
Understanding Heterarchy: Crafting and Social Projects in Pre-Hispanic Northwest Argentina

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Archaeological studies of specialized craft production in hierarchies often highlight the crucial roles of prestige goods in ancient political economies. Yet elaborate crafted items are also produced and circulated widely in heterarchically-ordered societies, where powerful elites are absent. In this latter case, attributing crafting to the agency of elites — or to the demands of political economy — is unconvincing. This article investigates the alternative cultural logic underlying crafting in heterarchies, seeking to understand both the contexts of crafting and the nature of the ‘social projects’ in which artisans were engaged. Expectations for archaeological signatures of craft activity are developed and applied to a case study, drawing upon recent excavations in northwest Argentina.

Craft production is a topic of sustained interest for archaeologists. The patterned remains of artisans' activities, frequently visible in the archaeological record, reveal the division of household labour (Hirth 2009a) and economic organization (Costin 2005), as well as shedding light on wider themes including social identity (Costin & Wright 1998), ritual (Spielmann 2002), socio-political dynamics (Hruby & Flad 2007) and exchange (Earle *et al.* 2011).

Studies of specialized craft production in relation to hierarchy have highlighted the crucial roles of prestige goods in ancient political economies (Brumfiel & Earle 1987; Clark & Parry 1990; Costin 1991; 1998; 2005; Helms 1993; Costin & Hagstrum 1995; Clark & Houston 1998; Lesure 1999; Janusek 2002). Case studies reveal extraordinary levels of skill, as manifested in Moche grave goods (Alva & Donnan 1993; Donnan 2007; Castillo *et al.* 2008); elite control of technology, as seen in Bronze Age Denmark (Kristiansen 1991; Earle & Kristiansen 2010); and vivid expressive qualities, visible in Aztec craftwork (Brumfiel & Feinman 2008). The rationales and strategic objectives orienting these costly undertakings have been explained as conspicuous consumption (Veblen 1934 [1899]), as wealth finance (Earle 1981; 1997; D'Altroy & Earle 1985), or as the materialization of ideologies (DeMarrais *et al.* 1996).

Elaborate craft goods are also frequently produced in societies where powerful elites (and institu-

tions of centralized control) are absent or limited in their scope and influence (Armstrong 1971; Ames 1995; Hirth 2009b). In these latter cases, attributing crafting primarily to the agency of elites — or to the demands of political economy — is unconvincing. Archaeologists have paid insufficient attention to the cultural logic underlying craft activities in heterarchical societies. In this article, I highlight this different logic and, through a case study, demonstrate how such an approach generates new insights into the socio-political dynamics of heterarchical societies.

A contrast between hierarchies (as centralized, stratified polities) and heterarchies (as decentralized networks characterized by diffuse and varied power relationships) is drawn here primarily for heuristic purposes. The point to emphasize is that craft production has been better-studied in hierarchical settings. At the same time, in drawing the contrast I do not imply that hierarchy and heterarchy are distinct phenomena that can (or should) be placed in opposition. A hierarchy always encompasses heterarchical relationships (Mills 2004; Crumley 2007), and complex societies encompass elements of each. My argument here is that, in past societies that were predominantly heterarchical in their organization, artisans worked under different socio-political and economic conditions that, in turn, shaped the contexts of their work and the 'social projects' toward which their efforts were directed.

Heterarchies and the logic of crafting

The term 'heterarchy' has had a mixed reception among archaeologists. Critics argue that it lacks precision; used to characterize a broad range of societies and organizational structures, it reveals little about socio-political institutions or their internal dynamics (McGuire & Saitta 1996; Saitta & McGuire 1998). Yet the term persists in the literature, arguably for its utility in highlighting the diverse array of past societies that fail to fit a hierarchical model (Crumley 1995; McIntosh 1999; Mills 2000; 2004; Rautman 1998). An on-going challenge for the discipline is to develop new approaches to documenting the enormous structural diversity subsumed under the term heterarchy.

I retain the term heterarchy in this article (rather than referring to 'middle-range' or 'intermediate' societies) specifically because it draws attention to *organizational differences*. Heterarchical societies *are* ordered, albeit in varied ways, some of them strikingly unlike the vertical linkages and tiered, centralized administrative units visible in hierarchies. The focus here is societies of intermediate scale, whose populations inhabit multiple communities, and whose interactions may extend across long distances. Heterarchically-ordered societies may yield little evidence for the material trappings of power and authority associated with elites. Social order may, instead, be grounded in societal divisions based upon age, gender, clan, lineage, or ethnicity (Brumfiel 2000). Archaeologists are less adept at recognizing these alternatives, in part because the archaeological traces are more ephemeral, but also because hierarchies are so ubiquitous in our own experience.

Past research on craft and heterarchy has focused upon social contexts of production. Ehrenreich's (1995) diachronic analysis of metal-working in Wessex (in Britain) contrasted hierarchically-organized (specialist) production of bronze with subsequent non-specialized practices of iron-making. Arguing that the latter process reflects heterarchical principles, Ehrenreich attributed changing practices in metallurgy to concurrent societal transformations. As local communities increasingly valued self-reliance, iron-working — as a less technically-demanding craft — was a better fit with those ideals. A second example involves Classic Period Maya polities where an observed lack of integration between arenas of political activity and craft production led Potter and King (1995) to characterize these aspects of political economy as heterarchical.

While investigating organization and structure is essential, an equally significant area of inquiry involves the dynamics of agency. Crumley (2007, 30) recently re-conceptualized heterarchies as 'inter-

dependent, richly networked [systems] ... characterized not by levels but by nodes, links, and networks'. Heterarchical social orders, by definition, involve social actors whose on-going face-to-face negotiation in turn creates and sustains these networks of interaction. Craft items (as socially-valued goods) circulate as part of this process of communication. Anthropologists have long recognized the varied ways that objects mediate social relationships in non-state societies (Mauss 1954 [1925]; Carrier 1995; Gell 1998; Strathern 1988). In these settings, social relations are fluid, built up, maintained and transformed through gift exchanges. The influential ideas of Gell (1998) reveal the profound social significance of 'art' objects in heterarchies.

Understanding social discourses mediated by objects using archaeological data is challenging work, requiring an in-depth knowledge of local histories and cultural practices, as well as requiring attention to symbols, iconography and the forms and paraphernalia of ritual. In a heterarchy, social objectives often encompass the building of consensus, maintenance of communication over distances, and the forging of dependable and lasting interpersonal relationships. Inalienable objects similarly play important roles, continuing 'to bear the identity of the giver and of the relationship between the giver and the recipient' (Carrier 1995, 24) in an exchange. Where specific ethnographic detail is scarce, archaeologists still often have access to the contexts in which craft goods were made or circulated, supplemented by theoretical insights drawn from this extensive literature (Gregory 1980; 1982; Clark 2007).

