Up on th’hill
Down by the river
By the ocean
Across the field
By the word of the Boognish
Lordy lordy lord, I’m coming home

-Gene & Dean Ween
The Bristol-Shiktehawk bifaces and Early Woodland ceremonialism in the Middle
St. John Valley, New Brunswick

by

Alexandre Pelletier-Michaud

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Supervisor: Susan E. Blair, Ph.D., Anthropology

Examining Board: M. Gabriel Hrynick, Ph.D., Anthropology
Gary K. Waite, Ph.D., History

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Dean of Graduate Studies

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ABSTRACT

In the Maritime Peninsula, the visibility of Early Woodland ceremonialism is limited to a few sites that have been associated with burial complexes defined elsewhere in the Northeast. The biface assemblage excavated in the 1930s from the Bristol-Shiktehawk site, in the middle St. John River Valley, has been assumed to be ceremonial but has never been the subject of a thorough professional analysis. I conduct such an analysis based on a technological approach. My results support the view that the assemblage likely dates to the Early Woodland period, by establishing connections which are rooted temporally in the region but extend geographically towards the Midwest. I question the compartmentalizing nomenclature which structures our understanding of regional variations in manifestations of ceremonialism, suggesting a more complex but fluid cultural landscape for the period around 3500 to 2000 B.P., and explore the limitations posed by the theoretical framework often applied to questions of ritual in archaeology.
ACKNOWLEDGEMENTS

This thesis would not have been possible without all the great people, inspiring colleagues and dear friends (all at once) that I have met in New Brunswick. I would like to thank first and foremost my committee, starting with my supervisor Dr. Sue Blair for her encouragements, inspiring creative thinking, and for never doubting in my ability to complete this; Dr. Gabe Hrynick for his insightful comments and amazing focus, and Dr. Gary Waite, for accepting to devote some of his time to be my external reviewer. Dr. Dave Black has been a constant presence through the whole process; I am in debt for his contagious enthusiasm and deep love of Maritimes archaeology. I thank my lab colleagues Jesse Webb and Chris Shaw, who suffered through my rants on Tappan Adney and asymmetry, and did not complain of my several tables of constantly rearranged bifaces. I also thank everybody else in the UNB Anthropology department, with a special mention to Judy Babin for her unwavering helpfulness and unmatched administrative expertise. I want to acknowledge that I would not have been able to complete this research without the generous funding received from the UNB Faculty of Arts, and the New Brunswick Innovation Foundation.

Many thanks to all the friends and colleagues who have graciously contributed to my gathering of information and brought new ideas to my reflections, including: Austin and Kaley Paul, who showed me around the province and played a huge part in stoking my interest in New Brunswick archaeology; My colleagues on the board of the APANB, Ramona Nicholas, Ken Holyoke, Michael Rooney and Darcy Dignam; Mary Bernard and
Darryl Hunter, who have helped me uncover clues in the curious affair of GFC and ETA; Dr. Matt Betts, the staff at the Canadian Museum of History, the staff of ASUNB and the Museum of New Brunswick, for granting me access to artifacts and documents in their collections; for conversations and various contributions, thanks to Dick Doyle, Kat Ritchie, John Campbell, and professional Archaeologists outside of the province who have found the time and interest to reply to my inquiries, including Dr. Arthur Spiess in Maine and Dr. Jess Robinson in Vermont. To all the others whom I have failed to name here, woliwon, merci, thank you!

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## List of Symbols, Nomenclature or Abbreviations

### Individuals

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<thead>
<tr>
<th>Abbreviation</th>
<th>Full Name</th>
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<tbody>
<tr>
<td>ETA</td>
<td>Edwin Tappan Adney</td>
</tr>
<tr>
<td>GFC</td>
<td>George Frederick Clarke</td>
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### Institutions

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</tr>
<tr>
<td>CMH</td>
<td>Canadian Museum of History, Gatineau, Qc.</td>
</tr>
<tr>
<td>NBM</td>
<td>New Brunswick Museum, St. John, NB.</td>
</tr>
<tr>
<td>UNB</td>
<td>University of New Brunswick, Fredericton, NB.</td>
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### Lithic Materials

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<tr>
<td>AGGR</td>
<td>Apple-green glassy rhyolite</td>
</tr>
<tr>
<td>KTMP</td>
<td>Kineo-Traveler Mountain porphyry</td>
</tr>
<tr>
<td>QCSR</td>
<td>Quoddy cream-speckled rhyolite</td>
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### Miscellaneous

<table>
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<tr>
<td>NB</td>
<td>New Brunswick</td>
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<tr>
<td>B-S</td>
<td>Bristol-Shiktehawk</td>
</tr>
<tr>
<td>SBU</td>
<td>Someone Before Us</td>
</tr>
<tr>
<td>B.P.</td>
<td>Before present</td>
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Chapter 1 – Introduction

In northeastern North America, stone tool assemblages are the primary preserved component of the prehistoric archaeological record, and it is mostly around them that archaeologists have constructed notions of identity, cultural connections, technological continuity and change, and ceremonialism. In this thesis, I will explore these ideas through an examination of an important but understudied assemblage of flaked stone artifacts from the middle St. John River valley, in central New Brunswick, Canada.

In New Brunswick, archaeological research has mostly been focused on the Lower St. John River valley (Blair 2004, 2010; Foulkes 1981; Holyoke 2012; Holyoke and Hrynick 2015; Sanger 1973), the lower reaches of the Miramichi (Allen 1981; Turnbull 1976, 1986) and the Quoddy region (Black 1992, 2000a, 2000b, 2002; Blair 1999; Davis 1978; Gilbert 2011; Hrynick and Black 2016; Sanger 1987, 2008). Central New Brunswick is poorly represented in the literature, with the exceptions of the Mud Lake Stream and Deadman’s Pool sites (Deal 1986; Sanger 1971), which are located towards the margins of the region and outside of the St. John River Valley, a brief report on the Meductic site (Caywood 1964) which focuses on the historic occupation of the site, and a 1982 survey by ASNB (Ferguson 1983). Amateur collections such as the one amassed by Dr. George Frederick Clarke nevertheless testify to the archaeological richness of the middle St. John Valley (see Turnbull 1990). From a research standpoint, interior sites have the potential to further archaeological understanding of the Terminal Archaic and Early Woodland periods, one of the most poorly understood transition in the prehistory of the Maritimes, and eastern North America in general (Black 2000a:98;
Sanger 2008:35; Sassaman 2010:187); most coastal sites of that age are at best significantly impacted if not destroyed by erosion, land subsidence and development (Black 2000b:148). Because of these same factors, threatened coastal sites are likely to continue to receive the bulk of researchers’ attention in the coming years. While it is true that in recent years most of the archaeological work in New Brunswick has taken place in the interior, this is overwhelmingly due to cultural resource management (CRM) work completed as part of the mandatory environmental impact assessment for land development projects; such projects are not focused on research and their findings seldom find their way into the published literature (on integrating CRM data into academic research in NB, see Holyoke 2012). In this context, extant collections from inland sites can provide opportunities to pursue complementary research avenues without diverting resources from the coastal areas where they are much needed.

My thesis focuses on an assemblage of bifaces which has been assumed to be ceremonial in nature and likely dates to the Early Woodland period, from a region in which no other such assemblage has been excavated or studied. The bifaces were collected in 1932 by an amateur, Dr. George Frederick Clarke (GFC), from The Bristol-Shiktehawk site in the middle St. John River Valley. They are now curated by the University of New Brunswick as part of the GFC archaeological collection. This assemblage provides me with an opportunity to explore the relationship between ceremonialism and lithic technology, both as part of a broad phenomenon and as a regional manifestation.
Objectives

The goals of my project can be summed up as seeking answers to three basic research questions:

- *Is the assemblage cohesive?*

  Is there enough internal cohesion to support the view that it could constitute a clustered deposit or ceremonial “cache”? I understand the term “internal cohesion” to refer to a high enough level of uniformity in morphology, raw material, manufacture and/or use-wear patterns to suggest a cultural affinity between the different elements of the assemblage, including similarities in style, intended and actual purpose, as well as the technical abilities and the technological approach of the manufacturer.

- *Is the assemblage unique in the region?*

  Are there comparable assemblages in the region or outside that may help establish parallels with regards to age, cultural affiliations and context?

- *What does my analysis contribute to archeological understanding of the Early Woodland?*

  What information can I, through my analysis, extract from the bifaces that will help me understand why, how and where they were made and used, information which can also be applied to the understanding of the function of lithic tools within Early Woodland ceremonials as a whole?

I explore these three questions through a set of specific research objectives which I have achieved in three separate stages:
A. Primary data collection and analysis

i. Identification of the bifaces belonging to the study collection;

ii. Identification of the technological attributes and patterns specific to each of the bifaces in the collection;

iii. Intra-assemblage comparison of these attributes with the aim of identifying which ones are recurring within the assemblage and thus constitute evidence of the cohesive nature of the collection.

iv. Technological analysis of the identified traits and patterns.

B. Comparative analysis

i. Comparison of the individual attributes and collective patterns of the assemblage with other assemblages from different, better known contexts, with the aim of establishing possible temporal, geographical, cultural and functional affiliations;

C. Behavioral interpretation

i. Based on all previous analysis, discussion and speculation on what this assemblage brings to the understanding of the CcDv-3 site and pre-Contact lifeways in the Northeast.

At the data collection and analysis stage of my research, my aim was to obtain and collect all direct information pertaining to the study collection. This data was obtained through inspection and technological analysis of the specimens as well as archival information relevant to the context of the finds.

In the second stage of my research, I situate the Bristol-Shiktehawk assemblage within a broader regional perspective. For this purpose, I rely on both published
literature, unpublished documents and personal communications. I have contacted researchers in Maine, Nova Scotia, Ontario, Québec and Vermont in search of artifacts, assemblages and lithic materials which may be of relevance to my research. My comparisons are based on technological traits, raw material, morphology and assemblage composition. The main objective at this level is to situate the Bristol-Shiktahawk assemblage both temporally (by comparing attributes of the Bristol-Shiktehawk bifaces to those from dated assemblages) and geographically within the interactions spheres of the region or beyond.

Thirdly, putting the data gathered in the first two stages of my research to the test, I attempt to answer some questions at the anthropological level concerning the possible functions and practices associated with this assemblage. Building on – and challenging – hypotheses brought forth in the interpretation of ceremonial assemblages, I use my newly collected data to discuss questions of ritual and other behaviours associated with biface production and deposition.

To these three main objectives I could add that my research should also serve to demonstrate what data and level of understanding can be obtained from an undated assemblage with a general site area as only context, and what cannot. Finally, I consider the dissemination of a quality descriptive analysis as one of my primary objectives. Given the general scarcity of primary data in published form in the region, the publication of my data so that it is made available to other researchers will facilitate extra-regional comparisons, and should be the main contribution of this project to archaeological research in the Northeast.
Terminology

Lithic technology

My research explores archaeological issues through lithic analysis. This analysis employs a specialized technical terminology that includes terms of sometimes ambiguous meaning, even among lithic analysts. I will therefore define some of the terms used for the purpose of this research.

The majority of the artifacts discussed in this research are flaked stone, produced by knapping. A flake (Figure 1.1) is a piece detached by percussion or pressure applied to a stone (the core) that is conducive to conchoidal, glass-like fractures (see Andrefsky 2005). Such toolstones include flint, chert, chalcedony, rhyolite, quartz, quartzite and mudstone. The striking or pressure platform is located at the impact point leading to the detachment of the flake; the dorsal face of the flake is the portion of the original core’s surface detached with the flake and may feature part of the stone’s cortex (its outer “crust”, see weathering below) as well as scars of previous flake removals. The ventral face of the flake is smooth and formed as the flake detaches from the core; it contains a percussion bulb adjacent to the striking platform created by the force of the impact. The proximal end of the flake is located at the platform, and the distal end away from it (Inizan et al. 1999; Andrefsky 2005). Flakes can be produced to be used as such with little to no retouch along their edges, which are naturally very sharp. Flakes can also be modified into tools by removing flakes from one or both of their faces, creating unifacial or bifacial pieces. Flakes produced to be modified into tools can be called blanks, as do any roughly shaped pieces of stone prepared for the same purpose. However, flakes are most often created as a by-product of tool manufacture, and are thus not intended for use;
such waste flakes can also be referred to as *debitage*, a term that can also refer to the action of flaking (see Inizan et al. 1999:16). Flakes do not always possess every attribute I have mentioned; debitage pieces which do no display flake attributes are often referred to as *shatter*.

A *biface* is a stone tool created by the removal of flakes from both faces of a core or flake blank in a process of thinning and shaping; it is typically fashioned to produce a continuous regular edge all around its periphery. Bifaces are most commonly lenticular or plano-convex in cross-section and may or not retain sections of the core or flake blank’s surface (Inizan et al. 1999). In northeastern North America, bifaces are said to be *stemmed* or *notched* when the corners of their proximal end have been modified to facilitate hafting to a shaft or handle; otherwise they are *unstemmed*. Figure 1.1 illustrates some basic nomenclature for flakes and stone tools.

The majority of the bifaces discussed in this thesis are unstemmed. I use a number of morphological terms to describe these artifacts, including:

a) *Ovate*, “egg-shaped”, with an overall oval form with convex edges;

b) *Lanceolate*, “spear-shaped”, similar to ovate but more elongated, and

c) *Triangular* or *sub-triangular*, with more-or-less straight edges forming a three-sided shape.

I avoid the term *leaf-shaped*, which is widely used to describe unstemmed bifaces (e.g. Boulanger and Eren 2015; Fowler 1964; Heckenberger et al. 1990; McConaughy 2005). It is a poorly-defined concept and appears to encompass all of the morphologies I have just listed. The term *bipointed*, widely used in this thesis, refers to an outline on which both ends come to a sharp point. The general morphology might be lanceolate,
with the widest point towards the base. If the widest point is towards the middle of the biface the shape will be *lenticular* if the edges are convex and regular, or *diamond-* or *lozenge-shaped* if the edges are straight and form an angle where they meet at the widest point. Figure 1.2 illustrates examples of unstemmed bifaces morphologies.

Unstemmed bifaces found in bundled context are often referred to as “*cache blades*”, a problematic term" (Binford 1963b; Didier 1967:6; Granger 1981\(^2\), Johnson and Brookes 1989, McConaughty 2005, Nolan et al. 2015). “Cache blade” can act as a shortcut to both functional interpretation and morphological description, as it often describes bifaces ranging from triangular to bipointed in shape. In this research, I will use the less ambiguous and more technically precise term “unstemmed biface”, to which I will add the appropriate morphological qualifiers.

*Weathering* refers to the chemical phenomenon through which the surface of a rock becomes discolored and changes texture with time, from exposure to moisture, soil acidity and heat, forming a crust of *cortex* on the surface of cobbles (Andrefsky 2005:103). Mechanical weathering, such as water-rolling, is also involved in the development of cortex. It is however distinct from *surface wear*, which is a polish or grinding imparted by anthropogenic mechanical factors to the surface of an artifact.

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1 “Cache blade” is doubly problematic; cache, as explained in Chapter 2, is a functionally loaded term, and blade, in lithic terminology, typically refers to either an elongated flake or the distal part of a hafted biface (Andrefsky 2005:23).

2 Granger rightly points out that functional interpretation is indissociable from the term and only uses it in quotations.
Unit terminology

Ubiquitous but seldom defined, the concept of assemblage can vary in meaning and scope. In my research, I use the term assemblage to refer to an ensemble of artifacts from a given site, generally belonging to a shared and limited context in time and space. This is a somewhat limited definition for a term that has been used in a much broader range of meaning (see Banning 2000:294, Deetz 1967), but it is sufficient for the purpose of this thesis. My study collection is composed of the bifaces which were found by George Frederick Clarke in 1932, and which he considered as belonging to a shared context (the so-called “Bristol blades”). While in 1932 those would have constituted the whole of the Bristol-Shiktehawk assemblage, this assemblage has since vastly expanded and would now have to include every artifact from the site, in any of the present collections. While all of these artifacts may be relevant to this study, they are not part of my focused study collection. Since I wish to refrain from using any term loaded with functional interpretation (cache assemblage, ceremonial assemblage), I will use “the study collection”, to which I will refer as “the Bristol-Shiktehawk assemblage” when context does not allow for ambiguities.

Geographical units

The Maritime Peninsula includes the Canadian Maritime Provinces as well as parts of Québec and Maine bordered by the St. Lawrence River to the north, and the Chaudière and Kennebec rivers to the west (Bourque 1989, Hoffman 1955) (Figure 1.5). It forms part of the Northeast, which stretches west to Lake Ontario, and south to Cape Cod. It is bordered by the Midwest to the west, and the Mid-Atlantic to the south. The Far
Northeast (sensu Sanger and Renouf 2006) adds Labrador, adjacent parts of Quebec and the island of Newfoundland to this region.

Ceremony/Ritual

Defining the idea of ritual as it concerns archaeology is a notoriously complex problem (Bell 1992; Brück 1999; Insoll 2011; Robinson 2011; Verhoeven 2011). Adding to the confusion, the term is sometimes used interchangeably with ceremony in archaeological discussions. Although some authors have argued against such a separation (Bell 1992:219), in this thesis I am distinguishing between ritual actions and ceremonial actions:

Ritual actions can include any individual or collective action involving intangible forces related to a belief system (for example, day to day rituals surrounding hunting, gathering or crafting; protocols that are followed in order to perform an action “correctly”, safely, or respectfully); and

Ceremonial actions, ritualized actions or events that are more organized, “official” and perhaps collective in nature. This is the commonly understood meaning of ceremonial when applied to archaeological assemblages and features in the Northeast.

While these definitions may not be universally accepted, they will be important in my discussion of the archaeological visibility of ritual and ceremonal practices, and how these terms can be applied to qualify artifacts.
Geographic and cultural context

The Bristol-Shiktehawk site (CcDv-3) is located on the banks of the St. John River, in the town of Bristol, New Brunswick, in the middle St. John River valley (Figure 1.3). The middle St. John River valley extends through western New Brunswick, between the falls at Grand Falls and the head of tide at Fredericton. This area is at the heart of the traditional territory of the Wolastoqi (Maliseet), which centers on the St. John River (traditionally known as the Wolastoq, the beautiful river) from Québec to the Bay of Fundy, and borders on the coastal traditional territories of the Mi’kmaq to the east and the Peskotomuhkati (Passamaquoddy) to the southwest (Erickson 1978:123). The St. John River was until the mid-twentieth century renowned for Atlantic salmon fishing, up to at least its confluence with the Tobique River. In prehistoric times, other anadromous fish such as Atlantic sturgeon, striped bass and gaspereau could have also been exploited from the St. John (Blair 2004). The middle St. John River valley borders on the uplands of the Miramichi River system to the east; to the west the uplands are dominated by an abundance of lakes that can be navigated to connect with the Gulf of Maine and the Quoddy region through the Penobscot and St. Croix River systems (Ganong 1899).

The Bristol-Shiktehawk site is situated on the east bank of the St. John River, roughly 650 m south of the mouth of the Big Shiktehawk Stream\(^3\) and directly north of the Little Shiktehawk Stream (Figure 1.4). The location of the site is marked on W. F. Ganong’s (1899) map of the portage routes of New Brunswick as the starting point of a

\(^3\) Spelled Shikatehawk on the GeoNB website (www.geonb.snb.ca, accessed Feb. 8\(^{th}\) 2017).
canoe and portage route leading from the St. John to the Southwest Miramichi River, connecting the heart of Wolastoq’kew land to coastal Mi’kmaq territory (Figure 1.5). The terrain at the site consists of a series of terraces rising from a lower floodplain along the edge of the St. John River.

The name Shiktehawk and its multiple variants (Clarke preferred Shiktahawk⁴) originates in the Wolastoq’kew language. According to Clarke (2016a:95), the original name means “I killed him” and is connected to the legend of a fight to the death between two chiefs, one Mohawk and one Wolastoqiyik; after an afternoon of fighting, the Wolastoqiyik killed his opponent, hence the name. Rayburn (1975:254) suggests the translations “where he takes them (salmon)”, “flat at its mouth” or “delta at its mouth”. These interpretations could be supported by Clarke’s (2016a:95) mention of an excellent salmon pool at the mouth of the Big Shiktehawk Stream, as well as the presence of delta-like formations at the mouth of both streams (see Figure 1.4)⁵. This salmon pool was most certainly a great attraction to the site; coupled with the favorable ground and the use of the portage route it must have made the flat terrace at Bristol-Shiktehawk a very attractive location for short or long-term occupation.

⁴ Although he reports the original name as “Six-Ta-Haw” (Clarke 2016a:95). The Chief of the Sixtahaw, a short story by Clarke, unpublished in his lifetime, takes place at the site and was probably written shortly after its discovery (Bernard 2015:202).

⁵ These names could also refer to the fact that the Big Shiktehawk Stream originally had two mouths; see Figure 3.7.
Prehistory in the Northeast

As for most of the North American continent, the prehistory of the Northeast is broken down by archaeologists into three major periods. The Paleoindian period begins with the first human presence in the region around 13000 years BP. It is followed by the Archaic period, stretching approximately from 9000 to 2800 BP. Finally, the Maritime Woodland period extends from around 2800 BP to European colonization ca. 500 BP, and is characterized by changes in lithic technology and burial practices, and by the introduction of ceramic technology (Blair 2004).

Each of these major periods is usually divided into an Early, Middle and Late phase, which are sometimes themselves subdivided (for example, the later Middle Maritime Woodland). The transition between the Archaic and Woodland periods passes through a “Terminal Archaic” phase, sometimes known as the Transitional Period (see Snow 1980:235, Black 2000a:89). It is this transitional, Terminal Archaic to Early Woodland period that mostly concerns this research.

