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Crafting a shared history of learning: Pottery making and the building of agropastoral communities (Argentina, 200-850 CE)

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ABSTRACT

For many decades, anthropological archaeologists have investigated early villager societies in the Southern Andes, especially in regions that experienced the formation of larger settlements, politico-religious centers, and eventually, centralized polities. This paper contributes to the reconstruction of socio-material strategies and trajectories of early Andean smaller-scale, egalitarian agropastoral settlements by comparing the technological choices embedded in pottery manufacture in the Tafí Valley (Tucumán, Argentina, 200–850 CE). Evidence from these smaller communities demonstrates an extensive occupation by agropastoral groups living in dispersed hamlets. These early farmers maintained local foodways, but shared similar mortuary and architectural traditions. To further investigate the crafting of social relations between these small villages, this paper explores how Andean farmers and herders articulated difference and similarity through shared learning histories, in this case, of making pots.

With data from three contemporary residential sites located in northern (La Bolsa, La Ciénega) and southern (Las Carreras) parts of the Tafi Valley, we apply a suite of elemental, mineralogical, and archaeological techniques (including pXRF, optical petrography, morphological reconstruction of vessels, and forming marks) to elucidate and compare the operational sequences of pottery making. Results reveal that small-scale agropastoral settlements, even separated by small distances, mobilized different material and immaterial resources in mutually intelligible combinations enacting a constellation of potting practices that allowed them to balance the tensions between similarity and difference at the regional level.

1. Introduction

The emergence and decline of early villager societies globally have been topics of perennial interest in anthropological archaeology (Capriles, 2014; Gero, 2015; Hastorf, 2008; Hodder, 2018; Núñez & Perlès, 2018; Olivera, 2001; Robb, 2007; Scattolin, 2015; Stanish, 2003; Thompson & Birch, 2018; Wilshusen & Potter, 2010). In the Southern Andes, the shift from small-scale farming communities to increasingly centralized and hierarchical polities has received considerable attention, focusing on the complex facets of early social differentiation and integration and their role in fueling political and economic inequality to reveal fascinating aspects of social change (Bandy, 2004; Bermann & Castillo, 1995; Bruno, 2024; Hastorf, 2003; Laguens, 2004, 2006; Marsh, 2016; Núñez Regueiro, 1974; Roddick, 2013; Scattolin, 2010; Stanish, 2003). However, the centuries after adopting agropastoral lifestyles are still poorly understood in areas where the origins and evolution of village life did not lead to the formation of larger settlements, politico-religious centers, and eventually, centralized polities (Fox, 2007; Haber, 2007; McAndrews, 2005). We believe that we still need to account for the multiple social and material strategies and particular historical trajectories that small-scale villages put in place and followed to sustain an agropastoral project over time —which included but was not limited to growing their own foods, living together, and establishing increasingly dependent relations to materials (Bandy & Fox, 2010; Hastorf, 2008; Hodder, 2018; Olivera, 2001; Robb, 2013).

Around 200 CE, agropastoral groups settled down in the intermontane Tafí Valley, tucked between the high-altitude *puna* plateau and eastern rainforests (*yungas*) of the Andes (Tucumán, Argentina; Fig. 1). Until 850 CE, farmers and herders occupied the landscape intensively, populating it with hundreds of dispersed homesteads, cultivated fields, and corrals. Unlike other regions in the Southern Andes, early farmers in the Tafí Valley did not aggregate into large nucleated settlements, nor

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develop entrenched social inequality or ranks. Instead, Tafi villagers crafted a society grounded in socioeconomic autonomy with dispersed hamlets, all rooted in a strong egalitarian *ethos* where ancestors played a significant role in productive and ritual activities and resulting in a palimpsest of socio-economic and cultural practices (Franco Salvi, 2018; Salazar & Kuijt, 2016; Scattolin, 2010). This research investigates how people living in different settlements interacted and the nature and scale of the social relations between these small communities.

Building on previous documentation of shared built environment and architectural practices in Tafi Valley sites (Berberián, 1988; Dlugosz et al., 2009; Franco Salvi, 2018; Franco Salvi et al., 2023, 2025; González & Nuñez Regueiro, 1960; Manasse, 2023; Núñez Regueiro, 1974; Salazar et al., 2024; Salazar & Kuijt, 2016; Sampietro & Vattuone, 2005; Scattolin, 2010), recent archaeometric research on first millennium ceramics from Tafi communities (200–850 CE) found that villagers developed localized subsistence strategies and culinary preferences (Vázquez Fiorani et al., 2026, n.d.). In order to bridge the gap between the micro- (focused on the life stories of individual households) and macro-spheres (based on regional economic and political systems) of analysis, we argue that we need to create heuristic frameworks that articulate the tensions between similarity and difference upon which Tafí villages cemented their communities and conducted their daily lives. We compare ceramic technology in three Tafi Valley agropastoral settlements: La Bolsa 1 and Lomita del Medio (in the north) and Santa Cruz (in the south). In simple terms, we are interested in understanding how Andean farmers and herders balanced difference and similarity by shared learning histories, in this case, of making pots. To answer this, we pose two specific questions: did potters throughout the Tafí Valley share the same pottery-making technical knowledge and skills, and if so, did they belong to a constellation of practice?

Learning and knowledge transmission are multi-scalar, forming nested constellations of practice that expand beyond face-to-face

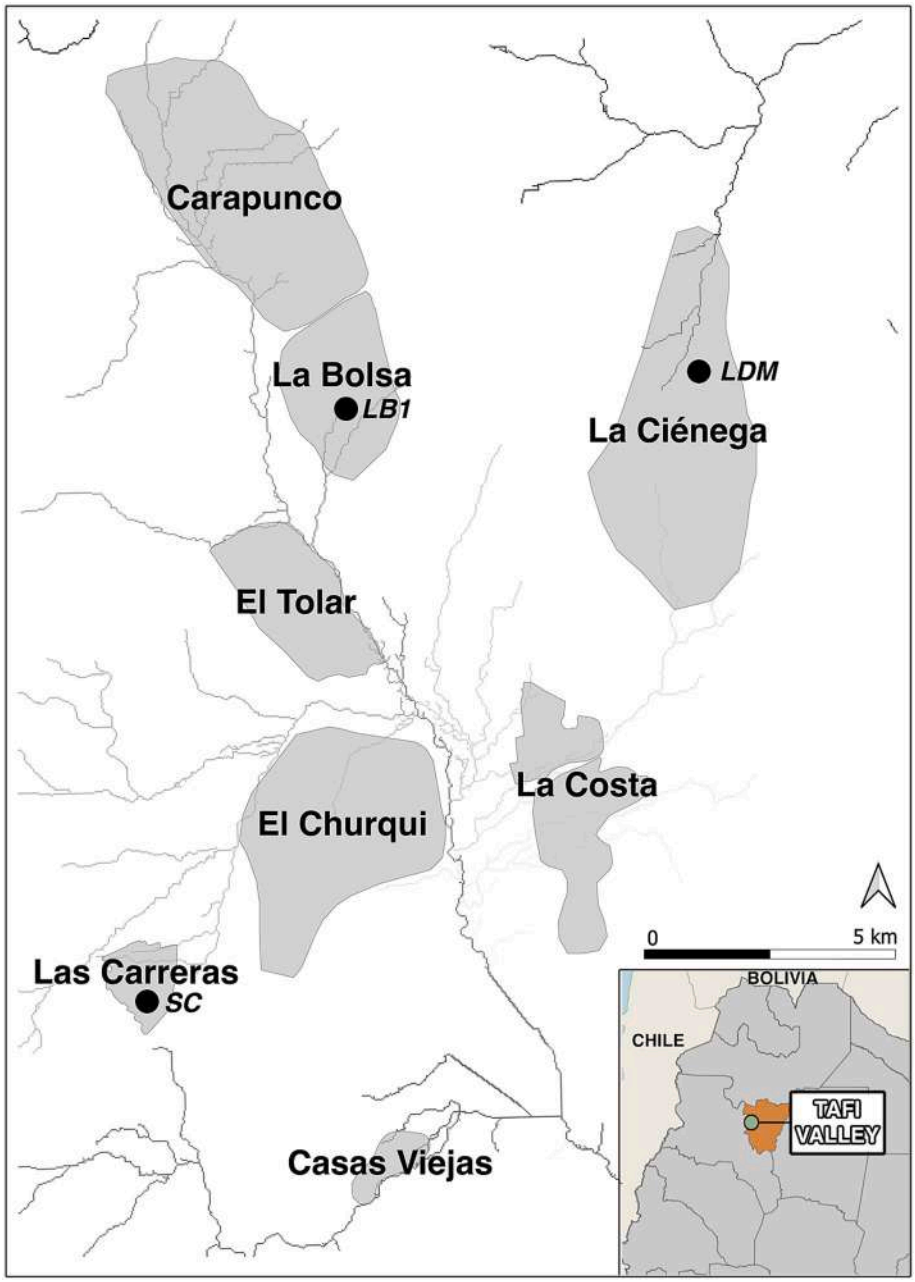


Fig. 1. Map of the Tafí Valley with areas with concentrated early farming villagers, including the three sites presented in this study: La Bolsa 1 (LB1), Lomita del Medio (LDM), and Santa Cruz (SC). Shaded grey areas demark the subregions of the Tafí Valley with their respective names.

interactions to form common histories, and thus offer a fertile ground to explore the formation of sociality among multiple spatial and temporal scales (Crown, 2007; Gosselain, 2016; Hendon, 2010; Lave & Wenger, 1991; Mills & Szuter, 2016; Roddick, 2016; Roddick et al., 2016; Wenger, 1998). In this article, we utilize the communities of practice approach to assess if all agropastoral settlements in the Tafí Valley used the same pottery-making technical knowledge and skills, and if they were part of an overall constellation of practice. In doing so, we evaluate if farmers in different villages and hamlets nurtured a collective sense of belonging and community membership that extended beyond their immediate residences, even while maintaining socioeconomic productive autonomy in the household sphere.

