ANALYZING AESTHETICS AND CONTEMPLATING COSMOLOGIES: GLASS BEADS AND THE SOCIO-POLITICAL ECONOMIES OF THE HAUDENOSAUNEE CONFEDERACY, CA. 1655-1754

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This paper compares glass bead color, shape, and size patterns from 19 Seneca, Cayuga, Onondaga, Oneida, and Mohawk towns, ca. 1655-1754. During this time, Haudenosaunee (also known as Iroquois) Nations sought trading relationships with Europeans and other Indigenous communities to obtain goods by choice, rather than by dependence. As actors with agency, Haudenosaunee Nations intentionally sought specific visual characteristics of glass beads to generate desired outcomes. Within the context of Haudenosaunee cosmology, the colors red, white, and black have aesthetic and ideological power because their animacy evokes dynamic states of being and facilitates transformation. Considering glass bead color, shape, and size patterning across multiple contemporaneous towns in the Haudenosaunee Confederacy illuminates nation-specific aesthetic preferences, trends in bead use, and draws attention to Haudenosaunee economic and aesthetic motivations for wearing and exchanging glass beads during the fur trade.

INTRODUCTION

The Haudenosaunee Confederacy presently consists of the Mohawk, Oneida, Onondaga, Cayuga, Seneca, and Tuscarora Nations.[1] Historic and current Haudenosaunee (Iroquois) lands are situated in what is now New York state and the provinces of Ontario and Quebec. This paper focuses specifically on fur trade-era (17th-18th centuries) Seneca, Cayuga, Onondaga, Oneida, and Mohawk settlements in New York (Figure 1).[2] Historically, Haudenosaunee towns relocated periodically out of both ecological and sociopolitical necessity (Gerard-Little 2017). Moreover, Haudenosaunee populations during this time were heterogeneous, as evidenced through incorporation of captives from other tribes into their communities through individual and group adoption (Jordan 2013; Richter 2011) as well as marriage (Waterman 2008).

George Hamell's publications (1983, 1992, 1996) on color symbolism and Haudenosaunee cosmology shifted the focus of North American glass bead research from a narrative of European influence to a discussion of Indigenous agency. Hamell examined color symbolism in the Seneca context to contemplate the metaphysics of the colors red, black, and white in Seneca cosmology and material culture. While widely used and cited within archaeological scholarship, Hamell's (1992) linguistic interpretation of color symbolism in the Seneca context is based in Eurocentric color theory, and the articles are not completely transparent about their sources from within the Haudenosaunee community. In this paper, I extend this analysis by examining color in the context of Haudenosaunee cosmology and ceremony, using work by Seneca archaeologist Arthur C. Parker, non-Indigenous scholar William Fenton, and Tuscarora scholar J.N.B. Hewitt, who directly attributed information to Seneca and/or Haudenosaunee voices in their writing. This paper expands upon Hamell's groundwork on color symbolism using available written work, with the intention of providing a baseline for future interpretations on color involving a partnership with Haudenosaunee community members.

As Hamell worked within the Seneca context, I begin my data analysis with glass bead assemblages from three eastern Seneca sites: Ganondagan (ca. 1670-1687), White Springs (ca. 1688-1715), and Townley-Read (ca. 1715-1754). I collected data from domestic-context assemblages at the three sites to serve as a baseline of comparison. Next, I reanalyzed published datasets from other contemporaneous Haudenosaunee Confederacy towns, which include Seneca, Cayuga, Onondaga, Oneida, and Mohawk glass bead assemblages. I then discerned whether the glass bead color patterns I observed at Ganondagan, White Springs, and Townley-Read are consistent across the other Haudenosaunee towns. Finally, I integrated the data analysis with my discussion on Haudenosaunee cosmology and aesthetics to offer some potential explanations for the patterns I observed in the glass bead data.

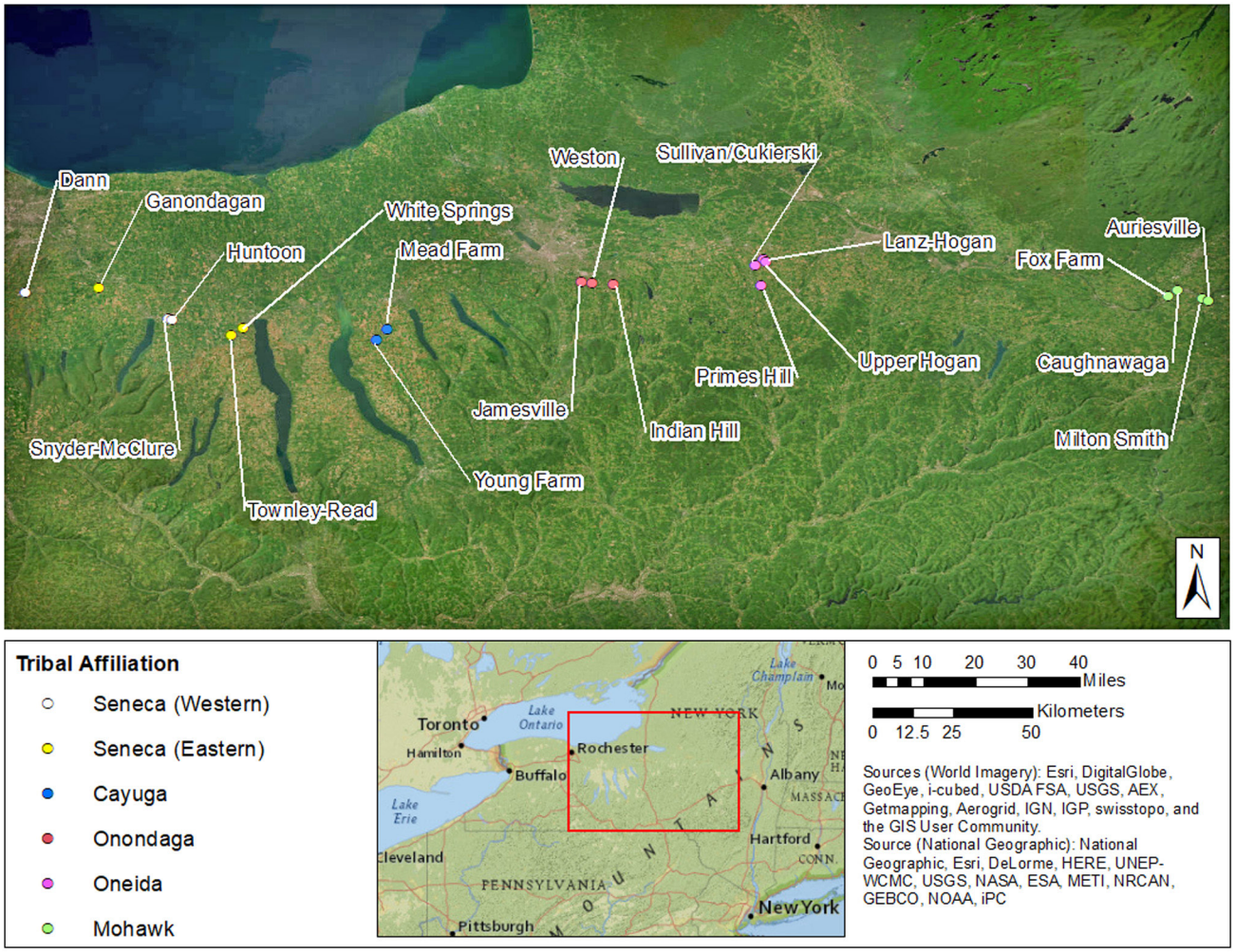

Figure 1. Locations of the sites mentioned in text (all images by the author).

DISCERNING HAUDENOSAUNEE AESTHETICS IN THE 17TH AND 18TH CENTURIES

Using work by Ruth Phillips (2013), I integrate the discussion of color within a broader framework of aesthetics to contextualize glass beads and their colors within Haudenosaunee visual vocabulary. Phillips (2013) wrote about four Anishinaabe (also known as Ojibwe or Chippewa) visual strategies which include animacy, visual ambiguity, space, and ornamentation. Anishinaabe lands and populations, historically and presently, are situated in the Upper Great Lakes region. The Seneca Nation had trading relationships with tribes of the region, including those studied by Walder (2018) such as the Ho-Chunk, Potawatomi, Meskwaki, Tionontate-Wendat, Odawa, and Anishinaabe. The application of Phillips' visual strategies to a Haudenosaunee context is appropriate, based on these cross-cultural relationships. Further, Haudenosaunee and Anishinaabe scholar Vanessa Watts (2013) bridges Haudenosaunee and Anishinaabe cosmologies in her discussion of Place-Thought via the Creation stories of First Woman and Sky Woman.

In this article, I primarily consider animacy to examine how glass beads both reflected and influenced Haudenosaunee aesthetic, economic, social, and political attitudes, and how Haudenosaunee people use glass beads to carry messages and convey meaning during the fur trade. From a Haudenosaunee perspective, animacy is fundamental to the existence of every human and non-human in the world. It is the "embodiment of the feminine" because it is derived from Sky Woman (Watts 2013:23). As she was falling from the sky, birds helped Sky Woman get onto the back of Turtle, where she created the land from her body. As such, the human world and the non-human world are inseparable; there is no binary, oppositional distinction between nature and culture. Within a framework of "Place-Thought" – derived from the experience and existence of

Sky Woman – the land is animate because it is "alive and thinking" and humans and non-humans "derive agency through the extensions of these thoughts" (Watts 2013:21). In discussing the art from Ganondagan, Hill (1986:18) echoed this sentiment: "everything has animate energy." As Phillips (2013:69) notes, "animate presence is dependent on human interactions with other-than-human beings." Beads are such animate, other-than-human beings that influence, and are influenced by, the decisions and actions of Haudenosaunee people. The historical, social, and aesthetic roles of wampum are broadly analogous to those played by glass beads.

