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The Oxford Handbook of the Archaeology and Anthropology of Hunter-Gatherers
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[–] Abstract and Keywords

Although the use of unfired clay and even the production of non-utilitarian ceramic artefacts by Palaeolithic hunter-gatherers has long been accepted, their role in the emergence and spread of ceramic vessel technology has, until recently, received little scholarly attention. Pottery was seen as a technology of sedentary agriculturalists, for which mobile hunters and gatherers would have had little use. This article reviews some of the archaeological evidence that has been used to support a reassessment of this traditional paradigm, showing that the agricultural connection can often be broken decisively and that themes of practicality and prestige, which characterize traditional discussions of the emergence of pottery, can be equally successful in exploring its origins as a hunter-gatherer technology.

Keywords: hunter-gatherer, pottery, ceramic vessel technology, origins

AT the outset, it is necessary to make the distinction between *clay* (a natural argillaceous material that, when suitably processed, becomes plastic and can be shaped into almost any form), *ceramic* (which in this context is used to refer generally to clay forms, fashioned, dried, and deliberately heated at high temperature with the intention of producing a durable product), and *pottery* (which refers specifically to portable *ceramic* vessels). Though apparently minor, these distinctions are important and not merely for reasons of greater clarity in the following discussion. Although it has long been accepted that hunter-gatherer communities found various uses for argillaceous materials during the last Ice Age, including the production of the first ceramic artefacts (e.g. Absolon 1949; Childe 1936; de Villeneuve 1906; Osborn 1916), until recently the idea that hunter-gatherers could have been responsible for the independent invention and dispersal of ceramic *vessels* was given little serious consideration (Jordan and Zvelebil 2009; Zvelebil and Dolukhanov 1991). In Europe at least, it was widely assumed that the ‘squalid…huddle[s] of marsh-ridden…forest-scavengers’ (Wheeler 1956, 231–4), the simple hunters and gatherers of the Palaeolithic and Mesolithic periods, would have ‘had little use for cumbersome and fragile pots [in their nomadic lives]’ (Anderson 1984, 81). The vision of ‘agriculture and the art of pottery-making…[as] a pair’ (Dixon 1928, 156), the principal elements in a wider ‘package’ of ‘revolutionary’ traits that together defined the Neolithic Age, was for many years almost universally accepted within the European archaeological community (Childe 1936; Hawkes and Woolley 1963).

Over the last 50 years, the incorporation of analytical techniques borrowed from the natural sciences and theoretical approaches developed in anthropology has fuelled this gradual re-evaluation of the origins of pottery technology and a renewed investigation of its social context (Jordan and Zvelebil 2009; Rice 1999). Of these developments, two are particularly significant: firstly, the introduction of absolute dating techniques, which has helped to establish the surprising antiquity of the relationship between hunter-gatherers and ceramic technology; and secondly, the application of alternative theoretical frameworks, developed in anthropology, within which it has been possible to reconsider the place of ceramic vessel technology in hunter-gatherer societies (cf. Bettinger

1991; Dolukhanov et al. 2005; Hoopes and Barnett 1995; Jordan and Zvelebil 2009; Kelly 1995; Kuzmin 2006; Rice 1999).

It is important to remember that in many hunter-gatherer societies, both before and after the emergence of pottery, clay and ceramics have been used for many other purposes (p. 664) (cf. Clark and Gosser 1995; Gurcke 1987; Hays and Wienstein 2004; Karkanas et al. 2004; Kashina 2009; Kobayashi 2004). It is these other uses that mark the beginning of the relationship between hunter-gatherers and ceramic technology and it seems appropriate to give them some consideration at the outset.

Clay Hunters and Ceramic Gatherers: The Earliest Ceramics of the Pleistocene

Clayey soils and sediments are a reality of everyday life in many environments, and their plasticity is a matter of general experience, especially among people whose livelihood depended on the skilful interpretation of animal tracks (cf. Mithen 1988). The fact that the properties of clay were well known to prehistoric hunter-gatherers is enigmatically illustrated wherever exceptional conditions of preservation have allowed. Bison, horses, lions, and bears rendered in clay as large, free-standing models and *bas-reliefs* have been found in several of the Magdalenian painted caves of southern France, most famously at the Le Tuc d'Audoubert and Montespan (Bahn and Vertut 1997; Hawkes and Woolley 1963).

Though often referred to as *art*, there is more to these representations of animal life than aesthetic concerns (Mithen 1988). At Montespan, for example, one such model of a crouching bear seems to have been given an even more lifelike aspect by draping it with the actual skin of the animal with its own head 'instead of one also modelled in clay' (Breuil and Berger-Kirchner 1961, 50). While the clay body itself may show signs of having been 'wounded' by spears 'hurled…as part of a magic rite' (Breuil and Berger-Kirchner 1961, 50; though see Bahn 1991 and references therein for a more sceptical viewpoint). Deep in these caves, with flickering light giving life to the shadows, it is easy imagine how dramatic this inspired manipulation of the plasticity of clay might have been. These rare examples hint at the use of wet clay in hunter-gatherer societies, which was undoubtedly more widespread and more varied than its limited representation in the archaeological record might suggest (Breuil and Berger-Kirchner 1961; Rice 1999).

The available archaeological evidence suggests that the properties of clay when dry and burnt were also put directly into use. Hard, earthen slabs set around a Middle Palaeolithic (Mousterian) hearth at the Grotte du Prince (Italy) have been interpreted as heat-storing 'grills', perhaps used for cooking meat. At Klisoura Cave I (Greece), specially constructed shallow clay-lined basins from the Aurignacian inhabitation of the site, dated to around 35,000 BC (34,700 ± 1600 BP—Gd-7892; 31,400 ± 1000 BP—Gd-7893) were also used to store heat for cooking and have been connected with the toasting of wild seeds (Hayden 1993; Karkanas et al. 2004). Such practical uses for clay as a means of storing heat are also likely to have been common in prehistory, but are usually not fired at a temperature sufficient to undergo the transformation to ceramic and therefore suffer from the same preservation bias as raw clay itself. Although such examples demonstrate that the earliest uses of clay were as likely to be practical as magical, it is interesting to note that the first truly ceramic artefacts again seem to be found in close association with dramatic, transformative rituals.

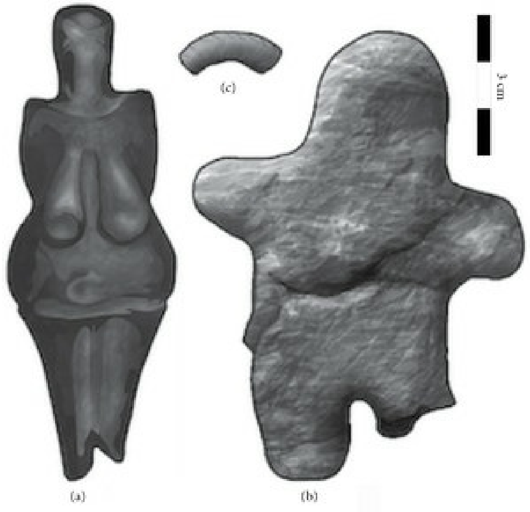

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Figure 30.1 (a) The 'Black Venus' found at the site of Dolni Vestonice, in the Pavlov Hills of the Czech Republic; (b) Terracotta human figure found at the Maïninskaya site, near Maïna on the Yenisei River in Siberia (redrawn after Bougard 2003); and (c) Line drawing of ceramic fragment from Tamar Hat near the Mediterranean coast of Algeria, interpreted (by some) as a fragment of a zoomorphic figurine (redrawn from Saxon 1976).

