beasts, a war leader, a feeder of domestic animals and "a fountain of agricultural wealth" (the hero holds a vase with flowing streams, a symbol of abundance and a possible reference to the role of the state in irrigation systems); he is alternately portrayed as an officiator in religious ceremonies (according to Glassner [2000a], however, versus Algaze [2008], the seals and cultic objects feature different characters, not just one). We can observe this iconography from early periods in Iran and Egypt. For Pittman, in fact, "the characteristic Uruk imagery was first developed and found its richest expression in Susiana" (2013: 295). At Susa and Choga Mish, east of Susa, cylinder seal impressions show temples on high platforms (Oates 2014a: 1491; Amiet 1980: 695).

<sup>52</sup> Pollock 1999: 118–120. This author considers that a "tributary structure" had already been put into place during the 'Ubaid period. The tributary system would have led to migrations of populations, some of them into towns (see above). An increased disequilibrium between rural communities and cities favored technological innovations and finally led to a change in economic organization, with a transition to a system of *oikoi* employing their own labor force (Pollock 1999: 96).

<sup>53</sup> Margueron and Pfirsich 2001: 103. In Syria, hundreds of clay sealings (made with stamp seals) and calculi have been unearthed at Tell Sabi Abyad, within a Late Halaf context (sixth millennium). Calculi in fact appeared at various sites as early as the seventh millennium (see above). Bullae have been found at Susa and at Chogha Mish (Potts 1999: 65). The shape of the calculi indicates their numeric value, according to a system essentially sexagesimal, and secondarily decimal.

<sup>54</sup> Datings proposed at Uruk are problematic, because of the excavations at this site, and more generally speaking – for the whole region – because of problems with radiocarbon dating. Petrie thus points out that "the most problematic factor impacting upon the absolute dating of the late 4th millennium BC is the extended plateau in the radiocarbon calibration curve from c. 3350 to 2900" (2013b: 388).

<sup>55</sup> Technically, Pittman (2001b: 419ff.) links the development of cylinder seals with the invention of the drill, which was also used for the production of stone vessels. The drill would also be used for the decoration of stamp seals. Quoting Pittman (2013), Petrie notes that there is "no overt evidence for the development of cylinder seal technology at Uruk during the Middle Uruk Phase" (2013b: 406 n. 4).

<sup>56</sup> The Urukians used thirteen different types of accounting; the "signs tell what units of measure are employed, [and] they indicate the nature of what is quantified" (Glassner 2000a: 178, 180).

The Susiana Plain was “part of the Uruk world between 3800 and 3150 BC” (Wright 2013: 63); it is likely, however, that during the Early and Middle Uruk periods, “an independent state based at Susa developed in Susiana” (Petrie 2013b: 388). For her part, Pittman (2013) “queries the primacy of southern Mesopotamia in the development of the administrative innovations that took place in the 4th millennium” (Petrie 2013b: 391). For Pittman (2013: 321), Susa was the source of many of the “Mesopotamian” innovations. One notes the appearance “of bevel-rim bowls and other Uruk forms at Ghabristan, Sialk, Tal-e Kureh and possibly Tal-e Iblis” (Petrie 2013b: 13): the question remains to know whether we observe a process of colonization, trade, or emulation/coevolution<sup>57</sup> (at Susa for example, and from Susa) (Rothman 2001b: 21).

Copper metallurgy developed in Iran during the fourth millennium BCE, using crucible-based smelting technology, for example at Tal-e Iblis (periods III and IV), Tepe Sialk (III and IV), Tepe Hissar (II), Tepe Ghabristan (II), Arisman, Godin Tepe (VI.1), and Susa (Weeks 2013). We do not have evidence of ancient mining at Anarak, but local mineral sources must have been used. Iran exported copper and copper artifacts.

The juridical power of the state was constituted at this time. We know from Nissen that “group size and amount and level of conflicts are systematically and inseparably interconnected”; the dimension of Uruk implies the setting up of a system of laws and sanctions, as well as an organization that is able to implement them (Nissen 2004: 14).

Among the crucial innovations of the Urban Revolution figure techniques of power and new forms of organization. Bullae, calculi, and cylinder seals have already been mentioned. The first signs of writing appeared around 3300 BCE at Uruk (the exact period is not known), in response to the growing complexity of commercial transactions and social organization, and to the building of a system of relations between the Sumerian city-states, interacting with a periphery of pastoralist or sedentary populations.<sup>58</sup> The development of writing laid the groundwork for the state’s ideology, with the creation of a body of scribes whose apprenticeship must have also been an “indoctrination” (Pollock 1999: 169). Writing quickly acquired a sacred dimension: along with iconography, it brought about contact with the world of the gods. In the economic field, most of the ancient documents contain lists of goods that were received, sent, or stored, such as grains, milk products, wool, textiles, metals ... Some of these documents show attempts at economic planning. They have usually

<sup>57</sup> On this concept, see also Chase-Dunn 1988, and Sherratt 1993.

<sup>58</sup> Mainly resorting to metaphor and metonymy, the system is logographic and uses phonetic values and syllabism; “the visual marks of invisible analogies,” most of the signs are polysemic and polyphonic (Glassner 2000a: 13–19, 202, 220–224). Stamps, seals, and written symbols reflect a general shift in social relations. They guarantee property rights, transfer of goods or of powers, and they have – in writing especially – an identifying function (Glassner 2002b: 368). Going further, Glassner (2000a: 15) makes the point that the invention of writing cannot be considered simply as a response to increased economic and administrative complexity, as its very existence transformed our relation to knowledge and cultural memory. Obviously, writing was linked to the political and religious spheres (divination, the calendar ...). Considering a “gradual trajectory” from the earliest notational systems (marks on pottery, on bullae ...) to writing (Lamberg-Karlovsky 2003) is a theory that fails to take into account the cognitive revolution writing implies.

been found in the vicinity of public buildings.<sup>59</sup> A vast majority of tablets thus reflect the existence of a centralized and hierarchized administration. Archaic texts from Uruk refer to social differentiation and the organization of various professions.<sup>60</sup> They reveal the existence of slaves of local or foreign origin. “A larger pool of dependent labor available gave a comparative advantage” to southern Mesopotamia (Algaze 2008: 81). Slaves probably worked on irrigation systems and constructions. As Algaze rightly points out (2008: 146–147), “innovations in communication [writing, accounting systems], [transportation] and labor control were fundamental for the Sumerian takeoff.” The city of Uruk was crisscrossed by canals used for transport and irrigation.

Slaves also worked in workshops. “The second most frequently mentioned commodity in Archaic texts [after barley] is female slaves” (Algaze 2008: 129). A tablet from Uruk refers to 211 women slaves, who produced textiles for the temple.<sup>61</sup> Many Uruk texts deal with wool and textiles (woven woolen cloth),<sup>62</sup> which probably represented the first exports of the Mesopotamian cities, in addition to leather, agricultural products, perfumed oils, and metal artifacts. During the third millennium, “iconography from cylinder seals and sealings depict various stages of textile production” (Algaze 2008: 81). Archaic texts “attest to the existence of temple/state-controlled sheep herds” (Algaze 2008: 87).<sup>63</sup> It is likely, also, that raw wool imports contributed to the growth of the textile industry in the southern Mesopotamian cities. Wool, notes Algaze (2008: 79), was more easily dyed than linen, and “economies of scale were achievable by using wool as opposed to flax.” “The mass production of textiles” financed by elites was clearly “an urban phenomenon” (Algaze 2008: 84). “The earliest economic records and lexical lists also include numerous references to metals” (2008: 93) (see below). In sum, the flourishing of different crafts linked to institutions can be observed. Southern Mesopotamia had at least two other crucial advantages over the north: a higher density of population and efficient water transport, facilitating trade.<sup>64</sup> The Mesopotamian elites ensured the supply of necessary raw materials: metals, stone, and wood. There is

<sup>59</sup> The connection, however, is far from certain; see Nissen (2004: 12) for the site of Uruk. Some documents from private archives have come to light, showing “a minimal use of writing” (Glassner 2000a: 234ff.).

<sup>60</sup> See the lists of titles and professions found during the Late Uruk period and repeated for nearly one thousand years (Nissen 2004: 13). At the end of the fourth millennium, the scribes themselves seem to have been associated with six different professions (Glassner 2000a: 143). “Among the Warka IVA tablets,” notes Oates, “there is a surprising number of lexical texts presumably used in teaching, suggesting a longer previous history of writing” (2014a: 1486). It is clear that the public sector was largely at the origin of the growing social complexity in the Late Uruk period, in response to various constraints. The different lists that have been found indicate a willingness “to put the world in order” (Glassner [2000a: 253] speaks of a Sumerian obsession with classification).

<sup>61</sup> Textile workshops employing women in a situation of dependence are well known for the third millennium. It is possible, also, that some communities had a semi-servile status (Wright 2001: 140).