The three-period system is deeply engrained in the archaeological practice in North America, and has functioned as a suitable chronological framework to facilitate analysis and discussion of archaeological manifestations. It is however based on the culture-historical approach to prehistory and largely defined on artifact types, which can lead to an emphasis on change to the detriment of continuity. Researchers from a variety of theoretical orientations have critiqued the implications of discontinuity that are implied

Whereas Maritime Woodland is used in the Canadian Maritime Provinces, it is referred to as the Ceramic period or simply the Woodland period elsewhere in the Northeast (Snow 1980).
by this terminology (e.g. Hrynick and Black 2016; O’Brien and Lyman 2000; Petersen 1995). It is especially important to be aware of the artificial nature of these divisions when trying to understand “transitional” periods.

George Frederick Clarke

Dr. George Frederick Clarke (1883-1974) stands as a unique and imposing figure in the history of twentieth century New Brunswick. Probably the best-known author in the province during his lifetime, his writings reflect his deep love for New Brunswick history, its landscapes and nature – and salmon fishing. A passionate avocational archaeologist, the career dentist from Woodstock spent decades exploring the brooks and rivers, floodplains and terraces of central New Brunswick, between Grand Lake and the Tobique river. Unapologetic in his amateur status, he dug “for the pure love of it”, driven by curiosity; long before professional archaeology took a strong foothold in the province, his discoveries led him to meet many of the important figures in the archaeology of northeastern North America. While most of these encounters were brief and unfortunately did not develop into fruitful collaborations, his relationship with Edwin Tappan Adney, the influential journalist, linguist, and expert on indigenous watercraft, could be the subject of a volume of its own (see Bernard 2015).

The George Frederick Clarke archaeological collection was donated to the University of New Brunswick in 2006; its cataloguing has recently been completed. It contains over two thousand and six hundred artifacts and has been the subject of two master’s theses as well as being used for teaching purposes. Large portions of the collection remain to be analyzed, and work with the artifacts is ongoing.
The Bristol-Shiktehawk Site

*Site Discovery*

Among the thousands of artifacts Clarke collected throughout his career, the bifaces he found at the Bristol-Shiktehawk site seem to have held the most fascination for him (Figure 1.4). In the chapter he devotes to the site in *Someone Before Us* (1968), his archaeological memoirs (and the first monograph on New Brunswick archaeology, recently (2016) republished by Chapel Street Editions), he calls them “probably the most important stone artifacts ever unearthed in this part of northeastern North America” (Clarke 2016a:97). The intriguing nature of The Bristol-Shiktehawk bifaces would be noted by all of the researchers who subsequently came in contact with the collection.

According to Clarke in *Someone Before Us*, the bifaces were recovered over the course of three or four days in the summer and fall of 1932\(^7\), on a low terrace along the St. John River between the Big and Little Shiktehawk Streams, in the town of Bristol. The first area George Frederick Clarke excavated in June produced twenty-eight artifacts of “extraordinary beauty”, “spearheads” and “double-pointed blades”; these were found in relative proximity (nine were found “within four feet of the previous lots”) and at different depths within “ten inches” of the surface (Figure 1.5) (Clarke 2016a:98). When Clarke returned to Bristol the following October, he was accompanied by fellow collector

\(^7\) In *Someone Before Us*, the original finds are dated Sunday, June 4\(^{th}\) of 1932 and the next day; however, June 4\(^{th}\) and 5\(^{th}\) of 1932 would have fallen on a Saturday and Sunday. In his 1932 letter of June 15\(^{th}\) 1932, Clarke places the original finds at “last Sunday and Monday”, which could either be read literally as June 12\(^{th}\) and 13\(^{th}\), or more probably as Sunday and Monday of *last week*, June 5\(^{th}\) and 6\(^{th}\) of 1932.
William Kesson. After finding another large bipointed biface at a depth of “ten inches”, they came upon a concentration of artifacts at the base of the ascent leading to the upper terrace: “[…] we found fourteen whole pieces, some double-ended, others with rounded bases, and three broken portions which exactly fitted the broken knives I had found June 4th. All the fourteen pieces were on the same level, ten of them bunched together side by side, ten inches below the top soil. Three about sixteen inches from the ten; one three feet, opposite Mr. Kesson” (Clarke 2016a:99). In his discussion of the small area in which these forty-three pieces were found, Clarke specifies that he found no arrowheads, scrapers or other tools associated with them; furthermore, the bifaces were “quite different in shape and material” from other artifacts he later found on the upper terrace. He also noted the lack of bone, ashes or flakes in the area around the biface concentrations. Clarke raised the possibility that “the artifacts, or at least those bunched together, were mortuary offerings” (Clarke 2016a:99). Aware of the unique nature of the assemblage, Clarke was quick to note morphological similarities between his finds and the upper Paleolithic Solutrean stone points of Europe.

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8 Clarke (2016a) referred to the large bifaces in the collection as “blades” and “poniards, distinct from the smaller, notched “arrowheads” he was more used to finding.

9 “Ashes” is a term often used by Clarke to refer to black and greasy soil corresponding to organic-rich, anthropogenic occupation layers.

10 On this matter see Chapter 4 – GFC and the Solutrean Hypothesis
History of research

Over the years, the Bristol-Shiktehawk site has attracted the attention of a number of archaeologists rarely seen for a site in the province. When William J. Wintemberg, then Assistant Archaeologist with the National Museum of Canada (Jenness 1941), visited New Brunswick in 1933, he was advised to contact Clarke by William Kesson, who had been present on site in the fall of 1932. Clarke showed Wintemberg a sample of his collection, including bifaces from Bristol-Shiktehawk. Wintemberg produced 28 line drawings of the artifacts he was presented with, along with a short description and basic measurements and descriptions\textsuperscript{11}. According to Clarke (2016a:99), his visitor had “never seen any quite like them”, and could not associate them with any “culture group”\textsuperscript{12}. There is no indication that they visited the site together or that Wintemberg made plans to return for further investigations.

Although there is evidence of the bifaces being discussed with Douglas Byers, of the Peabody Museum, in the late 1940s,\textsuperscript{13} it would be almost thirty years before the site received a new visit from professionals. In 1961, Richard J. Pearson, affiliated with the National Museum of Canada, excavated at the Bristol site, giving the Borden number CcDv-1 to the upper terrace. According to David Sanger’s field notes from 1968, Pearson

\textsuperscript{11} Wintemberg’s note on Clarke’s artifacts are dated August 11\textsuperscript{th}, 1933.

\textsuperscript{12} Wintemberg (1943:320) later compared the bifaces with artifacts found in Tadoussac, Qc, postulating that the Bristol bifaces were “probably left by people of the same culture as those at Tadoussac”.

\textsuperscript{13} In a letter from Tappan Adney to Byers dated January 7\textsuperscript{th} 1948: “I have just been told that a photo of these [the Bristol artifacts] have been sent to you, and aroused your interest.”
excavated on the lower terrace for less than an hour before moving above the slope. A few years later\textsuperscript{14}, Walter A. Kenyon, of the Royal Ontario Museum, was led by Clarke to the site with a team of archaeologists. They too worked for “about an hour” on the lower terrace before moving to the upper terrace where, from a small excavation, they collected “fully one hundred pounds of chippings, but no finished pieces” (Clarke 2016a:102). The notes and artifacts from Kenyon’s excavation were unfortunately not available for study at the time of this research. In 1968, David Sanger, with what was then called the National Museum of Man, visited Clarke and took the earliest still-extant photographs of the Bristol artifacts. He excavated at Bristol between June 12\textsuperscript{th} and June 15\textsuperscript{th} of that year, following Clarke’s recollections of the original find spot. Sanger renamed the whole Bristol-Shiktehawk site CcDv-3 and Pearson’s artifacts from 1961 were relabeled using the new site number. Sanger’s field notes and photographs as well as the artifacts from his and Pearson’s excavation were obtained for the analyses reported in this thesis. Later correspondence between Clarke and Sanger indicates interest from the latter in collaborating on publishing a thorough analysis of the Bristol-Shiktahawk assemblage, although this idea never materialized\textsuperscript{15}.

Although the site was briefly visited during a 1982 survey by ASUNB (Ferguson 1983), more than 20 years passed before someone else excavated at Bristol. Chris Blair, of the New Brunswick provincial Archaeological Services Branch, excavated a few test pits at CcDV-3 on July 9\textsuperscript{th}, 1991. The artifacts he collected are housed at the

\textsuperscript{14} Clarke (2016a:102) dates Kenyon’s visit to “Four or five years ago”.

\textsuperscript{15} In a letter dated January 7\textsuperscript{th}, 1971, in the GFC collection at UNB.
Archeological Services (ASNB) facility in Fredericton. David Keenlyside, Curator of Atlantic Archaeology at the Canadian Museum of Civilization, subsequently dug at Bristol on August 24th and 27th of 1994. The artifacts he collected then are also kept at ASNB. The Bristol-Shiktehawk site and assemblage are mentioned in Adrian Burke’s (2000:145) doctoral thesis where he makes some observations on the lithic materials and potential age of the “cache” bifaces.

Finally, the site underwent a four-week extensive testing campaign as part of Brent D. Suttie’s PhD research\textsuperscript{16} in August 2010. Upwards of one hundred manual and mechanical\textsuperscript{17} test pits were dug on both terraces and adjacent areas. According to the preliminary report (Suttie and Nicholas 2013), over thirty cultural features were identified. Several radiocarbon dates were obtained, of which five belong to the Late Maritime Woodland period, two to the Middle Archaic, and one to the Historical period. A concentration of lithic artifacts was found 15cm below a feature dated to the Middle Archaic. Among these artifacts were a possible portion of a channel flake as well as a fragment of a microblade, possibly indicating a Paleoindian period occupation at the site (Suttie and Nicholas 2013). Recently obtained dates from charcoal recovered on the lower terrace would indicate a Middle Woodland occupation (B. D. Suttie, Pers. Comm.). The information available for the 2010 campaign is unfortunately fragmentary as only an incomplete preliminary report is currently available.

\textsuperscript{16} This doctoral project was not completed.

\textsuperscript{17} 2m x 2m mechanical test pits were excavated by a compact backhoe to a depth of 2 m (Suttie and Nicholas 2013).
The review of all extant artifactual collections from CcDv-3 is completed by the Bradstreet collection. Local Bristol resident Joseph Bradstreet has collected on the Bristol-Shiktehawk site for several decades, mostly when the upper terrace was being plowed (J. Bradstreet, pers. comm.). He donated most of his collection to ASNB in 2010, although he still retains a few artifacts at his residence. The Bradstreet collection comprises a large number of flakes, bifaces, large blanks as well as several ground stone artifacts. Other noteworthy pieces include a small European copper vessel and a 17th century French enameled seal spoon (Suttie and Nicholas 2013).

**Thesis outline**

The rest of my thesis is structured as follows: Chapter 2 presents a review of literature on similar biface assemblages in New Brunswick and the Northeast, based on morphology and composition, including a summary of the theoretical issues and approaches related to their study. This is followed by a presentation of my methodological approach, broken down into the different parts of my analysis. The results of my analysis are presented in Chapter 3 in the same order, beginning with an explanation of how the individual bifaces were identified and included in the study collection, along with the information that can be obtained from the other artifacts from the site as well as archival material related to the find. This is followed by the analysis of the raw materials, manufacture and morphology of the assemblage. Chapter 3 concludes with a look at weathering and breakage patterns. Chapter 4 contains the internal and external comparative analysis of my results, through which I attempt to establish cultural, temporal and functional connections for the CcDv-3 assemblage. This is followed by a
discussion of how my observations are relevant to the understanding of the assemblage, the site, and of Early Woodland ceremonialism in the Northeast, including a reflection on ritual, ceremonialism and symbolism as they relate to lithic technology. Finally, my conclusions are presented in Chapter 5, followed by appendices containing my raw data. Figures and tables are presented at the end of each chapter; larger tables are presented in Appendix B.
Figure 1.1 – Basic lithic analysis terminology.

The biface on the left has a contracting or lobate stem; the one to the right could either be described as side-notched or expanding-stemmed, with a slightly concave base.

Adapted from Inizan (1999) and Andrefsky (2005).
Figure 1.2 – Unstemmed bifaces morphologies.

A. Lanceolate, rounded base; B. Lanceolate, bipointed; C. Ovate; D. Triangular.

Figure 1.3 – George Frederick Clarke holding up one of the “Bristol blades”, ca 1960.

(GFC collection, UNB)
Figure 1.4 – Plate I of Someone Before Us.

Four of the “double-pointed blades” found at Bristol by Clarke (1968:19). (This plate was not reproduced in the 2016 re-edition of SBU).
Figure 1.5 – Location of the Bristol-Shiktehawk site within The Maritime Peninsula.
Figure 1.6 – Site location, close-up.

Upper (white) and lower (black) terraces along the St. John River, between the mouths of the Big (A) and Little (B) Shiktehawk Streams. (Map adapted from Google Earth, 2017)
Figure 1.7 – Map of Aboriginal canoe & portage routes of New Brunswick.

The Bristol-Shiktehawk site, identified here as *Shig-a-te-hawg*, is in the center of the circle. The canoe/portage route connecting the St. John River to the main Miramichi River is highlighted in black (Ganong 1899).
Chapter 2 - Background

Because of his limited familiarity with contemporary archaeological literature, George Frederick Clarke relied mostly on his substantial personal experience of New Brunswick archaeology when discussing his finds in Someone Before Us. His practical knowledge led him to present the Bristol-Shiktehawk biface assemblage with a focus on three defining characteristics. These observations were correct and remain a valid starting point for my comparative analysis. I however need to situate these attributes within the context of current research. The main characteristics of the Bristol-Shiktehawk assemblage presented in Someone Before Us are:

1) the “bunched” context of the finds, perhaps representing a “cache” of mortuary offerings (Clarke 2016a:99);
2) the presence of large, bipointed bifaces (Clarke 2016a:100); and
3) the presence of large, contracting stemmed points.

I here explore the current state of research on these three notions in the Far Northeast before delving into my analysis.

Mortuary ceremonialism and ceremonial “caches” in the Northeast and beyond

The Bristol-Shiktehawk bifaces have often been referred to by Clarke and others as constituting a “cache” assemblage. Although caching in a broader sense is usually used in anthropological studies to indicate leaving foods, supplies or tools at locations for future or emergency use (the “logistical” cache, see Binford 1979, 1980; Franco et al. 2013; Kilby 2008; Olsen and Woods 2016; Wilke and McDonald 1989), in northeastern
North America and the Midwest, archaeologists have used the term to refer to clustered interments of like artifacts, often bifaces (Binford 1963b; Davis 1982; McConaughy 2005; Nolan et al. 2015; Pleger 2000; Taché 2011). Contrary to utilitarian caches meant for later retrieval, northeastern caches are mostly associated with mortuary or ceremonial features and are often characterized by the addition of powdered red ochre. This semantic dichotomy is problematic in its functional implications (see Olsen and Woods 2016). As awkward as it is, the concept of a “ceremonial cache” is too ubiquitous in the regional literature for me to avoid it in this thesis. However, outside of this chapter, I will favor the more neutral designation of “clustered deposit”. A more in-depth discussion of the notions of ritual and ceremony can be found in Chapter 4.

Ceremonial biface “caches” in northeastern North America are a defining characteristic of Terminal Archaic/Early Woodland mortuary ceremonialism. Variations in mortuary practices in Northeastern North America have been traditionally defined by means of a number of archaeological units, of which some of the most persistent are the concepts of tradition and complex. The tradition is generally understood as a broader, temporally longer unit which may comprise a number of shorter-term complexes representing related burial patterns (Robinson 1996:98; Willey and Philips 1958:37).18

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18 Burial traditions should not be confused with whole-culture traditions; see for example the Susquehanna tradition below.
In the Northeast, the Late Archaic Moorehead burial tradition is one of the earliest well-defined mortuary phenomenon, and is recognized between ca 5200 and ca 3700 B.P (Robinson 2006:355). The nature of the connections between the Moorehead tradition and other coeval or preceding units in the Far Northeast, especially in Labrador and neighboring areas, is a complex matter that is still widely debated (Bourque 2012:142; Robinson 1996:98, 2006:344). This confusion is partly explained by the fact that there are a number of commonalities in known burial practices throughout the Archaic period in the Far Northeast. Among these are the existence of large cemeteries and the predominance of ground-stone woodworking tools (gouges, adzes, celts) and other objects (rods, perforated abraders, plummets) as mortuary inclusions, combined with the use of powdered red ochre. Bifaces as burial inclusions become more numerous in the Late Archaic, with straight or contracting-stemmed types commonly associated with the ground slate bayonet which is the defining artifact of the Late Moorehead burial tradition (Bourque 2012; Robinson 1996; 2006).

The Late Archaic in the Northeast is directly followed by the Terminal Archaic period (ca 3800-3000 B.P.). The recognition of this transition is based on observed changes in technology, resource exploitation and artifact styles. Evidence points to

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19 Robinson (1996:99) first presented the Moorehead tradition as including the Gulf of Maine Table Land and Morrill Point Complexes (8500-7000 B.P.); later (2006:355) he places them as preceding the emergence of that tradition.
increased connections with the Mid-Atlantic region of the Eastern Seaboard with the northward spread of the “Broadpoint” lithic system, which forms the core of the phenomenon known as the Susquehanna tradition in the Northeast (Bourque 1995; Dincauze 1968; Sanger 2006). Whether the sporadic manifestations of the Susquehanna tradition in the Maritime Peninsula represent a population movement/replacement or the diffusion of cultural ideas has been debated for decades, as evidence also suggests continuity from the Late Archaic in the region (Black 2000a; Bourque 1995; Cook 1976; Petersen 1995: 221; Rutherford 1990; Sanger 2006, 2008; Turnbaugh 1975). In any case, around that time there is a shift along the Atlantic Seaboard towards the production of large, broad, stemmed bifaces, and away from typical Archaic ground stone tools (gouges, rods, plummets), which more or less disappear from the archaeological record at this point; the main groundstone tool form for the period is the fully grooved axe. In mortuary context bifaces are common, often showing strong wear, and are associated with other tools such as drills and groundstone tools (mostly grooved) inside cremation burial features in which the stone tools have often also been burned; red ochre is sometimes present but most often not (Bourque 1995; Deal 1986; Dincauze 1968, 1975:39). Biface caches that are not outwardly ceremonial in nature also occur in the Terminal Archaic (Rae and Jones 2017:22).

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20The Susquehanna tradition is generally understood as a “whole culture” tradition, not a burial tradition per se. As such it is divided in successive phases, mostly derived from biface types: Snook Kill, Atlantic, Watertown, Coburn, and Orient (Dincauze 1975:27).
Around 3000 B.P., archaeologists observe another major transition which defines the beginning of the Early Maritime Woodland period. While the introduction of ceramic vessels and agriculture (in certain areas of the Northeast) are the principal technological innovations of the period, changes are observed throughout northeastern North America in settlement patterns, resource exploitation, lithic technology, cultural interactions and mortuary ceremonialism. Archaeologists have struggled to explain the transition between the Late Archaic and Early Woodland periods in northeastern North America, in part because of the macro-regional scale of the observed changes (Black 2000a:98; Fiedel 2001; Sanger 2008:35; Sassaman 2010:187). In the Northeast, there seems to be a shift in cultural interactions towards the interior and the Great Lakes, along the St. Lawrence River valley and as far as the Ohio River drainage (Black 2000a:100; Turnbull 1976:60). In ceremonial practices this is illustrated by the introduction of burial mounds on the Maritime Peninsula (Christianson 2005; Davis 1991a; Turnbull 1976). While there appears to be grounds for a relatively consistent Early Woodland burial tradition over a vast territory, researchers have traditionally put more emphasis on defining a number of regional mortuary complexes. In northeastern North America, these include:

a) Meadowood, centered around the northern New York State/southeastern Ontario area, but also recognized in the whole Northeast, including Québec, New

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21 Also called the Early Woodland period, Early Ceramic period or Ceramic period 1 (CP1) outside of the Maritime Provinces (Snow 1980).

22 The concept of an “Eastern Burial Cult” has served in the past as such a region-wide tradition, but has fallen out of use with no clear replacement (Dragoo 1976).
Brunswick, Labrador and the Delmarva Peninsula. The well-studied Meadowood lithic technological system is central to the definition of the phenomenon; in the “core” area it relies heavily on the use of Onondaga chert (Ritchie 1965:182). The largest ceremonial “caches” in the Northeast (up to 1500 bifaces in a single cache; Taché 2011:50) are associated with Meadowood (Granger 1978; Holly 2013:62; Lowery et al. 2015; Taché 2010, 2011);

b) Glacial Kame and Red Ocher\textsuperscript{23}, mostly confined to the Midwest/Lower Great Lakes area, characterized respectively by “sandal sole” shell gorgets and turkey-tail points. Red Ocher mortuary features often contain “caches” of bipointed or sub-triangular bifaces and are sometimes part of large cemetery sites (Binford 1963b; Didier 1967; Pleger 2000; Ritzenthaler and Quimby 1962); and

c) Middlesex, first defined in New York state but represented throughout the Northeast, characterized by the presence of lobate-stemmed Robbins and Adena points. Middlesex complex mortuary features include burial mounds and large cemeteries (Blair 2004:38; Heckenberger et al. 1990; Loring 1985; Turnbull 1976).

While these constructs succeed in defining regional variation, they have been developed in a parallel manner in their respective “core” areas (which can themselves be

\textsuperscript{23} The “Red Ocher” complex name was coined in the 1960s and is still in common use (Pleger 2000; Ritzenthaler and Quimby 1962). To avoid confusion with the red mineral (rich in ferric oxide) from which it takes its name, I use the capitalized “Red Ocher” for the complex, and the uncapitalized, alternate spelling of “red ochre” for the mineral.
more indicative of research chronology than actual cultural patterns). As a result, they can suggest a level of diversity and complexity which does not necessarily reflect the data. Researchers have argued for a long time that the similarities among these complexes are very striking and should perhaps outweigh the differences when trying to understand the phenomenon as a whole (Blair 2004:39; Heckenberger et al. 1990:111; Loring 1985; Ritchie 1965:198-199; Ritzenthaler and Quimby 1962). These common traits include large numbers (“caches”) of bifaces (either unstemmed or straight/contracting-stemmed) exhibiting a high degree of standardization in shape and commonly associated with other ceremonial objects, including gorgets (thin, tabular, pierced slate or shell objects), blocked-end tubular stone pipes, copper and shell ornaments, flaked and ground celts and the inclusion of red ochre in the deposit. Furthermore, diagnostic markers of one complex are often found in features associated with another (Meadowood lithics in Middlesex context, see Heckenberger et al. 1990:139; Loring 1985:100; Turkey-tail points in Middlesex context at Augustine Mound and the East Creek site, see Loring 1985:119; Turkey-tail point in Meadowood context, see Ritchie 1965:181).

