

Ceramics, Ethnicity, and Style:
Understanding Social Boundaries and Ceramic Exchange in the Middle Volga from
the 13th to 15th Century during the Golden Horde Period

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Abstract

The Golden Horde period of the Middle Volga region saw rapid developments in socioeconomic organization. This period was characterized by the development of small towns around larger settlements, migration of various populations into the region, warfare, and political campaigning. From the 13th to the 15th century, various unglazed ceramic production methods and styles were introduced into the region. This research compares the distribution of ceramic types locally at the settlement of Bolgar and regionally between the settlements of Bolgar, Bilyar, and Juketau to understand how group boundaries were potentially signaled. This comparative analysis is primarily concerned with the possibility that the distribution of ceramic types may represent materialized ethnic boundaries at a local and regional scale during periods of political and economic stress. Through studying Golden Horde ceramics in the Middle Volga, I have found that certain social boundaries are likely materialized through the distribution of ceramic types. These boundaries may represent distinct ethnic differences between populations given the historical context of the period and region.

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Introduction

Research Objectives

From the 13th to 15th century, within the Middle Volga region of present-day Russia, regional interactions between settlements appear to have significantly affected both regional ceramic industries and group boundaries. This study will attempt to demonstrate this through analysis of the visibility and distribution patterns of attributes in ceramic artifacts at a regional scale within the Middle Volga. In addition, this study will also attempt to demonstrate this with statistical data gathered from ceramics from the Middle Volga site of Bolgar in tandem with other ceramic studies focused on Bilyar, Kazan, and Juketau. This period, known as the Golden Horde period, saw fundamental changes in the region's socioeconomic organization. New settlements arose while previous settlements experienced increased development in urban craft production (see Table 1) (Lisova 2012: 125). Bolgar, Bilyar, Kazan, and Juketau are all regional examples of settlements that experienced changes in socioeconomic organization within this period (see Figure 1) (Izmailov 2015: 60, Sitdikov and Izmailov 2015: 16, Valeev 2015: 92). With the arrival of new technologies and techniques, the production of unglazed ceramics in this region experienced the emergence of new varieties in style (Lisova 2012: 125). Archaeologists have identified 22 regional ceramic groups demarcated by color (associated with specific firing characteristics), surface treatment, shape, ornamentation, ornamentation location, form (as determined by proportion calculations), molding-techniques, and the composition of the clay (Khlebnikova 1984: 21-26, 2015b: 138-155, Bakhmatova 2016: 126). This research focuses on the Middle Volga ceramic groups 1, 13, and 16 as identified by Khlebnikova, and the boundaries between groups potentially signified through the production and exchange of these specific

ceramic groups, with a focus on the settlement of Bolgar (Khlebnikova 1984: 21-26, 2015b: 138-155).

If the site of Bolgar maintained very permeable local boundaries and continuous local ceramic exchange, then Group 1 ceramics should have a high visibility in Bolgar regardless of whether an area was intended for commercial, domestic, or industrial activity. This study defines permeability as the quality of a social boundary allowing for ideas and material culture to pass through it. Very permeable boundaries allow for ideas and material culture to pass through with relative ease. Group 1 ceramics possess the unique combined regional characteristics of a red color, diverse shape, and are ornamented with incised straight lines, wavy patterns, and combed-shaped stamps (see Table 2 and Figure 2) (Khlebnikova 2015b: 138, 148-155). These attributes should have high visibility across the commercial, domestic, and industrial zones of Bolgar.

If the site of Bolgar was the center of ceramics exchange within the Middle Volga, maintaining very permeable regional boundaries, and with extensive commercial activity, then Bolgar should have a higher visibility of Group 13 and Group 16 ceramics at commercial and domestic zones when compared to industrial zones. Group 13 ceramics or “Juketau” ceramics originate from the settlement of Juketau along the Kama River and are associated with ceramics from the region of modern-day Kazakhstan (Khlebnikova 1984: 167-168, 2015b: 148). Group 13 ceramics possess the combined characteristics of a yellow to red color, pot and/or bowl shape, and are ornamented with an incised inclined multilevel wave of 1 to 2 bands along the shoulder with occasional combed-shaped stamps (Khlebnikova 2015b: 144). Group 16 ceramics possess the combined characteristics of a grey color with a white or pink hue, are pot-shaped, and ornamented with an incised horizontal wavy line at the top of the vessel (see Table 2 and Figure 2) (Khlebnikova 2015b: 144).

Focusing on Bolgar's ceramics in relation to the site's commercial, domestic, and industrial zones potentially provides an opportunity to observe the settlement's internal social boundaries. Relating the ceramic assemblage patterning of Bolgar to the three other sites of Bilyar, Kazan, and Juketau from the 13th to 15th centuries in the Middle Volga also allows an opportunity to observe a transformative period of boundary and frontier creation and its influences on ceramic craft production (see Table 3 and Figure 1). This analysis of these three ceramic groups during the Golden Horde period examines the various exchange relationships and potential signaling of ethnic group identity through variations in ceramic style along with local and regional distribution of ceramic assemblages.

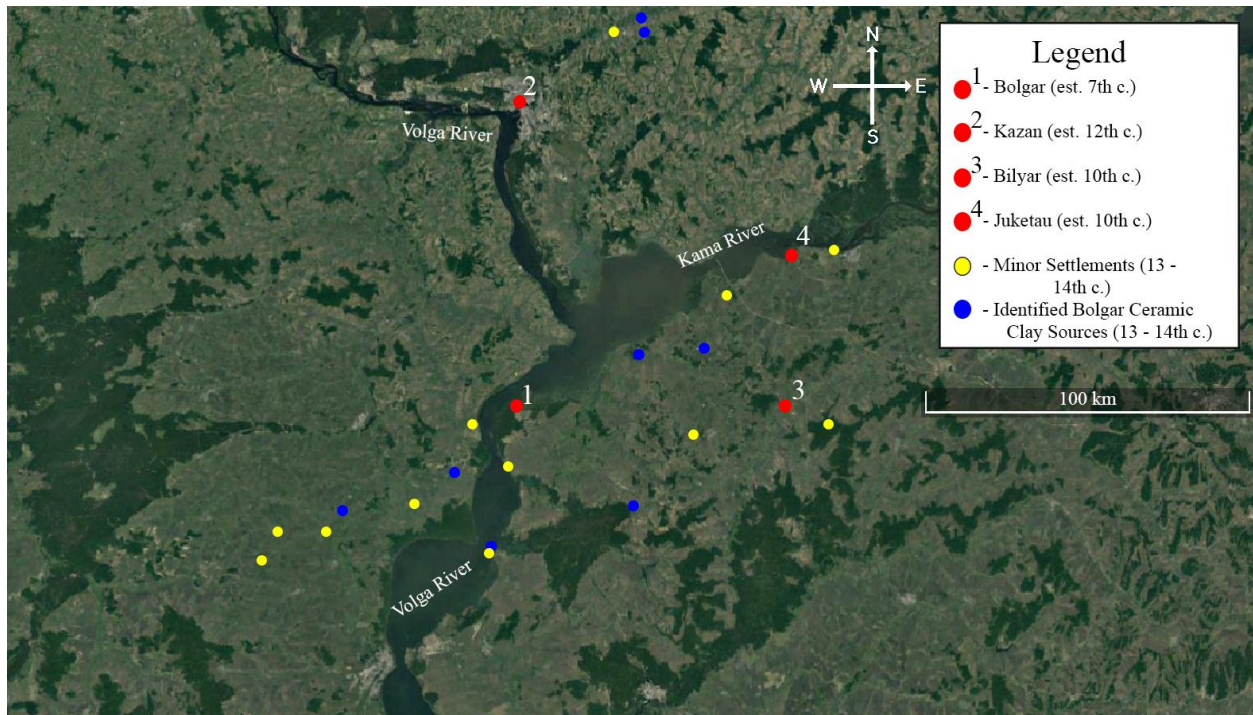


Figure 1: Satellite Map of the Volga and Kama Confluence. This map shows the major and minor settlements as well as identified clay sources for Bolgar ceramics during the 13th to 14th centuries in the Bolgar Ulus unit of the Golden Horde.

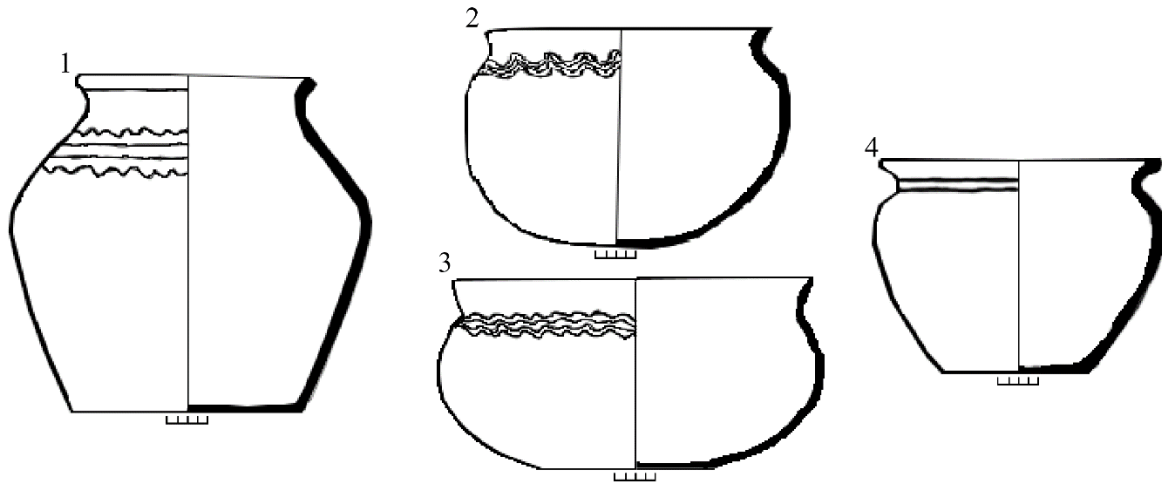


Figure 2: Ceramic Groups 1, 13, and 16 Example Models. This figure shows models of the ceramic groups 1, 13, and 16: Group 1 pot (1), Group 13 pot (2) and bowl (3), and Group 16 pot (4). *Scales in single centimeter units

Dates	Middle Volga		Signifying Event	Settlements	Middle Volga Ceramic Groups					
	Period	Phase			Group 1	Group 13	Group 16			
1600	Post-Golden Horde		1552: Khanate of Kazan is annexed to Muscovy	Bolgar	Kazan	Bilyar	Juketan	Group 1	Group 13	Group 16
1500		Kazan Khanate								
1400	Golden Horde	Late	1379: Blue and White Horde unite	Bolgar	Kazan	Bilyar	Juketan	Group 1	Group 13	Group 16
1300		Early	1240s: Middle Volga conquered by the Mongols							
1200	Pre-Mongol	Islamic	922: Khanate of Volga Bulgria adopts Islam	Bolgar	Kazan	Bilyar	Juketan	Group 1	Group 13	Group 16
1100										
1000										
900	Pre-Islamic			Bolgar	Kazan	Bilyar	Juketan	Group 1	Group 13	Group 16
800										
700										

Table 1: Middle Volga Timeline and Bolgar Ceramic Chronology. This table is a timeline showing the various periods of the Middle Volga from the 8th to 17th centuries as well as a chronology of the ceramic groups 1, 13, and 16.

Characteristic	Group 1	Group 13	Group 16
Color	red	yellow to red	grey and sometimes with a white or pink hue
Shape	non-specific	pot or bowl	pot
Ornamentation	Various; commonly carved straight lines, wavy patterns, and/or comb-shaped stamps	inclined multilevel wave of 1 to 2 bands and comb-shaped stamps	carved horizontal wavy line
Ornamentation Location	neck and shoulder	shoulder	neck
Composition	fine clay composition, inconspicuous admixtures of sand, occasionally finely ground red chamotte, and plant residue	clay composition with a lot of visible sand; sometimes with an admixture of fine limestone or a small amount of crushed shells	clay composition rich in pounded shells

Table 2: Ceramic Groups 1, 13, 16 Characteristics. This table shows five characteristics that distinguish the ceramic groups of 1, 13, and 16.

Settlement	Bolgar	Kazan	Bilyar	Juketau
Bolgar	x	96 km	87 km	98 km
Kazan	96 km	x	122 km	108 km
Bilyar	87 km	122 km	x	42 km
Juketau	98 km	108 km	42 km	x

Table 3: Straight-line Distances between Settlements. This table shows the approximate straight-line distances between the four settlements: Bolgar, Kazan, Bilyar, and Juketau.

Regional Background

Beginning in the 8th century, the Middle Volga region assumed a remarkably significant status being located on the Great Volga trade route. The development of the Great Volga trade route established contact between the various groups within the Middle Volga region and other outside political units (Kirpichnikov 2015: 82). Slavic, Finno-Ugric, and Turkic groups established consistent contact with each other and became more familiar with each other's sociopolitical organization and systems of production (Kirpichnikov 2025: 82). The Volga and Kama rivers both run through the Middle Volga region and allowed exchange interactions to run along the rivers between settlements like Bolgar, Bilyar, and Juketau starting in the Pre-Mongol period (see Table 1 and Figure 1) (Kirpichnikov 2015: 82). Serving as significant economic, religious, and political centers, both Bolgar and Bilyar became centers for exchange amongst the various groups identified in the Middle Volga during the Pre-Mongol period (Kirpichnikov 2015: 82). Prior to the Golden Horde period, Bilyar existed as the largest settlement in the region with Bolgar being the second largest settlement (Poluboyarinova 2015: 100). The Middle Volga region experienced an intensification of state formation and development of the Great Volga trade route, resulting in the establishment of contacts between the various groups in the region, bringing in a plethora of foreign goods (Kirpichnikov 2015: 83). During the second half of the Pre-Mongol period, settlements like Bolgar experienced an influx of foreign goods coming from regions like the Iberian peninsula as is evident by the recovery of Spanish ceramics from archaeological sites (Koval 2016: 121). Bolgar also represented the last settlement along the Great Volga trade route going north. The movement of furs and slaves in the region primarily ran southward through the settlements of Bolgar and Bilyar (Poluboyarinova 2015: 101). According to written accounts by Arab merchants in both the Pre-Mongol and Golden Horde periods, the

settlement of Bolgar and the Middle Volga region at large represented the end of a wealthy trade route (Kirpichnikov 2015: 88).

