

1979

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Recommended Citation

Tiffany, Joseph A. (1979) "An Overview of Oneota Sites in Southeastern Iowa: A Perspective From the Ceramic Analysis of the Schmeiser Site, 13DM101, Des Moines County, Iowa," *Proceedings of the Iowa Academy of Science*, 86(3), 89-101.

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An Overview of Oneota Sites in Southeastern Iowa: A Perspective From the Ceramic Analysis of the Schmeiser Site, 13DM101, Des Moines County, Iowa

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A ceramic typology for Oneota pottery from the Schmeiser site indicates that the typology is regional in scope. Assessment of the cultural relationships among Oneota sites in southeast Iowa and the state resulted in: 1) establishment of an Oneota taxonomy based on site location, changes in shoulder and rim decoration and time; and 2) development of the concept of synchronous change in shoulder motifs on Oneota pottery. It is also suggested that the geographical distribution of radiocarbon dated Oneota sites which share similar shoulder motifs supports migration legends on the spread of Chiwere speaking Siouan groups onto the prairie plains.

INDEX DESCRIPTORS: Oneota archaeology, ceramic typology, southeastern Iowa.

"Oneota" as an archaeological concept refers to a number of post-Woodland occupations on the Prairie Peninsula dating from ca. A.D. 1000 to Historic times. Shell tempered ceramics constitute the diagnostic artifact for Oneota culture throughout the midwest. Globular ollas with constricted orifices and rounded bottoms are characteristic. They are often decorated with geometric patterns composed of trailed lines and punctates on the shoulder area of the vessels and with tool or finger impressions on the lip or inner lip-rim area. A broad range of stone and bone tools are also commonly found on Oneota sites. These include small, unnotched, triangular projectile points, end scrapers, knives, graters, perforators and drills, as well as manos, metates, grooved mauls, shaft abraders and celts. Pipes, especially small, short stemmed catlinite disc pipes, are considered an important trait. Antler and bone tools include scapula hoes, awls, needles, scapula knives, shaft wrenches, conical antler projectile points and ornaments.

Oneota is primarily a ceramic culture (Henning 1970:141). The diversity of Oneota artifact assemblages represents societies that are transitional between Woodland and Plains Village cultures. Oneota assemblages reflect an intermediate and diffuse amalgamation of features generally found among Woodland groups in the northern Mississippi River Valley, Mississippian groups to the east and south and Plains Village cultures to the west.

Certain Oneota manifestations have been affiliated with historic Siouan tribes. These include the Ioway, Missouri, Winnebago and possibly the Kansa, Osage and Oto (Griffin 1937; Mott 1938; Henning 1970:4). Gibbon (1972b:173) cites evidence suggesting that some Algonquin speaking groups such as the Miami and Illini may be associated with some Oneota or Oneota-like occupations in Illinois, Indiana and Wisconsin.

A number of studies have been made during the past 50 years concerning Oneota sites in Iowa. In the 1920's and 30's, Charles R. Keyes and Ellison Orr investigated Iowa Oneota, primarily the Orr focus of northeast Iowa. Their work was elaborated and expanded on by Mott (1938), Mott Wedel (1959), and Henning (1961, 1970). Other studies include Harvey (1971), McKusick's (1973) work at the Grant site and Glenn's (1974) analysis of the physical anthropology of Oneota groups. Oneota research in southeast Iowa has been reviewed by Anderson (1975) and Hotopp (1977). McKern (1945), Griffin (1943, 1960), Hall (1962) and Gibbon (1970a) provide a general history of Oneota research in the midwest.

Prior to Keyes' and Orr's surveys, work on Oneota sites in southeast Iowa has been confined primarily to the McKinney site (13LA1) near Toolesboro, Iowa (Hotopp 1977). Keyes' (n.d.) suggested that Oneota ceramics from southeast Iowa were different from Orr focus materials. He called these components the Burlington focus (Keyes n.d.; Till in Hotopp 1977:57; National Research Council 1935:5, 69a). The type sites for this focus appear to be the Dry Branch site (13DM80) and the Schwenker or Eversman site (13DM82) (Table 1; Keyes 1951; Griffin 1943:298; Henning 1961:31). The Schmeiser site ceramics show it to

be a Burlington focus component.

Henning conducted limited site surveys in southeast Iowa in the late 1950's and generally described some of these Oneota sites (Henning 1961). Henning's attention, centered on the McKinney site which he considered to be an Orr focus site (Henning 1961, 1970). In the early 1970's Straffin (1972) reported on his excavations at the Kingston site and also excavated at the Schmeiser and Kelley Oneota sites. Test excavations were conducted at the McKinney site in 1970 (Slattery, Horton and Ruppert 1975). An archaeological survey of the Great River Road right-of-way through southwest Iowa made in 1977 supplied additional information on previously known Oneota sites (Hotopp 1977; Alex 1978).

In summary, much of Oneota research in Iowa has centered on Orr focus sites. Despite reports on Oneota sites in southeast Iowa, the range of ceramics and other artifacts is poorly known. This had led to continuing speculation concerning the chronological position and

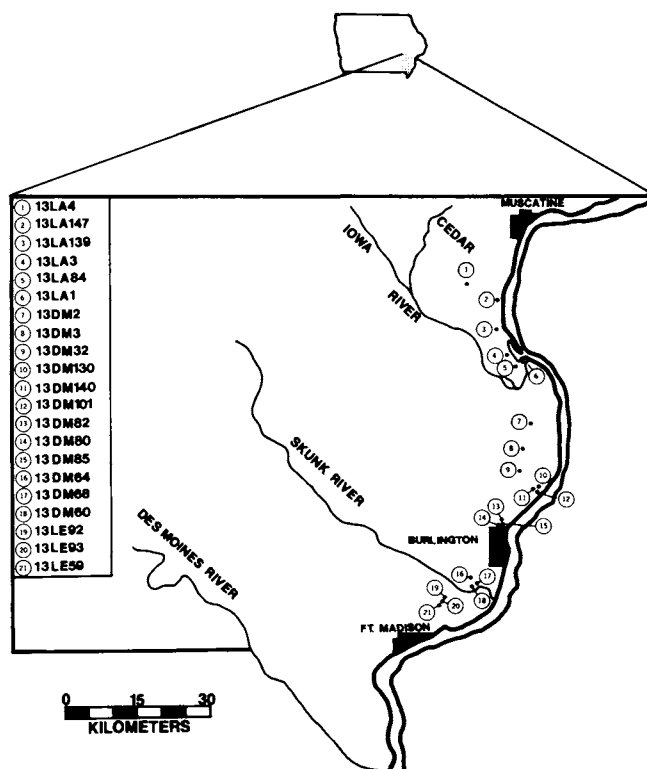


Fig. 1. General location of Oneota sites in southeast Iowa.

Table 1. Summary information on 13DM101 and other southeast Iowa Oneota sites

Site Name	Site Number	Location	Size in Hectares	Features	Remarks & References
Wever Terrace	13LE59	Second alluvial terrace	.05	-	On Lost Creek, multi-component; Till 1977:31
Burk	13LE92	Second alluvial terrace	.01	-	On Lost Creek; Till 1977:56
Lost Creek	13LE93	Second alluvial terrace	.3	-	On Lost Creek; Till 1977:57
Bailey Farm	13DM2	Flood plain	4	Surface scatter	Henning 1961:31; Till 1977:75
Kingston	13DM3	Bluff top	2	Suggests structures	Straffin 1971
Burgus	13DM32	Bluff top	.8	-	Tentatively Oneota; Till 1977:86
--	13DM60	Alluvial terrace	.1	-	Tentatively Oneota, multi-component; Till 1977:103
--	13DM64	Alluvial terrace	.5	-	Tentative Oneota, multi-component; Till 1977:106
Spring Creek	13DM68	Bluff top	.5	in association with Patterson-Cornell Mound Group	Till 1977:110
Dry Branch	13DM80	Flood plain	.6	Surface scatter	On Flint Creek; Till 1977:118-119
Schwenker or Eversman	13DM82	Alluvial terrace	.2	-	Till 1977:121-122
--	13DM85	Flood plain terrace	.4	-	Henning 1961:31
Schmeiser	13DM101	Flood plain	.4	-	Tentatively Oneota, multicomponent; Till 1977:124
Schmeiser	13DM130	Rise on flood plain	.1	-	-
Oneota II	13DM140	Rise on flood plain	.6	-	Till 1977:156-157
Kelley	13LA1	Bluff top	2.2	Octagonal fortification	Till 1977:166-167
McKinney	13LA3	Terrace on flood plain	-	-	Till 1977:189-191; Henning 1961:31; Slattery Horton & Ruppert 1975
Sand Run	13LA4	Bluff top	-	-	Multicomponent; Till 1977:192
Poison Ivy	13LA84	Flood plain	-	-	Alex 1978:78-91
-	13LA139	Rise on flood plain	10	-	In marshland; Till 1977:251-252
-	13LA147	Alluvial terrace	1.5	-	Multicomponent; Till 1977:259-260
Muscatine Island, north end	13MC3	Flood plain	-	-	Destroyed; Till 1977:282

formal relationships among these Oneota sites with better known manifestations in Iowa and in the midwest.