By the mid-17th century, glass beads had been integrated into Haudenosaunee decorative tradition for nearly one hundred years, and their use was built on an even older visual vocabulary and cosmological framework centered around shell beads, including wampum. According to oral tradition, Hiawatha was the first person to string together shell beads to be condoled after his family was killed (Tehanetorens 1976; Williams 2018). He and the Peacemaker brought The Great Law of Peace to unite the Mohawk, Oneida, Onondaga, Cayuga, and Seneca Nations under the Haudenosaunee League (Tehanetorens 1976). The Great Law of Peace establishes strength through unity (Ransom and Ettenger 2001), as well as reciprocal responsibilities within one's family and community (Williams 2018). The Great Law of Peace, as well as other treaties like Two Row Wampum, are recorded on woven wampum belts.

These agreements were regularly renewed or "polished" to preserve them and to maintain their principles of peace, good mind, and strength (Ransom and Ettenger 2001). "Polishing" may include gift giving, which is an essential part of maintaining individual and community well-being (Creese 2016). As such, the shell beads used in wampum belts are involved in "making and sustaining relationships" through a collective process between humans and non-humans (Creese 2017:61; Watts 2013).

From a Haudenosaunee perspective, the Earth exists as the celestial tree (also called the Tree of Life or the Tree of Peace) on the back of Turtle, who is swimming in the sea (Watts 2013), and the World's Rim exists beyond this sphere (Fenton 1962; Hamell 1992). Above the Earth is the Sky Dome, "from where light and life descend," and below the Earth is where "powerful evil creatures" like serpents and horned monsters live (Hill 1986:18). Within the Seneca context, the Edge of the Woods is the physical and metaphysical threshold around a town, which is "the world in a microcosm" (Hamell 1992:454). This space is where rites of passage and social exchanges between human beings and other-than-human beings occur (Fenton 1987; Hamell 1992:454). Grandfathers dwell at the edge of the woods and in other liminal spaces such as below the water and in caves (Fenton 1987; Hamell 1992). Grandfathers, such as False Faces (Fenton 1987), Panther (longtail) (Hamell 1998; Hewitt 1904:204), and Serpent (Hamell 1998; Hewitt 1928:466), are keepers of important substances and their associated rituals. They interact with individuals who enter these physical spaces (Fenton 1987).

Wampum primarily originated from the Mid-Atlantic coast, which is located beyond the World's Rim of a Seneca town, and at the World's Rim where the land meets the ocean. Wampum ceremonies occurred at the threshold of a town to link "insiders to outsiders… promoting social, political, and economic change" (Hamell 1981:12). Wampum also had and continues to have uses in "public affairs, and in official communications, in ritualistic and fiducial transactions" (Hewitt 1907:907). In addition to shell beads, other materials like red stone (pipestone/catlinite and slate) and copper were exchanged between Northeastern Indigenous communities prior to the arrival of Europeans (Hamell 1992:451). These so-called "exotic" objects contained "an elevated cultural efficacy" within Haudenosaunee communities due, in part, to their origin from the "cultural frontier" beyond the World's Rim, where they could be exchanged with other humans and other-than-human beings, such as Grandfathers (Hamell 1992:454). As such, the glass beads brought by Europeans to Haudenosaunee country "were perceived and received as analogous" to existing material culture (Hamell 1992:459; Phillips 2013:173-174).

Hamell (1992:456) argues broadly that material culture is used in ritual contexts to aid in transforming from one state of being to another. However, as the animacy of human beings and other-than-human beings is inherent and not limited to ritual contexts, it may be unreasonable to impose a binary between "ritual" and "daily life" in Haudenosaunee contexts. I assert that Hamell's readings are not only applicable to ritual situations, they can also be used to interpret domestic assemblages at Haudenosaunee sites.

Haudenosaunee glass bead use during the 17th-18th centuries included embroidered, woven, and strung beadwork worn by men, women, and children. Embroidered beadwork adorned clothing, including skirts, leggings, coats, hides, headwear, and footwear. Strung beadwork includes necklaces, bracelets, and hair adornment. Strings of beads could also be worn around the waist, ankles, arms, and legs, or hung from the nose and/or ears (Karklins 1992). These categories of embroidered, woven, and strung beadwork do not have precise boundaries and realistically existed, and continue to exist, along a continuum. Karklins (1992) also cites other personal items adorned with glass beads, including object inlays (e.g., pipes, clubs, and tomahawks), knife

sheaths, blankets, pouches, and cradleboards. However, the nature of the archaeological collections I examined for this article makes it difficult to identify glass beads used for these purposes.

BROADENING HAMELL'S INTERPRETATIONS OF COLOR

In his writings about Seneca cosmology, Hamell points to white, red, black, and yellow as metaphysically significant colors. He interprets whiteness as representative of positive "social" states of (well) being, deriving this interpretation from the association of white wampum and silver with life, wealth, and peace (Hamell 1992:455-456). White wampum was used in "rituals of re-creation and resuscitation" (Hamell 1981:6). In addition to white shell, Hamell (1998) argues that other white or reflective materials – including white stone (flint, chalcedony, quartz) and metal (silver) – had similar agentic qualities. White stone and metals, in addition to glass beads, are also associated with the scales of the Serpent; they are carried in medicine bundles to achieve success in courtship, warfare, and hunting (Hamell 1998:270-271). The association between white and positive states of well-being is also evident in the Seneca language. According to site manager and Seneca faithkeeper Peter Jemison, "Ganondagan" was chosen as the name of Ganondagan State Historic Site because it means "white village," which "has more to do with ideals of purity and peace than with the color white" (Jones 1986). Though Hamell (1992:465, note 9) argues white is a ritually "bivalent" color, meaning it may be applied to "socially constructive" or "socially destructive" purposes, he only discusses the "socially constructive" agency of white in a Haudenosaunee context throughout his paper.

Hamell's interpretation of white is consistent with what others have written. Hewitt (1907:907) indicates that white wampum is associated with "peace, health, welfare, and prosperity." Hill (1986) writes that the White Roots of Peace exist at the base of the Tree of Peace, lead in the four cardinal directions, and guide people to the center of the Haudenosaunee Confederacy. Both white and red are also associated with the White Dog Sacrifice, during which a pure white dog (sometimes more than one) is ritually sacrificed, painted with red dots, and burned in a fire alongside tobacco (Tooker 1965) and other objects such as white wampum and ribbons (Blau 1964:97). Euro-American observers' descriptions of the Seneca White Dog Sacrifice in the 18th and 19th centuries also note feasting on the dog and sprinkling its (white) ashes at the door of every house (Tooker 1965:131-135). Modern practices of this ceremony may involve a white basket of ribbons rather than a dog (Blau 1964:99). The White Dog Sacrifice provokes socially positive outcomes: to prevent and heal sickness, assure agricultural productivity, secure success in hunting, and obtain protection from natural disasters (Blau 1964:104; Tooker 1965).

Hamell (1983:7, 1992:456-457, 465) argues red can represent "potent" substances associated with life. These substances include blood, berries, and fire (Hamell 1992:456). Berries are associated with healing, medicine, and liminality (Hamell 1986). Hamell (1992:465) also argues that red can evoke "antisocial" states of being like warfare, which he deduced from the use of red pigments in burials and on wampum belts. Bradley (2011:26) and Puyo (2014) observed painted wampum belts with red pigments soaked into the sinew and rawhide. A red wampum belt can communicate war (Hamell 1996; Woodward 1979:29). Hamell (1992:456-457) argues that red, like white, is "bivalent:" when red is combined with white, it can be "socially constructive" and when it is combined with black, it can be "socially destructive."

Hamell (1992:456-457) argues black is an "inanimate" color, representing death, mourning, and "asocial" states of being. He deduced this interpretation from the word for "black" in the Seneca language which means "the color of (char)coal" (Chafe 2014). Hamell (1992:465) notes that a period of mourning is marked by extinguishing fires and painting faces black with charcoal. He also points out that condolence wampum is deep purple (Hamell 1992:465). According to J.N.B Hewitt (1907:907), dark purple wampum represents the potential for "hostility, sorrow, death, condolence, and mourning," which is in line with Hamell's association of blackness with mourning. However, glossing black and purple as the same "dark" color (Hamell 1992:470) may obscure the distinctiveness of purple as it relates to purple wampum. Further, Hamell's analysis of black as only representing death and mourning may be too limited. In terms of blackness, it is helpful to consider Kanohwa'gëgo'na, "the Great Black Door, through which all good and evil messages must come to reach the confederate house of lords and council" (Parker 1916:96). The Great Black Door is significant in both ritual and in daily life. It is the entrance to the longhouse, the western threshold of the Haudenosaunee Confederacy, and the entrance (also associated with the west) to the Other World and to the Village of Souls (Hamell 1981:13; Parker 1916). One approaches the Great Black Door from the east, sets aside weapons, and waits to be greeted and brought inside by the host (Hamell 1981:14). The door is a site of transformation, illustrating the fluid relationship between west and east, darkness and lightness, and visitor and resident.