The introduction of Middlesex ceremonial mounds in the Northeast was long seen as an offshoot of the midwestern mound-building Adena culture, with the assumption that its spread represented a population movement of Adena “settlers” to the north and east (Dragoo 1976; Ritchie 1965:200-203; Ritchie and Dragoo 1960:63). This situation was in part due to research chronologies (the Adena culture of the upper Ohio Valley was defined long before the Middlesex complex) and to an adherence to a core/periphery model. However, Middlesex features in the Northeast have since produced radiocarbon dates that predate the emergence of Adena in the Midwest (Heckenberger et al.
1990:139). Furthermore, Early Woodland ceremonial features in the Northeast have been found to contain artifacts types associated with the preceding Late and Terminal Archaic occupations, hinting at a population continuity (see Dragoo 1976; Heckenberger et al. 1990:138; for heavy copper tools of the “Old copper tradition” in Red Ocher and Middlesex contexts, see Pleger 2000 and Greenman 1966; for Middlesex and Red Ocher artifacts on a “single component” Late Archaic site, see Clermont et al. 2003:296). This is also supported by the continuity observed in lithic technology between the Late and Terminal Archaic and the Early Woodland (Petersen 1995:221; Rutherford 1990).

Early Woodland ceremonial “caches” in the Northeast occur in isolated mortuary features as well as large cemeteries and burial mounds. The often-sizeable numbers of bifaces that they comprise commonly include large stemmed bifaces, large unstemmed bifaces which could represent preforms for the stemmed points, and an assortment of smaller, unstemmed bifaces which may display a different morphology (the “cache blades” discussed in Chapter 1).

The intent behind ceremonial “caches” and the function of the bifaces that are placed in them are widely debated; varied economic purposes have been proposed (caching bifaces as a way to create rarity and support exchange systems, see Granger 1978, Krakker 1997; association of mortuary sites and “trade fairs”, see Taché 2011; also, turkey-tail bifaces involved in the copper exchange system, see Didier 1967), while others researchers emphasize the ceremonial and spiritual nature of the deposits (Loring 1985, Turnbull 1976). Researchers have attempted to understand biface caching using a variety of approaches, including refined metric analysis and statistics, distributional analysis, technological analysis, and use-wear analysis (Binford 1963a; Didier 1967;
Granger 1978; McConaughy 2005). The high degree of standardization and wide spatial distribution of biface “caches” associated with the Meadowood sphere, as well as the range of turkey-tail points associated with the Red Ocher complex has allowed researchers to use distributional analysis in trying to understand the motivations behind the manufacture and circulation of cache bifaces – an approach aided by the focus on “single source” lithic material observed with “classic” Meadowood bifaces and turkey tail points (respectively, Onondaga chert from the Niagara Peninsula area and Blue-Gray chert from the Ohio Valley). Many have pointed to the involvement of certain types of “cache bifaces” in extensive exchange systems, and some have interpreted the presence of these systems as a sign of increasing social complexity (Didier 1967, Krakker 1997, Pleger 2000; Taché 2011). On the Maritime Peninsula, where “ceremonial caches” are not as numerous and often contain bifaces made from local materials, connections between local and broader exchange systems are less evident.

**Bipointed and contracting-stemmed bifaces in the Northeast**

While the contracting-stemmed form is found from the Middle Archaic to the Contact Period in the Northeast, most large points using this style of haft elements date to the Late Archaic and Early Woodland Periods. The majority of the large stemmed biface types associated with the burial complexes mentioned above are contracting or lobate-stemmed, including most variants of Moorehead, Adena/Middlesex and Turkey-tail

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24 A large percentage of Moorehead tradition ground slate bayonets also have a contracting stem (Bourque 2012:76).
points, as well as some types associated with the Susquehanna tradition. The popularity and temporal range of this form is most likely due to the relatively simple hafting strategy it denotes, namely fitting a point into a drilled or carved socketed shaft. The bipointed form can be used in the same fashion without modification, but also represents a logical preform outline for a contracting-stemmed point. Large bipointed bifaces are relatively common in the archaeological record in the Northeast and, while they range from the Paleoindian to the Late Woodland periods, are mostly associated with radiocarbon dates and other artifacts placing them in the Terminal Archaic and Early Woodland periods (ca. 4000-2000 B.P.). They are relatively frequent among assemblages associated with the Susquehanna tradition (especially the Coburn and Watertown phases), as well as with the Red Ocher and the Middlesex burial complexes (Dincauze 1968, Heckenberger et al. 1990, Hruska 1967, Krakker 1997).

It should be mentioned that recent efforts have been made to associate large bipointed bifaces on the Eastern Seaboard, especially in the Chesapeake Bay area, with a Pre-Clovis occupation during the Last Glacial Maximum (LGM) (Collins et al. 2013, Stanford and Bradley 2012). The theory that these bifaces represent a link between Clovis lithic technology and the Solutrean industry of Upper Palaeolithic France and Spain is an update to the Solutrean Hypothesis which has been around for a few decades and has largely failed to gain acceptance in the archaeological community (see Boulanger and Eren 2015). The connections of the Bristol-Shiktehawk assemblage with the Solutrean Hypothesis are discussed in Chapter 4.
Methodology

Analytical framework

In the absence of recorded context, the goal of this analysis was to obtain as much information as possible from the artifacts themselves so that comparative analyses, by me or others, could be attempted in a more informed and relevant manner down the road. I chose to use a technological approach articulated around the concept of chaîne opératoire, a widely used analytical tool which I could use to explore the whole life history of the artifacts by placing them in a technological context (Figure 2.1). This approach is based on the pioneering works of French anthropologist Andre Leroi-Gourhan which, in the mid-twentieth century, initiated a shift from reliance on tool typologies to a comparative approach based on techniques and technology (Andouze 2002). It is a framework which can be used to organize the successive steps of an artifact’s life, from conceptual scheme to discard, while integrating the relationships between intention, knowledge, skills, methods and techniques (Inizan et al. 1999). My analysis thus begins with lithic material, followed by manufacture, morphology, retouch and use-wear. The step of discard, which is very much at the center of the matter for a potential “cache” assemblage, comes last. I approached the chaîne opératoire with the knowledge that every technical decision is informed by the steps preceding it as well as the ones that follow; the intended use of the tool for example affects the choice of raw material and the manufacture decisions, including the morphology (Grace 1996:219). In the presence of tools that may have been created with their deposition in mind, the discard and use steps are also necessarily linked.
Identification, description and preparation of the collection

Before beginning my analysis, I first needed to identify and locate as many as possible of the artifacts originally identified as belonging to the Bristol-Shiktehawk assemblage. Clarke’s inconsistencies in his labelling of artifacts25 and the reporting of their total number made it necessary to cross-check sources. I searched for any archival material relating to the assemblage, including descriptions, notes, correspondence and photographs. I consulted the George Frederick Clarke and Tappan Adney fonds at the UNB library archives, archival documents shared with UNB by Mary Bernard26, Wintemberg’s descriptions and sketches (courtesy of David W. Black), David Sanger’s field notes from 1968, provided by the Canadian Museum of History, as well as Clarke’s own recollections published in Someone Before Us (SBU) and Six Salmon Rivers and Another (2015). While all these sources at least mentioned the Bristol site, information relating to the original composition of the assemblage was found in only a few of them. My identification of the bifaces constituting my study assemblage is thus based on:

- A letter from Clarke to Adney, 1932;
- Wintemberg’s outline sketches and descriptions, 1933;

25 Throughout the GFC collection, artifacts have been labeled following a number of different, undocumented systems, some using site name abbreviations, others using letters and numbers. A large number of artifacts carry very minimal information, and many bear no labels at all.

26 Mary Bernard, grand-daughter of George Frederick Clarke, and Chapel Street Editions are leading an effort to republish the author’s complete works. Most of the documents she shared with UNB concern GFC and ETA’s correspondence, and were obtained from the PEM.
• The labels directly applied to the artifacts, by Clarke or others, year unknown;
• Sanger’s photographs and notes, 1968;
• Clarke’s plates and descriptions in Someone Before Us, 1968.

In case of conflicting sources, I considered the chronological order of the information; Wintemberg’s notes, predating the rest by as much as three and a half decades and dating back to the year following the site’s discovery, were considered the most reliable. Clarke’s letter to Tappan Adney, dated June 15th 1932, was written within two weeks of the first finds but before Clarke returned to the site in October of that year. Unfortunately, the descriptions it contains are vague and do not allow for the identification of specific artifacts. “Actual size” drawings of the artifacts, mentioned by Clarke as being attached to the letter, could not be found. These would have without a doubt constituted the earliest and most reliable representation of the bifaces found on that first expedition. The markings directly applied to the artifacts in Clarke’s collection sometimes give conflicting information — correspondence from Tappan Adney suggests that the artifacts were not labeled until the mid-1940s. While it is not possible to assess the veracity of this claim, it does put into question the reliability of the labels. However, I have been able to verify the validity of most of them through cross-referencing. The means by which every artifact was identified as part of my study collection are detailed in

27 In some cases Clarke’s labels indicate two different sites on either faces of the artifacts.
28 In a letter to Douglas Byers, January 7th 1948.
Appendix B, including a description of the labels applied to them, as well as their present location and condition.

Having identified and located all the available artifacts, I proceeded to gently clean, using isopropyl alcohol and cotton swabs, one face of all the bifaces which had been covered in a varnish or lacquer by Clarke. I had to do this to reveal the natural appearance of the stone to facilitate the analysis of the lithic material. I left one face untouched to allow for potential analyses in the future; I selected the face to be cleaned with a view on preserving as much of the original labels intact. In the few cases where labels were present on both faces, I photographed and recorded details that would be lost due to cleaning.

Besides the bifaces identified as belonging to the study collection, I also looked for any other artifacts from CcDv-3 which may be of significance to the interpretation of the site. I was especially interested in bifaces displaying morphological or technological affinities with the Bristol-Shiktehawk assemblage, as well as any artifacts made from similar raw materials, especially debitage. I examined the GFC collection at UNB, the artifacts from the Pearson and Sanger excavations of the 1960s, obtained on a loan from the CMH, the Joseph Bradstreet collection (housed at Mr. Bradstreet’s residence and ASUNB), and the artifacts excavated by Chris Blair and David Keenlyside in the 1990s. As mentioned in Chapter 1, the artifacts excavated by Kenyon in the 1960s were unavailable due to an ongoing reorganization of the Royal Ontario Museum’s collections.

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29 Some of the artifacts had been varnished, presumably for display purposes, with a clear coating. This coating has over the years darkened and opacified, obscuring the appearance of the stone.
**Lithic Material**

I visually examined the bifaces’ toolstone, focusing on texture, color, crystalline inclusions and peculiarities. I used macroscopic observation combined with low-magnification microscopy (10X). I used these observations to assess whether multiple artifacts might have been made from the same materials. Because these interpretations are based on visual analysis alone, they remain provisional. I examined every available collection from the Bristol site for artifacts made from lithic materials also represented within my study assemblage to determine if these materials were locally available and had been worked on site. I opted against using an electron probe microanalyzer coupled with UNB’s scanning electron microscopy (SEM) and X-ray fluorescence (XRF), since limitations – cost, limited size of specimen chamber for SEM and necessity of a larger sample size for XRF – made these options impractical.

I attempted some identification of potential known sources for the raw materials. I reached out to other researchers in New Brunswick and the surrounding areas to request their assistance in identifying lithic materials. Detailed individual observations on lithic material are presented in Appendix A; a summary is presented in Chapter 3, with the artifacts grouped by raw material types. I assigned letters to the lithic types represented, and combined these types into groups to facilitate the discussion.

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30 Although I did perform XRF analysis on a select few bifaces, I am not presenting this data as I was not able to make it contribute to my analysis.
Manufacture

My primary focus was on lithic technology since I considered recurring patterns of manufacture, combined with morpho-typological comparisons, as the most relevant approach towards suggesting cultural affiliations for the assemblage. I approached the artifacts’ manufacture with a focus on flaking patterns, remnant attributes and idiosyncratic traits. I produced outline drawings, using Adobe Photoshop®, based on photographs of every artifact. These outlines illustrate most of the flake scars and served as templates on which I was able to note my observations as well as take all morphological measurements. Most of the discussion of manufacture rests on the qualitative description of the flaking and the comparison of patterns from one artifact to the other. As the question of edge retouch may be more closely related to the matter of use than manufacture and morphology, I decided to present it with the use-wear data in the relevant section. The results of the manufacture study are mostly presented in text form; the summary of remnant flake blank attributes is presented in Appendix B.

Morphology

There is a general feeling of morphological cohesion inside the assemblage, which it was my intent to define, describe and, perhaps, quantify. My morphological analysis begins with a summary of visual observations, including generalities about outlines and haft elements (shoulder angles, symmetry, stem angle), as well as specific cases of recurrent and unique attributes. Complete individual descriptions are found in Appendix A.

Basic measurements (total length, maximum width, maximum thickness and weight) are presented in Appendix B. Ratios (length to width, width to thickness) and
statistical values (maximum, minimum, mean and standard deviation) are presented in Table 3.2. Length was only considered statistically relevant on complete pieces; the associated ratios are not calculated for the two artifacts for which the tip is missing.

Among the main aspects of the intra-assemblage morphological similarities are the recurring patterns of symmetry/asymmetry displayed by the artifacts. Defining and quantifying these patterns proved a considerable challenge, forcing me to consider several strategies. My chosen approach involved placing every artifact outline on a grid using Adobe Photoshop®; on this grid I aligned the long axis of the biface. I collected measurements for the horizontal amplitude of the widest point on either side the long axis (left and right apex) and created ratios relating it to the total length. In cases where the widest point occurred at different levels on both sides of the long axis, I measured the offset between the two points and used it, along with the width-to-length ratios of either halves, as a measure of the degree of bilateral asymmetry (see Figure 2.2). I used the overall widest point of the artifacts as the demarcation line between the distal (tip) and proximal (base) portions. This allowed me to calculate width-to-length ratios for both portions to allow comparisons between the bifaces.

I have placed the tables presenting measurements for the whole assemblage in Appendix B, while I have included the tables compiling comparative statistics at the end of Chapter 3. I present and analyze my data on both the individual level (assessment of symmetry on a per-piece basis) and the assemblage level (assessment of cohesion and variation between the artifacts within the assemblage).
Use-Wear

Use-wear analysis can be performed on two different, complementary levels: macroscopic/low power microscopic, and high power microscopic (>100x) (Grace 1996). High power microscopic analysis usually focuses on the observation and description of the different types of polish present of the tool’s working edge; it aims at identifying, using experimental reproduction, the type of material that was worked to produce the observed type of polish (hide polish, wood polish, etc.). Difficulties lie in the subjective nature of the descriptions of the observed edge condition (greasy polish, rounded polish, bright polish) but also in the use of photography (lack of magnification and lighting standardization, very shallow depth of field at higher magnifications, quality of reproduction), and the gathering of the experimental data necessary to their interpretation, which is only made possible by having access to the same lithic material from which the artifacts were made (Grace 1996: 210-211). The quantification and visual description of the polish patterns in a meaningful way that is useful to other research is thus problematic. In light of these issues, researchers have turned to metrological technologies allowing for the objective, mathematical documentation of surface structures. Such data is then analyzed algorithmically, which makes it possible to compare surfaces (Stemp et al. 2015:428). These methods are new, and remain reliant on experimental data.

Some researchers have attempted polish analysis with low power microscopy with some success, and were able to suggest with likely uses for the analyzed artifacts (see McConaughy 2005). McConaughy’s research is especially relevant to my project as it concerns an assemblage of cached unstemmed bifaces. However, its usefulness is limited
by the same problems listed above: vagueness of descriptions, unreliability of photographs, importance of raw material.

I have limited my approach to a presence/absence level. My goal was to determine if a biface showed signs of having been used, or if the evidence suggested that the assemblage was created by depositing unused artifacts. I used macroscopic inspection combined with low-power microscopy (10X).

In order to keep wear analysis at a manageable scale, I tried to focus my observations to certain areas of the bifaces. I identified sections of special interest along the edges or every specimen. I selected these sections as likely to exhibit evidence of intentional use using a set of criteria, mostly based on observations made from the outlines of the bifaces:

- Concave sections of otherwise convex edges. I considered concave sections as less likely to have sustained accidental or environmental wear than convex ones; they could also reflect intentional retouch of a used edge. If due to accidental damage, these sections should show differential pocket/travel polish when compared to adjacent areas.

- Damaged/jagged sections on otherwise regular outlines. I considered these sections as likely to exhibit differential retouch and/or damage patterns when compared to adjacent areas.

- Sections exhibiting features of interest. For example, a clear break in the outline such as an apparent intentional notch, or a defined feature such as shoulder or stem.
For the bifaces for which the sections identified from the outline did not prove to contain conclusive information, I performed an inspection of the whole edge. I then selected significant areas for which I described the edge condition.

The interpretation of the data collected from the examined sections is based both on the direct observations and the comparison of the different sections examined on one biface.

I based my analysis on the notions that:

- A biface that was never used would show a relatively consistent amount and aspect of non-use-related wear all around its edges;
- A biface that was prepared for hafting but not otherwise used would show differential edge preparation between the haft area and the rest of the edges;
- A biface that had been physically used prior to interment would show differential wear patterns on different sections of its outline, including damage on the blade parts.
- If a biface was produced as a preform and not meant for direct use, retouch could be expected to be limited to edge straightening and would likely not vary significantly in amount and nature along the edges.

I also examined the presence of surface wear on the bifaces. Surface polish and edge damage attributed to transport wear is notoriously hard to quantify and interpret (McConaughy 2005). I noted a subjective evaluation of its intensity (absent, light, marked) and its general distribution (localized, all over).

31 These notions are, admittedly, mostly commonsensical assumptions on my part.
The observations of edge-wear made on the bifaces are compiled in Appendix C. They include the location of each section, the observations made on these sections, including retouch patterns, and a magnified photograph. A concluding statement is then drawn from the compilation and comparison of all sections for every artifact. Outlines of the artifacts showing the sections examined are included in Appendix A.

Discard

I include a consideration of the operational stage of discard in my technological analysis because of its suggested importance as a *raison d’être* for this assemblage and ceremonial “caches” in general. Of all the different aspects of the analysis, this one is the most dependent on the context of the deposit; there is nevertheless some information that can be gathered from the artifacts themselves.

This information is mostly contained in the character of the artifacts’ preservation and the breakage patterns observed in the artifacts. Weathering patterns and the location and characteristics of the breaks are presented in Tables 3.5 and 3.6.
Figure 2.1 – Schematic representation of a chaîne opératoire.

Adapted from Grace (1996:219).
Figure 2.2 – Measurements collected for morphological analysis in this study.
Chapter 3 – Results

Included in this chapter are the results of my primary analysis. I begin with the
identification of the study collection, followed by an overview of the available
information from CcDv-3 outside of the study assemblage. Following this, I describe my
analysis of raw material, morphology, manufacture and use-wear. I conclude with an
overview of weathering and breakage patterns.

Identification of the Collection

Appendix B and Figure 3.1 present the 37 artifacts composing my study
collection, along with the way they were identified as belonging to the assemblage, their
current location and their condition. Two artifacts (10-100 and 10-101) are known only
from sketches or photographs; the remaining 35 bifaces are part of the GFC collection at
UNB and are identified by the catalogue number attributed to them in the UNB database.
I gave an arbitrary number in keeping with this system to the two missing artifacts to
facilitate the discussion. One artifact (53-5) bears a label marking its provenience as the
Clearwater-Miramichi site. This piece is included in the collection based on its presence
in the Wintemberg sketches, which likely predate the handwritten label. Its general
morphology and characteristics of manufacture do not stand out among the rest of the
assemblage, and while it is possible that it was included in the 1933 sketches by mistake,
I think it is likelier that it was later mislabeled and thus belongs with the assemblage. One
other artifact (104-9), also included in the Wintemberg sketches where it is noted as
having been found “on a high slope away from where the other blades were found”, is
also labeled as being from a different location (TR – Tobique River), casting further doubts on the reliability of the handwritten labels. I have decided not to include it in the study collection based on Wintemberg’s comments. On the other hand, artifact 8-4 is noted by Wintemberg as being “probably from the same locality as the other blades”; I have included it in my study collection.

The number of bifaces found in 1932 and originally identified as belonging together is unclear. This is in part due to the arbitrary nature of this notion of “belonging together”; because of Clarke’s digging techniques\(^{32}\) and the absence of field notes, it is impossible to know which bifaces were found in association, and how many features – if any – were involved. There seems to be some confusion in the sources, with some numbers referring to the total number of artifacts found at the site, and others solely to the ones considered part of the “Bristol blades”.

In his June 1932 letter to Adney, Clarke mentions finding 25 specimens, including “10 large skinning knives”\(^{33}\), a total which does not include the October finds. In 1933, Wintemberg recorded 25 bifaces, including the one found away from the others mentioned above. Based on currently available information; either a) Clarke showed Wintemberg a selection of 25 bifaces out of the larger number he found during his two 1932 trips; b) Clarke showed Wintemberg the 25 bifaces found on his first trip, not disclosing the October finds, or c) the October dig did not actually happen before 1933,

\(^{32}\) From his writings and notes, it appears that Clarke’s digging techniques typically involved digging a trench with a shovel before expanding that trench horizontally with a trowel.

