# CONSUMPTION HABITS AND CERAMIC FINGERPRINTS IN A PROTO-GLOBAL WORLD. TOWARDS A MANUAL

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### MATERIAL CULTURE, CONSUMPTION, AND LOCAL HABITS: A THEORETICAL POINT OF DE-PARTURE

Material culture not only reflects human behaviour but actively objectifies it. Objects mediate interactions between individuals and their material environment by embedding and perpetuating behavioural and perceptual routines. In this capacity, material culture substantiates cognitive processes and social structures. Consequently, artefacts should not be regarded as passive or static vessels of ethnic belonging or social status. Beyond their utilitarian functions, they serve as dynamic carriers of social values, symbolic meanings, and identities—meanings that shift in response to changing environmental and social contexts. In this way, artefacts and their way of consumption offer critical insights into the modes of materialisation that structure human social life. These consumption behaviours reveal how cultural values, social norms, and power relations are encoded, performed, and negotiated through material means. Therefore, the archaeological record offers a unique opportunity to investigate such dynamics, particularly within the Archaic Mediterranean, a world dominated by people without written history. Examining strata from this period makes it possible to infer the behavioural regimes and cultural dispositions that shaped consumption practices. These, in turn, reveal localised discourses of value, authority, and social organisation within a broader, interconnected Mediterranean milieu—an early example of a proto-globalised world.

Material assemblages uncovered through archaeological investigation may be interpreted as materialised interfaces of consumption. They represent the intersection of local socio-cultural frameworks with trans-regional influences and exchanges. Such an approach foregrounds the interpretive potential of material culture in articulating the entangled nature of past societies, where the global and the local are mutually constitutive. These interpretive strategies build on foundational works in the field (Morris 2003; Miller 2005; Hodos 2006; Henare et al. 2007; Dietler 2010, pp. 55–74; Joyce & Pollard 2010; Knapp & Van Dommelen 2010; González-Ruibal 2012; Knapp & Van Dommelen 2014; Vives-Ferrándiz Sánchez 2014;

Babbi et al. 2015), all of which underscore the significance of consumption and material agency in shaping social worlds.

### UNCOVERING CONSUMPTION PRACTICES: ARCHAEOLOGICAL ASSEMBLAGES AND THEIR MATERIAL FINGERPRINTS

Archaeological assemblages represent the material outcomes of consumption-related behaviours. These assemblages—comprising artefacts such as ceramics, metals, and glass, alongside ecofacts like animal bones and plant remains—are not random accumulations but the consequence of specific social activities. The proximity and association of such objects as findings in the archaeological record reflect various forms of human engagement with material culture, from quotidian refuse disposal to ritual deposition, burial, or consecration. As such, assemblages serve as tangible expressions of culturally embedded modes of consumption, informed by prevailing regimes of value and shaped by the routinisation of behavioural practices.

Even the composition of waste assemblages reveals embedded cultural logic. What one society deems disposable may hold residual significance in another; thus, a midden's constitution is neither arbitrary nor solely functional. It is the product of culturally situated consumption patterns, offering insights into the value systems and behavioural codes that govern acts of discarding. Scholars have long acknowledged that such practices articulate broader social ideologies and power relations (Appadurai 1986; Rathje & Murphy 2001; Dietler 2010b; Joyce & Pollard 2010, pp. 301–302; Joyce 2012; Lucas 2012; Smith 2015, pp. 27–58).

Importantly, the transition of objects into waste is not always due to accidental breakage or neglect. Intentional acts of deactivation—such as bending swords, perforation of vessels, or deliberate fragmentation—frequently precede ritual deposition, preventing its continued circulation and reaffirming its symbolic role in mortuary or cultic contexts. Including a sherd rather than a whole vessel, for example, in sacrificial deposits, constitutes a meaningful *pars pro toto* gesture. Consequently, analysis of assemblages must address not only the typological identity of artefacts but also their condition and manner of deposition. Such considerations are essential for reconstructing the ritualised and habitual behaviours through which social groups engaged with material culture (Åström 1987; Chapman 2000; Driessen 2013).

From this perspective, assemblages are materialised "effects" of specific social events (Joyce & Pollard 2010, p. 301). Each assemblage may thus be interpreted as the archaeological correlate of a distinct social phenomenon: funeral results in a sepulchral assemblage shaped by a particular *ideologia funeraria* (D'Agostino 1982); sacrificial offerings generate cult deposits; households yield domestic inventories; *agorai* give rise to public infrastructural

arrangements. These diverse material expressions span a continuum from botanical traces and faunal residues to ceramics, metals, and architectural remains.

Consider, for example, the ritual event of wine drinking during a sacrificial feast. The resulting assemblage may comprise smashed tableware, faunal and botanical remnants of offerings, metal votive objects, and built structures such as altars or banqueting halls. When viewed as an integrated whole, such an assemblage constitutes a distinctive "material finger-print" of the social occasion—an archaeologically preserved imprint of a culturally significant event (Dietler & Hayden 2001; Wright 2004; Bray 2007; Hayden 2014; O'Connor 2015).

However, translating this metaphor into a robust analytical framework requires careful methodological elaboration. A central task involves disaggregating the overall material finger-print into constituent "sub-fingerprints," categorised by material class (e.g., ceramics, metals, bone, botanical remains). Beyond mere cataloguing, these sub-fingerprints must capture the constituent finds' specific arrangements, contexts, and associations, reflecting their roles in the original consumption scenario.

Subsequent quantitative encoding allows generating algorithms that express these sub-fingerprints in numeric values. These mathematical formulations can then be aggregated into a higher-order meta-algorithm: a composite "meta-fingerprint" representing the totality of the assemblage, enabling comparative analysis across strata and cultural contexts. The following section elaborates on this methodology using ceramic assemblages as a case study in fingerprint construction and interpretation.