Practical considerations

In addition to engaging with these theoretical issues, archaeologists working to understand craft activity in a heterarchical setting may be hindered by current trends encouraging specialization in the discipline, as well as by the ways artefacts are recovered and studied. That is to say, the specialist activities of material culture experts in archaeology mirror artisan activities in past hierarchies. In both cases, individuals perform tasks efficiently on a more or less full-time basis. Just as an artisan in the past performs a single craft in a highly-skilled manner, an archaeologist becomes expert by spending substantial time studying a single category of evidence such as textiles or ceramics.

Excavators also facilitate these analyses by sorting and bagging artefacts by material type, in order that each collection can be studied individually. Expert analysis obviously yields valuable data and knowledge of past technologies; at the same time,

however, this approach can obscure the archaeological signatures of assemblages produced under conditions of heterarchy. My specific arguments include the following points: (1) that artisans in heterarchies will more frequently engage in multi-crafting (Hirth 2009b, 21) on an intermittent basis, predominantly in households; (2) these conditions of work encourage sharing of tasks and multiple authorship of objects (Mills 1995); as well as (3) expedient production characterized by interchange or substitution of raw materials (particularly for manufacture of utilitarian goods). Additionally (4) transfers of techniques (and decorative motifs) across media may be more common, as artisans flexibly move from one set of tasks to another, and (5) a wide range of elaborate goods will be produced and circulated as individuals engage in socio-political manoeuvring as well as ritual.

The broader practical issue is that archaeologists should consider whether field and laboratory procedures could prevent recognition of the patterns that might emerge only when comparisons are made across different media, or when the assemblage as a whole is reviewed. It is striking how often archaeologists who write about craft production discuss a single category of evidence, although a few researchers (among them Hagstrum (2001), Inomata (2007), and Miller (2007)) have taken more holistic views of crafting recently, with promising results.

Below, I set out specific expectations for the study of craft production in a heterarchy. In the three sections that follow, I consider (1) contexts of crafting; (2) materials and technologies; and (3) social projects.

Contexts of crafting

Workshops attached to elites, and similar contexts that facilitate specialist labour, often develop in hierarchically-ordered societies, as elites (or state institutions) sponsor artisans who work to meet demand for finely-crafted items that circulate as valuables, either in systems of wealth finance or as political insignia legitimating the authority of those in power (Earle 1987; Brumfiel & Earle 1987). Evidence of attached specialists often implies full-time artisans, while the location of a workshop near an elite household further indicates its control over the finished goods.

Away from situations of elite control, craft activities are more likely to be conducted in households on a part-time basis, although workshops may also be established by groups of artisans who share tools, space or materials. Ethnographic study of ceramic producers in the Andes reveals seasonal variation in the making of pots (Arnold 2008, 323), since many potters also participate in agricultural

work and because weather conditions affect potting. A heterarchical model of crafting implies greater local autonomy and self-sufficiency; as a further consequence, individuals engage in a wider range of crafts, acquiring more diverse skills. As Brumfiel (1995, 129) observes:

When production is non-specialized or carried out by part-time specialists, the lives of individuals are far more complex than they are in *complex* economies ... the multiple activities, exchanges, and schedules of individuals in heterarchically organized economies result in more varied and challenging lives for the individuals involved. The maintenance of heterarchical social relationships also involves great complexity for individual actors ...

At the same time, fewer institutions exist to centralize information, coordinate interactions, and streamline activities.

Multi-crafting is 'the practice of engaging in multiple craft activities within the same household' (Hirth 2009b, 21). Individuals in heterarchies would be expected to exercise greater independence in their daily routines, with more freedom to decide when to engage in skilled crafting. An example from documentary sources (associated with post-conquest Maya society) illustrates a situation of multi-crafting. Clark and Houston (1998, 36) cite ethno-historian Roys' (1972 [1943], 46) observation that

nearly everybody seems to have done some farming; and the producers of merchantable goods followed their callings at such times as work in the fields and necessary tasks about the home did not require their attention. A man might make many things for his own use but manufacture for sale only the one thing for the production of which he was specially trained or naturally adept. In the Motul dictionary, a certain term is defined as '... he who knows many crafts and he who is proficient in some particular one ...'.

Clark and Houston (1998, 41) conclude that every 'competent adult in Yucatec society could probably practice a variety of crafts should he or she so choose, or circumstances dictate'.

While this passage characterizes life in a market economy, it nonetheless reflects a situation known to have been prevalent in past agrarian societies. Household-based crafting facilitated and encouraged wide participation, but nonetheless individuals acquired and used specialist skills when opportunities arose for economic benefit. Crafting would occur *intermittently* (e.g. as periodic or discontinuous activity scheduled around other tasks: Hirth 2009b, 21), and both men and women acquired a range of skills. A further consequence of household multi-crafting will be that finished goods may have multiple authorship (Mills 1995).

In hierarchies, the prevalence of specialist workshops would foster interaction and encourage sharing of techniques, raw materials and tools, as well as allowing close supervision (Costin & Hagstrum 1995; Costin 2005, 1063–4). Finished goods made in workshops may therefore be similar (or ‘standardized’) in appearance, form or manufacture. As argued earlier, workshops may also be present in heterarchically-ordered societies; however, in the absence of elite patronage, the general expectation is that crafting locations will be more widely dispersed. Overall, then, in a heterarchy, assemblages should be more diverse, since artisans working independently will generate more variation in forms and techniques of manufacture.

A few qualifications about standardization are necessary. Among the Telefol people of New Guinea, women who teach their daughters to make string bags ‘place great value on the standardisation of their looping techniques, since this is a way of confirming tribal identity’ (MacKenzie (1991) cited by Ingold (2000, 357)). In some contexts, careful adherence to traditional practices reflects close contact among kin for the transmission of skills (particularly for objects made for personal use or display). Additionally, if goods are made for gift exchange involving wider audiences, meaningful communication is facilitated through conformity with shared stylistic conventions. Local variants of objects that recognizably ‘belong’ to iconographic traditions can mark social or ethnic identity.

Finally, in hierarchies, some prestige goods are prized for their uniqueness, although high demand for emblems or political insignia may encourage standardization of these items. Alternatively, archaeological evidence for standardization may reflect emulation, as exemplified by exact copies of Minoan conical cups made for islanders seeking to replicate elite lifestyles in the Bronze Age Aegean (Berg 2004).

Materials and technologies

Building on the arguments above, I suggest that most craft production in heterarchies will be non-specialized and oriented around the aims of expediency. Expedient action, as defined in the *Oxford English Dictionary* online is ‘conducive to advantage in general, or to a definite purpose; fit, proper, or suitable to the circumstances of the case’. Use of the word ‘expedient’ avoids the interpretive difficulties associated with ‘efficiency’ in the craft production literature (see Arnold 2008, 10, 318–19; Costin 2005) as well as focusing attention on flexible decisions made by household producers in response to changing conditions.