To a certain degree, learning processes can be reconstructed by analytical methods that provide fine-grained resolution of different choices embedded in pottery-making (Crown, 2007; Michelaki, 2008; Roddick, 2009). Here, we present data from La Bolsa I, Lomita del Medio, and Santa Cruz sites to elucidate operational sequences of pottery-making by applying a suite of elemental, mineralogical, and archaeological techniques, including pXRF, optical petrography, morphological reconstruction of vessels, and forming marks. We focus on both macro- and micro-attributes of ceramics to build more robust and comprehensive understandings of similarities and differences in technical choices and styles (many of which can be masked when considered alone, such as different pots made using the same paste recipe) and to gain enhanced insights into social and culturally embedded understandings of identity and community membership among villagers. Ultimately, reconstructing the different stages of ceramic manufacture provides "an entrance into the social world of the potters" (Robb, 2007: 172). Results in this study reveal that small-scale agropastoral settlements, even separated by small distances, mobilized different material and immaterial resources in mutually intelligible combinations, enacting a constellation of potting practices that allowed them to balance tensions between similarity and difference.

2. A toolbox for unraveling how people learned in the past

Craft production is a situated process of embodied cultural transmission, where interpersonal learning occurs by and through established social bonds (Lave & Wenger, 1991; Roddick et al., 2016; Wenger, 1998). As such, learning is an intrinsically relational phenomenon where practitioners engage in technical work that creates and reinforces social identity and affiliation by a suite of material technologies and repertoires, in many cases forming recognizable technological behaviors and/or traditions that can index social boundaries across several spheres encompassing individuals, households, and communities (Crown, 2007; Gosselain & Stark, 1998; Hegmon, 1998; Lara & Bray, 2025; Michelaki, 2008; Roddick et al., 2016; Roux, 2016; Stark et al., 2000). In this sense, craftspeople develop specific aspects of their social identity within specific cultural contexts where individuals learn the methods of making, living, and behaving inherited over generations (Adams, 2010: 208).

Shared learning experiences create communities of practice that promote, in turn, the continuous renewal of relations between individuals and groups. Communities of practice arise when people mutually engage in a joint enterprise, sharing a repertoire of material and immaterial (i.e., gestures, bodily habits) practices through which practitioners express their sense of membership, acting in the world through a continuously renewed set of relations (Lave & Wenger, 1991; Wenger, 1998). Through learning experiences, people follow or challenge naturalized ideas, valuing or devaluing behaviors that in turn can strengthen or weaken their membership within a community (Chesson, 2023: 64).

Learners and practitioners interact repeatedly through time, creating what can be seen as unfolding histories of learning, a phrase that better captures the dense and sustained temporal nature of such experiences (Wenger, 1998: 86). When histories of learning are too far removed from face-to-face interactions and engagement, communities of practice can be scaled into broader constellations (Wenger, 1998). As a process, learning is shaped by multi-scalar interactions that configure constellations of practice and emergent communities (Roddick et al., 2016). We adopt a definition of constellations of practice as an overarching identity that "unifies multiple communities through mutual engagement or a network of communities interacting across a landscape, defined by a shared technological style" (Stephens et al., 2023: 398-399). Such an approach has proven beneficial in reconstructing encompassing spheres of social interaction and identity (Dorland, 2018; Stark, 1998), as Eckert and colleagues (2015) illustrate for the American Southwest, where potters indexed their shared belonging and identity to larger groups by using similar designs.

Situated practices of learning move beyond simply knowledge transmission to understand the ever-emergent and multi-scalar processes of community-making, embedded in negotiation and contestation through each production step, and thus constantly open to change. An example of the dynamic interplay between change and continuity is the Inka-style pottery found in southern Ecuador. Ceramics there exhibit evidence of being manufactured by Cañari local potters, combining and adapting their traditional techniques differently to achieve state aesthetic requirements (Lara & Bray, 2025).

Constellations of practice are connected by the actions of brokers (actors that structure and integrate new or revised practices or repertoires) and boundary objects (materials bridging, mediating, and forming liminal spaces between communities of practice) that act as anchors in unfolding historical processes (Wenger, 1998). Practitioners decide whether to *align* or conform to current techniques and styles, and can adopt new practices through *imagination* (Gosselain, 2016; Roddick et al., 2016: 48). Middle Iroquoian communities, for example, maintained their traditional practices, which carried deeper social meanings, by aligning their decorative motifs (Dorland, 2018). By the same token, Sassaman and Rudolphi (2001) unraveled differences between tempering/shaping (incorporating new technological practices through *imagination*) and decoration/use practices (conforming to established and traditional aesthetic and functional principles by *alignment*) in the American Southeast, arguing that potters belonged to different communities of practices that mapped onto kinship and residence patterns.

In this way, communities are understood not as closed units but as something that people and materials do, always in a state of becoming rather than being (Harris, 2014). They emerge from sustained situations of learning and belonging embedded within overall societal affordances (Gosselain, 2016: 49). Shared learning histories of making—indexed in pots—can provide a meaningful location to anchor social interaction and integration, and thus, create and maintain community(ies), as Jordan and colleagues (2020) demonstrate for Late Classic Period Maya communities in Belize. Similarly, Lazzari and colleagues identify the spheres of interaction and exchange of ceramics and obsidian in Northwestern Argentina based on the large-scale circulation of technological styles (Lazzari et al., 2017, 2019), a line of inquiry also followed by Bugliani and Pereyra Domingorena in El Cajón Valley (2024).

Thus, the learning process and its role in defining social groups can be reconstructed by tracing the choices made by potters during crafting. We see technological choices and styles as the various culturally embedded decisions in the crafting process, including selections of raw materials, tools, and techniques, from a universe of environmental, technical, and social possibilities and constraints (Duistermaat, 2016; Echenique et al., 2021; Michelaki, 2007; Roux, 2016; Sillar & Tite, 2000). Technological choices link the social dimension to the techno-utilitarian domain of practice, performing as "an active tool in strategies of social action and involving symbolic structures and attitudes of the community and artisans by perpetuating and changing status relations and basic ideational concepts" (Echenique et al., 2021: 4).

Technological styles are actively embedded in crafting activities, and thus, constitute a gateway to explore the processes of community-making. For instance, Druc (2009) argues that Peruvian gendered and

geographical identities are marked by technological distinct manufacturing techniques (coil and paddle-building for female potters and coiling for males), and Adams (2010) describes a similar scenario in Southwest Pueblo communities. In other cases, social identification may be displayed by low-visibility attributes (raw material selection and paste recipes): Echenique et al., (2021) document the use of shale temper within Bolivian Yavi-Chicha prehispanic groups. Following these scholars, we apply a multi-proxy approach to trace technological choices made by Tafi Valley potters in northwestern Argentina to reconstruct the ceramic production sequence from selection of raw materials, forming, decorating, and firing pots to assess their roles in building distinct senses of belonging and community.

3. Tafí Valley's environmental setting and early farming communities

The Tafí Valley is an intermontane valley in Tucumán province in Argentina with evidence of human occupation dating back to 200 BCE. After an initial, brief period of population aggregation that included construction of mounded ceremonial structures (Franco Salvi, 2018; Salazar, 2010; Scattolin, 2010), the subsequent population increase and village fissioning process led to increasingly scattered residential clusters and households dispersed across the landscape (López Lillio & Salazar, 2015). By 200 CE, the Tafí Valley was home to numerous hamlets and small villages scattered across the landscape. In total, more than ten of these sites have been identified across the Tafí Valley, all separated approximately by a day's walk and each containing up to 100 residential units (Berberián, 1988; Cremonte, 1997; Cuenya & García Azcárate, 2004; Dlugosz et al., 2009; García Azcárate, 1996; González & Nuñez Regueiro, 1960; Oliszewski et al., 2017; Sampietro & Vattuone, 2005) (Fig. 1). This research focuses on three of these residential sites, all dating to 200–850 CE.

While most day-to-day decisions were anchored at the household level in individual hamlets, similarities in the built environment suggest strong ties between these different settlements, especially for pooling labor (Franco Salvi, 2018; Salazar & Kuijt, 2016), and thus raise important questions about how households interacted with each other. A distinctive feature of Tafi Valley residential architecture is the multi-room stone house containing up to eight rooms opening onto a central patio, a layout shared with substantial homogeneity by all contemporary settlements and villages in the nearby Anfama, San José, Chasquivil, and Amaicha Valleys and La Ciénega and Quebrada de los Corrales ravines. Similarly, material culture —mainly but not entirely limited to pottery— exhibited similarities of decorative traits that suggest the existence of a shared tradition (Berberián, 1988; Cremonte, 2003). Organic residue analyses complicate this regional scenario when considering Tafi Valley foodways, with settlements in the southern and northern parts of the valley characterized by distinct, specialized subsistence strategies likely related to micro-environmental differences (Vázquez Fiorani et al., 2026, n.d.).

Building on previous research defining regional socio-political systems and temporal trends in the development and demise of these agropastoral communities (Berberián, 1988), we are poised to refine macro-scale models to encompass the variability observed between settlements. To begin this process, our research centers on household practices and people's everyday life within and between La Bolsa I, Lomita del Medio, and Santa Cruz (Franco Salvi et al., 2025; Franco Salvi & Justiniano, 2021; Franco Salvi & Salazar, 2014; Salazar et al., 2022, 2024, among others) to provide valuable fine-grained information about similarities and differences upon which Tafí groups built their communities and conducted their daily lives.

3.1. Case studies in the Tafí Valley

In this paper, we present data from three different subregions of the Tafí Valley (La Ciénega, La Bolsa, and Las Carreras) that contained one or more agropastoral sites, defined as the cluster of six or more residential units situated less than 500 m apart. Specifically, we focus on three houses located in the northern sites of Lomita del Medio (U18) and La Bolsa 1 (U14) and the southern Santa Cruz (U02). All three houses shared similar stratigraphic and site formation processes: a single occupational floor with multiple pits and burial cists sealed by wall collapse, with all materials radiocarbon dated between 200 and 800 CE (all calibrated dates can be check in Supplementary material 1). Refitting of pots and spatial distribution of ecofacts suggest that these materials were found *in situ*. With enduring and consistent regional architectural practices and ceramic traditions (Berberián, 1988; Cremonte, 2003), similar site formation processes, and all deposits dating mainly to the mid first millennium CE, we consider Lomita del Medio, La Bolsa I, and Santa Cruz as broadly synchronous and comparable.