At the site of Dolní Věstonice, two raised hearth structures of fired clay have been identified in direct association with the earliest-known portable ceramic artefacts, dated to around (p. 665) 28,000 BC (25,600 ± 170 BP—GRO-1286) (Gamble 1999; Soffer et al. 1993). One of these early 'kilns' was found within the remains of a small structure, known colloquially as the 'magician's hut', about 80 m upslope from the main encampment (Gamble 1999; Vandiver et al. 1989). Thousands of fragments of small zoomorphic and anthropomorphic figurines and other objects, modelled from clay-like loess and fractured by the heat of the fire, were recovered from the floor of this hut (Soffer et al. 1993; Vandiver et al. 1989; see also Verpoorte 2000 for a discussion of other 'Pavlovian' sites with similar material). Although precise intentions can never be known, it would seem that deliberate action, not careless craftsmanship, led to the destruction of most of these artefacts. If exposed to high temperature, damp clay will hiss, crack, or explode as the pressure of expanding steam forces its way out from within (Arnold 1985; Rice 1987). The manipulation of such knowledge suggested by this assemblage and its spatial separation from other structures has implicated these early ceramics in potent mystical rites or divinatory rituals, acts of symbolic destruction and pyrotechnic display (Gamble 1999; Jordan and Zvelebil 2009; Soffer et al. 1993). Fragments of more carefully finished (p. 666) figurines, including the famous Black Venus (Figure 30.1(a)) which have survived the millennia almost completely intact may imply that when objects were required to survive the firing process their creators were able to ensure that they did (Soffer et al. 1993; Vandiver et al. 1989; though see also Verpoorte 2000 for a different interpretation).

Similar ceramic objects and figurines, both zoomorphic and anthropomorphic, have been identified at several other sites in the Czech Republic, Austria, Slovakia, and further afield: the human-shaped 'gingerbread figure' found near Maïna, on the left bank of the Yenisei River (Western Siberia), dated around 18,000 BC (16,540 ± 170 BP—LE-2135; 16,176 ± 180 BP—nd) (Figure 30.1(b)); the so-called 'Barbary Sheep', a small, curved section of fired clay with incised decoration (Figure 30.1(c)), found at the cave of Tamar Hat (Algeria), associated with a single date of around 21,500 BC (19,800 ± 500 BP—nd) (Bougard 2003, 32; Budja 2006, 184–5; Saxon 1976; Vandiver and Vasil'ev 2002). Despite these early experiences with ceramic production, there are few indications to suggest that the figurine traditions of the Pleistocene ever led directly to the further development of pottery (Gamble 1999; Jordan and Zvelebil 2009; Soffer et al. 1993). Indeed, from across western Eurasia, only one single portable ceramic container has been confidently identified from Pleistocene deposits.

This unique find comes from the southern Urals, from the painted cave of Shulgan-Tash, or Kapova cave, in the Republic of Bashkortostan. It is usually described as the base of a small cup, or fat-burning lamp. However, mineral residues found within the vessel suggest that it was more likely to have been part of a pigment pot, perhaps used by the cave's painters (Bahn 1996; Bougard 2003; Zhushchikhovskaya 2005). The vessel is approximately 6 cm in diameter, it was apparently fired at 500–600°C and has been dated to around 16,000 BC on the basis of two radiocarbon dates on charcoal/ash from the same cultural layer (14,680 ± 150 BP—LE-3443; 13,930 ± 300/490 BP—GIN-4853) (Bahn 1996, 369; Bougard 2003, 7; Danukalova and Yakovlev 2006). If this dating is correct, this is one of the earliest examples of a ceramic vessel known in the world. It is, however, a technological ancestor with no identified descendants. The emergence of pottery as a durable tradition in society is to be found elsewhere.

Earthen Baskets and Clay Bags: The Origins of Pottery

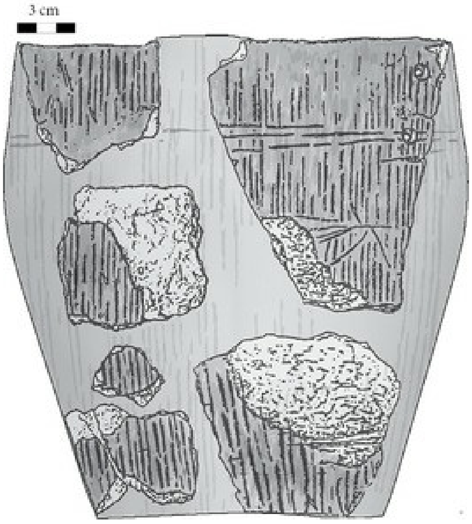

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Figure 30.2 Vessel from the site of Gasya in the Russian Far East (modified after Zhushchikhovskaya 2005 and Kuzmin 2002).

Before we consider the evidence for the emergence and spread of ceramic vessel technology among hunter-gatherer societies across the world, it is worth briefly considering some of the theories that have been proposed to account for the discovery of pottery (cf. Amiran 1966, 242; Childe 1936, 89; Linné 1966, 36; Lubbock 1913, 492–3; McCabe 1912, 312). Although these theories are varied, they follow a theme supported by even the most superficial study of early pottery: that it was heavily influenced by pre-existing organic technologies (Brown 1989; Jordan and Zvelebil 2009; Rice 1987; 1999). Although often referred to as 'artificial stone' (Rice 1999, 3), pottery techniques share more in common with *additive* organic crafts than with *subtractive* lithic technologies (Kobayashi 2004). The cadenced movements of the potter's hands, turning the vessel slowly to guide a new coil into place, are very like the motions of the basketweaver's craft (Jordan and Zvelebil 2009). Even techniques like slab construction, which initially seem unique to the working of clay, share features with the production of vessels from rawhide or bark. Sometimes this connection was even more direct, when the impressions left by an organic mould on the surface of the clay in production gives the **(p. 667)** fired vessel a decidedly organic appearance. This kind of moulding technology, using baskets, sand-filled bags, and even sea-mammal bladders, has been found among many recent hunter-gatherer groups (cf. Glushkov 1996; Tsetlin 2006; Zhushchikhovskaya 2005) and appears to have been used for the production of the earliest pottery in the Russian Far East (Figure 30.2) (Zhushchikhovskaya 2005).

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Figure 30.3 Middle Jomon pottery vessel from the site of Ookubu, Honshu (Japan) (redrawn after Zhushchikhovskaya 2007).