Previously, from the 10th to 12th centuries, military conflicts between the Rus (Slavic groups to the west) and the Turkic dominated state-level society of Volga Bulgaria over the main trade artery of the Middle Volga region led to a declining socioeconomic situation (Poluboyarinova 2015: 100-101). Entering into the 13th century, the Mongol Empire rapidly subdued the region, thereby pushing the Middle Volga into a period of rapid destabilization and struggles for economic and political control (see Table 1) (Valeev 2015: 90). Despite the immense political turmoil brought to the region by the Mongol invasion, trade and craft production, including that of ceramics, experienced immense dynamic growth, which led to the settlements of Bolgar, Bilyar and Juketau becoming centers for the economic maintenance of the region and production of crafts (Valeev 2015: 90). Moving into the second half of the 14th century, the fragmentation of the Mongol Empire led to the creation of the Golden Horde state-level society, which focused on establishing the Middle Volga as its center for trade and allowing an influx of exotic and luxurious goods, like Spanish ceramics, into the region (Valeev 2015: 90). In addition, the settlement of Bolgar became the first capital of this newly established state (Valeev 2015: 94). The Golden Horde also saw the establishment of new settlements across its controlled territories within the Middle and Lower Volga (Lisova 2012: 125). During the Golden Horde period, the settlement of Kazan became established (Lisova 2012: 125). Previously, in the Pre-Mongol period, the area of Kazan served as a small frontier settlement between Volga Bulgaria and the Finno-Ugric people to the north, such as the Mari (Taagepera 1999: 216-217). However, with the migration of Turkic groups throughout the region of the Middle Volga during the Golden Horde period, Kazan become one of the many new settlements established

(Taagepera 1999: 216-217). It was during the Golden Horde period that the Middle Volga region experienced its peak purchasing power, attracting exotic goods and various groups to the region's economic and political centers (Bolgar, Bilyar, Kazan, and Juketau) (Poluboyarinoва 2015: 100-113, Valeev 2015: 92).

In addition to the influx of foreign goods to the region, foreign influences on ceramic style also arrived. In particular, Middle Volga Golden Horde architectural ceramics are noted for adopting the style and glazed techniques of Islamic and Iranian ceramics (Noskova 2015: 266). Golden Horde ceramics became representative of a unity in the form of varying styles arriving into the region and amongst groups within the Golden Horde (Lisova 2012: 126). Settlements like Bolgar, Bilyar, Kazan, and Juketau became “meeting points” for the varying populations within and surrounding the region (Valeev 2015: 92). Best described as possessing a multi-ethnic composition, major and minor settlements, particularly along the western border of the region between the Golden Horde and the Russian Principalities, contain traces of diverse production and trade activities observed through artifact style and production technologies and techniques (Gribov and Akhmetgalin 2013: 90). Slavic, Finno-Ugric, and Turkic speaking populations all composed the overall ethnic composition of the region (Gribov and Akhmetgalin 2013: 90). The significant development of the Great Volga trade route and urbanization of the Middle Volga attracted these varying groups to the settlement resulting in unique ceramic groups like Groups 1 and 13 (Gribov and Akhmetgalin 2013: 90). The various ceramic groups of the region are attributed to the multi-ethnic composition of the settlements (Gribov and Akhmetgalin 2013: 90). The diverse examples of ceramic styles and techniques within the varying settlements long displayed the movement of other groups into the Middle Volga during the Golden Horde period (Gribov and Akhmetgalin 2013: 90). From the Pre-Mongol period well into the 14th and 15th

centuries, ceramics in this region continued to reflect the diversity of the region's ethnic composition (Khlebnikova 2015b: 152). The Middle Volga's role as a political, economic, and administrative center was significant and stimulated the development of local production features throughout the Golden Horde period and into the Kazan Khanate period (Khlebnikova 2015b: 152)

During the second half of the 14th century and the first half of the 15th century, conflicts between the Golden Horde and the Russian principalities, primarily the Principality of Muscovy to the west, intensified (Izmailov 2015: 55-63). These conflicts hastened the process of disintegration within the Golden Horde and reduced the Golden Horde's maintenance of its boundaries (Izmailov 2015: 56-63). The region roughly reached its maximum trading profit in the first half of the 14th century, and, as a result, the expansion of Golden Horde settlements occurred, with the continued emergence of new trade- and craft-specialized villages surrounding the political, economic, and social centers of the Middle Volga (Izmailov 2015: 56). However, the development halted as various raiding parties intensified their activity along the border of the Middle Volga, occasionally reaching the core settlements of Bolgar, Bilyar, Kazan, and Juketau (Izmailov 2015: 56). Relatively recently established villages were destroyed by raiding parties from the west and began intercepting and preventing the movement of merchants between settlements and other regions (Izmailov 2015: 56-63). This severely weakened the Golden Horde's state organization in the region and disrupted craft production within settlements (Izmailov 2015: 56-63). By the second half of the 15th century, the Golden Horde had segmented into more region-specific khanates with the two most significant being the Kazan Khanate and the Great Horde (Izmailov 2015: 56-63). This marks the end of the Golden Horde period and the beginning of the Kazan Khanate period (see Table 1) (Izmailov 2015: 56-63). The major political

and economic centers of the Middle Volga region, Bolgar and Juketau, both became ruins as conflicts between the Golden Horde and Russian principalities resulted in their entire destruction (Izmailov 2015: 56-63). Bilyar had lost nearly all of its significance by this point with only a much smaller rebuilt settlement occupying its previous territory (Izmailov 2015: 56-63). However, the economic focus of the region reoriented to Kazan, which expanded its boundaries, population, and production during the Kazan Khanate period (Izmailov 2015: 56-63).

Overall, the early phase of the Golden Horde period is characterized by destabilization because of the Mongol invasions and the migration of new people into the region, drastically changing and diversifying its demographics (Lisova 2012: 126, Fakhrutdinov 2015: 51-54). During this phase, the newly established state-level society of the Golden Horde secured trade and created a relatively secure and stable period for commercial activity and the expansion of previously existing craft production systems, which led to the further development of the Great Volga trade route (Kirpichnikov 2015: 82-89, Lisova 2012: 126). This led to an intensification of urbanization in the region along with the rise of new major and minor settlements (Lisova 2012: 126). It was during this early phase that the Golden Horde established Kazan. The late phase of the Golden Horde period is understood as the plateauing of economic and urban development and the decline and eventual fragmentation of the Golden Horde state (Izmailov 2015: 55-63, Valeev 2015: 92). Armed conflicts with neighbors along with domestic stress resulted in the inability of the Golden Horde state to continue to manage its large swaths of territory (Izmailov 2015: 55-63). Raiding destroyed the settlements of Bolgar and Juketau during this period and the majority of economic development shifted towards Kazan, which acted as the political and economic center for the Kazan Khanate during the Kazan Khanate period (Izmailov 2015: 55-63, Taagepera 1999: 216-217, Valeev 2015: 92).

Settlement of Bolgar

The first records of the establishment of the settlement of Bolgar date back to the 7th century and are from Byzantine sources that refer to the emergence of a tribal society known as Onogundurs or “the nation of ten arrows” (Sitdikov and Izmailov 2015: 12-14). Largely referred to as the Khanate of Volga Bulgaria, this tribal society centered itself on the settlement of Bolgar, which served as its capital until the Mongol invasions of the 13th century (Sitdikov and Izmailov 2015: 12-14). During the Pre-Mongol period, the significant geographic location of the settlement on the Volga and connections to neighboring groups allowed it to grow a unique urban-style organization that centralized its production and management (Sitdikov and Izmailov 2015: 12-14). By the end of the Pre-Mongol period, Bolgar had established a state-level society with a complex hierarchy of social, professional, and ethnic relationships (Baranov 2015: 234-237). Despite this, the Mongol invasions of the 13th century destroyed the settlement (Baranov 2015: 234-237). However, Bolgar was rapidly reconstructed and quickly became the political and economic capital of one of the Mongol Empire’s successor states, the Golden Horde (Baranov 2015: 234-237).

The elites of Bolgar took an active role in the management of craft production, leading to the development of public workshops dedicated to mass craft production (Baranov 2015: 234-237). Domestic production of craft goods also occurred in great quantities despite the use of public workshops in varying districts of the settlement (Baranov 2015: 234-237). High levels of professionalism and engineering works occurred throughout the urban space of the settlement, presumably to create a concentration of administrative efforts for the control of the productive forces of Bolgar (Baranov 2015: 234-237). The placement of the largest “industrial” workshops for craft production was on the outskirts of the settlement (Baranov 2015: 234-237). In addition,

markets were often joined with workshops presumably in order to minimize the impact on urban organization (Baranov 2015: 234-237).

The economy flourished during the Golden Horde period as goods from across the Islamic world of the 14th century arrived at Bolgar (Poluboyarinova 2015: 100-113). The findings of “exotic” Spanish ceramics within the settlement during the Golden Horde period are one of many examples of the far-reaching trade relations of the settlement (Koval 2016: 121). Bolgar also used the labor of captive artisans and experts of various backgrounds to maintain the settlement’s infrastructure and demand for high-quality materials (Baranov 2015: 237). The captive artisans allowed Bolgar to make significant advancements in its industrial production of Group 1 ceramics, glazed ceramics, and ceramic kilns (Baranov 2015: 237, Lisova 2012: 126-127, Vasilyeva 2015: 156-159). This became an important element in the development of the settlement as well because captive artisans also provided the settlement with the necessary knowledge of techniques and technologies to improve the quality of production methods of craft goods like the settlement’s ceramics (Baranov 2015: 237). Overall, this fostered Bolgar’s growth and allowed for innovative solutions to the settlement’s organizational problems as it expanded outward (Baranov 2015: 237). This provided a satisfactory living situation for its inhabitants and prevented overextension (Baranov 2015: 237).

The settlement of Bolgar served as the economic and political center for the Middle Volga during the Pre-Mongol and Golden Horde periods (Baranov 2015: 234-237, Fakhrutdinov 2015: 46-54, Sitdikov and Izmailov 2015: 12-14). The concentration on creating an efficient industrial organization allowed the elites of the settlement to produce large quantities of craft goods (Baranov 2015: 234-237). Cities and military outposts of the Golden Horde in the Middle Volga relied heavily on Bolgar’s industrial ceramic production (Nigamaev 2017: 239-242).

Group 1 ceramics were the style of ceramics produced in Bolgar's industrial workshops (Nigamaev 2017: 239-242). Nearing the end of the Golden Horde period, settlements began to rely more heavily on domestic pottery due to the proposed lack of access to Bolgar and the decline there of industrial craft production (Nigamaev 2017: 239-242). Domestic production of craft goods also allowed for the diverse populations of the settlement to meet the more specific domestic demands of the settlement (Baranov 2015: 234-237). Bolgar's extensive network of relations with outside groups in addition to its wealth allowed for the settlement to possess high purchasing power of "exotic" goods (Poluboyarinova 2015: 100-113, Koval 2016: 121). However, the end of the Golden Horde period saw the settlement destroyed by competing groups along its border (Izmailov 2015: 56-63, Krasnov 2015: 219, Valeev 2015: 92-97). In the early 18th century, Peter the Great and the governor of the Kazan province founded the current-day Bolgar village in the ruins left from the original Bolgar settlement due to its historical legacy in the region (Zabirova 2015: 362). Bolgar was one of the primary economic and industrial centers of the Golden Horde, attracting various groups from across the region to partake in its trade and production (Baranov 2015: 234-237, Koval 2016: 121, Valeev 2015: 92).

Settlement of Kazan

In contrast to Bolgar, the Golden Horde established Kazan as a frontier settlement during the 13th century and it therefore had not existed previously. Initially, Kazan was located in the Finno-Ugric territories of the Mari (Taagepera 1999: 216-217). However, the Golden Horde drove many Mari away from their territory and then the settlement of Kazan was established (Taagepera 1999: 216-217). During the Golden Horde and Kazan Khanate period, the settlement experienced a symbiosis of the Turkic and Finno-Ugric cultures (Taagepera 1999: 216-217). The

heaviest mixing of Finno-Ugric and Turkic traditions occurred at this settlement, more so than at Bolgar (Taagepera 1999: 216-217). Its geographic location along the Volga River provided the settlement with a favorable location to acquire trade going up and down the river (Taagepera 1999: 216-217).

Kazan was a wealthy settlement during the Golden Horde period and primarily acted as the “meeting point” between the Finno-Ugric populations to the north and the Turkic populations to the south (Taagepera 1999: 216-217). Organizational and production methods found in other wealthy settlements in the region are also found at Kazan (Taagepera 1999: 216-217, Vasilyeva 2015: 156). By the late phase of the Golden Horde period, the economic center of the Middle Volga region had shifted to Kazan (Izmailov 2015: 60-61). Once the Golden Horde had fractured in the mid-15th century, the Kazan Khanate named Kazan as its capital and provided the khanate with the necessary production to prevent Russian acquisition of the settlement for the next century (Izmailov 2015: 60-63, Valeev 2015: 92). Overall, Kazan served as both an important political and economic center for the Golden Horde in the Middle Volga (Taagepera 1999: 216-217, Valeev 2015: 92). However, after the destruction of Bolgar and the fragmentation of the Golden Horde, Kazan assumed the role of the regional economic base, securing the trade and production of its neighboring settlements (Valeev 2015: 92).

Settlement of Bilyar

Turkic groups established the settlement of Bilyar during the 10th century and it acted as an important “meeting point” for groups to the West and to the East (Khlebnikova 2015b: 68). Bilyar served as one of several urban centers of the Khanate of Volga Bulgaria of the Pre-Mongol period (Sitdikov and Izmailov 2015: 16). Unlike the other settlements included in this

study, Bilyar is not located on either of the major rivers of the region, the Volga or Kama (see Figure 1) (Valeev 2015: 48). However, Bilyar is situated along a minor river called the Cheremshan River; it is important to note that this river is not accessible by boat like the Volga and Kama rivers (Valeev 2015: 48). Bilyar is also noted for having a significant social status for the Turkic groups of the Middle Volga and it is largely described in the written sources as the “Great Town” of the pre-Mongol period (Valeev 2015: 53). The population of Bilyar prior to the invasion of the Mongols is estimated to be around 100,000 inhabitants (Khalikov 1989: 93). Given this significant status, Bilyar played an important role in the ethnic processes that led to the formation of state entities and identities as is observed in the hybrid groups of ceramics that emerge at the settlement (Bakhmatova 2016: 127-137).

During the 12th century, the Khanate of Volga Bulgaria moved its political and economic efforts deeper into its territory to the settlement of Bilyar (Valeev 2015: 54). This repositioning of the state’s economic and political foci to Bilyar is often associated with growing tensions and conflicts with the Russian principalities to the West, which negatively affected Bolgar more than Bilyar (Valeev 2015: 53-54, Khlebnikova 2015a: 68). However, during the Mongol invasions of the 12th century, the settlement of Bilyar was destroyed, as was Bolgar (Valeev 2015: 53). The Golden Horde period saw the reconstruction of the settlement of Bilyar (Khalikov 1989: 93). However, the settlement never obtained again the same economic significance it had in the Pre-Mongol period (Khalikov 1989: 93). Bilyar did retain its regional spiritual significance and continued to act as an important “meeting point” throughout the Golden Horde period. It was an important site for the ethnic processes that led to the formation of Bolgar-Tatar ceramics similar to those of the settlement of Juketau (Bakhmatova 2016: 127-137).