This study analyzes the pottery from the Schmeiser site. The purpose is to: 1) describe and establish a typology for the Schmeiser pottery that is regional in scope; and 2) reassess the temporal and cultural relation-

ships among Oneota sites in southeast Iowa and throughout the state.

The Schmeiser site lies on the floodplain of the Mississippi River in Des Moines County about 10 kilometers north of Burlington, Iowa. It is one of 22 reported Oneota sites in southeastern Iowa (Fig. 1). These sites extend from just north of Fort Madison to 16 kilometers south of

Muscatine, Iowa, a distance of approximately 70 kilometers (Table 1). Southeast Iowa Oneota sites vary from less than 1 to several hectares in extent and are confined to the bluffs and floodplain of the Mississippi and two of its major tributaries, the Skunk and Iowa Rivers. They are located on or near ecotones where floodplain forest, upland forest or prairie meet. This locational pattern is characteristic of Iowa Oneota sites (Henning (1970:140).) Soils in the study area are prairie or forest soils formed in loess on the uplands and in colluvium and alluvium on the terraces and river bottoms.

Alex (1971) distinguished 3 types of Oneota settlement patterns in Iowa. The first are compact, fortified villages of less than 2 hectares like the McKinney site (13LA1), Orr focus sites such as the Lane Enclosure (13AM200) in northeast Iowa, and the Blood Run site (13LO2) in northwestern Iowa. The second settlement type is the diffuse village. These sites range from 2 to 120 hectares and appear to represent site areas periodically utilized by Oneota groups over a long period of time. Examples of this settlement type include the Dixon (13WD8), Correctionville (13WD6) and Bastian (13CK28) sites in northwest Iowa, the Kingston site (13DM3) and 13LA147 in southeastern Iowa, and the Guthrey (23SA131) and Utz (23SA2) sites in north central Missouri. The third settlement type is the compact, unfortified villate of less than 2 hectares. The Grant site (13AM201), in northeast Iowa and the majority of southeast Iowa sites are examples of this settlement type.

Oneota house types include ovoid wigwams reported from the Walker-Hooper and Overhead sites in Wisconsin (Gibbon 1972a; Stoltman 1973) and large, Iroquois-type longhouses reported from the Anker and Oak Forest sites in Illinois (Bluhm and Liss 1961; Bluhm and Fenner 1961), and from the Grant site in northeast Iowa (McKusick 1973). In addition, a square, Central Plains type house has been reported from the Leary site in Nebraska (Hill and Wedel 1936:16-17, 69), and rectangular structures with wall trenches were found in Wisconsin at Carcajou Point by Hall (1962:17-21) and at the Zimmerman and Fisher sites in Illinois (Gibbon 1972b:172). Mott Wedel (1959:42) also discusses an ovoid posthole pattern from a site in northeastern Iowa which may represent an Oneota structure. A number of superstructures ranging from wattle and daub to bark covered summerhouses and mat covered wigwams are possible house types (Overstreet 1977:162).

Although no house types are known for the southeast Iowa Oneota sites, several sites have surface scatters of artifacts which suggest houses. Excavation of the bluff top sites would reveal what house types characterize this region. Since the upland sites are on loess deposits, any subsurface features like storage pits, post holes and house pits would appear as dark stains on the yellow loess.

Subsistence patterns of Oneota groups in southeast Iowa and across the state appear to be generalized (Henning 1970:44) and oriented toward farming and hunting. Faunal remains from the Kingston site (Straffin 1971:2-7) suggest a woodland/forest orientation. Preliminary faunal analysis by Straffin (1972:7) from the Schmeiser site also indicate a strong orientation toward the local floodplain and marshland communities. Oneota groups in Iowa have been viewed as prairie adapted and as having exploited a wide range of the available and diverse habitats found in the Prairie Peninsula. It appears from the southeast Iowa data, however, that Oneota groups were primarily woodland oriented and only crossed the prairies to find the particular forest-riverine setting they preferred.

The importance of farming in the Oneota diet is unclear. Gibbon (1972b:175) argued that Oneota subsistence was based on efficient horticulture and extensive exploitation of local resources. The importance of cultigens and other economic aspects of Iowa Oneota sites can be tested by comparing floral and faunal assemblages from radiocarbon dated storage pits and features from western, central and eastern Iowa Oneota sites. Many of these data are already available in collections maintained by the Office of State Archaeologist, if not published

(Osborn 1976). This approach would determine if geographical variability exists in the subsistence patterns of contemporaneous sites and would evaluate regional continuity among the sites studied. If Oneota groups were woodland-oriented, one would expect to find deer and elk as the predominant meat source regardless of site location. On the other hand, if the western Oneota sites on the Little Sioux River show regional continuity and development, one might expect bison to be more important in early sites in this region or at least to increase in importance in later sites like Bastian and especially in the proto-historic and historic Orr focus sites in the area like Gillett Grove (13CY2) and the Milford site (13DK1). These results could then be compared with Oneota sites in the upper midwest where subsistence activities are oriented towards hunting, fishing, gathering and gardening (Gibbon 1970b: 152; 1971; 1972a, b).

Hillside cemeteries like those associated with the Orr focus in northeast Iowa (Mott Wedel 1959:44-46; Fisher and Tiffany 1977:17-27) appear to be absent in southeast Iowa. At least two of the Oneota sites in question, the Kingston site (13DM3) and the Spring Creek site (13DM68), are located in association with large Woodland mound groups, however. It is possible that these mound groups contain intrusive Oneota burials — a trait also known in northeast Iowa (Mott Wedel 1959). Oneota groups may have also constructed their own burial mounds in northeast Iowa (McKusick 1973:21; Mott Wedel 1959:18, 20, 30). Human remains are found in habitation sites as well (Osborn 1976). Any of the known burial patterns in northeast Iowa including re-articulated burials (Henning and Peterson 1965) may be present in the southeastern portion of the state. Delineation of the actual burial patterns of Oneota groups in this part of the state must await more extensive research and excavation in this region.

METHODS

Oneota pottery can be difficult to classify (Henning 1970:31-32). It has been suggested that Oneota ceramics are difficult to group into wares and types that have any meaning with respect to chronological ordering or cultural processes. The apparently random association and recombination of formal and decorative attributes may reflect the fact that Oneota groups were apparently patrilineal as Anderson (1972:240) has suggested.

Related to the problem of Oneota pottery classification is Gibbon's (1972b) proposition that Oneota emerged from a Woodland hunting and gathering base modified in the direction of the Mississippian pattern. Ford and Willey (1941:356-357) also suggested a contact and acculturation hypothesis to explain the emergence of Oneota. The social organization and the evolution of Oneota from a Woodland base may be a cause of the classificatory problems with Oneota pottery referred to by Henning. They also suggest means for understanding Oneota pottery typologically.

In the Middle Woodland period, for example, one can find a broad distribution of similar and simple decorative traits over the upper midwest. This pattern indicates the sharing of ideas between groups for a long period of time. If Oneota is a regional, generic development from earlier Woodland cultures, then one could expect some general formal trends with respect to ceramics to continue. This concept of the sharing of similar and simple decorative traits over a broad area appears to be the case for Oneota pottery, and thus, provides support for Henning's (1970) observations. Even so, Henning's viewpoint concerning Oneota ceramic typology represents a broad characterization. I believe a ware/type classification is possible for the Schmeiser site pottery and other Oneota ceramic complexes in Iowa.