## THE CERAMIC FINGERPRINT: FORM, FUNCTION, AND THE MATERIAL SIGNATURE OF CONSUMPTION

In ancient Mediterranean societies, clay constituted the foundational material of everyday life—comparable in its ubiquity and versatility to plastics in the modern world. Beyond its application in architectural components such as mudbricks and roof tiles and its role in sculptural production, clay served primarily as the raw material for manufacturing ceramic containers. These vessels were essential to the logistical infrastructure of daily and ceremonial life, facilitating the transport, storage, preparation, and consumption of foodstuffs and goods (Sinopoli 1991, pp. 1–2).

While most of these ceramic vessels were broken—whether through accidental damage, functional exhaustion, or intentional acts—they were rarely lost completely. Their remnants, ceramic sherds, constitute the most prevalent material remains across Bronze and Iron Age strata in the Mediterranean archaeological record. These sherds function as stratigraphic index fossils in both quantitative and contextual terms. They trace the evolution of

consumption behaviours through layers of human occupation, offering a diachronic framework for understanding local traditions and wider trans-Mediterranean interactions.

Against this backdrop, ceramic analysis has served as the prototypical domain for testing the concept of the material fingerprint—a methodological tool aimed at identifying and interpreting the material signatures of consumption practices. The prototype of what has become known as the ceramic fingerprint was first developed in 2012 and premised on a series of formal, functional, and quantitative criteria.

A fundamental premise of the ceramic fingerprint methodology lies in the exclusive consideration of sherds that can be securely attributed to specific vessel shapes and types. This restriction reflects a deeper epistemological constraint: the archaeological record is invariably incomplete. No archaeological assemblage preserves the full material complement of objects initially present at a given event or context. Instead, what survives is a partial and selective material residue, shaped by processes of use, breakage, disposal, post-depositional transformation, and recovery. As a result, it is methodologically untenable to treat the absolute number or cumulative weight of ceramic fragments as reliable indicators of the original quantity of vessels or the volume of goods once consumed. These values cannot reconstruct historical consumption events comprehensively or quantitatively. The only viable analytical approach is to focus on the proportional relationships among identifiable vessel types within an assemblage. These relative percentages do not claim to represent the totality of past consumption but provide a comparative framework for identifying structural patterns in ceramic use.

Researchers can identify broader trends in vessel selection and function via proportional analyses, shedding light on culinary practices, ritual feasting behaviour, and distinctions between everyday and ceremonial consumption (Kistler & Mohr 2015, 2016). The exclusive reliance on relational data is thus not a limitation but rather the most robust interpretive strategy available for engaging with the fragmentary nature of archaeological evidence. It forms the necessary basis for any comparative assessment of consumption patterns across time, space, and social context.

Following the functionalist dictum that form follows function, ceramic assemblages are subdivided into form-functional categories. As Sinopoli (1991, p. 83) has observed, ceramic vessels are utilitarian tools shaped by the specific activities they were intended to support. The formal attributes of a vessel—its size, morphology, and finish—are thus closely linked to its functional role. Ethnoarchaeological analogues have provided a robust comparative framework for defining these form-function associations (Henrikson & McDonald 1983), facilitating the classification of ceramic forms into functional areas of activity.

These activity areas encompass a range of uses, from long-term storage and long-distance transport, to preparation and short-term storage, to the serving and consumption of

solids, liquids, and aromatics. Additional categories account for the storage of non-edible and non-potable materials (Schaub 1996; Wilson & Rodning 2002; Forni 2007; Boudreaux 2010; Santacreu 2014, pp. 146–148). Once ceramic sherds have been assigned to these form-functional categories, their proportional distribution can be visualised using bar charts. The resulting graphic output—comprising relative percentages of vessel types per assemblage—constitutes the ceramic fingerprint of a given archaeological unit, representing the materialised imprint of localised consumption behaviours (cf. Fig. 1; Kistler & Mohr 2015, 2016). As a diagnostic tool, such fingerprints permit the systematic comparison of ceramic assemblages across space and time and enable reconstructing consumption patterns within their respective local social fabrics.

## CERAMIC FINGERPRINTING AT MONTE IATO: TRACING STRUCTURED CONSUMPTION AND CULTURAL DIFFERENTIATION

Within the framework of behavioural archaeology, Michael B. Schiffer (1985) advanced the premise that ritually deposited assemblages are governed by specific "underlying rules or grammars of cultural order" (Joyce & Pollard 2010, p. 208). Building on this foundation, William Walker (2002) further demonstrated that even ostensibly secular or utilitarian contexts like abandoned or destroyed buildings may represent material manifestations of ritual practices. This reconceptualisation of archaeological deposits as behavioural products has significantly altered the interpretive landscape at Monte lato in western Sicily.

Formerly, the destruction debris from the so-called Agora House I and the Late Archaic House had been interpreted primarily as domestic refuse—the remnants of household inventories (see Isler 2009, pp. 153–157, 176–210). With the behavioural turn, however, these deposits are more fruitfully analysed as structured depositions—contextually organised material traces that reflect consumption patterns at the moment of architectural abandonment. If, as Walker (2002, p. 162) argues, archaeological strata represent a materially ordered expression of social relations, then the destruction layers from Monte Iato—and indeed all depositional contexts—must be considered as "evidence of sequences of events through which human actors positioned materials in relation to each other" (Joyce & Pollard 2010, p. 301).

In response to this shift in interpretive focus, a systematic comparison of these structured deposits was undertaken by applying the ceramic fingerprint methodology. Given their abundance and functional diversity, ceramic data were selected as the initial analytical target. The goal was to establish a common comparative baseline across assemblages using quantifiable and visualisable metrics—specifically, bar charts that express the proportional distribution of vessel types within distinct activity areas.