Hamell (1992:462) makes the case that yellow was an unpopular color because of its association with sickness. Hamell derives this interpretation from the Seneca word for yellow which translates as "the color of bile" (Chafe 2014). Yellow skin is also a symptom of jaundice or viral hepatitis (Hamell 1992:462). This is a limited interpretation, as the sun and the sunflower are important to creating and sustaining life. The sun exists in the Upper World above the Celestial Tree, both of which give light and life to everything below (Parker 1912). Flowering plants and "stars" also exist in the Upper World and grow from the celestial tree, providing light (Parker 1912). The sunflower provided the only source of light for Earth during creation, standing in for the Celestial Tree, according to Hewitt's recording of Earth Grasper (Adams 2013:91). Overall, it seems that yellow has a more positive valence than Hamell hypothesized.

According to Fenton's (1962, 1987) interpretations, the components of False Face exemplify the integrated relationship of red, white, and black and their association with the life-giving force of the sun (yellow). False Faces exist beyond the World's Rim and are noticed by hunters who encounter them in the forest (Fenton 1987:95). They have contorted faces from being hit with a mountain in an interaction with the Creator. Their faces may be red, black, white, blue, or split, and their color and design come to people in dreams.[3] Allegany Seneca citizen Chauncey Johnny John explained that in return for tobacco and corn mush, False Faces offer protection and remove sickness (which they also play a role in creating) (Fenton 1987:119-120). To prepare for the False Face ceremony, women anoint the masks with sunflower (yellow) oil (Fenton 1987:143). During the ceremony, participants crouch around the fire (red/yellow), imitating the False Face Grandfathers at the edge of the woods (Fenton 1987:277). Participants scoop up hot coals (red), which were once charcoal (black). The coals turn to ashes (white) once they cool and are subsequently blown to heal disease. The False Face ceremony therefore maintains social balance through a collective process. It demonstrates how red, black, and white, as well as yellow substances, are important complementary components for and conduits of transformation.

Though Hamell writes from within the Seneca context, it is not unreasonable to expand his interpretations to the other four nations within the Haudenosaunee Confederacy during the 17th and 18th centuries. At this point, the Mohawk, Oneida, Onondaga, Cayuga, and Seneca Nations were united under The Great Law of Peace and had reciprocal responsibilities to one another.

GLASS BEADS FROM THE SENECA GANONDAGAN/ WHITE SPRINGS/TOWNLEY-READ SITE SEQUENCE

The towns of Ganondagan (ca. 1670-1687), White Springs (ca. 1688-1715), and Townley-Read (ca. 1715-1754) were occupied sequentially by the same eastern Seneca community in what is today Ontario County, New York. These sites have been reliably dated by researchers using a variety of methods, including historical documents and diagnostic artifacts (Jordan 2008:154-162, 2010; Jordan and Gerard-Little 2019:39-40; Parmenter 2010). Ganondagan was occupied during a "peak period in Haudenosaunee power" when the Haudenosaunee Confederacy was at war with other extra-regional Indigenous communities (Jordan and Gerard-Little 2019:41). Historical accounts suggest that Ganondagan was not palisaded, and excavations by Dean and Barbour did not identify one (Dean 1984; Jordan 2018:178-179). In 1687, upon receiving intelligence from Iroquoian allies of the Marquis de Denonville expedition that they were about to invade Seneca country, the community at Ganondagan burned their town and fled to what became White Springs (Parmenter 2010:193-195). The French-Indigenous Denonville expedition subsequently burned and plundered what was left at Ganondagan (Jordan 2018:181; Parmenter 2010:194).

The early years at White Springs were turbulent due to continued warfare with other Indigenous Nations and associated population decline, as well as the spread of disease (Brandão and Starna 1996:215; Jordan 2008:55-57). Historical and archaeological analysis of White Springs suggests the town was a densely populated, nucleated settlement with a palisade in an easily defensible location (Jordan 2018:181-182).

Between 1700 and 1701, the Haudenosaunee Confederacy, New France, New York, and western Indigenous Nations (including Ottawas, Potawatomis, Wendats, Meskwakis, Miamis, and Ojibwes) brokered treaties to secure hunting territories within the western Great Lakes and calm collective hostilities (Brandão and Starna 1996; Jordan 2008:58). However, the Seneca Nation still faced threats of violence resulting from Queen Anne's War (1702-1713), as well as ongoing conflicts with and between other western Indigenous Nations (Jordan 2008:61-62). After the 1713 Treaty of Utrecht formally ended Queen Anne's War, a period of relative regional peace came to Seneca country (Jordan 2008:63-64). Subsequently, Haudenosaunee diplomacy during this period gave the Seneca Nation considerable political and economic power as geographic "middlemen" between the Upper Great Lakes and Albany (Jordan 2008:64-65).

The Seneca community at White Springs moved to Townley-Read in a planned settlement relocation around 1715, likely due to resource depletion around White Springs (Gerard-Little 2017). Townley-Read was part of a neighborhood within the New Ganechstage Site Complex, an unpalisaded, dispersed settlement situated in low-lying terrain. Townley-Read contained two-family "short longhouse" households placed in a line, 60-80 meters apart, adjacent to a waterway (Jordan 2014:64). Jordan (2008, 2018) argues this settlement structure was advantageous for reducing labor demands for both men and women, and the proximity (within 75 km) to newly established European trading posts at Niagara and Oswego likely reduced travel times to trade.

During 2019-2020, I cataloged all the glass beads from domestic context excavations at Ganondagan, White Springs, and Townley-Read using the Kidd and Kidd typology (1970) with supplemental guidance from Karklins (1985, 2012). The *Munsell Bead Color Book* (2012) was used in normal daylight conditions to determine a specimen's color. A strong, concentrated light source was used to assist with recognition of bead core color.

Kidd and Kidd designations are used to describe bead size by diameter: very small (<2.0 mm), small (2.0-4.0 mm), medium (4.0-6.0 mm), large (6.0-10.0 mm), and very large (>10.0 mm). The term "seed bead" is used colloquially to generally describe very small, small, and medium circular beads.

Ganondagan

Archaeologists associated with the private cultural resource management firm Dean and Barbour Associates (henceforth "Dean") excavated domestic spaces at Ganondagan between 1982 and 1984, under a contract with the New York State Bureau of Historic Sites (Dean 1984). Field methods included geophysical survey, test unit excavation, and mechanical trenching. Artifacts were recovered using quarter-inch mesh and flotation.

The excavations recovered exactly 700 glass beads. This count differs from what is reported in Dean (1984) for two reasons: the excavation report examines beads from only the 1983 field season (n=378), and my examination determined that the material of some beads from the 1982, 1983, and 1984 excavations was misidentified in the site report.

Red is the most common bead color (70.9%), followed by black (16.6%), blue (6.9%), white (3.9%), polychrome (1.0%), green (0.7%), and yellow (0.1%) (Table 1). Round beads dominate the assemblage (76.7%), followed by circular (14.3%), tubular (7.7%), truncated teardrop (0.1%), and polyhedral (0.1%). Large (55.1%) is the most common size, followed by medium (26.7%), small (17.0%), and very small (0.4%). No beads are very large, and five beads (0.7%) are broken in such a way that their original size was unidentifiable ("unid."). Only one bead in the assemblage is wound; the remainder are drawn.

Table 1. Characteristics of Glass Beads from Domestic Contexts at Ganondagan.

Ganondagan Glass Beads (1670-1687) Dean and Barbour Excavations, 1982-1984								
Color	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**	**Size**	**Count**	**% of Total**
Red	496	70.9	Round	537	76.7	VS	3	0.4
Black	116	16.6	Circular	100	14.3	S	119	17.0
Blue	48	6.9	Tubular	54	7.7	M	187	26.7
White*	27	3.9	Oval	7	1.0	L	386	55.1
Polychrome	7	1.0	Truncated teardrop	1	0.1	VL	0	0
Green	5	0.7	Polyhedral	1	0.1	Unid.	5	0.7
Yellow	1	0.1						
			Drawn	699	99.9			
			Wound	1	0.1			
* Includes light-colored beads (26 white and 1 oyster white).								

White Springs

The White Springs Project, directed by Dr. Kurt Jordan (Cornell University), excavated domestic contexts at White Springs from 2007 to 2015. Field methods included geophysical survey, shovel test pit excavation, test unit excavation, mechanical stripping, and pedestrian survey. Soils were screened using quarter-inch mesh in plowzone soils and eighth-inch mesh in feature soils. Soil samples were taken for flotation from features, unless the feature was smaller than 0.3 liters, in which case it was screened using eighth-inch mesh.

The White Springs assemblage consists of 479 glass beads (Figure 2). Red beads dominate (50.5%), followed by black (13.6%), blue (11.1%), white (10.9%), polychrome (9.8%), yellow (2.7%), and green (1.5%) (Table 2). The most common shape is tubular (40.7%), followed by round (39.5%), oval (8.1%), circular (5.8%), wound faceted (2.5%), and truncated teardrop (1.7%). The remaining 3% consists of polyhedral (n=2), twisted polyhedral (n=2), unidentifiable shapes due to damage in manufacture or from use/breakage (n=2), and raspberry (n=1). The most common size is large (35.7%), followed by small (34.4%), medium (22.5%), very large (4.6%), and very small (0.6%). The sizes of ten broken beads (2.1%) are unidentifiable. Lastly, the assemblage is dominated by drawn beads (93.9%). Only 5.6% of the assemblage consists of wound varieties, and less than 1.0% (n=2) of the assemblage is unidentifiable.

Figure 2. A selection of glass beads and a glass button (upper left) from House 4 at the White Springs site.