Using Lehmer's (1954:41) conception of a ware, Schmeiser ware is defined as a group of types which share the following features: 1) vessel form; 2) temper; and 3) shoulder decoration. Schmeiser ware types

Table 2. *Attributes on body sherds*

Attribute	Observations	Attribute	Observations
Plain	160	Narrow	-
Decorated	114	Acute	-
Plain		Narrow	-
Dull	119	Punctate	
Plain		Diameter	
Polished	41	Narrow and	2
Surface Finish		Direction of	
Trailed	18	Application	16
Smoothed-over			
Trailed	79	Medium	8
Polished-over		Straight	
Trailed	17	Medium	7
		Right	
		Wide	
		Acute	1
Line Width		Wide	
Medium	21	Straight	2
Narrow	73	Wide	
	12	Straight	
		Wide	
		Right	-
Line Depth			
Deep	18		
Shallow	88		
		Other	2
		Total Bodysherd Sample	274

Table 3. *Body sherd thickness in mms*

Item	Number	Range	Mean	Standard Deviation
Plain	40	4-9.4	6.7	.15
Trailed	40	4.4-9.2	6.8	1.45

Table 4. *Measurements in mms on rim/shoulder fragments*

Measurement	Number	Range	Mean	Standard Deviation
Rim Thickness	12	6.2-10.5	8.4	1.44
Lip Thickness	2	5.7-7.3	-	-
Shoulder Thickness	29	5.5-9.1	7.4	1.01
Neck Angle	5	90-120.5	-	-

represent decorative segments and are defined on the basis of location and presence/absence of decoration on the lip or rim of Schmeiser ware vessels (Fig. 2). Although the ware/type groupings could be seen as abstractions in the mind of the classifier, it is hoped that the typology to be presented has formal, temporal and spatial importance with respect to reconstruction of Oneota lifeways in this portion of the state.

The following pottery descriptions are based on the rim sherds recovered from Straffin's excavations in the repository of the Office of State Archaeologist. The body sherds described represent 25% of the Schmeiser collection and were chosen at random from the total body sherd collection from the site.

The method of analysis follows Knudson (1967) and Wheeler (1952). Henning's (1970:32-42) procedures were used for the isolation and description of decorative attributes on the rim and body sherds. Gibbon (1973) has provided a much more detailed procedure for description of Oneota pottery attributes. Gibbon's methods were not used in this study primarily because Straffin (1971:22-28-30), in his analysis of the Kingston Oneota pottery, used Henning's descriptive format for description of design elements and techniques of application. The fact that Henning's approach has already been established for Oneota sites in the study area is considered ample reason not to use another approach. If other methods were used for the Schmeiser analysis, it would not be possible to make precise comparisons among the Oneota sites in the region without reworking a major collection already described in the literature.

POTTERY DESCRIPTION

Schmeiser Ware

Items. The Schmeiser sample contains 274 body sherds and 186 rim sherds.

Paste. Schmeiser ware pottery is tempered with crushed shell. The shell fragments are 1-2 mm in size and range in relative amount from 20-50% of the paste. The sherds examined are compact and have a smooth, fine surface feel. Many have laminations in the paste in cross section.

Hardness ranges from 2.5-4 on the Moh's scale.

Generally, the Schmeiser sherds are dark gray (10YR3/1) to yellowish red (5YR4/6) on their interior surfaces. The core of the sherds is uniformly gray (10YR5/1). The exterior sherd surfaces have a similar range of reds and buffs to grays. Firing clouds are prevalent on many sherds.

Method of Manufacture. The method of manufacture could not be determined exactly, but Schmeiser pottery appears to have been mass modeled then thinned by the paddle and anvil method.

Surface Treatment. Schmeiser vessels have carefully smoothed, plain, dull exteriors. Some are polished — probably as a result of the thinning or decorative process used in vessel construction (Table 2). The interior surfaces show varying degrees of care in finishing. Some interiors have undulating surfaces, possibly indicating the use of a hand for anvil in vessel construction. Folding and thickening is present at the interior rim/neck juncture on some specimens. This is also an indicator of vessel construction showing that some rims were apparently made by attaching an additional thin strip of clay to the vessel body. Likewise, several interior surfaces have short, erratic lines and grooves that may also represent different layers of clay used in the modeling process. Some of the better finished interior surfaces exhibit what appear to be grass impressions. These impressions may denote the use of grass to impress, wipe and smooth the vessel surfaces during construction.

Form. Schmeiser ware vessels are globular to sub-globular ollas with loop handles, smoothly curved shoulders and rounded base-bottoms. The necks of the vessels are heavier and thicker near the rim and neck area and thinner towards the body. This is reflected in the thickness of the sherds from various portions of the vessels. The body sherds range in thickness from 4-9.4 mm and average around 7 mm (Table 3). On the other hand, the rim/shoulder fragments range from 5.5-<9.1 mm in thickness (Table 4).

The handles on Schmeiser ware have a mean width of 6.1 mm, are of the loop form, and in most cases, do not extend up to the lip (Table 5). A distinctive feature of Schmeiser ware handles is deep, horizontal grooves on the exterior surface of the handles giving them a "stepped"

Table 5. *Handles on Schmeiser site pottery*

Type	Total	Loop	Strap	Up to Lip	Below Lip	Grooved Horizontally	Vertical Lines	Plain
Schmeiser Tool Impressed Lip	13	13	-	4	9	10	-	3
Schmeiser Tool Impressed Rim	5	5	-	3	2	5	-	-
Schmeiser Plain	-	-	-	-	-	-	-	-
Rim Fragments	2	2	-	1	1	2	-	-
Loose Handles	1	1	-	-	1	1	-	-
Others								
1	1	-	1	1	-	-	1	-
2	1	1	-	1	-	-	1	-
3	1	1	-	-	1	-	1	-
TOTAL	24	23	1	10	14	18	3	3

Table 6. *Attributes on Schmeiser site pottery*

Type	Lip		Rim		Lip Notches				Tool Impressions		Neck Profile		Lip Form				
	Total	Plain	Decorated	Plain	Decorated	Acute	Right	Finger	Scallop	Vertical	Diagonal	<	(∩	∪	∩	∪
Schmeiser Tool Impressed Lip	53	-	53	53	-	10	41	2	1	51	1	19	8	46	4	1	1
Schmeiser Tool Impressed Rim	88	88	-	-	88	-	-	-	-	75	12	16	13	43	41	2	1
Schmeiser Plain	13	13	-	13	-	-	-	-	-	-	-	4	2	9	4	-	-
Rim Fragments	9	-	-	-	-	-	-	-	-	-	-	5	2	1	-	-	-
Bowls	12	7	5	8	4	-	-	-	-	4	-	-	-	4	6	-	-
Red slip	2	2	-	2	-	2	-	-	-	-	-	-	-	2	-	-	-
Miniatures	7	7	-	7	-	-	-	-	-	-	-	5	1	3	4	-	-
Other																	
1 (P)	1	1	-	-	1	-	-	-	-	1	-	1	-	1	-	-	-
2 (Q)	1	1	-	-	1	-	-	-	-	1	-	-	1	1	-	-	-
3 (R)	1	1	-	-	1	-	-	-	-	1	-	1	-	-	1	-	-
TOTALS	186	120	58	83	95	12	41	2	1	133	13	51	27	110	60	3	2

appearance. This decorative characteristic is present on all but 3 Schmeiser ware handles in the sample (Table 5). Some of the handles have been smoothed after decoration, distorting the decoration somewhat.

The interior neck juncture is angular on 51 of 78 rims (Table 6) producing rims with angular profiles. In degrees, the interior neck angle is variable and ranges from 80-120° with a fairly homogeneous distribution of measurements within this range (Table 7).

Four lip forms were identified on the Schmeiser sample: square; rounded; beveled towards the interior; and beveled towards the exterior. The overwhelming majority were angular (110 or 175 recorded); the second most common was the rounded form (Table 6). Because the rounded form has its highest occurrence with Schmeiser Tool Impressed Rim, it may be the result of the tool impressed decoration on the interior lip/rim juncture. Measurement of lip angles range from 75-115°, but the majority fall between 90-95° (Table 8). Lip thickness ranges from 3-10.3mm; the mean value differs among the component types, however (Tables 9-11).

Schmeiser rims are generally parallel sided and straight to slightly flaring although variation within these norms is apparent (Figs. 3-5). Rim height ranges from 15.6-50.1 mm and in thickness from 4.5-10.7 mm with the mean values differing among component types (Tables 9-11).