Application of this technique to the ceramic deposits from the abandonment layers of Agora House I and the Late Archaic House revealed a recurring pattern: the spheres of food preparation, short-term storage, and presentation were dominated by local and regional wares, whereas drinking vessels were overwhelmingly of Greek import (Kistler & Mohr 2015, pp. 391–394). This dichotomy—between locally grounded preparation practices and a more cosmopolitan, Hellenised mode of consumption—was not limited to Monte Iato alone. A similar pattern emerged in the ceramic assemblage from the warrior grave at Montagna di Marzo, where Greek imports likewise dominated the drinking category. At the same time, local wares prevailed in other functional domains (Fig. 4).

Notably, however, some anomalies complicate this otherwise coherent picture. In the Late Archaic House, the category of "mixing drinks" was populated almost exclusively by locally produced matt-painted kraters, outnumbering their Greek counterparts by a striking ratio of 15:1. In contrast, Agora House I yielded no kraters whatsoever in this category—a lacuna mirrored in the warrior grave, further emphasising the selectivity and social coding of such deposits.

This dual structure is not an isolated phenomenon. The necropolis of Archaic Morgantina (Fig. 5) and the indigenous domestic complex at Monte Maranfusa (Fig. 6) both exhibit ceramic fingerprints that reinforce the same bifurcation: local ceramics dominate in preparation and storage, while imported Greek pottery predominates in the consumption of drinks. Across these diverse contexts, a consistent material pattern emerges—one not reducible to ritual specificity, funerary ideology, or ethnic identity but indicative of a shared matrix of value attribution and consumption aesthetics. In the domain of drink-related practices, Greek imports appear to have achieved symbolic pre-eminence, effectively displacing indigenous drinking wares, while local traditions remained resilient in the more utilitarian spheres of everyday consumption (Kistler & Mohr 2015, p. 393).

This pattern was not static. Ceramic fingerprints from the southern edge of the agora, dating to the first half of the sixth century BCE, show a predominance of locally produced, matt-painted and incised ceramics across all activity areas (Fig. 7). Only isolated imports from Corinth, Etruria, and colonial Greek cities appear within the drinking category. However, a diachronic comparison reveals that by the mid-fifth century BCE, Greek imports had mainly supplanted these local wares in the drinking domain. This transformation—particularly in the conspicious alcohol consumption activity—points to a socially driven appropriation of foreign styles, through which elites within the Sicilian interior articulated status and distinction (Kistler & Mohr 2016, pp. 83–89).

Yet, this Hellenised model of consumption was not universally adopted. A contrasting ceramic fingerprint was identified in a trench-cut deposit located in the open-air gathering space just north of the Late Archaic House (Fig. 8). Dated no later than 500/480 BCE, this

deposit consists exclusively of incised and matt-painted ceramics, entirely lacking Greek imports. The stratigraphic boundary is marked by a red-figure Nikosthenic pyxis immediately beneath the deposit layer, verifying its *terminus ante quem*. Although Greek pottery sherds are present in the overlying occupational surface (Fig. 9), the deposit itself is devoid of any imported material, suggesting a deliberate cultural expression of "pre-Greek" identity (Kistler & Mohr 2016, pp. 89–91).

Crucially, this manifestation of "pre-Greek" consumption cannot be interpreted as the survival of an archaic tradition. The settlement layers, reused as backfills at the southern edge oft he later agora from nearly a century earlier, already include Greek colonial imports, indicating that such ceramics had long been integrated into local material regimes. Thus, the complete absence of imports in the out-door deposit reflects not a residual indigenous authenticity but rather a deliberate cultural choice—a strategic re-inscription of local identity through material practice (Kistler & Mohr 2016, pp. 91–92).

In sum, the ceramic fingerprint methodology has enabled a precise and comparative quantification of consumption behaviours across diverse social, temporal, and spatial contexts. These fingerprints reveal internal contradictions within a single settlement: in the elite banquet halls of the Late Archaic House, drinking practices conformed to a Greek-influenced ideal; mere metres away, a structured deposition reaffirmed indigenous traditions through the absence of imported wares. The fingerprint thus facilitates both inter-site and intra-site analyses, exposing divergent registers of value and consumption even within ostensibly cohesive cultural units. Significantly, these divergences are not reducible to binary ethnic identities (Greek vs. indigenous), but rather reflect heterogeneous social positions and locally negotiated identities embedded within broader cultural interactions (Kistler & Mohr 2016, pp. 92–93).

### TRANS-MEDITERRANEAN COMPARISONS AND THE RECALIBRATION OF THE CERAMIC FIN-GERPRINT METHODOLOGY

With the emergence of globalisation theory in the late twentieth century, the Archaic Mediterranean has increasingly been interpreted as a proto-global interaction hyperspace, characterised by heterogeneous local responses to overarching hegemonic or colonial dynamics (Kistler et al. 2015, pp. 493–494). Post-colonial concepts such as middle ground, hybridity, and métissage, along with globalisation-related terms like network and glocality, have now become integral to the theoretical and methodological landscape of Mediterranean archaeology (Rowlands & Van Dommelen 2012; Antonaccio 2013; Knapp & Van Dommelen 2014, pp. 249–251; Van Dommelen 2015). However, a critical tension remains: most finds and monuments excavated before the post-colonial turn were interpreted and published within

paradigms that treated material culture as evidence of overarching processes such as Hellenisation, Orientalisation, or nationalist prehistoric reconstructions. These old-established ways of interpretation, deeply rooted in nineteenth-century imperial and nationalist classificatory schemes, remain embedded in scholarly discourse and often conflict with current post-colonial and globalisation-oriented approaches.