Townley-Read

The Townley-Read glass bead assemblage was recovered from domestic contexts through excavations by the Townley-Read/New Ganechstage Project, led by Kurt Jordan and Dr. Nan Rothschild (Columbia University), advised by Seneca faithkeeper Peter Jemison, from 1996 to 2000. Field methods included geophysical survey, shovel test pit excavation, test unit excavation, mechanical stripping, and pedestrian survey. Soils were screened using quarter-inch mesh in plowzone soils and eighth-inch mesh in feature soils. Soil samples were taken for flotation from some features.

The Townley-Read assemblage consists of 73 beads.[4] White is the most common color (67.1%), followed by black (11.0%), green (6.8%), blue (6.8%), polychrome (4.1%), red (2.7%), and yellow (1.4%) (Table 3). The most common shape is circular (67.1%), followed by round (26.0%), oval (2.7%), faceted (2.7%), and tubular (1.4%). The most common size is small (58.9%), followed by very large (20.5%), large (9.6%), very small (6.8%), and medium (4.1%). Drawn beads dominate at Townley-Read (84.9%); the rest are wound.

The sample size of domestic-context glass beads at Townley-Read is small compared to those of Ganondagan and White Springs. However, Herlich's (2008) analysis of glass beads from domestic, burial, unknown, and surface contexts at Townley-Read suggests it is representative of the overall glass bead color patterning across the site, as red beads represent just 2.7% of the overall Townley-Read assemblage, as well as less than 2.0% of the burial assemblage.

Summary

Across the Ganondagan/White Springs/Townley-Read site sequence, there is a transition from a preference for red glass beads to a preference for white (Figure 3). At Ganondagan, over 70.0% of the beads in the domestic assemblage from the Dean excavations are red. Wray and Graham's (1985) data from burials and mixed contexts also indicate that red is the most common bead color at the site (LaGrasta 2021:33-36). Red remains the most common bead color at White Springs, with over 50.0% of the assemblage comprised of red beads, though this is a decrease from Ganondagan. Though the Townley-Read glass bead assemblage is much smaller than those of Ganondagan or White Springs, supplemental information from Herlich's (2008) analysis of Townley-Read burial contexts confirms that white is the most common bead color there (LaGrasta 2021:41-43). This is a marked difference from Ganondagan and White Springs. Additionally, across all three sites, black is consistently the second most common bead color.

The dynamism of glass bead shape and size across the Ganondagan/White Springs/Townley-Read site sequence demonstrates distinctive trends in bead use, which

Table 2. Characteristics of Glass Beads from Domestic Contexts at White Springs.

White Springs Glass Beads (1688-1715) The White Springs Project Excavations, 2007-2015								
Color	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**	**Size**	**Count**	**% of Total**
Red	242	50.5	Tubular	195	40.7	VS	3	0.6
Black*	65	13.6	Round	189	39.5	S	165	34.4
Blue	53	11.1	Oval	39	8.1	M	108	22.5
White**	52	10.9	Circular	28	5.8	L	171	35.7
Polychrome	47	9.8	Faceted	12	2.5	VL	22	4.6
Yellow	13	2.7	Truncated teardrop	8	1.7	Unid.	10	2.1
Green	7	1.5	Unidentifiable	3	0.6			
			Polyhedral with twist	2	0.4			
			Polyhedral	2	0.4			
			Raspberry	1	0.2			
			Drawn	450	93.9			
			Wound	27	5.6			
			Unidentifiable	2	0.4			

* Includes dark-colored beads (63 black and 2 amethyst [purple])
** Includes light-colored beads (28 white, 3 oyster white, 14 light gray/colorless, 1 pale green, 6 pale blue).

Table 3. Characteristics of Glass Beads from Domestic Contexts at Townley-Read.

Townley-Read Glass Beads (1715-1754) Townley-Read/New Ganechstage Project Excavations, 1996-2000								
Color	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**	**Size**	**Count**	**% of Total**
White*	49	67.1	Circular	49	67.1	VS	5	6.8
Black	8	11.0	Round	19	26.0	S	43	58.9
Green	5	6.8	Oval	2	2.7	M	3	4.1
Blue	5	6.8	Faceted	2	2.7	L	7	9.6
Polychrome	3	4.1	Tubular	1	1.4	VL	15	20.5
Red	2	2.7						
Yellow	1	1.4						
			Drawn	62	84.9			
			Wound	11	15.1			

* Includes light-colored beads (41 white, 7 pale blue opal/alabaster, 1 lilac/nearly colorless).

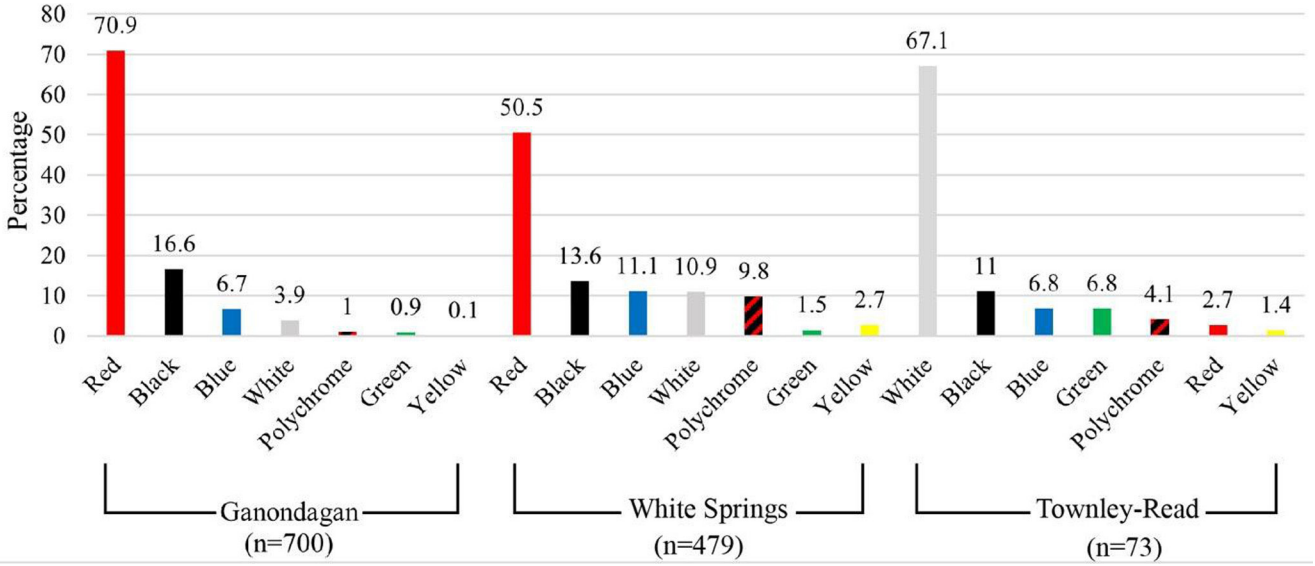

Figure 3. Glass bead colors represented in domestic assemblages at the Ganondagan, White Springs, and Townley-Read sites.

contributed to visually different styles of ornamentation over time. Dominant bead shapes shift between Ganondagan and White Springs, even as red continues to be the most popular color. In the Ganondagan assemblage, round is the most common shape and large is the most common size. The most common shape at White Springs is tubular, but round beads are also quite numerous. Wound beads become common at White Springs, with shapes such as round, oval, faceted, truncated teardrop, and raspberry. Drawn beads with polyhedral and polyhedral-twist shapes are also present at White Springs. The most common size in the White Springs assemblage is large, but small beads are just about as numerous. The White Springs assemblage demonstrates an increase in variety within the Seneca bead palette, involving greater diversity in color, shape, and surface decoration compared to the previous decades. Finally, the most common shape in the Townley-Read assemblage is circular, and the most common size is small. These small, circular beads are more numerous in the Townley-Read domestic assemblage compared to the other sites.

GLASS BEADS FROM OTHER HAUDENOSAUNEE SITES

Jordan (2008:176) writes, "the immediate Seneca response to Denonville was one of continuity rather than change." This is true regarding glass bead color preferences in the early years at White Springs, where a preference for red glass beads is maintained from Ganondagan, despite the Seneca community having to flee their town in advance of the French military incursion. Settlement relocation was not unique to the Seneca Nation; the other five (later six) Haudenosaunee Nations also relocated their settlements both by choice and through violent displacement. Specifically, other Haudenosaunee towns contemporary with both Ganondagan and White Springs were nucleated settlements in strategically defensible locations. During this time, allied Indigenous-Euroamerican military incursions into Haudenosaunee country contributed to the relocations of Haudenosaunee towns near the end of the 17th century (Jordan 2008:53). In the decades following the 1700-1701 peace treaties, as well as the Treaty of Utretcht, Haudenosaunee towns were increasingly not centralized within fortifications. During this time of relative peace, white was the most popular glass bead color at the Seneca Townley-Read site.