<sup>62</sup> The symbolic importance of weaving has been emphasized by Glassner (2000a: 214).

<sup>63</sup> On the centrality of textiles to the early Mesopotamian urban process, see McCormick Adams 1981: 11 (cited in Algaze 2008: 92). “Of the emergent industries of the time, none would have contributed more to the growth of internal diversification, specialization and overall employment than woolen textile manufacture.”

<sup>64</sup> “Waterborne transport in ancient Mesopotamia could have been about 170 times more efficient than the average donkey caravan” (kg/km/day) (Algaze 2008: 61).

little doubt that the state was involved in long-distance trade.<sup>65</sup> During the second half of the fourth millennium, exchanges benefited from innovations in transportation: waterway development, clearly visible at Uruk; improvements in shipbuilding; domestication of the donkey (both in Egypt and in western Asia) and the use of the wheel. A written sign reflects the presence of donkeys during the Uruk period. Recent genetic research shows that donkey domestication first took place in Egypt, from a Nubian subspecies, *Equus asinus africanus* (the first remains of domesticated donkeys were discovered in a Predynastic tomb, at Ma'adi, dated c. 4500 BCE). A second domestication occurred from another subspecies related to *Equus asinus somaliense*, but another breed – today extinct – may have lived between Yemen and the Levant; it may have been the ancestor of this second domesticated set (Beja-Pereira *et al.* 2004; Vila *et al.* 2006). Wild donkeys may have been domesticated in Mesopotamia (Uerpmann 2008: 441), where remains are dated to the Middle Uruk period at Tell Rubeidheh, in the Diyala valley. As already mentioned, the wheel was probably developed in northern Mesopotamia, Syria, or eastern Anatolia at the time of the Urukian expansion (Sherratt 2006a).<sup>66</sup> From Anatolia, use of the wheel and the wagon spread along the Danube and the Black Sea. Their arrival went along with the dislocation of the large villages of the Cucuteni-Tripol'ye culture (located between the Dnieper and the Danube) around 3600/3500 BCE, during an ecological crisis brought about by a climatic aridification and a degradation of the environment linked to anthropogenic activities.<sup>67</sup> We cannot exclude a diffusion of wheel and cart through the Caucasus. The remains of a wagon found in a kurgan at Starokorsunskaja (Maykop culture) have been dated to c. 3500 BCE (Trifonov 2004; Primas 2007). Clay models of wheels have also been excavated from the earliest levels at the site of Velikent (same period) (northeastern

<sup>65</sup> See the discovery of numerous exotic goods in the foundations of a building of the Eanna (Algaze 2001: 35). Moreover, H. T. Wright (2001: 137) contemplates the existence of mobile craftsmen organized “in guildlike corporate groupings”; this may explain the homogenization of Urukian material styles (ceramics, bricks ...).

<sup>66</sup> Models of wheels (made of terracotta or stone) are known at Jebel Aruda and in the Kura-Araxes culture. They show the use of a rigid axle, with wheels turning independently. In addition, a wall painting at Arslantepe (dated to c. 3370 BCE) shows a pair of draught animals. The wheel is recognizable on pictograms of the Late Uruk period.

<sup>67</sup> One may wonder whether or not epidemics – favored by settlement size and promiscuity between people and animals – contributed to the dislocation of the great villages of the Cucuteni-Tripol'ye culture; settlements seem to have been abandoned after fires, which were quasi-universal rituals of purification during epidemics. The farmer-herders of the Cucuteni-Tripol'ye culture became mobile pastoralists, with wagons, who moved into the steppes (cf. the Sredni Stog culture, the pre-Maykop culture north of the Caucasus, then the Yamnaya culture [Pit Grave Culture, 3200–2400] ...), at the same time continuing to practice agriculture (Kohl 2002: 161, Rassamakin 2002, and Scarre 1999: 148). The wheel seems to have been introduced in the north of the Caucasus soon after the collapse of the Cucuteni-Tripol'ye settlements (Sherratt 2006a: 351). While a west-east movement of population accompanied the dislocation of the Cucuteni-Tripol'ye culture, conversely east-west movements may have occurred at an earlier period, if the identification of buckwheat (*Fagopyrum sagittatum* Gilib., family of the Polygonaceae) among the plants present in the Cucuteni-Tripol'ye culture is confirmed (this identification has recently been challenged). This plant originated in the western Himalayas (Janik 2002: 300ff.). Broomcorn millet *Panicum miliaceum* has been found in Cucuteni-Tripol'ye sites, and in the Late Sredni Stog culture; it was domesticated during an early period in China, but perhaps also in the Pontic steppes. The question of an eastern arrival, however, remains open.



Caucasus) (Kohl 2007: 85). The ard and the wheel spread together and rapidly across Europe along pre-existing trade routes, following the Danube valley and other large rivers, such as the Oder, around the middle of the fourth millennium, probably at the same time as innovations such as wool sheep breeding, the preparation of fermented beverages and the use of bivalve molds for casting metal objects.<sup>68</sup> The adoption of more intensive agricultural practices provided a means of facing the crisis linked to the combination of population surge and climatic deterioration during this period. These diffusions were accompanied by major social transformations. “The use of draught power appears to have been linked to an élite able to mobilize resources; it implied concentration of power and control on herds and therefore on men” (Sherratt 2006a: 345).

The crucial aspect of the invention of bronze has already been emphasized. It allowed for the growing production of weapons: besides trade, war played a major role in forming a dominant political elite and in building the state. Texts from Ur, dated to the end of the Urukian period / beginning of the Early Dynastic, refer to hierarchized military organization.<sup>69</sup> Interestingly, “male slaves [in Archaic texts] are often qualified as being of foreign origin” (Algaze 2008: 129).

The need to maintain an adequate flow of imports to ensure the stability and growth of a type of production destined both for the southern Mesopotamian social space and for export partially explains the Uruk expansion to the north and east: it was a complex phenomenon, variable in both space and time (Rothman 2004: 57). Not only did the city of Uruk take part in this expansion, but so did Nippur, Kish, Ur, and probably other cities, as suggested by the presence of the gods Enlil and Ninhursag at Mari, and of Ningal at Ugarit during the third millennium.<sup>70</sup> Mesopotamia needed to import metals, wood, stone, and luxury goods – as these were indispensable for affirming the power of its elites.<sup>71</sup> Whereas the city had no copper, arsenic, or tin, it managed to develop an elaborate copper and later a bronze industry. The earliest economic tablets

<sup>68</sup> Sherratt 1997, 2006a. The complex of draught power spread as a package (Sherratt 2006a: 346 fig. 5 and n. 49). The tracks or representations of wheels and ards “are distributed between 3500 and 3300 in a vast zone going from the Alps to the Baltic Sea and Great Britain to the northern Caucasus” (Sherratt 2006a: 346). Representations of wagons were found on a pot in Poland around the middle of the fourth millennium, and in Denmark around 3000 BCE. The development of sheep breeding for wool production went along with that of the weaving industry.

<sup>69</sup> Ekholm Friedman 2000: 165, 166. Gat 2002 (for the emergence of city-state cultures). Also Renfrew 1975. Only very few bronze artifacts are known prior to 3000 BCE. Uruk probably used armed forces, not to control trade routes, but to control the Mesopotamian core. The depiction of prisoners on cylinder seals is most likely not merely symbolic. Unlike what can be observed in the Egyptian iconography, the prisoners depicted do not seem to be foreigners. Pittman notes that “scenes of warfare are rare outside Uruk” in the iconography of this period (2013: 309).

<sup>70</sup> Westenholz 2002: 40 n. 9. Moreover, the author notes ancient borrowings from the Sumerian in the Semitic dialects of the northwest. These influences, however, may have resulted from contacts occurring during the third millennium.