As such, the field urgently requires an epistemological reorientation—one that dispenses with ethnically essentialist terminology and method, which continues to reproduce the hermeneutic loop whereby local ceramic types, brooches, architectural forms, and other cultural markers are rigidly assigned to specific ethnic groups. This classificatory logic, often inherited through ethnographic projection from antiquity itself, leads to circular arguments in which such markers become reified as evidence of migration, colonisation, or diaspora simply by their repeated appearance across different sites (Jones 1997; Hall 2004; Crielaard & Burgers 2011, esp. p. 76; Kistler 2012, pp. 221–229; Bunimovitz & Lederman 2014, pp. 254–256; Hodos 2014, pp. 215–216; Osanna 2014, pp. 230–236; Kistler et al. 2015, pp. 497–499).

To investigate the dynamics of early Mediterranean connectivity, a fresh approach is needed—one that focuses not on ethnic attribution, but on the material traces of transregional flows and their local transformations. Only through systematic, multi-sited comparisons can we begin to reconstruct the cultural, religious, and political processes through which early Mediterranean communities absorbed, reconfigured, or resisted such influences (cf. Holton 2008, pp. 199–200; Appadurai 2010a, 2010b). However, a universally applicable methodology for such a comparative archaeology of proto-globalisation has yet to be realised.

An initial attempt to create an integrated, GIS-based transregional dataset met practical limitations due to technical complexity and resource constraints (cf. Brogman 2015, pp. 165–202; Gattiglia 2015, pp. 1–3). Consequently, the focus shifted to identifying an interoperable and scalable method for detecting material correspondences and disjunctions—one capable of algorithmically mapping similarities and differences in excavated assemblages across the Mediterranean (see also Gattiglia 2015, pp. 5–7; Copper & Green 2016).

Developed for intra-site analysis at Monte Iato, the ceramic fingerprint emerged as a promising method for cross-regional comparative analysis. Previous applications of this method had already demonstrated its utility in capturing structured consumption patterns within specific social fields. However, for trans-Mediterranean deployment, the fingerprint framework required significant methodological recalibration. It quickly became clear that the original classification schema—based on locally specific terms such as matt-painted, incised, or "Attic imports"—was regionally constrained and inadequate for comparative application. For example, in Greek mainland contexts, what counts as "imported" elsewhere may be locally produced and vice versa. Thus, a broader, functionally neutral classification system was necessary.

To this end, an additional structural layer was introduced into the ceramic fingerprint's data architecture: each assemblage is now divided into local/regional and imported wares, independent of geographic location. These categories are further subdivided by fabric and finish (e.g., monochrome fine/coarse, matt-painted, impressed/incised, black-glazed), and then specified through locally relevant abbreviations (e.g., D for *dipinta*, I for *incisa*, A for Attic). For instance, in a fingerprint from Athens, Attic wares would appear under local ceramics, not imports.

This revised classification system also improves flexibility for hybrid contexts. For example, at Entella, where a once-indigenous settlement eventually produced Punic amphorae (Montana et al. 2015), these should not be coded as imports but as local production. Additionally, the typological spectrum of vessel forms was cleaned and aligned with the formal and functional categories established by Sparkes and Talcott (1970) to ensure consistency across sites.

A new feature added to the fingerprint database interface is a green header bar containing two meta-categories: General Information and Rating of Security. While the latter is discussed elsewhere (see below, "Biases of the Ceramic Fingerprint"), the former plays a central role in digital mapping and dataset traceability. The General Information category includes three essential identifiers: Site ID (e.g., "Monte Iato"), Place ID (e.g., "Temple of Aphrodite"), and Layer/Assemblage, which captures the stratigraphic context. These entries anchor each fingerprint within the Google Earth-based Mediterranean interface, enabling zoom-level transitions from global to local scales. This geospatial anchoring permits the dynamic visualisation of spatial clusters or transregional distributions of similar fingerprints.

In contrast to these anchoring identifiers, the Social Field category is designed to capture intra-site variation and social differentiation. It draws on Pierre Bourdieu's concept of social fields—distinct arenas of practice governed by specific logics, or "rules of the game" (Bourdieu 1996, pp. 127–128, 160–161). These fields may coexist in the same physical space yet encode different practices. For example, the dining space of a household might transform into a site of ritual hospitality when entertaining guests (González-Ruibal 2006; Öhlinger 2015, pp. 419–421). Social fields thus function as situational frameworks that render identity performative and visible through material culture (Kistler & Mohr 2016, p. 93).

In practical terms, assigning ceramic assemblages to social fields such as household, ritual, or public allows users to compare internal variation at a single site or between related settlements. Divergences between household-level consumption patterns, for instance, may suggest social differentiation, status distinctions, or divergent cultural affiliations. Linking household and ritual fields within a given site may also reveal shared practices or ritualisation within domestic contexts (Öhlinger 2015, pp. 419–421).

The recalibrated ceramic fingerprint ultimately provides a scalable, comparably structured tool for identifying shared patterns and local innovations in early Mediterranean material culture. It enables researchers to transcend outdated ethnic typologies and engage instead with contextually grounded, functionally defined consumption regimes, offering a refined lens through which to explore early forms of Mediterranean entanglement.

# BIASES IN THE CERAMIC FINGERPRINT METHODOLOGY AND PARAMETERS FOR ANALYTICAL REFINEMENT

The trans-Mediterranean expansion and comparative application of the ceramic fingerprint approach have brought the methodological limitations and biases inherent in its design into sharper focus. While some of these biases can be mitigated by introducing additional analytical parameters, others remain intrinsic to the archaeological record and require careful interpretive caution.