Seneca

Starting ca. 1550, the Seneca Nation maintained two principal towns, one eastern and one western, along with interconnected regional and extra-regional "satellite" communities (Jordan 2013; Richter 2011; Wray and Schoff 1953). The Marsh site (ca. 1655-1675) was an eastern Seneca town occupied immediately prior to Ganondagan. The western Seneca town sequence included Dann (ca. 1650-1670, contemporaneous with Marsh), Rochester Junction (ca. 1670/75-1687, contemporaneous with Ganondagan), Snyder-McClure (1688-1710/15, contemporaneous with White Springs), and Huntoon (1710/15-1740/45, contemporaneous with Townley-Read). Available glass bead data primarily comes from burial excavations conducted by Charles Wray and his contemporaries.[5]

Ryan and Dewbury (2010) examined a sample of 170 glass beads from Dann that were surface collected by the Frost family. Due to the comparability of the bead color and shape profiles from an assemblage surface collected by the Frost family at White Springs, I am confident the Dann Frost collection is similarly representative of the site's overall bead assemblage (LaGrasta 2021:38-39). In the Dann Frost collection, red is the most common color (71.8%), followed by black (9.4%), white (7.1%), blue (6.5%), polychrome (2.9%), and yellow (2.4%) (Table 4). The most common shape is tubular (77.6%), followed by round (15.9%), circular (5.9%), and oval (<1.0%). All the Dann beads are drawn. Bead sizes were not recorded.

Jordan (1996) examined and compiled unpublished field notes from Wray and other earlier researchers who excavated burials at Seneca sites dating ca. 1688-1754, including Snyder-McClure and Huntoon. The field notes on five Snyder-McClure burials report a total of 721 glass beads, plus 756 "large beads, different colors" for which a location has not been determined (Jordan 1996). Of the 721 glass beads, black is the most common color (42.0%), followed by unknown (34.0%), yellow (15.3%), white (3.6%), red (3.1%), and blue (2.1%) (Table 4). The most common shape is round (65.7%), followed by unknown (24.0%), faceted (6.9%), and tubular (3.3%). Ten percent of the Snyder-

Table 4. Characteristics of Glass Beads from Other Seneca Sites.

Seneca Glass Beads								
Dann (ca. 1655-1675) Derived from Ryan and Dewbury (2010)			**Snyder-McClure (1688-1710/15)** Derived from Jordan (1996)			**Huntoon (1710/15-1740/45)** Derived from Jordan (1996)		
Color	**Count**	**% of Total**	**Color**	**Count**	**% of Total**	**Color**	**Count ****	**% of Total**
Red	122	71.8	Black	303	42.0	White	13,099	70.8
Black	16	9.4	Unknown	245	34.0	Unknown***	5,058	27.4
White	12	7.1	Yellow	110	15.3	Black	201	1.1
Blue	11	6.5	White*	26	3.6	Blue	134	<1.0
Polychrome	5	2.9	Red	22	3.1			
Yellow	4	2.4	Blue	15	2.1			
Shape	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**	**Shape**	**Count ****	**% of Total**
Tubular	132	77.6	Round	474	65.7	Seed****	18,338	99.2
Round	27	15.9	Unknown	173	24.0	Round	95	<1.0
Circular	10	5.9	Faceted	50	6.9	Unknown	35	<1.0
Oval	1	<1.0	Tubular	24	3.3	Tubular	20	<1.0
						Oval	4	<1.0
Drawn	170	100.0	Drawn & Unknown	646	90.0	Drawn & Unknown	18,430	99.7
			Wound	75	10.0	Wound	62	<1.0
TOTAL	170		**TOTAL**	721		**TOTAL**	18,492	

* Includes light-colored beads (opalescent).
** Includes burials with excavators' estimated counts.
*** Includes unknown, white, blue, black, yellow, and green.
**** Seed is likely the same as circular.

McClure glass beads are likely wound based on Wray's descriptions, and the remaining 90.0% are either drawn or of unknown production. Bead size information was not recorded in detail. In addition to the field notes that Jordan examined, Schoff (1949:24-25) identified 819 glass beads from two burials at Snyder-McClure, but he does not provide further detail.

The field notes on the 20 Huntoon burial assemblages report 18,492 glass beads (Jordan 1996).[6] The most common color is white (70.8%), followed by unknown (27.4%), black (1.1%), and blue (<1.0%) (Table 4). "Seed" is the most common shape (99.2%). Others include round, tubular, oval, and unknown (<1.0% of the total assemblage). Bead size information is not available other than the "seed" designation, which is assumed to include very small, small, and medium beads.

Cayuga

Detailed published datasets on Cayuga archaeological glass bead assemblages come from DeOrio (1978) and Mandzy (1992). Discrepancies in site chronology, dating, and naming conventions are evident in both works.[7] According to Mandzy, the Mead Farm site (called "St. Joseph" by DeOrio) was the principal Cayuga town occupied from ca. 1656 to 1680. This community later relocated to Young Farm (ca. 1680-1710). Bead size information was not recorded by either author.

The Mead Farm (ca. 1656-1680) glass beads are derived primarily from burial excavations (Mandzy 1992:154). In this assemblage, red is the most common color (49.8%), followed by black (17.1%), white (14.1%), blue (6.9%), polychrome (4.6%), yellow (4.4%), and green (3.0%) (Table 5).[8] The most common shape is "seed" (37.9%), followed by tubular (37.9%), round (28.3%), oval (<1.0%), and twisted tubular (<1.0%).

The Young Farm glass beads were recovered by looting, surface collecting, and systematic excavation of both burials and a "village area" (Mandzy 1992:177). Red is the most common color (65.6%), followed by black (12.0%), blue (12.0%), white (6.9%), polychrome (2.9%), yellow (<1.0%), and green (<1.0%) (Table 5). The most common shape is tubular (65.4%), followed by round (27.8%), and "seed" (5.6%). Twisted tubular, wound faceted, oval, and corn shapes are also present (<1.0% each). Mandzy does not differentiate between drawn and wound beads, though it is likely the faceted and corn shapes are wound. The oval shape may be as well.

Onondaga

Bradley (2020) presents data on only the most frequently occurring Kidd and Kidd varieties at the Onondaga Indian Hill (ca. 1663-1682), Weston (ca. 1675-1696), and Jamesville (ca. 1696-1715) sites. The Indian Hill data represent 85.0%, the Weston data 88.0%, and the Jamesville data 71.0% of the total glass bead assemblages, respectively. This sampling strategy is not consistent with how data are presented elsewhere in this paper; it may skew the Onondaga data slightly regarding shape distributions and the proportions of "minority" colors like green, yellow, and polychrome. In addition, Bradley does not provide detailed data on size, but he observes "a trend toward small and very small beads" at both Weston and Jamesville (Bradley 2020:529).

The glass beads from both Indian Hill and Weston are from domestic contexts that were systematically excavated (*see* Sohrweide 2001 for Weston excavation information). In the Indian Hill bead sample, red is the most common color (86.0%), followed by black (11.2%), blue (1.8%), and yellow (1.0%) (Table 6). White beads are not represented. The most common shape is round (72.9%), followed by tubular (26.3%) and circular (<1.0%). Bradley does not report the presence of wound beads in the Indian Hill sample, so all beads are likely drawn. In the Weston sample, red is the most common color (52.4%), followed by black (37.5%), blue (7.5%), and white (2.6%) (Table 6). The most common shape is round (89.5%), followed by tubular (10.5%). Bradley (2020:443) does note the presence of some wound varieties in the Weston assemblage.

The glass beads from Jamesville were derived from surface collections, which may be from domestic and/or burial contexts. Most of the beads are red (51.0%), followed by black (21.0%), blue (11.4%), white (10.8%), polychrome (2.9%), and yellow (2.7%) (Table 6). Wound truncated-teardrop and faceted beads are among the most frequently occurring varieties in the Jamesville assemblage.

Oneida

Clark (2019) aggregates Oneida glass bead data from a variety of sources, including work by Bennett (1983, 1988) and Pratt (1961, 1983). Clark also supplied his own data by re-cataloging some collections. Detailed provenience information is not provided, but it is likely that some of Clark's data comes from burial contexts. He does not outline excavation methodologies for any site, but Bennett (1988) provides information on surface investigations and systematic excavations of the "occupation area" (likely domestic contexts) at Primes Hill. Bead size information is not provided.

Table 5. Characteristics of Glass Beads from Cayuga Sites.

Cayuga Glass Beads Derived from Mandzy (1992)					
Mead Farm (ca. 1656-1680)			**Young Farm (ca. 1680-1710)**		
Color	**Count**	**% of Total**	**Color**	**Count**	**% of Total**
Red	2290	49.8	Red	686	65.6
Black	786	17.1	Black	125	12.0
White*	648	14.1	Blue	125	12.0
Blue	317	6.9	White*	72	6.9
Polychrome	214	4.6	Polychrome	30	2.9
Yellow	210	4.4	Yellow	4	<1.0
Green	138	3.0	Green	3	<1.0
Shape	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**
Seed**	1746	37.9	Tubular	683	65.4
Tubular	1523	33.1	Round	290	27.8
Round	1302	28.3	Seed**	59	5.6
Oval	9	<1.0	Tubular with twist	6	<1.0
Tubular with twist	8	<1.0	Faceted***	4	<1.0
			Oval	2	<1.0
			Corn	1	<1.0
TOTAL	4603		**TOTAL**	1045	

* Includes light-colored beads (white, light grey, colorless).
** Seed is likely the same as circular
*** Mandzy describes "octagonal" or "8-sider" beads, which are likely faceted (wound).

In the Sullivan/Cukierski (ca. 1660-1677) bead assemblage, red is the most common color (75.8%), followed by black (12.1%), polychrome (6.7%), blue (2.8%), white (1.7%), yellow (<1.0%), and green (<1.0%) (Table 7).[9] The most common shape is round (62.4%), followed by tubular (36.7%), "seed" (<1.0%), and oval (<1.0%). Only drawn beads are present.