\(^{33}\) Clarke did not hesitate to use names suggesting a functional interpretation when referring to artifacts. This was one of the archaeological habits which Adney urged him to abandon.
meaning that the 24 bifaces presented to Wintemberg were the only ones in Clarke’s possession at that point. Some of the artifacts not featured in the Wintemberg sketches are at least as spectacular as the ones that are; it seems hard to imagine that Clarke could have resisted the temptation to show these off to the renowned specialist as well. It should however be noted that in the 1932 letter Clarke says that even though “Wintemburg”\(^{34}\) \((sic)\) would love to know where the artifacts came from, he (Clarke) was “not telling”. There seems to have been a certain reluctance on his part to collaborate with academics at this point of his life\(^{35}\). Wintemberg’s notes from his 1933 visit in Woodstock abound with vague indications (“from a site about 2 miles north of Woodstock”, “somewhere near Woodstock”, “about 100 miles north of Woodstock”, “probably from the same locality”), suggesting that Clarke was not forthcoming in sharing all the information that he had. The fact that two artifacts are illustrated and described more than once in Wintemberg’s notes (twice for 52-42, three times for 52-30), with slight variations, is also quite odd, and does not suggest a lengthy, well-planned meeting between the two men. Wintemberg (1943:320) later references Clarke’s 24 bifaces in a posthumous *American Antiquity* article on the Tadoussac site, confirming that the artifacts he sketched and described were the only ones he was shown and told about.

\(^{34}\) The original text read “Wintemburg”, scratched, annotated “Morehead” in the margin. The second occurrence of this correction makes it clear that it refers to Warren K. Moorehead, well-known archaeologist with Phillips Academy, Andover, MA, who visited New Brunswick in the 1920s.

\(^{35}\) This reluctance may have been justified, considering the cavalier approach towards excavation exhibited by some archaeologist at the beginning of the 20\(^{th}\) century (see for example Moorehead (1922:28): “I have dug up nearly thirteen hundred skeletons during the past thirty years”).

54
As for the third possibility, it is not supported by the chronology of the finds presented in *Someone Before Us* (for example, biface 10-100 is said to have been found in the fall, but is present in the Wintemberg sketches). Wintemberg likely did indeed visit Clarke in August of 1933, as he was in New Brunswick, digging at the Government House Cemetery in Fredericton at that moment. I believe it is most likely that Clarke only showed Wintemberg a selection of his Bristol collection. However, the matching numbers of 24 to 25 bifaces found in the June 1932 letter and Wintemberg’s notes are tantalizing, and it is also quite possible that Clarke, notoriously bad with dates and years (see Clarke 2016a:xiii; 2016b:113), made a mistake in the chronology of the finds presented in *Someone Before Us*.

*Someone Before Us*, published in 1968, 36 years after the author first excavated at Bristol, remains by far the most detailed narrative of the finds at Bristol, but relies on the memories of a man in his mid-eighties who, by all accounts, was never keen on taking field notes (Bernard 2015:264). While I do not approach Clarke’s descriptions as inherently unreliable, the amount of detail included in *Someone Before Us* is surprising, considering the amount of time that had passed since the finds at that time and the suspected absence of primary notes. The Bristol site and artifacts appear to have been considered by Clarke as among his best finds. I believe that the length of description and the level of detail found in SBU may reflect not as much the extreme clarity of the man’s memory as his desire to highlight the importance he ascribed to the site. Clarke was certainly more of a storyteller than a scientist – for example, the masterful skill of description of nature and characters he displayed throughout his literary works is at odds
with the clumsy descriptions of his excavation trenches in *SBU*.\(^{36}\) He knew the value of a good story, and that a good scientific story needed numbers and details; his haphazard use of numbers is pointed out in other places (Clarke 2016b:113). I do not believe that the numbers found in the Bristol-Shiktahawk narrative presented in SBU should be taken as solid facts; I do believe however that they must be a relatively accurate reflection of the events\(^{37}\). Finally, one event related in David Sanger’s notes from 1968 is of interest.

Sanger, having been led to the Bristol site by Clarke, was shown the location of his original finds. Sanger set up camp and dug for two days, finding a few flakes and pieces of charcoal. When Clarke came back two days later, he appeared to remember that the location he had first indicated was not correct and pointed to another spot, much to Sanger’s dismay. Clarke’s apparent confusion at the exact location is not surprising considering the three and a half decades that had elapsed since the original excavation; it is nevertheless at odds with the precision shown in *SBU*, which would have been in press at that moment.

In *Someone Before Us*, Clarke mentions 28 bifaces from the June dig (apparently including artifact 51-89, a large bifacially flaked celt), and 15 from the October dig, for a

\(^{36}\) “I […] sank a trench eighteen inches deep anterior to the deposit found the previous evening” or “I dug my trench eighteen inches deep at right angles to the former deposit” (Clarke 2016a:98).

\(^{37}\) A site reconstruction based on a literal interpretation of *SBU* was attempted by B.D. Suttie in order to “reconstruct the layout of the cache to ascertain if any patterning can be discerned in the layout of the artifacts” (Suttie and Nicholas 2013:15). Such an attempt is in my opinion inconclusive at best for the reasons listed above.
total of 43. The year the book was published (1968), David Sanger was presented with 31 bifaces from Bristol, while being told that the original total was 42. Table 3.1 summarizes the different numbers available. One of the issues here is the existence of artifacts (51-89, 104-9) which seem sometimes included, sometimes excluded from the collection. The numbers available give us a low total of 40, high total of 43. If we subtract the two artifacts from the lower total, we get a minimum of 38 artifacts for the 1932 Bristol-Shiktehawk bifaces, with a maximum of 43. With a total of 37 known artifacts (39 if we count 51-89 and 104-9), I may be close to having the whole original collection together, although it is quite possible that other artifacts exist in unknown locations, have been lost or are simply mislabeled in the GFC collection at UNB.

CcDv-3 – Evidence from outside of the study collection

The available evidence hints at a prolonged occupation for the CcDv-3 site. If the potential channel flake\(^\text{38}\) recovered from the upper terrace during the 2010 campaign (Suttie and Nicholas 2013) really is indicative of a Paleoindian period component at the site, people may have made use of the upper terrace at Bristol for most of the period of human occupation of New Brunswick, considering the presence of a small contact period European copper vessel and a 17\(^{\text{th}}\) century enameled French seal spoon in the Bradstreet collection. Long, expanding stemmed points also in the Bradstreet collection may represent a Late Archaic period occupation (see Figure 3.2). One notable trait of the CcDv-3 biface assemblage is the scarcity of small, notched projectile points, and the

\(^{38}\) I did not have the opportunity to personally inspect that artifact.
absence of Pre-contact ceramic. Both of these observations may hint at a diminished presence on site during the bulk of the Woodland period. However, considering the limited extent of testing and the fact that the site was never systematically excavated, the absence of certain artifact forms may be solely due to sampling bias, and is considered of limited significance for site interpretation. Overall, unstemmed bifaces are the most common, with the remainder of hafted forms dominated by expanding stemmed points, with a few straight stemmed specimens (Figure 3.2). Among the unstemmed bifaces, lanceolate or triangular morphologies are the most common. One large lenticular bipointed biface (#109) stands out (Figure 3.3, left side). While similar in size and outline to specimens in the study collection (see 10-100, Figure 3.1), it is markedly thicker, with a strongly plano-convex cross-section resulting in steep, scraper-like edges. Damage and wear on the edges as well as polish on the flat face are also consistent with scraper use. Another large biface, ovoid in shape and very regular in manufacture (see Figure 3.3, right side), stands out both for its heavily weathered and worn surface and edges and the peculiar crisscrossed scratch damage covering its surface. Several whole or fragmentary bifaces in the Bradstreet collection are notable for the high quality of their manufacture (thinness, regularity of flake removals, regularity of outline). Several of them are fractured and incomplete, and they do not all display strong weathering.

Also falling within the bifacial tool category are a number of flaked and ground implements and associated blanks, found both in the Bradstreet and GFC collections (Figure 3.4). Specimen 51-89 from the GFC collection stands out for the regularity of its shape and manufacture. Polish inside the flake scars at the bit end as well as at the poll end on the opposite face seems to indicate some degree of use or retouch by grinding.
Overall, the biface sub-assemblage of CcDv-3 is quite varied but marked by the prevalence of unstemmed forms and the occurrence of several large, very regular implements. The presence of flaked and ground tools is also notable.

Apart from bifacial tools and debitage, the collections contain a large number of large blanks, which are roughly-formed and fairly thick (Figure 3.5). These blanks are almost all heavily weathered and have developed a cream-colored cortex. Fresh breaks on some pieces however reveal a variety of colors. Several retain cortex suggestive of a cobble origin. The appearance and dimensions of these blanks are very reminiscent of stone blanks or spalls that are made available at online stores for modern knappers. It seems likely that they were prepared for a similar purpose, as transportable tool blanks awaiting further reduction and/or to serve as bifacial cores. This is of interest as it may represent a different approach to bifacial reduction from what is observable in the study collection, where most if not all of the large bifaces were not produced by the reduction of a core but worked from a large flake blank (See Manufacture below). Also present are numerous smaller, triangular or wedge-shaped blanks (see Figure 3.4), which may represent preliminary forms for flaked and ground implements. While a few of these have undergone some grinding as well as perhaps some use, the majority are simply roughly formed by flaking. Most feature a relatively thin broad end that could have been suitable for sharpening and use as an axe; however, others have a very blunt end which may indicate an intended use as a maul.

The presence of large numbers of blanks and plentiful cortical debitage in the CcDv-3 lithic assemblage suggests a focus on lithic production at the site, likely associated with the exploitation of a local raw material source. The exploitation of
cobbles available at the mouth of the Little and Big Shiktehawk streams seems likely considering the documented presence of good quality materials at these locations and the appearance of some cortex remnants on artifacts from CcDv-3 being more consistent with cobbles rather than quarried stone. Clarke (2016a:102) noted a “large block of black, mottled flint that had had flakes struck off it” near the mouth of the Little Shiktehawk. Although he took this as evidence that the bifaces had been manufactured on site, Clarke does not mention if the material matched any of the bifaces.

Intra-site context of the study collection

The only available account of exactly where and how the assemblage was excavated is the one presented by Clarke in Someone Before Us, some 35 years after its recovery. This account indicates, as presented in Chapter 1, that the bifaces were excavated over three days in 1932 from the lower terrace, at or near the foot of the slope leading to the upper level, with at least 10 of them “bunched together side by side” (Clarke 2016a:99). This is illustrated on a site plan, produced by Clarke at an unknown date and located in the GFC Collection at UNB (Figure 3.6)\(^\text{39}\). However, some of the information I gathered conflicts with Clarke’s 1968 version of events. While situating the

\(^{39}\) The dates presented on the site plan (“June 4th + Oct 8th 1932”) may, indirectly, help to determine when the plan was produced. As stated in Chapter 1, the original finds were probably made on Sunday, June 5th 1932, and that the one-day error seen in SBU and on the map is in good faith and mostly inconsequential; however, the presence of this error on the site plans points towards a later date of production, perhaps closer to the publication of the book than to the events it describes.
finds on the upper or lower terraces at Bristol would have limited implications for the site interpretation, it could help direct further field investigations at the site.

The main source of information contradicting Clarke’s narrative of the finds is Edwin Tappan Adney. The question of the find spot at Bristol became an unlikely focus of the quarrel between Clarke and him, in which he maintained that Clarke had falsified the truth in a presentation to the Woodstock Rotary Club in order to support a greater age and a “Red Paint” association for the bifaces. This contention is referenced in two 1948 letters to Douglas Byers and Wendell Hadlock, both with the Peabody Essex Museum. Adney, commenting on Clarke and his collection’s shortcomings, states that he was taken to the site by Clarke and had mapped it, and that the “cache blades” were found “on a slide of a river bank” and “at the river bank of the field and on the side of the bank”, and that “this cache […] had slipped down from the top level”. In another, undated document addressed to the Peabody Essex Museum, Adney recalls that the find spot “was shown to me as on the side partway down in the sloping river bank” and that “indications were of slides by the field above which had ploughed up surface artifacts”. While Adney certainly had a personal grievance with Clarke and, from some of his correspondence, appears to have been somewhat vindictive towards the end of his life, it is interesting to note that he was not fighting here the idea that the artifacts were found on the lower terrace, but

40 In his correspondence from the late 40s, Adney bitterly accuses several people of stealing his work and ideas.
that they had been found *at a five foot depth on the upper terrace*. If the find spot he was shown was on the lower terrace, one could assume that this is the information he would have reported when this became an issue. Clarke did indeed show the site to Adney, who mapped it (Figure 3.7). The map, dated May 5th 1936, surprisingly – and disappointingly – makes no mention of Clarke’s “cache”, although it shows the spring water levels reaching the foot of the incline, with the lower terrace completely underwater. All the “campsites” indicated are on the upper terrace. It is unfortunately impossible to determine at this point who was telling the truth, or if either of them actually remembered.

Elements that seem to contradict Clarke’s SBU version of the finds are:

a) Adney’s statements;

b) The newspaper coverage of Clarke’s 1938 talk, according to which Clarke found artifacts “more than five feet below the present surface level”. This does not correspond to Clarke’s later narrative;  

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41 There is indeed a mention of separate cultures at three different levels, including finds at a 5 feet depth in a *Carleton Sentinel* article dated January 13th, 1938, covering a talk given by Clarke at the Fisher Memorial public library in Woodstock, NB. Clarke gave another talk to the Woodstock Rotary Club in November of 1948. The Rotary talk mentioned by Adney in January of 1948 is either referring to the library talk or to a third, as yet undocumented one.

42 Adney prepared maps of several of Clarke’s archaeological sites, including a general St. John River archaeological map which is in the GFC fond at the UNB library archives.

43 The greatest depth mentioned in *Someone Before Us* is “10 inches below the top soil” (Clarke 2016a:99).
c) The fact that most subsequent researchers at Bristol started on the lower terrace, where they found only a few flakes, before moving up to the upper terrace;

d) Clarke’s apparent confusion when pointing the find spot out to David Sanger in 1968;

e) The more “logical” location of the well-drained upper terrace for such a deposit. The find spot on the south end of the lower terrace indicated by Clarke’s map falls within a potential flood zone (Figure 3.8). Flooding could have also contributed to the erosion and perhaps undermining of the bank, causing the edge of the upper terrace to collapse 44.

While I do not wish to suggest that Clarke intentionally mislead his readers in Someone Before Us, there is one possible explanation for these discrepancies. In the 1960s, Clarke went on a personal crusade against the construction of the Mactaquac dam above Fredericton, which he rightly viewed as a great danger to both fish migrations up the St. John River and low-lying archaeological sites. While Someone Before Us was

44 A map of historic ice jams on the St. John River indicates major ice jams just above and below the Bristol site in 1932, with flooded areas all along both sides of the St. John River and extending a few kilometers up the Big Shiktehawk Stream (New Brunswick Department of Environment and Local Government 2013). In the spring of 1923, floods destroyed bridges at Shiktehawk and Florenceville (New Brunswick Department of Environment and Local Government 2012). Clarke (2016a:99) also mentions that the lower terrace “had only been plowed once before in a hundred years”, perhaps due to flooding issues, and suggests soil washing down from the upper terrace to explain the greater depth at which he found artifacts at the foot of the slope.
published too late to raise awareness and opposition to the dam’s construction, and while the Bristol site is located much too high on the St. John to have been impacted by the dam, it does not seem impossible that Clarke may have – with the best intentions – wanted to emphasize the presence of significant sites on the vulnerable low “intervales” of the river. Unfortunately, I believe that with the available data it is not possible to make an assertive conclusion as to where the assemblage originated. In any case, the mention of bifaces “bunched together” can probably be trusted and does not suggest a disturbed context.45

Lithic Material

I present my detailed observations on lithic materials in Appendix A. For this analysis, as described in Chapter 2, I gave a lettered type name to materials represented in more than one artifact. As mentioned in the previous chapter, identifications were made on a visual basis alone. I have assigned all materials to groups based on their traits or representation within the assemblage. Lithic sources discussed in this section are illustrated on Figure 3.22.

Group 1 - Type A - (8-4, 10-2, 10-3, 10-7, 10-10, 10-100, 14-3, 52-26, 52-28, 52-42)

Perhaps the most striking observation regarding lithic materials is the prevalence of the highly variable type A material, mainly recognizable by a greenish, semi-

45 It is admittedly conceivable that undermining of the upper terrace could have caused large chunks of soil to collapse and slide down the incline largely intact.
translucent groundmass marked with small, roughly circular, cream-colored specks. Cleaning and detailed observation of the specimens allowed me to identify a dark and light variant, the former being characterized by a very dark gray to black, semi-translucent body marked by rare, circular void formations. This was made possible by the gradation from light to dark observed in certain artifacts (especially 10-2, see Figures 3.9, 3.10). Overall, type A material grades from medium grayish-green to black; most variants along this spectrum are characterized by cream-colored sub-circular specks (Figures 3.9, 3.10, 3.11). Well-defined, straight banding between areas of different appearance can be seen on some specimens.

Materials closely resembling Type A were also identified in artifacts from CcDv-3 outside of the study assemblage. Significantly, these include cortical debitage, indicating that these materials were worked on site at early stages of reduction (Figure 3.11). In all, 10 of the assemblage’s bifaces are made from this material (photographic evidence allows me to identify, with reasonable confidence, type A material for artifact 10-100).

The variant of the stone visible on artifact 8-4 allows me to securely associate type A material with the stone identified by Gilbert (2011) as *Hinkley Point Metasediment*, an observation already proposed by Burke (2000:145) (Figure 3.12). While this appears to be a misnomer (see below), the identification of this material as local to the Quoddy region is almost certainly correct, based on its known archaeological distribution (see below). It is a microcrystalline, semi-translucent stone with a highly variable groundmass color ranging from light green to black, with some weathered specimens exhibiting a blueish-grey color. The stone is characterized by dull, cream
colored speckles, irregular in shape and distribution and ranging from very small to large. The shape and distribution of the speckles could perhaps be evocatively described as reminiscent of altocumulus clouds. In areas where the speckles are more densely concentrated they tend to merge; in these areas the pale, dull variegations effectively become the groundmass. On certain weathered surfaces, the speckles appear to degrade before the groundmass, producing small crater-like features and a pock-marked surface. This is especially visible, for instance, on the cortex present on a large piece of debitage recovered from the Reversing Falls site in Maine (80.15 ME).

Hinkley Point is a small peninsula, about one kilometer long, extending south-east at the meeting of the Dennys River and Dennys Bay near Dennysville, Washington Co., Maine. Several trips to the point were made with some of the field crew involved in excavations at Devil’s Head (97.10 ME) and Reversing Falls (85.10 Me) sites in June 2017, under the direction of Dr. Gabe Hrynick. This included a thorough walkover survey of the entire shoreline of the point aimed at locating the source of the cream-speckled stone, which was found in debitage form at both sites. A single toolstone outcrop was identified, at the location indicated by Kingsbury and Hadlock (1951), on the south side of the point, close to its western end. The material outcropping there is massive, microcrystalline in structure with a dark blueish-grey groundmass; it is reminiscent of some glassy rhyolites found in secondary cobbles throughout New Brunswick. According to geological maps, this outcrop is composed of rhyolites belonging to the Edmunds formation (Gates 1984). Fractures range from smooth conchoidal to blocky and random; coarser-grained variants have a somewhat limited “knappability”, while the finest-grained variant is a high quality toolstone, more than
suitable for biface production (Figure 3.13). This is, to my knowledge, the only material outcropping on Hinkley Point, and it does not correspond at all with the cream-speckled stone mentioned above.

The erroneous association of this stone with the Hinkley Point source is deeply rooted in the literature, and without a personal attempt to locate this source in the field I would have certainly perpetuated it in this research. The first reference to a “felsite outcrop at the West end of Hinkley Point” comes from Kingsbury and Hadlock (1951:25), in an article on the Eastport/Moose Island site. In this paper, they postulate that some of the debitage from the site may originate from that outcrop, without giving any details about the appearance of the rock. Crotts (1984:57-59) reports that Ross Moffett examined in 1952 a sample obtained from the Hinkley Point outcrop by Kingsbury and judged that it had been metamorphosed, although he could not determine if the stone was of igneous or sedimentary origin. There are no mentions of color or speckles, although I am limited to the material quoted by Crotts as I have not been able to consult Moffett’s original descriptions.

The first association of the cream-speckled stone with the Hinkley Point source appears in Stephen Davis’ (1978:29) report on the Teacher’s Cove (BgDr-11) site, based on a personal communication from Douglas Byers. This association is presented as tentative. It seems possible that Byers, recognizing the cream-speckled material at Teacher’s Cove from the Moose Island assemblage, postulated that this could have been the “felsite” referred to by Kingsbury and Hadlock, and that Davis reported this observation as a hunch to be further investigated. It, however, was not verified, and Crotts (1984:57-59), working partly on lithic tools from Teacher’s Cove, later reported
the same association in a more assertive manner, presumably based on the same personal communication to Byers, although this is not mentioned. Burke (2000:145), based on his analysis of a collection from a site on the Dennys River (126.4 ME), believed Crotts’ suggestion of a source for the speckled stone near Dennysville as likely. Gilbert (2011) based his identification of the speckled material found at the Deer Island Point site on Crotts’ analysis.

Despite the confusion of source and name, the cream-speckled stone does appear to be a material endemic to the Quoddy region. Its known archaeological distribution includes N’tolonapemk (96.02 ME) (Brigham et al. 2006), Devil’s Head (97.10 ME) and Reversing Falls (80.15 ME) (Hrynick et al. 2017), Teacher’s Cove (BgDr-11) (Davis 1978), Deer Island point (BfDr-5) (Gilbert 2011), 126.4 ME, near Dennysville (Burke 2000:145), Bristol-Shiktehawk (CcDv-3), as well as the Moose Island/Eastport and Mincher Point sites (Crotts 1984). With the exception of Bristol-Shiktehawk, all of these sites are located in or around Passamaquoddy Bay, in either Maine or New Brunswick. The presence of cortex on a number of pieces of debitage at Reversing Falls further suggests a local source. One of the relevant artifacts illustrated in the N’tolonapemk report (Brigham et al. 2006:178) is identified as being made of Dennys formation rhyolite, which is described as having a “gray to greenish gray groundmass with thick bands of sub-spherical inclusions of quartz and feldspar” (Brigham et al. 2006:125), a description that generally matches my type A material. My attempts to locate an outcrop of a stone matching this description near Dennysville were unsuccessful.