Although this kind of direct evidence for the relationship between ceramic vessels and other forms of container technology is interesting and may support the oft-cited use of clay to waterproof organic vessels as an origin for the craft (e.g. Childe 1936; Hoopes and Barnett 1995; Rice 1999), the stylized recreation of patterns, textures, or forms that are evocative of organic vessels are far more common (Childe 1936; Tsetlin 2006; Zhushchikhovskaya 2005; 2007). In different parts of the world potters drew inspiration from gourds, skin flasks, wickerwork, birch-bark containers, woven or netting bags and 'even [apparently] from human skulls [!]' (Childe 1936, 93; Rice 1999). This kind of skeuomorphism is common in human societies, creating continuity between old and new, helping to situate this unfamiliar material within an established technological syntax (Miller 1985; Miller 2007). It is not, however, restricted to the earliest phases of ceramic vessel use. In Japan, for example, more than nine thousand years after the first emergence of pottery, Middle Jomon vessels were not only being marked to give the impression of a woven or knotted product, but also ostentatiously decorated with applied and incised bands, often unmistakably representing a network of knotted ropes (Figure 30.3) (Aikens 1995; Tsutsumi 2002; Zhushchikhovskaya 2005, 2007). Nor does it constitute a (p. 668) necessary phase in the evolution of ceramic technology. The pottery sequence at San Jacinto in northern Columbia, one of the very earliest pottery complexes in the New World, shows that potters exploited the plasticity of clay to its full effect from its first introduction to society (Figure 30.4), using relief modelling to produce dramatic, sculptural decoration that would be extremely difficult to achieve in any other medium (Oyuela-Caycedo 1995).

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Figure 30.4 Fragment of decorated pottery from the site of San Jacinto I in northern Columbia (redrawn after Oyuela-Caycedo 1995).

It is clear that in many cases the emergence of ceramics probably developed out of some earlier use of clay, such as the lining of organic baskets, as seems plausible in the Russian Far East, or the lining of cooking pits as has been suggested for San Jacinto (Oyuela-Caycedo 1995; Zhushchikhovskaya 2005). This does not explain why some of the earlier uses of clay in the European Palaeolithic and elsewhere did not lead to the same innovation. It is possible that cognitive evolution could explain why pottery did not emerge among earlier hominid species (Hayden 2009). However, to suggest that minds so obviously capable of subtle and dramatic manipulation of the physical, visual, and symbolic aspects of material did not possess the cognitive fluidity necessary to make a conceptual step, from experience of fired clay and the use of containers, to the specific idea of a usable *fired-clay container* seems rather implausible (Hayden 2009; Mithen 1996). Perhaps pottery vessels were intellectually conceivable, but remained ideologically, even morally, unthinkable in societies structured by the 'vigilant sharing' of food and power (Erdal et al. 1994; Vandiver et al. 1989). Perhaps **(p. 669)** the transubstantiation of earth into practical forms may have entailed an unacceptable shift in the perceived social relationship with the environment and its resources (cf. Childe 1936). Perhaps pottery was simply impractical in Upper Palaeolithic society. Ceramic vessels are certainly more fragile and less portable than their light and flexible organic counterparts, and their manufacture is subject to climatic constraints, which would not have affected the production of other kinds of container (Arnold 1985; Brown 1989; Rice 1999; Zhushchikhovskaya 2001). However, the barriers of high mobility and poor climate are not insurmountable and have probably been overstated (Reid 1989). Rather than focusing on the many reasons why pottery did not emerge until the end of the Pleistocene, it is perhaps more fruitful to consider contexts where it did.

The Emergence and Spread of Pottery in Hunter-Gatherer Society

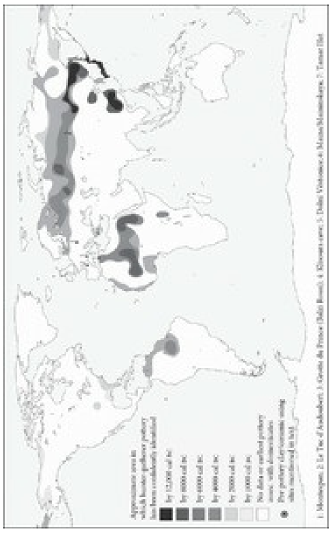

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Figure 30.5 Sketch map showing the approximate distribution and chronology for the emergence of ceramics in hunter-gatherer societies across the world.

What follows is a brief outline of the chronological distribution of hunter-gatherer pottery around the globe (summarized in Tables 30.1–30.6 and Figure 30.5). The drawback **(p. 670)** **(p. 671)** **(p. 672)** **(p. 673)** **(p. 674)** **(p. 676)** **(p. 677)** **(p. 678)** to skimming the surface of the evidence in this way is to present an impression of continuous dispersal that cannot be realistically supported by the archaeological evidence. It should be remembered that the spread of ceramics is marked by a variety of non-linear, culturally relevant patterns that need to be clarified through further excavation and dating. Nevertheless, this kind of 'low-resolution' survey does allow the extent of the phenomenon of hunter-gatherer pottery to be identified and some general patterns in the data to be discussed.

Table 30.1 A selection of radiocarbon dates for Late Pleistocene sites with hunter-gatherer pottery in Japan, China, Korea, and eastern Russia. Maximum calibrated date range (2-σ) calculated using OxCal 4.1 with curve IntCal 09 (Bronk Ramsey 2009; Reimer et al. 2009)

IntCal 09 (Bronk Ramsey 2009; Reimer et al. 2009).

	Site name	Region	Calibrated date range (BC) Published dates (BP) (Dating lab. code(s))	Source reference
China	Yuchanyan (Hamadong)	Yangtze Basin	**16,546–14,834** 14,795 ± 60–13,890 ± 50 (BA06867, BA05422)	Boaretto et al. 2009
	Xianrendong	Lower Yangtze Basin	**19,309–11,787** 17,420 ± 130–12,170 ± 140 (UCR-3561, BA95145)	Kuzmin 2006; Wu et al. 2012
	Hutouliang (Yujiagou)	Sanggan River Basin	**14,719–13,149** 13,080 ± 200 (GrA-10460)	Kuzmin 2006; Xia et al. 2001
	Nanzhuangtou	Baiyangdian Basin	**10,729–8453** 10,510 ± 140–9420 ± 95 (BK87088, BK86121)	Zhao and Wu 2000
Japan	Odai Yamamoto I	Northern Honshu	**15,466–12,212** 13,780 ± 170–12,680 ± 140 (NUTA-6510, NUTA-6506)	Habu 2004
	Kitahara	Eastern Honshu	**14,505–13,201** 13,060 ± 100–13,020 ± 80 (Beta-105401, Beta-105400)	Kudo 2004
	Fukui cave	Kyushu	**14,833–11,630** 12,700 ± 500–12,400 ± 350 (GaK-950, GaK-949)	Serizawa 1979
Korea	Kosanni (Gosanni)	Cheju Island	**10,163–4453** 10,180 ± 65–(6230 ± 320) (SNU02–096, AA-38105)	Kuzmin 2006

Russian Far East and Eastern Siberia	Khummi	Lower Amur Basin	**14,828–9821** 13,260 ± 100–10,345 ± 110 (AA-13391, AA-13392)	Kuzmin and Jull 1997
	Gasya	Lower Amur Basin	**14,443–10,635** 12,960 ± 120–10,875 ± 90 (LE-1781, AA-13393)	Derivianko et al. 2004
	Gromatukha	Middle Amur Basin	**14,862–7583** 13,310 ± 100–8660 ± 90 (AA-38102, AA-20940)	Derivianko et al. 2004; Kuzmin 2002
	Chernigovka	Maritime Region	**10,610–6447** 10,770 ± 75–7475 ± 65 (AA-20936, nd)	Kuzmin 2002; Zhushchikhovskaya 2005
	Ust' Karenga	Northern Transbaikal	**12,288–10,197** 12,180 ± 60–10,600 ± 100 (AA-60210, AA-21378)	Kuzmin and Vetrov 2007
	Ust' Kiakhta	Southern Transbaikal	**11,660–11,208** 11,505 ± 100 (SOAN-1552)	McKenzie 2009

(*) Though an associated thermoluminescense date on pottery returned a date *c*.9650 BC (Xia et al. 2001).