Since access to raw materials in heterarchies is unlikely to be facilitated through systems of centralized (or elite-administered) exchange, artisans should employ locally-available materials or obtain them through informal, personal exchange networks. Where supplies are less reliable, artisans should be flexible in the selection of raw materials and ready to employ substitutes. Separation of producers from consumers may also become blurred, given wide participation in crafting as well as in informal networks of exchange. Where multi-crafting is prevalent, producers will acquire the necessary motor skills — as well as find opportunities — for transfer of decorative motifs from one medium to another.

At the same time, expectations about expedient production and multi-crafting must be investigated rather than assumed; the diversity seen in heterarchies cautions against neat predictions about orderly patterning in archaeological remains. The expectations outlined here should be seen as starting points for inquiry into socio-political dynamics and economic relationships that may be diffuse, decentralized and difficult to reconcile. Similarly, expectations for expedient production are probably best suited to analysis of the making of utilitarian goods. Heterarchies certainly involve alternative modes of production beyond expediency; one of these is the ‘ritual mode of production’. As Spielmann (2002) has argued, the ritual mode compels production of objects revealing extraordinary virtuosity, labour inputs and social value. Production for ritual, as well as for the ‘social projects’ discussed in the next section, requires careful attention to individuals and their agency.

Social projects

Understanding how and why elaborate objects are produced in small-scale societies requires attention to social projects, as articulated by Gell (1998, 74) as part of ethnographic study of art objects. He argued that decorative patterns ‘attach people to things, and to the social projects those things entail’. Social projects entail the objectives of individual social actors (e.g. the signalling of gender, age, identity, personhood or social position) as well as those of the social group (e.g. consensus-building, social negotiation and ritual).

Two examples help to illustrate the *social* significance of crafting in heterarchies. Wengrow (2001, 182) characterizes artisans’ contacts with decorated pottery (and with other producers) in the Neolithic of the Near East:

Neolithic painted pottery invested the social and sensory activity of consumption with conceptual, and even cosmological, value. Its production, use, and

circulation provided a material framework for the construction of lasting interpersonal relationships It was as potential practitioners that people encountered and appreciated these products, generating *a system of social relationships between producers and consumers of aesthetic labour which differs fundamentally from that prevailing in our own society and, in a different sense, from those which characterized early states ...* (italics added) Wengrow (2001, 182).

Although Wengrow does not refer explicitly to heterarchy, the case study highlights the way in which producers and consumers, as social actors largely free from institutional constraints, gave away and received pottery, engaging in a process that built and maintained social networks. The intentions underlying production and circulation of pottery, as well as social realities created through the contacts, were *unlike* those that orient social and exchange relationships in archaic states (or, indeed, in our own society). As Wengrow emphasizes, the goal of aesthetic production and circulation was 'lasting interpersonal relationships'.

A second, more general example involves production for ritual, where requirements of form and decorative treatment may be stringent:

Ritual does not simply regulate work; it demands work. Moreover this work has an aesthetic quality to it beyond production for ordinary, everyday consumption, which may require a certain level of skill and affects the organization of craft production. In the ritual mode of production, the goal is not profits, but rather, acceptable, often superlative performance and participation. Thus, feasting and craft production in small-scale societies are supported not by elites but by numerous individuals as they fulfil ritual obligations and create and sustain social relations ... (Spielmann 2002, 197).

Subsequently, goods produced for ritual can 'move into the realm of more individualized social-ceremonial events, from bride-price payments to homicide reparations' (Spielmann 2002, 198). Simply categorizing crafts as 'ritual' or 'wealth' goods does not necessarily help archaeologists to infer potentially complicated histories of ownership and contingent meanings (Gosden & Marshall 1999).

Both Wengrow and Spielmann highlight 'aesthetic properties' as a crucial element of the craft goods produced for social projects. In contrast, Gell's approach is explicit in its attempt to move beyond aesthetics as a measure of an object's significance. Yet all of these researchers acknowledge that 'aesthetic' or 'decorative' qualities of objects are powerfully inculcated in their social roles. Artefacts demonstrate their owner's place in a social world and his or her vital powers; they establish the continuity of social

life by serving as markers of identity, social position or ethnicity. Beyond the individual, objects situate people within social networks, materializing collective relationships across time and space.

In the remaining sections, I explore these theoretical ideas using archaeological materials from the site of Borgatta (SSalCac 16) in northwest Argentina (making reference to the assemblage from the wider region). The aim is to demonstrate their utility for understanding heterarchical contexts of crafting, as well as for reconstructing agency and the wider socio-political and economic spheres within which artisans undertook their labours.

Craft and heterarchy in pre-Hispanic northwest Argentina

In recent decades, archaeological investigations in the northern Calchaquí Valley (Salta Province) have supported a growing consensus that the pre-Hispanic polities of the region were predominantly heterarchies. Acuto (2007) argued recently that a 'communal social life' characterized Late Period (AD 950–1450) communities. Located in the eastern slopes of the Andes, the wider region is characterized by narrow, longitudinal valleys that connected the *altiplano* of Bolivia with lower, more forested zones to the south and east in Argentina (Fig. 1). Archaeological evidence has been recovered from survey and recent excavations in the northern Calchaquí Valley (DeMarrais 1997; 2004; in prep.; DeMarrais & Lane n.d.; in prep.).

The study area is near the northern boundary of an interaction sphere whose centre lay further south in the fertile lower-elevation valleys of Catamarca and Tucumán Provinces. A shared pre-Hispanic cultural tradition (known as 'Santamariana') characterized northwest Argentina during the Late Period (after AD 950), known for distinctive infant funerary urns and bronze plaques. In the central and southern valleys, hierarchical polities were centred upon large conglomerate towns, as reflected in bronze plaques decorated with warrior motifs (Nielsen 2007; Raffino 1991; Tarragó 2000). In contrast, northern Calchaquí Valley settlements are more peripheral, with smaller populations and less-convincing evidence for elites.

The northern Calchaquí Valley is semi-arid, receiving limited rainfall that restricts agriculture to a narrow band of irrigable land along the main river and its principal tributaries. The transition to settled village life began around 200 BC (or perhaps earlier), when farmers diverted rivers to water alluvial deposits planted with maize or quinoa (DeMarrais 1997; in prep.); early settlements were built adjacent to these fields.