Table 7. *Measurements of neck angle in 5 degree increments*

Type	Degrees								
	80	85	90	95	100	105	110	115	120
Schmeiser Tool Impressed Rim	1	-	1	3	2	4	3	4	1
Schmeiser Tool Impressed Lip	1	2	4	2	1	2	5	4	1

Table 8. *Measurement of lip angle in 5 degree increments*

Type	Degrees								
	75	80	85	90	95	100	105	110	115
Schmeiser Tool Impressed Rim	2	4	3	27	7	1	1	-	-
Schmeiser Tool Impressed Lip	1	2	-	27	4	2	2	-	1
Schmeiser Plain	-	1	2	4	2	-	-	-	-
Bowls	-	-	1	2	-	-	-	1	-

Table 9. Measurements in mms on Schmeiser Tool Impressed Lip

Measurement	Number	Range	Mean	Standard Deviation
Rim Height	28	15.6-49.1	33.3	9.53
Rim Thickness	49	4.5-9.3	7.2	1.35
Lip Thickness	51	4.3-10.3	7.2	1.44
Mouth Radius	10	40-150	100.7	35.9
Neck Radius	8	60-130.5	98.1	24.9
Shoulder Thickness	18	3.8-8.6	6.1	1.25

Table 10. Measurements in mms on Schmeiser Plain

Measurement	Number	Range	Mean	Standard Deviation
Rim Height	6	30.1-45.2	39.5	-
Rim Thickness	11	5.1-10.5	7.8	1.61
Lip Thickness	13	4.1-9.1	5.8	1.43
Mouth Radius	1	100	-	-
Neck Radius	1	80	-	-
Shoulder Thickness	2	6.5-7.2	-	-

Table 11. Measurements in mms on Schmeiser Tool Impressed Rim

Measurement	Number	Range	Mean	Standard Deviation
Rim Height	30	16.7-50.1	32.3	9.3
Rim Thickness	84	4.9-10.7	7.1	1.49
Lip Thickness	77	3-8.2	5.3	1.13
Mouth Radius	12	60-130.5	95	29.9
Neck Radius	11	40-110.5	81	28.3
Shoulder Thickness	19	4.3-7.6	5.7	1.07

Table 12 Measurements in mms on other pottery types

Type	Measurement	Rim Height	Rim Thickness	Lip Thickness	Mouth Radius	Neck Radius	Shoulder Thickness	Lip Angle	Neck Angle
Bowls	Number	-	12	12	-	-	1	-	-
	Range	-	4.4-9.2	3.2-6.3	-	-	5.7	-	-
	Mean	-	6.3	4.5	-	-	-	-	-
	S.D.	-	1.29	.93	-	-	-	-	-
Red Slip	Number	-	2	2	-	-	-	-	-
	Range	-	5.5-5.9	5.6-5.7	-	-	-	-	-
	Number	5	7	7	-	-	4	-	-
Miniatures	Range	9.7-11.6	3.8-4.9	2.5-4.9	-	-	3-7.5	-	-
	Mean	-	4.3	3.3	-	-	-	-	-
	Number	-	1	-	-	-	-	-	-
Rolled Lip	Range	-	10.7	-	-	-	-	-	-
	Number	1	1	-	-	-	1	-	1
Other 1	Range	28.1	7.7	-	-	-	5.5	-	90
	Number	1	1	1	1	1	1	1	-
	Range	24.2	6.9	4.6	60	50	5.4	90	-
Other 2	Number	1	-	-	-	-	1	-	1
	Range	32.8	-	-	-	-	4.8	-	115

Table 13. Comparison of Schmeiser Ware traits with the Kingston & Guthrey sites

Attributes	Schmeiser		Kingston		Guthrey	
	No.	%	No.	%	No.	%
Line width:						
Medium	73	69	484	87	378	93
Not medium	33	31	62	13	28	7
Lip Decoration						
I Acute Notched Lip	10	6	13	4	3	1
II Right Notched Lip	41	27	78	21	21	10
III Finger Notched Lip	2	1	3	1	0	0
IV Scallop Notched Lip	1	1	4	1	0	0
V Vertical						
Interior	75	49	179	49	46	23
VI Slanted tool						
Interior	12	8	13	4	4	2
VII Vertical tool						
Exterior	0	0	1	0	9	4
VIII Slanted tool						
Exterior	0	0	0	0	1	0
IX Plain	13	8	75	20	118	58
Decorated Body Sherds	114	42	662	26	584	18
Plain Body Sherds	160	58	1895	74	2682	82
Punctuation						
round, medium,	16	44	100	66	73	42
acute						
other	20	56	52	34	99	58
Sample size						
Rims	154	36	366	13	202	6
Body	274	64	2557	87	3266	94

Table 14. Percentages used for Fig. 10

Lip Decoration	Schmeiser No.	Schmeiser %	Kingston No.	Kingston %	Guthrey No.	Guthrey %
II	41	31	67	23	21	11
V	75	58	179	54	46	25
IX	13	10	75	23	118	64
TOTALS	129	99	332	100	185	100

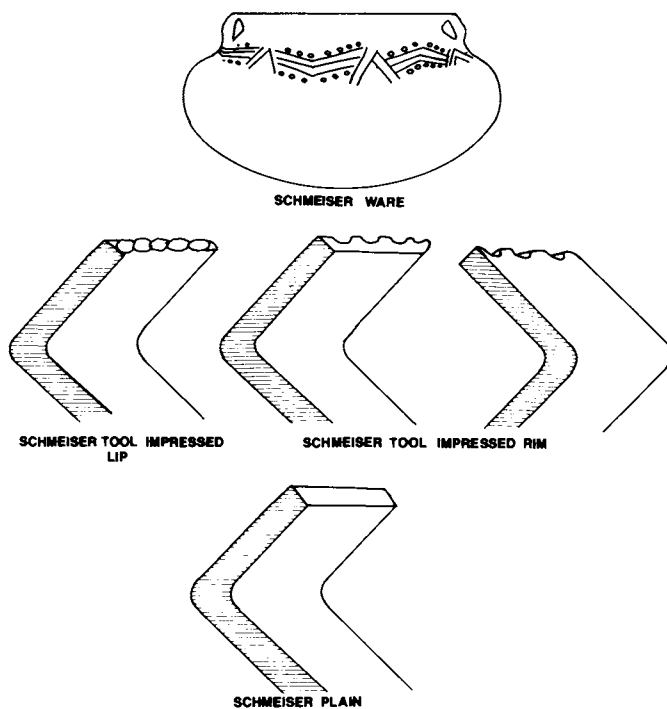


Fig. 2. Representation of Schmeiser ware and component types.

Measurements on mouth and neck radii indicate small and medium sized vessels (Table 9-11). Miniature vessels are also present (Table 6).

Decoration. There are four basic areas of decoration on Schmeiser ware pottery. Decoration on the upper body area from the neck to the shoulder consists of geometric trailed patterns bordered by punctates. The trailed lines are shallow and of medium width (Table 2). The punctates are of medium diameter and most frequently applied at an acute angle to the vessel surface (Table 2; see Henning 1970 for definition of terminology). Even though considerable variation was noted from sherd to sherd, the body decoration forms a few basic motifs involving nested chevrons divided by generally vertical, parallel trailed bands. The range of observed motifs are shown in Figs. 6 and 7.

The second form of decoration consists of the stepped handles described earlier. The other two forms of decoration consist of placing vertical and occasionally diagonal tool impressions on either the lip or the interior lip/rim juncture. While the two decorative forms on the lip and rim are mutually exclusive, they both occur with the stepped handles and decorated vessel bodies. Thirteen rims were undecorated, but these too were associated with the decorated handles and shoulders.

Other Items. In addition to those vessel fragments described as Schmeiser ware, there were other vessel forms and sherds of different paste or decorative characteristics in the sample. These include bowls, rolled lip and red slipped vessels as well as grit tempered and smoothed-over-cord-marked shell tempered sherds (Table 12). The body sherds are described below, the rims elsewhere.

One body sherd was sand/grit tempered and had a red exterior and gray interior. The exterior was single-cord-impressed with S^Z twisted

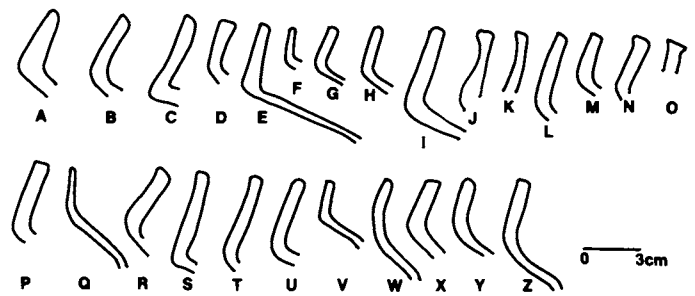


Fig. 3. Schmeiser Tool Impressed Lip rim profiles.