<sup>71</sup> The need for Mesopotamia to import raw goods and slaves for building cities and manufacturing products became a motor for building the Urukian world-system (Matthews 2003: 118). H. T. Wright notes, however, that wood was available (2001: 133); but it is likely that the trees did not have the size required for building palaces and temples. The Khuzistan and the middle valleys of the Tigris and the Euphrates provided sources of bitumen (used for vessels and for caulking ships). We should also keep in mind what I refer to as “invisible imports,” such as wine.

already contain a pictogram for a smith (Algaze 2008: 77), and the remains of a foundry showing division of labor have been unearthed at Uruk (Nissen 2004: 10). Two types of bronze were used in western Asia: arsenical bronze, found mainly along a north–south axis: the Caucasus;<sup>72</sup> eastern Anatolia; Palestine; southern Mesopotamia;<sup>73</sup> and a type of tin bronze appearing in the early third millennium, along an east–west axis: Afghanistan; Anatolia; northern Syria; Cilicia. Imported into southern Mesopotamia prior to the middle of the fourth millennium, copper came from the Iranian plateau, northern Iraq (Tiyari mountains), or eastern Anatolia. Already known in Palestine, the lost-wax casting technique developed both in Mesopotamia and at Susa.<sup>74</sup> The cupellation process used to separate lead and silver – from galena, a lead ore containing silver – was attested *c.* 3300 BCE at Habuba Kabira, and mid-fourth millennium at Arisman, in the vicinity of the Anarak copper source.<sup>75</sup>

In addition to needs and economic opportunities, ideology probably underpinned both the Urukian expansion and the emergence of ruling elites. Here, as is still the case, religion played several roles: it had an integrative function within a multiethnic population; it represented a kind of sanctification through which leaders could claim legitimacy; and it allowed for the regulation of economic activities when both cooperation and forced labor became necessary.<sup>76</sup> We must take into account not only religion itself, but a system of thought and practices, along with changes in clothing and food consumption accompanying social hierarchization in Urukian society. The role of religious networks in the Urukian world may explain why cultural signs were maintained, differentiating the southern Mesopotamians and their hosts for several centuries, at sites such as Hacinebi (Anatolia), but the “ideological Sumerian capital” also influenced many societies: the spread of “Urukian” potteries may have been linked to the consumption of fermented beverages embedded in new social relations (Sherratt 2004).

The Urukian expansion favored an evolution that had begun earlier in Anatolia and Syria, and built upon it: interactions between the Anatolia–Levant and Mesopotamian spheres took place during the flowering of the ‘Ubaid culture, and

<sup>72</sup> It is probably no coincidence, notes Kohl (2002: 161), that the Early Bronze Age cultures of the northern and southern Caucasus (Kura-Araxes, Maykop) emerged around the middle of the fourth millennium, “at roughly the same time that the so-called Uruk colonies have been documented in Anatolia on the middle to upper reaches of the Euphrates.” Various researchers have shown the links of the Maykop culture and of Transcaucasia with northern Mesopotamia (see below). To the west, solid interconnections are seen between Anatolia, the Balkan region, and the steppes during the Early Bronze Age (Sherratt 1997; Rassamakin 2002: 52ff.).

<sup>73</sup> For Muhly (1995: 1505) and Potts (see above), copper imported from Talmessi (Anarak) in Iran contained arsenic and may be the source of the arsenical copper found in Mesopotamia and Palestine.

<sup>74</sup> Benoit 2003: 59. For Palestine, see the treasure of Nahal Mishmar (*c.* 3500 BCE), consisting of 416 pieces, where arsenical copper may have come from Anatolia (Muhly 1995: 1504; Benoit 2003: 184).

<sup>75</sup> Silver extraction in Anatolia goes back to the early fourth millennium. Silver earrings dated to this period have been found at Hacinebi.

<sup>76</sup> Rothman 2001b: 357ff. For Lamberg-Karlovsky (1996: 94), “the key to understanding the ‘Uruk expansion’ rests not in the economic sphere but in the political: the establishment of a stratified elite which legitimized itself by a religious ideology, and reserved for itself the right to monitor and control the economic productivity of its subordinate population.”

continued after the end of the Ubaid period. “Societies from Syria and Anatolia already exhibit complex organisational characteristics in the first part of the 4th millennium, prior to the rise of regular contacts with the Uruk world” (Philip 2004: 209)<sup>77</sup> (see above). At the junction of various roads, Tell Brak exhibits links with southern Mesopotamia already during the Middle Uruk period or even earlier.<sup>78</sup> Tepe Gawra and Arslantepe, though smaller settlements, were craft centers and nodes on exchange networks. Gawra produced textiles. The discovery of annular rimmed vessels which resemble primitive stills implies that perfumes were already being produced in the middle of the fourth millennium (Needham *et al.* 1980: 82). As Algaze points out (2001: 66ff.), however, the complexity of the northern settlements and their techniques of management and communication of information cannot be compared with those of Uruk and the cities of southern Mesopotamia.<sup>79</sup> Lapis lazuli is present at sites in Iran such as Tepe Sialk (Middle Uruk/Late Uruk), Tepe Giyan (already in the first half of the fourth millennium BCE), Tepe Yahya (3750–3650 BCE), and Tepe Hissar (phase 3600–3300, then 3300–3000), where it appears along with silver (perhaps originating in Anatolia, though this origin remains uncertain) (Mark 1998: 37). Lapis has been found in northern Mesopotamia, at Arpachiyah, Nineveh (already during the Ubaid period), Tell Brak, Tepe Gawra (Late Uruk?), and Jebel Aruda (before 3200), revealing the existence of trade routes linking Central Asia, Iran, and northern Mesopotamia.<sup>80</sup> This blue stone was also present in the main southern Mesopotamian cities, during the second half of the fourth millennium: Uruk, Ur, Nippur, Khafajeh, and Telloh – but it remained a rarity prior to the Jemdet Nasr period *c.* 3100 BCE. Moreover, “the intrusion [in Pre-Maykop settlements] of northern Mesopotamian cultural elements or peoples (?) predating the subsequent southern Mesopotamian Uruk expansion” signals exchanges with regions beyond the Caucasus (Kohl 2007: 70).

The Urukian expansion from 3600 BCE onward led to a growing connection of the southern Mesopotamian networks with those of northern Mesopotamia, Anatolia, and the Caucasus (see Map 1.2). Trading was active along the Euphrates, a river that played a crucial role in Urukian development. A Mesopotamian influence was felt in the plains of southwestern Iran (Susa II, 3500–3150) and in northern Mesopotamia (Brak, Hacinebi). From *c.* 3500, Uruk – and probably other rival Mesopotamian cities<sup>81</sup> – created “colonies” (built by the state or by small groups independent of the state; this question remains debated): Qraya, Tiladir Tepe, Sheikh Hassan, and later

<sup>77</sup> See Stein 1999: 92, 103; Frangipane 2004a: 124.

<sup>78</sup> Oates 2004: 118ff. Oates emphasizes the important role of textile craft as early as the Middle Uruk. Cylinder seals have also been excavated at Brak, dated to the Middle Uruk period.

<sup>79</sup> During the first half of the fourth millennium, the development of a type of painted pottery in Iran probably reflects the extension of exchange networks.

<sup>80</sup> As mentioned, lapis lazuli has been found that is dated to the first half of the fourth millennium in Iran (Tepe Giyan, Tepe Yahya). At Susa, lapis lazuli appears at the end of the Uruk period (Casanova 2013: 36). Throughout the ancient world, magic properties of protection were attributed to lapis lazuli, a fact which partly explains the covetousness that this stone aroused.

<sup>81</sup> This rivalry between city-states may have been at the origin of the Urukian expansion, along with the creation of “colonies.” Competition probably went along with forms of cooperation: it is difficult, otherwise, to understand the stability of the expansion process over the long term. Perhaps Uruk was at the head of a kind of federation.

Habuba Kabira and Jebel Aruda.<sup>82</sup> The clear purpose of these colonies was to control access to regions of Anatolia and Iran that were rich in metal ores; to utilize pasture resources (for wool); and to interconnect the southern Mesopotamians with established trade centers and networks in Syria, between Anatolia and the Levant, and on routes crossing Iran. The importance of “outposts” such as Habuba Kabira implies active involvement by the public sector (palace, temple) in the process of creation.<sup>83</sup> Urban planning and the building of its fortifications required a strong community, and therefore state-level organization. The “Urukians” also settled in centers located either at network nodes or near coveted resources. Sites such as Hacinebi (as early as the Middle Uruk period) and Hassek Hüyük<sup>84</sup> thus hosted Mesopotamian enclaves. In the sites where Urukians were present, they usually brought their own administrative techniques (bullae, seals, tablets, weights), ceramics, bitumen, and building techniques. When Hacinebi hosted an Urukian enclave, two administrative systems – Anatolian and Urukian – seem to have coexisted. In an attempt to refute the possible formation of a world-system centered on Uruk and other Mesopotamian cities, Stein alleges – while providing no evidence for it – that exchanges between the Anatolian and Urukian communities were symmetrical; in fact, we do not know what was really exchanged; textiles and slaves, for example, left no trace in the archaeological deposits. In any case, it seems that the Urukian demand stimulated copper production in Anatolia. Stein recognizes that we have little information to go on for understanding the context surrounding the Anatolian elite during Urukian phase B2. He also puts forward the unlikely idea that there were few interactions between the Anatolian and Urukian communities during their two or three hundred years of coexistence (1999: 166)! Moreover, contrary to Stein’s assertion, a core’s power over a region did not necessarily diminish with distance, nor did exchanges become increasingly “symmetric” when the distance increased – I will come back to this point. Chains of exchanges were formed, along which inequalities could be transmitted and strengthened. While distance and the existence of groups positioned as intermediaries could lead to lower profits for the agents of the core, they did not reduce exploitation of the system’s geographic or social peripheries. The fact that the Urukians sought alliances with the local elites does not imply equality in the situation of the two communities within the world-system. Moreover, the Urukians were settled on the highest part of the site, a fact Stein did not take into account. Lastly, Hacinebi was not a “periphery” as Stein terms it, but a semi-periphery: the level of social complexity, development of crafts, and density of its regional population show this clearly. The elites of northern semi-peripheries benefited

<sup>82</sup> Qraya, in the Middle Euphrates valley, yielded a date *c.* 3670 BCE, that might be too early (Wright and Rupley 2001: 101). The sealings found, however, go back as far as the Middle Uruk (Pittman 2001b: 410). Tiladir Tepe, near Karkemish, dates from the Middle Uruk period, as does Sheikh Hassan; the other centers are linked to the Late Uruk period. Recent excavations have revealed a substantial Urukian presence on the Upper Euphrates during the Late Uruk period (Algaze 2001: 43).