Lomita del Medio (LDM): The site is located in a high-altitude ravine in northeastern Tafí Valley in the La Ciénega subregion, which has a maximum altitude of 2800 masl with a semi-arid climate as part of the foggy grasslands and acts as transitional area between the montane forest and *puna*. Aerial and pedestrian surveys in La Ciénega identified 138 dwellings and several productive areas scattered across 600 ha. The hamlet of Lomita del Medio contained 8 residential units, one of which (U18) we excavated (Fig. 2; Franco Salvi et. al., 2023). This compound was composed of eight lateral rooms opening onto a central patio. We recovered wild fruits (*Geoffrea decorticans, Prosopis* sp.) macroremains, camelid (*Lama* sp.) and wild cervid bones, and multiple grinding stones (n = 43). Data from lipid residue analysis of pottery vessels and phytolith analysis suggest the exploitation of wild grasses, C3 plants, and ruminant meat (Vázquez Fiorani et al., 2026, n.d.).

La Bolsa 1 (LB1): The site is located in northern Tafí Valley in the La

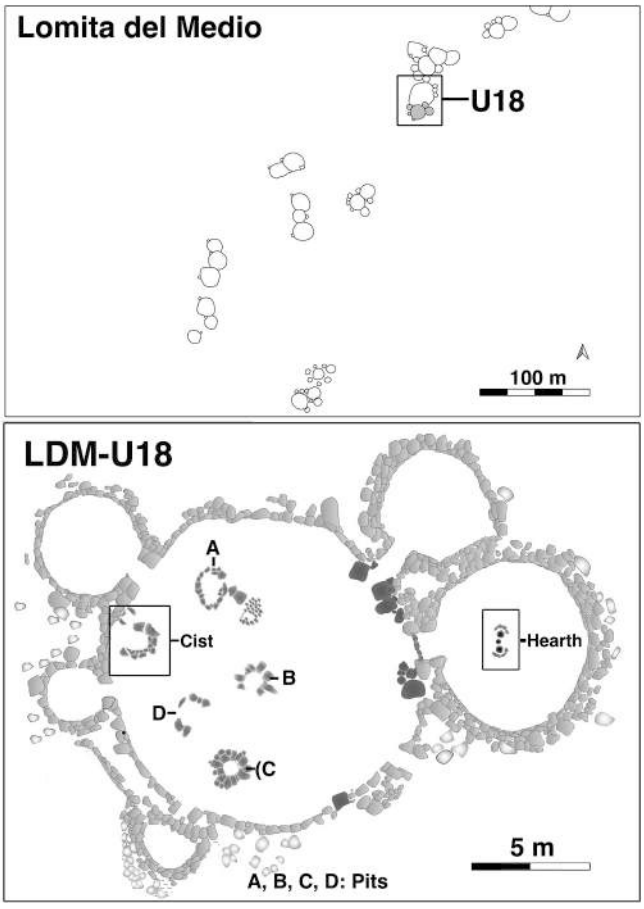


Fig. 2. Lomita del Medio archaeological site with floor plan of residential unit U18.

Bolsa subregion, which is characterized by a semi-arid climate with vegetation adapted to the colder temperatures (mainly short shrubs), drier conditions, and with a high altitude at 2500 masl. Aerial and pedestrian surveys documented 156 residential units and multiple canals, crop squares, and field cleaning mounds separated into three distinct sites (LB 1, 2, and 3) which were distributed across approximately 700 ha (Franco Salvi, 2012; Salazar, 2010). Between 2006 and 2009, Salazar and colleagues (2010) excavated a house of five rooms attached to a central patio (residential unit U14) in La Bolsa 1 (Fig. 3). Macro and microremains of *Zea mays, Cucurbita* sp., and *Phaseolus* sp., were identified together with camelid and cervid remains. A total of 33 grinding stones were identified. Lipid residues showed evidence of camelid meat and C3 plant consumption, with minor intake of maize (Vázquez Fiorani et al., 2026, n.d.).

Santa Cruz (SC): The site is located in an alluvial cone in southern Tafi Valley in the semi-arid Las Carreras region, which has a maximum altitude of 2100 masl and encompasses approximately 400 ha. Local vegetation included several types of grasslands, with few tree species. Excellent preservation of terracing, irrigation channels, corrals, residential units, and faunal remains from household excavations attest to villagers' longstanding agricultural and herding activities (Franco Salvi et al., 2023). Aerial and pedestrian survey of the Las Carreras subregion identified one mound and several *in situ* monoliths, as well as 110 residential units and several corrals and walled garden features. Clear clustering of residential and farming structures in some areas formed discrete hamlets and village settlements, including Santa Cruz, where we excavated the central patio of a household unit (U02), leaving eight lateral rooms unexcavated due to time constraints. 20 grinding stones were identified together with *Lama* sp. remains. Lipid evidence showed evidence of extensive C3 plant consumption (Fig. 4).

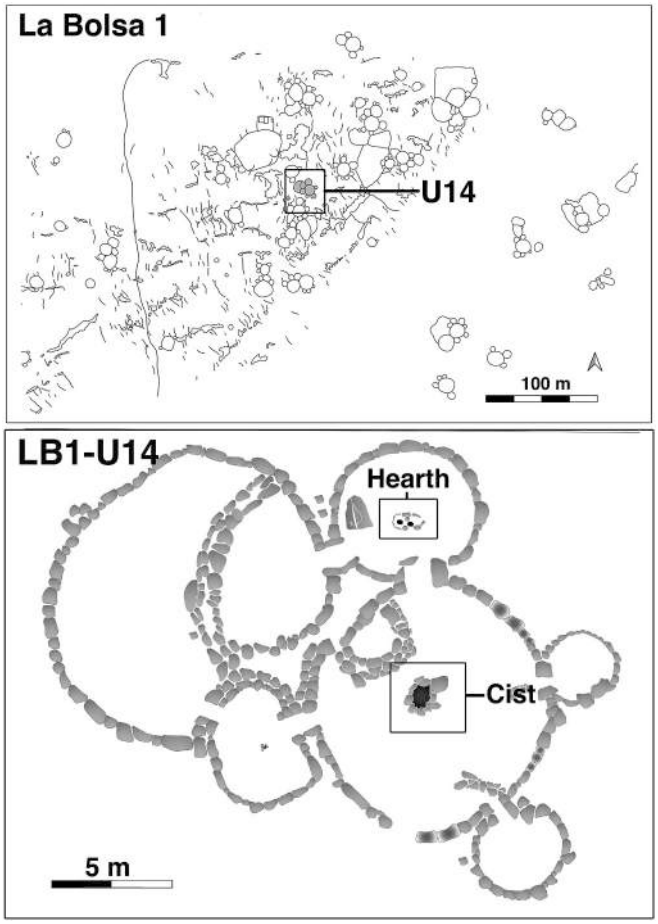


Fig. 3. La Bolsa 1 archaeological site with floor plan of residential unit U14.

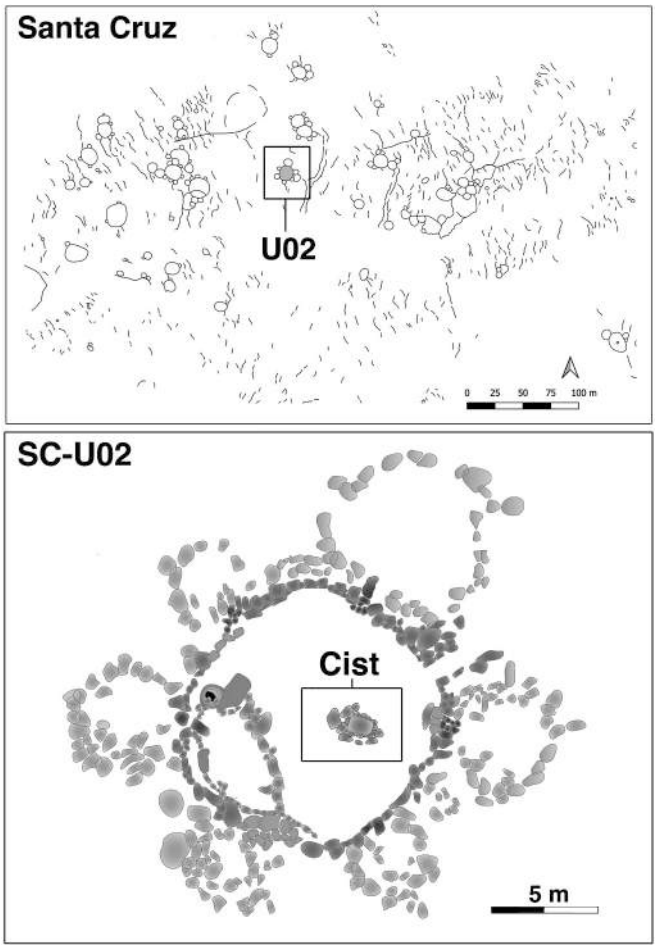


Fig. 4. Santa Cruz archaeological site with floor plan of residential unit U02.

3.2. Methods and sampling

This research combines results from pilot research on 14 pots from Lomita del Medio with a greatly expanded dataset from that site and the contemporary sites of La Bolsa 1 and Santa Cruz. Using compositional, mineralogical (optical petrography: Cremonte, 2003; Druc, 2013; Ownby et al., 2017; Pereyra Domingorena, 2015; Quinn, 2013), and macroscopic (morphological reconstruction and traceology: Balfet et al., 1992; Orton & Hughes, 2013; Rosselló, 2013) methods, we analyzed 17,688 ceramic fragments (Minimum Number of vessels = 889) to reconstruct technical choices made by potters at different stages of the manufacturing process (Table 1; see Supplementary information 2 for

Table 1
Ceramic assemblage composition (fragments, MNV, and main morphological groups) at Lomita del Medio, La Bolsa 1, and Santa Cruz.

Site	Fragments	MNV	Shapes
Lomita del Medio, residential unit U18	7242	242	Bowls = 92 Pots = 70 Jars = 23 Indeterminate = 57
La Bolsa 1, residential unit U14	9456	573	Bowls = 241 Pots = 163 Jars = 64 Indeterminate = 105
Santa Cruz, residential unit U02	990	74	Bowls = 31 Pots = 24 Jars = 5 Indeterminate = 14

in-depth descriptions of sample preparation and analysis).

4. Similarities and differences in Potters' choices and techniques in early farming communities

To explore choices made by potters in each agropastoral settlement, we considered raw material selection; paste preparation and recipes; forming and shaping techniques; finishing and decorative techniques; and firing. These elements often correlate with potters' craft and identity (Gosselain & Livingstone Smith, 2005) and allow us to evaluate the presence of local and/or regional identity markers acting as boundary objects and brokers in a constellation of practice. A high degree of variability in manufacturing techniques, forms, and decoration will support a model of localized communities of practice. Conversely, homogeneity in paste recipes and forming/shaping within a more or less varied assemblage of forms and finishing techniques will suggest local crafting practices integrating a regional constellation of potting.