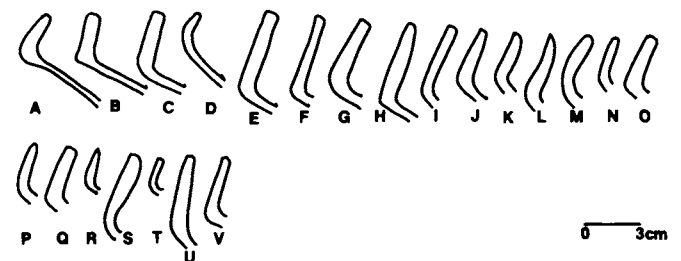


Fig. 4. Schmeiser Tool Impressed Rim profiles.



Fig. 5. Rim profiles. A-E, bowls; F-I, Schmeiser Plain; J-M, miniatures; N-O, red slipped rims; P-R, other rims.

ords. It is 6.1 mm thick and probably of Late Woodland affiliation.

Three shell tempered body sherds were red slipped. They are thinner than the Schmeiser materials, ranging from 4.9-5.5 mm, and are probably fragments of Mississippian trade vessels.

Two buff colored shell tempered sherds had paste characteristics similar to Schmeiser ware, but had smoothed-over-cord-marked exteriors. They range in thickness from 6.1-9.8 mm and appear to be thicker than the Schmeiser ware materials. There were also 2 other smoothed-over-cord-marked shell tempered body sherds, but these are thinner and range in thickness from 4.8-5.4 mm.

Schmeiser Types

Schmeiser Tool Impressed Rim (Tables 6-8; Figs. 4, 6, 8, d-e). Schmeiser Tool Impressed Rim is characterized by a series of parallel, and infrequently diagonal tool impressions on the interior rim/lip jun-

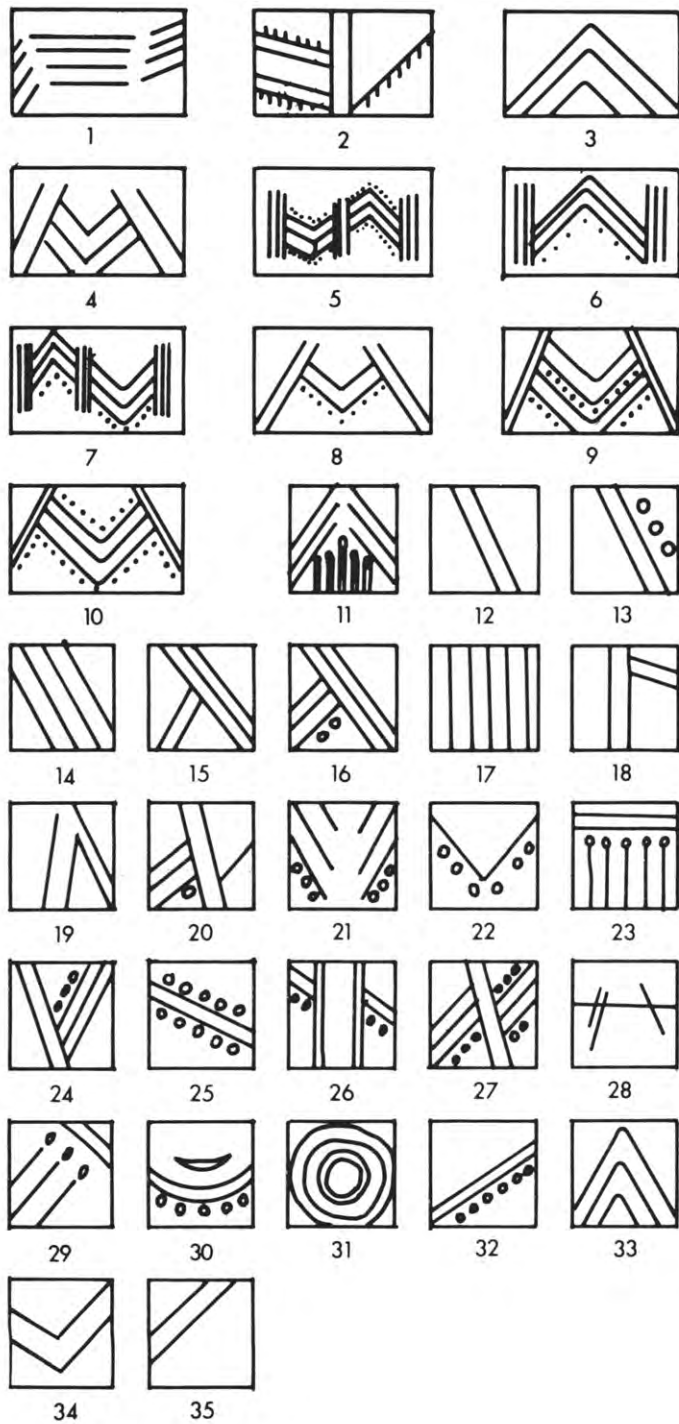


Fig. 6. Designs on Schmeiser pottery. 1-32, body sherds; 33-35, rim sherd interior surfaces.

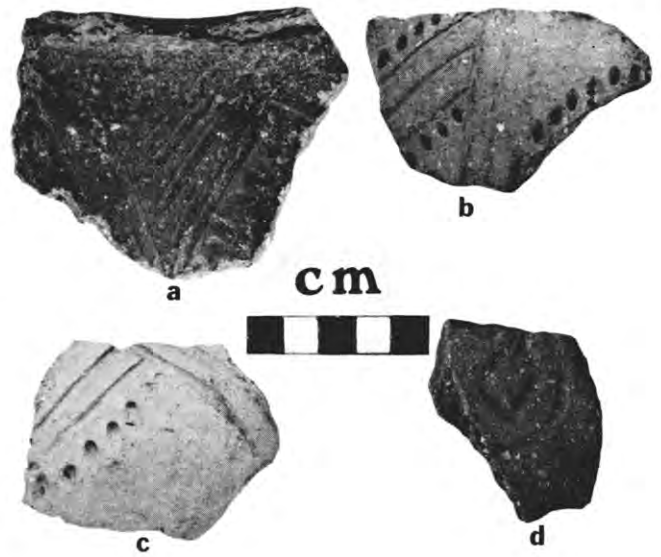


Fig. 7. Decorated body sherds from the Schmeiser site.

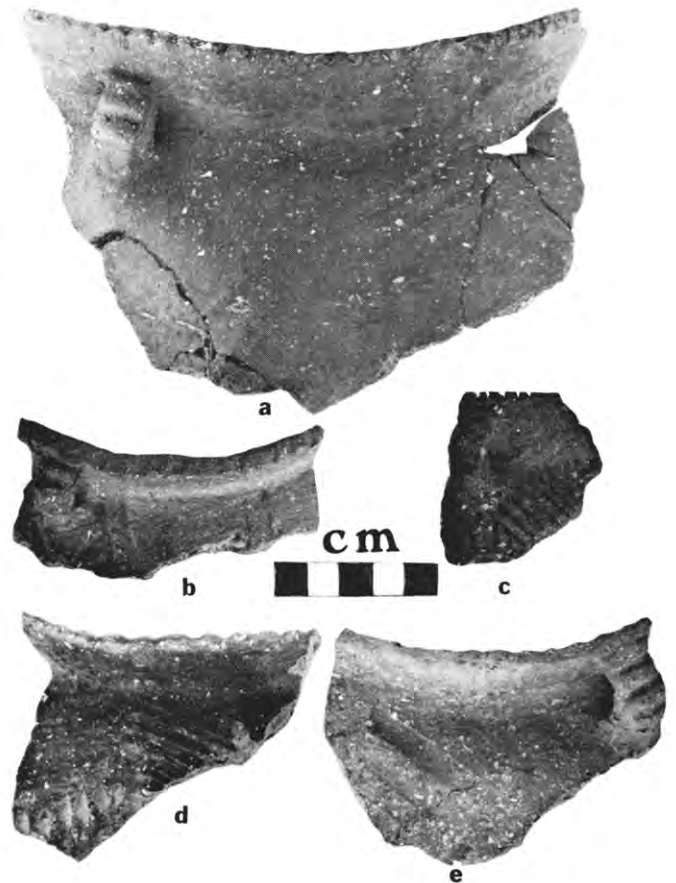


Fig. 8. Pottery from the Schmeiser site. a-c, Schmeiser Tool Impressed Lip; d-e, Schmeiser Tool Impressed Rim.