Settlement of Juketau

Similar to Bilyar, the settlement of Juketau was established in the 10th century (Bakhmatova 2016: 128). Its establishment is attributed to a group of previously nomadic Guza-Cumans who were subjects of the Khanate of Volga Bulgaria and affiliated with the elites of Bolgar (Bakhmatova 2016: 128). Juketau is located along the Kama River near the intersection of the Volga and Kama rivers (Bakhmatova 2016: 128). The emergence of Group 13 ceramics is attributed to migration of the Guza-Cumans to the Middle Volga and establishment of Juketau (Bakhmatova 2016: 128). The ceramic techniques brought by the Guza-Cumans to Juketau account for the unique sets of attributes found in Group 13 ceramics (Bakhmatova 2016: 128, Khlebnikova 1984: 21-26). Similar ceramic attributes are found to the east of Bolgar in the steppes of modern-day Kazakhstan (Khlebnikova 1984: 21-26, Khlebnikova 2015b: 144-145). Juketau ceramics can be found in the various other significant settlements of the region like Bolgar and Bilyar (Khlebnikova 1984: 21-26, Bakhmatova 2016: 136).

After the Mongol invasions and during the Golden Horde period, the settlement of Juketau assumed the role of an important regional political and economic center (Izmailov 2015: 60-63). While an important settlement of the Middle Volga region, Juketau never assumed the same significance as Bolgar (Izmailov 2015: 60-63). However, Juketau grew significantly during the Golden Horde period similar to the settlements of Kazan and Bolgar (Izmailov 2015: 60-63). Juketau significantly increased its level of craft production, including the production of ceramics, to support its status as a regional commercial center (Bakhmatova 2016: 134-136, Valeev 2015: 90). Smaller settlements that were more specialized arose around Juketau to support and maintain its growth (Valeev 2015: 90). The political elites of Juketau served an important role during the fragmentation of the Golden Horde and attempted to influence the political alliances

of the region (Valeev 2015: 90-95). However, the settlement was destroyed in the 15th century due to conflicts with the Russian principalities (Valeev 2015: 90-95). The destruction of Juketau ended the settlement's status as an economic and political center (Valeev 2015: 90-95). The settlement was never rebuilt, but its importance with regard to ethnic processes in the region largely influenced the development of other industries and ceramic groups (Khlebnikova 2015b: 144-145, Bakhmatova 2016: 125-134). Ceramic groups 7, 8, 18, 20, 21, 24, and 26 are all noted for the influence of Juketau on their development (Bakhmatova 2016: 125-134).

Literature Review

Ethnicity and Archaeological Theory

In addressing the region of the Middle Volga, concepts like ethnicity are often used to describe the boundaries between groups, and various stylistic attributes, techniques, and technologies are sometimes connected with ethnic groups, whether singular or multiple. This presents challenges in approaching this region because the concept of ethnicity itself has a complex history with the core definition of its meaning being much debated over time (Jones 1997: xxi). Therefore, it is important to define these concepts of ethnicity, ethnic group, and ethnic identity in order to conceptualize the processes occurring within the Middle Volga.

Starting with ethnic identity, or the smallest form of ethnic attribution, this concept is defined as a matter of self-ascription and the ascription by others within the broader group in opposition to other groups based on perceived cultural differentiation and/or common descent (Barth 1998a: 5-6, Jones 1997: xxi). The most general feature of ethnic identity is that it behaves as a status marker and does not rely on the control of any specific assets but rather largely depends on the criteria of origin and commitment to its ascription (Barth 1998b: 28). Ethnic

identity does not require any performance in order to act out or realize the identity (Barth 1998b: 28). The second concept to consider is ethnic group. An ethnic group is also created by self-ascription, when any set of people segregates itself from other groups based on perceived cultural differentiation and/or common descent (Jones 1997: xxi). Ascription to an ethnic group is based on the same restrictive criteria as ethnic identity (Barth 1998b: 27-28). However, a social system or organization may stratify members of the ethnic group according to their positions and disabilities overall, but this does not impact one's identification with an ethnic group and thereby, ethnic group identification is not bound to varying levels of status in the same way political or economic status identification may be (Barth 1998b: 27-28).

The overall concept encompassing both ethnic identity and ethnic group is that of ethnicity, which is constructed starting with the individual and then by the overall group (Jones 1997: xxi). Ethnicity is defined as all the social and psychological phenomena associated with a social-cultural group based on the criteria identified with ethnic identity and ethnic group (Barth 1998a: 6, Jones 1997: xxi). Of great importance in relation to ethnic boundary making is the way in which group membership intersects with the varying social and cultural processes occurring in a social organization (Barth 1998a: 6, Jones 1997: xxi). In approaching the concept of ethnicity as an overarching principle of social organization, one's ethnicity is constructed through interactions and by boundary construction with other ethnic groups (Barth 1998a: 6, Jones 1997: xxi). In addition, participation in certain social situations and exchanges can mobilize the criteria that define one's ethnicity, thereby further constructing boundaries between ethnicities or maintaining them (Barth 1998a: 6, Haaland 1998: 69). Potentially this boundary construction between varying ethnicities is visible through economic standards and determinants (Haaland 1998: 68-69). Ethnicity and group ethnic identity can be marked by changes and /or stylistic

standardization in economic processes occurring within a group's social organization and in interactions with neighboring groups (Jones 1997: 26-28, Haaland 1998: 54-69).

Beyond the overarching political, historical, and economic processes affecting ethnicity, it remains important to identify an engagement with ethnicity in material culture (Jones 1997: 141-143). Archaeological studies have attempted to identify the boundaries and frontier spaces associated with ethnicity by observing the style of artifacts, techniques, and production of artifacts demonstrated in the archaeological record (Jones 1997: 113, 141-143). In addition, ethno-archaeological studies on social stress in relation to communication and signaling have been used to identify the disruption, alteration, and creation of social relationships and associations to varying social identities like ethnicity (Jones 1997: 113-115).

An example of an ethnographic study that relates to signifying larger social entities, like ethnicity, is the study published on Kalinga clay selection and use in relation to signaling social boundaries in the Philippines by Miriam Stark, Ronald Bishop, and Elizabeth Miksa (Stark, Bishop, and Miksa 2000: 295–331). The study found that in instances of social stress, for example tribal warfare and political campaigning, local production systems led to social affiliations becoming focused on larger entities like ethnic groups rather than the local community (Stark, Bishop, and Miksa 2000: 302-303). Additionally, the study found that local neighboring communities, associated with different ethnic groups, exhibited distinguishing morphological and stylistic attributes in their ceramics during times of social stress, such as when work, travel, and general safety were impacted (Stark, Bishop, and Miksa 2000: 303-304). The broad framework for the interpretation of change in material culture, such as Kalinga ceramic production, is built around the concept of *habitus* as suggested by Pierre Bourdieu (Dietler and Herbich 1998: 246-248, Jones 1997: 116-119). Change in material culture, such as

in the Kalinga study and potentially in the Middle Volga, manifests itself at the intersection of meanings embodied in both the material and non-material worlds, where acting agents strategically behave based on Bourdieu's concept of the *habitus* (Dietler and Herbich 1998: 246-248, Jones 1997: 119).

Overall, in order to understand changes in technique and material culture, it is necessary to understand three aspects of social organization (Dietler and Herbich 1998: 248). First is the *habitus*, which structures human responses to societal problems, demands, and/or opportunities (Dietler and Herbich 1998: 248). In addition, material culture forms and influences the dispositions that constitute the *habitus* of the acting members of any associated social group (Dietler and Herbich 1998: 248). Furthermore, the social problems or demands that provoke responses result in societal shifts (Dietler and Herbich 1998: 248). Therefore, the interactions of varying peoples' *habitus*, economically and socially, leads to the construction of the larger concept affiliated with this study, ethnicity (Jones 1997: 126). By comparing context to historical processes, it may be possible to identify self-conscious ethnic symbolism based on material variation, both stylistic and technical (Jones 1997: 126).

Moreover, this theoretical framework based on *habitus* recognizes that the existence of a coherent, monolithic ethnic entity classifiable across all cases of change in social organization likely does not exist (Knutsson 1998: 99-100, Jones 1997: 126). Ethnicity is not one universally applicable term but rather the term comes to represent the wide range of varying interactions between individuals and groups amongst and between themselves (Knutsson 1998: 99-100). The case for ethnicity here is not that material culture inherently reflects the boundedness of ethnic units but rather material culture can be used to signify ethnicity under varying contexts (Jones 1997: 126). Individuals and groups consume material culture in various ways and incorporate it

into various symbolic structures according to specific historical traditions and social contexts (Jones 1997: 126). Fundamentally, the symbolic meanings of material culture may change through time, whether gradual or radical, or the general form of material culture can remain the same (Jones 1997: 126). Material culture can change in its meaning drastically through time, thus the importance of historical context in understanding the relationship between ethnicity and material culture and the need to understand the representation of identification and boundaries between social units (Jones 1997: 126-127).

Boundaries, Ceramics, and Style

With regard to the significance of ethnicity in relation to material culture, ceramics can be used to represent ethnic identifications through defining stylistic attributes in contrast to surrounding social units, thereby helping to delineate the boundaries between social units given appropriate historical contexts (Jones 1997: 126-129, Stark, Bishop, and Miksa 2000: 296–301, 302-303, Sterner 1989: 451–459). Stylistic meanings in ceramics and other forms of material culture may come to signal varying representations of ongoing processes of historical change observed in material culture (Hegmon 1992: 524-526). Conversely, the material culture may also come to represent meanings non-specific to anything in particular in relation to historical context (Hegmon 1992: 524-526). Therefore, we can understand style as being contingent on a number of factors (Parkinson 2006: 36). These factors include references to general (sociocultural) and specific (interpersonal) relationships, abstract values and ideals guiding behavior, personal motivation, and individual ability (Parkinson 2006: 26). If we account for a particular historical and social-political context associated with a specific material culture, whether that includes ceramics or not, a degree of interpretation of stylistic variation is possible and specific

boundaries and their processes may then be represented stylistically (Hegmon 1992: 524-526). In addition, considering the dimensions of stylistic variation amongst artifact classes, boundaries can be represented horizontally or vertically within the social hierarchy in relation to the particular region and historical context of study (Hegmon 1992: 526).

Ethnographic studies have also revealed that ceramic style can distinguish between ethnic and various other social groups, when certain stylistic attributes became specifically associated with them (Hegmon 1992: 527-529, Stark, Bishop, and Miksa 2000: 302-324, Sterner 1989: 451-459). Style can be intended to signal to various groups and the communication of style with ceramics is not always directed overtly towards other groups (Sterner 1989: 451-459). Groups can communicate through style in various directions (Stark, Bishop, and Miksa 2000: 302-303, Sterner 1989: 458-459). Groups can signal internally within the context of their immediate group, towards other groups in boundary creation, or potentially both internally and externally to convey various meanings, one of which can be boundary creation (Stark, Bishop, and Miksa 2000: 302-303, Sterner 1989: 458-459).

Style in material culture can both facilitate the exchange of information by conveying group affiliation as well as serve a functional and adaptive purpose (Jones 1997: 113). Based on studies of the Kalahari San, Polly Wiessner argued that style behaves as one of the many channels whereby groups can communicate identity as well as project identity onto one another within the group (Jones 1997: 113). Individuals and groups can mobilize style to disrupt, alter, and create new social relations (Jones 1997: 113-114, Wiessner 1983: 257-258). Ian Hodder elaborated on this point by conducting studies in Kenya, Zambia, and Sudan (Jones 1997: 114). Hodder argued that groups maintained distinctions in material culture in order to justify future competition between groups as well as negative reciprocity in the future and that these

distinctions increased in times of economic stress (Hodder 1979: 446–454, Jones 1997: 114).

However, Hodder also stressed that groups that employ distinctions of style for adopting variable adaptive strategies depend on the internally generated symbolic schemes within groups (Hodder 1982:186, Jones 1997: 114). There is no direct relationship between the degrees to which groups engage in material culture patterning and how they negotiate style to employ various strategies to engage in between-group competition (Hegmon 1992: 526, Jones 1997: 114-115).

As suggested previously, groups may use style in material culture and potentially ceramics to employ various strategies to retain distinct identities amongst their communities or to signal boundaries internally and/or externally (Stark, Bishop, and Miksa 2000: 302-303, Sterner 1989: 458–459, Hodder 1982:186, Wiessner 1983: 257–258, Jones 1997: 113-115). However, it is also important to note that it is entirely possible for groups to signal or choose certain strategies of boundary creation or deconstruction that have no reference to their material culture and, therefore, certain boundary creation strategies would be invisible to archaeologists (Jones 1997: 113-115). Context and other lines of support beyond material culture are deeply important for understanding how groups employ style in material culture, whether ceramics or not, to devise strategies of boundary creation (Jones 1997: 126-129, 114-115).

Using the middle-range theoretical principles derived from various ethnographic and ethnoarchaeological contexts, archaeologists have developed methodological techniques for using stylistic attributes in material culture (Parkinson 2006: 34). In a study of the Great Hungarian Plain from the early Neolithic to the beginning of the Copper Age by William Parkinson, Parkinson employed a method of stylistic ceramic variability analysis, in conjunction with inferences supported by settlement pattern data, to determine the levels of social boundary maintenance through time (Parkinson 2006: 33-54). Parkinson's study demonstrates how stylistic

variation in ceramics supported by archaeological data on settlement patterning provides a promising avenue to understanding of the long-term processes of boundary creation and maintenance (Parkinson 2006: 52-54). However, Parkinson concluded in part that stylistic variations in ceramics require understandings gathered from ethnographic and ethnohistoric contexts in order to draw conclusions on the mechanisms that are associated with internal and external boundaries at a local, regional, or macro-regional scale (Parkinson 2006: 52).

Research like that of Hodder, Parkinson, and Wiessner emphasizes the active role style can take in symbolizing identity and the negotiation of various social relations through strategic and timely uses of meaning in material culture (Hodder 1979: 446–454, Parkinson 2006: 33-58, Jones 1997: 115, Wiessner 1983: 259-260). Sterner's study of ceramics with the Sirak Bulahay and Stark's study on the ceramic production of the Kalinga in the Philippines highlight how style is signaled internally and externally depending on the ongoing sociocultural, economic, and political processes affecting the general production of ceramics (Stark, Bishop, and Miksa 2000: 295–331, Sterner 1989: 451–459). In addition, the examples of the Kalinga and Hodder's study on the Lozi in Zambia show how ethnic groups or local communities do not always mobilize style in material culture in order to reference distinct ideas and boundaries (Hodder 1981: 67–95, Stark, Bishop, and Miksa 2000: 295–331, Jones 1997: 115). Style in material culture can communicate boundaries between groups and/or the processes of maintaining those boundaries so long as the factual historical context supports the claim for style's active role in the period of interest (Hegmon 1992: 526).

Distance Decay and Ceramics

Patterning in stylistic variation of ceramics and other material culture is also certainly explainable through their distance from their source of manufacture rather than as a reflection of social boundaries (Hodder 1979: 446). In the linear distance decay model, the probability of contact between groups is related to the distance between groups in a negative linear relationship (Hodder 1979: 446, Renfrew 1977: 75). Therefore, we can expect that as distance increases between groups the amount of group-to-group interaction decreases (Renfrew 1977: 75). In addition to the linear distance decay model an exponential distance decay model has also been discussed; however, the condition required here is that reduction in interaction as a function of distance is proportional to the number or quantity of materials at the point of origin (Renfrew 1977: 75, 79). Robin Haynes discussed this exponential model for distance decay and explained how this model makes no statement about the number of transactions occurring in regards to the goods transferred from their source (Haynes 1974: 90-104, Renfrew 1977: 79). Overall, in regards to both the linear and exponential models for distance decay, the patterning of artifacts should generally decrease at a measurable rate, whether that is linear or exponential (Renfrew 1977: 79).