In the Upper Hogan (1687-1696) assemblage, red predominates (54.8%), followed by black (21.6%), blue (10.5%), polychrome (6.1%), white (4.4%), yellow (1.3%), and green (1.3%) (Table 7). The most common shape is round (51.8%), followed by tubular (38.1%), "seed" (8.0%), oval (1.7%), corn (<1.0%), and faceted (<1.0%). Only five wound beads are present (<1.0%), the remainder are drawn.

White beads (31.0%) dominate the Primes Hill (ca. 1696-1710) assemblage, followed by black (27.0%), blue (19.0%), red (15.1%), green (4.8%), and polychrome (3.2%) (Table 7). Round is the most common shape, followed by faceted (15.1%), tubular (7.9%), "seed" (2.4%), oval (2.4%), donut (<1.0%), and flat disk (<1.0%). Drawn beads comprise 69.8% of the assemblage, but wound beads are also quite numerous (30.2%).

The dominance of white beads (49.6%) continues at Lanz-Hogan (1725-1750), and the proportion of red beads further declines. After white, green (24.3%) is the most common color, followed by yellow (10.4%), blue (10.0%), red (4.3%), black (1.3%), and polychrome (<1.0%) (Table 7). "Seed" beads (99.2%) make up most of the assemblage, though this category likely includes mostly round and

Table 6. Characteristics of Glass Beads from Onondaga Sites.

Onondaga Glass Beads Derived from Bradley (2020)*								
Indian Hill (ca. 1663-1682)			**Weston (ca. 1675-1696)**			**Jamesville (ca. 1696-1715)**		
Color	**Count**	**% of Total**	**Color**	**Count**	**% of Total**	**Color**	**Count**	**% of Total**
Red	2319	86.0	Red	645	52.4	Red	497	51.1
Black	302	11.2	Black	462	37.5	Black	205	21.1
Blue	48	1.8	Blue	92	7.5	Blue	111	11.4
Yellow	28	1.0	White	32	2.6	White**	105	10.8
						Polychrome	28	2.9
						Yellow	26	2.7
Shape	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**
Round	1965	72.9	Round	1102	89.5	Round***	640	65.8
Tubular	708	26.3	Tubular	129	10.5	Tubular	282	29.0
Circular	24	<1.0				Truncated teardrop	26	2.7
						Faceted	24	2.5
Drawn	2697	100.0	Drawn	1231	100.0	Drawn	922	94.9
			Wound	present		Wound	50	5.1
TOTAL	2697		**TOTAL**	1231		**TOTAL**	972	

* Bradley (2020) presents data on only the most frequently occurring Kidd and Kidd varieties at these sites.
** Includes light-colored beads (white, light grey, colorless).
*** Bradley groups round, oval, "elongated," and "flat" bead shapes together in his presentation for Jamesville.

circular beads. Other shapes include (<1.0% total) faceted, round, donut, oval, tubular, and flat disc with inlay. Most Lanz-Hogan beads are drawn (99.4%), but wound beads (<1.0%) are present. Clark also reports one round, blown glass bead.

Mohawk

Rumrill (1991) reports on Mohawk glass bead assemblages and Snow (1995) expands upon and clarifies much of this data. Snow outlines survey and recovery methodologies for each site: Fox Farm (ca. 1666-1679) was excavated by avocational archaeologists; domestic contexts from Caughnawaga (ca. 1679-1693) were systematically excavated; Milton Smith (ca. 1693-1712) was systematically surveyed, but not excavated; and Auriesville has not been surveyed but parts have been excavated, including cemeteries.[10] Therefore, the glass bead assemblages from all but Caughnawaga may consist of beads from both domestic and burial contexts. Bead sizes were not recorded by either author.

In the Fox Farm assemblage, red predominates (92.4%), followed by black (5.4%), blue (1.1%), and polychrome (1.1%) (Table 8). No white beads are present. The most common shape is circular (51.1%), followed by round (43.5%) and oval (5.4%). All Fox Farm beads are drawn. Rumrill (1991:34-35) and Snow (1995) also point out that red beads were just as common at the White Orchard and Schenck sites, which were occupied by Mohawk communities at the same time as Fox Farm. The Fox Farm community later relocated to Caughnawaga. In that assemblage, black is the most common color (88.3%), followed by red (5.5%), blue (4.1%), white (1.0%), yellow

Table 7. Characteristics of Glass Beads from Oneida Sites.

Oneida Glass Beads Derived from Clark (2019)											
Sullivan/Cukierski (ca. 1660-1677)			**Upper Hogan** (ca. 1687-1696)			**Primes Hill** (ca. 1696-1710)			**Lanz-Hogan** (1725-1750)		
Color	**Count**	**% of Total**	**Color**	**Count**	**% of Total**	**Color**	**Count**	**% of Total**	**Color**	**Count**	**% of Total**
Red	2311	75.8	Red	743	54.8	White*	39	31.0	White*	6272	49.6
Black	369	12.1	Black	293	21.6	Black**	34	27.0	Green	3075	24.3
Poly-chrome	205	6.7	Blue	143	10.5	Blue	24	19.0	Yellow	1314	10.4
Blue	85	2.8	Poly-chrome	83	6.1	Red	19	15.1	Blue	1262	10.0
White*	53	1.7	White	60	4.4	Green	6	4.8	Red	538	4.3
Yellow	16	<1.0	Green	17	1.3	Poly-chrome	4	3.2	Black**	170	1.3
Green	8	<1.0	Yellow	17	1.3				Poly-chrome	10	<1.0
Shape	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**
Round	1902	62.4	Round	702	51.8	Round	89	70.6	Seed***	12,541	99.2
Tubular	1117	36.7	Tubular	516	38.1	Faceted	19	15.1	Faceted	53	<1.0
Seed***	22	<1.0	Seed***	109	8.0	Tubular	10	7.9	Round	23	<1.0
Oval	6	<1.0	Oval	23	1.7	Seed***	3	2.4	Donut	13	<1.0
			Corn	5	<1.0	Oval	3	2.4	Oval	5	<1.0
			Faceted	1	<1.0	Donut	1	<1.0	Tubular	4	<1.0
						Flat disk	1	<1.0	Flat disk w/ inlay	2	<1.0
Drawn	3047	100.0	Drawn	1351	99.6	Drawn	88	69.8	Drawn	12,560	99.4
Wound			Wound	5	<1.0	Wound	38	30.2	Wound	78	<1.0
									Blown	3	<1.0
TOTAL	3047		TOTAL	1356		TOTAL	126		TOTAL	12,641	

* Includes light-colored beads (white, light grey, colorless).
** Includes dark-colored beads (purple/"amethyst" and brown/"cinnamon").
*** Seed is likely the same as circular.

(<1.0%), and green (<1.0%) (Table 8). The most common shape is round (98.5%); other shapes include truncated cone, corn, tubular, and circular (<1.0% each). Most beads are drawn (98.9%), but a few wound beads are present (1.1%).

In 1693, Count Louis de Frontenac and his army "pillaged and burned" Caughnawaga, which scattered the Mohawk Nation over multiple settlements (Rumrill 1991:35-37). Milton Smith was likely occupied by Catholic

Table 8. Characteristics of Glass Beads from Mohawk Sites.

Mohawk Glass Beads Derived from Rumrill (1991) and Snow (1995)											
Fox Farm (ca. 1666-1679)			**Caughnawaga** (ca. 1679-1693)			**Milton Smith** (ca. 1693-1712)			**Auriesville** (ca. 1693-1712 / 1712-1750)		
Color	**Count**	**% of Total**	**Color**	**Count**	**% of Total**	**Color**	**Count**	**% of Total**	**Color**	**Count**	**% of Total**
Red	85	92.4	Black	639	88.3	Black	17	37.8	White*	45	47.9
Black	5	5.4	Red	40	5.5	Red	12	26.7	Blue	26	27.7
Blue	1	1.1	Blue	30	4.1	White	7	15.6	Yellow	13	13.8
Poly-chrome	1	1.1	White	7	1.0	Blue	4	8.9	Poly-chrome	9	9.6
			Yellow	5	<1.0	Poly-chrome	3	6.7	Black**	1	1.1
			Green	3	<1.0	Yellow	2	4.4			
Shape	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**	**Shape**	**Count**	**% of Total**
Circular	47	51.1	Round	713	98.5	Round	17	38.0	Faceted	30	32.0
Round	40	43.5	Truncated cone	5	<1.0	Tubular	13	29.0	Circular	28	30.0
Oval	5	5.4	Corn	3	<1.0	Circular	13	29.0	Raspberry	16	17.0
			Tubular	2	<1.0	Truncated cone	2	4.0	Round	13	14.0
			Circular	1	<1.0				Oval	7	7.0
Drawn	92	100.0	Drawn	716	98.9	Drawn	43	95.5	Wound	56	60.0
			Wound	8	1.1	Wound	2	4.4	Drawn	38	40.0
TOTAL	92		**TOTAL**	724		**TOTAL**	45		**TOTAL**	94	

* Includes light-colored beads (white, light grey, pale blue/opalescent or alabaster).
** Includes dark-colored beads (brown/ "cinnamon"), but no actual black beads.

Mohawk people from Caughnawaga immediately after Frontenac's campaign (ca. 1693-1712) (Rumrill 1991:38-41; Snow 1995:454). The bead assemblage from Milton Smith is small (n=56), but black beads continue to be the most common (37.8%), followed by red (26.7%), white (15.6%), blue (8.9%), polychrome (6.7%), and yellow (4.4%) (Table 8). Round is the most common shape (38.0%), followed by tubular (29.0%), circular (29.0%), and truncated cone (4.0%). Most beads are drawn (95.5%), the rest are wound.