Fig. 9. Pottery from the Schmeiser site. a, bowl; b-c, g, aberrant rims; d-e, red slipped rims; f, miniature; h, Schmeiser Plain.

ture. The neck profile is about evenly divided between angular and rounded forms (Table 6). The rounded neck profile form has its greatest frequency of occurrence with this type, however (67%). Schmeiser Tool Impressed Rims have a weak rim/shoulder juncture. Most rims classified as this type were upper lip/rim sections.

Lip forms are also evenly distributed between square and rounded forms. The rounded variety has its greatest frequency of occurrence in this type as well. As mentioned previously, the predominance of rounded lips may be a result of the application of the tool impressions. Those lips which are square are so as a result of smoothing and flattening the lip after application of the tool impressions. This process can be clearly seen in profile on the exterior lip surfaces of several sherds. These sherds have a thin, uneven protrusion of clay onto the exterior rim surface.

The application of tool impressions also caused other alterations of the rim profile. On some of the rims, the tool impressions are wide and deep enough to give the lip a wavy or scalloped effect. Examples of a scalloped, rounded lip in contrast to a square, straight lip on Schmeiser Tool Impressed Rim are illustrated in Fig. 8, d and e respectively.

Other decorative features on Schmeiser Tool Impressed Rim include the application of isolated, trailed chevron designs on the interior rim surface (Fig. 6, 33-35). Similar design elements are present on pottery from the Leary site (Hill and Wedel 1936:24), on Moingona phase pottery from the central Des Moines River Valley (Osborn 1976:30-57), and on rims from the Dry Branch (13DM80), Schwenker (13DM82) and Spring Creek (13DM68) sites. Interior rim decoration is also found on Correctionville Trailed pottery (Henning 1961).

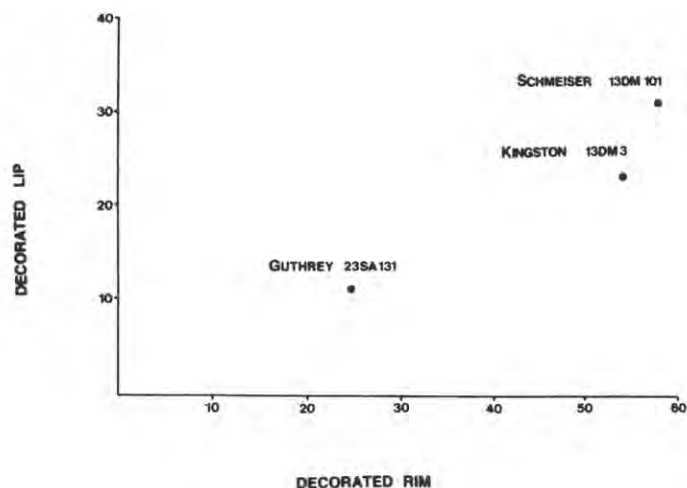


Fig. 10. Display of Schmeiser, Kingston and Guthrey pottery with respect to the percentages of plain, decorated lip and decorated rims in each sample.

Schmeiser Tool Impressed Lip (Tables 6-9, Figs. 3, 8, a-c). Rims in this type are characterized by a series of tool impressions on the lip. The neck profile is angular and the lip form is square on most specimens (Table 6). The majority (41 of 54 observations) of lip notches were applied at a right angle to the lip producing a circular to oval shaped impression. A few were applied at an angle; 2 were finger impressions. One of these was deep enough to give the lip a scalloped effect. One specimen had deep, narrow tool impressions on the lip that cut into the rim (Fig. 8, c).

Except for the lack of interior rim decoration, other formal and decorative features of Schmeiser Tool Impressed Lip are similar to Schmeiser Tool Impressed Rim. Several Schmeiser Tool Impressed Lip specimens exhibit "T" or "L" shaped lip/rim profiles (Fig. 3, N-O). This is probably due to the pressure of tool application on the particular section of rim represented, and as such, is not a distinct lip/rim profile.

Schmeiser Plain (Tables 6, 8, 10; Fig. 5, F-I, 9, h). A few rims in the sample had no decoration on the rim or lip. These are classified as Schmeiser Plain. Schmeiser Plain rims generally have angular neck profiles and square lips (Table 6). Other formal and metric attributes are similar to the other 2 types and the ware group in general.

Other Rim/Vessel Forms

In addition to Schmeiser ware and its component types, several other shell tempered rim and vessel forms were present in the Schmeiser collections. Some of these, like the bowls and miniatures, appear to be locally made and are part of the Schmeiser ceramic complex. The others may be fragments of trade vessels or represent later Oneota occupations at the site.

Bowls (Tables 6, 8, 12; Figs. 5, A-E, 9, a). Twelve rim fragments were classified as bowls. One has a flared rim profile, the others are incurving (Fig. 5, A-E). Two lip profiles, square and rounded, were identified. Two decorative styles are present on the Schmeiser bowls. These are tool impressions on the lip or tool impressions on the interior lip/rim juncture as illustrated in Fig. 9, a. Two were undecorated, and 2 had lugs on the exterior lip/rim.

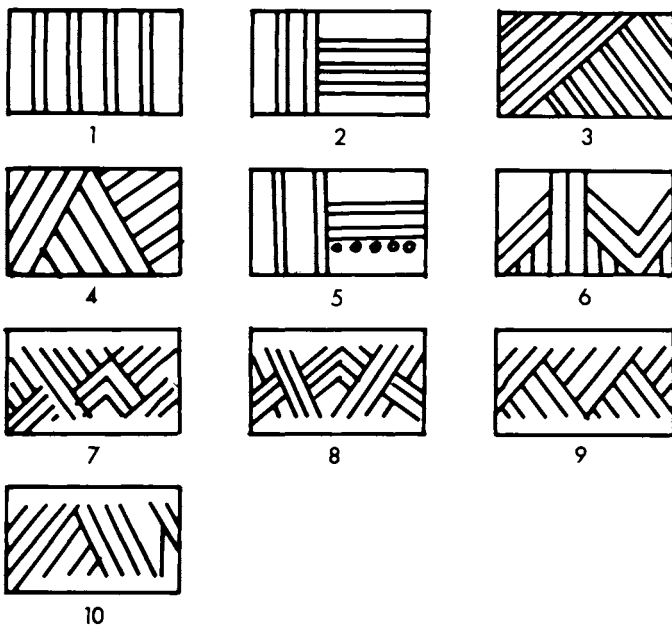


Fig. 11. Design motifs on Kelley Oneota pottery.

Red Slipped Rims (Tables 6, 12; Figs. 5, N-O, 9, d-e). Two plain, red slipped rim fragments were in the Schmeiser sample. Both rims are vertical and parallel sided. The lip profile is square, and each has tool impressions on their lips (Table 6). Although only the upper portions of both rims are present, measurements on each suggest they are from the same vessel — probably a high neck water bottle.

Miniatures (Table 6, 12; Figs. 5, J-M, 9, f). Miniature vessels from the Schmeiser site fall into two categories — bowls and flared rim forms. The flared forms appear to be a scaled down version of the larger Schmeiser ware vessels. Both forms may have functioned as toys or practice pots. Most are undecorated, although one flared rim miniature did have a plain handle (Fig. 9, f). Another flared rim miniature has shoulder decoration consisting of a series of angular punctates applied acutely in parallel rows.

Rolled Lip (Table 12). One undecorated, rolled lip rim fragment was recovered from the Schmeiser site. It has an angular neck profile and is unslipped. It could be locally made, but more than likely, it was part of a trade vessel.

Non-Schmeiser ware Oneota Rims (Tables 6, 12; Figs. 5, P-R, 9, b-c, g). There were three non-Schmeiser ware Oneota rims in the collections from the Schmeiser site. One rim is flared, has an angular neck profile and a square lip (Fig. 5, P). The interior lip/rim is decorated with vertical tool impressions. It also has a strap handle that is decorated with a series of parallel, vertical trailed lines (Fig. 9, b). The strap handle, rim form and decoration is reminiscent of McKinney site (13LA1) pottery (Slattery, Horton and Ruppert 1975). If this association is correct, this indicates an occupation of indeterminate length at the site by later Oneota groups.