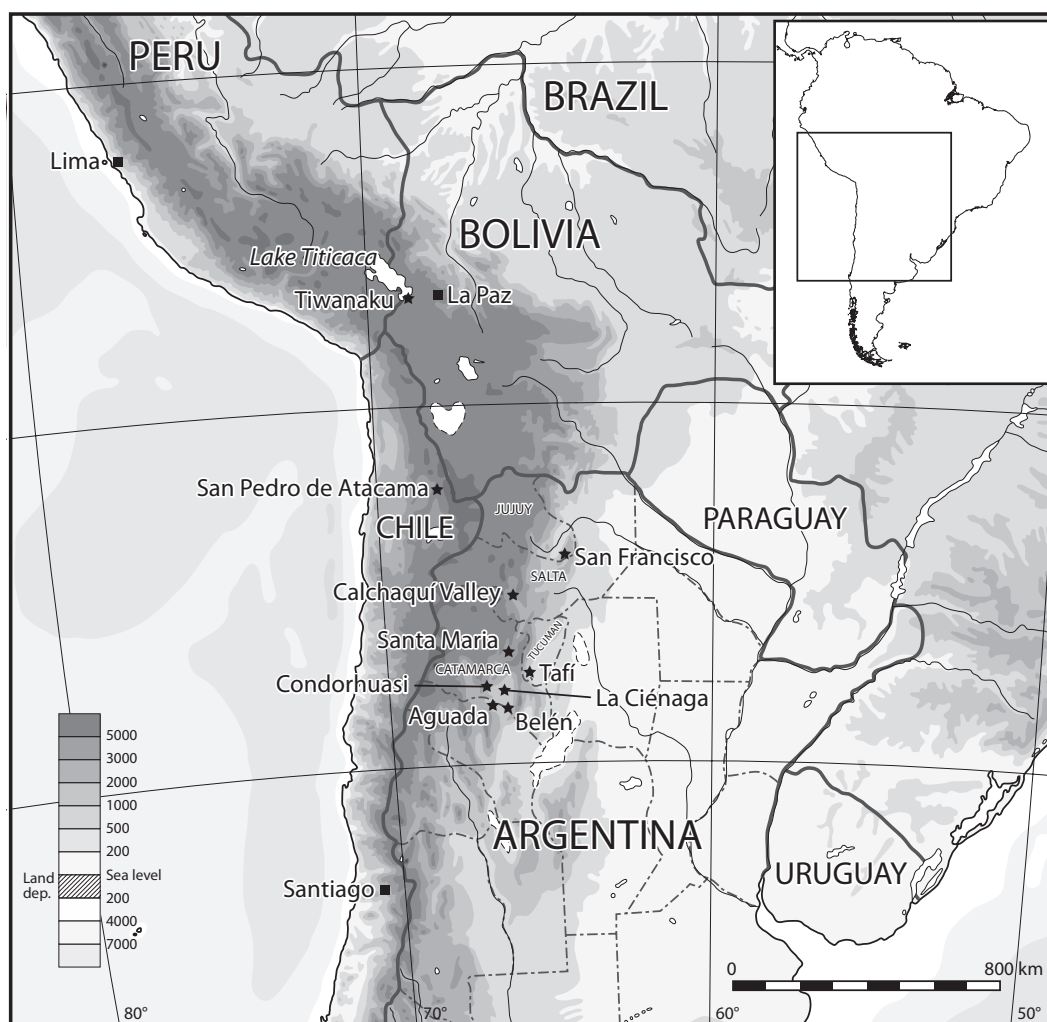


Figure 1. Map showing the locations discussed in the text. (Drawn by Dora Kemp using information from Rossi 2003, 44 and Collins Atlas.)

Overall population density (and potential for aggregation) remained low across northwest Argentina throughout the Formative (first millennium AD), although a few larger communities appeared after AD 950, especially in the southerly Santa María and Hualfín Valleys. Some Late Period polities, such as Quilmes in the Santa María Valley, grew to encompass populations approaching perhaps ten thousand, while northern Calchaquí Valley communities remained small.

The region encompasses diverse altitudinal zones, with a corresponding gradient in resource availability. While archaeologists generally agree that an interaction sphere involving llama caravans existed from the Archaic Period (c. 6000 BC–200 BC), debate continues over the intensity and nature of these con-

tacts (Berenguer 1986; 1998; Dillehay *et al.* 2006; Nuñez 1991; Nielsen 1997–98; 2006a; Albeck 2002; Sprovieri 2012; Tarragó 2006). Some archaeologists emphasize circulation of ritual paraphernalia and psychoactive plants, although more evidence is needed. My own view is that these interaction spheres probably varied widely through time and space, but that the evidence for limited circulation of ritual items and obsidian (as easy-to-transport and highly-valued goods), is the most convincing at present.

Although our knowledge of the chronological sequence continues to be refined, it remains generalized, especially for the Formative Period (before AD 950). The chronology of northwest Argentina as a whole is subdivided into three periods associated with local ceramic styles: Early Period (200 BC–AD 650),

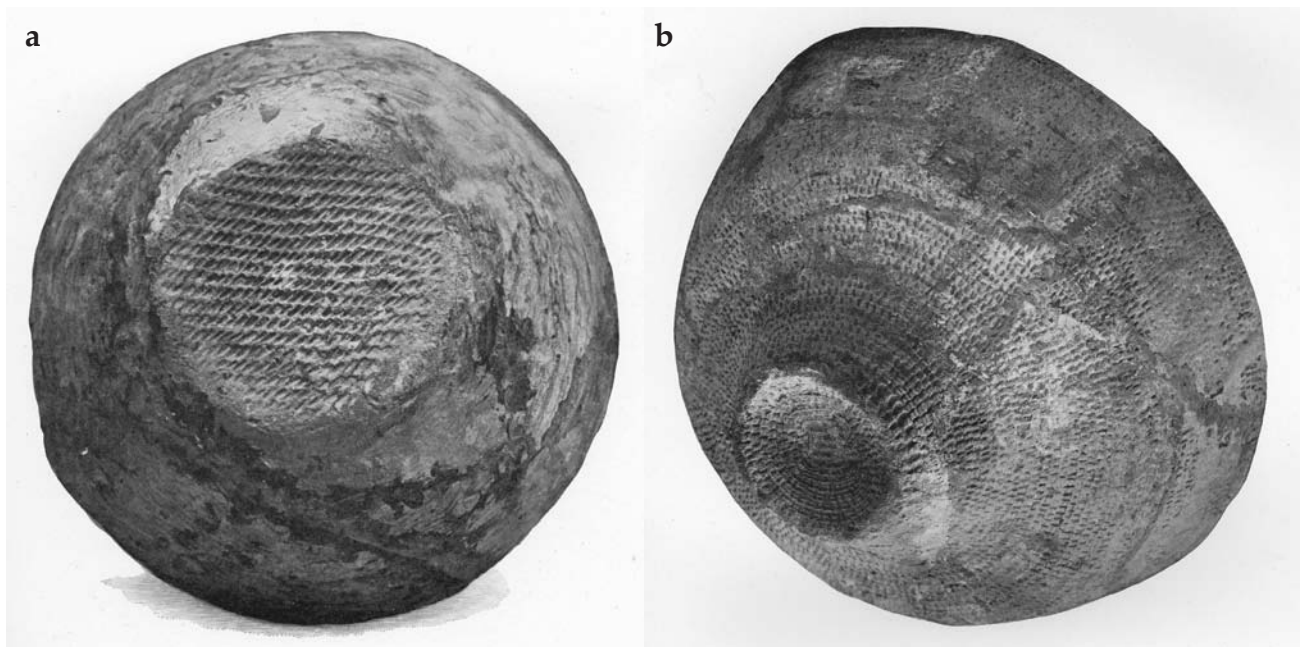


Figure 2. (a) Basket impressions on the base of a bowl from La Paya, Calchaquí Valley (from Boman 1908, pl. XV, fig. 30); (b) basket impressions on the exterior of a bowl from El Bañado, Quilmes (from Boman 1908, pl. II, fig. 3).