Rumrill dates Auriesville to ca. 1712-1750, but Snow (1995:451-455) argues the site could have been occupied earlier by a group of Mohawk people from Caughnawaga ca. 1693-1712 or occupied short-term ca. 1700-1712. Rumrill (1991:41) argues the Auriesville assemblage is characteristic of the early 18th century, and my comparative analysis supports this assertion. White beads are the most common (47.9%), followed by blue (27.7%), yellow (13.8%), polychrome (9.6%), and black (1.1%) (Table 8). No red beads are present. The most common shape is faceted (32.0%), followed by circular (30.0%), raspberry (17.0%), round (14.0%), and oval (7.0%). Wound beads dominate the assemblage (60.0%).

Summary of Haudenosaunee Glass Bead Trends

Across nearly all Haudenosaunee contexts, red is the most common glass bead color, followed by black, from at least the 1650s until about 1700. However, there are two notable "breaks" with this pattern. First, the Seneca Snyder-McClure (ca. 1688-1710/15) collection is dominated by black beads, and red beads make up just 3.1% of the assemblage. Though 34% of the Snyder-McClure beads are of "unknown" colors, even if all these beads are red, black beads would still outnumber red in the assemblage. However, Herlich (2008) notes potentially significant individual variation in the colors of glass beads in burials. Jordan (1996) documents just five burials, so it is possible that the small sample size impacts the colors represented in the Snyder-McClure collection.[11] Further research on the beads from Snyder-McClure is therefore warranted. Second, in the Mohawk Caughnawaga (ca. 1679-1693) and Milton Smith (ca. 1693-1712) bead assemblages, black is the most common color, rather than red. The shift from red to black is stark between Mohawk Fox Farm and Caughnawaga, whereas changes in color preferences in the eastern Seneca sequence, and Cayuga, Onondaga, and Oneida contexts, occur more gradually. The Caughnawaga beads are a large assemblage that was systematically excavated, so I have confidence this sample is representative of the beads used during the site's occupation. Therefore, the high proportion of black beads at Caughnawaga suggests that black was either preferred by Mohawks, not having as much access to red beads as the other four nations at that time, or they had access to another type of red-colored material to use for adornment instead of red glass.[12]

After the turn of the 18th century, white becomes the most common bead color across the Haudenosaunee Confederacy. The increase in white beads in the Primes Hill assemblage (ca. 1696-1710) may suggest that an increase in white beads occurred in the Seneca country during the latter portion of the White Springs occupation, rather than with the Seneca community's transition to living at Townley-Read. At the Seneca Townley-Read and Huntoon, the Oneida Lanz-Hogan, and the Mohawk Auriesville sites, white is the most common bead color.

Though glass bead color patterns are quite consistent across the Haudenosaunee Confederacy (except for Snyder-McClure and the two Mohawk sites), there is considerably more variation in bead shape patterns. At Dann (Seneca), tubular beads are the most common. At Ganondagan (Seneca), Indian Hill (Onondaga), and Sullivan/Cukierski (Oneida), round is overwhelmingly the most common shape. However, at the same time at Mead Farm (Cayuga), seed is the most common shape and at Fox Farm (Mohawk), circular is most common.

Haudenosaunee sites contemporary with White Springs (Seneca) generally have more diversity in bead color and shape with the appearance of wound varieties such as truncated teardrop, raspberry, corn, and faceted. However, while Mohawks, Oneidas, and Onondagas may have preferred round beads at this time, Cayugas and Senecas apparently preferred tubular beads.[13] Seed beads are popular at Townley-Read and Huntoon (both Seneca), as well as Lanz-Hogan (Oneida). Wound faceted beads are the most common shape at Auriesville (Mohawk), but circular beads are nearly as common.

No glass bead data are available for contemporaneous Cayuga or Onondaga sites. Wound beads become more common over time in Haudenosaunee contexts, and the increase in their numbers coincides with the increase in white beads around the turn of the 18th century. The lone wound bead variety found at Ganondagan – an amber truncated teardrop (variety WIi*) – is also present at White Springs (n=9), Onondaga Weston (count not reported; designated WIb2 in Bradley [2020:443]), Caughnawaga (n=5, called "truncated cone," WIe* in Rumrill's Table 25 and Snow's Table 11.3), and Milton Smith (n=2). This suggests the truncated-teardrop form may have been worn at Ganondagan in the later years of its occupation. This variety is not observed at Haudenosaunee sites contemporary with Townley-Read, indicating that it is a potential horizon marker for the 1670s-1690s.

Another possible wound horizon marker is the pentagonal-faceted type (WIIc). My research clarifies Wray's (1983) and Bennett's (1983) longtime claim that such beads appear at Haudenosaunee sites beginning in the late 1680s-1690s. Clark (2019:53) also makes this observation from his empirical analysis of Oneida glass bead assemblages, dating the "wire-wound phase" to 1690-1785. Faceted wound beads are present on all Five Nations sites occupied during the last two decades of the 17th century.[14] However, the presence of faceted wound varieties at Oneida Primes Hill (ca. 1696-1710) but not at Upper Hogan (1687-1696), and at Onondaga Jamesville (1696-1715) but not at Weston (1675-1696), provides a tighter time frame, indicating this shape became more common around the turn of the 18th century.

The similar color and distinct shape preferences across the Five Nations during this time likely yielded visually distinct beadwork between nations. Differences in bead shape provide evidence for deliberate selection on the part of the Haudenosaunee people. The aesthetic characteristics of these glass bead assemblages are the result of strategic choices the Haudenosaunee made as willing participants in the fur trade, rather than a reflection of the bead supply that was generally available from European merchants.

CONCLUSION

The dynamic visual characteristics evident in glass bead assemblages over time demonstrate that Haudenosaunee people intentionally sought certain colors, patterns, shapes, and sizes of glass beads and buttons. I propose that Haudenosaunee people of the 17th-18th centuries valued whiteness and reflectiveness of glass beads for their associations with animacy and positive states of well-being, including peace, health, and wealth. Redness was valued for its potency related to life-giving (or life-taking) aspects such as blood, berries, and fire. Though Hamell (1992) argues black is valued for its ability to communicate feelings of mourning related to conflict and death, it is apparent that blackness is more nuanced. The Great Black Door and the False Face ceremony exemplify the transformational qualities of black as a threshold. Further, the low numbers of yellow beads in the assemblages may not indicate a Haudenosaunee distaste for yellow, but perhaps a reverence for it due to the color's association with the sun and the sunflower.

Moreover, the White Dog Sacrifice and the False Face Ceremony demonstrate how social actors – both human and other-than-human – interact with one another to maintain social balance through collective processes of transformation. As such, the colors white, red, black, and yellow have a complex interrelationship between one another and with humans in the context of Haudenosaunee society.

The glass bead assemblages from three Seneca sites dating 1670-1754 indicate Seneca people preferred red, black, and white beads for ornamentation during this time. The popularity of red beads at Ganondagan (ca. 1670-1687), and White Springs (ca. 1688-1715) likely extended even earlier, as red was the most common bead color in the Dann assemblage (ca. 1650-1670). Though black beads are not as common in the Ganondagan and White Springs assemblages as red beads, they are still the second most popular color. I observe a shift in preference from red to white beads between White Springs and Townley-Read (ca. 1715-1754).

Comparative analysis of glass bead assemblages from contemporaneous Five Nations towns suggests dynamism of color preference is consistent across the Haudenosaunee Confederacy. My analysis indicates the shift from red to white beads occurred around the turn of the 18th century, rather than coinciding with the Seneca community's relocation from White Springs to Townley-Read. This study also demonstrates that while Haudenosaunee beadwork of the 17th-18th centuries may look similar in terms of color, nation-specific shape preferences would have resulted in aesthetic differences. For instance, while the Seneca community was in residence at Ganondagan, they and Onondagas and Oneidas were wearing mostly round beads, whereas Cayugas preferred tubular beads and Mohawks preferred circular beads. This likely yielded visually distinct beadwork between nations.

That the Five Nations had similar preferences for color and distinct preferences for shape appears to demonstrate that they were not simply trading for what was generally available from European merchants. As actors with agency, Haudenosaunee Nations intentionally sought out specific visual characteristics of glass beads to generate desired outcomes. In turn, European supply in the 17th-18th centuries may not have been solely driving the glass bead market in the Haudenosaunee context. The lack of yellow beads at the sites examined in this article may not necessarily be because the color was undesirable to Haudenosaunee people; rather, it could be so potent and special that its use needed to be regulated by the communities. In fact, excavations at the Sonnenschlag and Genenbach glassworks in Upper Austria revealed many amber-colored (yellow) beads, which date to the early years of the 18th century (Tarcsay 2020), indicating that supply may not have been the limiting factor. Since these glassworks were primarily making beads for global export, the amber beads may have been destined for another part of the world if there was not a market in the Haudenosaunee Confederacy.