#### Primary Use Context and the Security of Assemblages

As Sinopoli (1991, p. 85) notes, "it is relatively rare for ceramics to be deposited in their location of primary use." This is partly due to the destructive impact of anthropogenic disturbance and environmental erosion, which often compromise the integrity of structured deposits (La-Motta & Schiffer 1999). Even when such deposits survive, stratigraphic recovery and precise documentation remain challenging—despite advances in integrative archaeological methods that combine macro- and micro-contextual analyses (Weiner 2008; Finkelstein et al. 2012, esp. pp. 136–138; Reitz & Shackley 2012, pp. 3–7). Depositional contexts in which ceramics remain at the site of their primary use are typically associated with exceptional events such as deliberate destruction or ritual acts (Schiffer 1985).

More commonly, ceramics are recovered from contexts of secondary deposition—cleared, displaced, or reused strata—often unrelated to their original spatial or functional setting (LaMotta & Schiffer 1999; Joyce & Pollard 2010, pp. 296–303). Stratigraphic observation and sherd refitting in select cases allow partial reconstruction of their primary social or functional context. However, such reconstructions are rare in legacy excavations, where documentation standards often fall short of contemporary expectations (Antonaccio 2015, esp. pp. 56–58).

To account for this critical variability, each ceramic fingerprint must be assigned a Rating of Security. This rating is based on three interrelated factors: (1) the nature of the archaeological context, (2) the standard of excavation and documentation, and (3) the mode of recovery (excavation vs. survey). For archaeological contexts, a three-tier qualitative system is used:

A: primary use area;

**B**: reconstructed primary use area;

**C**: secondary context without reconstructable primary association.

For the scientific quality of excavation, the following distinctions apply:

A: all finds recorded and classified;

**B**: all significant finds recorded and classified;

C: only a selection of significant finds recorded;

**D**: unknown level of find documentation.

Survey data are evaluated with similar rigour, though the nature of surface collection rarely permits a classification as 'primary use'.

#### **Functional Misuse of Vessels**

A further challenge arises from the potential misuse of vessels—i.e., their use in ways that deviate from their intended function. The assumption that "form follows function" is frequently violated in practice. For example, an Attic skyphos from Monte Iato (K 24776) exhibited concentric interior abrasions, indicating it was used as a mixing bowl rather than a drinking vessel (Isler 2009, p. 158, fig. 29). While occasional traces of alternative use may survive, such cases are seldom systematically identifiable (Santacreu 2014, pp. 146–147). To this end, a vertical category titled misused has been incorporated into the fingerprint framework, intersecting all activity areas and capturing known or suspected cases of functional deviation.

In some instances, functional ambiguity cannot be resolved at all. For example, whether a pithos fragment served as part of a storage container or as an improvised lid may be unclear. In such cases, interpretations must be based on general assumptions or be uniformly applied as a constant bias across comparative assemblages.

### **Multi-functionality of Vessel Types**

More tractable is the issue of vessel multi-functionality, particularly common in assemblages of locally produced wares with limited typological differentiation. Certain vessel types may plausibly serve in multiple roles—e.g., for storage, transport, preparation, or consumption (Santacreu 2014, p. 147). The fingerprint methodology addresses this by proportionally distributing a single fragment across relevant activity areas. For instance, early Iron age bowls that could serve equally for serving, consuming, or mixing are recorded as one-third of such bowls within each corresponding activity area.

#### Miniature Vessels

Miniature vessels, by contrast, require categorical distinction. Due to their small scale, these vessels often cannot fulfil the practical function suggested by their form. Rather, they serve as symbolic substitutes, embodying full-sized vessels' formal and functional identity within a ritualized or representational code. Their presence in primary-use contexts is thus a strong indicator of ritual activity (Kiernan 2015).

### Archaika: The Use of the Antique

The term *archaika* refers to vessels that were either genuinely old and obsolete at the time of their use or deliberately crafted in an archaizing style. Frequently employed in foundational rituals, these artifacts evoke ancestral heritage or an imagined antiquity, thereby endowing the ritual—and, by extension, the broader community—with a sense of rootedness and authenticity (Kistler et al. 2015, pp. 517–521). In this context, the deliberate use of *archaika* functions as a symbolic gesture of cultural continuity and legitimization.

#### Differential Rates of Breakage and Preservation

One of the most persistent sources of bias is the differential rate of vessel breakage. As Schiffer (1989, p. 56) has emphasized, the fragmentary nature of ceramic finds precludes precise quantification of original vessel counts. Although it is broadly acknowledged that certain vessel types—e.g., large stationary storage containers—are less prone to fragmentation than mobile finewares, the effects of such differences on assemblage composition are difficult to control or quantify.

Firing techniques and material composition further influence breakage patterns: coarse handmade wares fired in open pits tend to disintegrate into smaller fragments, whereas finely slipped ceramics from kilns are more likely to survive as larger sherds (Sinopoli 1991, p. 87; Orton et al. 2010, pp. 223–224). Nonetheless, due to post-depositional processes and recovery bias, the extent to which these patterns distort the archaeological record remains impossible to calculate precisely. Differential breakage must, therefore, be treated as an inherent, though largely unquantifiable, interference factor affecting all ceramic assemblages to some degree.

### ASSEMBLAGE, CONTEXT, AND THE CERAMIC FINGERPRINT: A METHODOLOGICAL RE-APPRAISAL

Once constructed, the ceramic fingerprint can be used as a comparative index of ceramic consumption behaviours. Patterns of similarity and difference across sites may be identified. Yet,

unlike ethnographic fieldwork, archaeology rarely permits us to determine the precise social or cultural reasons for these convergences and divergences. These must be interpreted through analogical reasoning, often grounded in ethnographic and anthropological studies. As Gattiglia (2015, p. 3) reminds us, "correlation does not imply causation."