<sup>83</sup> It is impossible, however, to evaluate the involvement of the state in the process of the Urukian expansion, against the initiatives of private entrepreneurs or agents of the state acting on their own account. See Algaze 2001: 73.

<sup>84</sup> Algaze (2001: 40) suggests that Nineveh was occupied by southern Mesopotamians.

from exchanges with the Urukians within a process of coevolution, but beneficial exchanges are not equivalent to symmetrical relations (Rothman [2001b] commits the same error as Stein when he refutes Algaze's model, arguing that "northern societies must have seen advantages to an exchange relation with Southerners": these advantages recognized by the north did not imply the absence of dominance and exploitation by the southern Mesopotamians).

Other Anatolian sites, such as Tepecik, exhibit Mesopotamian influences without revealing an Urukian presence. This is also the case at Godin (level VI) (Iran) for the Middle Uruk period. The Euphrates River played a pivotal role because it offered access to the metal resources of the Ergani area, the Taurus forests, and the products of the Mediterranean region (the location of the colony of Habuba Kabira is enlightening in this respect).<sup>85</sup> In Syria, the site of El-Kowm, which shows influences from Sheik Hassan from the thirty-fourth century BCE onward, forms the western boundary of the Urukian sphere. Algaze has defined the ensemble formed by the southern Mesopotamian core and the network of Urukian enclaves as an "informal empire" or a "world-system," whose activity and survival depended primarily upon alliance networks with local chiefs.<sup>86</sup>

Moreover, Mesopotamian merchants and artisans may have been present at more isolated sites, located along trade routes (thus Godin Tepe [VI.1],<sup>87</sup> Sialk [III], in Iran, close to copper resources of Anarak).<sup>88</sup> For this "Urukian expansion," we should probably consider the existence of merchant communities operating within indigenous societies.<sup>89</sup> The regional configuration of established Urukian settlements shows dendritic forms that suggest the functioning of a monopolistic system (Algaze 2001: 49) or at least some kind of cooperation.

<sup>85</sup> See also the Urukian settlements found at Hassek Hüyük and Samsat in the Upper Euphrates valley, not far from ore deposits.

<sup>86</sup> For Algaze, the Urukian expansion was that of a first world-system, with the Mesopotamian city-states (core) exploiting various peripheries, in a process similar to that which Wallerstein describes for the modern period, with "a supra-regional system of interaction" which "emerges from the independent efforts of a few fiercely competitive cores" (Algaze 1993: 117). Mesopotamian influences are clearly seen in those societies which had contact with the Urukian enclaves, for example at Arslantepe, Tepecik, or Norşuntepe.

<sup>87</sup> The southerners – from Uruk or Susa – clearly enjoyed a dominant position, since they occupied an oval compound at the top of the hill of Godin during phase VI.1, with a fort built for them, dated to c. 3350 BCE (Badler 2004: 84). The excavations reveal a quasi-absence of Urukian women in the fort. According to Pittman (versus Potts 1999), glyptic art and numerical tablets show links with Susa and Nineveh (2000b: 443). Pittman has argued for the presence of people from Susa at Godin, whereas Rothman alleges that the oval compound was occupied by a local elite: "Godin would find its best analogy with a site such as Arslantepe or Tepe Gawra" (Rothman 2013: 87). However, if there were no "true leaders" at Godin, as Rothman suggests (2013: 89), why was it necessary to use elaborate cylinder seals? (Cylinder seals have been recovered from Godin.) The discovery of some Middle Uruk pottery shows that interactions predated the building of the "enclave" (Oates 2014a: 1491).

<sup>88</sup> Or perhaps these merchants were from Susa (see below).

<sup>89</sup> To interpret the Urukian expansion partly in terms of diasporas is compatible with the fact that this expansion took shape within the context of a world-system (on the concept of diasporas, see Curtin 1984, and Subrahmanyam 1996). Stein (1999) has rejected – generally speaking – the "world-system model" (in doing so, he has failed to consider Wallerstein's perspectives in their integrality) and has presented the "concept of diaspora" as an "alternative" model. Diasporas, however, function as part of the global context of the world-system. Whether these diasporas were politically independent from their cities of origin or not, the diasporas played a crucial role in forming interregional hierarchies.

In Iran, tablets impressed by cylinder seals and bearing numerical notations have been found at Susa, Chogha Mish (Khuzistan), Tal-i Ghazir (between Khuzistan and Fars), and Godin Tepe (in Luristan). According to Potts (1999: 60), the numerical tablets from Godin are similar to tablets from northern Mesopotamia (Tell Brak, Mari, Jabal Aruda), “whereas those from Susiana are most like examples from Uruk”; for Dahl *et al.* (2013: 354), however, “the Godin Tepe tablets are all Uruk-style tablets.” “A single tablet (T295) has been classed as numero-ideographic, it bears a pictographic Uruk IV sign” (Matthews 2013: 347). Sialk (IV 1) yielded numerical tablets, prior to the appearance of Proto-Elamite documents.<sup>90</sup> Proto-literate tablets have also been found in northeastern Iran, at Tepe Hissar. At Uruk, proto-cuneiform signs and numerical systems were present together on tablets, but at Susa, it was only at Level III that pictograms appeared, after Susa II and the numerical tablets (Potts 1999: 63). Only “three of the thirteen numerical systems attested at Uruk [Late Uruk and Jemdet Nasr periods] were introduced to Susa [Susa II]” (Potts 1999: 65). But the Proto-Elamite includes a “decimal counting system that is not attested at Uruk (Dahl *et al.*)” (Petrie 2013b: 393). Potts emphasizes that although Mesopotamian scribes probably settled at Susa, it is difficult to view Susa as an Urukian colony. In fact, it is possible that a state centered on Susa maintained its autonomy, and influenced the Iranian plateau (see Petrie 2013b: 399).

The Urukian expansion fostered new development in Anatolia and Syria, where local elites took advantage of the exchanges and adopted some southern Mesopotamian practices such as the use of cylinder seals.<sup>91</sup> They established themselves as intermediaries along the roads of coveted products and organized their own craft production. Arslantepe, where a vast public palace-like structure was built starting in 3500 BCE, appears to have been a minor power center, controlling local or regional production. Many seals have been excavated, that were used in accounting operations. The site shows connections with southern Mesopotamians, but also with Syria and the Maykop culture.<sup>92</sup> As already pointed out, ideology – and ideational technologies – certainly played an important role in the southern Mesopotamian expansion; ideology clearly influenced the northern chiefdoms or proto-states and contributed to their configuration into semi-peripheries of the Urukian world-system.<sup>93</sup> The culture of Maykop, in the northwestern Caucasus, clearly reflects

<sup>90</sup> A clay bulla and a tablet dated to the Susa II period have also been found at Tepe Sofalin (Petrie 2013b: 390).

<sup>91</sup> The map presented by Primas (2007: fig. 7) clearly shows the spread of cylinder seals in the fourth millennium, along the Tigris (Nuzi, Nineveh, Tell Brak) with more seals appearing along the Euphrates River (Habuba Kabira, Jebel Aruda, Hacinebi, Hassek Hüyük, Samsat, Arslantepe) and in the Levant (Tell Afis, Judeidah, Catal Hüyük, Ugarit).

<sup>92</sup> Frangipane 2004a: 128; 2004b: 65; Rassamakin 2002: 55. Frangipane, however, does not believe that long-distance trade played a crucial role in the development of northern societies; she mentions growing metallurgical activity at Arslantepe, but considers this as simply production for a local elite. G. J. Stein also seems to agree: for Stein, there is no evidence at Arslantepe for a production oriented toward exports, and long-distance exchange played only a limited role; however, he notes a development of sheep herding for wool production, and borrowings of Urukian symbols of power by the local elites, which went along with societal transformation at Arslantepe (1999: 105–110) (see also Frangipane [2001: 330], who stresses the role of the ruling elites in the sheep breeding). For P. L. Kohl (2007: 223), the development of sheep herding at Arslantepe may have been favored by the arrival of populations from Transcaucasia.