There were also differences in glass bead color preferences in North American Indigenous communities outside Haudenosaunee territory. Red and black beads dominate late-17th-century Algonkian-speaking Piscataway sites of the Chesapeake region; Piscataway people had similar aesthetic and ideological understandings of red, black, and white (Webster and King 2018; Williamson 2003). Like the Haudenosaunee Confederacy, Piscataways also traded and undertook diplomacy with the English and French during this time (Webster and King 2018), though Haudenosaunee people were also trading directly with the Dutch. In the Great Lakes region, the Iroquoian-speaking Neutral Confederacy, also trading with the French and the Dutch, demonstrated aesthetic and ideological preferences for red beads (Kenyon 1982), though most research on the Great Lakes bead trade is focused on the first half of the 17th century. However, during most of the 17th century in the Southeast, Creek and Guale communities (both Muskhogean-speaking) demonstrated aesthetic and ideological preferences for blue glass beads, and they primarily traded with the Spanish (Blair et al. 2009; Pluckhahn 1996). The question of how global glass bead supply and demand influenced individual site assemblages deserves further inquiry.

The dynamics of aesthetic preferences signal Haudenosaunee motivations for utilizing particular colors

in times of conflict and other colors in times of peace. The popularity of red glass beads during the second half of the 17th century implies Haudenosaunee people sought them for their animate, sustaining, and protective qualities during a time when warfare was frequent. During this period, black was generally the second most popular bead color. To mitigate this difficult time, Haudenosaunee people may have chosen red beads alongside black ones to serve as conduits for transformation into more stable and peaceful circumstances. Just before the turn of the 18th century, white becomes the most common bead color, and red beads make up a considerably smaller proportion of bead assemblages. This white shift roughly coincides with peace treaties signed between the Haudenosaunee Confederacy, New France, New York, and western Indigenous Nations in 1700-1701 (Brandão and Starna 1996; Parmenter 2010). Jordan (2008:57-63) describes how the first decade of the 18th century continued to be violent for the Seneca Nation, so the popularity of white beads may reflect hope for peace. Turgeon (2001:95) points out that white was also a popular bead color early in Haudenosaunee-European interaction, which "may have corresponded to an expression of hope for better well-being through the encounter with Europeans." Perhaps the same sense of optimism and hope for peace was also felt over a hundred years later and articulated through Haudenosaunee demand for white beads to be used for adornment worn in daily life.

ACKNOWLEDGMENTS

This paper is derived from my Cornell University master's thesis (LaGrasta 2021). I am grateful for the support and encouragement of my thesis committee members, Dr. Kurt Jordan, Dr. Sherene Baugher, and Dr. Jolene Rickard. My thesis was financially supported by the Cornell Department of Anthropology, the American Indian and Indigenous Studies Program, and Cornell Institute of Material Studies, the Hirsch Fund, the Richmond Community Foundation, Mometrix, and the UNICO Foundation. I am grateful to Dr. Andrew Farry and Michael Lenardi at the Bureau of Historic Sites for their preparation of the Ganondagan Dean assemblage and to Josh Teeter at Taughannock State Park for providing space and equipment for my research. I also give thanks to Michael Galban at Ganondagan State Historic Site for his research recommendations and guidance. Karlis Karklins provided valuable technical support with bead identification. My employer, Johnson, Mirmiran, and Thompson (JMT), supported my paper on feature stratigraphy and the Ganondagan and White Springs glass beads at the 88th Annual Meeting of the Society for American Archaeology where I connected with Dr. Alison Carter, who, along with Karlis Karklins and Kurt Jordan, encouraged me to publish in *Beads: Journal of the Society of Bead Researchers*.

ENDNOTES

1. Hodinöhsö:ni' is the Seneca spelling of Haudenosaunee (People of the Longhouse). The Haudenosaunee Confederacy presently consists of the Mohawk (Kanien'kehá:ka), Oneida (OnΛyota'a•ka), Onondaga (Ononda'géga'), Cayuga (Gayogo hó:no?), Seneca (Onöndowa'ga:'), and Tuscarora (Skarù·rę?) nations.

2. Diasporic Haudenosaunee communities are in other states as well, including Wisconsin, Oklahoma, and North Carolina. Additionally, Haudenosaunee people traveled through and resided in other lands outside their homelands for hunting, battle, and trade. The Tuscarora Nation arrived in what is now New York state in 1713 from what is now North Carolina. They were "welcomed home" into the Haudenosaunee Confederacy in 1722, during the time that Townley-Read was occupied by the eastern Seneca community.

3. There is variation in False Face mask decoration and associations between color and cardinal directions within the Five Nations, and even between Seneca communities at Allegany, Tonawanda, and Cattaraugus. Fenton (1987) describes these differences at length.

4. Jordan (2008:159) analyzed this same assemblage. My analysis differs slightly from his because he did not have access to the *Munsell Bead Color Book* (2012).

5. Wray (1985:112) reports that 132,980 glass beads from Seneca sites occupied ca. 1600-1687 are housed at the Rochester Museum and Science Center. Over 45,000 glass beads from Wray's burial excavations at Dann and Marsh are also housed at the RMSC (Wray 1983:44) and over 18,000 additional shell and glass beads collected from the surface of Dann may be in private collections (Wray 1985:110-111).

6. This number is primarily based on the excavators' estimates and does not represent exact counts. Jordan (1996) also notes that some burials contained glass beads, but their counts were not reported. The index numbers of burials that have glass beads but do not have glass bead counts: #3002 (white seed), #3005 (unknown), #3006 (white seed), #3013 (blue and white tubular, white seed), #3015 (blue, white, black, green

seed), #3501 (white, blue, green seed), #3502 (color unknown, seed). Notably, no red beads were recorded in these burials.

7. The "Mead Farm" site (ca. 1656-1680) that Mandzy discusses is the same site as DeOrio's "Mission Period" St. Joseph (ca. 1650-1680). Mandzy's (1992:10) Paddington site is the same as the Watkins site described by DeOrio, which is roughly contemporaneous with Townley-Read (Kurt Jordan 2021: pers. comm.). Mandzy does not describe the glass bead assemblages from Paddington and a later site he calls Watkins. Excavation of Paddington/Pattington by Ithaca College students and faculty recovered fewer than 10 glass beads (Jordan et al. n.d.). Therefore, no discussion of Cayuga sites contemporary with Townley-Read can be included in this analysis.

8. Mandzy did not use either the *Munsell Bead Color Book* or Kidd and Kidd designations in his data analysis and presentation, but I was still able to assess general bead color and shape information based on his descriptions of each assemblage.

9. Some of the counts in Table 7 differ slightly from what Clark reports in that he reported broken beads as 0.5 count, whereas I counted them as one bead.

10. Rumrill calls Auriesville "Auriesville Shrine," but Snow distinguishes between Auriesville #1, #2, and #3. The #3 site is a cemetery, whereas #1 and #2 are likely domestic areas. The glass bead data for Auriesville outlined in Rumrill, Snow, and Table 8 here is from Auriesville #1 and #2.

11. This argument could also be made for the Mead Farm (Cayuga) glass bead assemblage. During the time Ganondagan was occupied, red beads make up 70% or more of eastern and western Seneca, Onondaga, Oneida, and Mohawk bead assemblages, but just 49.8% of the Mead Farm beads are red. About half (n=2391) of the Mead Farm assemblage apparently comes from just two individual burials, and the other half (n=2212) are unprovenienced (Mandzy 1992:155-156, 158). Much of Mead Farm has been looted over time (Mandzy 1992:153), which may have further impacted Mandzy's artifact sample.

12. Though this article specifically focuses on color analysis of *glass* beads, Hamell (1992:461) is clear that color analysis should include *all* types of beads (shell, stone, metal, and glass). Earlier observations have been made about the relationship between white glass beads and white shell beads (Hamell 1992:461; Sempowski 1989). A cross-material color analysis could clarify reasons for the proliferation of black glass beads on Mohawk sites, as it may be balanced by an increased use of red stone beads. Perhaps Mohawks had access to red stone earlier than the other nations due to their geographic position near the source of red slate (the present-day New York-Vermont border) and/or changes to their trading relationship with the English that forced Mohawks to acquire catlinite/red pipestone beads via trade from the Great Lakes region (Snow 1995:449, 458-459). An increase in red stone beads is also observed at other Five Nations sites after the turn of the 18th century. DeOrio (1978:3-6) observes that red stone artifacts were "at the height of popularity" from 1710 to 1740 at the Cayuga Watkins site when red glass beads were no longer "dominant." Jordan and Gerard-Little (2019:53) observe fluctuations in the amount of red slate, catlinite (from the Great Lakes area), manufacturing debris, and finished objects in the Seneca Ganondagan/White Springs/Townley-Read site sequence. Notably, Jordan and Gerard-Little (2019:53) write that while red glass beads were scant in both domestic and burial contexts at Townley-Read, the use of red stone "went up dramatically." Moreover, at the Onondaga Weston site, Bradley (2020:459-460) observes a noticeable increase in red pipestone, which he argues is related to diplomacy with Ottawas.

13. The most common shape in the Snyder-McClure assemblage is round (65.7%), but 24.0% of the shapes are undetermined. This is different from what is observed at White Springs, at which tubular beads seem to have been preferred. This could be due to different eastern vs. western Seneca shape preferences. However, the Snyder-McClure data is not complete, so this interpretation could use further assessment.

14. Clark (2019) also identifies faceted wound beads at the Oneida Cameron site, which he dates to ca. 1590-1615. Faceted wound beads are then not found in another Oneida assemblage until Primes Hill (ca. 1696-1710). This suggests that the presence of faceted wound beads at Cameron may be due to attribution or collection problems, or from later Oneida activities at the Cameron site. Faceted beads are also present at Cayuga RMBH (ca. 1670?-1687), but the dating of this site is inexact. Mandzy also did not use the Kidd and Kidd typology in his analysis, so my assessment of bead shape is based solely on his descriptions.

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