An alternative model for explaining the patterning of material culture and in reference to ceramics is the down-the-line model (Renfrew 1977: 77). This model imagines villages arranged in a linear trade network and equally spaced apart (Renfrew 1977: 77). Each village receives a particular commodity from its neighbor that is nearer to the source and uses some of that commodity for its own use (Renfrew 1977: 78). The main assumption within this model is the uniform distribution of the villages as well as a uniform distribution of population across the villages (Renfrew 1977: 78). This model also does not refer to the number of transactions

occurring with the flow of goods and exhibits an exponential relationship between the probability of interaction and the distance from the source (Renfrew 1977: 78). In general, this model still expects the patterning of artifacts to decrease at a measurable rate from the source of the artifact (Renfrew 1977: 78).

These models, which explain the relationship of the patterning of artifacts and their distance from the source, are largely intended to highlight what is to be expected in an ideal situation, without any other outside influencing social factors (Hodder 1979: 446). Other social factors might influence the relationship between the distribution of artifacts and distance from their source (Hodder 1979: 446). Major structural changes in the organization of society and the growth of social and/or economic tension between communities may indicate to us deviations from these models (Hodder 1979: 453, Renfrew 1977: 87-88). It also opens up the possibility for political-economic, social, and cultural-symbolic dimensions to be considered along with changes to the system being observed (Hodder 1979: 453, Renfrew 1977: 87-88).

Integrating Theory and Middle Volga Ceramics

Ceramics in the Middle Volga are numerous and each season produces about 8,000 to 12,000 s just at the settlement of Bolgar, while each excavation unit at Bolgar tends to have around 15,000 to 16,000 sherds total on average (Khlebnikova 2015b: 138). With regard to relating these ceramics to ethnic groups, most ceramic groups tend to be recovered alone from inside domestic spaces or workshops (with the exception of group 1 ceramics) and restricted to various regions of the settlement (Baranov 2015: 234-237). The ceramic groups found in the domestic spaces of the major settlements tend to account for the majority of the ceramics recovered at the surrounding villages (see Figure 1) (Bakhmatova 2016: 125–143, Kuptsova

2017: 219–221, Mikheev and Mikheeva 2016: 169–181, Nigamaev 2017: 239–242). In addition, the raw material used by the inhabitants of Bolgar specifically to create their ceramics varies significantly between pottery groups (Bakhmatova and Sitdikov 2017a: 255–281) (Bakhmatova, Khramchenkova, and Sitdikov 2017b: 126–146). For the more industrial group 1 ceramics, a source for the raw material of the pottery came from the Kuibyshev reservoir, which is 140km away from Bolgar (Bakhmatova and Sitdikov 2017a: 273–278). Smaller settlements or villages during the Golden Horde period, like that of Nosely III (located near Kazan), Elabuga (located near Juketau), and Kirmensky (located near Juketau), are predominantly composed of a single ceramic group (Kuptsova 2017: 219–221, Mikheev and Mikheeva 2016: 169–181). In contrast, a major settlement, like Bolgar, from the same period may be composed of all ceramic groups to varying levels of representation (Khlebnikova 2015b: 138, Bakhmatova 2016: 125–143).

Unlike prehistoric settlements, the Middle Volga region during the Golden Horde period has numerous written sources documenting the social and political events of the period from Arab, Russian, and Tatar scholars (Izmailov 2015: 56, 60-61, Kirpichnikov 2015: 89, Valeev 2015: 91, 96-97, 101, 104, 108, Sitdikov and Izmailov 2015: 13-16). Written sources and archaeological findings provide historical context for the Middle Volga during the Golden Horde period and into the Kazan Khanate period and can be related to the situation explored in the study done on Kalinga clay selection (see Table 1) (Valeev 2015: 96-97). Warfare and political campaigning between sociocultural and political entities occurred quite frequently throughout the period and safety during this period could not be guaranteed, therefore we may expect a similar general patterning in the stylistic and morphological attributes of ceramics (Izmailov 2015: 56-63, Krasnov 2015: 219, Valeev 2015: 92-97, Stark, Bishop, and Miksa 2000: 303, 323–325). The periods of warfare and political campaigning in the Kalinga example led local communities of

different village allegiances to distinguish their pottery despite their close proximity, whereas this patterning was not observed during periods of relative peace (Stark, Bishop, and Miksa 2000: 302–303). Given the historical context of the region, ceramics in the Middle Volga during this period may come to represent the social boundaries between groups, such as ethnic groups, in order to allow various social relations to be negotiated, to intensify competition, and/or justify negative reciprocity (Hodder 1979: 446–454, Jones 1997: 114). This may be accomplished through disrupting, altering, and/or creating new social relations and for mobilizing style in material culture to signify identities (Parkinson 2006: 33-58, Jones 1997: 115, Wiessner 1983: 259-260).

If we use a distance decay model to explain the patterning of ceramics in the Middle Volga region, then we should expect the distribution of the ceramics to decrease as the distance from the source increases (Renfrew 1977: 75-78). A preliminary observation of the distribution of ceramics at various settlements would suggest that the patterning deviates from the distance decay model (Bakhmatova 2016: 125–143, Kuptsova 2017: 219–221, Mikheev and Mikheeva 2016: 169–181, Nigamaev 2017: 239–242). Therefore, this study will observe the patterning of stylistic attributes in ceramics across the four major settlements in the region during this period to understand if the patterning fits the distance decay model or if there are other factors influencing the distribution of ceramic styles in the region. A deviation away from the distance decay model may be explained by social and/or economic tensions between communities as well as major structural changes in the Middle Volga during the Golden Horde period (Hodder 1979: 453, Renfrew 1977: 87-88). Supported by the historical context of the region and in relation to the archaeological theory discussed, ceramics in the Middle Volga during the Golden Horde period may hold the potential to represent the boundaries between various ethnic groups due to

the social, political, and economic tensions that occurred (Izmailov 2015: 56-63, Krasnov 2015: 219, Nigamaev 2017: 239-242, Valeev 2015: 92-97).

Hypotheses

To form the hypotheses of this study in order to predict the patterns of the stylistic attributes of ceramics observed in the Middle Volga, the outline for various interpretations based on patterns in stylistic attributes proposed by Parkinson is used in relation to the historical context of the period and region (Parkinson 2006: 37). The hypotheses of this study use the various synthesized interpretations produced by Parkinson, also proposed by Carr and Voss and Young, for the distribution of high- and low-visibility characteristics given the spatial distribution at both local and regional scales (Parkinson 2006: 37, Carr 1995, Voss and Young 1995). The synthesized approach of Parkinson attempts to interpret the patterns of the visibility of stylistic attributes and their distribution between units (Parkinson 2006: 37). For this study, units at the local scale refer to zones belonging to a single settlement. Units at the regional scale of the Middle Volga refer to settlements. The basic assumption underlying the approach of Parkinson is that homogeneity within a single unit is indicative of a high degree of active or passive interactions within the single unit, regardless of the visibility of a stylistic attribute (Parkinson 2006: 38). This provides an outline for rough interpretation of the patterns in stylistic attribute distribution and are, nevertheless, susceptible to alternate explanations given various social contexts (Parkinson 2006: 38). This study explores the variability in the stylistic attributes of ceramics assemblages at the local level of Bolgar and the regional level of the Middle Volga with Bolgar in relation to Bilyar, Kazan, and Juketau. Bolgar is the type-site for this study. The

statistical data from ceramic assemblages at the site will be explored in relation to other ceramic studies on the sites of Bilyar, Juketau, and Kazan.

Specifically in relation to Bolgar, if we expect that the settlement is maintaining very permeable local boundaries and continuous local ceramic exchange, then we can expect Group 1 ceramics of Bolgar to be highly visible at all of the site's commercial, domestic, and industrial zones. Group 1 ceramics are highly standardized and mass-produced general wares from the industrial workshops of the settlement of Bolgar (Baranov 2015: 237, Khlebnikova 2015b: 138: 138, 148-155). Group 1 ceramics have a unique combination of various stylistic attributes that make them easily identifiable in comparison to other ceramic groups (see Table 2) (Khlebnikova 2015: 138: 138). Group 1 ceramics also are of a red color specific to their style of firing, diverse in shape, and ornamented with incised straight lines, wavy patterns, and combed-shape stamps (Khlebnikova 2015b: 138: 138, 148-155). Their ornamentation location is on the neck and shoulder and they have the unique composition of fine clay, inconspicuous admixtures of sand, occasionally finely ground chamotte, and plant residue (Khlebnikova 2015b: 138: 148-155). Chamotte, or grog, is fired ceramic material that has been crushed and grounded to be added into a clay composition as temper. Potential sources for the clay of Group 1 ceramics can extend up to 140 kilometers from the settlement of Bolgar to the Kuibyshev reservoir, potentially unlike the other ceramics groups produced in Bolgar during the Golden Horde period (Bakhmatova and Sitdikov 2017: 276-278).

In relation to distance-decay, we may predict that the settlements of Bilyar, Kazan, and Juketau will display descending visibility of Group 1 ceramics in this respective order (see Table 3 and Figure 1). It is also important to note that the distance-decay model may not fit well as all the Middle Volga settlements but Bilyar are located on a major river, either the Volga or Kama

River. Travel across these rivers in the Golden Horde period was frequent and may have been quicker to arrive at the settlement of Juketau from Bolgar than to first arrive at the inland settlement of Bilyar (Poluboyarinova 2015: 100). However, written records from the period and region indicate that travel across the rivers may have been riskier than traveling across land due to the use of the rivers by raiding groups coming from the West (Sitdikov and Izmailov 2015: 15, Fakhrutdinov 2015: 53).

In relation to ceramic groups of domestic pottery production, if we expect the site of Bolgar to be an important center of ceramic exchange within the Middle Volga, maintaining very permeable regional boundaries, and with extensive commercial activity, then we can expect Group 13 and Group 16 ceramics to both have a higher visibility at commercial and domestic zones in Bolgar. This is in contrast to the industrial zones at Bolgar. In applying the distance-decay model, we should expect to find a larger proportion of Group 13 ceramics rather than Group 16 ceramics in Bolgar dating between the 13th and 15th centuries. Juketau and Bilyar are closer in distance to Bolgar than Kazan (see Table 3 and Figure 1).

Both Group 13 and 16 are associated with domestic pottery production within the settlement of Bolgar and each has its own sets of identifiable stylistic attributes that distinguish it from the other groups within the Middle Volga (see Table 2) (Baranov 2015: 234-237, Khlebnikova 2015b: 138: 148-155). Group 13 ceramics or “Juketau” ceramics originate at the settlement of Juketau and their stylistic attributes resemble stylistic attributes of ceramics found at sites in the region of modern-day Kazakhstan (Khlebnikova 1984: 167-168, Khlebnikova 2015b: 148). The combined stylistic attributes of Group 13 ceramics include a yellow to red color, pot and/or bowl shape, and ornamentation with an incised inclined multilevel wave of 1 to 2 bands along the shoulder with occasional combed-shaped stamps (Khlebnikova 2015b: 144). In

addition, the ornamentation of this group only occurs on the shoulders of pots (Khlebnikova 2015: 144). The composition of this ceramic group consists of a clay with a lot of visible sand and an admixture of fine limestone or a small amounts of crushed shells (Khlebnikova 2015b: 144). In contrast, if we see the following combination of stylistic attributes in ceramics of a grey color with a white or pink hue, pot shape, and ornamented with an incised horizontal wavy line at the top of the vessel, then this is likely signaling the presence of Group 16 ceramics at a site or settlement (Khlebnikova 2015b: 144). The ornamentation location for Group 16 ceramics is on the neck of pots (Khlebnikova 2015b: 144). In addition, the composition of Group 16 pottery consists of clay that is rich in crushed shells (Khlebnikova 2015b: 144).

The hypotheses proposed examine the combined stylistic attributes of three ceramic groups within the Middle Volga at Bolgar in relation to three other settlements dating to the Golden Horde period (see Table 4). At a regional scale, this section outlines each selected ceramic group's unique combination of ceramic form, decoration, and composition in relation to their potential presence at four major settlements in the Middle Volga. Using the model provided by Parkinson, the following analyses will explore the variability in the stylistic attributes of ceramic assemblages at the site of Bolgar in relation to studies that focused on the ceramic assemblages at the other settlements mentioned in this study: Bilyar, Kazan, and Juketau (Parkinson 2006: 37).

Hypothesis	If . . .	Then . . .
#1	Bolgar is maintaining very permeable local boundaries and continuous local ceramic exchange	Group 1 ceramics should be highly visible at all of the site's commercial, domestic, and industrial zones
#2	Bolgar is a significant center of ceramic exchange within the Middle Volga, maintaining very permeable regional boundaries, and with extensive commercial activity	Group 13 and 16 ceramics should both have a higher visibility at commercial and domestic zones than at the industrial zones of Bolgar

Table 4: Hypotheses. This figure displays the hypotheses of this study.

Methods

Ceramic exchange and production within the settlement of Bolgar existed in three modes: industrial workshop production, domestic production, and commercial exchange (Baranov 2015: 234-237). Settlements may have used these three dimensions to signal to other communities within the Middle Volga the social relationships and boundaries between one another. This study particularly focuses on the concept of ethnicity and its potential to be signaled through exchange networks and production systems. I have used ceramics to understand signaled boundaries through ceramic exchange and production at Bolgar and in relation to the other sites of Bilyar, Kazan, and Juketau. Bolgar is well suited for this kind of analysis given its historical context during the Golden Horde period of the Middle Volga. The settlement was situated in an economic, geographical, and social position to assume a significant role in regional exchange networks and production of ceramics (Baranov 2015: 234-237, Fakhrutdinov 2015: 46-54, Sitdikov and Izmailov 2015: 12-14). In addition, Bolgar possessed three distinct zones for ceramic accumulation, unlike other smaller more numerous settlements during this period in the Middle Volga: industrial, commercial, and domestic zones (Baranov 2015: 234-237, Izmailov 2015: 56). As it can be assumed that the method of production results in a different final product, ceramics produced in an “industrial” standardized context versus a domestic setting will likely result in separate distinct ceramic products given the historical context of the Middle Volga during the Golden Horde period (Baranov 2015: 234-237). Therefore, archaeologists may gain insights into the ways in which settlements and people establish social boundaries, maintain them, and influence regional ceramic exchange.

Ceramic Typology and Bolgar Zoning

For a study examining ceramic exchange and production within and between various sites in a particular region, it is necessary to have a system of classification. Fortunately, the Middle Volga region possesses a well-established unglazed ceramic typology for the Golden Horde period (Kokorina 2002: 1-11). This unglazed ceramic typology includes 22 regional ceramic groups (Khlebnikova, 1984: 21-26, 2015: 138-155, Bakhmatova 2016: 126). These groups are distinguished by visual traits (production techniques and vessel design) and by form (Khlebnikova, 1984: 21-26). All factors that demarcate each ceramic group involve unique combinations of color (associated with specific firing methods), surface treatment, shape, ornamentation, ornamentation location, form, molding-techniques, and the admixture of the clay (Khlebnikova, 1984: 21-26, Bakhmatova 2016: 126).