In view of these observations, I propose the discontinuation of the term “Hinkley Point Metasediment” from future literature and the use of “Quoddy Cream-Speckled
Rhyolite” (QCSR) (or a similar, more elegant, combinations of qualifiers) in reference to the material in question, until an outcrop can be located and its association with the Dennys formation verified.

**Group 2 – Type B, C – (52-45, 10-9, 52-23, 52-35, 51-84, 51-41)**

Group 2 materials feature a light green, semi-translucent groundmass, with a vitreous texture. I was able to identify a shared material (type B) for artifacts 52-45 and 10-9, characterized by straight to jagged cream-colored variegation. The shared material of artifacts 52-23 and 52-35 was labeled type C. 51-84 shows strong similarities to type C under the microscope which were not obvious upon preliminary visual inspection; I have included it within the type. 51-41, while showing similarities to types B and C, is not associated with the types, but included in group 2 (Figure 3.14). It should be noted that 51-41 is markedly more weathered than other artifacts in this group. All these materials (but especially type C) show affinities with variants of the apple-green glassy rhyolite (AGGR) common in glacially transported cobbles throughout New Brunswick (Gilbert et al. 2006b). This material includes a wide range of variants and has not been attributed to a single source.

**Group 3 - Type D – (10-8, 52-18, 52-49, 52-31)**

Group 3 contains very dark gray to black materials. Specimens 10-8, 52-18 and 52-49 are assigned to type D, sharing very similar color and texture, as well as light gray variegations for the first two (Figure 3.15). Artifact 52-31 displays a similarly dark groundmass but smoother texture, and is characterized by the presence of small, circular,
rust-colored specks. I observed those same traits on two other bifaces in the Bradstreet collection (Figure 3.16). Black lithic materials are not to my knowledge very common in interior New Brunswick archaeological assemblages, although the almost complete absence of weathering in this case could make these specimens stand out more than they otherwise would. There are examples of very similar materials on other, unfortunately unmarked artifacts in the GFC collection. Similar black lithic materials are also frequent in private collections from the Quoddy region. I have identified a series of large thinning flakes made of a similar material in the artifacts from the 1991 excavation (see Figure 3.24).

Group 4 – (10-5, 10-6, 51-10)

Group 4 contains dark gray, porphyritic materials represented in specimens 10-5, 10-6 and 51-10. I compared these artifacts with a hand sample of Kineo-Traveler Mountain Porphyry (KTMP) from Mount Kineo, Maine (Figure 3.17). The bifaces show some affinities with the reference material (especially 10-5 and 10-6), although not enough to warrant a positive identification. Again, at the very least a similar formation process can be inferred.


Group 5 represents miscellaneous brown-gray to grayish-green materials (Figure 3.18). Materials vary from very fine-grained to granular in texture; artifact 53-5 displays some clear-gray variegation and retains a portion of cortex indicating a cobble origin. 51-40 stands out as an especially fine-grained material.
Group 6 – Type E and colored materials – (51-107, 52-22, 52-21, 52-27, 52-30)

Group 6 includes materials whose color does not fall inside the black-gray-green spectrum characterizing the rest of the collection (Figure 3.19). The semi-translucent, blue-gray, strongly banded, vitreous material of artifacts 51-107 and 52-22 (type E) is an obvious match and stands out among the assemblage in its color, waxy texture and heavy banding. The Norway Bluff chert outcrop at Munsungun Lake, in northwestern Maine, has been suggested as a possible origin (A. Spiess, pers. comm.), although the samples from this (highly variable) source available to me were not a visual match. One cortical flake found in the 1991 collection at ASUNB appears to be of a similar material, hinting at a possibly local, cobble origin (Figure 3.20). Also included in group 6 are artifacts 52-21 and 52-27. While both are fine-grained and reddish in color, the materials do not appear closely related. The purplish tint of 52-27 is also reminiscent of materials from the Munsungun Lake source (Burke 2000:186); two thinning flakes from the CMH collection may be of the same material (Figure 3.20). I have personally collected a small cobble of material strongly reminiscent of the “classic” red/blue/green variant of Munsungun chert at the mouth of the Little Shiktehawk Stream, an indication that such materials are naturally present in the area. 52-21 is a brighter red and displays a propensity for tabular breaks; it can be compared to similar materials occurring in New Brunswick. The GFC collection contains numerous similar examples from the inner reaches of the Southwest Miramichi River. 46 Finally, artifact 52-30 is made from a fine-grained stone featuring a

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46 From the Forks of the Miramichi and the Clearwater-Miramichi sites. One suggested source for this material is Slate Island, located between the two sites (A.W. Paul, pers. comm.).
tan groundmass covered in white speckles encircled in black (Figure 3.21). This material is also represented in a small expanding-stemmed point in the GFC collection (23-36), marked with a damaged black label which might have read B for Bristol. This stone is known from at least three other New Brunswick sites, Tobique Narrows near the Tobique dam, the mouth of the Nashwaaksis on the north side of Fredericton (A. W. Paul, pers. comm.), and the Jemseg crossing site (S.E. Blair, pers. comm.). At both the Tobique and Nashwaaksis sites, the stone was used to fashion a large side-scraper made on a bifacially retouched cortical flake. The rounded, highly polished cortex clearly indicates that the material was acquired as a water-rolled cobble. This, combined with the material’s distribution along the St. John River Valley, suggests that this stone occurs in secondary cobble sources in in the New Brunswick interior. A single flake of a similar stone was also found at the Devil’s Head site, Maine.

Summary

The majority of materials represented in the study collection are situated in the green-gray-black end of the color spectrum, with a marked predominance of green tones. While I could only make one positive association to a known material, types closely resembling most of the “usual suspects” (sensu Gilbert et al. 2006a, 2006b) in the region are represented (Munsungun, KTMP, AGGR). Brightly colored regional toolstones (mainly North Mountain47, Washademoak and Tobique cherts) as well as quartz are

47 Also known as Scots Bay or Minas Basin Multi-colored Cherts (MBMC). These chalcedonies and cherts belong to the North Mountain formation and outcrop mostly around Scots Bay, outside of the Minas Basin.
notably absent from the assemblage, although several pieces of North Mountain chert and Tobique chert/rhyolite debitage was recovered from CcDv-3 during the 1991 testing. Tobique rhyolite and chert are available from the Tobique River, which drains into the St. John River roughly 40km upriver from the Bristol-Shiktehawk site. These materials typically have a strong presence in assemblages from that area, including the GFC collection. Tobique rhyolite notably lends itself fairly well to the manufacture of large bifacial tools.

The available evidence points towards the bifaces being made from regionally or locally obtained materials. The Quoddy region, the suspected source area for the cream-speckled type A material (QCSR), is about 160km distant from the site as the crow flies, and is accessible in a reasonably straightforward manner via the Eel River portage route beginning at Meductic and connecting with the St-Croix River via the Spednic/Grand Lake system. That trip is just under 300km, almost all of it canoeable (Ganong 1899).

Manufacture

The results presented in this section are kept at the synthetic level. I present more detailed individual observations in the appendices. My observations on manufacture are limited to the 35 physically available bifaces.

The bifaces were overall very carefully manufactured. The largest observable flake scars illustrate primary shaping/thinning flake removals oriented perpendicularly to

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48 45% of the examined flakes (n=761) in the Bernard Collection (CeDw-8) (Turnbull 1990:13); all but two of over 2600 lithic artifacts at Deadman’s Pool (Sanger 1971).
the edges, suggesting that the bifaces’ final shape was intended and achieved at this stage. The thinness and shallow bulb of the flake scars suggests soft hammer percussion. The very narrow striking platform on that same primary flakes are often aligned in a sub-parallel or parallel pattern along straight sections of the edges. On trapezoidal pieces this results in the arrises of the flake scars from opposite edges lining up at their meeting point towards the center of the artifact (Figure 3.23). This regularity could suggest indirect percussion, presumably with an antler punch, but may simply reflect careful platform preparation and isolation. Flakes recovered during the 1991 excavations are very similar in size, shape and thickness to the scars observed on some of the bifaces (Figure 3.24, compare to Figure 3.23).

The regularity of the primary flake removals results in the creation of a mesial ridge at their meeting point along the long axis on at least one face of 77% of the artifacts. This ridge is well-centered and continuous only on certain faces of a few artifacts. In most cases, it is discontinuous, often disrupted by larger flake removals in the mesial section of the bifaces, and slightly offset to one side. Secondary shaping flake removals, or primary retouch, is generally kept to a minimum and mostly focuses on removing arris ridges between primary flake scars at the edge of the artifacts. This was done in a systematic or almost systematic fashion on 43% of the artifacts. Arrises which were not removed are consistently not very pronounced and do not disrupt the straightness of the edge. This suggests that arris removal was done only in places where it was needed to achieve a straight, thin edge.

The width to thickness ratios are quite regular (std. dev. 0.64), and at 3.87 average just below the ratio of 4 given by Callahan and Whittaker for stage 4 and 5 “finished
bifaces” (Andrefsky 2005:187-188). The absolute values for maximum thickness are notably cohesive (std. dev. 0.22 – see Figure 3.27). 35 out of 37 (95%) artifacts have a thickness comprised between 8.4 and 16.4 mm. Of this group, 25 pieces (68% of the assemblage) have a maximum thickness between 10.4 to 13.4 mm.

Several of the bifaces exhibit remnant traits indicating that they were manufactured from a large flake blank: a curved profile, a remnant striking platform, remnants of the original flake’s ventral or dorsal faces and evidence of a percussion bulb. Appendix B sums up the remnant attributes observed in the assemblage. A question mark denotes where a trait is suspected but could not be verified.

In total, 32 out of 35 artifacts (91%) display one or more remnant attribute of the original flake blank. Of the 16 artifacts for which I was able to determine the orientation of the original flake blank (from the retained bulb, platform or faces), all but two are oriented with the base of the point at the proximal end of the flake. One (52-18) is the other way around, with the base located at the distal termination of the flake blank, and one (53-5) displays thin terminations on both ends, indicating that the original striking platform would have been to the side. 52-18 is made from the same material as the much larger 10-8 and it is possible that it was made from a large thinning flake produced in the manufacture of the latter. 53-5 retains some of the original cortex on one face. This cortex is very smooth and glossy, indicating that the flake blank was obtained from a cobble.

Several pieces which do not retain the original striking platform at their base display some other type of flat surface, either a dorsal or ventral face remnant directly adjacent to the base (52-22, 52-23, 52-28. 52-31, 52-35), a fracture at the base (8-4, 52-
steep retouch (52-43), grinding (52-42) or a hinged flake termination (52-18). This brings the total of artifacts displaying a small, flat surface at their base to 24 out of 35 (68%). A further six artifacts feature a small, relatively flat or blunt, unretouched surface located laterally just above the base. This surface is either a square break (52-45, 52-31, 10-4), a conchoidal break (52-23) or a rougher, apparently voluntarily unretouched edge section (10-8, 10-6), in several cases associated with dense, deep retouch on the opposite side (see Figure 3.25). In total, 29 out of 35 inspected artifacts (10-8 also retains a small platform and is only counted once), or 83% of the artifacts feature a small, flat or rough unretouched section at their base or directly adjacent to it.

Several bifaces (26%) have a markedly thin mid-section, which thickens towards the base and tip before coming to an edge. This is either caused by the curvature of the original blank and thus represents a remnant ventral surface (10-10) or by the removal of one or more large, deep thinning flakes (10-6, 10-9, 51-10, 51-96, 52-24, 52-35, 52-42). On one artifact (51-40) the nature of the flake scar could not be ascertained.

One last notable manufacture attribute is the retention of two large flake scar terminations on the tip of one artifact (52-31, see Figure 3.26). The size of the scars indicate that they were produced at a much earlier stage of reduction and likely represent remnants of the original dorsal face of the flake blank. These flake scars extend from the tip down to 2 cm on the left side, 3 cm on the right. The arris formed where the scars meet runs 1.75 cm down from the tip and is offset to the right. The edges inside the flake scars have had fine retouch applied almost exclusively to the opposite face. Only a few flakes were removed on the scar face for the purpose of edge straightening. It seems more likely that this represents an opportunistic use of an accidental element rather than an
intentional shaping technique, considering a) the apparent size of the flakes involved, implying a removal at a stage of reduction when the biface shape was probably not readily evident, and b) the orientation of the flake on the right side, suggesting a removal from the side rather than from the top. However, the final effect is quite similar to the technique of tip-fluting seen in Dorset lithic technology (Plumet and Lebel 1997) and the intentionality of this trait should not be ruled out.

Summary

The main manufacture-related attributes emerging as characteristic of the assemblage are: a) the regularity and high degree of quality of the reduction; b) the retention of flake blank attributes displayed by the bifaces and c) the similar treatment of base preparation on a majority of the bifaces. The very consistent thickness of the bifaces, combined with the evidence of manufacture from flake blanks systematically oriented in the same way points towards a considerable level of standardization in reduction strategy, perhaps beginning at the blank production stage. The production of stone tools of various sizes and shapes with a regular thickness could also be viewed as a way of standardizing hafting strategies.

Morphology

General outline

Morphological descriptions of individual bifaces are presented in Appendix A. At first glance, a variety of morphologies and sizes are represented in the assemblage. A bipointed morphology is nevertheless prevalent, with 19 artifacts (50%) qualifying as
truly bipointed. Six bifaces (16%) display a truncated bipoint morphology, with one end
terminated by a square or oblique base short of coming to a point. A further seven
artifacts (18%) are stemmed, with an overall shape suggesting a bipointed preform. Three
bifaces (8%) have a lenticular shape with a base too rounded to be called a bipoint;
finally, only three artifacts (8%) have a morphology that is clearly distinct from a
bipointed shape. Several bifaces in the assemblage feature refined outlines with curves
that could be described as fluid⁴⁹ (especially 10-6, 10-7, 10-8, 10-100, 51-40, 51-84, 52-
23 and 52-28). This trait is, in most cases associated, with a certain degree of bilateral
asymmetry. Straight lines are noticeably rare.

At least eight “pairs” of artifacts are evident in the assemblage (Figure 3.28, see
also Figure 3.30). I have grouped these artifacts due to their morphological similarity –
for some of these pairs the similarity is so close than even after months of working with
the artifacts I still had to rely on my reference photos to tell them apart. Three of these
pairs (A, C and G) combine a stemmed biface with an unstemmed, bipointed one. The
bifaces of pairs D and E are made, respectively, from the same material (two variants of
type A); artifacts in pairs A and C are made from similar albeit non-identical materials.

Other artifacts display morphological regularity to a smaller degree. Figure 3.29
presents a series of some of the smaller points in the assemblage. Characteristics linking
them without being all present in every specimen include asymmetrical haft elements and

⁴⁹ For lack of a better term, I use fluid to refer to curves that are regular and “flowing” (e.g. Figure 3.1,
artifact 52-28), giving the artifact an aesthetically pleasing or “graceful” outline which may or may not
display strong symmetry. I acknowledge the subjective value of this notion.
a strongly convex left side associated with a straighter right side in the upper half.
Without being identical in size, they are close enough to form a regular continuum.

The three points presented in Figure 3.30 are the longest in the assemblage and
display interesting similarities. 10-10, in the center, has a blade section very similar to
10-100, to the left, with the addition of the stem. 14-3, on the right, has a more slender
triangular blade but is nearly identical in length to 10-10, and has comparable haft
elements. All three artifacts are made from the same material (type A).

Haft elements

Haft elements were identified on 15 artifacts, or 40% of the assemblage. Two
artifacts present straight-to-contracting, well-centered, symmetrical stems. Both have
well-defined shoulders opening at very similar angles, and feature very similar stem
margins, sub-parallel below the shoulder and tapering towards the base (Figure 3.31). A
third artifact (52-45) features a very similar shoulder to stem angle, although only on one
side; the other shoulder being lower with a more open angle (see Figures 3.28, 3.32).
Sub-parallel stem margins are also present on 10-10, although with weak, poorly-defined
shoulders and a square base, and 52-43, with asymmetrical shoulders and an oblique base
(see Figures 3.28, 3.30). 51-84 and 52-22 have symmetrical but off-centered tapering
stems, with open, poorly-defined shoulders, markedly asymmetrical on the latter (see
Figures 3.28, 3.29). Finally, 51-107 and 52-49 have contracting stems with oblique bases
and poorly-defined, asymmetrical shoulders, while 52-31 has a contracting, pointed stem,
with very subtle shoulders (Figure 4.29). Asymmetrical shoulders such as the ones
observed on 52-43, 52-45 and 52-22 were also noted on one point from the Bradstreet collection.

One artifact (10-8) features potential side notches, located close to the base (Figure 3.33). The notches are very shallow and not very well defined. They may represent accidental damage, as seen on several other locations on the artifact. However, their almost symmetrical placement and the shape and size of the associated flake scars are consistent with the deep conchooidal scars produced by pressure-notching.

All other elements of haft preparation have been applied unilaterally and are either well defined (52-27) or subtler (51-10, 52-23, 52-30). They form what could be termed asymmetrical pseudo-stems (Figure 3.34).

Tip treatment

Several bifaces have a slight contraction just below their tip, on one or both sides. Four of the larger, symmetrical bifaces (10-3, 10-4, 10-5, 10-8) have outline breaks on one or both of their sides in the upper quarter of their length, causing a slight asymmetry. Outline disruptions closer to the tip occur in 15 of the smaller bifaces (10-6, 10-7, 51-84, 52-18, 52-23, 52-27, 52-28, 52-29, 52-31, 52-35, 52-43, 52-49, 53-5), forming in most cases the impression of a slightly incurved tip (Figure 3.35).

Summary of form

While there is a fairly broad range of variation in the bifaces’ outlines, I observed significant regularity in form and the recurrence of particular traits, notably the existence of several morphological pairs of artifacts. Recurring characteristics of the tip, base and
haft elements as well as outline generalities give the assemblage a strong degree of morphological cohesion.

**Metric analysis**

Basic measurements are included in Appendix B; descriptive statistics are presented in Table 3.2. The measurements and ratios collected as a means of determining internal variation demonstrate a relatively high degree of cohesion in the proportions of the artifacts, notwithstanding dimensions. Standard deviation values for length/width and width/thickness are quite low. As mentioned above thickness is very regular throughout the assemblage (Std. Dev. = 0.22), while length and especially weight are the most variable of measurements.

**Asymmetry**

Appendix B and Tables 3.3 and 3.4 present the measurements, ratios and descriptive statistics associated with the evaluation of bilateral and longitudinal asymmetry within the assemblage. A distribution histogram of distal length/proximal length (Figure 3.36) shows that eleven artifacts, or just under a third of the assemblage, have a relatively centered widest point or strong relative longitudinal symmetry (less than 25% difference between distal and proximal portions)\(^50\). The majority of bifaces (24 out of 35, 69%) show a ratio of 1.26 or higher, with a markedly longer distal portion.

\(^{50}\) By relative symmetry I understand the symmetry of overall proportions, by opposition to absolute symmetry which includes a symmetry of outline as well.
Standard deviation values for distal length/width and proximal length/width ratios are very low.

I generated a ratio by dividing the highest partial width value by the smallest to create a measure of relative bilateral symmetry; a ratio of 1.0 indicates that both halves have the same width. A distribution histogram (Figure 3.37) of these ratios shows that a large majority of the bifaces have a high degree of relative bilateral symmetry – 49% with 10% or less difference, 78% with 20% or less – leaving only 8 artifacts (22%) with one side markedly wider than the other (≥20%) (Figure 3.38).

Figure 3.39 shows the distribution of values for offset/total length. 63% of artifacts show a maximal width offset equivalent to 5% or less of their total length; the rest (37%) show an offset/length ratio over between 5 and 11%, with only 6% above 10%. Interestingly, out of 8 artifacts having a width difference above 20% and 13 with an offset/length value above 5%, only two share the two traits.

Asymmetry summary

The measurements I have gathered have not allowed me to satisfactorily describe the degree of bilateral asymmetry which I had identified on a visual basis as an element of cohesion among a portion of the assemblage. While some artifacts do display a high level of measurable asymmetry in their general outline, it appears that for the majority the asymmetry is mostly characterized by small, straight or concave sections disrupting the outline of an overall proportionally symmetrical biface. While readily visible, such asymmetry is not easily quantifiable.
**Wear Analysis**

Results of wear analysis are summarized in Appendix B; detailed observations can be found in Appendix C. As explained in Chapter 2, the edge wear analysis focused mostly on the inspections of sections which presented macroscopic features of interest.

**Edge wear and retouch**

30 out of 35 (86%) examined bifaces displayed in at least one location evidence of edge damage or polish suggesting either use or at least passive damage resulting from a substantial use-life before discard. The wear observed graded from a light polish to heavily damaged edges, characterized by a “pitted” appearance (Figure 3.40). Edge wear patterns in most cases correlated with fine retouch patterns, i.e. sections that hadn’t been retouched consistently showed very minimal wear, while systematically retouched edge sections exhibited moderate to heavy wear and damage. Retouch was applied unifacially in an overwhelming number of cases; bifacial retouch was observed on certain sections in an alternating pattern, but never systematically. Retouch and wear were considered most significant where patterns could be observed; for example, the stem section of 10-10 illustrated in Figure 3.40 is unretouched and unworn, inconclusive on its own. However, when contrasted with the retouch and heavy polish observed on the adjacent shoulder section, it is suggestive of differential preparation and use, and strongly points towards the presence of a haft or handle protecting the stem during the episodes of use.

In many cases in which an indented/concave section was presumed to show the strongest signs of wear, the opposite was observed. The damage on the collapsed section appeared fresher than the surrounding areas, suggesting damage posterior to the
use/transport wear of the point. Figure 3.41 illustrates the correlation between indented sections and wear patterns on one side of specimen 51-40.