Table 30.2 A selection of radiocarbon dates from sites with early hunter-gatherer pottery across Siberia, European Russia, and Ukraine. Maximum calibrated date (2-σ) range calculated using OxCal 4.1 with curve IntCal 09 (Bronk Ramsey 2009; Reimer et al. 2009).

	Site name	**Region**	**Calibrated date range (BC) Published dates (BP) (Dating lab. code(s))**	**Source reference**
Eastern Siberia	Gorlei Les	Upper Angara Basin	**7793–5305** 8444 ± 144–6510 ± 100 (Ri-51, TO-4839)	McKenzie 2009

	Ust' Khaita	Upper Angara Basin	**6426–5306** 7245 ± 150–6625 ± 150 (SOAN 4431, SOAN 4647)	McKenzie 2009
	Ulan Khada	Ol'Khon Region	**6588–4003** 7560 ± 80–5495 ± 125 (LE-2277, SOAN 3336)	McKenzie 2009
Altai	Kornachak	Altai Mountains	**6567–5881** 7340 ± 175 (SOAN-2990)	Kuzmin and Orlova 2000
Western Siberia	Sumpanya	Upper Konda Basin	**12,150–4842** 11,970 ± 120–6100 ± 70 (LE-1812, LE-2540)	Kuzmin and Vetrov 2007
	Andreevskoe Ozero	Tyumen Oblast	**8541–8256** 9140 ± 60 (LE-2296)	Kuzmin and Vetrov 2007
	Sopka	Novosibirsk Oblast	**7283–6641** 8005 ± 100 (BGS-1805)	Kuzmin and Orlova 2000
	Tashkovo	Kurgan Oblast	**6439–6213** 7440 ± 60 (LE-1534)	Kuzmin and Orlova 2000
	Sartinya	Khantia-Mansia	**5711–5227** 6630 ± 80–6440 ± 80 (LE-1831, LE-4217)	Timofeev and Zaitseva 1996
European Russia	Chekalino	Sok River Basin	**8204–6592** 8680 ± 120–7940 ± 100 (GIN-7085, LE-4782)	Dolukhanov et al. 2005
	Ivanovskoe	Upper Volga Basin	**6339–5344** 7220 ± 90–6670 ± 140 (GIN-9359b, GIN-9630b)	Zaretskaya et al. 2005

	Pezmog	Komi Republic	**5877–5558** 6820 ± 70–6730 ± 50 (GIN-11915, GIN-12322)	Zaretskaya et al. 2005
	Chernaya Guba	Republic of Karelia	**5623–3377** 6530 ± 80–4840 ± 80 (TA-1315, TA-2023)	Dolukhanov et al. 2005
	Zales'ye	Tver Oblast	**5613–5375** 6530 ± 50 (LE-1144)	Dolukhanov et al. 2005
	Tsaga	Kola Peninsula	**5018–3121** 5760 ± 160–5020 ± 250 (LE-1087, LE-4292)	Dolukhanov et al. 2005; Timofeev and Zaitseva 1996

Table 30.3 A selection of radiocarbon dates from sites with early hunter-gatherer pottery across Fennoscandia and around the Baltic coast. Maximum calibrated date (2-σ) range calculated using OxCal 4.1 with curve IntCal 09 (Bronk Ramsey 2009; Reimer et al. 2009).

	Site name	Region/country	Calibrated date range (BC) Published dates (BP) (Dating lab. code(s))	Source reference
Northern Baltic and Barents Coast	Jokkavaara	Finland	**5721–4463** 6600 ± 110–5860 ± 110 (Hel-1580, Hel-1619)	Hallgren 2002
	Nordli	Northern Norway	**5629–5215** 6570 ± 60–6330 ± 50 (TUa-3028, TUa-3021)	Skandfer 2005
	Lossoas Hus	Northern Norway	**5476–4491** 6315 ± 90–5745 ± 45 (T-2468, TUa-3660)	Skandfer 2005

	Ylikiiminki	Finland	**5320–4724** 6170 ± 90–5995 ± 65 (Hel-4127, Hela-128)	Hallgren 2002
	Vargstensslätten	Åland Islands	**5307–4688** 6165 ±75–5990 ± 90 (Ua-17859, Ua-17857)	Hallgren 2002
Eastern Baltic	Katra	Lithuania	**5623–4003** 6550 ± 70–5360 ± 70 (Ki-7642, Ki-7646)	Hallgren 2002
	Zvisde	Latvia	**5616–4947** 6535 ± 60–6210 ± 80 (TA-862, TA-1593)	Derivianko et al. 2004; Kuzmin 2002
	Akali	Estonia	**5470–4987** 6255 ± 100 (TA-103)	Punning et al. 1968
	Riigiküla	Estonia	**5209–3969** 6023 ± 95–5268 ± 58 (Tln-1989, Tln-1992)	Kriiska 2001
South-Western Baltic	Schlamersdorf	Schleswig-Holstein	**5478–4798** 6385 ± 60–6105 ± 95 (OxA-4802, OxA-3326)	Hallgren 2002
	Salpetermosen	Denmark	**5212–3975** 6020 ± 100–5410 ± 120 (K-1233, K-1235)	Tauber 1968
	Lietzow-Buddelin	Isle of Rügen	**4932–3714** 5815 ± 100–5190 ± 120 (Bln-561, Bln-560)	Lübke and Terberger 2002

	Elinelund	Southern Sweden	**4585–3665** 5320 ± 210 (U-48)	Kohl and Quitta 1970

Table 30.4 A selection of radiocarbon dates from sites with early hunter- gatherer pottery across northern Africa. Maximum calibrated date (2-σ) range calculated using OxCal 4.1 with curve IntCal 09 (Bronk Ramsey 2009; Reimer et al. 2009).