I used this typology to categorize 118 Bolgar ceramics vessels and flues, pipes used for conveying heat, from the 2017 Bakhmatova and Sitdikov study on clay extraction sources for Group 1 ceramics in Bolgar (Bakhmatova and Sitdikov 2017: 255–281). In addition, I have traveled to the site of Bolgar twice in the past two years during the summer to work with Bolgar ceramics in person and to understand their production through local experiments and the identification of the regional ceramic groups. This study is primarily concerned with the distribution of the ceramic groups 1, 13, and 16. However, other ceramic groups were documented and counted together as “other groups” when creating figures 2 through 9. These other groups constitute six separate ceramic groups: 7, 11, 14, 17, 18, and 19. Each of these ceramic groups has its own distinguishing characteristics that make it easily identifiable (see Table 4). In addition, another category of “imported ceramics” is included (Bakhmatova and Sitdikov 2017: 266, 276). These ceramics do not qualify for any regional group (Bakhmatova

and Sitdikov 2017: 276). Their origin is outside of the Middle Volga, which was determined by the chemical composition (Bakhmatova and Sitdikov 2017: 276). Their chemical compositions differ significantly from Middle Volga ceramics (Bakhmatova and Sitdikov 2017: 276).

For each of the ceramics, four attributes were recorded: color, shape, ornamentation, and admixture. For the admixture, six admixtures were recorded: grus, sand, pounded shell, crushed shell, chamotte, and plant residue. Grus is the accumulation angular, coarse-grained stone fragments and is visible in grus or grit tempered ceramics through identification of small fragments of weathered crystalline rocks. The texture and visual appearance of grus temper is significantly distinguished from clay. Grus temper's appearance can vary depending on the sampling of stone fragments used. Sand-tempered ceramics are easily recognizable by the gritty texture on the surface of the ceramic. If the sand temper contains large enough granules, the granules can be visible at the cross section of a sherd or even on the outer surface. Shell tempered ceramics are characterized by the white fragments of shell usually visible at the cross section of sherds. Depending on the processing of the shell temper, pounded or crushed, the size of the fragments will differ. Crushed shell temper produces smaller remaining fragments in the ceramic than does pounded shell fragments. Shell temper will appear thin and flaky with sharp edges if present in the ceramic. Chamotte temper is identifiable by its heightened angularity in contrast to the clay. If poorly ground, Chamotte temper can appear as clumps. However, it is important to note that when attempting to identify chamotte temper in ceramics, it can be difficult if the chamotte temper is the same clay as the host clay in the composition. Plant residue is easily identifiable in ceramics. In fired ceramics, indentations will remain in the shape of the plant residue on the surface after being burned away by the potter's chosen firing method.

Apart from identifying admixtures, color was recorded with the visible eye. Concerning shape, it is important in differentiating between pots, bowls, and cauldron-shaped ceramics. To determine shape, the ceramics were positioned upright to create a profile with the vessel's base in contact with a flat surface (see Figure 3). These three shapes assist the greatest in distinguishing between ceramic groups in terms of shape. Pots and bowls in the Middle Volga during the Golden Horde period typically have seven components: the mouth, lip, rim, neck, shoulder, body, and base (see Figure 3) (Kokorina 2002: 256-334). The mouth is the opening of a hollow vessel. The lip is the part of the vessel most distant from the base. The rim is the section of a vessel that is closest to the opening or mouth. The neck section of a vessel is the restriction on a vessel's orifice. The neck is above the maximum diameter of the vessel. The shoulder is the section of a vessel that is below the rim and neck but above the maximum diameter of the vessel. The body of a vessel is below the maximum diameter of the vessel and contains the largest volume of a vessel. The base is the lowest portion of a vessel and is in contact with the surface that the vessel is rested on. Bowls are distinguished from pots by their wide mouths relative to their height (see Figure 3). Pots typically have narrower mouths relative to their height. The more narrow mouths of pots allow them to be more easily sealed and used for storage. This is opposed to bowls, where their wider mouths typically are more useful for cooking and serving food. A cauldron-shaped ceramic is a large vessel with a round base and handles, which are used for suspending the ceramic over a fire.

To learn about the significance between various locations within Bolgar, I separated the ceramics into three zones based on five locations within medieval Bolgar in association with their general purpose (see Appendix A). These five locations include a southwestern workshop (excavation P. 70) and a upland workshop (excavations P.149, P. 151, and P.182), the central

Bolgar marketplace (excavation P. 162), domestic spaces located near the upland portion of the Bolgar fortification (excavation P.156), and at the eastern mausoleum in the central part of the Bolgar fortification (excavation P.168). These locations represent the three distinguished zones of this study: industrial, commercial, and domestic. The two industrial workshops are categorized as industrial zones. These workshops were part of the former large workshops that heavily produced standardized ceramics in Bolgar during the Golden Horde period (Baranov 2015: 234-237). Industrial zones are in contrast to domestic zones. Domestic zones include the eastern mausoleum and the homes in the upland portion of the fortification. In contrast to the large-scale production of ceramics at designated workshops, domestic ceramic production was also significant at Bolgar and is important to consider in a comparative analysis of ceramics at the settlement (Baranov 2015: 234-237). At both of these locations, the spaces were not designated for large production purposes. Lastly, there is the commercial zone, which is characterized by the central marketplace of Bolgar. The central marketplace was a space designated for the exchange of goods including ceramics as well as domestic dwellings.

I have also included the results of two studies about the distribution of ceramics at Bilyar and Juketau in the analysis for a comparison of ceramics at Bolgar. The first study is from 2002 and features an analysis of 597 ceramics at the site of Bilyar (Kokorina 2002: 368-369). The second study is from 2013, and features an analysis of 1069 ceramics at the site of Juketau (Bakhmatova and Nabiullin 2013: 234). Incorporating these two studies in a comparison with the ceramics of this study at Bolgar will allow the opportunity to observe the distribution of ceramics in the Middle Volga at a larger scale than just that of Bolgar.

Characteristic	Group 7	Group 11	Group 14	Group 17	Group 18	Group 19
Color	grey	grey, brownish-grey, or yellowish-grey	grey and sometimes with a white or pink hue	grey, yellowish-grey, or brownish-red	grey or brownish-grey	grey
Shape	pot	pot	pot	pot	pot, bowl, or cauldron-shaped	non-specific, but overwhelming majority are rounded cauldrons, kettles, and pots
Ornamentation	rope ornament (often with braids) made in 2-5 double rows and with notch or comb ornaments	rope prints from a cord wound on a stick or its imitation	straight lines often made in 3-4 rows	straight and wavy lines	comb stamps often representing a herringbone pattern and short pronged comb prints	bands with finger-shaped impressions sometimes with wavy lines, often adorned with stamps of rosettes and animals
Ornamentation Location	shoulder	neck and shoulder	neck and shoulder	neck and shoulder	rim and shoulder	shoulder and body
Composition	clay composition with admixtures of crushed/powdered shell	puddle clay composition with admixtures of sand and chamotte	clay or fine clay composition with quartzite and scree resulting in a crock of a three-layer type	clay composition rich with admixtures of fine sand, notable amount of impurities	clay composition with small amounts of pounded shells and limestone	sedimentary puddle clay composition with occasional sand and pounded limestone

Table 5: “Other Groups” Ceramic Characteristics. This table shows five characteristics that distinguish the ceramic groups of 7, 11, 14, 17, 18, and 19.

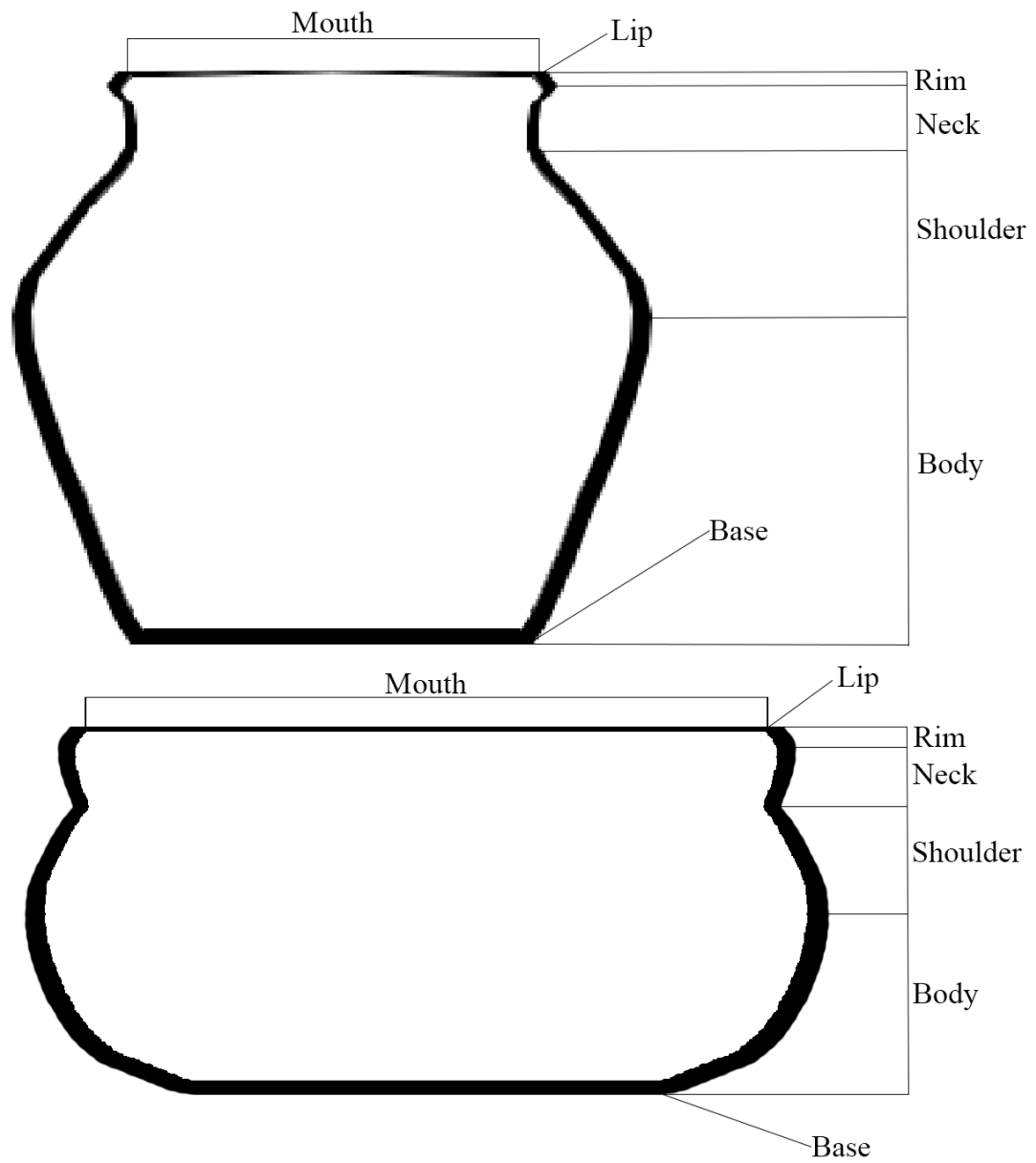


Figure 3: Pot and Bowl Sections. This figure shows the typical sections a pot (top) and a bowl (bottom) in the Middle Volga during the Golden Horde period.

Results

Frequency of Ceramic Groups in Bolgar

To begin my analysis, I had to first establish the frequency of ceramic groups between the five locations. Overall, the total number of ceramics is 118. Nine ceramic groups were represented in the 118 ceramics (see Appendix A and B). 73 of these ceramics are Group 1 ceramics, which represents 61.86% of all ceramics (see Figure 4). This is the largest represented group amongst all the ceramics. 16 of these ceramics are Group 13, which represents 13.56% of all ceramics (see Figure 4). Group 13 is the second most represented group amongst all the ceramics. Only two ceramics are Group 16 ceramics, which represents just 1.69% of all ceramics (see Figure 4). Group 16 is the second least represented ceramic group of all ceramics. There are 27 ceramics that were attributed to other ceramic groups and imported ceramics, which represents 22.88% of all ceramics.

At the southwestern workshop (P. 70) in Bolgar, there are 17 ceramics, which is 14.41% of all ceramics. All of these ceramics were Group 1 ceramics (see Figure 5). At the upland workshop, there are 32 ceramics, which is 27.12% of all ceramics. 22 ceramics are Group 1 ceramics, which represents 68.75% of all ceramics from this location. This is the largest group at the upland workshop (see Figure 6). Ten ceramics are Group 13 ceramics, which represents 21.25% of all ceramics at this location. Group 13 was the only other group besides Group 1 represented at the upland workshop (see Figure 6).

At the market in the central part of Bolgar, there are 48 ceramics, which is 40.68% of all ceramics in this study. 32 of the total ceramics at this location are Group 1 ceramics, which represents 54.17% of all 48 ceramics. This is the largest group represented at this location (see

Figure 6). Three ceramics are Group 13 ceramics, which represents 6.25% of all ceramics at this location. Only one ceramic at this location is of Group 16, which represents 2.08% of all ceramics at this location. Six other ceramics groups were represented besides groups 1, 13, and 16 at this location: 7, 11, 14, 17, 18, and 19. Together 16 ceramics are from other ceramic groups, which represents 33.3% of all ceramics at this location (see Figure 7). Two ceramics at this location are imported ceramic types. These results also represent the results for the commercial zone of Bolgar.

At the upland portion of the Bolgar fortification, there are 14 ceramics, which is 11.86% of all ceramics in this study. Five of these ceramics are Group 1 ceramics, which represents 35.71% of all ceramics at this location. This was the largest ceramic group represented at this location (see Figure 8). Only one ceramic is a Group 13 ceramic, which represents 7.14% of all ceramics at this location. Only one ceramic is Group 16, which also represents 7.14% of the ceramics at this location. Other groups found at this location include groups 7, 14, 18, and 19. Six ceramics at this site represent the other group's category, which represents 42.86% of all ceramics at this location. One ceramic represented an imported ceramic representing the proportion of all ceramics at this location as groups 13 and 16.

At the area of the eastern mausoleum in the central part of the Bolgar fortification, there are only seven ceramics, which represents 5.93% of all ceramics in this study. Three of these ceramics are Group 1 ceramics, which represents 42.86% of all ceramics at this location. This is the largest ceramic group represented at this location (see Figure 9). Two ceramics are Group 16 ceramics, which represents 28.57% of all ceramics at this location. The only other group found at this location is group 18. Two ceramics are Group 18 ceramics or "other groups", which also represents 28.57% of all ceramics at this location.

There are 49 ceramics from the industrial zones of Bolgar within this study, which is 41.53% of all ceramics. 39 ceramics are Group 1 ceramics, which represents 79.59% of all ceramics at these locations. This is the largest group represented at the industrial zones (see Figure 10). The only other group represented at the industrial zones of Bolgar is Group 13. Ten ceramics are Group 13 ceramics, which represents 20.41% of all ceramics at the industrial zones.