4.1. Raw material selection, sorting, and paste preparation

Tafí potters primarily exploited locally available micaceous clays, yet the preparation of pastes using these clays varied within each village. Chemically, it was not possible to observe any compositional differences between sites and/or vessel groups (supplementary information 3). Ceramic vessels exhibit similar elemental composition: with high iron; moderate titanium, potassium, and calcium; and low rubidium, strontium, zirconium, and manganese content. The enhanced Iron content is likely due to pyrite degradation products (hematite, goethite, limonite), commonly associated with clayey materials (Cremonte, 2003: 67). Previously published data from La Ciénega sites (El Pedregal, El Arenalcito) and La Quebradita, located in El Tolar subregion, confirm the compositional homogeneity in Tafi Valley ceramic assemblages with the application of more sensitive techniques (i.e., SEM-EDS, XRD) (Cremonte, 2003; Vazquez Fiorani et al., 2024).

Generally, procurement activities and sources are hard to identify in the archaeological record, as potters can obtain and mix raw materials in numerous ways (Druc & Gwyn, 1998; Gosselain & Livingstone Smith, 2005). Following Echenique and colleagues (2021), here we do not determine exact sources, but consider areas of procurement and their associated social and cultural underpinnings based on local geology and comparison with archaeological materials and published geochemical data of clays when available (Cremonte, 2003). From the compositional and mineralogical similarities between sampled raw clays and archaeological pastes, Tafí potters likely exploited local outcrops, depending on their plasticity and availability, because identified outcrops are generally close to the archaeological sites under consideration (Fig. 5).

Based on previous results from pXRF, SEM-EDS, and XRF analyses of ceramics from sites in La Ciénega (Cremonte, 2003; Vazquez Fiorani et al., 2024), we know that potters selected detrital illitic clays available in many outcrops across the Tafí Valley (Tables 2 and 3; Cremonte, 2003; Páez, 2010; Páez & Manasse, 2020). In petrographic analyses, we observed differences in types and amounts of temper and textural attributes of fabrics, yet they were not correlated by site. We found that Tafí's potters' decisions on what kinds of pastes to prepare related to how they planned to fire the pieces, finish their surfaces, and use the pots (e.g., coarse granitic paste recipes were chosen more frequently to make cooking pots and jars).

After acquiring raw materials, people prepared the clays by sorting and grinding them before rehydration, likely using the basin metates and manos recovered from the houses and scattered across settlements (Franco Salvi et al., 2023, 2025; Vazquez Fiorani et al., 2025). Clays were likely sifted to different degrees, and in some cases, potters added additional sand as temper. Generally, Tafí farmers prepared three types of paste recipes (Fig. 6):

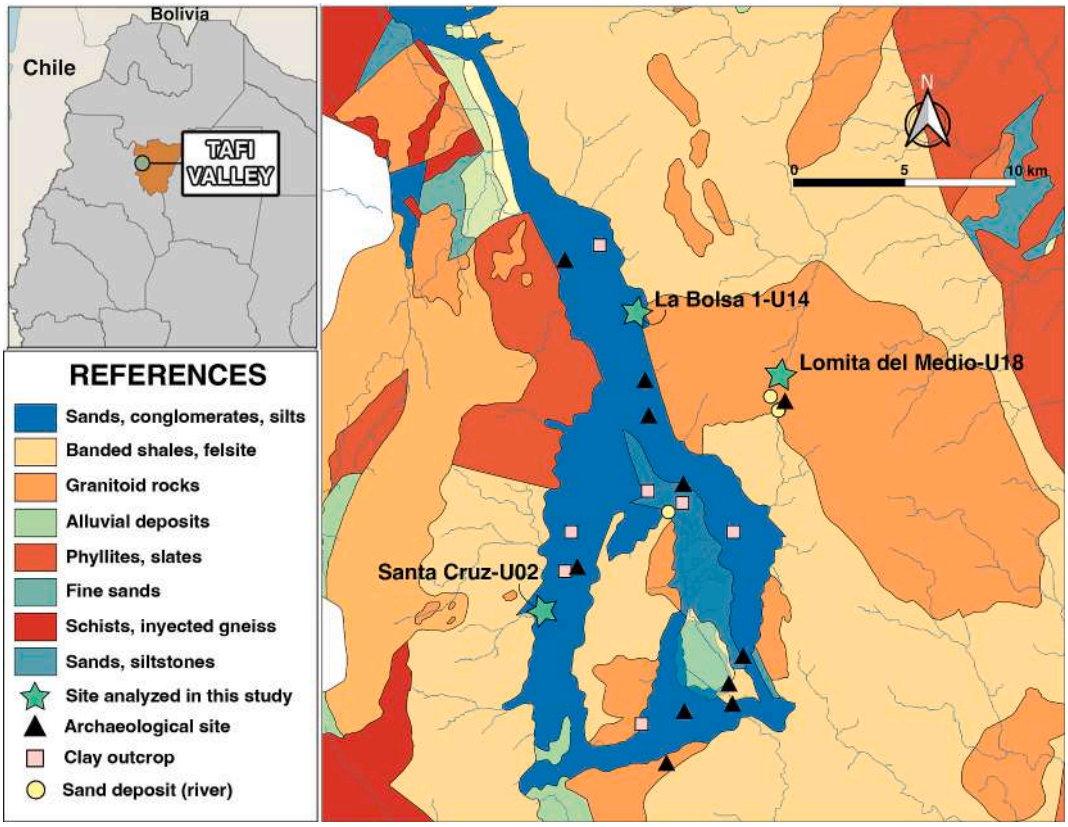


Fig. 5. Geological map of the Tafí Valley with sampled clay and sand sources. Source: © Instituto Geográfico Nacional, map by V. Franco Salvi.

Table 2
Clay sources identified in the Tafí Valley by Páez (2010) and Cremonte (1997).

SITE	Clay type	Plasticity	Color	Observations	Reference
Zanja del Chivo	Illite	Bad	Very pale brown	Clayey silt texture, quartzite grains (subangular, >1 cm)	Páez (2010)
Loma Bola 1	Kaolite, Illite	Good	Reddish brown	Clayey texture, associated to granite basin	Páez (2010)
Loma Bola 2	Illite, kaolite (traces)	Very good	Reddish brown	Clayey texture, associated to metamorphism	Páez (2010)
Mula Corral	Kaolite (traces), Illite (traces)	Very good	Dark reddish brown	Clayey texture, with exposed "rounded clasts"	Páez (2010)
Las Carreras	Illite, kaolite (traces)	Very good	–	Silt texture	Páez (2010)
La Bolsa	Illite	Good	Reddish brown	–	Páez (2010)
		Good	Yellowish brown	Clayey silt texture, metamorphic rocks	Páez (2010)
El Pinar	Illite, volcanic glass	Good	Dark, dull brown with a orange hue	Clayey texture	Páez (2010)
Rodeo Grande	Illite	Good	Not reported	Clayey texture, mica, quartz, feldspar	Cremonte (1997)
Loma del Medio	Illite	Good	Light brown	Clayey texture with quartz, biotite, feldspar	Cremonte (1997)
Loma del Medio	Iilite	Bad	Light brown	Clayey, silt texture, with biotite, K feldspar, plagioclases, muscovite, granitic lithoclasts, opaque minerals	Cremonte (1997)
El Pedregal	Illite	Good	Yellowish brown	Clayey texture, quartz, K feldspar, biotite, piroxene, volcanic glass	Cremonte (1997)
El Pedregal	Illite	Good	Greenish and pinkish brown	Clayey texture, quartz, K feldspar, granitic lithoclasts, mica	Cremonte (1997)
Zanjón de la Víbora	Illite	Good	Orange brown	Clayey texture, rich in carbonate, quartz, mica, K feldspar, mica, and opaque minerals	Cremonte (1997)
Río La Ciénega/Las Piedras	Illite	Good	Not reported	Clayey texture, quartz, mica, feldspar, piroxte, amphiboles, opaque minerals, volcanic glass	Cremonte (1997)
Río La Ciénega	Illite	Good	Light brown	Clayey texture, quartz, biotite, piroxene, volcanic glass	Cremonte (1997)

Table 3
Mineralogical and size characteristics of river and gully sands from the Tafí Valley (from Páez (2010) and Cremonte (1997)).

Source	Composition	Size	Reference
Río Tafí	Quartz, biotite, muscovite, feldspar, plagioclase, and granitic lithoclasts	0.063–2 mm	Páez (2010)
El Pedregal	Quartz, K feldspar, biotite, volcanic glass, amphibole (low), granate	0.125 to 0.250 mm	Cremonte (1997)
Río La Ciénega/Arroyo Loma del Medio	Quartz, K feldspar, biotite, plagioclase, olivine, piroxene, amphibole	1 to 2 mm	Cremonte (1997)
Loma del Medio	Quartz, K feldspar, plagioclase, biotite, muscovite, amphibole	0.250 to 1 mm	Cremonte (1997)
Loma del Medio	Quartz, K feldspas, plagioclase, biotite, volcanic glass, muscovite, piroxene	0.125 to 0.250 mm	Cremonte (1997)
El Pedregal	Quartz, K feldspar, plagioclase, biotite, volcanic glass, muscovite	0.250 to 1 mm	Cremonte (1997)
El Pedregal	Quartz, K feldspar, plagioclase, biotite, muscovite, olivine, piroxene, amphibole	0.250 to 0.500 mm	Cremonte (1997)

1) Recipe A: Potters from Lomita del Medio, La Bolsa 1, and Santa Cruz mixed clays with poorly crushed granitic rocks containing feldspar, biotite, muscovite, plagioclase, and quartz minerals observable in thin sections. The bimodal distribution of inclusions and angular sphericity suggest that potters intentionally added coarsely sifted sands, likely obtained from riverbeds (Cremonte, 2003; Sampietro Vattuone & Neder, 2009; Sampietro-Vattuone & Peña-Monné, 2019). In many cases, craftspeople roughly sorted tempers and kneaded pastes poorly, leaving behind big chunks of crystals visible macroscopically on cross-section fractures or clay lumps in coils.
2) Recipe B: Using the same locally sourced clays and sands, Tafi potters in all three communities prepared smooth, fine-grained pastes, often without clear evidence of intentional temper additions. Variation in size and distribution of some inclusions in these pastes indicates that such clasts naturally originated from the clays. Crafters might have preferred clays with fewer and finer inclusions, or perhaps they sifted raw materials carefully to remove bigger crystals.
3) Recipe C: Potters from the three sites prepared pastes using clays that were not located near their settlements. They sourced their raw materials from the few localized metamorphic clay outcrops in southeastern Tafí Valley, likely in the nearby Anfama or Trancas Valleys (Cremonte, 2003; Franco, 2020), or obtained such materials from their participation in exchange networks. In either case, potters used metamorphic clays to prepare very coarse and heavy pastes (similar in texture to the first group), with big phyllite and slate lithoclasts.