Middle Period (AD 650–950) and Late Period (AD 950–1450). The Inka conquest occurred about AD 1450, or perhaps earlier. The northern Calchaquí Valley manifests almost no evidence of Aguada culture, diagnostic of the Middle Period in other areas, and therefore the best evidence comes from the Late Period.

Contexts of crafting in northwest Argentina

Households were the main locus of craft activity in the northern Calchaquí Valley, with evidence for multi-crafting. This section describes the contexts in which artisans worked at the conglomerate town of Borgatta, a Late Period settlement which was excavated between 2003 and 2006 (DeMarrais & Lane n.d.).

Covering approximately 25 ha, Borgatta lies west of modern Cachi at the base of a well-watered tributary quebrada. An open space near the river has been interpreted as a plaza; the remaining space is filled by several hundred agglutinated residential compounds, interspersed with earthen refuse mounds and pathways. Residential compounds typically incorporate one or two roofed enclosures and an unroofed patio (DeMarrais 2004). Dimensions of domestic units vary widely, as do their layouts. Excavations (and test-pits) conducted in over 20 compounds yielded limited material evidence of social differentiation across the site. Homogeneity of deposits, together

with a paucity of imported or exotic goods, suggests that status distinctions were rarely expressed through material displays.¹

Evidence for crafting was recovered from all households, although areas of specialist production (such as workshops) were not identified. Spindle whorls are among the most common evidence; their distribution suggests that individuals in every household engaged in spinning and weaving. In contrast, evidence for more technically-complicated crafts, such as bronze-working (in the form of ore, crucibles, moulds or slag) was rare. Recovery of moulds or crucible fragments from only a few households (DeMarrais & Lane n.d.; in prep.) suggests that metallurgy was concentrated in those locations.

Pottery vessels were made locally as part of a system of non-specialized production. While insufficient evidence for firing pits or wasters was recovered to identify pottery-production locales, we infer that many individuals participated in the making of pottery. All households at Borgatta had access to utilitarian vessels, while decorated vessels (including the distinctive Late Period funerary urns) (Velandia 2005; Scattolin 2006; Nastri 2008; DeMarrais 2013) were also widely available. The ceramic assemblage from Borgatta (and from other northern Calchaquí Valley sites of the Late Period) is striking for the heterogeneity of forms and decorative treatments.



Figure 3. A partially-preserved basket from the collection of the Museo Arqueológico de Cachi. (Photograph by the author.)



Figure 4. An infant funerary urn, excavated from a residential enclosure at Borgatta, showing a frog motif transferred from a design woven into a textile. (Photograph by the author.)

As predicted earlier, in heterarchical societies, many individuals would have made vessels. In contrast, the painting of funerary urns probably involved fewer, more practised individuals, given the intricacy of their designs (see below).

Published evidence from the wider region also supports interpretations of multi-crafting. First, a complementary relationship between basketry and potting activities is inferred from impressions of baskets on the exterior surfaces of bowls. Baskets gave shape to the vessel as the clay coils were being built up (Figs. 2a, 2b & 3). Second, as argued above, the transfer of designs or motifs from one medium to another is more likely in situations of multi-crafting (or 'intersecting technologies': Hagstrum 2001). Transfer of motifs from textiles to funerary urns has been documented in other parts of northwest Argentina. While acidic soils normally prevent archaeological recovery of textiles, fragments of a tunic (recovered in exceptional conditions) reveal that motifs and designs painted on funerary urns were also woven into textiles (Renard 1999; Velandia 2005).

A final piece of evidence from Borgatta involves a design, painted on a funerary urn, that probably first appeared as a woven design on a textile. The shape of the frog motif (Fig. 4) reflects design constraints that would have been faced by a weaver (F. Cole pers. comm.). This indirect evidence suggests that images were transferred from textiles to urns, possibly by individuals with experience in both crafts.

Materials and technologies in northwest Argentina

Many features of the utilitarian implements excavated at Borgatta, as well as those on display in the Museo Arqueológico de Cachi, reveal expedient and non-specialized production. Objects reveal interchange (and substitution) of one raw material for another, as well as heterogeneity in their forms and techniques of manufacture, without much evidence for standardization.

Interchange of raw materials is clearly visible in the making of spindle whorls; this assemblage includes examples made from clay, stone, bone and wood (Figs. 5a & 5b). Some were incised, others were carefully shaped and polished, while still others were left undecorated. Some variation may be temporal, although the spindle whorls recovered from Borgatta also incorporate diverse raw materials and a range of decorative treatments. Individuals producing spindle whorls for everyday use made expedient decisions that resulted in a heterogeneous assemblage of forms, decorative treatments and materials.

Containers, as a category, exhibit similar variation in materials and, by implication, technologies

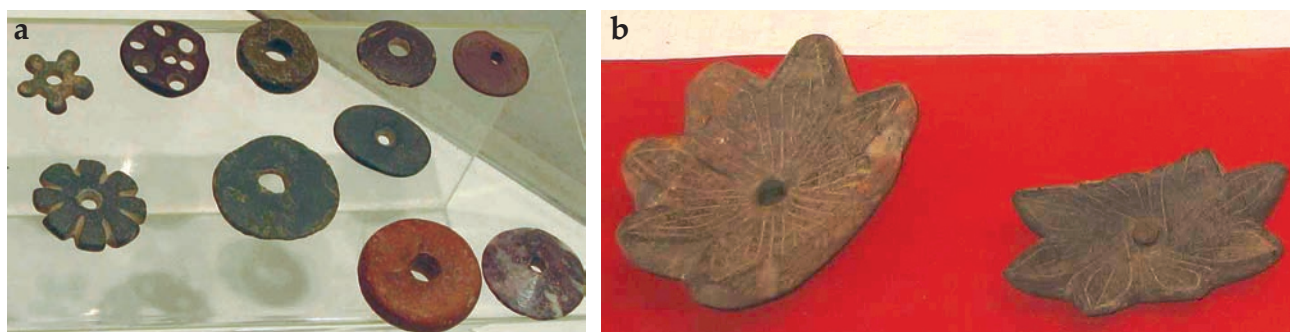


Figure 5. (a) Spindle whorls made from polished stone on display in the Museo Arqueológico de Cachi (M.A.C). (b) Spindle whorls made from fired clay on display in the M.A.C. (Photographs by the author.)



Figure 6. Stone containers on display in the M.A.C. Diameter of the larger bowl is approximately 10 cm. (Photograph by the author.)