<sup>93</sup> Algaze 2001: 67, 69. The novelty of the sociopolitical organizations in the south refutes Nissen’s view (2001: 167) of the Urukian expansion as a simple attempt to reconstitute the exchange networks of the Ubaid period.

Mesopotamian influences, first from northern Mesopotamia,<sup>94</sup> with the borrowing of the slow wheel, and later from southern Mesopotamia, as revealed by the discovery of a cylinder seal and a toggle-pin with a triangular-shaped head known at Arslantepe during the Late Uruk period (Kohl 2007: 75; Kohl and Trifonov 2014: 1578). Brought through Iran and the region of Nineveh, lapis lazuli has been unearthed at no fewer than three sites (Maykop, Novosvobodnaya, Staromysatov) (Primas 2007: fig. 9). Carnelian and cotton from India have also been found, as well as turquoise from Tajikistan (Cunliffe 2015: 93). The extension of exchange networks can also be seen in the northeastern Caucasus, where the site of Velikent, which appeared around 3500 BCE, yielded arsenical bronze from its earliest levels.<sup>95</sup> In the Urals, copper at the site of Kargaly was mined as early as the second half of the fourth millennium (Chernykh 2002: 94), and the “royal” kurgans exhibit extraordinary wealth in metals, including gold and silver objects (Kohl and Trifonov 2014: 1579). These interactions would lead to the emergence of new institutions in the Eurasian steppes (Kristiansen 2007: 160). South of the Caucasus, in Transcaucasia, the Kura-Araxes formations expanded from 3500 BCE onward.<sup>96</sup> Some tin-bronze ornaments have also been discovered in the tombs of Velikent; these bronzes would become more abundant during the first half of the third millennium in kurgans south of the Caucasus, and then further west, at Troy II and at Aegean sites and as far as the Adriatic (Velika Gruda). The tin may have come from Central Asia (Afghanistan, Samarkand, or regions further east?).

It would be inaccurate to view the seven hundred years of the Middle and Late Uruk periods as a continuum of growth in space and time: several phases of growth and decline are apparent. A first phase of expansion occurred around 3600/3500 BCE, and another one a few centuries later (Habuba Kabira would come under this second phase). Rothman (2004: 57) discerns three phases of expansion, the first at the start of the Middle Uruk period, the second later during the same period, and the third during the Late Uruk.

Moreover, as already mentioned, authors such as Ur tend to emphasize continuity with preceding centuries rather than “revolution.” Ur notes the presence of tripartite houses that were already known during the ‘Ubaid period: so-called “palaces” or “temples” retained the same structure. Ur rejects the idea that urbanism results from extending trade and growing tribute demands; he does not believe in the formation of social classes going along with the creation of true bureaucracies. “Urban society in the Uruk period was a dynamic network of nested households,” writes Ur (2014: 15). Here, however, he does not discuss the implications of the development of writing and of the impressive division of labor revealed by later lists of professions. For him, “broad social change is more likely to stem from the creative transformation of an existing structuring principle – in this case, the household – than from the revolutionary replacement of

<sup>94</sup> Kohl and Trifonov (2014: 1579) suggest an intrusion by northern Mesopotamian colonists into the southern Caucasus.

<sup>95</sup> Kohl 2007: 106. Produced by means of a potter’s wheel, fine ceramics exhibit a Mesopotamian influence. Moreover, metallurgical production in the Caucasus may have been fostered by relations with Iran (Kohl 2007: 70; Avilova 2005: 27). The Maykop culture probably exported wool as well.

<sup>96</sup> The site at Leila-depe contains ceramics exhibiting parallels with Late ‘Ubaid pottery, but “the parallels are better made with Early and Middle Uruk ceramics” (Kohl 2007: 68–69).

an existing structure with a completely new one.” He notes that “the term for ‘palace,’ *e<sub>2</sub>-gal*, literally meant ‘great house’.” However, this may be just a metaphor; and the fact that a city or a temple could remain under the rule of a particular household should not lead us to preclude the idea of new types of political or religious elites. Ur himself notes that some large tripartite houses built on high terraces must indeed be temples; their construction implies a large labor investment. Surely these “households” were not just common households. It is true, however, that when we consider ancient societies, “categories such as ‘urban’ and ‘state’ must be able to subsume a great deal of variability” (Ur 2014: 20), and the birth of the state does not imply the disappearance of kinship.

Most of the exchanges between southern Mesopotamians and northern populations are thought to have occurred within peaceful contexts. Military power must have played a role, however, especially when strong political entities emerged in the semi-peripheries of the Urukian area. During the Late Uruk period, settlements such as Habuba Kabira and Abu Salabikh were fortified: this appears to reflect growing conflicts.<sup>97</sup> At Hamoukar, a conquest by southern Mesopotamians has been suggested. “Urukians” also took over Brak – after a period of interaction<sup>98</sup> – and possibly Nineveh. Moreover, slaves may have been exchanged with the northern proto-states and then led to the cities of southern Mesopotamia.<sup>99</sup>

The Urukian expansion extended toward Egypt, via northern Syria. The existence of an Anatolia–Levant sphere of interaction is shown in the participation of Hama and sites of the Amuq in “a Syro-Anatolian glyptic tradition distinct from Mesopotamia,” the diffusion of the technology of the “Cananean blades,” the use of the pottery wheel, the presence of silver items at Byblos, in the southern Levant and in Egypt, and the relative abundance of copper at Byblos, with silver and copper coming from Anatolia (Philip 2004: 218, 220). This sphere of interaction was already in place at the start of the fourth millennium.

In the Persian Gulf, in contrast to what can be observed in Upper Mesopotamia and Iran, the Urukian presence seems to have been limited, perhaps because the organizational level of Arab societies did not allow for an efficient utilization of resources. It is unlikely that the Mesopotamian influences observed in the Nile delta and in Upper Egypt resulted from the presence of Urukians who sailed around the Arab coasts.<sup>100</sup> Exchanges did occur, however, during the fourth millennium, between Mesopotamia, Iran, and the eastern Arab coast. A clay bulla has been found at Dharan (end fourth millennium); Mesopotamian-type jars with tubular spouts discovered at Umm an-Nussi in the Yabrin oasis and at Umm ar-Ramadh in the al-Hufūf oasis may date to this period.<sup>101</sup> Around 3400 BCE, at Ra’s al-Hamra (Masqat), grey ceramic from southeast Iran was used to heat bitumen imported from

<sup>97</sup> On this extension of conflicts, see Wright 2001: 146. Wright notes the growing importance of semi-nomadic communities during this period, especially in Upper Mesopotamia; at the same time, Uruk became preeminent in Lower Mesopotamia. Violence is depicted in the new iconography which developed during the Late Uruk period.

<sup>98</sup> Algaze 2001: 45; Emberling 2002; Lawler 2006. For Oates (2004), it is difficult to discern whether the southern Mesopotamians controlled a part of the site or the whole city, during the Late Uruk period.

<sup>99</sup> The possibility of a slave trade is not taken into account by either Stein or Frangipane.

<sup>100</sup> Oates (2014: 1485), however, does not exclude the possibility.

<sup>101</sup> Potts (1990), however, relates this pottery to the Early Dynastic I.



Mesopotamia (Cleuziou and Tosi 1989: 30). The name of Dilmun (which, during this period, refers to the Arabian coast in the region of Tarut-Dharan, and not yet to Bahrain) appears in a text from the Uruk IV phase: we hear of a “Dilmun tax-collector,” which means that Sumerians were involved in trade with Dilmun, and a text from Uruk III refers to a “Dilmun axe” (Potts 1990: 86). Archaic texts from Uruk also mention copper from Dilmun, which may have originated in Oman. It could be that during the final years of the fourth millennium, barley and wheat were taken to Arabia. The term ŠIM, which seems to mean “aromatic essence, incense,” already appears in texts of the Uruk IV period. Archaic texts from Uruk mention “an aromatic product for the use of the priests”: aromatics certainly reached Dilmun at this time via a route linking Dhofar to Yabrin and al-Hasa (Zarins 1997, 2002). Moreover, the discovery of bowls of Urukian (or Proto-Elamite) type in Baluchistan renewed speculation on the possible role played by contacts with Susa and Mesopotamia in the emergence of the Harappan culture (Benseval 1994, Joffe 2000). Pottery of Urukian style unearthed at Tepe Yahya reflects southeastern Iranian links with Susa. The discovery of cotton fibers on fragments of plaster in a camp at Dhuweila (Jordan) (between 4450 and 3000 BCE) reveals the importation of cotton fabrics, possibly from the Indus region.<sup>102</sup>

Around 3200/3100 BCE, the Urukian “colonies” were suddenly abandoned; we observe a reorganization of the exchange networks as well as social transformations – not yet well understood – in southern Mesopotamia. Various reasons have been advanced. The decline observed in some “colonies” before their abandonment may have had its origin in the core of the system itself. A salinization of the lands – a consequence of faulty irrigation – may have led to weaker agricultural productivity and, therefore, to an increase in conflicts between city-states as well as to internal social problems: one notes “the abandonment of many of the public structures at the very core of Uruk itself.”<sup>103</sup> Climate data for the end of the fourth millennium show a decline in oak woodland at Lakes Van and Zeribar, and low water volumes for the Tigris and the Euphrates, reflecting a drier climate.<sup>104</sup> An aridization of southern Mesopotamia may have begun in the middle of the fourth millennium.<sup>105</sup> In addition, one observes a

<sup>102</sup> Betts *et al.* 1994. Remains of cotton threads have also been discovered in the Maykop culture (3600–3200) at Novosvobodnaya (Shishlina *et al.* 2003).