Overall, mineralogical and compositional data indicates the exploitation of local raw materials in most of the sampled specimens. Furthermore, there was no inter-settlement difference in the paste recipes employed for crafting; instead, they were distributed similarly across sites. Textural attribute differences seem to have been related to forms and intended function.

4.2. *Forming and finishing*

Tafi Valley potters used three main vessel-forming methods, evidenced by macroscopic observation of whole reconstructed vessels and individual sherds: coiling, slab-building, and pinching, often combining them in constructing different parts of a single container. Our analysis confirmed a significant correspondence between paste recipes, forming techniques, and functional shapes chosen by craftspeople. Coarse granitic pastes were preferred for making cooking pots by hand-coiling and slab-building. In contrast, fine granitic and coarse metamorphic recipes were often employed to produce service jars and bowls by coiling and pitching. Overall, coiling comprises almost 90% of forming techniques.

At Santa Cruz, potters used a perishable container as a mold to start forming the pots, pressing the clay over a basket's walls (often leaving vegetable threads impressed in the clay), after which they continued adding coils or slabs upwards (Fig. 7). At Lomita del Medio and La Bolsa 1, people formed containers by adding coils to a conical or concave base, observable by surface undulations in the outer walls, preferential/horizontal fractures, and raised ridges. In many cases, potters left the coils

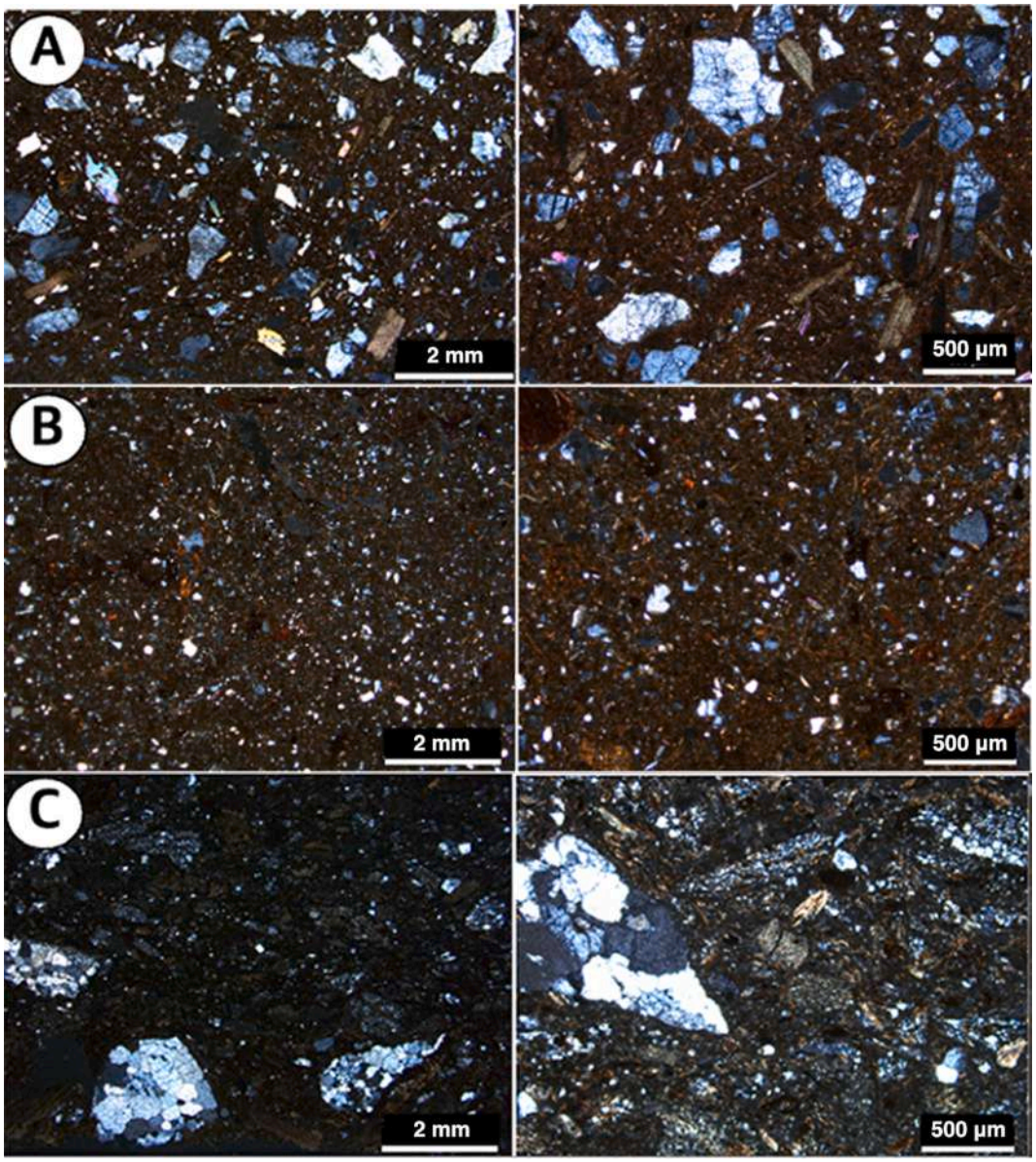


Fig. 6. Thin-section micro-photographs of Tafi Valley paste recipes A, B, and C.

clearly visible on the surface, creating a distinctive 'wavy-like' or corrugated texture that may have enhanced a pot's "grip-ability." In other instances, craftspeople constructed their pots by adding large clay slabs in specific sections of a coil-built pot, a practice evidenced by fracture patterns.

Between coils or slabs, potters pinched the coils and then smoothed exterior and interior surfaces to erase the marks, achieving in most cases a rough vessel wall. They patched vessel walls with more clay in uneven or too thin areas to achieve a uniform thickness, observable in several cross-sections where the coil negative was "sandwiched" between slabs or layers of clay, or even in the outer surface where roughly applied patches persist (Fig. 8). Clear depressions on the bases and necks indicate that upper bodies were shaped by applying discontinuous pressures (force applied to the clay in a sporadic and localized manner, or by point-by-point motions).

Building techniques and gestures were similar, suggesting that they were deeply rooted throughout the Tafí Valley. These forming techniques highlight the sensorial and mnemonic knowledge embedded in such choices and gestures, where understanding the right moments to add a slab was crucial to prevent vessels from collapsing. Such knowledge might have been acquired from past engagements with the materials; potters drew on their past experiences to know the right time to combine slabs and patches by feeling the clay's texture, temperature, weight, thickness, or color.

Vessel forms varied slightly between villages, showing differences in volume, aperture size, and handle forms. Fig. 9 provides a schematic reconstruction of the main forms identified in each site, including morphologies shared across subregions. Cooking pots were generally larger vessels, with globular or sub-globular bodies (Table 4). Highly pronounced, everted rims (where potters shortened the length of the coils to close the mouth, then pinched the neck and folded over the excess, pressing it onto the outer surface) on pots with marked angular profiles were frequently found at Santa Cruz (58%). These vessels were also found at Lomita del Medio and La Bolsa 1, though in smaller proportions (23 to 25%). Larger vessels (as large as 1 m tall) may have required construction in pieces, joined before firing.

Potters from all three sites constructed their bowls by adding very thin coils to a conical or flat base until conical shapes were achieved with rounded, pinched lips, with a clear difference between the base and the body regarding roughness, thickness, and fracture (Table 5).

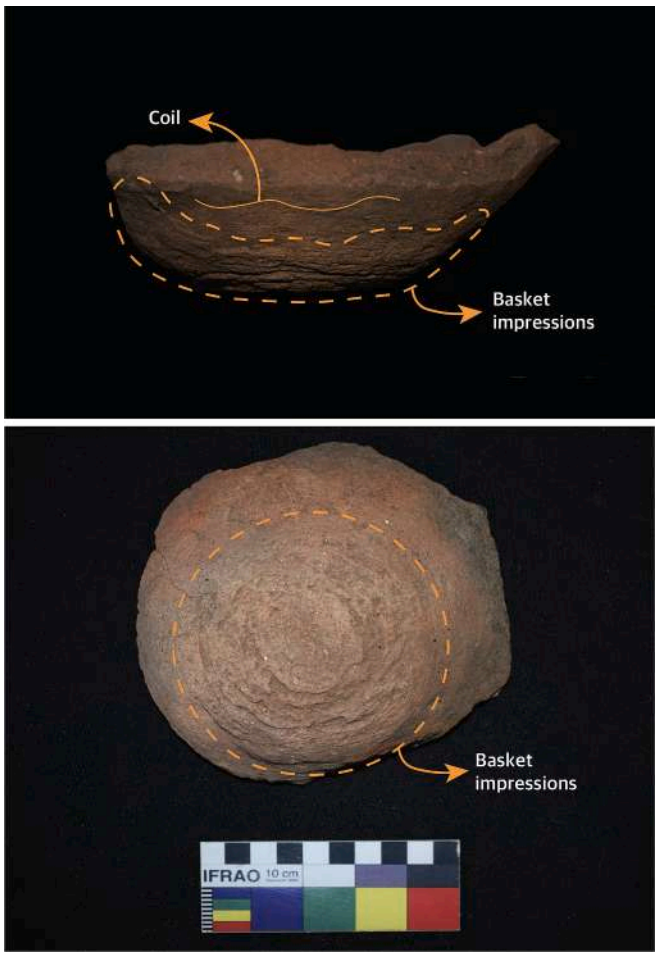


Fig. 7. Sub-conical base recovered from Santa Cruz with basket impressions showing using a perishable container as a mold.

However, some sharply conical ones have been identified at Santa Cruz (Fig. 10). Jars were also made by coiling techniques to achieve globular shapes before adding a strip handle on one or more sides. Sometimes, potters added tiny decorative knob handles to bowl rims.