There are 21 ceramics from the domestic zones of Bolgar within this study, which represents 17.8% of all ceramics. Eight ceramics are Group 1 ceramics, which represents 38.1% of the ceramics at these zones (see Figure 11). Group 1 is the largest ceramic group represented at the domestic zones of Bolgar. Three ceramics are Group 13 ceramics, which represents 14.29% of ceramics at these locations. One ceramic is a Group 16 ceramic, which represents 4.76% of the ceramics at these locations. Other groups represented at these zones represent are groups 7, 14, 18, and 19. Eight ceramics are of the “other groups” category and they represent 38.1% of all ceramics from the domestic zones. Only one ceramic is imported, which represents 4.76% of all ceramics from the domestic zones.

Frequency of Ceramic Groups 1, 13, and 16 at Bilyar and Juketau

In a 2002 study of 597 ceramics from the site of Bilyar from the 13th to the first half of the 15th century, Group 1 ceramics made up the majority of ceramics (Kokorina 2002: 368-369). 305 ceramics were Group 1 ceramics, which represented 51% of all ceramics in this study (Kokorina 2002: 368-369). Only three ceramics were Group 13 ceramics, which represented <.01% of all ceramics in that study (Kokorina 2002: 368-369). Seven ceramics were Group 16 ceramics, which represented .01% of all ceramics in that study (Kokorina 2002: 368-369).

In a 2013 study of 1069 ceramics from the site Juketau from the 10th to 14th centuries, Groups 1 and 13 formed the majority of ceramics (Bakhmatova and Nabiullin 2013: 233). 481 ceramics were Group 1 ceramics, which represented about 45% of all ceramics in this study (Bakhmatova and Nabiullin 2013: 233). 513 ceramics were Group 13 ceramics, which represented about 48% of all ceramics in this study (Bakhmatova and Nabiullin 2013: 233). The remaining 57 ceramics belonged to four “hybrid” or “transitional” groups: Group “13 + 7”, Group “13 + 8”, Group “7 + 1”, and Group “8 + 1” (Bakhmatova and Nabiullin 2013: 233-234). These “hybrid” ceramics represented about 5% of all ceramics in that study (Bakhmatova and Nabiullin 2013: 234).

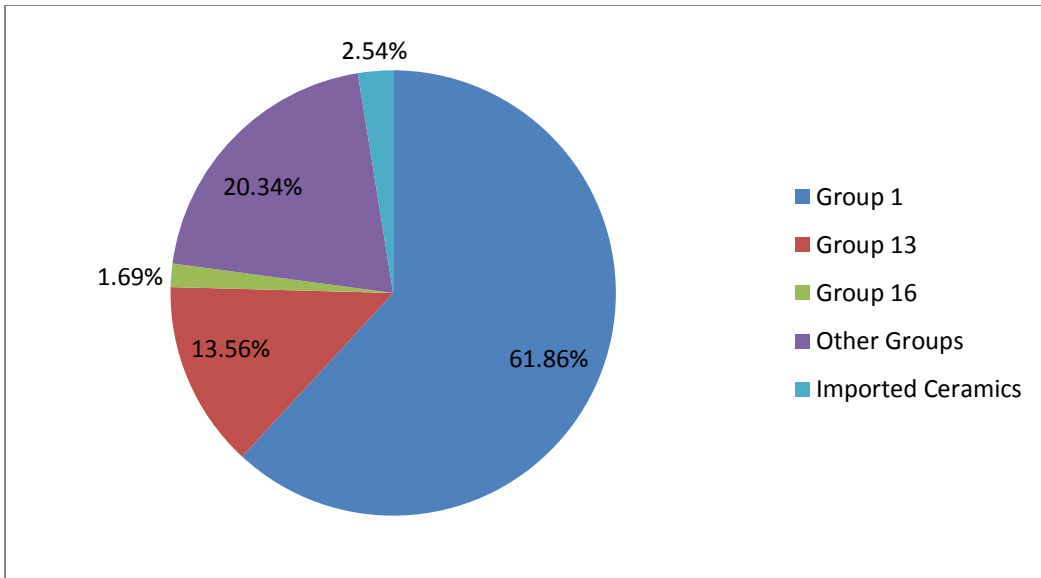


Figure 4: Total Ceramic Groups. This figure displays all the ceramic groups represented at all locations in Bolgar in this study.

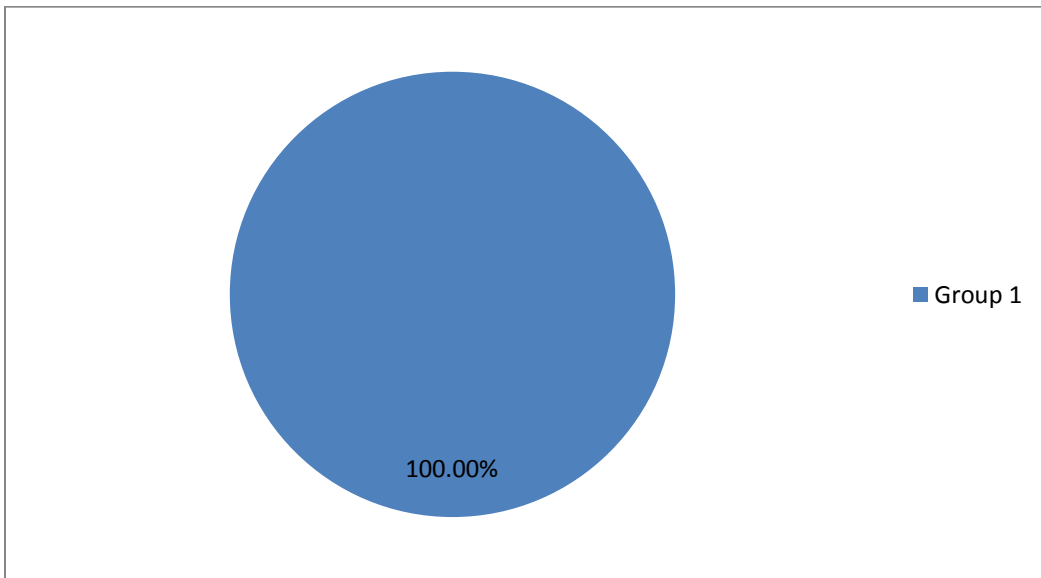


Figure 5: Ceramic Groups at the Southwestern Workshop (P. 70). This figure displays the ceramic group proportions at the Southwestern workshop in Bolgar from the excavation.

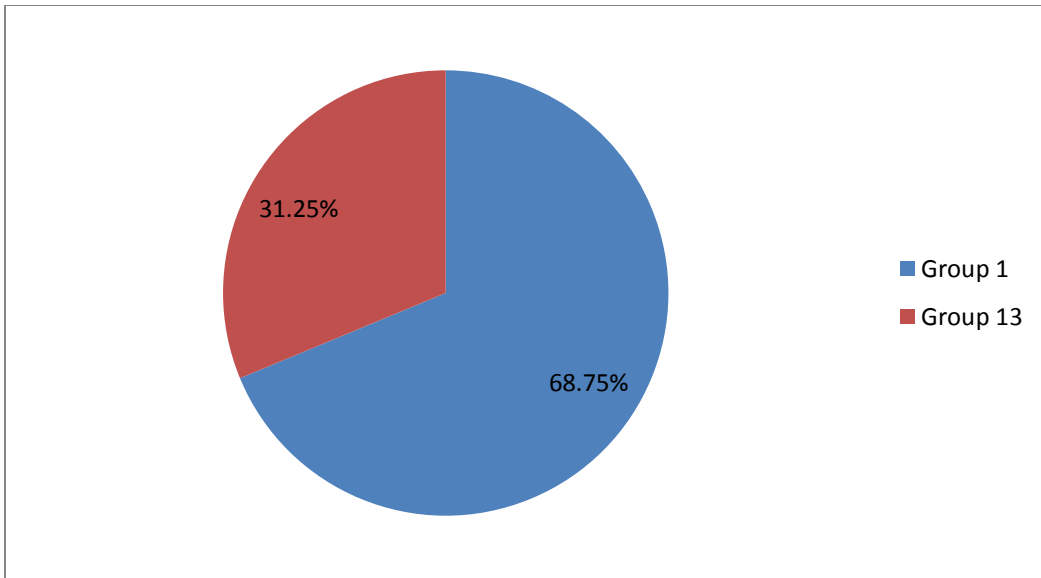


Figure 6: Ceramic Groups at the Upland Workshop (P. 149, P. 151, P. 182). This figure displays the ceramic group proportions at the upland workshop in Bolgar.

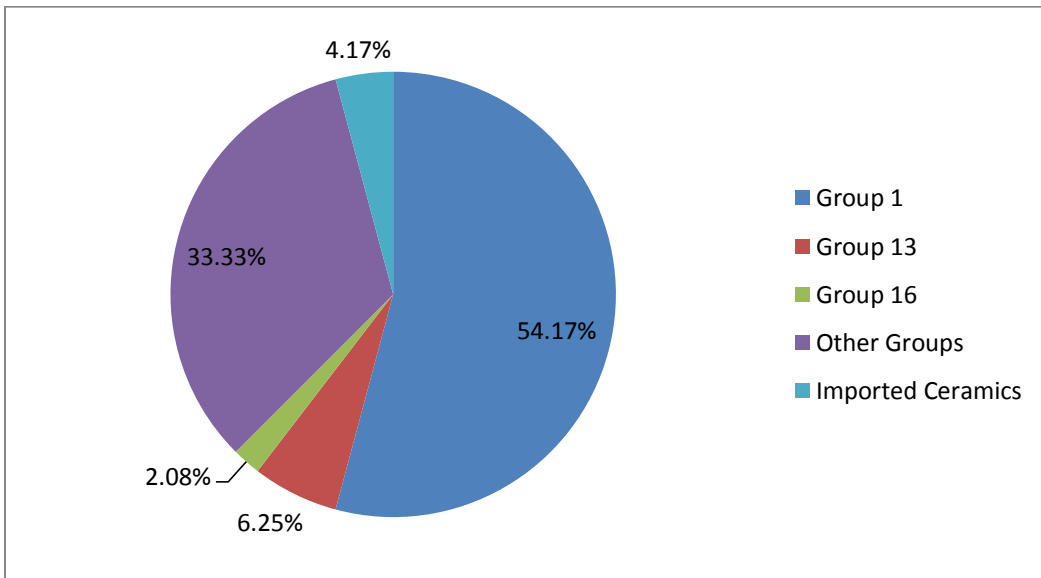


Figure 7: Ceramic Groups at the Central Market of Bolgar (P. 162). This figure displays the ceramic group proportions at the central market in Bolgar. It also represents the ceramic group proportions of the designated commercial zone in this study.

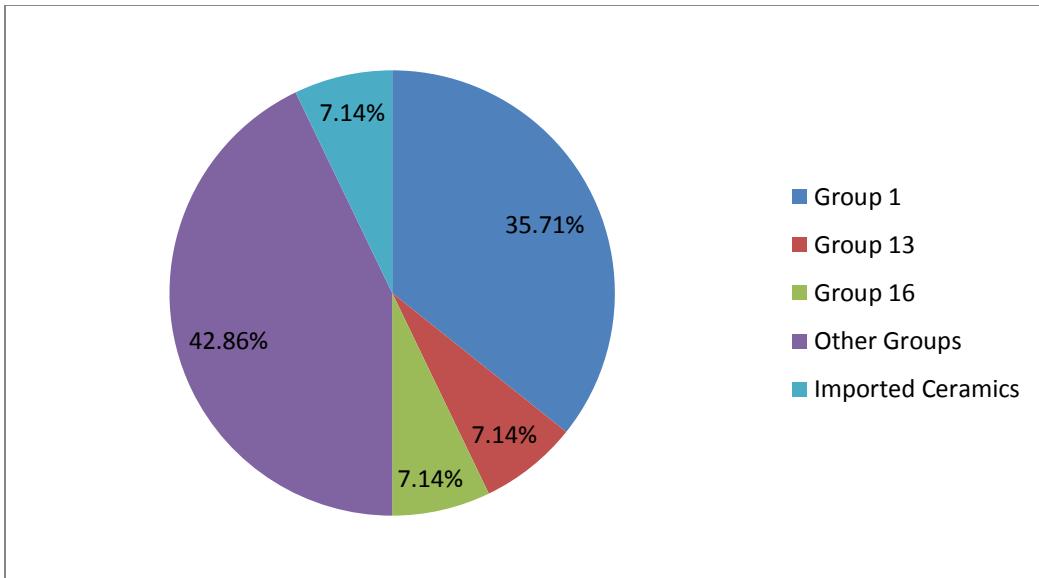


Figure 8: Ceramic Groups at the Upland Portion of Bolgar (P. 156). This figure displays the ceramic group proportions at the domestic spaces of the upland portion of Bolgar.

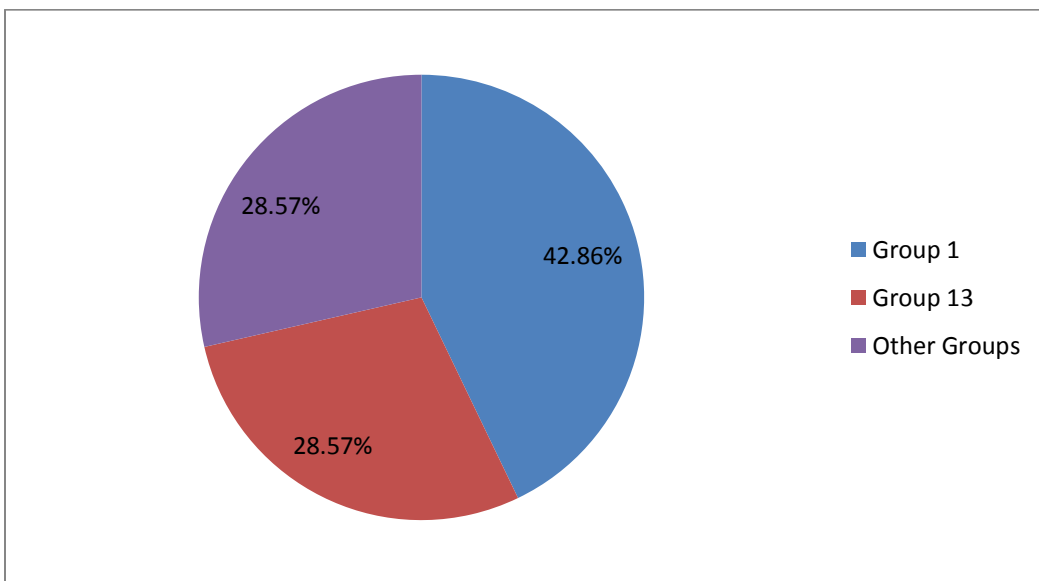


Figure 9: Ceramic Groups at the Eastern Mausoleum in the Central Part of Bolgar (P. 168). This figure displays the ceramic group proportions at the Eastern Mausoleum in the central part of Bolgar.