While marginal fresh, modern edge damage was seen on many if not all of the bifaces, the differential patination of several contiguous flake scars on a small portion of at least two artifacts (51-118 and 52-22; potentially 52-45 as well) suggests that some edge retouch was performed at a time distant enough from the time of manufacture as to allow for the whole piece to have acquired a degree of surface weathering. The retouch does appear fresh enough to suggest that it may have been applied post-extraction, although in all three cases the edge is visibly worn along the retouched section. The “freshly” retouched sections are found at a similar location on all three artifacts (Figure 3.42).

Surface Wear

All the bifaces display at least light but mostly moderate or marked surface wear, including the bifaces for which the edge-wear evidence was inconclusive. Furthermore, surface wear was often differentially distributed, recurring patterns being: a) stronger wear around the mid-section of the biface (22 out of 35, 63%), and b) one face being markedly more affected than the other (13 out of 35, 37%). Stronger wear, marked by deeply abraded arrises and raised areas, was observed on the mid-section of pieces where that area was not especially thicker or more prominent than the rest of the specimen.
**Grinding**

Tip grinding was observed on seven bifaces (20%); on only one of these (52-42) the grinding was present on both ends. All of these bifaces are large and symmetrical; five were made from type A material. In every case, ground areas were visible on both faces of the bifaces, in addition to obliquely along the edge on some pieces. The grinding was applied as to produce multiple facets, each featuring parallel striations loosely oriented along the longitudinal axis of the biface or aligned with its edge (Figure 3.43). The aspect and density of the striations was similar on every piece, suggesting that the abrasive material was the same and used in a similar, deliberate manner. The striations are clearly defined and the ground tips are still very sharp in most cases, suggesting that little to no wear was incurred after the grinding event. Similar diagonal striations were observed on a worn area on the surface of specimen 52-21, where they were associated with a glossier polish. This section is located close to the widest point of the biface, on a single face where it extends from the edge almost to the center of the piece. It roughly follows the arrises present in that area (Figure 3.44). If the biface was hafted, the worn area would have probably been located just above the haft.

**Wear Summary**

Overall, use-wear and retouch evidence suggests a relatively complex and perhaps long use-life for most of the bifaces composing the assemblage. Variations in the degree and appearance of wear on the edges and the surface of the bifaces suggest that the artifacts experienced different trajectories before their deposition, with many likely undergoing hafting and substantial mechanical use, but others showing little evidence of
such manipulations. The evidence of retouch post-dating the surface weathering of some bifaces as well as the recurring patterns of tip grinding are of particular interest.

**Discard**

*Weathering*

As a lithic assemblage, the collection stands out for the minimal degree of surface weathering exhibited by the bifaces. Nevertheless, weathering patterns are observable on several of the artifacts. The remnants of varnish or lacquer on the uncleaned face of some of the artifacts did however hinder my ability to distinguish differential weathering patterns. A summary of my observations on weathering is presented in Table 3.6.

Other collections from CcDv-3 are dominated by heavily weathered lithics, with some debitage altered to a cream-colored, chalky texture all the way through. Artifacts that are only slightly weathered do, however, also occur in these collections and are not exclusive to the study assemblage (see Figures 3.16, 3.20, 3.24). Unsurprisingly, the degree of weathering appears to be strongly dependent on the nature of the lithic materials. However, the presence of strongly weathered type A debitage, considering that the bifaces made from a comparable material show little to no surface alteration, indicates that other factors related to post-depositional conditions are involved.

*Breakage*

At least seven of the 35 artifacts (20%) have suffered a fracture; of these, five are composed of two sections which have been glued back together by George Frederick Clarke, and two are missing a small portion (Table 3.5).
I attempted to determine if a fracture had been incurred pre- or post-excavation by looking for differential weathering both inside the fracture scar, on artifacts for which the broken portion is missing, and on the faces of the refit portions of artifacts that have been mended. One artifact (10-9) shows surface weathering patterns indicating that its two pieces were separated before its deposition, or at least long before its discovery, as does another one (51-10) on which the inside of the fracture has a similar appearance to the rest of its surface and is encrusted with dirt. One artifact (51-96) was broken post or peri-discovery as is evidenced by the fresh, un-weathered appearance of the inside of the fracture. Remnants of glue inside the fracture indicate that the now missing tip had been mended by Clarke at some point. Not much more can be said about the remaining 4 refit pieces, other than that they do not show the damage that might be expected from a plough hit, and that their location mostly corresponds with weak spots in the biface (for example, along a fault line in the stone or at a thin section). They do not exhibit differential weathering between the broken sections, although this is not necessarily surprising considering the overall minimal weathering of the material. Artifact 8-4 may or may not have suffered breakage; I could not determine if the oblique fracture at its base was incurred pre-or post-manufacture. If the biface was indeed damaged, the lost section would have been a stem broken just below the shoulders.
<table>
<thead>
<tr>
<th>Source</th>
<th>Year</th>
<th>June dig</th>
<th>October dig</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Letter, GFC to ETA</td>
<td>1932</td>
<td>25</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Wintemberg sketches</td>
<td>1933</td>
<td>-</td>
<td>-</td>
<td>24(?)</td>
</tr>
<tr>
<td>Six Salmon Rivers and Another</td>
<td>1960</td>
<td>-</td>
<td>-</td>
<td>42</td>
</tr>
<tr>
<td>Someone Before Us</td>
<td>1968</td>
<td>28</td>
<td>15</td>
<td>43</td>
</tr>
<tr>
<td>Sanger’s notes</td>
<td>1968</td>
<td>-</td>
<td>-</td>
<td>42</td>
</tr>
<tr>
<td>Minimum</td>
<td>-</td>
<td>25</td>
<td>15</td>
<td>40</td>
</tr>
<tr>
<td>Maximum</td>
<td>-</td>
<td>28</td>
<td>15</td>
<td>43</td>
</tr>
</tbody>
</table>

Table 3.1 – Number of artifacts found at Bristol-Shiktehawk 1n 1932.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Count</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length (cm)</td>
<td>35</td>
<td>7.04</td>
<td>18.20</td>
<td>11.24</td>
<td>2.97</td>
</tr>
<tr>
<td>Width (cm)</td>
<td>37</td>
<td>2.63</td>
<td>7.53</td>
<td>4.68</td>
<td>0.94</td>
</tr>
<tr>
<td>Thickness (cm)</td>
<td>36</td>
<td>0.84</td>
<td>1.90</td>
<td>1.23</td>
<td>0.22</td>
</tr>
<tr>
<td>Length/Width</td>
<td>35</td>
<td>1.64</td>
<td>4.28</td>
<td>2.42</td>
<td>0.55</td>
</tr>
<tr>
<td>Width/Thickness</td>
<td>36</td>
<td>2.12</td>
<td>6.14</td>
<td>3.85</td>
<td>0.64</td>
</tr>
<tr>
<td>Weight (g)</td>
<td>35</td>
<td>14.60</td>
<td>196.40</td>
<td>61.31</td>
<td>34.36</td>
</tr>
</tbody>
</table>

Table 3.2 – Descriptive statistics for basic measurements of the Bristol-Shiktehawk bifaces.
<table>
<thead>
<tr>
<th>Attribute</th>
<th>Count</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Length (cm)</td>
<td>35</td>
<td>7.04</td>
<td>18.20</td>
<td>11.15</td>
<td>2.92</td>
</tr>
<tr>
<td>Maximum Width (cm)</td>
<td>37</td>
<td>2.63</td>
<td>7.53</td>
<td>4.68</td>
<td>0.94</td>
</tr>
<tr>
<td>Length of Distal portion (cm)</td>
<td>35</td>
<td>3.98</td>
<td>11.02</td>
<td>6.45</td>
<td>1.44</td>
</tr>
<tr>
<td>Length/Width, Distal</td>
<td>35</td>
<td>0.85</td>
<td>2.51</td>
<td>1.39</td>
<td>0.28</td>
</tr>
<tr>
<td>Length of Proximal portion (cm)</td>
<td>37</td>
<td>2.13</td>
<td>9.16</td>
<td>4.75</td>
<td>1.74</td>
</tr>
<tr>
<td>Length/Width, Proximal</td>
<td>37</td>
<td>0.41</td>
<td>1.74</td>
<td>1.01</td>
<td>0.32</td>
</tr>
</tbody>
</table>

Table 3.3 – Descriptive statistics for measurements related to the longitudinal asymmetry of the bifaces.

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Count</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>Std. Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Length (cm)</td>
<td>35</td>
<td>7.04</td>
<td>18.20</td>
<td>11.15</td>
<td>2.92</td>
</tr>
<tr>
<td>Left Max. Width (cm)</td>
<td>37</td>
<td>1.26</td>
<td>3.90</td>
<td>2.38</td>
<td>0.51</td>
</tr>
<tr>
<td>Length/Left Max. Width</td>
<td>35</td>
<td>1.26</td>
<td>3.90</td>
<td>2.38</td>
<td>0.51</td>
</tr>
<tr>
<td>Right Max. Width (cm)</td>
<td>37</td>
<td>1.45</td>
<td>3.68</td>
<td>2.36</td>
<td>0.49</td>
</tr>
<tr>
<td>Length/Right Max. Width</td>
<td>35</td>
<td>3.27</td>
<td>8.71</td>
<td>4.81</td>
<td>1.19</td>
</tr>
<tr>
<td>Offset</td>
<td>37</td>
<td>0.00</td>
<td>1.50</td>
<td>0.38</td>
<td>0.39</td>
</tr>
<tr>
<td>Offset/Length</td>
<td>35</td>
<td>0.00</td>
<td>0.11</td>
<td>0.04</td>
<td>0.03</td>
</tr>
<tr>
<td>Left Max. Width-Right Max. Width</td>
<td>37</td>
<td>0.01</td>
<td>0.72</td>
<td>0.26</td>
<td>0.20</td>
</tr>
</tbody>
</table>

Table 3.4 – Descriptive statistics for measurements related to the bilateral asymmetry of the bifaces.
<table>
<thead>
<tr>
<th>Artifact</th>
<th>Fracture type</th>
<th>Location</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-3</td>
<td>Oblique</td>
<td>3/10 of length from base</td>
<td>2 pieces, refit (glued). No differential weathering.</td>
</tr>
<tr>
<td>10-5</td>
<td>Oblique</td>
<td>6/10 of length from base</td>
<td>2 pieces, refit (glued). No differential weathering.</td>
</tr>
<tr>
<td>10-9</td>
<td>Oblique</td>
<td>7/10 of length from base</td>
<td>2 pieces, refit (glued). Differential surface weathering suggests a pre-deposition fracture.</td>
</tr>
<tr>
<td>14-3</td>
<td>Straight</td>
<td>5/10 of length from base</td>
<td>2 pieces, refit (glued). No differential weathering.</td>
</tr>
<tr>
<td>51-10</td>
<td>Oblique, very flat face, probably natural fault line.</td>
<td>ca. 8/10 of length from base</td>
<td>Tip missing. Dirt incrustation in break face suggests a pre-deposition fracture.</td>
</tr>
<tr>
<td>51-96</td>
<td>Oblique, “snapped” appearance</td>
<td>ca. 8.6/10 of length from base</td>
<td>Tip missing, glue remnants. Weathering indicates a post-find fracture.</td>
</tr>
<tr>
<td>52-28</td>
<td>Oblique, appears to follow natural fault line</td>
<td>6/10 of length from base</td>
<td>2 pieces, refit (glued). No differential weathering.</td>
</tr>
</tbody>
</table>

Table 3.5 – Summary of breakage patterns.
<table>
<thead>
<tr>
<th>Artifact</th>
<th>Pattern</th>
<th>Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-4</td>
<td>Uniform</td>
<td>Marked</td>
</tr>
<tr>
<td>10-9</td>
<td>Differential, side to side</td>
<td>Light</td>
</tr>
<tr>
<td>51-10</td>
<td>Differential, face to face</td>
<td>Marked</td>
</tr>
<tr>
<td>51-41</td>
<td>Differential, face to face</td>
<td>Marked</td>
</tr>
<tr>
<td>51-96</td>
<td>Differential, face to face</td>
<td>Marked</td>
</tr>
<tr>
<td>51-107</td>
<td>Differential, face to face</td>
<td>Light</td>
</tr>
<tr>
<td>51-118</td>
<td>Differential, face to face</td>
<td>Marked</td>
</tr>
<tr>
<td>52-22</td>
<td>Differential, face to face</td>
<td>Light</td>
</tr>
<tr>
<td>52-30</td>
<td>Differential, face to face</td>
<td>Light</td>
</tr>
<tr>
<td>52-43</td>
<td>Differential, face to face</td>
<td>Light</td>
</tr>
<tr>
<td>52-45</td>
<td>Differential, face to face</td>
<td>Marked</td>
</tr>
<tr>
<td>104-9*</td>
<td>Differential, face to face</td>
<td>Marked</td>
</tr>
<tr>
<td>51-89*</td>
<td>Uniform</td>
<td>Marked</td>
</tr>
</tbody>
</table>

Table 3.6 – Weathering patterns on bifaces from CcDv-3 in the GFC collection.

Asterisks identify artifacts which are not part of the study assemblage.
Figure 3.1 – The 37 bifaces composing the study collection.

(Photo: Alexandre Pelletier-Michaud)
Figure 3.2 – Selected stemmed points from the Bradstreet collection.

(Photo: Alexandre Pelletier-Michaud)
Figure 3.3 – Selected unstemmed bifaces from the Bradstreet collection.

(Photo: Alexandre Pelletier-Michaud)
Figure 3.4 – Flaked and ground tools and triangular blanks from CcDv-3.

Artifact 51-89 is in the top row, fourth from the left.

(Photo: Alexandre Pelletier-Michaud)
Figure 3.5 – Large weathered blanks from the Bradstreet collection.

(Photo: Alexandre Pelletier-Michaud)
Figure 3.6 – Site plan by George Frederick Clarke.

(GFC collection, UNB)
Figure 3.7 – Map of the Bristol-Shiktehawk site by Tappan Adney, dated May 3rd, 1936.

The pink colouring indicates the site area on the upper terrace; comment reads: “Indian campsites all along here”. (New Brunswick Museum)
Figure 3.8 – The Bristol-Shiktehawk site.

Purple shading indicates the extant of areas affected by the 2008 flood event. The find spot identified on Clarke’s map is inside the white circle. (GeoNB.ca)

Figure 3.9 – Type A material, light variant.

Artifacts 10-7 (left) and 10-2 (right). Note similar color, texture and circular structures. (Photo: Alexandre Pelletier-Michaud)
Figure 3.10 – Type A material, dark variant. Artifacts 10-2 (left) and 10-3 (right).

Note similar color, texture and ripples. (Photo: Alexandre Pelletier-Michaud)
Figure 3.11– Type A-like speckled material artifacts from the CMH collection (left) and the Bradstreet collection (right).

Cortex present on first and third artifacts from the CMH, visible on bottom row. On the Bradstreet artifacts, note the fresh removal on heavily weathered surface, revealing the green groundmass with cream, circular inclusion, top left; smooth but only lightly weathered cortex, lower right. (Photo: Alexandre Pelletier-Michaud)
Figure 3.12 – Type A, left to right: artifact 14-3, artifact 8-4, flake from Devil’s Head, Maine, initially identified as Hinkley Point Metasediment.

(Photo: Alexandre Pelletier-Michaud)

Figure 3.13 – Experimental biface made from rhyolite collected at the Hinkley Point outcrop.

(Photo: Alexandre Pelletier-Michaud)
Figure 3.14 – Group 2 materials.

Top row, left to right: 52-45, 10-9, 52-23. Bottom row, left to right: 51-41, 51-84, 52-35. 
Note overall similar color and texture, similar linear structures in type B specimens (52-45, 10-9), very similar void structures in type C specimens (52-23, 52-35, 51-84). (Photo: Alexandre Pelletier-Michaud)

Figure 3.15 – Group 3 - Type D materials.

Left to right: 10-8, 52-18, 52-49. Note similar color, texture, light gray variegations on first two specimens. (Photo: Alexandre Pelletier-Michaud)
Figure 3.16 – Group 3 materials.

Left to right: 52-31, bifaces 164 and 125, Bradstreet collection. Note dark, smooth groundmass with circular, rust-colored specks. (Photo: Alexandre Pelletier-Michaud)

Figure 3.17 – Group 4 materials.

Left to right: KTMP sample, artifacts 10-5, 10-6, 51-10. Note variations in micro- and macro-crystalline inclusions. (Photo: Alexandre Pelletier-Michaud)
Figure 3.18 – Group 5 materials.


Figure 3.19 – Group 6 materials.

Left to right: 52-21, 52-27, 51-107, 52-22. (Photo: Alexandre Pelletier-Michaud)
Figure 3.20 – Group 6 debitage.

Left: Cortical fragment from the 1991 excavation. Note similarity to Type E material, artifacts 51-107 and 52-22. Right: Flakes from the CMH collection. Note resemblance to artifacts 52-21 and 52-27. (Photo: Alexandre Pelletier-Michaud)

Figure 3.21 – Group 6


(Photo: Alexandre Pelletier-Michaud)
Figure 3.22 – Lithic sources mentioned in this chapter:

a) Quoddy region b) Scots Bay c) Tobique River d) Munsungan Lake e) Mount Kineo f) Niagara Peninsula. (Map adapted from Google Maps)
Figure 3.23 – Flaking patterns (artifact 10-8).

Note: Large primary flake removals perpendicular to the edges, well-centered mesial ridge, parallel flake removals along edges and between opposite sides, minimal secondary thinning. (Photo: Alexandre Pelletier-Michaud)
Figure 3.24 – Large, thin thinning flakes, ventral face up, platform is to the bottom. Last one on right is missing its proximal portion. From a single 1991 test pit at CcDv-3. (Photo: Alexandre Pelletier-Michaud)

Figure 3.25 – Basal treatment, different features but similar effect. Left to right: 52-23, 51-41, 52-31, 10-6, 10-8, 10-4. (Photo: Alexandre Pelletier-Michaud)
Figure 3.26 – Specimen 52-31, detail of the tip.

Note the remnants of two large flake scars forming the tip. Arrows mark orientation of removals. (Photo: Alexandre Pelletier-Michaud)
Figure 3.27 – Distribution of values for maximum thickness (cm).
Figure 3.28 – Pairs of morphologically very similar artifacts.

Top row: 52-23 and 51-84, 10-3 and 10-4, 52-45 and 51-41. Bottom row: 52-28 and 10-7, 52-26 and 52-42, 10-101 and 10-6, 52-43 and 52-24. Note in three cases the association of a stemmed point with an unstemmed one.
Figure 3.29 – Series of small, morphologically comparable points.

Figure 3.30 – The three longest points in the assemblage: 10-100, 10-10, 14-3.
Note the similarity of the blade part on the first two bifaces, with the addition of the stem on 10-10, as well as the different proportions of the blade between 10-10 and 14-3 but the nearly identical length, and similar haft elements. All three made from same material (Type A).
Figure 3.31 – Straight, symmetrically stemmed points: 51-40, 14-3.

Note the similar angles of the shoulders, stem margins and stem taper. To scale, made from different materials.

Figure 3.32 – Well-defined shoulders.

Back to front: 14-3, 52-45, 51-40. Note the regularity of shoulder, stem and blade angles. To scale, all different materials.
Figure 3.33 – Slight side notches towards the base of 10-8.

Note the semi-circular conchoidal notching flake scars. (Photo: Alexandre Pelletier-Michaud)

Figure 3.34 – Artifacts featuring “pseudo-stems”: 52-27, 51-10, 52-23, 52-30.

Note outline disruption forming a shoulder on only one side of the bifaces.
Figure 3.35 – Three of the bifaces displaying an incurved tip.

Left to right: 10-7, 51-84, 52-43. (Photo: Alexandre Pelletier-Michaud)

Figure 3.36 – Distribution of distal length/proximal length ratios.
Figure 3.37 – Distribution of lateral width difference ratios.

Figure 3.38 – Artifacts displaying strong bilateral asymmetry.

Left to right: 10-7, 51-41, 51-84, 52-24, 52-27, 52-28, 52-49.
Figure 3.39 – Distribution of offset divided by total length.
Figure 3.40 – Examples of edge condition.

Top to bottom: Largely unretouched, unworn edge (10-10, stem); Unifacially retouched edge, fairly strong polish (10-10, shoulder); Extensively retouched edge, strong damage and polish, “pitted” appearance (10-3, upper blade). (Photo: Alexandre Pelletier-Michaud)
Figure 3.41 – Correlation of indented sections (dotted lines) and edge condition on artifact 51-40.

A, B and D mark sections of heavy damage and wear. C marks a section devoid of retouch and unworn, likely indicating posterior damage. Note unretouched edge along the stem. (Photo: Alexandre Pelletier-Michaud)
Figure 3.42 – Artifacts displaying fresh retouch.

Left to right, top to bottom: 52-45, 52-22, 51-107. White lines show the extant of the retouched section. Note similar location of retouched sections. (Photo: Alexandre Pelletier-Michaud)
Figure 3.43 – Tip grinding. Note similar faceting and striations.

(Photo: Alexandre Pelletier-Michaud)
Figure 3.44 – 52-21, mesial section.

Note polished areas inside white box. (Photo: Alexandre Pelletier-Michaud)
Chapter 4 – Discussion

I organize the discussion of my results around the three main research questions presented in Chapter 3. I begin with a brief assessment of the internal cohesion of the assemblage, followed by a comparative, inter-site, morphological and technological analysis. Finally, I present some conclusions and speculative reflections and suggest avenues for future research.