	Site name	**Region/country**	**Calibrated date range (BC)** **Published dates (BP)** **(Dating lab. code(s))**	**Source reference**
North-Eastern and Eastern Africa	Saggai	Sudan	**10,258–9254** 10,060 ±150 (Caneva 1983)	Close 1995
	Sarurab	Sudan	**9121–8295** 9370 ± 110–9340 ± 110 (HAR-3475, HAR-3476)	Close 1995
	Ti-n-Torha	Libya	**8543–7572** 9080 ± 70–8650 ± 70 (Ua-17859, Ua-17857)	Alessio et al. 1978
	Nabta	Egypt	**8424–7741** 8960 ± 110–8870 ± 80 (SMU-440, SMU-208)	Close 1995
	Amekni	Southern Algeria	**8226–6690** 8670 ± 150–8050 ± 80 (MC-212, UW-87)	Thommeret and Thommeret 1969
	Gabrong	Northern Chad	**8165–7328** 8560 ± 120 (Hv-3715)	Close 1995
	Lothagam Hill	Kenya	**8330–6589** 8420 ± 350 (N-1100)	Yamasaki et al. 1972

North- Western and West Africa	Tagalagal	Niger	**9133–8286** 9370 ± 130–9330 ± 130 (Roset 1987, Roset 1987)	Close 1995
	Adrara Bous	Niger	**8542–7613** 9130 ± 65–9030 ± 190 (Roset 1987, Roset 1987)	Close 1995
	Ravin de la Mouche	Mali	**9441–8925** 9785 ± 70–9510 ± 70 (ETH-28746, ETH-31279)	Huysecom et al. 2009
	Gobero	Mali	**7585–6825** 8470 ± 40–8060 ± 40 (P-584, P-535)	Sereno et al. 2008
	Aîn Naga	Northern Algeria	**7025–5923** 7500 ± 220 (U-48)	Delibrias et al. 1972
	Tintane Pécheur	Mauritania	**5635–4561** 6390 ±160–6020 ±150 (Ly-552, Lu-553)	Evin et al. 1975
	Khant de Saint-Louis	Senegal	**4581–3948** 5650 ± 40–5340 ± 120 (Ly-990, Ly-988)	Calvocoressi and David 1979
	Iwo Eleru	Nigeria	**4651–4240** 5570 ± 90 (Hv-1510)	Calvocoressi and David 1979
	Gao Lagoon	Ghana	**4258–2347** 5219 ± 80–4180 ± 140 (N-2982, Gif-4241)	Calvocoressi and David 1979

Table 30.5 A selection of radiocarbon dates from sites with early hunter-gatherer pottery across South America and southern North America. Maximum calibrated date (2-σ) range calculated using OxCal 4.1 with curve IntCal 09 (Bronk Ramsey 2009; Reimer et al. 2009).

	Site name	Region/country	Calibrated date range (BC) Published dates (BP) (Dating lab. code(s))	Source reference

Eastern South America	Caverna da Pedra Pintada	Eastern Brazil	**7031–5479** 7580 ± 215–6625 ± 60 (GX17415, GX1742A-AMS)	Roosevelt 1995
	Tapeinha	Eastern Brazil	**6099–5365** 7090 ± 80–6590 ± 100 (OxA-1546, OxA-2431)	Roosevelt 1995
	Sambaqui de Urua	Eastern Brazil	**4714–4071** 5570 ± 125 (SI1034)	Roosevelt 1995
	Porta da Mina	Eastern Brazil	**4353–2886** 5115 ± 195–4380 ± 80 (GX2472, SI2544)	Roosevelt 1995
Northern South America	Barambina Mound	Guyana	**4981–2501** 5965 ± 50–4115 ± 50 (SI4333, SI4332)	Roosevelt 1995
	San Jacinto	Northern Columbia	**4983–3695** 5940 ± 60–5700 ± 430 (PITT-0155, Beta-20352)	Oyuela-Caycedo 1995
	Monsú	Northern Columbia	**4327–1311** 5300 ± 80–3230 ± 90 (UCLA-2149c, TK-625b)	Oyuela-Caycedo 1995
	Puerto Hormiga	Northern Columbia	**3971–2497** 5040 ± 70–4502 ± 250 (SI-153, I-1123)	Oyuela-Caycedo 1995
	Kakakaburi	Guyana	**3938–2578** 4890 ± 75–4215 ± 70 (SI7019, SI7020)	Roosevelt 1995
	La Gruta	Venezuela	**2905–1416** 4090 ± 105–3320 ± 100 (I-8970, I-10742)	Barse 2000
USA	(p. 675) Rabbit Mound	South Carolina	**3630–2904** 4570 ± 95–4525 ± 135 (GXO-345, GXO-343)	Hoopes 1994
	Grove's Orange Midden	Florida	**3497–2491** 4399 ± 123–4115 ± 75 (Beta-nd, Beta-nd)	Hoopes 1994
	Turner-Casey	Missouri	**3627–2923** 4550 ± 115	Hoopes 1994; Reid 1984

	Bilbo	Georgia	**3010–2347** 4125 ± 115 (O-1047)	Hoopes 1994
	Ford Shell Rings 1 & 2 (Skull Creek)	South Carolina	**2831–1635** 3890 ± 100–3585 ± 115 (I-3047, I-2850)	Buckley and Willis 1969; Hoopes 1994
	Stallings Island	Georgia	**2459–1667** 3780 ± 70–3510 ± 70 (Beta-138660, Beta-134458)	Sassaman et al. 2006
	Nebo Hill	Kansas	**2125–1696** 3555 ± 65 (UGA-1332)	Reid 1984
	Poverty Point	Louisiana	**1751–1056** 3160 ± 140–3040 ± 70 (Beta-122916, Beta-153804)	Kidder 2006; Hays and Weinstein 2004
	Tucker Site	North-west Florida	**1453–860** 2962 ± 120	Walthall 1990

Table 30.6 A selection of radiocarbon dates from sites with early hunter-gatherer pottery across the Arctic and subarctic of eastern Asia and western North America. Maximum calibrated date (2-σ) range calculated using OxCal 4.1 with curve IntCal 09 (Bronk Ramsey 2009; Reimer et al. 2009).

	Site name	Region	Calibrated date range (BC) Published dates (BP) (Dating lab. code(s))	Source reference
Yakutia	Bel'kachi	Aldan Basin	**5042–3964** 5970 ± 70–5270 ± 70 (LE-676, LE-656)	Dolukhanov et al. 1970; Kuzmin and Orlova 2000
	Sityakhi	Lower Lena Basin	**4362–3661** 5220 ± 170 (IM-530)	Kuzmin and Orlova 2000
North-Eastern Asia	Kukhtui	Sea of Okhotsk	**3695–3110** 4700 ± 100 (LE-995)	Kuzmin and Orlova 2000
	Terkuemkyun	Eastern Chukotka	**3500–3104** 4580 ± 40 (LE-2661)	Kuzmin and Orlova 2000
	Maltan	Upper Kolyma Basin	**3497–2886** 4450 ± 110 (KRIL-247)	Kuzmin and Orlova 2000
	Tyutyul	Western Chukotka	**3329–2586** 4290 ± 100 (MAG-1094)	Kuzmin and Orlova 2000

	Tokareva	Sea of Okhotsk	**2032–1695** 3540 ± 60 (MAG-554)	Kuzmin and Orlova 2000
	Opukha	NW Bering Sea Coast	**969–411** 2600 ± 100 (MAG-945)	Kuzmin and Orlova 2000; Orechov 1999
Alaska	Onion Portage	Northern Alaska	**1741–366** 3170 ± 120–2370 ± 50 (K-835, P-1066)	Lucier and VanStone 1992; Morlan and Betts 2005
	Cape Espenberg	West-Central Alaska	**1288–379** 2870 ± 75–2530 ± 130 (Beta-17972, Beta-33760)	Morlan and Betts 2005
	Choris	West-Central Alaska	**1268–111** 2646 ± 177–2190 ± 51 (P-203, P-611)	Morlan and Betts 2005