<sup>103</sup> Algaze 2001: 77. Glassner (2000a: 47) speaks of a “radical redesign” at Uruk, but he also makes the point that no cultural break is observed. For Nissen (2001: 164), the absence of writing at Habuba Kabira and Jebel Aruda could indicate an abandonment prior to the Late Uruk phase: the collapse of the colonies would then have been caused by conflictual political conditions in the north and not by a decline of the south. However, the absence of writing *sensu stricto* at Habuba Kabira, where numeric tablets, bullae, and other instruments of control and administration of the southern cities have been found, could simply result from the fact that writing was not a requirement for these colonies (H. Wright, p.c.). Carbon dates suggest date ranges between 3340–2890 and 3100–2940 for Habuba Kabira and 3360–2970 for Jebel Aruda (Wright 2001). Moreover, Nissen refutes the idea of a decline at Uruk and in southern Mesopotamia at the end of the fourth millennium (2001: 167, 173) (cf. also Frangipane 2001: 343).

<sup>104</sup> Butzer 1995: 133, fig. 2, 136 (lake levels were probably low between 3200 and 2900 BCE). Pollen analysis at Lake Zeribar shows a decline in oak between 3250 and 2750 BCE.

<sup>105</sup> Wright 2001: 128. For Mitchiner (2004) and for Nissen (2001: 171), the process of aridification had already begun around 4000 BCE, freeing up lands hitherto submerged and stimulating the development of irrigation.

weakening of the summer monsoon system of the Indian Ocean, especially around 3200 BCE.<sup>106</sup> The pressure exerted by cities on their physical surroundings (deforestation ...) and the human environment (tributes, corvées, urban migration) may also have been destabilizing factors. It is likely that the activity of the outposts depended in part on products such as textiles delivered from urban centers of the south. The profitability of these outposts could not be ensured within a climate of economic and political deterioration.

In addition, the destruction of the “palace” of Arslantepe by a fire *c.* 3000 BCE leads us to suspect other destabilizing factors which were not solely linked to climate change, but were also the indirect consequences of the Uruk expansion itself.<sup>107</sup> Transcaucasian populations belonging to the Kura-Araxes formations entered the plain of Malatya; they had probably been displaced by the arrival of groups coming from the steppes and the northern Caucasus. These Transcaucasians occupied Arslantepe from 3000 to 2900 BCE.<sup>108</sup> North of the Caucasus, the Maykop culture disappeared around the end of the fourth millennium (Kohl and Trifonov 2014: 1581–1582). We observe a reduction in number and size of the settlements in Anatolia following the collapse of the Urukian colonies, as well as a regional fragmentation.<sup>109</sup> Pontic and Transcaucasian influences are also seen in northwestern Iran during the late fourth and early third millennium, for example at Yaniktepe. At Godin, from 3100 to 2900, the Urukian/Susian influence diminished while at the same time, Transcaucasian pottery came into use (this pottery would become the most commonly used during phase IV).<sup>110</sup> Godin shows evidence of a fire, as does Sialk III, which was destroyed *c.* 3000 BCE. The Kura-Araxes populations also migrated to the southwest, entering the Amuq plain (Syria) then northern Palestine, around 2800–2700 BCE (Kohl 2007). In northern Mesopotamia, the lower town at Brak was abandoned, trade networks faded away, and “the use of tokens and sealed bullae as administrative technology disappeared, and mass production of pottery, on a large scale in the mid- to late-fourth millennium (e.g. Oates and Oates 1993: 181–182), all but disappeared at the end of the Uruk period” (Ur 2010: 401).<sup>111</sup> The

<sup>106</sup> Staubwasser and Weiss 2006; see below. For these authors, sharp climate change is noticeable in Anatolia, at Lake Van, and in Oman. Analysis of ice cores from Kilimanjaro also shows a climate change around 3100 BCE (Thompson *et al.* 2002).

<sup>107</sup> These movements can be understood as “one of the long-term consequences of the Uruk expansion” (Algaze 2001: 76). We cannot imply, as did Warburton (2003: 229), that Anatolia collapsed simply due to a decline in southern Mesopotamian demand.

<sup>108</sup> Frangipane 2004b: 63; Huot 2004, I: 174. Sherratt and Sherratt (2001: 34 n. 24) state that these Transcaucasian populations may have contributed to spreading the ritual use of wine. Kohl *et al.* (2002: 127) note the effects of climatic deterioration at the beginning of the third millennium in the north Caucasus–Caspian region. Migrating populations reached Syria–Palestine around 2800/2700 (Lyonnet and Kohl 2008: 32).

<sup>109</sup> Rothman (2001b), however, points to an apparent continuity in the Jazira plain, while a new type of pottery called “Ninivite V” appeared in a vast arch-shaped area. Moreover, Tell Brak, at the beginning of the third millennium, still showed cultural influence from southern Mesopotamia (such as the layout of the Eye Temple) (Crawford 2004: 120–122).

<sup>110</sup> Badler 2004: 82; Burney 1994: 48–50; Kohl 2007: 98. Edens (2002b: 33) gives a date for phase IV at Godin (containing pottery of the Kura-Araxes type, 2600 BCE) that is later than the date proposed by other authors.

<sup>111</sup> Oates (2014: 1485) also suggests the arrival of Semitic people as a possible cause for the abandonment of the Urukian colonies.

Urukian networks obviously could not survive in a politically hostile environment. Trade relations between Egypt and Mesopotamia practically stopped around 3100/3000. Upheavals in the north of the Urukian sphere of interaction affected not only the north–south relations, but also east–west routes. The abandonment of the northern colonies corresponds to a shift in Mesopotamian trade southwards toward the Persian Gulf, where copper in Oman began to be utilized in a significant way, within a more fragmented political and cultural context.<sup>112</sup>

Changes also occurred in the east. One notes a drop in population in Susiana *c.* 3200. “Sites with Late Uruk material disappear from the Susiana plain, and above the abandoned remains of the last Uruk community at Susa are layers with Banesh-related ceramics [known on the Iranian plateau] and Proto-Elamite texts” (Wright 2013: 68–69). Petrie notes that “the Proto-Elamite period was preceded by a widespread disruption in occupation at all of the excavated sites” (2013b: 400). A distinctive culture then developed at Susa (III), with increasing interaction between Susa and the Iranian plateau.

## The State in Egypt: Formation of the First Kingdoms

### *The Predynastic Period*

During the fourth millennium, a progressive aridization of the Libyan desert and of the eastern desert led to movements of populations toward the Nile valley and encouraged more intensive agricultural practices in recession agriculture. Lands fertilized by the Nile formed a relatively landlocked area; this situation may have favored a centralized political mode of organization and may have ensured better stability for the Egyptian system than had the irrigated lands of southern Mesopotamia. In contrast, southern Mesopotamia could have benefited from more varied exchange networks: the situation and structure of the region of the Tigris and the Euphrates rivers partially explain its instability and its dynamism, both characteristic of the city-states. The nature of the state in Egypt was also influenced by the politico-religious features of the societies from which this state originated (Wengrow 2006). One should note that the ritual scene featuring the king striking the heads of his vanquished enemies with a macehead was already represented during the Nagada Ic period (Wilkinson 2003). The ideological foundations of power were different in Mesopotamia and in Egypt. In Egypt, the figure of the god-king pharaoh was the guarantor of cosmic and social order, whereas the Mesopotamian lords were above all administrators and war chiefs. Order in Mesopotamia was the result of negotiations within cities, between cities, and between urban populations and nomads. Egypt became urbanized from around 3500 BCE, with various competing proto-states controlling sections along the river and neighboring regions. Political entities were centered on Nagada, Hierakonpolis (Nekhen), and This (Abydos was the necropolis of the people of This). Upstream from Nagada, the kingdom of Abou (Elephantine)

<sup>112</sup> Algaze 2001: 76–77; Crawford 2004: 182. As pointed out above, however, texts from the Eanna IV of Uruk, at the end of the fourth millennium, already mention copper from Dilmun, which may have originated in Oman or Iran.

formed another political entity. Kingdoms also developed in the delta, with Buto and Gerza (Gerzeh) as capitals.<sup>113</sup> During the Nagada IIc–d period, the funerary rituals of the south were adopted in northern Egypt.