Monte lato serves as a case in point. Ceramic fingerprints from sites in the West Sicilian interior show remarkable consistency across the activity areas of short-term storage, preparation/cooking, serving, and consumption. These roles are consistently dominated by local or regional wares, often decorated with matt-paints or incisions. Ethnographic studies of early societies suggest that these domains fall within the traditional sphere of female activity (Sinopoli 1991, p. 169; Dietler & Herbich 2006, esp. pp. 400–403). Ethno-archaeological analogues support the notion that indigenous vessel forms in these contexts served a broad spectrum of uses—from fermentation to food preparation (Kistler & Mohr 2015, pp. 392–394). The relative rarity of wine amphorae in the Sicilian hinterland, comparable to their low frequency at sites such as the Heuneburg, raises questions about interpreting imported Greek vessels. Are these truly indicators of Greek drinking customs, or were such imports appropriated and recontextualised within local symbolic and practical frameworks (Dietler 2010b, pp. 218–220)?

These questions underscore an important point: the ceramic fingerprint cannot resolve interpretive issues. Conclusions drawn from it are not embedded in the quantitative data but emerge from broader cultural analysis, particularly ethnological and anthropological contextualisation. The act of assembling and classifying data is interpretive and, therefore, open to the same biases as excavation and documentation (Fahlander 2004, esp. pp. 186–196).

A more subtle yet equally critical interpretation layer arises from the social field's designation in the fingerprint's metadata. This category—found under General Information—is intended to situate the assemblage within its behavioural context (e.g., 'household', 'ritual', 'public'). Yet, as LaMotta and Schiffer (1999, p. 22) have shown, assigning an assemblage from a domestic structure to the 'household' field may be misleading. For example, if the ceramic assemblage was deposited during a terminal ritual event after the systematic removal of reusable items, it would more appropriately be categorised as part of the 'cult' field. The Place ID—such as 'House XY'—may remain accurate, but the social field must reflect the behavioural nature of the deposition, not merely its architectural setting.

This highlights a persistent epistemological tension: by assigning a social field, we prefigure the results of our analysis. As Hodder (1991) and Gattiglia (2015, p. 5) have argued, all archaeological classification systems are embedded in theory and produce interpretive consequences. Still, the more nuanced and contextually grounded our categorisation of social fields, the more meaningful the comparative power of the ceramic fingerprint becomes.

# REVEALING PROTO-GLOBAL PATTERNS: TOWARD A COMPARATIVE ENGINE FOR CERAMIC CONSUMPTION

The ceramic and material fingerprints of archaeological assemblages, conceived as indices of specific consumption practices, offer a powerful tool for comparative analysis. They facilitate cross-contextual insights not only along horizontal (geographic) dimensions but also across vertical (chronological) axes. Importantly, these comparisons remain viable even when the archaeological assemblages originate from legacy excavations—undertaken within interpretive frameworks historically unrelated to proto-globalisation studies. Through systematic recoding into the ceramic fingerprint schema, such datasets can be recontextualised, provided that appropriate qualifiers are appended under the Rating of Security to reflect issues of context, documentation, and interpretive reliability.

By leveraging the Site ID and Place ID, these fingerprints can be accurately georeferenced on a Google Earth-based platform, allowing dynamic zooming into site plans and excavation areas. This dual-scale documentation system—parallel to traditional fieldwork records—enables the construction of a streamlined, interoperable database capable of operating at a trans-Mediterranean level. Each fingerprint functions as a discrete algorithm encoding the quantified profile of ceramic consumption in a specific context. Based on these algorithms, a future search engine could be developed to visually highlight patterns of similarity and divergence across the Archaic Mediterranean.

The spatial distribution of similarities would mark areas of shared consumption practice. These could be filtered regionally to trace dense connectivity within localised networks or projected across broader Mediterranean trajectories to identify long-distance interactions. The recurrence of similar fingerprints over time could reflect the endurance of traditions or the formation of new cultural routines in response to regional entanglements and shifting power structures.

Conversely, dissimilarities are equally significant, particularly for intra-site analysis. Horizontally, they may signal regional distinctions in consumption behaviour or divergent cultural adaptations. Vertically, dissimilarities may mark transformative episodes in local identity construction, periods of cultural rupture, or deliberate acts of differentiation within evolving social fields. In this way, the ceramic fingerprint becomes an instrument for detecting the material consequences of global interaction on local lifeways—an index not of causality but of patterned variability that invites further interpretation.

However, the ultimate explanatory burden remains with the researcher. Identical fingerprints may emerge from radically different socio-historical processes depending on the site-specific context and the interpretive lens applied—whether ethnographic, anthropological, or historical.

The ceramic fingerprint enables the Archaic Mediterranean to be interrogated as a proto-global mega-space—one decoupled from the geopolitical frameworks and ethnocentric typologies inherited from ancient authors and 19th-century classificatory traditions. It provides a methodological toolkit for diachronic and synchronic comparisons—ranging from Gibraltar to the Levant—and, crucially, establishes a framework for analogical comparisons between the proto-global dynamics of the Early Iron Age and those of the contemporary networked world. However, this heuristic value will only be fully realised if ceramic fingerprinting is embraced as a methodological paradigm within branches of current globalisation and consumption research. Only then can archaeology provide the long durée reference point necessary to illuminate both the continuities and disjunctions between early global entanglements and our present era of hyper-connectivity (Gattiglia 2015, p. 8).