Antiquity Acknowledged

Since the publication of dates associated with pottery sherds from the Fukui cave site (Japan) in 1965, East Asia has consistently produced the earliest reliable evidence for the use of ceramic vessels anywhere in the world (Boaretto et al. 2009; Kuzmin 2006; Serizawa 1979). Though initially treated with scepticism by many, these remarkably early dates were soon unequivocally supported, not only by a series of similar and even earlier radiocarbon results from sites across Japan (Table 30.1), but also by independent thermoluminescence dates on the ceramic fragments themselves (Flemming and Stoneham 1973; Kudo 2004, 257; Kuzmin 2006; Ono 2006; Serizawa 1979, 342). These first sherds and others like them mark the 'Incipient' phase of a remarkably long and varied relationship between hunters-gatherers and pottery, known more prosaically as the *Jomon* (cord-marked) culture (Aikens 1995; Aikens and Higuchi 1982; Yasuda 2002a). At first, this material was treated as exceptional and its relevance for the wider study of Eurasian prehistory remained 'very difficult to [assess]' (Aikens and Higuchi 1982; Chard 1974, 111). With the mounting pace of archaeological research since the late 1980s, it has become increasingly clear that the situation in Japan is far from unique (Tables 30.1–30.6 and Figure 30.5).

The Old World (Tables 30.1–30.4)

Late Pleistocene pottery assemblages dated between *c*.19,300 and 10,500 BC have been identified across eastern Asia: from *Xianrendong* in the Lower Yangtze Basin, to *Ust' Karenga* in the northern Transbaikal (An 1991; Boaretto et al. 2009; Kuzmin and Vetrov 2007; McKenzie 2009; Zhao and Wu 2000). Though often referred to as an 'East Asian model of Neolithisation' (Kuzmin 2002, 1), the emergence of pottery in the absence of agriculture was not restricted to the Far East. At the western fringe of Siberia, there are data to support the idea that pottery first came into use in the region between 12,000 and 8000 BC, although some of these dates are still under review (Kuzmin and Vetrov 2007; Usacheva 2001). Nor is it even restricted to Asia, since there is now strong evidence for the use of ceramic vessels in hunter-gatherer societies of sub-Saharan Africa sometime before 9400 BC, and a growing body of data to support the use of pottery more widely across northern Africa by 9000 BC (Close 1995; Garcea 2006; Haaland 1992; Huysecom et al. 2009; Sereno et al. 2008).

In fact, by the time pottery emerged in the Near East among agricultural communities, around 7500–6500 BC, pottery was already in use among communities of hunter-gatherers in many parts of the Old World.

(p. 679) Although the evidence of the earliest ceramic vessel use is still sparse, during the middle Holocene it seems to have become both far more common and more widespread. By 5500 BC ceramic vessels had been made and used in hunter-gatherer societies from Sakhalin to the coast of the Barents Sea and, in Africa, from Kenya to the Mediterranean. By 5000 BC, pottery had appeared along the Baltic coast, reaching the western edge of continental Eurasia and the Atlantic coast of Africa at around the same time that the first pottery-using agriculturalists appeared in north-western Europe (Calvocoressi and David 1979; Gebauer 1995; McKenzie 2009; McIntosh and McIntosh 1983; Timofeev 1998; Skandfer 2005).

It is important to realize that around the edges of this dispersal and in its wake, widespread changes in society and the environment seem to have increasingly favoured an economic shift towards the management of animal herds and the adoption of agriculture. This shift is often limited, with hunting, fishing, and gathering remaining the primary economic activities, but it is sufficient to blur the boundaries between hunter-gatherer and agro-pastoral communities. Since the focus of this chapter is partly to demonstrate that there is no necessary association between agriculture and pottery, areas in which economic demarcations are unclear, ill-defined, or disputed have not been discussed. These areas are geographically widespread and include large areas of Northern China and Mongolia, the Pontic-Caspian Steppe, north-western Europe, and northern Africa (Derevyanko and Dorj 1992; Gebauer 1995; Hassan 2002; Kotovo 2009; Telegin et al. 2003; Velichko et al. 2009). In most cases the temporal gap between the emergence of the ceramic vessels and the appearance of the first domesticated plants and animals has made it possible to chart, with reasonable clarity, the emergence and spread of pottery among the hunter-gatherer communities of the Old World. However, this gap is considerably narrower in the New World, and across much of the continent the emergence of pottery and horticultural products is essentially coeval (Damp and Vargas 1995).

The New World and the Far North (Tables 30.5 and 30.6)

As the first pottery began to be made and used along the western fringes of the Old World, groups of hunter-gatherers in the New World had already made the same discovery (Hoopes 1994). Across the Atlantic, the earliest evidence comes from the equatorial plains of the lower Amazon Basin in eastern Brazil and from a discrete cluster of sites in the Serranía de San Jacinto of northern coastal Columbia, dated to around 6000 BC and 5000 BC, respectively (Roosevelt 1995; Oyuela-Caycedo 1995). By 4000 BC pottery had become a common feature of hunter-gatherer communities along the north-eastern coast of South America (Barse 2000; Hoopes 1994; Roosevelt 1995). The earliest pottery in Central America, coastal Ecuador, Peru, and north-western Argentina, dating between 4000 and 1000 BC, seems to emerge and spread in the context of ‘horticultural’ societies, already involved in the active management of plant resources (Damp and Vargas 1995; Hoopes 1995; Rue 1989). It is not clear whether these two dispersals are related, and though hunting and gathering still played an important economic role (e.g. Smith 2001), these peoples and their pots are not considered further here.

In North America, the emergence and spread of pottery in and through communities of hunter-gatherers can only be clearly recognized in two discrete geographical areas at opposite ends of the continent: in the south-east and the far north-west. In other parts of the (p. 680) continent its precise distribution is difficult to trace, not only because it becomes blurred with the dispersal of ‘pottery with agriculture’ that followed it, but also because these porous and low-fired fibre-tempered ceramics are highly susceptible to the destructive action of frost and other erosive processes (Reid 1984). It is probable, therefore, that the currently identified distribution of pottery use in the North American archaeological record presents only a partial picture of its use in prehistoric society (Reid 1984; Sassaman 1995).

Pottery appeared in hunter-gatherer societies in the south-east around 3500 BC and was soon adopted at other sites along the Atlantic and Caribbean coastal lowlands to the east of the Mississippi and northwards to the Missouri. Whether this development of pottery here should be interpreted as technological diffusion from the south, or as another independent invention, is still unclear (Clark and Gosser 1995; Hoopes 1994; Sassaman 1995).

In the opposite corner of the continent, the picture is quite different. The emergence of pottery in Alaska and north-western Canada around 2500–1000 BC appears to be directly associated with a wider dispersal event among the hunter-gatherer communities of north-eastern Asia, occurring between 5000 and 2500 BC, which brought pottery to the northern and eastern extremes of the Old World and then across the Bering Strait into the New World (Hoffecker 2005; Kuzmin and Orlova 2000; McKenzie 2009; Stimmell and Stromberg 1986).