At the same time, long-distance exchanges were developing. The dearth of stone and minerals in the valley led to the setting up of commercial networks, with the Nile offering the possibility of transport by boat. Very early on, the Mesopotamian sphere established indirect contacts with the Nile valley, through the Syrian coast.<sup>114</sup> These contacts would serve as catalysts in the formation of the state. The principal domesticated plants of western Asia (wheat, barley, pea, lentil, faba beans) were introduced into Egypt as early as 4500 BCE, and flax around 3500 BCE at the latest (Fuller and Hildebrand 2013). The Nile delta imported olive oil and wine from the Levant; ceramic vessels for both have been discovered. Other ceramics appear to be linked to the preparation of bread and beer, using production techniques clearly adopted from Mesopotamia (Wengrow 2006). This revolution was not only culinary: it went along with the building of the state and with innovations in funerary practices. Iconographic motifs observed in Egypt – especially during the Nagada IIc–d phase – have been linked to Susiana (two intertwined snakes) and Mesopotamia (“the master of animals,” serpopards, winged griffons, rosettes),<sup>115</sup> as well as architectural elements (the appearance of a type of monumental architecture using sun-dried bricks shows an influence from western Asia).<sup>116</sup> Moreover, cylinder seals of Mesopotamian type were also in use (Moorey 1995; Mark 1998; Wilkinson 2004; Wengrow 2006), for imprints on jar seals, but were also sometimes used as ornaments. Other objects linked to administrative activity, such as conical “tokens,” which have their parallels in Mesopotamia, may have represented elements of accounting (Wilkinson 2004). Lapis lazuli from Afghanistan also arrived in Egypt, probably via the Levantine port of Byblos.<sup>117</sup> Lapis has been found at Nagada (as early as the Nagada I phase), at Abydos and Hierakonpolis. Exchanges became more regular around the middle of the fourth millennium, during the Nagada IIc–d cultural phase (*c.* 3600–3300 BCE), thanks to the growing use of the

<sup>113</sup> Ivory “labels” found in the tomb U-j of the first king “Scorpion” at Abydos (see below) mention three settlements in the delta: Buto, Bubastis, and another unidentified city (Levy and van den Brink 2002: 8, 18). The texts of the pyramids refer to two (neighboring?) cities, Pe (Buto?) and Dep. In a period preceding Nagada IIc, however, tombs in cemeteries of Lower Egypt contain few offerings, compared with the graves of Upper Egypt (Wengrow 2006: 36).

<sup>114</sup> Maritime contacts via southern Arabia appear to have been less likely. It is curious, however, that the major site of Nagada appeared near the road of the Wādi Hammamat linking Koptos and the Red Sea. This route would become the great commercial corridor between Egypt and the Indian Ocean. See Moorey 1995, Mark 1998, Meeks 2002.

<sup>115</sup> Among other motifs originating in Mesopotamia were that of a bird of prey on the back of a quadruped, well known at Hierakonpolis, that of a lion attacking a horned animal from behind, and that of an ibex turning its head (Vertesalji 1992).

<sup>116</sup> A first use of brick has been found for a house at Hierakonpolis dated to the Nagada Ib–c period (*c.* 3700 BCE). The use of mud-brick in building funerary structures became “a standard feature of high status burials” in the Nagada III period (Wengrow 2006: 78, 171).

<sup>117</sup> There is a necklace from this period, British Museum EA 63077. Tombs in Byblos have yielded silver and copper from southern Anatolia on the one side, and gold, ivory, and Egyptian figurines of the Nagada I type on the other (Aubert 2013: 210).

donkey, domesticated in Egypt,<sup>118</sup> and to the development of navigation. It is during this period that more lapis lazuli was found in Upper Egypt. The Nile Valley also began receiving cedar wood; basalt jars and grinding stones; bitumen from the Dead Sea; carnelian beads,<sup>119</sup> and, more importantly, copper: for the Nagada IIc–d period, Wengrow points to a trade of ingots and copper sheets of a standardized size, a trade revealing contacts with the Levant.<sup>120</sup> In the first instance, the importance of copper in manufacturing weapons probably explains the advance of the Nagada culture into the Nile delta as well as the ensuing Egyptian thrust into the southern Levant. The date palm, domesticated in the Persian Gulf, may have been introduced into Egypt during the Nagada IIc–d period.<sup>121</sup> In exchange for these Asian products, Egypt exported ivory, stone maceheads, palettes, ceramics, stone tableware, gold ingots in rings, and textiles (de Miroschedji 2002). Asians probably lived at Maadi and at Buto even before the middle of the fourth millennium,<sup>122</sup> and Egyptians were already present in the southern Palestine during the Nagada I phase (Levy and van den Brink 2002: 18; Wilkinson 2002: 516–517; Hartung 2002: 446).

Contacts with Mesopotamia progressed when Habuba Kabira and other Urukian colonies developed (at the end of the Nagada II and during the Nagada III periods in Egypt, *c.* 3300–3150 BCE). The discovery of a Nubian shard of the Nagada IIc period at the site of Habuba Kabira is significant. Wright has suggested the possible presence of Syrian artisans in the Nile valley, and that of Egyptians in Syria (quoted by Joffe 2000: 118 n. 7). The discovery of silver at Byblos and in Egypt,<sup>123</sup> and of Mesopotamian-type pottery in Egypt,<sup>124</sup> reveals maritime links between the Nile valley and northern Syria. The presence of Urukian elements at Buto has been inferred from various assemblages. Cones and clay nails found there, for example, have been compared with the cones assembled to form colored mosaics decorating religious buildings during the Urukian period, but this identification has recently been questioned by various authors.<sup>125</sup>

Egyptian influences are also obvious in Lower Nubia during the same period (in the tombs of what is known as the A-group, as well as at Qustul and Sayala), along with imported items such as lapis lazuli and objects featuring an Egyptian iconography. The

<sup>118</sup> Moorey 1995: 199. Donkeys were domesticated at Maadi at the beginning of the fourth millennium and perhaps at El-Omari during the fifth millennium (Margueron and Pfrisch 2001: 92). Wengrow (2006: 39) notes increasing interactions with the Levant through “a pack-donkey route” established around the mid-fourth millennium BCE.

<sup>119</sup> Smyth 1998: 7; de Miroschedji 2002: 40. Egypt also received honey and turquoises from Sinai. Egyptian objects in Palestine are more numerous than are Palestinian artifacts in Egypt.

<sup>120</sup> See Wengrow 2006: 39. One notes a growing number of copper artifacts in Egypt and in Lower Nubia during the Nagada IIc–d phase. See also Golden 2002.

<sup>121</sup> de Vartavan and Asensi 1997: 193; Fahmy 1998 (finds at Nekhen, site HK43). Date pits have been discovered in a cave at Nahal Mishmar (Israel), dated to the fifth millennium BCE.

<sup>122</sup> At Maadi, stone structures predating Upper Egypt’s Nagada IIc–d period show a Levantine influence that most likely reflects the presence of Asian people. Maadi imported pottery and copper from Palestine.

<sup>123</sup> The cupellation process for separating lead and silver, in use at Habuba Kabira, may have been introduced into Egypt through northern Syria.

<sup>124</sup> Three pottery vessels of Mesopotamian style found at Badari and Mostagedda may be imports (Wilkinson 2004: 238–241).

<sup>125</sup> Cf. Baines 2003; Philip 2004: 221; Wengrow 2006: 97.

contents of some tombs bear testimony to the wealth acquired by a Nubian elite through trade between Arabia and Inner Africa on the one hand, and Egypt on the other, particularly at the beginning of the following Nagada III phase.<sup>126</sup> The Nubian A-group used copper tools and exported copper, gold,<sup>127</sup> and incense (from African *Boswellia*?).

Like the Urukian expansion, that of the Nagada culture (originating in Upper Egypt), to the south and to the north, was based on an agricultural and demographic potential, and seems to have been motivated by the search for metals, Nubian gold, and Palestinian copper; this expansion occurred between 3500 and 3200, within the framework of territorial states in competition. Here again, innovations in means of transport played a crucial role in extending networks. The increasing use of the donkey has been noted above. During this period, many depictions of boats appeared on pottery. As symbols of royal power, boats reflected the scope of the ruler's control over fluvial transport. The first ships were built of reeds, but construction of boats from planks tied by ropes may have begun during the middle of the fourth millennium, a period that witnessed the introduction of the sail (Ward 2006).