The second rim also has interior lip/rim decoration consisting of vertical, tool impressions. The neck profile is rounded, but the lip profile is square (Table 6, Fig. 5, Q). It has a strap handle. Like the aforementioned rim, this handle is decorated with parallel, vertical

SPACE/ TIME UNITS	ONEOTA TRADITION			
	DES MOINES-SKUNK REGION		SKUNK-IOWA REGION	
	LOST CREEK LOCALITY	SPRING CREEK LOCALITY	KINGSTON LOCALITY	TOOLESBORO LOCALITY
LATE 1550	?	?	Bailey Farm (13DM2)	Late McKinney (13LA1)
MIDDLE	?	?	Kelley Phase	13LA84 13LA139
1350	Burk (13LE92)	Spring Creek (13DM68)	Burlington Phase	Early McKinney (13LA1)
EARLY 1000	Lost Creek (13LE93)			

Fig. 12. Oneota taxonomy for southeast Iowa.

trailed lines (Fig. 9, g). Oneota pottery with these characteristics are more common at the nearby Kelley Oneota site (13DM140) and at the McKinney site (Table 1; Fig. 1).

The last specimen has an angular neck profile and a square lip (Fig. 5, R; Table 6). It has a loop handle decorated with parallel, vertical trailed lines (Fig. 9, c). Rather than the trailed shoulder decoration characteristic of Schmeiser ware, this specimen has a series of vertical, raised bands on the shoulder surface formed by deep finger impressions from the interior of the vessel wall.

DISCUSSION

The Schmeiser pottery sample has its closest formal and decorative similarity with the ceramics from the nearby Kingston Oneota site (13DM3) (Fig. 1). Features common to both ceramic assemblages include cord-marked, shell tempered pottery, red slipped rim and body sherds presumably from high neck water bottles, and Oneota pottery with tool impressed lip, tool impressed rims and plain rims. Shoulder motifs of medium width trailed lines forming chevron designs which are outlined with medium sized, acutely placed punctates separated by vertical fields of parallel trailed lines are found in both samples. The circle and dot motif (Fig. 6:30-31), loop handles with notched, step-like decoration and bowls are present in both collections (Straffin 1971:23-26, 30-34-35, 48). Schmeiser ware also shares many of these formal and decorative traits with Oneota pottery from the Leary site in southeastern Nebraska (Hill and Wedel 1936:30-41, 67; Henning 1970:145) and with the Clarkson site in central Iowa (Osborn 1976:129)

As Straffin (1971:31) notes, impressionistically, Kingston ceramics, and we may include Schmeiser as well, share a number of decorative features with Oneota pottery from the Chariton River region in Missouri. Data on Guthrey, Kingston and Schmeiser have been summarized from Straffin (1971:38) and Henning (1970) (Table 13). Data from the Kingston and Guthrey sites were used because they are the only published, detailed ceramic analyzes of sites close to Schmeiser. Differences among the 3 sites are that there are more plain rims at the

Guthrey site than at either Des Moines County sites, whereas Schmeiser and Kingston have about the same percentages of lip and rim decoration, but vary on the frequency of plain rims (Table 13).

Several Chi-square tests were performed comparing Schmeiser with Kingston and Guthrey. The two null hypotheses tested were: 1) there is no difference among the frequencies of major lip and rim decoration categories (Table 13, II, V & IX) among the sites; and 2) there is no significant difference between the frequencies of medium and non-medium width trailed lines among the three sites. These tests paralleled those made by Straffin (1971:32-33). The results were the same on all tests, the null hypothesis was rejected at the .05 level.

The Chi-square results can be displayed graphically by plotting the percentage of 2 of the lip decorative styles (II and V) based on the percentage of the third (IX) from each sample (Table 14, Fig. 10). These results show a close relationship between Schmeiser and Kingston, but a great disparity between them and Guthrey. Guthrey and Kingston radiocarbon dates indicate these 2 sites were occupied during the 14th century (Henning 1970:85, 170; Straffin 1971:6). An interpretation of the Chi-square results suggests Guthrey and Kingston-Schmeiser ceramics reflect formal differences among spatially separate, but contemporaneous groups who are part of the same ceramic tradition. The differences between Kingston and Schmeiser could reflect formal dissimilarity among the same group in one locality as a result of time. In summary, the formal differences in ceramics between the southeast Iowa sites and those in the Chariton River region are seen as spatial; those between Kingston and Schmeiser are viewed as developmental.

Schmeiser and Kingston Oneota represent one of 3 kinds of Oneota pottery found in southeast Iowa. The Schmeiser-Kingston materials differ markedly in decorative styles with materials from the Kelley Oneota site (13DM140) in the Office of State Archaeologist collections (Fig. 1, Table 1). Kelley rims have more strap handles than loop handles. The strap handles are decorated with parallel, vertical lines. At the Kelley site strap handles that extend to the lip are as common as those that do not. Both angular and curved rim profiles are present with the latter predominating. The rims are more flaring and appear to be shorter than Schmeiser-Kingston rims. Rim decoration consists mainly of deep tool and finger impressions on the lip. Shoulder decoration de-emphasizes chevron designs and punctates. Instead combinations of parallel, vertical and diagonal to horizontal trailed bands are used (see Fig. 11). Broad trailing (greater than 5 mm) is preferred 2 to 1 on the sherds inspected.

Ceramics similar to Kelley Oneota have been illustrated by Griffin (1943:CXL, Fig. 6, CXLI, Figs. 1-3, 10) from the Huber focus in Illinois and from the Midway village in Wisconsin. The shoulder motifs on Kelley Oneota are like those reported from the Bastian site, 13CK28, on the Little Sioux River in northwest Iowa by Harvey (1971), on Allamakee Trailed pottery from Oneota sites in northeast Iowa (Henning 1961; Mott Wedel 1959) and from the Leary site in Nebraska (Henning 1970:145; Hill and Wedel 1936:39).

The Kelley Oneota pottery sample also contained both a plain and a highly polished, black, seed jar with engraved decoration, Lake Winnebago Trailed pottery (Hall 1962: vol. 2, 107-109), a fragment of a zoomorphic Mississippian vessel and two trailed-over-cord-marked shell tempered rim sherds reminiscent of Fifield Trailed of the Fisher focus as illustrated by Faulkner (1972:Plate XII, A) from the Griesmer site. The trade pottery, similarity of shoulder motifs to Bastian, and radiocarbon dates (Faulkner 1972:53; Henning 1970:169) support a date in the 1500's for the Kelley site.

Oneota pottery with shoulder decoration like the Kelley ceramics appear to have replaced the Kingston-Schmeiser pottery in southeast Iowa and represent forms that are transitional to the kind of pottery styles found at the McKinney site (Slattery, Horton and Ruppert 1975). The shoulder decorative motifs found on Kelley and Bastian pottery are

particularly significant. Pottery with flared rims and similar shoulder motifs is associated with Initial Coalescent sites in South Dakota and has been attributed to Oneota influence (Spaulding 1956:91-96). Kelley-like shoulder design elements are also found on Lower Loop pottery (Grange 1968).

The McKinney site (13LA1) is somewhat enigmatic in that like many Oneota sites, it contains at least two radiocarbon dated occupations (AD 1295±90, GX2248 and AD 1610±90, GX2249). Continuity with Kelley pottery can be seen in the McKinney rim profiles which are flared and smoothly rounded in profile. The McKinney rims are higher than Kelley rims, but clearly are more like Kelley than the high, flared angular rim profiles of Allamakee Trailed (Mott Wedel 1959: Henning 1961:52, Fig. 4). McKinney pottery has vertically trailed, strap handles that do not extend to the lip, and shoulder designs of narrow and broad trailed lines in motifs reminiscent of Allamakee Trailed. The McKinney shoulder motifs are mainly vertical, parallel bands of trailed lines. Triangular areas filled with punctates, a feature found on Orr focus pottery in the Upper Iowa River valley, is apparently lacking. More precise comparisons of Orr focus sites, such as the Lane Enclosure (13AM200), with McKinney are hampered because they too appear to be multiple component sites. If McKusick's (1973:10) radiocarbon dates are accurate, the Lane Enclosure dates from the 15th and 17th centuries. These dates are comparable to those Gibbon (1970b) reported from the Midway village, an Orr focus site in Wisconsin. These dates provide considerable time depth to the Orr focus and its diagnostic pottery type, Allamakee Trailed, and lead to the difficulties in comparison of Allamakee Trailed as a single typological unit with sites like McKinney.

If McKinney pottery represents the end of a regional ceramic continuity as I believe, its purported decorative similarity to Orr focus pottery may result from the sharing of a general decorative style on Oneota pottery in the late prehistoric period of which Allamakee Trailed and McKinney pottery are two regional examples.