Discussion

Although the interpretation of the data is still a matter of contentious debate, it is evident that the idea of a single universal origin for pottery technology is implausible (Rice 1999; Jordan and Zvelebil 2009). It seems far more likely that communities of hunter-gatherers in the Asian Far East, North Africa, and South America were independently responsible for the invention of ceramic vessel technology. Some would take this further. For example, in East Asia it has been proposed that the emergence of pottery in China, Japan, the Russian Far East, and the Transbaikal could have occurred independently and almost simultaneously in each of these regions alongside climatic changes that followed Last Glacial Maximum (Khlobystin 1996; Kuzmin 2006). Similarly, eight ‘plausible’ centres of independent invention have been proposed for the emergence of pottery in the New World (Hoopes 1994, 42). The basic assumption that significant differences in the character of early pottery assemblages represent the operation of independent invention is logical, but it is not the only way to account for patterns in the data. Knowledge of pottery could have spread in many forms, whether through the physical exchange of pots, through encounters with potters, or even through myths or stories told around the fire. With the widespread experience of both plastic clay and fired earth, pottery as an idea or a finished product could be reinvented even in the absence of detailed technological information, permeating quickly across a wider range of social, political, economic, or ideological contexts than would be likely to result from direct cultural transmission. The resulting variation in the character of early pottery technology means that connections between communities ‘cannot always be traced’ in the archaeological record (Clark and Gosser 1995, 219). It may be more fruitful to consider the idea of repeated *dependent reinvention* (a conflation of the terms ‘dependent invention’ and ‘rapid reinvention’, found in Clark and Gosser 1995, 209–10) rather than isolated inspiration as a model for the early dispersal of pottery.

(p. 681) Whether transmitted as techniques or disseminated as ideas, pottery was not forced onto society (Clark and Gosser 1995). The different reasons for its adoption or rejection were woven into a web of human interactions within their natural, social, economic, and material environments (cf. Ingold 2000; Lemonnier 1993; Pfaffenberger 1992). The emergence and spread of ceramic technology was the result a series of active choices and judgements made on the basis of perceived economic, practical, ideological, and personal risk, benefit, and cost (Clark and Gosser 1995; Jordan and Zvelebil 2009). Such perceptions are, necessarily, socially constituted (see Pfaffenberger 1992) and should be expected to vary considerably both within and between different societies. Ultimately the best way to explore the reasons behind the adoption of pottery in prehistory is to explore its uses in society, both practical and symbolic.

From Household Crocks to Crocked Households: The Uses of Ceramic Vessels

Over the years many possible functions have been proposed for pottery vessels in hunter-gatherer society, from glue pots and oil lamps, to braziers and resonant drums. The majority of the attention has focused on their practical roles in the preparation, processing, and preservation of food and drink (Brown 1989; Hayden 1995; Jones 2007; Kobayashi 2004; Matson 1966; Reid 1989; Rice 1999; Sassaman 1995; Swanton 1979; Yasuda 2002b; Zhushchikhovskaya 2005).

Culinary Ceramics

As a waterproof and fireproof container, pottery is generally considered to have conferred the greatest practical advantage when used directly on the fire in the preparation of ‘juicy foods’ (Yasuda 2002b, 130). Although there are many ways of cooking food without portable containers, there are a number of significant advantages to cooking in liquids (Arnold 1985; Reid 1989). Perhaps most importantly, it is a comparatively thrifty technique, ensuring that juices otherwise lost to the fire are conserved, while enabling the use of ‘leftovers, discards and scraps [from previous meals, allowing] many more people to be nourished from what might otherwise be insufficient food’ (Crown and Wills 1995; Jordan and Zvelebil 2009; Rice 1999, 31–2). As a technique, it is also valuable in extracting the maximum nutrition from the foodstuffs at hand, facilitating the bulk processing of small and ‘fiddly’ food resources and expanding the range of both plant and animal resources that can be effectively exploited (Arnold 1985; Rice 1999). It would have provided a more hygienic method of cookery enabling the preparation of nutrient-rich broth that could have been used for weaning infants and sustaining the elderly or infirm (Hoopes and Barnett 1995; Jordan and Zvelebil 2009).

These benefits are often cited as reasons for the invention and adoption of ceramic vessel technologies. However, they are actually common to many ‘moist’ cookery techniques, which *rarely* require pottery to be used effectively (contra Garcea 2006, 214 and Yasuda 2002b, 129). There is a wealth of ethnographic evidence for the use of other containers for indirect (and (p. 682) even direct) moist cookery in the absence of pottery, though with the exception of clay-lined cooking pits, these would be rarely preserved in archaeological contexts (Reid 1989; Stahl and Oyuela-Caycedo 2007). Arguably, the most significant economic advantage of pottery was the saving in time (Brown 1989; Rice 1999); pottery could be left on the fire to bubble away, without the continuous, fuel-inefficient, and labour-intensive addition of hot stones needed to maintain the required temperature (Bettinger et al. 1994; Brown 1989; Hoopes and Barnett 1995). Where long-duration cooking was required, whether to denature toxic chemicals, gelatinize indigestible starches, or render fat, oil, and grease, the benefit in time would be magnified significantly (Arnold 1985; Brown 1989; Reid 1989; Rice 1999; Sassaman 1995). Even where pottery continued to be used for indirect heating with hot stones, as was the case for the early hunter-gatherer pottery of North America, it is argued that time and attention required during cookery would be still be reduced significantly (Rice 1999; Sassaman 1995; Schiffer and Skibo 1987). Cooking could be performed at the same time as other activities or delegated to less-active individuals, thereby further increasing the overall productivity of the group.

Compared with other vessel technologies, the production of pottery is generally thought to confer particularly significant advantages where vessels were needed for the processing of abundant, seasonal resources, which were only exploitable for a limited time and which required intensive processing to produce a storable resource (Brown 1989; Torrence 1983; 2001; Zvelebil 1986). Like all multi-stage crafts, pottery production could be fitted into 'spare' blocks of time between other activities, but when needed in quantity, ceramic vessels could also be made more 'cheaply' than other kinds of vessel, since communal bulk firings make possible an economy of scale in production that simply could not be achieved in other media (see Brown 1989, 217–19). In this context, the appearance of ceramics in hunter-gatherer societies across the world is frequently associated with other evidence for economic intensification, particularly the specialized exploitation of aquatic resources (Hayden 1990; 2009; Zvelebil 1986). The formation of shell mounds or middens (e.g. Brazil, the Western Baltic, the Atlantic coast of Africa and southern North America, and, to a lesser extent, southern China), the development of specialized fishing equipment, including nets, traps, or other mass-capture technologies for fish (e.g. Nile Valley, south-western Sahara, Baltic coast, and the Cisbaikal), or harpoons and floats for marine mammal hunting (e.g. Northern Baltic and the coastal low Arctic and subarctic), are all thought to be diagnostic of intensification and occur at around the same time as the emergence of pottery (Close 1995; German 2009; Haaland 1992; Hallgren 2009;McIntosh and McIntosh 1983; McKenzie 2009; Pearson 2005; Roosevelt 1995; Rowley-Conwy and Zvelebil 1989; Sassaman 1995; Sereno et al. 2008; Wu and Zhao 2000; Zhushchikhovskaya 2005).