Figure 7. Decorated ceramic bowl (black on red) recovered from Cruz (SalCac 36). (Drawing by the author.)

of manufacture. Used for storage, cooking, serving and transport, containers are (rarely) polished stone (Fig. 6) and (more commonly) fired clay (Fig. 7). Still other containers are made of fibres woven into baskets (see Fig. 3). Both baskets and wooden bowls tend to disintegrate in archaeological deposits; however, in ethnographic research in Azul Pampa (Jujuy Province) García (2001, 207) observed that a collection of wooden plates, serving dishes and spoons inherited from grandparents was still in use, evidence of their durability and, perhaps, their social significance. Given the diversity of forms and intended uses, the range of raw materials (clay, wood, plant fibres and polished stone) used to fashion containers is unsurprising. The heterogeneity of containers nevertheless supports the view that their production was non-specialized and expedient.

Spoons and spatulas were made from wood or bone (Figs. 8a & 8b). In an environment where trees were scarce, the long bones of a camelid or deer were

alternative durable materials that could be cut and polished (Benavente *et al.* 1993). Larger implements, including spades and digging sticks, were made primarily from wood. Small spatulas may have had ritual uses (the ingestion of cébil or other powders), while pins or fasteners (of polished bone) secured textiles or clothing. Other bone implements were left unpolished, reflecting expedient manufacture and use.

Projectile points, scrapers, flakes and bifaces were made either from imported obsidian or from locally-available quartz, quartzite and greywacke (which were locally available in a range of grades and colours) (Fig. 9) (Farr 1999). Surface collections from survey reveal that the lithic materials used for tool-making in most settlements predominantly came from the immediate surroundings, reflecting expedient acquisition.² In the museum in Cachi, a collection of projectile points made from bone (Fig. 10) provides further evidence of substitution. These unusual large

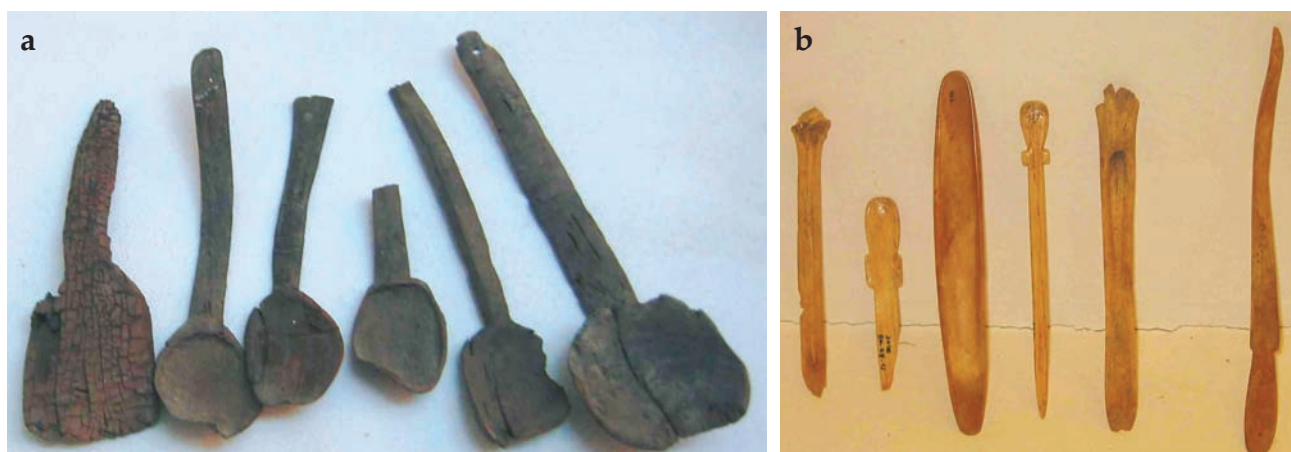


Figure 8. Wooden implements (a) and bone implements (b) on display in the M.A.C. (Photographs by the author.)

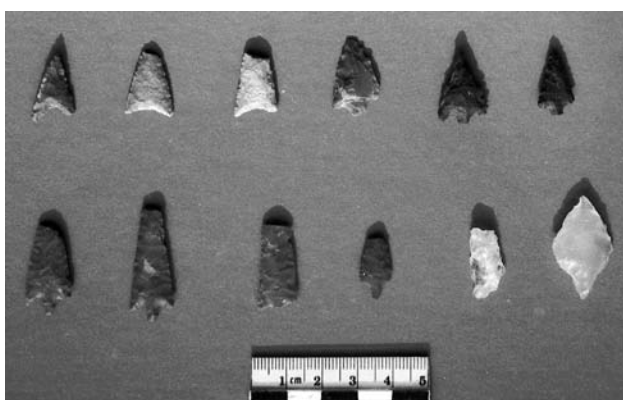


Figure 9. Projectile points made from quartz, obsidian and greywacke, all recovered on survey. (Photograph by the author.)



Figure 10. Bone projectile points on display in the M.A.C. (the stone point on the right side provides a scale when compared with the objects in Fig. 9). (Photograph by the author.)

points may date to the colonial period, suggesting that expedient production lasted beyond both Inka and Spanish conquests.³ An additional leaf-shaped bone point was recovered in excavations at La Paya (in the Casa Morada, an Inka period structure) (Bennett *et al.* 1948, 71; Boman 1908, pl. VI).

Obsidian, unlike local lithic materials, had to be obtained from sources in the *puna* to the west. Scatolin (2006) characterized Formative Period exchange networks in northwest Argentina as both ‘multi-layered’ and ‘heterogeneous’, while sourcing studies undertaken by Yacobaccio *et al.* (2002) and Lazzari *et al.* (2009) demonstrate that obsidian was moved long distances from early Formative times. Obsidian was procured by many inhabitants of the region, as evidenced by its frequency in lithic surface collections from the survey; the implications of these exchanges are discussed more fully below.

In summary, expedient production characterized the making of a range of utilitarian implements. Excavations at Borgatta have failed to identify areas of specialist production (although bronze production is one exception, since metallurgy requires expertise, access to ores and fuel, and the capacity and equipment for firing at high temperatures). While further investigation may reveal household specialist activity in pottery or lithic production, the existing data support a general picture of multi-crafting and production of an assemblage of utilitarian implements and tools that are rarely uniform.

Social projects in northwest Argentina

Questions about the social projects for which the northern Calchaquí producers engaged in craft activity are challenging. Why were so many elaborate,

decorated objects produced, in such a wide range of media? What can archaeologists infer about the agency of those who produced these goods and, finally, what was their social significance? The expectation, as outlined above, is that 'aesthetic production' in heterarchy involves social — as well as ritual — objectives. Interpersonal relationships may be as highly valued as social ties forged at the level of the corporate group. Finally, varied material expressions of identity, including emblems of place or locale, are expected as part of an assemblage, as social actors engaged in varied face-to-face interactions at the local (and possibly regional) level.