Of the other Oneota sites listed in Table 1, only a few had enough diagnostic materials in the Office of the State Archaeologist collections to hazard an association with Kingston-Schmeiser, Kelley or McKinney. The Burk site (13LE92), and the Lost Creek site (13LE93) in Lee county have pottery similar to Schmeiser. The Dry Branch site (13DM80), the Schwenker site (12DM82) and the Spring Creek site (13DM68) in Des Moines county also have Schmeiser-like pottery. Kelley-like sites include 13LA84, 13LA139 and possibly Bailey Farm (13DM2) although the latter also appears to have McKinney-like pottery.

A number of developmental trends are observable among Oneota sites in southeastern Iowa. From early to late: 1) the line width on shoulder trailing changes from medium and shallow to broad and medium to broad and fine lines; 2) rim profiles shift from slightly flared, angular and rounded profiles to flared rims with predominately rounded rim profiles to high, flared rims with rounded profiles; 3) rim decoration changes from lip and rim tool impressions of medium size to broad tool and finger impressions on the lips; 4) appendages change from plain and "step" decorated loop handles to strap handles with vertical, parallel trailed decoration that extend to the lip to similarly decorated strap handles that do not extend to the lip; and 5) shoulder motifs emphasizing chevron designs outlined by punctates in Kingston-Schmeiser pottery change to vertical and diagonal trailed line combinations found at the Kelley site to more Orr-like decoration of single bands of vertical to diagonal trailed lines at McKinney.

The developmental changes in Oneota ceramics in southeastern Iowa appear to involve the recombination of a few similar traits which change gradually through time. These formal and decorative attributes provide the basis for broader taxonomic considerations in categorizing Oneota materials from the Mississippi River Valley in this portion of the state.

Using the Willey and Phillips (1958) classification terminology, a Skunk-Iowa region is defined spatially to include the Oneota sites contained in an area from the north bank of the Skunk River to about 16 kilometers south of Muscatine, Iowa (Fig. 1). The region extends from the Mississippi River into Iowa to the forest/prairie transition on the uplands — a distance of approximately 8-11 kilometers. The Skunk-Iowa region may encompass a similar lateral and vertical extent in Illinois (National Research Council 1935:5). A Des Moines-Skunk Region can also be defined to include the Lee County Oneota sites and others that may exist from the mouth of the Des Moines River in Lee County north to the confluence of the Skunk and Mississippi rivers. The locality defined for the Des Moines-Skunk region is the Lost Creek locality, which includes the Lee County Oneota sites on Lost Creek, a tributary of the Skunk River.

Within the Skunk-Iowa region, the Kingston locality encompasses an area from Bailey Farm (13DM2) south to Flint Creek on the northern edge of Burlington, Iowa. Two other provisional localities are contingent upon further work. These are the Toolesboro locality, which extends from the mouth of the Iowa river north to the vicinity of 13LA147, and the Spring Creek locality which includes the Des Moines County sites south of Burlington (13DM60, 13DM64, and 13DM68).

Based on the data presented 3 phases are proposed for the Kingston locality. They are the Burlington phase which provisionally dates from the 1300's and includes pottery characteristic of Kingston, Schmeiser and related sites (Dry Branch and Schwenker) in the locality. The Burlington phase is intended to encompass the ceramics discussed by Keyes as the Burlington focus, but has been limited to a specific period of time and in areal extent to the Kingston locality. The Burlington phase is followed by the Kelley phase which is characterized by ceramics associated with the Kelley site. A final phase may be represented by the Bailey Farm, 13DM2. This late prehistoric phase is exemplified by the protohistoric ceramics from the second occupation of the McKinney site in the Toolesboro locality.

Based on the shoulder design elements and other ceramic attributes discussed, the occupation of the Des Moines-Skunk and Skunk-Iowa regions by Oneota groups can be broken into three periods: Early, Middle and Late. These periods are compatible with Oneota sites in Iowa and the upper midwest (Fig. 12).

Many areas need to be explored further and numerous questions answered to substantiate the validity of the taxonomic arrangement presented here. For example, the earliest sites in the Burlington phase date to the 1300's, yet shell tempered, cord-marked pottery is present at Kingston, Schmeiser, Schwenker and Oneota sites on Lost Creek. Do these cord-marked sherds represent an earlier phase containing the transition from Late Woodland to Oneota in this region, or do they represent the amalgamation and acculturation of Woodland groups to a relatively late and intrusive Oneota complex in this area? Do the proposed phases belong in local sequences as presented, or do the idiosyncrasies of Oneota socio-economic organization as discussed by Gibbon (1972b) make them better placed in a regional sequence? While all these questions are provocative, my concluding remarks will address the relationship between the Skunk-Iowa region and other Oneota sites in Iowa.

Burlington phase pottery shares many general characteristics with other Iowa Oneota sites including those from the Moingona phase in the lower Des Moines River Valley (Osborn 1976; Gradwohl 1974), from Driftless region sites like the Grant site (13AM201) in northeast Iowa and the Sheffield site in Minnesota (Gibbon 1973), and from the Dowell and Guthrey sites in Missouri mentioned previously (Henning 1970). An Oneota site, 13MC3, near Muscatine also has pottery with formal and decorative features compatible with the Burlington phase. The body decoration of the Burlington phase pottery is quite similar to materials normally associated with Correctionville Trailed of the Cor-

rectionville-Blue Earth phase of northwest Iowa and southern Minnesota (Osborn 1976:130, Henning 1961:197), the Leary site in Nebraska (Hill and Wedel 1936:30-41), and with pre-Orr sites in the Driftless region like the Diamond Bluff, Armstrong (Hurley 1978:47-58) and Shrake-Gillies sites in Wisconsin.

Kelley phase ceramics have shoulder design motifs like those at the Bastian site. Similar design elements and apparently similar rim forms and decoration have been found in Orr focus sites like Midway and the Lane Enclosure. Since both of these sites contain two components, each dating from the Middle and Late periods as defined in this study, it is possible that earlier forms of Allamakee Trailed have more Bastian/Kelley-like shoulder designs than later Orr focus sites in the Driftless region.

The main implication is that similar decorative motifs on the shoulders of Oneota vessels were shared by Oneota groups over a large area. Variation in design elements and their location on Oneota pottery may be more important in understanding Oneota archaeology than the technology of application of these decorative features. Furthermore, these decorative motifs appear to shift uniformly in popularity through time over the whole prairie/plains. These patterns are reflected in the Skunk-Iowa sequence.

Regional variation at any given time period is also present. For example, if one considers the nested chevron shoulder motif characteristic of Early Period Oneota complexes like the Burlington phase, Correctionville-Blue Earth phase and Moingona phase, a more curvilinear variety of this horizon marker can be found in Driftless region sites like Armstrong, Diamond Bluff and Bartron in the Red Wing area of southwestern Minnesota and western Wisconsin where direct Mississippian influence from local trade centers was present (Gibbon 1974). Likewise, Correctionville Oneota and Burlington phase ceramics have similar shoulder motifs, but different rim forms.

The Oneota tradition during the Early Period may have originally received Mississippian influence indirectly and later by direct contact, when trade centers were established in northwestern Illinois, southeastern Minnesota and southern Wisconsin. The fact that Correctionville and other Early Period sites have the same shoulder motifs could support migration legends concerning the spread of Chiwere speaking Siouan groups onto the prairie plains (Dorsey 1886; Radin 1923:1-27). Radiocarbon dates from a number of Oneota sites in western Iowa, Missouri, Minnesota and Wisconsin support this contention (Henning 1970; Harvey 1971:250; Osborn 1976:18; Boszhardt 1977).

This hypothesis of shared decorative motifs has broad implications both for rethinking Hall's (1962) classification of Oneota sites and for the test implications of Gibbon's (1972b) ideas on Oneota origins and development. The reevaluation of current Oneota taxonomy in light of the shared decorative motif hypothesis is needed especially for the Driftless region which may be the area of initial socio-economic evolution and expansion of Chiwere speaking groups into the prairie/plains. Future work should focus on a detailed examination of this hypothesis and review of Classic Oneota as a taxonomic concept.

ACKNOWLEDGEMENTS

This article is an outgrowth of a paper presented at the 1978 annual meeting of the Iowa Academy of Science held at the University of Northern Iowa, Cedar Falls. I would like to thank Duane Anderson and Mildred Mott Wedel who read this paper and offered many useful suggestions and criticism. I also want to thank Dean Thompson for drafting the figures and Betty Horner for typing various stages of this manuscript.

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