While vessels were still wet, potters affixed different types of handles (flat strips or knobs) to the middle and upper half of vessels. The necessary knowledge to determine precisely how and when to attach the independent pieces to maintain the shape evokes the sensorially rich understanding of the feel and experience of clay and production stages.

The morphological and building mark analysis of ceramics in the three analyzed sites indicates that building techniques (i.e., coiling, patching, slab-building) were widely shared across communities. Nonetheless, slight differences existed in terms of the forms preferred in Santa Cruz and Lomita del Medio/La Bolsa 1. While angular cooking pots and conical bowls were frequently found at Santa Cruz, they were not common in the other two cases (Lomita del Medio and La Bolsa 1). Similarly, exaggerated everted rims that seem to have been preferred at Santa Cruz, occurring infrequently at the two northern sites.

4.3. Finishing and decorative motifs

Once the general shape of the vessel was formed, Tafí potters smoothed the surfaces by wiping the inner and/or outer walls with a cloth or by using a stone pebble or bone instrument to scrape off excess clay. At Santa Cruz, people also frequently employed a maize cob to brush the exterior surface. In some pots from Lomita del Medio, craftspeople also employed maize cobs for brushing, but to a lesser extent and often combined with cloths (Fig. 11). Notably, maize-cob brushing became a widely used finishing technique during the Late Intermediate Period (ca. 1000–1470 CE) in the region (Manasse, 2019; Vázquez Fiorani, 2019).

The smoothing process removed traces of forming techniques (i.e., coils, basket negatives) but often left behind a series of fine, parallel, and horizontal striations of varying depth, as well as floating grains (coarse temper particles that protrude on the ceramic surface and surrounded by a layer of clay slurry) (Roux et al., 2019: 149) These marks indicated not only differences in the pressure applied (we can imagine the potter's gesture of brushing the cloth around the round container) but also the thickness and knots of the textile threads. Variations in the timing of brushing (applying a wet cloth to more pliable clays versus more complex surfaces) may have also created differences in these striations. In some cases, macroscopically visible crests caused by an accumulation of clay slurry indicate that the leather-hard pot was re-wet by applying tools dipped in water (Roux et al., 2019: 153). However, the overall smoothing of the surfaces was rough at best, often evident in clunky finishes and visible joints, raising the question of whether the roughness was a deliberate choice made by the potters during the process.

Tafí Valley potters finished their vessels in various ways, though they often did not apply surface treatments after smoothing to erase the coil joints. Sometimes potters burnished surfaces when pots were leather-hard or thoroughly dried. We excavated examples of pebbles that might have been used for rubbing the pots, resulting in a lustrous, shiny appearance and/or a compacted micro-topography, often irregularly distributed across the vessel body. On burnished serving jars and bowls, potters added incised designs on the upper portion of rims, combining lines and dots inside triangles, multiple lines, and curves. Incised decorations were the most frequently used in the three sites, and most commonly at Santa Cruz. In many cases, potters combined motifs (i.e. incised dots, lines) into newer arrangements to form triangles or double-lines, creating unique designs in each case (Fig. 12). Finally, a recurrent motif is the anthropomorphic depiction of a crying face made with applied eyes and incised tears.

Finally, potters applied a buff or red slip/wash (with different degrees of thickness) before firing some pots: a minor technical choice at Lomita del Medio and La Bolsa 1 (approximately 5%), and slightly more frequent at Santa Cruz (7%). Buff slip was often thicker than red but exhibited moderate to high cracking, and its poor preservation state makes it difficult to evaluate how and where it was originally applied to the vessel (i.e., completely soaked in slip or only partly covered by it). Potters likely used some of the readily available clays in the Tafí Valley, those with the desired reddish and whitish hues, to make the slips. While thin white and red slips occurred only on serving vessels made with thin granitic pastes, potters from Santa Cruz favored thick white slips in their cooking and storage pots.

In summary, decorating methods and finishing techniques exhibit regional variation within the southern and northern parts of the Tafí Valley. There is local variation in the combination of motives that create unique designs in each site, with zig-zag triangles being more frequent at Santa Cruz. Particularly, we were able to identify two main surface treatments that were frequently used at Santa Cruz (brushing and white slip). Conversely, at La Bolsa 1 and Lomita del Medio these technological choices, while present, were found to a lesser extent.

4.4. Firing

Tafí potters fired all pots at very low temperatures, producing friable fabrics. We found a clear difference between paste recipes, shapes, and firing conditions chosen by potters: cooking pots made of coarse granitic recipe almost always fired in oxidizing conditions, achieving terracotta to orange tones. However, these cores remain black or brown in many cases, suggesting that carbonaceous matter did not always burn away thoroughly and indicating that firing did not last long enough or that firing conditions alternated rapidly (Michelaki, 2008: 371). Serving vessels made with fine pastes were fired in either oxidizing or reducing

Fig. 8. Forming marks recorded in Santa Cruz cooking pots.

conditions. In the latter case, potters achieved dark grey tones by controlling oxygen access to the firing, which required more time and care to ensure that air did not enter the fire. In some cases, we observed mixed light and dark surfaces (fire clouding), indicating irregular firing conditions or an inability to control air entry during the fires.

Sadly, we lack one key aspect of this last step of pottery production in the Tafí Valley: the firing features and their locations. We believe that open and pit firing were used, as observed in other regions of Northwestern Argentina (Feely, 2011), which might explain the low temperatures and unstable firing conditions. This could also be related to the limitations of supplies for firewood that performed well in reaching higher temperatures, especially in Lomita del Medio.

5. Discussion

At the beginning of this paper, we posed two questions: did potters throughout the Tafí Valley share the same pottery-making technical knowledge and skills, and did they belong to a constellation of practice? By studying the sequences of pottery-making, we assessed the variation and homogeneity in pottery-making in La Bolsa 1, Lomita del Medio, and Santa Cruz during the centuries following the initial adoption of agropastoralism. Reconstructing these potting practices allows us to examine how differences and similarities of craft production might index how people built and maintained social relationships —bundling people, places, and materials— to create and sustain communities in the valley.

5.1. Did potters throughout the Tafí Valley share the same pottery-making knowledge and practices?

Core technical and bodily gestures of vessel manufacturing, such as paste preparation, forming, finishing, and firing techniques, were shared throughout all three communities, but we did identify difference in finishing/decorative techniques between northern (La Bolsa 1 and Lomita del Medio) and southern (Santa Cruz) sites. We propose that these differences indexed the existence of at least two communities of practice with distinctive technological choices that coalesced into a regional constellation of practice. In this way, potters chose to utilize some aspects of the ceramic manufacture to emphasize relatedness across settlements, and actively de-emphasized others to reinforce social boundaries within households and neighboring domestic groups.

We find consistent differences in finishing and decoration between pots made in the northern sites of Lomita del Medio and La Bolsa 1 from more southerly Santa Cruz that suggest the existence of two communities of practice. To summarize, in Table 6 we present the inter-site distribution of analyzed technological choices including paste recipes, finishing techniques, and decorative methods. Particularly, the use of exaggerated flaring lips, constricted necks, frequent use of white slip, and, to a lesser extent, use of maize cobs, highlight preferred techniques used by southern potters at Santa Cruz. These qualitative elements occur in the northern sites, but they are not exclusive to the south. Instead, they index *preferred* ways of shaping and fashioning some pots: people at La Bolsa 1 and Lomita del Medio employed these techniques, but to a lesser extent.

Nonetheless, paste preparation, forming, and firing techniques were shared between settlements. Potters at all three sites employed the coiling method, predominantly used poorly sorted granitic sands, and roughly kneaded pastes. Those common manufacturing decisions, rooted in technical habits and gestures, formed a distinctive technological style in the Tafí Valley. By reproducing such choices, potters anchored their practices to valley-wide histories of learning that expanded beyond their residences, creating and sustaining social ties linked to those knowledges.

5.2. Did Tafí settlements belong to a constellation of practice?

We propose that the similarities observed between Tafí villages indicate people sharing ways of doing and learning that expanded beyond their households and villages, unfolding to other spaces in the Tafí Valley. Thus, we argue the existence of a constellation of practice at the level of the Tafí Valley formed by two communities of practice