The nature and intensity of pre-Hispanic exchange in the south-central Andes is debated. For the wider region, early circulation of goods (or comestibles) would have been one response to altitudinal differences in resource availability (Tarragó 2006, 353). Some researchers view Tiwanaku (further north in Bolivia, AD 500–1150) as a stimulus for regional circulation of goods by llama caravans (Browman *et al.* 1984; Kolata 2003; González 2004; West 1981), although the effects of Tiwanaku on peripheral zones (including northwest Argentina) are not clear (Aschero 2000; Pérez-Gollan & Gordillo 1993).

In the northern Calchaquí Valley, extensive survey (DeMarrais 1997; *in prep.*) as well as excavation (DeMarrais & Lane *n.d.*; *in prep.*) revealed a paucity of imported craft goods, especially at Late Period sites. In a recent study of exchange (through re-analysis of burial goods from the town of La Paya and neighbouring sites) Sprovieri (2008–2009; 2012) reached a similar conclusion. Obsidian is an exception, as it appears frequently in surface collections made at sites throughout the region. Spheres of interaction therefore appear to have been distinct, dependent upon the materials involved, as argued earlier.⁴

I argue that evidence for low levels of participation in long-distance exchange by members of the *etnias* occupying the northern Calchaquí Valley during the Late Period is consistent with other evidence for heterarchy. Undoubtedly, limited quantities of craft goods did circulate (goods may have moved short distances *within* the region), and obsidian was probably obtained through informal personal contacts. Interpretations advanced here for heterarchy also accord with Nielsen's (2007, 27) observations that, after extended drought (AD 1250–1310) in the wider region, local differences in pottery, architecture and textiles became more pronounced.

If long-distance exchange was not the primary incentive for crafting, then production for ritual probably better explains the social projects in the minds of northern Calchaquí Valley artisans. Pottery



Figure 11. A Formative Period ceramic pipe fragment on display in the M.A.C. (Photograph by the author.)

(among the best-preserved of craft goods) was elaborated through burnishing surfaces, incising, painting designs or motifs, or addition of sculpted appendages. The Late Period ceramic iconography includes visually-complex anthropomorphic and zoomorphic representations, including birds, frogs and serpents, as well as human features.

The diversity and range of the assemblage of elaborate, decorated objects made during both the Formative and Late Periods arguably reflects the influence of a ritual mode of production. Mortars, tablets and pipes (particularly those of the Formative Period) are elaborately decorated with miniature sculptures of humans and animals (Sprovieri 2012). The circulation — and ritual ingestion — of psychoactive plants is thought to have had deep roots in the south Andean past (Pérez-Gollan & Gordillo 1993; Torres 1998; Sprovieri 2008–2009). Pipes (of fired clay, bone or stone) have been found in Formative Period contexts (Fig. 11), while elaborately-decorated tablets for the inhalation of powder (using tubes) are securely dated to the Late Period, and perhaps earlier (Torres 1987). The toasted seeds of cebíl (*Anadenanthera* sp.), which grows in the forests along the eastern and southern edges of northwest Argentina, were widely circulated for their psychoactive properties.

Objects made for use in Formative Period rituals (for ingestion of psychoactive plants) are generally small. Their carefully-executed miniature decoration would have been visible only to users (or to those in the immediate vicinity), suggesting that the rituals were small-scale events, rather than public events with an audience.⁵ An important exception is the bronze plaques, produced by Middle Period Aguada artisans associated with the Ambato region to the south. These plaques, possibly worn by ritual officiants, hint at status differences developing there (Figs. 12a & 12b).

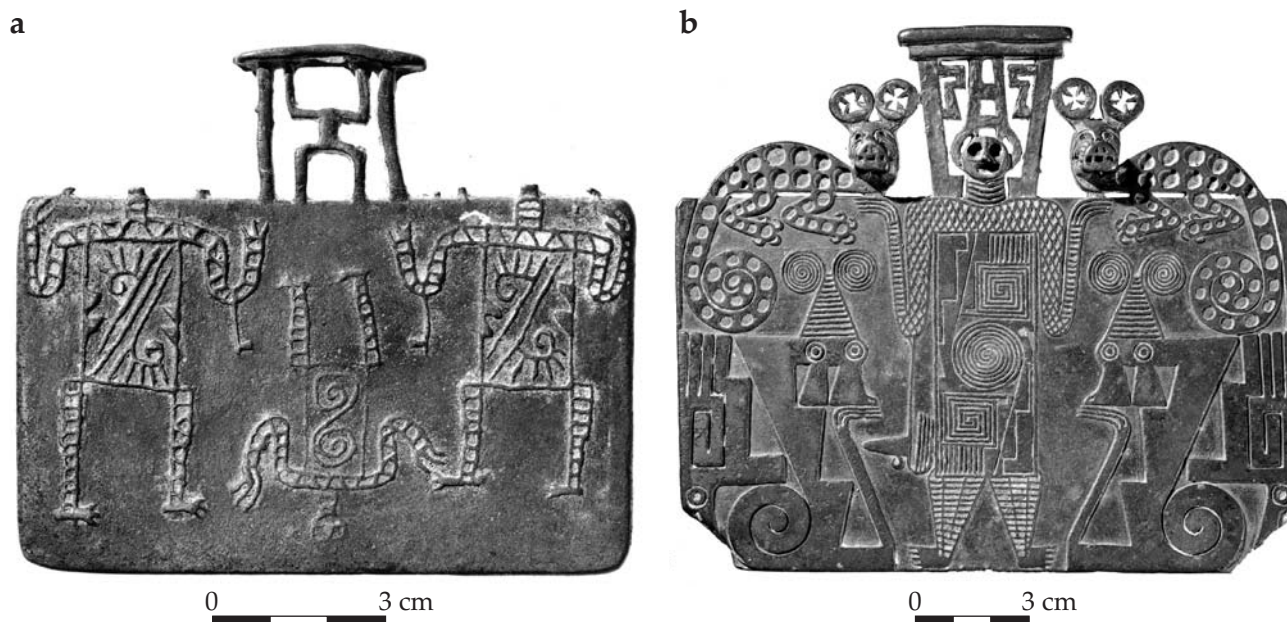


Figure 12. Late Formative Period (Aguada) bronze plaques. (a) Aguada bronze plaque showing three figures dressed in elaborate tunics. Two figures had heads protruding above the main panel, now missing. The central figure is upside down. This plaque was donated (c. 1895) to the Museum of Archaeology and Anthropology, University of Cambridge (Z-2541); it may have been associated with the plaque on the right; it measures 10.5 × 9.0 cm. (b) Aguada bronze plaque showing a central personage flanked by two animals. Holes for suspension are located in the headdress of the central figure, who carries an axe and wears a tunic decorated with geometric designs. This plaque was donated (c. 1892) to the Museum of Archaeology and Anthropology, University of Cambridge (Z-2540); it measures 12.3 × 10.9 cm. (Photographs: G. Owen; © CUMAA, used with permission.)