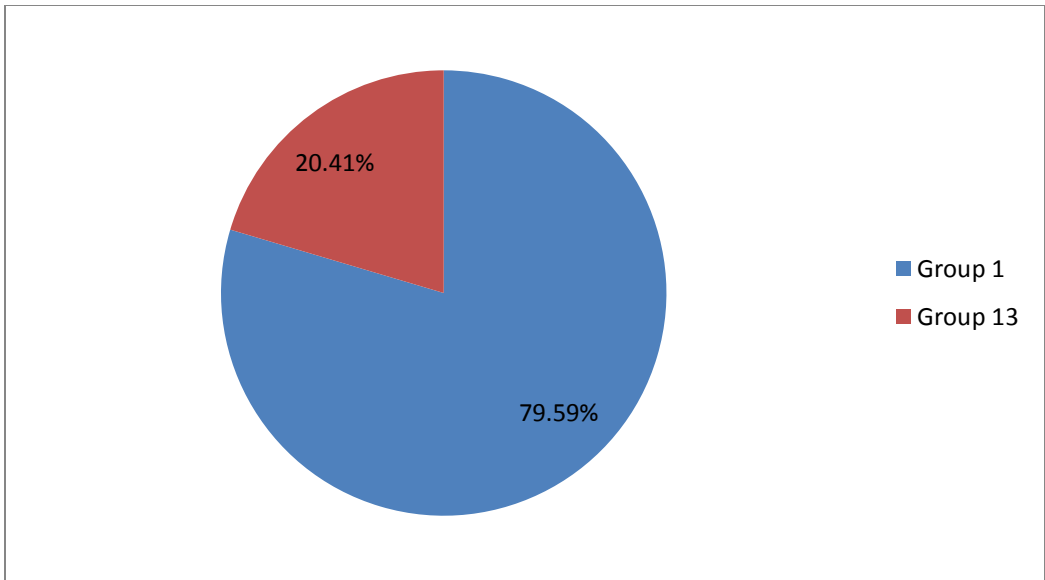


Figure 10: Ceramic Groups at the Industrial Zones. This figure displays the total ceramic group proportions at the industrial zones of Bolgar.

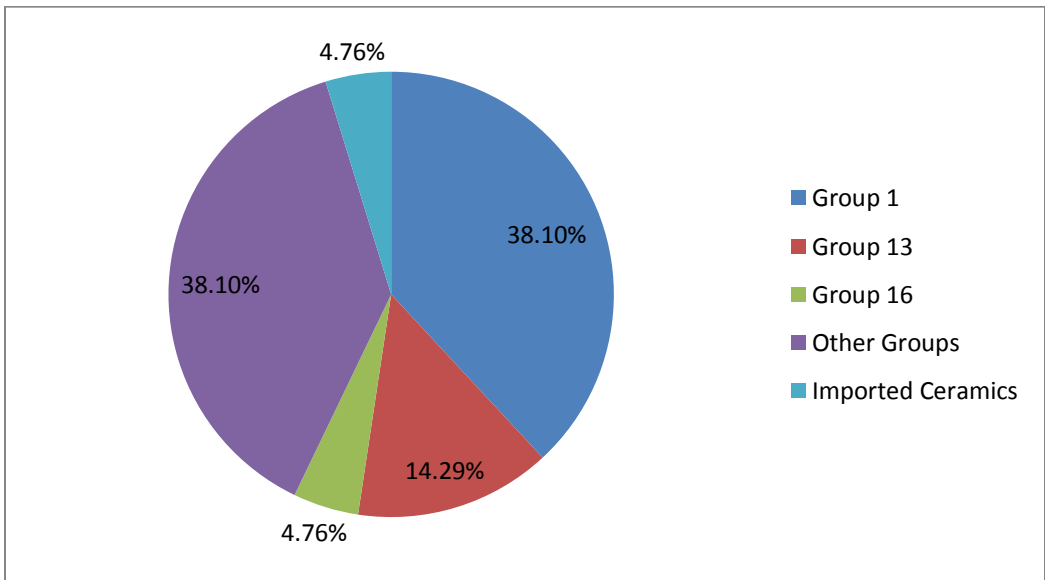


Figure 11: Ceramic Groups at the Domestic Zones. This figure displays the total ceramic group proportions at the domestic zones of Bolgar.

Discussion

Local Distribution of Ceramic Groups 1, 13, and 16 at Bolgar

To begin the analysis of the results, a Chi-square test was conducted to determine whether the null hypothesis could be rejected. The p-value of the Chi-square test was 4.76E-30. With this extremely small p-value, the null hypothesis is rejected. Therefore, this study does not reject hypothesis 1 (see Table 4). With Group 1 ceramics being highly visible amongst all zones and locations, Bolgar is likely maintaining very permeable local boundaries and continuous local ceramic exchange. This highlights minimal boundary creation regarding Group 1 ceramics between locations in Bolgar and likely signifies an emphasis on the functional nature of these ceramics. The distribution of Group 1 ceramics does not signify potential class, ethnic, or religious boundaries.

In contrast to hypothesis 1, this study rejects hypothesis 2 due to the significantly higher visibility of Group 13 ceramics in the industrial zones as compared to the commercial and domestic zones of Bolgar (see Appendices A and B). The distribution of Group 13 does not signify that the settlement is likely maintaining very permeable regional boundaries with extensive commercial activity. Group 13 ceramics are likely not evidence of the signaling of ethnic group boundaries at a local scale within the settlement using pottery. The distribution of Group 13 ceramics likely reflects the functional nature of these ceramics. In addition, a class explanation for Group 13 ceramics is also very unlikely. The presence of Group 13 ceramics at the eastern mausoleum and at most other locations largely discounts a class explanation. The eastern mausoleum was constructed in the early Golden Horde period for the nobility (Khlebnikova 2015a: 68). Therefore, Group 13 ceramics are visible at upper class locations like

the eastern mausoleum and other lower class locations, for example that of the domestic spaces of the upland portion of the Bolgar fortification. This distribution likely discounts the possibility of a class explanation for Group 13 ceramic distributions in Bolgar. Their distribution is likely representative of their functional value for the inhabitants of Bolgar during the Golden Horde period.

More interestingly, Group 16 ceramics are only visible at commercial and domestic zones. Group 16 may be representative of Bolgar's local ethnic boundaries and regional ceramic exchange given its distribution within the settlement. Whereas Group 13 maintained significant visibility amongst all zones within Bolgar, Group 16 only maintains marginal visibility at two locations within Bolgar: the upland portion of the Bolgar fortification and the central market (see Figures 7 and 8). Group 16 may represent local ethnic boundaries within Bolgar given its distribution. Historically, Bolgar attracted many varying people from other neighboring regions into the settlement (Baranov 2015: 234-237, Koval 2016: 121, Valeev 2015: 92). These various people may have brought their own ceramic traditions with them. Group 16, being one method of production and style for ceramics, may be reflective in Bolgar of a distinct ethnic population bringing their own tradition of ceramic production into the settlement. Group 16 is absent from the industrial workshops in Bolgar, which means that it may represent boundaries between various populations in Bolgar (see Figure 10). However, it is impossible to rule out a class explanation for Group 16 ceramics. Group 16 ceramics are also absent from the eastern mausoleum, which may allow a class explanation for its distribution. That said, Group 16 ceramics are significantly marginal in Bolgar (see Appendices A and B). Their use and potential production would have been limited to a small group of Bolgar inhabitants, potentially members of an ethnic group not reflected as a majority of any class within Bolgar. If their use were purely

class dependent, then we would potentially expect Group 16 to be more visible in the upland region of the Bolgar fortification. It may be impossible to determine whether their distribution reflects a class or ethnic distinction within Bolgar. Observing unglazed ceramics at more class representative locations may allow a better understanding of the significance of Group 16 ceramics in Bolgar. These locations include the western mausoleum, dwellings in the upland section near the 13th century cathedral mosque, and the upland eastern bathhouses of the Bolgar settlement.

Interestingly, other ceramic groups seem to appear only in the commercial and domestic zones of Bolgar. The significance of this may be related to functional, class, or potentially ethnic explanations. Only Group 18 ceramics appear in the “other groups” category at the eastern mausoleum. In contrast, at the upland section of the Bolgar fortification and in the central market, five other ceramic groups were represented in the “other groups” category. Similar to Group 16 ceramics, these ceramic groups were not represented at the industrial zones of Bolgar. However, it is difficult to determine if this distribution symbolizes class or ethnic differences. The lack of groups 7, 11, 14, 17, and 19 at the eastern mausoleum still maintains the potential to represent class differences represented through ceramics rather than ethnic differences. Group 18 of the “other groups” category holds the highest potential to represent ethnic differences on a local scale within Bolgar due to its presence at all commercial and domestic zones included in this study and its absence at the industrial zones. However, an alternative explanation of its distribution could refer to its functionality, similar to Group 1.

Regional Distribution of Ceramic Groups 1, 13, and 16

When the results from the studies conducted at the other sites and compare them with the ceramics from Bolgar, the distribution matches the distance-decay model. Group 1 ceramics maintain a significant frequency across all the settlements of Bolgar, Bilyar, and Juketau. This frequency also descends the further away the settlements are from Bolgar (see Table 3). At Bolgar, about 62% of all ceramics are Group 1 ceramics. However, if we move to the next major settlement eastward, Bilyar, about 51% of all ceramics are Group 1 ceramics (Kokorina 2002: 368-369). The proportion of Group 1 ceramics decreases further as we move to the next settlement further east, Juketau. About 45% of all ceramics from Juketau are Group 1 ceramics (Bakhmatova and Nabiullin 2013: 233). Interesting to note, while Bilyar is an inland settlement and Juketau lies along a major river, the River Kama, the distribution does not appear to be significantly affected by this. The distribution is still what we would expect when applying the distance-decay model. This likely signifies the functional preference for Group 1 ceramics. This ceramic group appears to be devoid of any abstract societal meaning eastward that might signal boundaries between groups in the archaeological record. This is expected because this is the “mass-produced” ware in the Middle Volga during the Golden Horde period (Khlebnikova 2015b: 138).

In contrast to Group 1, the distribution of Group 13 pottery does not match the distance-decay model. When compared to the ceramics at Bolgar, Bilyar produced significantly fewer Group 13 ceramics (Kokorina 2002: 368-369). This becomes more interesting when both Bilyar and Bolgar are compared to the ceramics at Juketau (Bakhmatova and Nabiullin 2013: 233). At Juketau nearly half of all the ceramics represented were Group 13, whereas at Bolgar less than a

quarter of all ceramics were Group 13 (see Figure 4) (Bakhmatova and Nabiyullin 2013: 233). In contrast, only .01% of all ceramics at Bilyar were Group 13 (Kokorina 2002: 368-369). This comparison becomes significant when we consider the distances between the settlements. Bilyar is closer to both Bolgar and Juketau than Bolgar is to Juketau (see Figure 1). Generally, we would expect the distribution of Group 13 ceramics to decrease as we move further away from one direction. Instead, as we move from Juketau to Bilyar the proportion of Group 13 decreases but moving from Bilyar to Bolgar, the proportion of Group 13 increases.

The distribution of Group 13 ceramics at a regional scale does not fit the distance-decay model (see Table 3). There are three possible explanations for this distribution: commercial, ethnic, and geographic. As opposed to these three explanations, the presence of a political boundary to explain this distribution is highly unlikely. This distribution cannot be explained by politics given that this region was unified politically under the Golden Horde and it was during this period of unification that settlements in the region rapidly developed (Izmailov 2015: 55-56). Rather, the regional distribution of Group 13 ceramics during the Golden Horde period can be explained by a signaling of ethnic boundaries between settlements. The Golden Horde period saw many migrating populations cross through and settle in the Middle Volga region around Bolgar, Bilyar, and Juketau (Lisova 2012: 126, Fakhрутdinov 2015: 51-54). Potentially, competing ethnic groups preferred commercial exchange with specific settlements. In the case of Bolgar, Bilyar, and Juketau, the ethnic populations of Juketau and Bolgar may have preferred trading with one another rather than Bilyar, therefore Group 13 ceramics are found primarily at Bolgar and Juketau and not Bilyar. While the region was unified politically, the Golden Horde settlements of Bolgar, Bilyar, and Juketau were in regular conflict with the Russian principalities to the West (Izmailov 2015: 55-63). This increased external stress may have encouraged people

internally to make more strategic decisions in their commercial exchanges and production choices. Potentially, this external stress encouraged ethnic groups of the Middle Volga to favor ceramic exchange with ethnically similar settlements and less standardized ceramic production methods, i.e. not the production of Group 1 ceramics, to strengthen identification with their particular group, similar to the boundary signaling of the Kalinga in the Philippines (Khlebnikova 2015b: 138, Stark, Bishop, and Miksa 2000: 295–331). In addition, when selecting a less standardized production method for ceramics, these populations would have chosen more locally favored production methods and styles.

However, there exist two alternate explanations besides ethnic boundary signaling to this distribution of Group 13 ceramics regionally: commercial and geographic. Geographically, the settlements of Bolgar and Juketau are farther away but they are both positioned along major rivers, the Volga and Kama (see Figure 1). In contrast, Bilyar is located along a minor river that is not navigable by boat, the Cheremshan River (Valeev 2015: 48). Travel along the Volga and Kama between Bolgar and Juketau may actually be significantly quicker than traveling on land to Bilyar from either Bolgar or Juketau. However, when we compare this distribution to Group 1 ceramics, which do fit the distance-decay model, a geographic explanation becomes unlikely. While it is true that Bolgar and Juketau are both located on major rivers and Bilyar is not, it is puzzling to see Group 1 ceramics fit the distance-decay model and not Group 13 ceramics (see Figure 1). To explain the differences in distribution between these two ceramic groups, Group 13 ceramics would require a preferred river-based mode of transportation, whereas Group 1 would require either a mixed or a preferred land-based mode of transportation. However, no preferences in transportation between these ceramic groups have necessarily been reported.

In addition, significant numbers of Group 1 ceramics were found at each settlement, but not Group 13 ceramics (Bakhmatova and Nabiullin 2013: 233, Kokorina 2002: 368-369). This rules out a functional explanation, because Group 1 ceramics are the purely functional ceramics for this region and period and appear highly visible across each of these settlements, but Group 13 ceramics do not (Khlebnikova 2015b: 138). This also confuses the geographic explanation. If Group 13 ceramics do not signal any boundaries, then we should expect to see its production dispersed across the Middle Volga according to the distance-decay model similar to Group 1 ceramics, but this is not the case.

Conversely, this distribution may be explained by the commercial viability of production for certain styles of ceramics. Potentially, it may have been more rewarding to produce and exchange Group 13 ceramics for Bolgar and Juketau rather than Bilyar. Bilyar may have fulfilled an economic or social niche apart from ceramics or the production of Group 13 ceramics. In addition, it may have been more economically rewarding for individuals to exchange ceramics at Bolgar rather than Bilyar. Therefore, despite the distance, travel to Bolgar would have been favored over exchange between Bilyar and Juketau. Bolgar was known historically as the economic center for the Middle Volga in addition to being located along the Great Volga trade route (Baranov 2015: 234-237, Fakhrutdinov 2015: 46-54, Sitdikov and Izmailov 2015: 12-14). To explore this explanation further, we should observe the ceramic distribution of the many towns that developed during this period to see if other settlements fit specific economic niches and produce goods that are eventually traded to Bolgar. This was a period of smaller towns developing around larger settlements to sustain these settlements increased growth (Lisova 2012: 125). Examples of these towns include the sites of Challin, Kammaev, Russko-Urdmat, Sukeev, Suvar, and Larger Tarkhan.