Is it cohesive? – Internal analysis

The morphological and technological analysis has allowed me to identify a great degree of internal cohesion within the assemblage. While none of the attributes that are characteristic of the collection (a bipointed morphology, type A, B, C or D material, tip grinding, platform retention, an asymmetrical stem, surface wear, angular basal treatment, a recurved or constricted tip, bilateral asymmetry) are present in every biface, all but two of them feature at least two. The different morphological groups of artifacts are all interconnected via these traits (Figure 4.1). Based on this distribution, I feel confident in saying that the bifaces form a cohesive group, and that they likely represent a valid archaeological assemblage originating from a shared cultural context, as described by Clarke. I believe that this conclusion supports my efforts to draw inferences and suggest hypotheses relative to the origins and purpose of the assemblage as a whole.

Based on these attributes and their recurrence, I have attempted to create groups into which the 37 bifaces can be placed (Figure 4.2). Group 1 (11 items) includes some of the artifacts displaying the finest craftsmanship; all are large (>10 cm in length) and
bipointed or contracting-stemmed and feature strong bilateral symmetry. Every biface
displaying tip grinding is included in this group, as are seven of the 10 artifacts made of
type A material. Group 2 (seven items) contains the bifaces displaying the most “fluid”
curves (including a curved tip) and strongest bilateral asymmetry; it contains the two
bifaces made from the light variant type A material as well as the bifaces made from type
C material. All bifaces in group 2 are either bipointed or contracting stemmed. Group 3
(six items) contains two of the type B material bifaces as well as the remaining large
contracting stemmed ones; it is composed of three stemmed/unstemmed pairs, all but one
biface display some degree of weathering. Group 4 (seven items) contains the smaller,
asymmetrically stemmed forms. Finally, the remaining bifaces which do not fit well into
one of the other groups are assembled in group 5 (seven items). The implications and
validity of this separation in five groups are discussed in the speculation section towards
the end of this chapter.

Comparative Analysis

Inter-site artifactual comparisons are among the simplest and oldest foundations
of archaeological analysis. They form the basis for most of what Trigger (1989:20) refers
to as low-level theories (typological classifications and seriations, identification of
archaeological cultures), which are concerned with the dimensions of time, space and
form. Typologies are however subject to the same issues affecting culture-historical units
presented in Chapter 1, namely an emphasis on variation over continuity, and the
reification of analytical constructs (in this case, morphological types). I begin this section
with an example of the limitations to interpretations based on low-level comparisons, which has served as a caveat to the interpretation of my results.

**Clarke, Bipoints and the Solutrean hypothesis**

I have already mentioned in Chapter 2 the Solutrean migration hypothesis and the keystone role played by Northeastern bipointed bifaces in a recent iteration of the narrative put forth by its proponents (see Collins et al. 2013, Stanford and Bradley 2012). As pointed out by Boulanger and Eren (2015), this appears to be a good example of making the data fit the model, a recurring problem with the argumentation behind the Solutrean hypothesis, as noted by many others (Bamforth 2013; Fiedel 2001; Morrow 2014; Surovell 2014). In their discussion of the scarcity of bipointed forms in the Northeast, a whole slew of examples from well-known and securely dated sites were ignored, and the proponents only considered specimens from a specific area and from unsecured context, which are presented as rare. The absence of the Bristol bifaces from Boulanger and Eren’s (2015) rebuttal is indicative of the assemblage’s low visibility in the literature, which was among the reasons that motivated me to work on this project.

This situation is ironic as Clarke himself may well have been the first to link North American stone artifacts with the Southwestern European Solutrean lithic industry of the Upper Paleolithic. In 1948, Adney mentions the connection established by Clarke between his finds and the laurel-leaf bifaces illustrated in H. F. Osborn’s (1915) *Men of

51 This is somewhat surprising, as the Clarke collection is cited by Wintemberg (1943:320) as containing specimens very similar to the Tadoussac bipoints, which are mentioned by Boulanger and Eren (2015), and a quick Google search will reveal that the collection is now curated by UNB.
the Old Stone Age, a favourite work of reference for Clarke (2016a:99) (Figure 4.3). To Adney this was a point of mockery, although Clarke does not appear to have ever believed that there could be a “genetic” relation between the Old-World tradition and his New Brunswick finds; he was merely pointing out the unavoidable morphological resemblance between the two (Clarke 2016a:135). While I have not been able to find a mention of this association in the pre-1960s Clarke corpus, an unpublished manuscript from the mid-1920s is evidence that he was aware of Solutrean technology then, and it seems probable that Clarke made the connection as soon as he unearthed the first bipointed bifaces at Bristol. Throughout his life, Clarke appears to have maintained the opinion that the human occupation of New Brunswick did not go back more than a few thousand years (Clarke 2016a:17). I believe that he would have found the idea of the Bristol bifaces being over twenty thousand years old preposterous. While some of the Bristol bifaces arguably look a lot more Solutrean than many of the specimens proposed as pre-Clovis missing links, their location at Bristol is also clearly incompatible with a Pleistocene age.

For my part I will not dwell on the morphological resemblance between the Bristol bipoints and similar Solutrean forms. As discussed in Chapter 2, a bipointed shape is by no mean a complicated or unintuitive morphology to give to a stone tool. Technologically, it has the straightforward advantage of facilitating the thinning of the base by bringing its edges closer to its center. It also allows for a systematic, symmetrical approach to thinning, as well as maximizing the tool’s length by taking advantage of the

52 In the GFC archaeological collection at UNB.
flake blank’s natural shape (which necessarily tapers towards the platform). A bipointed biface constitutes an obvious precursor shape to any straight or contracting stemmed point; to a knapper used to manufacturing such tools, a bipointed morphology may well be the most obvious one to give to a large, unstemmed biface. It is thus not surprising to see bipointed, symmetrical bifaces being made in temporally, geographically and culturally unconnected contexts.

Overly far-reaching connections and the idea of uniqueness have, to this day, dominated the discussion on the Bristol bifaces. In Someone Before Us, Clarke insists on two things: their resemblance to the Solutrean points, and the fact that every specialist who saw the points had never seen anything like them in the Northeast\(^53\), with only three points from the American Southwest at the Harvard museum being comparable. However, Clarke’s very first impressions, expressed in his June 1932 letter to Tappan Adney, that his finds were perhaps ceremonial in nature and associated with the “Red Paint People”\(^54\) were probably his best. Being able to draw on a much larger corpus of

\[^{53}\text{It does not appear that Clarke was ever made aware of the connection established by Wintemberg with the Tadoussac assemblage.}

\[^{54}\text{“Red Paint People” is still used by some researchers to refer to the population(s) involved in the Moorehead burial tradition (e.g. Bourque 2012). In 1932, it was a poorly-defined grouping of all northeastern manifestations of burial ceremonialism characterized by the use of red ochre, most of which belonging to what is now called the Moorehead tradition, but also included Early Woodland and earlier Archaic manifestations (see Smith 1930). Clarke’s opinion of the « Red Paint People » as a valid concept greatly changed throughout his life, going from communicative enthusiasm in the 1930s-40s to complete dismissal in 1968’s Someone Before Us.}\]
research material than what was available to Clarke, it is my objective to situate the Bristol-Shiktehawk assemblage within the broader regional framework without having to look for overseas parallels, and supersede this notion of uniqueness.

**Northeastern connections – Archaic roots and Early Woodland complexes**

Through an examination of morphology, technology and raw material integrating data on assemblage composition, I was able to establish connections which I present here chronologically. Artifacts described in this paragraph are shown on Figure 4.4.

Some of the contracting-stemmed points in the assemblage show surprising affinities with points made from Ramah chert from the Nukasutok-5 site in the Nain region of Labrador, a site with a proposed occupation including several Maritime Archaic occupations between 6000 B.P. and 4500 B.P. (Hood 2008, Figure 98). These points feature either the well-defined, broad-angled shoulders or weak, poorly-defined shoulders both seen in the Bristol assemblage. Moreover, a large, regular point from the site is described as having been manufactured from a large flake and retaining much of the ventral face of the flake blank in its medial portion, a trait echoing observations on some of the large points from CcDv-3 (Hood 2008:159). The points from Nukasutok-5 are very similar to stemmed points from the Labrador Maritime Archaic Rattler’s Bight complex (4100-3500 B.P.) and the Nulliak site (ca. 4300 B.P.), also made of Ramah chert (Bourque 2012:85; Loring 2002:170). Bourque (2012:84-85) reports 20 Rattler’s Bight type points (also made from Ramah chert) to have been found in coeval Middle Moorehead phase (ca. 4000 B.P.) burial features in Maine (Robinson 2011). A large, bipointed, contracting-stemmed point made of Ramah chert was found in association with
Moorehead phase burials at the Bradley Cemetery, Maine (see Figure 4.5) (Belcher et al. 1994). Points made on local toolstones associated with Moorehead features also show some affinity with some of the CcDv-3 stemmed points (especially 14-3, 51-40 and 52-45) (Bourque 2012:84); furthermore, the retention of the striking platform on finished points is considered a characteristic trait of Moorehead phase lithic production (A. Spiess, pers. comm.). At the Eastport/Moose Island site (Maine), several contracting-stemmed and bipointed points are reported (Kingsbury and Hadlock 1951, Plates I & II; Sanger 2008:16). The stemmed points especially are reminiscent of Moorehead phase points; Hadlock compares them to artifacts found in the “Red Paint” graves of Maine, and with points found in the lower horizons at the Taft’s Point site (which also contained 16 slate bayonets and 60 plummets (Davis 1978:30). Sanger (2008:17) slightly disagrees, comparing the point with the ones associated with the Terminal Archaic occupation of the N’tolonapemk (Meddybemps) site and suggesting that they represent a local Terminal Archaic tradition distinct from the Susquehanna/Broadpoint sphere. The Eastport site is of special interest because of the observation by Kingsbury and Hadlock (1951:25) that some of the “most carefully made points and knives” at the site were made from stone common on sites of the upper St. John River, which was “known by [the authors] to be stone local to the Plaster Rock region of New Brunswick”. This is almost certainly a reference to the Tobique rhyolite and chert originating in this area (see Burke 2000:201-

55 Anecdotally, this same point, reproduced on page 12 of Walter Brown Smith’s (1930) The Lost Red Paint People of Maine, was almost certainly among the examples mentioned in Clarke’s letter to Adney in June of 1932 as comparable to the “knives” he had just found. This association appears to have formed the basis of Clarke’s long-held interpretation of the bifaces as “pre-Malecite”.

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208), with which the authors would have had become acquainted through their interactions with George Frederick Clarke (D.W. Black, pers. comm.). Incidentally, some of the bifaces from the N’tolonapemk site reported as similar to the Eastport bifaces by Sanger (2008) are also made of Tobique rhyolite (Brigham et al. 2006:360). These observations echo the presence at Bristol-Shiktehawk of a material likely to be local to the Quoddy region, the type A lithic material, or QCSR, used in the manufacture of a majority of the large, regular bifaces in the assemblage\textsuperscript{56}. These patterns of lithic distribution highlight a certain “social connection” between the Quoddy region and interior New Brunswick, at least during the Terminal Archaic period (Brigham et al. 2006:363; Sanger 2008). Researchers have suggested the existence of distinct interior and coastal pre-contact populations in the Maritime Peninsula (e.g.; Sanger 1996, 2008:34) based on evidence of year-round coastal occupations (Betts et al. 2017; Black 2002). The coastal-interior transhumance described in early ethnographical accounts is now mostly understood as originating with increasing summer contacts with European traders on the coast (see also Bourque 1989; Hrynick et al. 2017). While distinguishing human populations from artifact forms and lithic distribution can be problematic (see Sanger 1996:523), the QCSR bifaces in the Bristol-Shiktehawk assemblage can hopefully contribute to our understanding of interior-coastal relationship by highlighting a coast-to-interior trajectory of lithic distribution which has seldom been discussed in the region.

\textsuperscript{56} QCSR was also among the materials identified at N’tolonapemk (Brigham et al 2006, figures 103 and 126). The author identified the material as belonging to the Dennys formation.
Artifact 8-4 is the only biface in the Bristol assemblage reminiscent of forms associated with the Terminal Archaic Susquehanna Tradition. With its broad widest point located close to the deeply convex, three-sided base and overall triangular shape with concave edges, the point is strongly reminiscent of unstemmed or expanding-stemmed bifaces of the Watertown variant of the Mansion Inn blades described by Dincauze (1968, plate III) in eastern Massachusetts. As pointed out in Chapter 3, the base of the point is formed by an oblique fracture; this could either represent breakage incurred by the blank prior to the completion of the point, or a “peri-mortem” fracture representing the loss of a stem that was part of the complete form. In either case, the point would fall within the morphological spectrum of Terminal Archaic “broad points” (sensu Turnbaugh 1975). While they are relatively rare, artifacts associated with the Susquehanna tradition do occur along the canoe route connecting the Quoddy region with the St. John River via the St. Croix River (Davis 1978; Sanger 2008).

As I mentioned in Chapter 2, clustered deposits of large bifaces in the Northeast are typically associated with Early Woodland mortuary ceremonialism, the most common manifestations of which being the Middlesex and Meadowood complexes. The Bristol bifaces do show a certain affinity with Middlesex assemblages; however, they have very little in common with Meadowood flaked artifacts. Two sites associated with the Middlesex complex are known from the Miramichi river, in relative proximity to the Bristol site (ca. 150 km as the crow flies), and at the other end of the portage route connecting Bristol to the Gulf of St. Lawrence coast.
The Augustine Mound and McKinlay collection

Similar to those from the Bristol-Shiktehawk assemblage, bifaces from the McKinlay collection and Augustine Mound (CfDI-2) roughly fall into two categories: large, stemmed or unstemmed bifaces with similar morphologies falling within the Adena/Middlesex formal types, and smaller, less symmetrical bifaces (Turnbull 1976, 1986). While the large bifaces from Bristol are generally smaller and do not correspond to Adena/Middlesex types, some interesting comparisons can be established (Figure 4.6). The asymmetry of certain haft elements, the “fluid” curves of certain artifacts as well as general morphological and size similitudes of others are amongst the noted traits. Figure 4.6 illustrates two large stemmed bifaces from McKinlay and Bristol-Shiktehawk (Second row from top, rightmost on either side). While their size and haft element differ considerably, a very similar contraction of the blade’s edges near their center is evident, perhaps indicating a similar functionality or use history for the two pieces. The Augustine Mound bifaces represented in Figure 4.6 include both exotic and local materials. Artifact 51-84 from Bristol is a striking morphological match (apart from the differing stem) with a stemmed biface reported by Davis (1991b) from the Long Falls sites (AIDl-8, AIDl-9) in Yarmouth County, Nova Scotia (Figure 4.6, second row from top, middle). A blocked-end tubular pipe as well as other Middlesex-type bifaces suggest an Early Woodland age for this amateur-collected site.

57 The McKinlay collection was recovered from a site in the Red Bank area of New Brunswick in the early twentieth century, and shipped to the British Museum. The exact location of the site is uncertain (Turnbull 1986).
Smaller, unstemmed bifaces from the three sites also present interesting similitudes (Figure 4.6). Although the Bristol small bifaces sub-assemblage appears the most morphologically cohesive, a similar range of sizes and morphologies is evident in the McKinlay collection; some individual morphologies pair up quite convincingly. An example of asymmetrical haft elements from Augustine matches up very closely with artifact 51-107 from Bristol; the general shape and size of the points are also comparable. Finally, flaked and ground axes, commonly found in Middlesex assemblages, were present at both Augustine and McKinlay, as they are at Bristol-Shiktehawk.

One key difference between the Augustine and McKinlay assemblages and the Bristol-Shiktehawk bifaces is the presence of large, sharply bipointed bifaces; bipointed bifaces are however present at other sites associated with the Middlesex complex in the Northeast, notably at the Boucher and Mason cemeteries, as well as the Killarney site (Vermont, Maine and Ontario, Greenman 1966; Heckenberger et al. 1990) (Figure 4.7). While they do show some resemblance to some of the CcDv-3 bipointed bifaces, they are generally more slender and lack the characteristic “fluid” curves of the Bristol bifaces.

Midwestern connections – The Red Ocher complex

The Red Ocher burial complex centers on the area between the Great Lakes and the Ohio River, including the states of Iowa, Wisconsin, Illinois, Michigan, Indiana and Ohio, as well as parts of Southern Ontario (Didier 1967; Ritzenhaler and Quimby 1962). Its duration spans the transition from the Late Archaic to the Early Woodland period, with sites dating to between 3150 - 2350 B.P. It has been suggested to have locally evolved from the preceding and perhaps overlapping Old Copper complex of the Great
Lakes area (Pleger 2000:171). Red Ocher burials share several attributes and artifacts with coeval Northeastern Early Woodland complexes (red ochre, copper beads, gorgets, stone pipes), but are distinguished by a signature artifact, the turkey-tail point, which includes a variety of sub-types overall characterized by a large, bipointed morphology with small notches near one of the tips, forming a diminutive, lozenge-shaped stem (see Figure 4.8) (Didier 1967; Ritzenthaler and Quimby 1962). Turkey-tail points are typically made from nodules of blue-gray Cobden Dongola or Wyandotte chert from the Ohio Valley area, commonly referred to as Indiana or Kentucky “hornstone” (Morrow et al. 1992:184). They often retain parts of the cortex on one or both of their ends (Hruska 1967, Krakker 1997:21,2013:5-6). Turkey-tail points are also typically found in clustered deposits, often in funerary context and associated with numerous smaller, sub-triangular or “leaf-shaped” bifaces (Binford 1963a, 1963b, Didier 1967:12, Krakker 1997, Ritzenthaler and Quimby 1962). Turkey-tail points have also been reported from sites associated with the Middlesex and Meadowood complexes (Clermont et al. 2003:296; Ritchie 1965:181; Turnbull 1976).

Several of the morphological and technological traits intrinsic to the Bristol-Shiktehawk bifaces are echoed in the turkey-tail points of the Red Ocher complex: platform/cortex retention, fluid curves, a recurved tip, and a bipointed, often asymmetrical outline (Figure 4.9). Non-hafted bipointed bifaces from Michigan interpreted as Turkey-tail blanks have also been noted to retain some flake blank attributes, such as portions of the ventral surface (Krakker 1997:23). In fact, it is quite easy to match several of Didier’s (1967) idealized turkey-tail types to artifacts from the Bristol-Shiktehawk assemblage (Figure 4.8); note that at least one biface from the
Augustine Mound also matches these types. The “pseudo-notches” (see Chapter 3 - Morphology) on artifact 10-8 from Bristol are also very consistent with a turkey-tail style haft.

The Riverside site

The Riverside cemetery (20ME01) site comprised 52 burials located on a high sand dune overlooking the Menominee River, Michigan (Hruska 1967). Burial inclusions were numerous and included large amounts of copper beads and tools, bipointed “hornstone blades” and stemmed points; red ochre was present in almost every feature (Hruska 1967:151). Uncalibrated AMS dates obtained for features excavated in the 1950s and 1960s are within a temporal range of 2950 to 2350 B.P. (Pleger 2000:175). The Riverside burials are viewed as representing a single component Red Ocher occupation (Pleger 2000:175). Basal grinding\(^{58}\) is reported as sometimes present on both ends of the “burial blades”; cortex is present in most cases on one or both ends as well. The bifaces from at least one feature showed a “dulling or grinding” on their edges, which could have been intentional or use-related. Several bifaces had been pressure-retouched over the worn areas. Many of the bifaces also display “small polished areas”, presumably on their surface, “which could only have been caused by abrasion or rubbing together in a bag or container” (Hruska 1967:235). Notably, not one of the Riverside bipointed bifaces was notched in the turkey-tail fashion; the type name only comes up when qualifying the two contracting-stem points

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\(^{58}\) Basal grinding typically refers to the dulling by grinding of the base of a hafted point. It is unclear what it might refer to in the case of unstemmed points on which the base is formed by a remnant section of cortex.
from Features 31 and 37 as modified “turkey-tails” (see Figure 4.9, center row, rightmost) (Hruska 1967).

Notwithstanding the numerous familiar technological traits echoed in this assemblage, the closest morphological connections between the Riverside and Bristol-Shiktehawk assemblages do not come from the bipointed bifaces, which are generally more slender, symmetrical and regular than the Bristol-Shiktehawk bipoints (see Figure 4.7), but from stemmed and unstemmed points present in two of the dated features (Figure 4.9). The “modified Turkey-tail” illustrated on Figure 4.9, center row, rightmost, is especially striking in its similarity to artifact 51-40 from Bristol-Shiktehawk. The stemmed point from the Bradstreet collection presented in Figure 4.9 is made of Onondaga chert, which outcrops principally in the Niagara peninsula, thus constituting in itself evidence of a Great Lakes connection for the Bristol site.

In summary, techno-morphological analysis of the Bristol bifaces indicates that the assemblage, while somewhat exceptional in nature for the region, is largely consistent with other Late/Terminal Archaic and Early Woodland assemblages (roughly 4000-2000 B.P.). Moreover, the results suggest connections stretching out to the Great Lakes and Ohio River drainages, in keeping with previous observations of an emphasis on cultural interactions along the St. Lawrence axis for the interior Northeast during that period (Black 2000a:100). While I could not find any single truly comparable assemblage, the association of these artifact forms has been previously observed in both regions (Robinson 2011:666). As outlined in Chapter 2, the distribution of artifacts associated with the various ceremonial complexes of the Terminal Archaic and Early Woodland
periods is much more fluid than primary categorization could suggest. In this view, the composition of the Bristol-Shiktehawk assemblage is not at all aberrant as a manifestation of Early Woodland ceremonialism, even considering its northeastern location, although it certainly highlights the deep local roots and complex, wide-ranging cultural connections at play during that period. Admittedly, elements that are considered diagnostic markers of such deposits (red ochre, copper or shell ornaments, polished stone objects) have not been observed at the Bristol site, and thus the connections with Early Woodland ceremonial deposits are based mostly on the bifaces’ attributes. I mentioned in Chapter 2 that the association of turkey-tail type points with Middlesex burial sites in the Northeast had been previously established, at the East Creek site in Vermont and the Augustine Mound in New Brunswick (Loring 1985:119). While the Augustine Mound bifaces do appear to at least morphologically correspond to midwestern turkey-tail types (Figure 4.8), the East Creek point pictured in Figure 4.5 does not. It shares the side-notches and diamond-shaped stem of the turkey-tail type, but is otherwise morphologically and technologically very different, which highlights the limitations of depending on haft elements for classifying and naming artifacts. The GFC Collection at UNB also contains six points with haft elements that could be compared to turkey-tail

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59 Figure 5.12 illustrates selected bipointed and stemmed points from the Boucher Cemetery (Middlesex) and the Riverside Cemetery (Red Ocher). Morphologically, the artifacts are essentially indistinguishable. Artifacts associated with Early Woodland complexes are also found in Middle Woodland features in the Northeast (see Spence 1967).
points (Figure 4.10). \(^{60}\) They all present more or less bipointed outlines, with variably marked side-notches forming a contracting or diamond-shaped stem; the smaller ones are quite comparable to the East Creek point discussed above. The two larger ones are much more regular in outline and are indeed reminiscent of Late Archaic to Early Woodland forms, although the complete absence of context or associated artifacts does not allow for anything more than speculation.