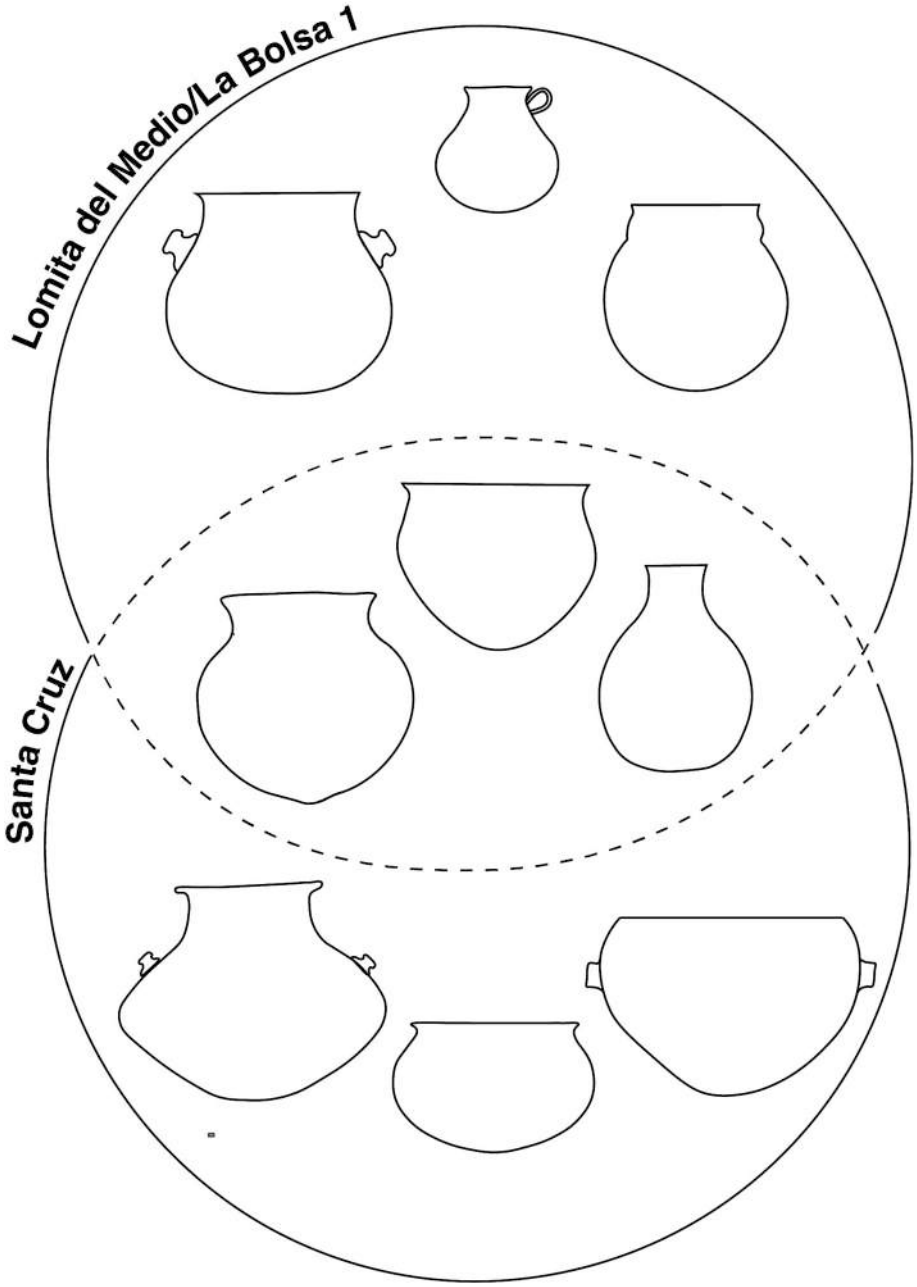


Fig. 9. Schematic illustrating shared and distinct vessel forms found in the northern sites of Lomita del Medio and La Bolsa 1 and the southern site of Santa Cruz (figure not to scale).

encompassing the northern (La Ciénega and La Bolsa) and southern (Las Carreras) parts of the valley.

The constellation of practice unfolding in the Tafí Valley during 200–850 CE engaged at least two communities of practice (Lomita del Medio/La Bolsa 1 and Santa Cruz) interacting across the valley. Even when pottery making exhibited inter-site differences, there was an overall shared technological style in Tafí that ruled raw material selection, paste preparation, building, and firing techniques. Our results show how daily household practices of potting were connected across the landscape, binding people, things, and places together. While shaping and finishing differences were enacted and sustained by local communities of practice, technical knowledges flowed between the spaces of quarries, paste recipes, and finished pots, linking people from different settlements into a constellation of practice encompassing shared and different ways of producing vessels.

Similar ways of potting, rooted in shared histories of learning in the Tafí Valley, performed as material anchors of social interaction between people living in different settlements. Yet they all had some sense of standard membership. We believe that such socio-material relations were sustained by the mediation of boundary objects and the movement of people between villages and hamlets and the landscape acting as brokers. In Table 7, we summarize the observed material indicators of boundary objects and brokers, and the processes of alignment and imagination.

Boundary markers included finished pots that brought together both similar and different decisions involved in production (and likely use), the coarse river sands used for temper by all Tafi potters, clay quarries, and paste recipes (as technical knowledge), conveying and actualizing condensed social relations without requiring daily co-presence. Such objects connected the knowledge in making a single pot (in terms of technique, form, and aspect) to other similar pots, and thus, to other communities. The pots brought those different relations together into

Table 4
Summary of main sequence steps for cooking pots (groups A) in each village. Reconstructions not to scale.

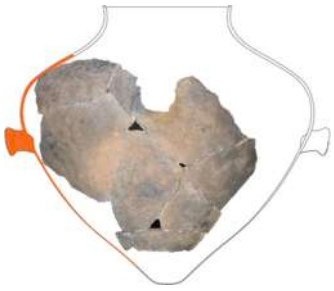
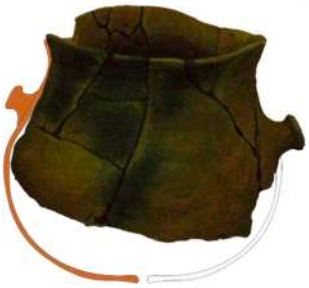
Operational sequence step		Lomita del Medio-U18	La Bolsa 1-U14	Santa Cruz-U02
				
Raw material	Sourcing	Clay and tempers of granitic origin, maybe sourced from rivers and exposed gullies/ravines (Paste A) or metamorphic sands (Paste B).		
	Processing	Tempered		
	Texture	Medium to coarse		
Forming	Technique	Coiling, slabs		Coiling, slabs, sometimes molded over baskets
	Wall thickness	3 mm-10 mm	3 mm-10 mm	Up to 18 mm
	Rim diameter	Up to 60 cm		
	Volume	Up to 130 l		Up to 200 l
	Shapes	Restricted and unrestricted	Restricted and unrestricted	Predominance of restricted
Finishing	Finish	Smoothed, wiped with cloth		Smoothed, brushed with maize cob
	Decoration	Undecorated, decorated (incised and modeled)	Undecorated, decorated (incised and modeled)	Undecorated
	Slip	White, red	White, red	White (more abundant), red
Firing	Atmosphere	Full oxidation, incomplete oxidation with firing cloud, incomplete reduction		
	Duration	Not always enough to burn the organics from core		
	Arrangement	Fire clouds suggest that pots touched the fuel and/or other vessels		
	Color	Orange brown, dark brown, dull brown, brownish grey		

Table 5
The main sequence steps for serving bowls and jars (fine red and grey types, group B) in each village. Reconstructions not to scale.

Operational sequence step		Lomita del Medio-U18	La Bolsa 1-U14	Santa Cruz-U02
				
Raw material	Sourcing	Granitic outcrops		
	Processing	Untempered		
	Texture	Very fine to fine		
Forming	Technique	Coiling, pinching		
	Wall thickness	2–3 mm		
	Rim diameter	5–20 cm		
	Volume	0.5 to 1 l		
	Shapes	Restricted and unrestricted (one handle jars, bowls)		Restricted and unrestricted, and conical bowls
Finishing	Decoration	Undecorated, decorated (incised and modeled)		
	Slip	Red, pinkish white		
	Motives	Fine vertical, horizontal, and zig zag lines, dots, dots inside triangles		
Firing	Atmosphere	Full oxidation, full reduction		
	Duration	Mostly enough to burn the core		
	Arrangement	Fire clouds suggest that pots touched the fuel and/or other vessels		
	Color	Orange brown, dark brown, dull brown, grey, black		

bundled of places, things, and people (Abbott et al., 2006), and rhythms and tempos rooted in situated learning practices.

Based on our analysis of pottery technology, we propose that people moved between neighboring villages, agricultural fields, pasturelands, and water and raw material sources, bringing and exchanging technical knowledge about how to pot. Visitors and newcomers in a given village might have acted as brokers between communities of practice, fostering the adoption of new technical choices or the manipulation of a set of technical material resources into different arrangements, as we seen for instance in adding white slip to cooking pots, using maize cobs to brush exterior surfaces, combining decorative incised motifs, adopting different forms, or adding a known type of handle (i.e. knob) to different pots. Brokers allowed for village (or even household) level variation and/or appropriation of technical resources, resulting in unique pots in each case, but with a considerable resemblance, making it easy to fit local ways of doing things into a constellation of practice.

We do not have conclusive evidence to pinpoint a specific social mechanism structuring the movement of people. There may have been

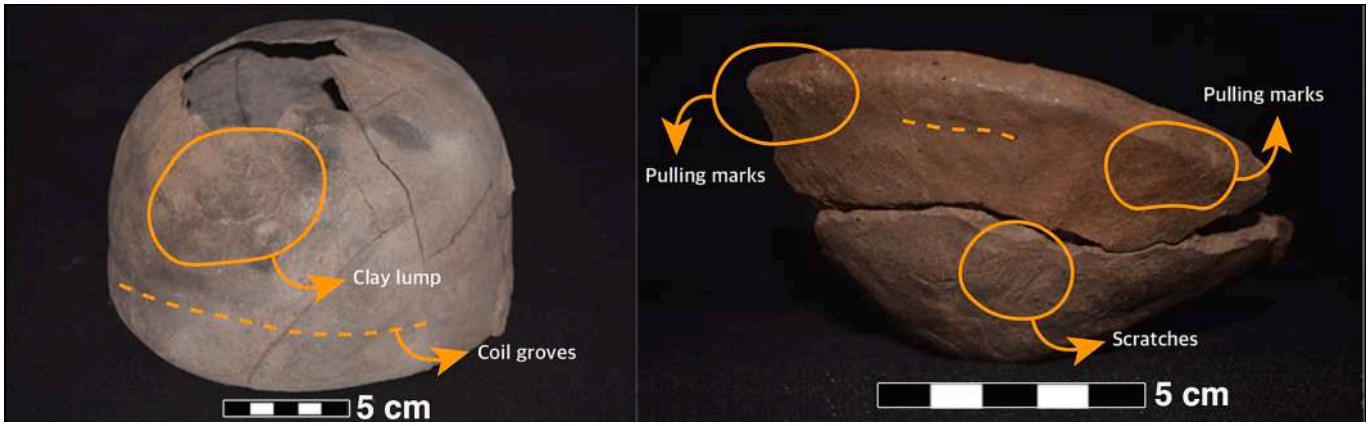


Fig. 10. Different types of bowls identified at Tafí villages with details of forming marks: left, gray fine bowl from La Bolsa 1; right, red fine bowl from Santa Cruz with pronounced conical shape. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

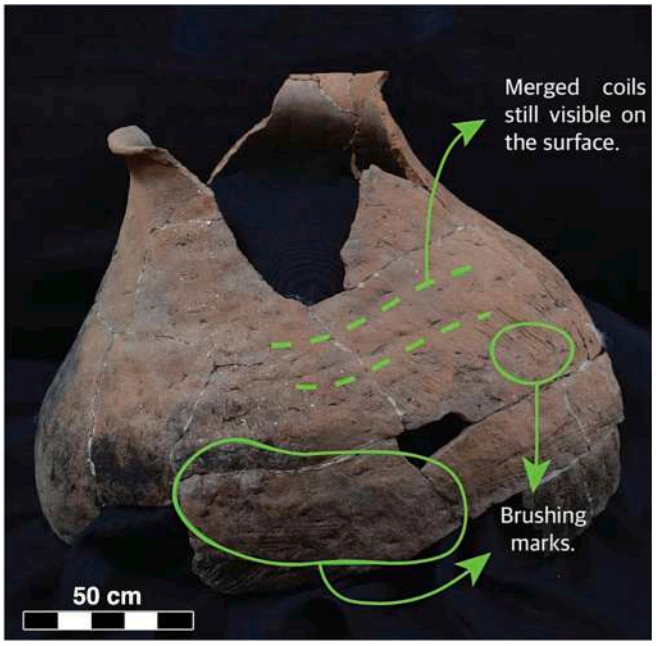


Fig. 11. Lomita del Medio cooking pot with detail of different building and finishing marks.

two main possibilities: intermarriage or exploitation of of the same raw materials by different sets of villagers. With small-scale settlements, it is highly likely that people moved into and out of sites due to demographic reasons, including seeking marriage partners or fostering with kin. These events would have created opportunities for solidifying bonds between households and settlements, and facilitated technical exchange and innovation. The common exploitation of outcrops and other locations for sourcing raw materials could have provided fruitful opportunities for interaction. Certain landscape features that offered greater benefits for making pots (gullies with more plastic clays, or with certain color qualities) could have been more intensely utilized, creating a node for interaction and communication between communities and individuals.