Some evidence (in the form of craft goods) indicates the continued use of hallucinogens during the Late Period (Sprovieri 2008–2009; 2012). Additionally, Nastri (2008) interprets the iconography of Late Period infant funerary urns as evidence of a ‘shamanic cosmivision’. The urns, mentioned earlier, are commonly found in northern Calchaquí Valley sites (both in villages and towns). Distinctive, ovoid vessels, standing as tall as 50 cm, elaborately painted, their introduction indicates change in both the nature and scale of rituals.

In contrast to the small ritual items of the Formative, Late Period urns were large enough to have been visible at a distance (DeMarrais 2013). Nastri (2008) and Velandia (2005), among others, have analysed urns and their iconography throughout northwest Argentina, offering different interpretations. Nastri (2008, 31) argues that the substitutions of animal parts (or wholes) for human features, cephalic representations, references to sacrifice, inclusion of phallic elements (earlier) and aggressive elements (later) jointly comprised a rich symbolism tied to shamanic practices that were transformed over time, in response to changing societal conditions. He highlights:

La cantidad de imágenes y su enorme variación dentro de convenciones representativas relativamente constante ...

The quantity of images and their enormous variation within relatively constant conventions of representation ...

This local variation, and particularly its florid and idiosyncratic character, constrained by a wider set of stylistic conventions, fits well with the expectation that craft production in heterarchical settings should generate diverse local expressions within a wider tradition (Figs. 13a–d & 14).

Further, if Nastri’s interpretations are correct, they illustrate the continuation of some elements of shamanic, or cult, practice from earlier times, while new, more public events (mortuary rituals) were introduced. The mortuary rituals required larger objects that could contain the deceased infant’s remains as well as focusing the attention of audiences. I have argued elsewhere (DeMarrais 2013) that infant and child burials involved displays of urns in the community, as part of a process of mourning, before they were returned to the residence for burial under floors. If urn iconographies reflect local or kin group identi-



Figure 13. (a & b) Infant funerary urns from the northern Calchaquí Valley. (c) A libation bowl in the store room of the M.A.C. (d) A sculpted head appendage with face paint, possibly from an urn, recovered from Borgatta. (Photographs by the author.)

ties, as Velandia (2005) has argued, then Late Period craft activities reflect a new emphasis on the corporate group (or the community as a whole) as settlements expanded.

This admittedly brief overview of social projects reveals that elaborate craft goods fulfilled a range of social objectives in the northern Calchaquí Valley. Substantial time and effort were devoted to crafting

elaborate objects, many of which were used in ritual. The objects reveal substantial idiosyncratic variation at the local level. A wider range of goods (textiles, bronze items, shell beads and lapidary goods) was produced; for reasons of space I omit further discussion. My intention has been primarily to indicate the initial directions that a fuller investigation of social projects might take.



Figure 14. Images of funerary urns from the Santa María Valley, showing designs that also appeared on textiles. (From Boman 1908, pl. IV, following p. 159.)

Conclusions

In this article, I argued that while craft production has received sustained attention in hierarchical settings, archaeologists have devoted less systematic study to the factors affecting crafting in heterarchies. Away from situations of elite patronage or supervision, craft production is more likely to be undertaken predominantly in households. For reasons I outlined above, household members may engage in multi-crafting, or work intermittently, in practices documented in a recent edited volume (Hirth 2009a). Building upon these productive insights, I have sought to highlight the alternative dynamics that characterize spheres of socio-political activity and economic interaction in past heterarchies. I suggested that artisans in heterarchies produce goods for different reasons, and for different audiences, than did their counterparts in hierarchies.

Setting out preliminary expectations for the archaeological signatures of crafting in heterarchies, I argued further that: (1) multi-crafting would be widely practised; (2) multi-crafting would encourage household members to share tasks and skills; (3) manufacture of utilitarian goods would usually be expedient and non-specialized; (4) transfers of designs or motifs across media would be common; and (5) elaborate craft goods would be produced and circulated widely, as part of the building and maintenance of interpersonal (and collective) networks.

Developing a case study focusing upon heterarchically-organized Late Period *etnias* of the northern Calchaquí Valley of Argentina, I demonstrated that, in the absence of a well-developed political economy, most crafting took place in households. Evidence for multi-crafting was recovered in excavations at the large conglomerate town of Borgatta. Utilitarian industries reflected non-specialized, expedient production that employed locally-available raw materials. Obsidian is an exception; its wide distribution reflects the heterogeneous nature of exchange networks in the region (Scattolin 2006; Lazzari *et al.* 2009).

Furthermore, significant time, materials and skill were directed toward the making and circulation of visually-elaborate, idiosyncratic craft goods. Many crafted items were apparently made for use in ritual. During the Formative Period, elaborate ritual paraphernalia was manufactured and used for ingesting psychoactive plants (particularly *cebil*). Subsequently, during the Late Period, the scale of ritual activity changed to encompass larger audiences. Mortuary rituals emphasized display and burial of infants in decorated funerary urns. More formal plazas also appeared in settlements as people built and occupied larger conglomerate towns (Nielsen 2006b); these were settings for public events that built solidarity and reinforced corporate group membership.

Notes

1. As is the case elsewhere in the Andes, textiles (including tunics) probably played important roles in social signalling and the communication of ethnic identities; it is unfortunate that these craft items rarely preserve.
2. Cachi Adentro, the region west of Cachi, is the only region surveyed that had relatively few lithic resources. Inhabitants of sites in Cachi Adentro probably obtained blanks or finished tools from the inhabitants of sites along the main Río Calchaquí.
3. Bone projectile points were reported by Debenedetti (1921) from excavations at the site of Caspinchango in Catamarca, who assigned them to the Colonial Period on the basis of associations with strata containing glass beads and iron buckles.

4. Obsidian distribution spheres include one surrounding Zapaleri (on the Argentina/Bolivia border) which supplied high-quality black obsidian (Yacobaccio *et al.* 2004, 199). It is present in high quantities in sites in Jujuy and the north and west areas of Salta province (Yacobaccio *et al.* 2004, 201), indicating a range of 350 km. A second source, Ona-Las Cuevas, had a range of 340 km. Ona obsidian is found in sites in Catamarca's *puna* region, the Cajón Valley, Santa María Valley, the Lerma Valley, Quebrada del Toro, and the Calchaquí Valley. In Inka times, Cortaderas Derecha and Potrero de Payogasta (both northern Calchaquí Valley sites) acquired obsidian from varied sources, suggesting greater integration of the movement of obsidian under the Inkas.
5. In the southern valleys, a few larger Aguada (late Formative Period) sites, such as La Rinconada, include platforms and plazas, suggesting that audiences gathered in those locations for ritual activities. In other regions, including the northern Calchaquí Valley, formal ritual settings have not yet been identified for sites dating to this period.

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