Often paralleling such indications of the exploitation of animal resources is clear evidence for the intensive use of seasonally abundant plant foods: acorns, nuts, fruit, berries, seeds, and/or grains, whether in the form of actual bio-archaeological remains, or in the form of mortars, grinding slabs, and other more durable remains of prehistoric plant-processing (e.g. western Baltic, Japan, Nile Valley, southern China, northern Columbia, and the North American south-east) (Close 1995; Garcea 2006; Eerkens 2004; Eerkens et al. 2005; Jordan and Zvelebil 2009; Kobayashi 2004; Kubiak-Martens 1999; Sassaman 1995; Stahl and Oyuela-Caycedo 2007; Yasuda 2002b; Wu and Zhao 2000).

Even where faunal and other material indictors of specific types of resource exploitation are lacking, the earliest ceramic vessels are often associated with microlithic stone-tool assemblages that are considered to be an indicator of broad-based economic intensification (e.g. (p. 683) Transbaikal, southern Japan, and northern China) (Elston and Kuhn 2002; Jeske 1989; Kuzmin and Vetrov 2007; McKenzie 2009; Serizawa 1979; Zvelebil 1986). Of particular relevance are the traditions of microblade production that form the basis of many late- and post-glacial 're-colonization' assemblages across large swathes of northern Eurasia (Goebel 2002). These kinds of adaptable and maintainable lithic technologies represent a response to relatively high residential mobility and resource stress, an interpretation that makes sense when set against the climatic fluctuations of the final Pleistocene (Bleed 2002; Elston and Brantingham 2002).

There is no single explanation for the emergence of pottery, and while ceramic containers could have helped to maximize the time available for foraging and improved the nutritional value of scant resources in times of hardship, in many cases it first makes an appearance against the backdrop of rich, stable 'aquatic' environments that would have provided an opportunity for the generation of significant seasonal surpluses (Brown 1989; Hayden 2009; Zvelebil 1986). It is therefore suggested by many researchers that pottery may have played a dual role, not only in the preparation and processing of seasonal bounty, but also in its safe, long-term storage for use in leaner times (Rice 1999; Testart 1982).

Storing Surplus

Despite its important role in storing agricultural surplus in later periods, the role of ceramic vessels in the long-term storage of food in early, pottery-using, hunter-gatherer societies is somewhat less clearly supported. Certainly, ceramic vessels offer a resistance to rodent and insect pests that organic vessels do not and, if sealed with beeswax, tar, or other compounds, they can provide excellent protection against the ingress of moisture (Crown and Wills 1995; Gosselain and Livingstone-Smith 1995; Rice 1999). However, unlike its projected use as a household stew pot, which poses few barriers to mobility (see Arnold 1985, 112; Reid 1989, 172), the use of ceramic vessels for the mass storage and transport of surplus seems less convincing.

Of course, ceramic vessels may have been made and cached for future recovery, either replete with stores or as part of on-site equipment used in resource processing (Beck 2009; Jordan and Zvelebil 2009). Either way, the ‘front-loaded’ nature (see Bettinger 2009) of the technology itself and many of the products it was used to process suggest that if it was stored, it was with the intention of subsequent recovery and use.

While this may be relevant in later phases of pottery use, it is important to remember that, so far, the number of vessels recovered from individual sites tends to be low, especially in the earliest phases of its use (Hayden 2009). Although this could potentially be explained in terms of off-site storage, site-function, mobility patterns, taphonomy, or excavation bias, it can be used to argue that ceramic technology produced at such an uneconomically small scale must have had some significance as a technology of prestige (Eerkens 2004; Gheorghiu 2009; Hayden 2009).

Presenting Prestige

The unique qualities of the material of early vessels, fashioned from earth and created through fire, may have given such items considerable value, extending beyond their (p. 684) functional performance. As objects of rare value, it is argued that the development of the potter’s craft could have been bound together with the processes of social competition that drove the production, acquisition, and development of other desirable or exotic products, materials, and technologies (Hayden 1990; 1998; 2009). Interestingly, it is clear from the anthropological and archaeological literature that these processes also have strong links to indicators of economic intensification. In this context, economic surplus is not only stored against hardship but actively acquired and mobilized within the social sphere as part of networks of exchange, obligation, and competition, both within and between different social groups (Hayden 1998; 2009).

The idea that pottery might have been developed as a technology of prestige is currently rather popular, though it has been criticized for its ‘methodological individualism’ and inherent androcentrism (see Pearson 2005, 821). In this model, competitive individuals, seeking personal or familial aggrandizement, may have attempted to use the craft as a symbol of mastery and sought, through a variety of Machiavellian strategies, to accumulate and redistribute either the pots themselves or the valuable commodities they were used to produce (Hayden 1990).

One of the most frequently attested activities of ‘aggrandizing’ individuals or cliques is the organization and active exploitation of communal feasting events at which economic wealth could be displayed with social and political intent (cf. Boehm 1993; Gifford 2002; Hayden 1998; Helms 1993; Kelly 1995; Testart 1982). As a powerful symbol and a novel technology, pottery could have played a significant role at such occasions in the preparation of special or valuable foods or their presentation (see Hayden 2009); serving, perhaps literally, to draw distinctions between different communities, groups, or individuals.

Another plausible use for this initially rarefied technology could have been the production and distribution of intoxicants rather than foods (Hayden 2009). These substances may have been important for exclusive rites which were already common in many communities towards the end of the Palaeolithic, associated with periodic social aggregations of an otherwise disparate population (see Owens and Hayden 1997). The production of alcohol and many powerful hallucinogens alike would often require lengthy periods of controlled heating, for which pottery would have been well suited. The use of such fire-born ‘baskets’ might have added gravitas to these ecstatic rituals. Like the legendary asbestos tablecloth of Charlemagne, cast into the fire only to be removed unscathed, it is easy to imagine how impressive, even magical, this technology might have seemed, especially to the uninitiated (Leman 2006, 204).

Conclusion

Although the idea of pottery as a powerful symbol and prestigious technology is attractive, especially in the earliest phases of adoption, the available theories need to be used with care. Pottery was clearly important to the people who made it—socially, economically, ideologically, and even personally—but the level of significance it was given may have varied considerably through time. Ultimately, it is unlikely that any single model will ever suffice to cover the extraordinary variation in the ceramic material or the wide range of contexts in which pottery is first adopted into hunter-gatherer societies. While there seem to be recurrent (p. 685) relationships between ceramic technology and large-scale processes, such as economic intensification, social differentiation, decreasing residential mobility, demographic growth, and functional specialization in society, these relationships need to be explored rather than assumed a priori.

Though still in its nascent phase, the study of hunter-gatherer pottery is already challenging many long-held assumptions about the relationships between humans and the earth. We must continue to adapt our practical, analytical, and theoretical methodologies to address more relevant questions of these ceramics. It is likely that the models we use and our understanding of these materials *will* change dramatically in the future, but, however we understand the emergence of pottery among hunter-gatherer societies, their active role in the origin and spread of the first high-temperature technology can no longer be overlooked.

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