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Total of identified forms: 188	Dipinta: 130	Incisa: 18	Attic: 2	Corinthian: 9	Other Greek Imports:	Mono- chrome fine ware: 14	Coarse ware: 7
Long-term storage o	and long dis	stance tra	nsporta	tion			
Amphora (Transport)	-	-	2	-	-	-	-
Pithos	3	-	-	-	-	-	1
Lid	-	-	-	-	-	-	1
Preparation, short-t	erm storag	e and loc	al trans	portation			
Hydria/Amphora/ Stamnos	38	-	-	-	-	1	-
Pot/Olla/Dinos	3	1	-	-	-	2	-
Mortarium	-	-	-	-	-	-	-
Basin	9	-	-	-	-	3	-
Cooking ware	-	-	-	-	-	-	4
Serving and consum	ption of fo	od					
Bowl	44	13	-	-	-	8	-
Stemned Dish/Plate	-	-	-	-	-	-	-
Stand	-	-	-	-	-	-	1
Mixing of drinks							
Krater (column/stirrup)	-	-	-	-	-	-	-
Serving and consum	ntion of dr	inks					
Mug		-	Ι_	_	_	_	_
Jug	6	-	-	-	_	-	_
Olpe	-	-	_	_	_	_	_
Oinochoe	4	-	-	1	-	-	_
Feeder	-	-	-	_	_	_	_
Skyphos	-	_	-	_	_	-	_
Cup-skyphos	-	-	-	_	_	_	_
Kylix	22	1	-	_	7	_	_
Kotyle/others	1	-	-	8	-	_	-
Attingitoio	-	3	-	-	-	-	-
Kantharos	-	-	-	-	1	-	-
Serving and Consum	ption of pe	erfumes a	nd fraar	ances			
Aryballos	-	-	-	-	-	-	-
Alabastron	-	-	-	-	-	-	-
Lekythos	-	-	-	-	-	-	-
Storage of non-edib	le and non-	potable r	roducts				
Pyxis	-	-	-	-	-	-	-

Fig. 1: Ceramic fingerprint of the stratified fill on the southern edge of the Agora (600–550 BC). Categories and spreadsheet (E. Kistler, M. Mohr).

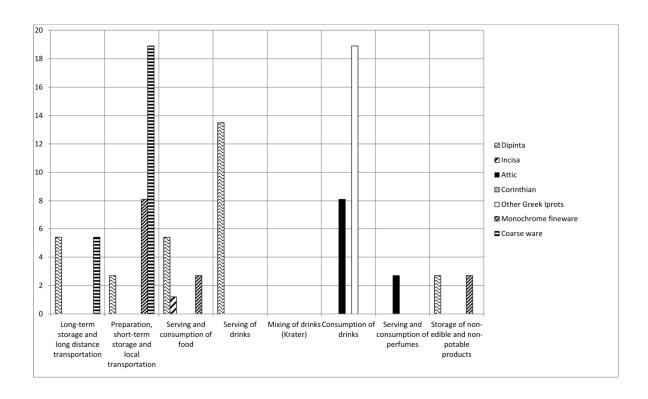


Fig. 2: Ceramic fingerprint of the debris of Agora House I, 470/60 BC. Bar chart (E. Kistler, M. Mohr)

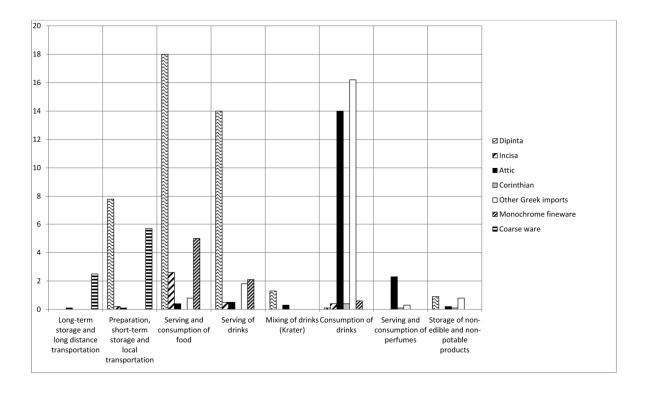


Fig. 3: Ceramic fingerprint of the debris of the upper floor of the Late Archaic House (460/50 BC). Bar chart – (E. Kistler, M. Mohr)