### *“Dynasty 0” at Abydos*

Excavations conducted at Abydos have uncovered tombs and inscriptions corresponding to a series of kings forming what is usually known today as “Dynasty 0.” Tomb U-j at Abydos, that of King Scorpion (Scorpion I), has yielded 400 jars, mostly for containing wine; some of these jars are of Palestinian origin. Also found were 150 inscriptions, on small bone or ivory plaquettes, or on jars. These inscriptions constitute the first known hieroglyphs.<sup>128</sup> This script, whose creation was probably influenced by the Urukian experience, emerged alongside the formation of the state. Writing was linked to the circulation of goods, and also had a ritual dimension. Both of these aspects of script ultimately referred to the figure of the king. The plaquettes mention the origin of the goods, and some of them bear signs of account; the names *Buto* and *Baset* on labels may attest to tributes sent by these cities. Radiocarbon dating has yielded 3300 BCE, but researchers suggest that the tomb be dated rather to the thirty-second or thirty-first century BCE.<sup>129</sup>

The ninth ruler after King Scorpion I, a king of This, Narmer, at last unified Egypt prior to 3100 BCE (Bard 2000; Watrin 2002). It is likely that the emergence of This/Abydos was based on military organization and an increasing use of violence, as shown

<sup>126</sup> The absence of Egyptian objects in Upper Nubia at this time reveals the status of intermediary held by the A-group of Lower Nubia in exchanges.

<sup>127</sup> For Wengrow (2006: 34), “there is no direct evidence of metallurgical knowledge within Egypt until the late fourth millennium BC,” although copper items dated earlier have been found. See also Killick 2009b.

<sup>128</sup> Bard 2000: 64; Arnaud and Kiner 2006: 63, 65. The first ruler mentioned in the inscriptions, King Oryx, may date to c. 3300 BCE. See also Raffaele 2003: 104ff. The tomb also contained boxes made of cedar imported from Syria.

<sup>129</sup> Joffe 2000: 113–114 n. 4; Braun 2001: 1283. This discrepancy between radiocarbon dating and archaeological estimates is usual for this period and the following one. Krauss and Warburton (2006: 487) propose a later date for Tomb U-j, c. 3000 BCE. Raffaele (2003) considers that there was “a time span of c. 150–200 years between the owner of Abydos tomb U-j and Narmer.”

by the discovery of weapons, which were more numerous from the Nagada IIc–d period onward; the “Towns palette” and the Narmer palette may also reflect this violence: their iconography is unlikely to be merely symbolic.<sup>130</sup> The formation of a unified Egyptian state went along with agricultural intensification and the king’s control over transregional exchanges. Tablets became more complex: the name of the sovereign was written down, as well as the year the goods were delivered. It is during this period (Nagada IIc–IIIa) that the royal ideology was formulated, accompanied by new religious practices (Wengrow 2006: 265). The purpose of the kings of Abydos seems to have been control of Egyptian gold and of copper resources of the Arava (Timna, Israel). Contacts with the Levant intensified during this period, accelerating the emergence of local hierarchies. In addition, it is likely that centers under Egyptian administration appeared in southern Palestine (Hartung 2002). Besides copper and wine, Egypt imported oil, resins and wood, particularly cedar wood from Lebanon. Originating in the Levant, the grapevine was cultivated in the Nile delta during the second half of the fourth millennium (see below), and Egypt produced wine during the First Dynasty.

Egypt was also connected to the south; the elite of the Nubian A-group culture benefited from its position as intermediary between Inner Africa and the Horn of the continent on the one side, and Egypt on the other (see above).

### *Egypt, the Interior of Africa, and the Indian Ocean*

Ancient routes linked the coasts of the Red Sea and the African interior to Nubia and Egypt. Cowries have been discovered in Nubia that date to the Neolithic period (el-Kadada, Central Sudan), and in a tomb belonging to the A-group culture (Phillips 1997: 427; Haaland 1999: 412–413). Other marine shells have been excavated at Kadero (Sudan) dated *c.* 4000 BCE, and the communities of the Kassala phase (Sudan, 3000 BCE) also had connections with the coasts of the Red Sea. Obsidian from Ethiopia has been discovered in Predynastic tombs of the fourth millennium BCE (period Nagada II, or as early as Nagada I).<sup>131</sup> Two arrows belonging to the Proto-Dynastic period discovered at Abydos are thought to have been carved from ebony (*Diospyros mespiliformis* Hochst. ex. A. DC.), found in Eritrea, Ethiopia, Sudan, and Yemen (Western and McLeod 1995: 80–81, Meeks 2002: 280). A bracelet carved from an Indian shell has been excavated in a tomb in Lower Nubia dating to the end of the fourth millennium BCE (Fattovich 1997a: 480). The cemetery of Qustul (Lower Nubia) yielded stone pots that were used for burning incense.

### Central Asia and Southern Asia

From the seventh millennium on, two secondary Neolithic centers formed in Turkmenistan on the one side, and in the Indus valley on the other. Interconnected proto-urban

<sup>130</sup> The demise of Maadi was noticeable during the Nagada IIc–d period, and we observe a discontinuity in some settlements around 3300 (for example at Tell el-Farkha and Tell Ibrahim Awad).

<sup>131</sup> Zarins 1989, Bavay *et al.* 2000, Hendrickx and Bavay 2002. The stone used for all the obsidian tools of Hierakonpolis, Abydos, Nagada, and Qaw el-Kebir that have been studied originated in Ethiopia or Yemen. Chemical analysis does not allow us to differentiate between obsidian from the Horn of Africa and obsidian from southern Arabia (Durrani 2005).

settlements appeared in Central Asia, in eastern Iran and in the Indus during the fourth millennium (Tosi and Lamberg-Karlovsky 2003). In Turkmenistan, the assemblages of Altyn Tepe and of the Geoksyur oasis (Namazga III phase)<sup>132</sup> show shells imported from India, and ceramics for which parallels can be seen in pottery found at Shar-i Sokhta I (Sistan, Iran), Mundigak III (Afghanistan), Quetta (“Quetta Ware”), and Mehrgarh III (Pakistan). Spindles unearthed at Anau and Shar-i Sokhta also show links between Turkmenistan and Sistan (Good 2006: 203). The data therefore do reveal connections and interactions among these different regions (Hiebert 1994; Possehl 1999a; Ratnagar 2004). The affinity of the painted pottery from the lower levels of Shar-i Sokhta with pottery from Turkmenistan may indicate that people from this region migrated to Shar-i Sokhta during the second half of the fourth millennium (Masson 1996a: 232). Global climatic cooling *c.* 3200/3100 BCE may have triggered some movements of populations towards the south, similar to what would be observed more than a thousand years later. In any case, a sphere of interaction including Turkmenistan, eastern Iran, part of Afghanistan and Pakistan, had already formed by this time. Moreover, contacts were made between populations from the steppes and the settlements of Turkmenistan around the middle of the fourth millennium (Lyonnet and Kohl 2008). Shar-i Sokhta also served as an interface for regions near the Indian Ocean. Located on a route leading to Elam and Sumer, Shar-i Sokhta was a regional center linked to Baluchistan (discovery of Nal pottery) and southern Iran. An Elamite seal dated to *c.* 3200 BCE has been discovered in Turkmenistan. East of Shar-i Sokhta, Mundigak received lapis lazuli from Badakshan (northern Afghanistan) and turquoise from either Nishāpūr (northeast Iran) or from Kyzylkum (Kazakhstan). These stones were worked locally into beads. Moreover, Mundigak yielded a single ivory item, imported from India, and ceramics from Baluchistan (Quetta ...).<sup>133</sup> The site was probably connected with settlements of the Indus basin such as Rahman Dheri. The likely center of a chiefdom emerging around 3300, Rahman Dheri became a fortified settlement during the first half of the third millennium.

The expansion of both Turkmenistan culture and long-distance trade was accompanied by the emergence of the site of Sarazm, in the Zeravshan valley (Tajikistan). Its earliest levels go back as far as the late fourth millennium. It has revealed “close architectural and ceramic parallels with sites in the Geoksyur oasis [Turkmenistan] and even farther south in Baluchistan” (Kohl 1995: 1060; Ratnagar 2004: 15).<sup>134</sup>

<sup>132</sup> Connections between Turkmenistan and Iran are already noticeable during the Namazga II phase (Lamberg-Karlovsky 1977: 36).

<sup>133</sup> Jarrige and Tosi 1981, Sarianidi 1996. Mundigak III can be dated to between the second half of the fourth and the first half of the third millennium.

<sup>134</sup> Although Sarazm is located near sources of tin, it contains only copper artifacts. In Turkmenistan, tin was rarely used prior to the Namazga VI phase (Weeks 2003: 176, Francfort 2005: 290 n. 163): it has not been determined whether or not tin was already being mined in Zeravshan during the third millennium (Boroffka *et al.* 2002). The mineworks in this region date to the period 1900–1300 BCE.