In the Tafí Valley, slight variations in forms and decorating motifs emerged from a shared repertoire of technical and stylistic resources, indicating how early Andean farmers and herders forged connections between communities reflected in culturally embedded technological choices without endangering their household and site-level autonomy. By recreating pastes using similar clays and adding the virtually identical amounts of temper sands, reproducing engrained bodily acts for creating coils from a clay patty to achieve round shapes, wiping surfaces with a cloth applying the right level of pressure to the clay, or recombining known incised geometric motifs in new arrangements, potters incorporated and renewed discursive and nondiscursive elements of their social identities, aligning their membership to their wider constellation while reinforcing their locally embedded community of practice. Technical acts and gestures acted as enunciative elements, a way in which people could reach out and communicate with the world around them (Harris, 2017: 130), and thus performed as indices to communicate senses of belonging and membership without requiring co-residency.

6. Many ways of being a villager in the southern Andes

In this paper, we presented results from a multi-analytical study of ceramic production among early villagers in the Southern Andes. By adopting a multi-scalar approach, we documented both obvious and subtle technical choices made by Tafí potters to express or alter their social identities and interactions between settlements. We argued the existence of a constellation of practice at the level of the Tafí Valley formed by two communities of practice encompassing the northern (La Ciénega and La Bolsa) and southern (Las Carreras) parts of the valley. Our results contribute to previous discussions of regional differences in subsistence practices and foodways and similarities in mortuary and architectural practices across the Tafí Valley (Vázquez Fiorani et al., 2026, n.d.). Ultimately, this study foregrounds the complexity of villager societies, the distinct paths they followed even at small distances from one another, and the intertwining of local ways of doing with regional understandings of social identity and interactions.

These similarities and differences, arcing between micro-local and regional ways of doing in the Tafí Valley, formed a fundamental tension within villager communities, further fueled by concerns surrounding population aggregation, self-sufficiency of households, and a dispersed settlement pattern (Salazar & Kuijt, 2016). Village life was not a fixed phenomenon, but an open process needing the sustained engagement of people in potting activities to assemble distinct, vibrant, and heterogeneous elements, including learning practices. Pottery production acted as an index used to express difference and ascertain belonging, all crucial for enacting a newly founded villager sociality and identity.

Shared pottery technical choices constituted a common idiom for villagers to express their membership in a regional community, while reinforcing the meaningful experience of their immediate built environment, things, and people. Knowledge transmission and membership would not only have been worked out and worked on in close, daily interaction during pottery making, but also in people's engagement with materials: for instance, recognizing a pot with thick white slip as made

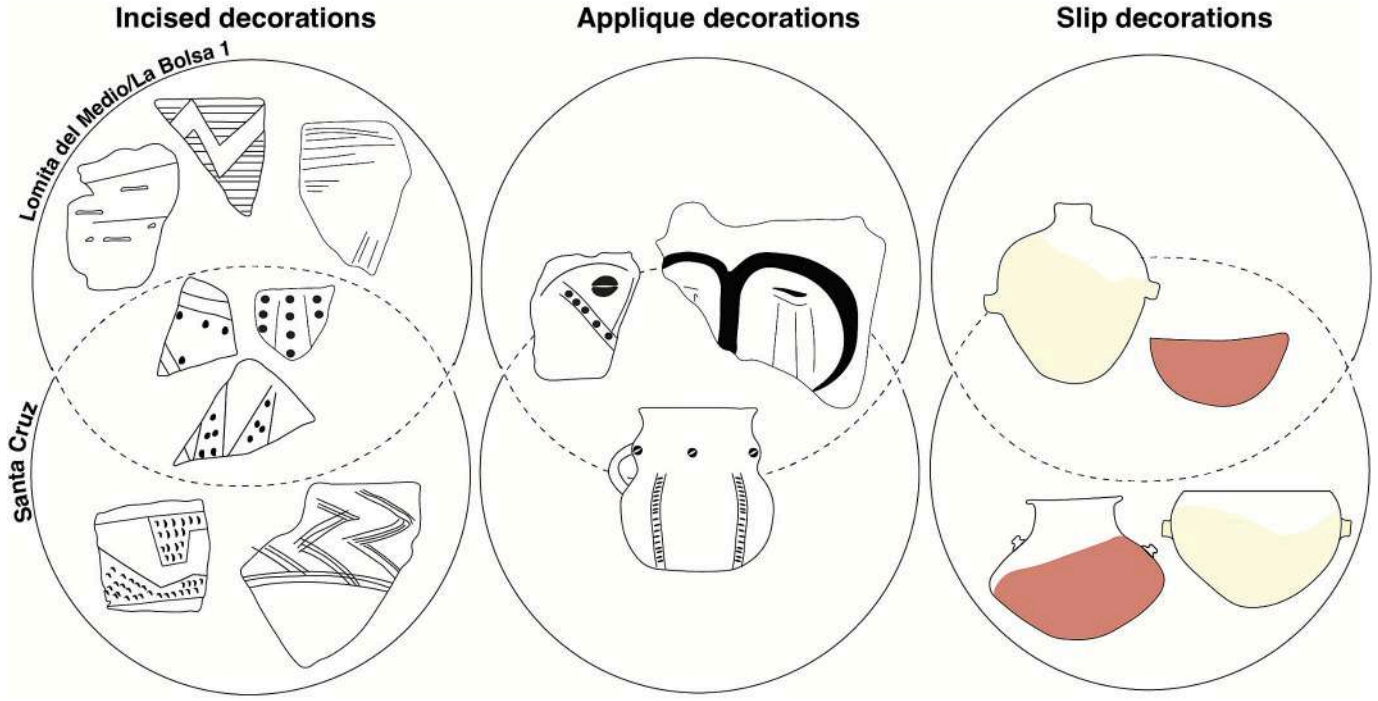


Fig. 12. Schematic of Tafí Valley decoration techniques (Figure not to scale).

Table 6
Technological choices identified in the three analyzed sites a) Paste recipes as identified in thin-sections, b) main finishing technique identified in each MNV, and c) decorative methods recorded in decorated sherds/vessels.

Technological choices			Santa Cruz	La Bolsa 1	Lomita del Medio
Paste recipes	A		57.8%	**57.1%**	**60.6%**
(n = 66)	B		**36.8%**	**42.9%**	**33.3%**
	C		—	**5.3%**	**6.1%**
Finishing techniques	Smoothing		**55.4%**	**76.7%**	**55.7%**
(n = 889)	Brushing		**2.7%**	—	**0.4%**
	Polishing		**32.4%**	**19.9%**	**38.8%**
	Slip		**9.4%**	**6.6%**	**3.7%**
	Incised	Lines	**78.9%**	**52.0%**	**50.0%**
Decorative methods		Dots	—	**24.0%**	**6.6%**
(n = 74)		Lines + dots	**10.5%**	**4.0%**	**10.1%**
	Appliques		**10.5%**	**20.0%**	**26.6%**
	Painted		—	—	**6.7%**

Table 7
Components of constellations of practice in the Tafí Valley.

Elements of constellations of practice	Material correlates
Boundary objects	• Quarries • Clays • Tempers • Paste recipes • Finished cooking pots (i.e., globular, open pots with knob and strip handles) • Combined decorations in the same vessel (i.e., brushing and cloth wiping);
Brokerage	• Brushing on exterior surface
Imagination	• Rearrangement of technical elements (new forms [i.e., conical/trapezoidal bowls, angular cooking pots], • Rearrangement of decorations [i.e., dashed geometrical compositions], • Extensive use of slips
Alignment	Reproduction of a core of technological choices (paste recipes, forming techniques, forms)

by Santa Cruz villagers, while placing that slight difference in an overall repertoire of ways of doing that were typical of the Tafí Valley.

We believe that mobilizing material and immaterial resources that solidified social identities in the Tafí Valley were powerful ways to bring people together beyond their immediate households and settlements. Inter-settlement relations may have been achieved by individuals moving between residential clusters through intermarriage, exchange, or even by gathering in resource-rich areas exploited by several households and/or villages.

The results of this work highlight that early farmers and herders in

the Tafí Valley did not follow a unique recipe to *be villagers*. Instead, they engaged in multiple and sometimes overlapping situated practices in which they mobilized and manipulated material and immaterial elements in varied and novel ways, including pottery technology, subsistence strategies, mortuary, and architectural practices. Ultimately, those repertoires and techniques performed as material anchors linking people, things, and places through space into a shared, yet plural and open, history of learning.

In the future, exploring deeper how these constellations integrated other communities of practice besides potting (i.e. foodways, building, farming) will be consequential in casting light into the articulation of different spheres of interaction and daily life shaping the complexity of early villages in the region. Ultimately, it will enable us to grasp the different historical trajectories of the consolidation of farming lifestyles, foregrounding the plural ways in which people interacted with each other and their surroundings during the early stages of agropastoralism and settled life.

Ethical approval

Not applicable.

CRediT authorship contribution statement

Agustina Vazquez Fiorani: Writing – review & editing, Writing – original draft, Visualization, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Julián Salazar:** Writing – review & editing, Visualization, Supervision, Resources, Funding acquisition, Formal analysis, Data curation. **Meredith Chesson:** Writing – review & editing, Supervision.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

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