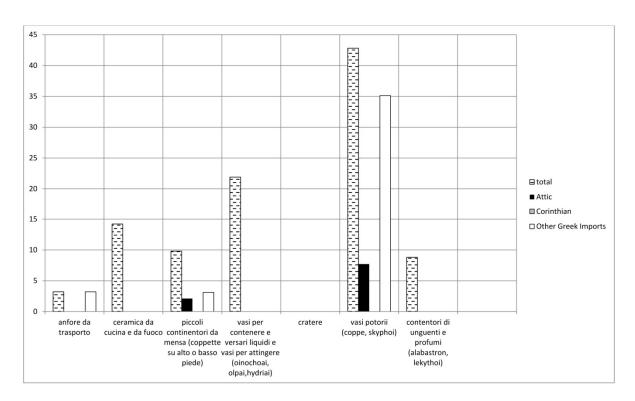


Fig. 4: Ceramic fingerprint: Montagna di Marzo

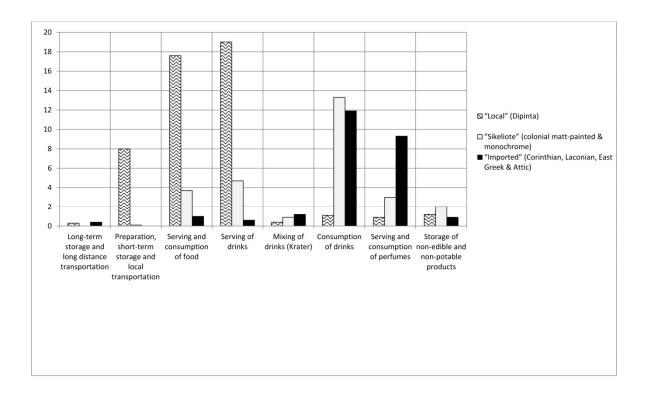


Fig. 5: Ceramic fingerprint, Archaic Necropolis of Morgantina

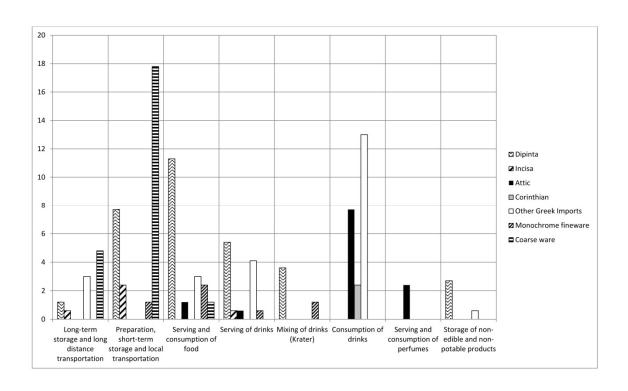


Fig. 6: Ceramic fingerprint: Monte Maranfusa

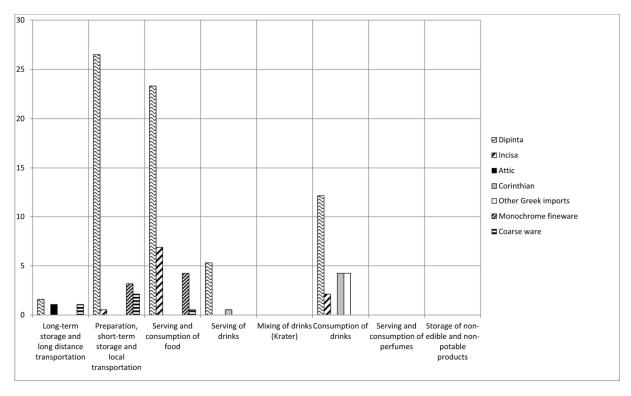


Fig. 7: Ceramic fingerprint of the stratified fill on the southern edge of the Agora (600–550 BC). Bar chart (E. Kistler, M.Mohr).

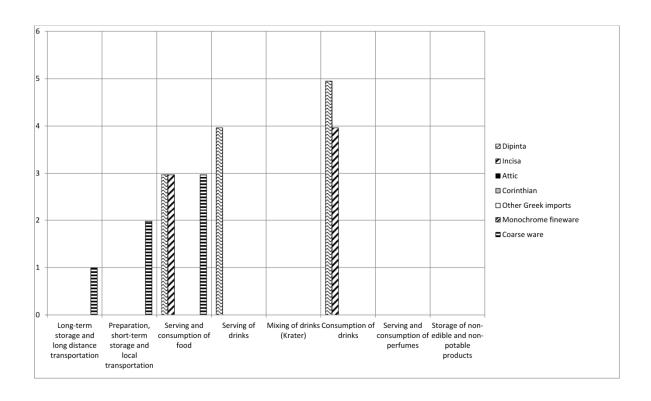


Fig. 8: Ceramic fingerprint of the deposit on the outer square of the Late Archaic House, 500–470/60 BC. Bar chart – (E. Kistler, M. Mohr)

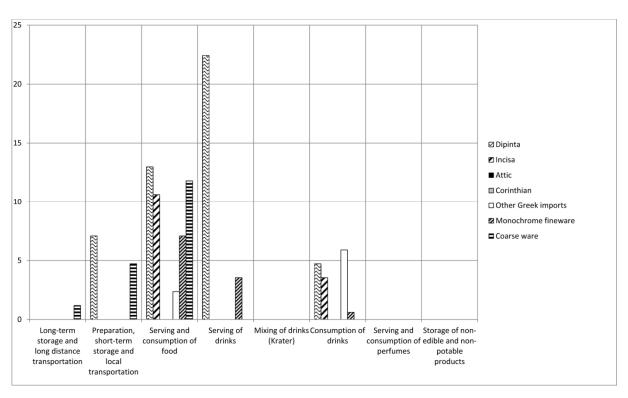


Fig. 9: Ceramic fingerprint of the occupation layer outside of the Late Archaic House, 470/60 BC. Bar chart – (E. Kistler, M. Mohr).

General Information				
Site ID	Monte lato	0		
Place ID				
Layer/Assemblage				
Social field				
Date				
	Special Categories	tegories		
	Archaika	Archaika	Defunct.	Miniatures
	tradition	foreign		
Long-term and long distance transportation	ransportati	uo.		
Amphora (Transport)				
Pithos				
Lid				
undetermined				
Short-term storage and local transportation	ransportati	uo,		
Hydria/Amphora/Stammnos		0		
Preparation/cooking				
Pot/Olla/Dinos		8		8
Mortarium				
Basin				
Cooking ware				
7				

OI etto						Sunni Aumono				
Site ID	Monte lato				Excavations	SI			Survey	
Place ID					A				A	
Layer/Assemblage					8				8	2000
Social field					0				C	
Date					Q				D	
Total of fragments	Local or regional	gional				Import				
	Mono	Mono	Matt-	Impressed/ Black-	Black-	Mono	Mono	Matt-	Impressed/ Black-	Black-
unidentified	fine	coarse	painted	Incised	glazed	fine	coarse	painted	Incised	glazed
Local Acronyms			q	1			8			A, C
Long-term and long distance transportation	ansportatic	u								
Amphora (Transport)										
Pithos										
Lid										
undetermined			93							
Short-term storage and local transportation	ansportatic	u								
Hydria/Amphora/Stammnos	6		60						0	65
Preparation/cooking										
Pot/Olla/Dinos	8.0		80				0			80
Mortarium										
Basin										
Cooking ware										
Lid										

 $\ \, \text{Fig. 10: Screenshot showing the Excel-based input template for the ceramic fingerprint} \\$