While Group 13 pottery most likely does not signal local ethnic boundaries, given the results from the various locations and zones in Bolgar, Group 13 ceramics may be signaling ethnic difference at the regional scale. Locally at Bolgar, the distribution of Group 1, the standardized ceramic type, and Group 13 appear similar, as they are visible in all zones (see Figure 7, 10, and 11). Regionally, the distribution between Group 1 and 13 differ significantly. This result may highlight the differences in the social significance of each ceramic group during the Golden Horde period in reference to signaling ethnic groups. Where Group 1 is the standard ceramic type used for its functionality and is highly visible across Bolgar, Bilyar, and Juketau, the distribution of Group 13 ceramics may be signaling ethnic boundaries between Bilyar and the other settlements (Khlebnikova 2015b: 138).

Group 16 ceramics tell a significantly different story than Group 13 ceramics. Locally in Bolgar, Group 16 ceramics may be signaling ethnic boundaries but regionally its distribution fits the distance-decay model. From Bolgar to Bilyar, the distribution of Group 16 ceramics drops from representing 1.69% to <.01% respectively. Group 16 ceramics are completely absent from Juketau. In addition, within the settlement of Bolgar, the group's distribution between locations and zones differs significantly between industrial and non-industrial zones, and within the domestic zones. However, due to the limited number of locations at Bolgar in this study, it is impossible to rule out a class distinction explanation between Bolgar's locations and zones in relation to Group 16 ceramics. Another problem in explaining the distribution of Group 16 ceramics locally at Bolgar is their significantly marginal numbers at the site. Group 16 ceramics require more locations at Bolgar in relation to ceramic representation to analyze adequately the group's distribution locally. In addition, observing the ceramic distribution at the larger

settlement of Kazan and the Golden Horde towns, we may further see that the regional distribution of Group 16 continues to fit the distance-decay model.

Conclusions

When attempting to observe ethnic boundaries represented through the production and style of ceramics in the archaeological record, it is difficult to distinguish what may appear as a class difference from a potential ethnic difference. It may be that class and ethnic differences in societies like that of Bolgar are intertwined. For example, in the context of Bolgar, the influx of people with different ethnic backgrounds may assume a particular class position. This makes it difficult to distinguish what exactly is being signaled through ceramic distributions locally in the archaeological record. In order to be able to draw distinctions, we need to analyze the ceramic distributions from more locations with separate contexts within Bolgar. In Bolgar, some proposed locations include the upland section near the 13th century cathedral mosque, the upland eastern bathhouses of the Bolgar settlement, and the domestic spaces located along the outside of the Bolgar fortification.

It may be more viable to observe ethnic boundaries regionally rather than locally to avoid the problem of distinguishing between class and ethnic group. In addition, observing the distribution of various ceramic types regionally allows for the inclusion of settlements that may be more ethnically homogenous. When attempting to observe ethnic boundaries locally, there may be no obvious distinctions, but these may appear at the regional scale. The distribution of Group 13 ceramics in the Middle Volga during the Golden Horde period may offer an example of this. However, the historic context and relation to other ceramic groups are crucial if the signaling of regional ethnic boundaries by ceramics is to be observed. For example, without

comparing Group 13 ceramics to the regional distribution of Group 1 ceramics, the standardized, purely functional ceramics, it becomes difficult to rule out other explanations like the functionality of the ceramics across settlements (Khlebnikova 2015b: 138). The historic context of political stress in the period allows us to consider the possibility that the distribution of certain material goods represents ethnic boundaries because ethnic groups may have needed to rely on one another for support more in times of war than in times of peace. In the case of the Middle Volga and the Kalinga study, this was represented by periods of warfare and political campaigning (Stark, Bishop, and Miksa 2000: 295–331).

In addition, observing more sites would allow for a further reconstruction of boundaries being represented, whether these boundaries represent ethnic differences or not. For the Middle Volga, observing the ceramic distribution of Kazan during the Middle Volga period would allow for a greater understanding of the boundary creation represented through ceramics in this region. Kazan was another major settlement emerging in this period due to its geographic positioning and frontier context during the Golden Horde period (Taagepera 1999: 216-217). Kazan was considered a meeting-point between two historically distinct populations: Finno-Ugric populations to the north and Turkic populations to the south (Taagepera 1999: 216-217). We may predict a greater visibility of Group 16 ceramics and a lesser visibility of Group 13 at Kazan in relation to Bolgar, Bilyar, and Juketau given the distance decay model and based upon the ceramic group distribution in this study. We may also predict that Kazan should have a normal distribution of Group 1. Again, this is also to emphasize the importance of context in attempting to observe ethnic boundaries through material culture, like ceramics. Being a political and historical meeting-point between various groups would allow this site to provide further

understanding in the ways boundaries are signaled through material culture, whether commercial, ethnic, or geographic.

Future research regarding the Middle Volga region in relation to exploring the potential for signaling ethnic boundaries in ceramic should look to incorporate the distribution of ceramic groups at other sites in the region. These sites should include the large settlement of Kazan and the smaller settlements of Challin, Kammaev, Russko-Urdmat, Sukeev, Suvar, and Larger Tarkhan. A comprehensive study of the ceramic group distribution across the Middle Volga during the Golden Horde period with the inclusion of smaller and larger settlements would greatly advance the methods used to study ceramic production and style and their relationship to social boundaries. Future research in this region should also look to include a larger variety of regional ceramic groups into comparative analyses with Group 1 ceramics. The results of a more inclusive regional study would allow for greater insights into the commercial behavior of smaller towns, the potential for economic niche settlements, and the meanings behind the distribution of certain ceramic groups, like Group 13 ceramics.

While future research should be concerned with the regional distribution of ceramics, it is also important that future research in the region concern itself with the local distribution of ceramic groups and their own contexts. What might be used regionally to signify ethnic or other boundaries may not be the same locally and therefore future research in Bolgar should look at the ceramic-group distributions at other locations in and around the settlement. Other locations should include the western mausoleum, dwellings in the upland section near the 13th century cathedral mosque, the upland eastern bathhouses of the Bolgar settlement, and dwellings found just outside of the Bolgar fortification. During the Golden Horde period, Bolgar was an economic center for the region and historically attracted various migrating populations (Baranov

2015: 234-237, Koval 2016: 121, Valeev 2015: 92). A study of ceramic group distributions including more locations in Bolgar would provide insight into the nature of signaled boundaries through material culture and the ways in which we can understand the potential symbolic differences between class and ethnic representation in material culture, if they exist on a local scale.

The most important thing to stress in future research is to define the social contexts operating at the various sites in the study region. Ethnic boundaries are largely mobilized in material culture in real time in order to negotiate various group relations, intensify competition, or justify negative reciprocity; therefore, during different occupations at a site, material culture, like ceramics, will assume different socially signified meanings (Hodder 1979: 446–454, Parkinson 2006: 33-58, Jones 1997: 115, Wiessner 1983: 259-260). Therefore, it is crucial to consider the social environment in which a site existed. Golden Horde period sites in the Middle Volga make ideal candidates for future research concerned with ethnic boundary representation in ceramics due to the historical context, which is very well documented and understood.

The results of the study have provided insights into the potential importance of identifying ethnic boundaries in the distribution of ceramic types during a period of migration, political campaigning, and warfare. Observing ceramic types at a multitude of locations, locally and regionally, and how they compare to one another in terms of distribution given their political, economic, and geographic positioning allows archaeologists to interpret the social significance of various ceramic production methods and styles from different contexts. Adding to a larger body of research in boundaries and style, this study builds on previous knowledge of how ethnic boundaries may be materialized in the archaeological record through ceramic-type distributions.

Appendix

Appendix A: Distribution of Ceramic Attributes and Groups in Bolgar by Location

Attribute	Excavation Number & Topographic Binding					Total
	P.70 (industrial complex in the area of Dutch lake in the Southwestern part of Bolgar fortification)	P.149, P.151, P.182 (upland industrial complex)	P.162 (central part of the Bolgar fortification-market)	P.156 (upland portion of Bolgar fortification)	P.168 (eastern mausoleum in the central part of the Bolgar fortification)	
# of ceramics	17	32	48	14	7	118
% of all ceramics by topographic binding	14.41%	27.12%	40.68%	11.86%	5.93%	
ceramic color						
tanned	0	0	3	2	0	5
	0.00%	0.00%	6.25%	14.29%	0.00%	4.24%
brownish-tanned	0	7	8	0	0	15
	0.00%	21.88%	16.67%	0.00%	0.00%	12.71%
grey	0	0	11	5	2	18
	0.00%	0.00%	22.92%	35.71%	28.57%	15.25%
greyish-brown	0	0	1	0	0	1
	0.00%	0.00%	2.08%	0.00%	0.00%	0.85%
raspberry	0	0	1	0	1	2
	0.00%	0.00%	2.08%	0.00%	14.29%	1.69%
raspberry-tanned	0	2	0	0	1	3
	0.00%	6.25%	0.00%	0.00%	14.29%	2.54%
red	1	0	11	0	3	15
	5.88%	0.00%	22.92%	0.00%	42.86%	12.71%
red with polishing	0	0	0	5	0	5
	0.00%	0.00%	0.00%	35.71%	0.00%	4.24%
reddish-brown	15	22	11	0	0	48
	88.24%	68.75%	22.92%	0.00%	0.00%	40.68%
reddish-tanned	0	0	0	1	0	1
	0.00%	0.00%	0.00%	7.14%	0.00%	0.85%
yellowish-	0	1	1	1	0	3

tanned						
	0.00%	3.13%	2.08%	7.14%	0.00%	2.54%
indeterminate	1	0	1	0	0	2
	5.88%	0.00%	2.08%	0.00%	0.00%	1.69%
Admixtures						
clay composition with plant residue	17	22	26	5	3	73
	100.00%	68.75%	54.17%	35.71%	42.86%	61.86%
clay composition with sand	0	10	4	1	2	17
	0.00%	31.25%	8.33%	7.14%	28.57%	14.41%
clay composition with pounded shells	0	0	3	1	2	6
	0.00%	0.00%	6.25%	7.14%	28.57%	5.08%
clay composition with crushed shells	0	0	2	2	0	4
	0.00%	0.00%	4.17%	14.29%	0.00%	3.39%
clay composition with grus	0	0	5	1	0	6
	0.00%	0.00%	10.42%	7.14%	0.00%	5.08%
clay composition with grus and sand	0	0	0	1	0	1
	0.00%	0.00%	0.00%	7.14%	0.00%	0.85%
clay composition with sand and pounded shells	0	0	0	1	0	1
	0.00%	0.00%	0.00%	7.14%	0.00%	0.85%
clay composition with chamotte	0	0	1	0	0	1
	0.00%	0.00%	2.08%	0.00%	0.00%	0.85%
clay composition without listed materials	0	0	7	2	0	9
	0.00%	0.00%	14.58%	14.29%	0.00%	7.63%

shape						
pot	11	22	16	6	2	57
	64.71%	68.75%	33.33%	42.86%	28.57%	48.31%
bowl	0	1	0	0	0	1
	0.00%	3.13%	0.00%	0.00%	0.00%	0.85%
other	0	7	21	8	5	41
	0.00%	21.88%	43.75%	57.14%	71.43%	34.75%
indeterminate	6	2	11	0	0	19
	35.29%	6.25%	22.92%	0.00%	0.00%	16.10%
Assigned Group 1 ceramics						
#	17	22	26	5	3	73
%	100.00%	68.75%	54.17%	35.71%	42.86%	61.86%
Assigned Group 13 ceramics						
#	0	10	3	1	2	16
%	0.00%	31.25%	6.25%	7.14%	28.57%	13.56%
Assigned Group 16 ceramics						
#	0	0	1	1	0	2
%	0.00%	0.00%	2.08%	7.14%	0.00%	1.69%
Other assigned group ceramics						
#	0	0	16	6	2	24
%	0.00%	0.00%	33.33%	42.86%	28.57%	20.34%
imported ceramics						
#	0	0	2	1	0	3
%	0.00%	0.00%	4.17%	7.14%	0.00%	2.54%

Appendix B: Distribution of Ceramic Attributes and Groups in Bolgar by Zone

Attribute	Zone			Total
	Industrial	Commercial	Domestic	
# of ceramics	49	48	21	118
% of all ceramics by topographic binding	41.53%	40.68%	17.80%	
ceramic color				
tanned	0 0.00%	3 6.25%	2 9.52%	5 4.24%
brownish-tanned	7 14.29%	8 16.67%	0 0.00%	15 12.71%
grey	0 0.00%	11 22.92%	7 33.33%	18 15.25%
greyish-brown	0 0.00%	1 2.08%	0 0.00%	1 0.85%
raspberry	0 0.00%	1 2.08%	1 4.76%	2 1.69%
raspberry-tanned	2 4.08%	0 0.00%	1 4.76%	3 2.54%
red	1 2.04%	11 22.92%	3 14.29%	15 12.71%
red with polishing	0 0.00%	0 0.00%	5 23.81%	5 4.24%
reddish-brown	37 75.51%	11 22.92%	0 0.00%	48 40.68%
reddish-tanned	0 0.00%	0 0.00%	1 4.76%	1 0.85%
yellowish-tanned	1 2.04%	1 2.08%	1 4.76%	3 2.54%
indeterminate	1 2.04%	1 2.08%	0 0.00%	2 1.69%
Admixtures				
clay composition with plant residue	39 79.59%	26 54.17%	8 38.10%	73 61.86%
clay composition with sand	10 20.41%	4 8.33%	3 14.29%	17 14.41%
clay composition with pounded shells	0 0.00%	3 6.25%	3 14.29%	6 5.08%
clay composition with crushed shells	0 0.00%	2 4.17%	2 9.52%	4 3.39%
clay composition with grus	0 0.00%	5 10.42%	1 4.76%	6 5.08%

clay composition with grus and sand	0	0	1	1
	0.00%	0.00%	4.76%	0.85%
clay composition with sand and pounded shells	0	0	1	1
	0.00%	0.00%	4.76%	0.85%
clay composition with chamotte	0	1	0	1
	0.00%	2.08%	0.00%	0.85%
clay composition without listed materials	0	7	2	9
	0.00%	14.58%	9.52%	7.63%
shape				
pot	33	16	8	57
	67.35%	33.33%	38.10%	48.31%
bowl	1	0	0	1
	2.04%	0.00%	0.00%	0.85%
other	7	21	13	41
	14.29%	43.75%	61.90%	34.75%
indeterminate	8	11	0	19
	16.33%	22.92%	0.00%	16.10%
Assigned Group 1 ceramics				
#	39	26	8	73
%	79.59%	54.17%	38.10%	61.86%
Assigned Group 13 ceramics				
#	10	3	3	16
%	20.41%	6.25%	14.29%	13.56%
Assigned Group 16 ceramics				
#	0	1	1	2
%	0.00%	2.08%	4.76%	1.69%
Other assigned group ceramics				
#	0	16	8	24
%	0.00%	33.33%	38.10%	20.34%
imported ceramics				
#	0	2	1	3
%	0.00%	4.17%	4.76%	2.54%

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