I am confident that my association of bifaces from Bristol-Shiktehawk with stone tools of the Red Ocher complex is more strongly grounded since it relies almost exclusively on morphological and technological attributes which are largely unconnected to haft elements.

What does my analysis bring to the discussion of Early Woodland ceremonialism?

Summary of observations

Below are listed the main observations that I have brought up in my analysis. I have added in italics the conclusions that can be inferred from these observations, as well as some elements of speculation.

- The presence in the debitage from the CcDv-3 collections of lithic materials similar to the ones identified in the bifaces indicates that these materials have been worked on site. The presence of pieces of cortical debitage indicates that the

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\(^{60}\) Three of them are labelled as being from Tobique River sites (Wapske, Three Brooks and one unidentified site), one from the Forks of the Miramichi site, and are two unlabeled, one of which, made from Ramah chert, is probably from the Lane’s Creek site near Woodstock.
work there included the early steps of the reduction sequence, and strongly suggests that those materials were acquired locally, or at least transported to site in a raw form from a presumably not too distant source. The hypothesis of locally sourced materials is strengthened both by the abundance of lithic debitage from the site and the presence of numerous large blanks or cores in the assemblage. I was able to observe the presence in the cobbles found at the mouth of the Little Shiktehawk Stream of a broad range of materials, including some high quality toolstone. The absence of materials for which procurement areas are known (especially the nearby Tobique Rhyolite) also suggests the exploitation of secondary cobble sources rather than quarry sites. I therefore propose that the site occupation was partly focused on the exploitation of lithic materials found in boulder form at the fanning mouth of both Shiktehawk streams, and that some of the bifaces in my study collection were possibly produced on site from locally acquired materials.

- Raw material identification furthermore indicates toolstone procurement in the Quoddy region, highlighting a connection between interior and coastal sites that has been previously inferred from lithic distribution (Brigham et al. 2006; Sanger 2008). The coastal stone (QCSR) is not of an objectively higher quality than the rest of the materials in the assemblage, but it was used in the manufacture of some of the largest and thinnest bifaces in the assemblage. The propensity of this stone for producing large, thin flake blanks – a quality that few local New Brunswick toolstones possess – may explain its import to the site.
The recurrence of technological traits among the bifaces may not be enough to suspect their manufacture by a single craftsperson, although in the case of morphological pairs of artifacts it seems quite possible. At the very least it can be said that *almost every individual biface had to be made by someone who was cognizant of at least part of the rest of the assemblage.* If several manufacturers were involved, they shared very similar technical knowledge, including reduction strategies and aesthetic frameworks. Only two artifacts (8-4 and 10-9) may not fit into this model; while they share some technological traits with the rest of the assemblage (including material), they are morphological outliers.

While there is some degree of variation among the morphology of haft elements on the stemmed bifaces in the assemblage, all feature an overall contracting stem. It could be said that *while there is no complete standardization of haft elements, the general hafting strategy appears to have been the same for all bifaces.*

The general lack of weathering observed on the bifaces suggest a depositional history separate from most of the debitage at the site, which displays heavy weathering. *The un-weathered appearance of the bifaces can probably be most easily explained by their sheltering from the elements, perhaps before as well as following their deposition.*

The vast majority of bifaces in the assemblage show extensive edge wear. While to some extent this wear may be attributable to the same passive factors which may have produced surface arris wear (see below), areas where fine retouch overlays a worn edge indicate a wear/retouch sequence that can only be attributed
to actual, mechanical use. The observation of differential retouch weathering on a few bifaces suggest a long use life, with a long latency period between episodes of retouch and use. The differential patterns of retouch and wear observed around the edge of most of the bifaces are also suggestive of edge preparation preceding and following use, as well as preparation for hafting. While my observations are not refined enough to propose the identification of the materials worked with the bifaces, I can safely conclude that the bifaces were not produced with the sole intent of being buried untouched, or permanently deposited directly following their manufacture. The bifaces edges were used in some way, likely in a hafted form. There is a possibility that some bifaces were recovered after their primary deposition, used and then reburied.

- Every biface in the collection also displays significant surface wear. This type of surface damage is frequently referred to as transport wear, pocket polish or bag wear, and is commonly assumed to represent long-distance or at least long term transport of the artifacts inside a leather or textile container. This seems at odds with the hypothesis of a local manufacture. The possibility exists that some of the observed wear is due to post-depositional taphonomic processes and curatorial damage (“lab-wear”). Recurring patterns however suggest that the wear was incurred during the active use life of the bifaces. This suggest that the bifaces’ use-life was extensive enough for active (use) or passive (transport) forces to produce marked patterns of wear on their surface.

- The asymmetrical morphology observed in many of the bifaces, including in some cases a curved tip, is not suggestive of a uniaxial piercing action, but perhaps of a
function centered on a cutting or scraping edge. This is also consistent with asymmetrical haft elements that may indicate a haft or handle not aligned with the main axis of the biface. However, a majority of the larger, symmetrical bifaces had their tip ground in a manner as to render it sharper. While this may possibly reflect a ceremonial practice (see below), it does suggest the intended use of some of the largest bifaces in a stabbing or piercing manner. The absence of wear on the ground surfaces does not suggest extended use following the grinding event. Furthermore, the pronounced curved profile and thin midsection of one of the largest ground points would have probably made it unsuitable to sustain heavy pressure or shock without breaking around its mid-point. I propose that the bifaces can be divided into at least two functional categories, one focused on a piercing action, containing most of the larger symmetrical bifaces, and the other focused on a cutting or scraping, knife-like action, containing the most specimens characterized by an asymmetrical blade of haft elements.

- Overall, considering the large amount of observable technological and morphological connections, it seems possible that the assemblage could represent a single depositional event, although differing sets of attributes can also be used to speculatively separate the bifaces in several groups which could indicate different events or periods.

- Morphological and technological affinities strongly suggest a connection to the turkey-tail bifaces associated with the Red Ocher Complex of the Midwest, while the composition of the assemblage and some morphological traits appear well-rooted in the Northeast and are consistent with assemblages previously described
in the region and associated with the Middlesex complex and earlier Archaic traditions.

Implications of manufacture and wear observation on functional interpretation

Assemblages of clustered deposits of bifaces are often interpreted in a binary manner, as either ceremonial objects or utilitarian tools. The ceremonial function is usually emphasized, and is readily evident when bifaces are part of a burial assemblage or associated with red ochre or artifacts commonly found in such context (e.g. blocked-end pipes, copper or shell ornaments, objects of polished stone such as gorgets or pendants). Surface wear has often been described as characteristic of bifaces found in Late Archaic and Early to Middle Woodland clustered deposits (Binford 1963:187; Didier 1967:11; Hruska 1967:235; McConaughy 2005:231; Prufer et al. 1984:23), and is usually considered the result of transport or curation inside a leather or textile bag (McConaughy 2005:228). This is often implicitly taken as confirmation of a ritual function, because the motivations behind the long term or long distance transport of the objects imply that they would possess a value beyond their functional utility. Absence of edge wear on finished bifaces has been noted on Meadowood bifaces (Ritchie 1965:197) and Robbins unstemmed bifaces (Dragoo 1963; Prufer et al. 1984:23), and is considered evidence of bifaces made specifically for a ritual purpose and therefore never used. On the other hand, the presence of edge wear is usually considered to denote a utilitarian function. Evidence of use has been reported on Red Ocher bipointed bifaces (Hruska 1967:235), Adena “leaf-shaped” bifaces (Dragoo 1963:210), and Hopewellian “leaf-
shaped” bifaces (McConaughy 2005). McConaughy’s study of a burial assemblage from the Sugar Run Mound, Pennsylvania, is the only report I could find where edge wear is not only noted but analyzed; his findings suggest that most if not all of the bifaces had been used as hafted knives, before becoming grave offerings. The existence of utilitarian and ritual functions is suggested as sequential; the bifaces were first made and used as knives before acquiring their secondary ritual function as grave goods.

The assumption that use wear and a ritual function are mutually exclusive stems from the modern view of the ritual/sacred and the utilitarian/rational realms as two separate, parallel spheres. Authors have pointed out the difficulty of recognizing ritual practice beyond the “odd” or unexplained, as well as the issues attached to transposing modern, scientific rationalism on ancient societies (Bell 1992; Brück 1999; Robinson 2011). Because of this frame of thought, archaeologists can have difficulty identifying or discussing ritual beyond ceremonial manifestations or objects that have no obvious utilitarian purpose.

Anthropological observations have shown that the ritual and secular spheres perfuse into each other to the point of becoming indiscernible in the actions of many traditional societies (see Brück 1999:319), and recent theoretical work in the Northeast has emphasized this in domestic architecture and the disposal of animal bones (e.g. Hrynick and Betts, 2017; Robinson and Heller 2017). Approaching ritual behaviour as operating in a system that is parallel to the rest of the archaeological record (which is presumed to reflect functional, rational or “secular” behaviour) is certainly among the reasons why our understanding of so-called “ceremonial caching” is still so limited (see Brück 1999:314). Examples from Iroquoian oral traditions suggest that aspects of lithic
technology (chert procurement, heat treatment and flaking techniques) found their way into myths of creation, directly tying “utilitarian” manipulations into the larger cosmology. In one of these myths, stone is personified by anthropomorphic creatures, one of which undergoes spalling in the fire and being hit with antler (Moulton and Abler 1991). In the Iroquoian creation myth reported by Moulton and Abler, Tawiskaron (“Flint”) suffers flaking from the heat of the fire built by his twin brother, who subsequently begins hitting Flint’s body with antler, removing flakes and eventually causing his death (Moulton and Abler 1991:4). The myth presents a functional sequence of manipulations (heat treatment enhancing the propensity of the stone to be shaped by flaking) from the point of view of the stone itself. This strongly suggests a ritualized aspect to basic manipulations that are central to flaked stone technology. If the stone was seen as an active participant in the act of knapping, stone tools could have been considered to retain at least part of the spirit inhabiting the stone they were fashioned from, giving an intrinsic ritual component to any action performed – or suffered – by the object.

I propose that “utilitarian” use-wear could be acquired through ritualized activities, or, looking at it from the other side, that ritual value can be imbued and accumulated through “utilitarian” actions. Ritual use may have been the means through which tools would have acquired a ceremonial value, perhaps rendering them suitable to be used as grave goods. In the same way that the ritual/secular dichotomy may not have any validity for pre-contact societies, our modern view of new, unused items as having higher (social or economic) value than secondhand, used ones should not be assumed to be transposable.
In the case of the Bristol bifaces, a ceremonial interpretation is supported by the information available on the original context as well as the comparative analysis; physical use can be inferred from the edge-wear, surface-wear and grinding observed on the bifaces. While this could lead me to conclude that the bifaces had a use-life that could be separated in a utilitarian and a ritual phase, with the latter being a repurposing of objects made for “secular” work, there seems to be no ground for seeing these phases as necessarily sequential and mutually exclusive. Accordingly, I propose that the presence of tip grinding on several bifaces, a very unusual type of retouch or manifestation of use-wear, may represent physical evidence of ceremonial or ritualized use. The fact that it occurs on bifaces presenting quite different morphologies, with or without haft elements, but all belonging to the large, symmetrical category, argues for manipulations that may not have been directly related to a specific tool form or action. The grinding of the edge of flaked tools is reminiscent of the flaked and ground implements common in the Early Woodland Period, and perhaps echoes the ground, faceted slate bayonets of the Late Archaic.

Comparative analysis has shown that most of the assemblages that demonstrate similarities to the Bristol-Shiktehawk bifaces occur in clear ceremonial context, within red ochre features that may or may not contain human remains. It seems quite possible that the Bristol assemblage originated as one or more funerary interments. While this hypothesis is impossible to verify, a few factors, apart from the nature of the assemblage, suggest the likelihood of burial features at Bristol-Shiktehawk. The location of the site at an anadromous fishing site and portage crossroads made it a likely place for seasonal gatherings, and is in keeping with cemetery locations in the Late Archaic and Ceramic
Periods in the Northeast (Robinson 2011). Furthermore, the local legend reported by Clarke (2016a:95) spoke of a fight to the death at the site, a story perhaps related to the mention of “indian graves” on Tappan Adney’s 1936 map of the site.

If the assemblage does represent a funerary deposit, it is atypical in that it does not include red ochre or any of the other objects typically complementing Early Woodland burial features such as: ground/carved stone objects (gorgets, pipes, abrader/pendants), shell objects (gorgets or beads) and copper objects (rolled beads, implements). While this could easily be blamed on the far less-than-perfect context of recovery of the assemblage, their absence may also be considered anecdotal; not all ceremonial deposits contain every possible diagnostic element. On the other hand, the possibility of a non-funerary ceremonial context deserves consideration. In any case, the Bristol bifaces were most likely deposited in a ceremonial context, within which the dual utilitarian and ritual natures of the objects were likely undistinguishable. Practices of disinterment, manipulations and reburial described in the early contact period records are increasingly recognized in the archaeological record (S.E Blair, pers. comm.). As an example, a deposit of bifaces found archaeologically may have seen decades or more of re-use/reburial events, impossible to assess empirically but perhaps responsible for some of the observable “bag-wear”. Whether this could have been the case at Bristol or not cannot be known.

A speculative life-history

The Bristol-Shiktehawk bifaces likely represent a collection of artifacts made both on and off-site. One imaginable pattern is the arrival on site of a portion of the
assemblage, presumably the QCSR bifaces along with the other large, carefully-made points (group 1 in Figure 5.2), where supplementary items are added to the collection, either also brought from another manufacturing location or made on site. At least some of the bifaces are likely to have undergone transportation as hafted tools or weapons, and were probably interred as such. The accumulation of bifaces that resulted in the collection as it is now known may have been a one-time event or spread over a considerable period of time; they also may have constituted a single clustered deposition at Bristol or may represent several discreet features. The bifaces were used, in a mechanical sense, potentially in a ceremonial activity, in some cases likely before and after their transport; some were retouched along the edge at this stage, indicating that a sharp working edge was desirable for their intended purpose. Some bifaces were also ground at the tip, either in preparation for ceremonial acts or as a result of such manipulations. In any case, the bifaces that were sharpened by grinding of the tip were probably interred or deposited shortly thereafter as suggested by the fresh appearance of the ground areas. Observations suggest that different bifaces were used to varying degrees, with some exhibiting heavy wear and damage and others looking fairly untouched. Some evidence suggests that a few of the bifaces may have been retouched after a prolonged abandonment or deposition; an explanation could be that these artifacts, having been deposited or interred, were recovered, lightly rejuvenated and added to the Bristol deposit. Their primary deposition may have occurred at the site or at a different location.

One artifact bearing particularly heavy wear and retouch, as well as being morphologically different from the rest of the assemblage, artifact 8-4, seems likely to represent a different functional intention and use history. Being made from stone (QCSR)
presumed to outcrop in the Quoddy region of Maine and New-Brunswick, it attests of a connection with this coastal region for the Bristol site. I speculate that artifact 8-4 may represent a curated (sensu Binford 1979), well-used tool, likely originating as part of one individual’s gear or toolkit. Information on artifact 8-4’s context of find is weaker than for most of the collection; it is possible that its association with the assemblage is erroneous. However, the identification of type A lithic material as originating from the same Quoddy source does link artifact 8-4 with the rest of the assemblage. If artifact 8-4 was in fact deposited along with the rest of the collection it may denote a different intention; a personal addition to a ceremonial deposit, or a personal grave good. If my assessment of artifact 8-4 as being related to the Susquehanna tradition is correct, it could be a much older piece than the rest of the assemblage, making its association with it all the more interesting. To further speculate, the collection of type A material bifaces at Bristol could be seen as a statement of connection with the Quoddy region for the population occupying the site, permanently or in a seasonal pattern. The addition of an older tool from the same stone would strengthen this connection by positioning it as deeply rooted in time.

61 Ritchie (1965:321) notes the presence of Archaic period points in an early historical burial which he interprets as “hunting charms”.
On the possibility of morphological symbolism

Occurrences of morphological symbolism in the archaeological record of the Northeast fall in two broad categories: explicit symbolism, including petroglyphs and effigies (animal representations in petroglyphs from Machias Bay [Hedden 2004]; bird effigies from Port-au-Choix; the Portland Point plummet [Tuck 1984]; animal effigies from the Turner Farm site [Bourque 1995] and N’tolonapemk [Brigham et al. 2006]) and implicit symbolism, which can only be hypothesized and cannot be assumed to be deliberate (slate bayonets as proxies for swordfish rostra (Bourque 1995, Robinson 2011:663)); bannerstones as representations of birds of prey (Rataul 2006). In these examples, animal symbolism is prevalent and a ritual function is implied (see also Betts et al. 2012; Robinson and Heller 2017). Ground or carved stone technology also appears as the most common medium for symbolic representation, almost certainly due to conservation issues – the materials best suited for artistic expression (wood, bone, antler) being organic and most likely not to be preserved. The wealth of figurative carved pieces in these materials from areas where preservation is allowed, as it is in the Arctic, tends to confirm this bias. Flaked stone technology as a medium for figurative representation or artistic expression is not at all common in the Northeast, although bifacial flaked stone whale effigies are known from the Arctic (Jordan 1980).

As previously described, some morphological traits observed in the Bristol-Shiktehawk assemblage appear motivated by considerations other than functional or stylistic (in the typological sense of the term). While “leaf-shaped” is quite commonly used as a term to describe bifaces in the literature, it is generally understood as a
morphological generalization rather than a literal description. However, I think it is possible that some of the Bristol-Shiktehawk bifaces may have been deliberately shaped to evoke the form of tree leaves. This hypothesis is based on the general outline, curved tip and fluid, well-defined lines of the artifacts. Figure 4.11 illustrates bifaces from the site and corresponding leaves of trees native to New Brunswick, such as American beech and paper birch. As I have mentioned above, these resemblances cannot be assumed to be deliberate. I am mentioning them here because some of the resemblances are quite striking, offering a line of investigation that deserves further attention. It would hardly seem surprising that precontract craftspeople found inspiration in the natural shapes that surrounded them, a process which may have represented nothing more than an aesthetic pursuit. However, the possibility of tree leaves acquiring a symbolic value attached to their prominent seasonal cycle of life and death should in my opinion be considered, although it may not be archaeologically verifiable. Considering that large numbers of “leaf-shaped” bifaces become a recurring fixture in burial practices after the Terminal Archaic period, and that some of these bifaces appear to mimic actual foliage, it may be worthwhile to explore the idea of a symbolism of the cyclical nature of life and death rooted in the seasonal changes of the Northeast.

Along these lines, there is another intriguing – although highly hypothetical – possibility. Two artifacts – 10-10 and 14-3, forming a “pair” (same length, same material, very similar stem and tip grinding) – match quite closely the shape of traditional Mi’kmaq and Wolastoqiyik paddles (Figure 4.12). I am again pointing out these resemblances as a possibility for further research; the relationship could very well be the opposite, with the shouldered blade of “war” paddles imitating the shape of stemmed
points to convey the overall shape of a spear or weapon. Interestingly, Mechling (1914:1) reports in a Gluskap creation myth collected from an elder in St. Mary, NB, how the hero “built a canoe and paddle out of stone” to travel down the St. John River. If anything, this at least attests of the myth-worthiness of stone crafting and canoe making in the region. As a concluding thought on morphological symbolism, I have added in Figure 4.12 two examples of early historical illustrations of paddles decorated with chevron motifs reminiscent of leaf venation, a possible hint at a symbolic relationship between paddles and leaves. Considering the potentially central role played by canoe transportation in lithic procurement (see Blair 2010, Holyoke and Hrynick 2015), it may not be surprising to see elements of intersecting symbolism between stone implements and canoe technology.
Figure 4.1 – Visual representation of the morphological and technological cohesion of the assemblage.

All recurring attributes are not illustrated; unlabeled links represent morphological connections.
Figure 4.2 – Morphological groups.
Figure 4.3 – Solutrean points illustrated in Osborn’s (1915:339) *Men of the Old Stone Age.*
Figure 4.4 – Side-by-side comparison of bifaces from CcDv-3 with Archaic period bifaces from the Far Northeast.
a) Nulliak site, Labrador (Loring 2002:170); b) Nukasusutok-5, Labrador (Hood 2008, figure 98); c) Eastport site, Maine (Kingsbury and Hadlock 1951, Plate I & II); d) Watertown Arsenal site, Massachusetts (Dincauze 1968, Plate III).
Figure 4.5 – Points from the Northeast discussed in this thesis for comparative purposes. Left to right: East Creek site, Vermont (Loring 1985:119), Augustine Mound, New Brunswick (two points) (photos: Drew Gilbert), Bradley cemetery, Maine (Belcher et al. 1994:13).
Figure 4.6 – Side-by-side comparison of bifaces from CcDv-3 with bifaces from Middlesex features in the Northeast.
a) Augustine Mound, New Brunswick (photos: Drew Gilbert); b) Long Falls site, Nova Scotia (Davis 1991b); c) McKinlay Collection, New Brunswick (Turnbull 1986).
Figure 4.7 – Bipointed and contracting stemmed bifaces from Middlesex and Red Ocher contexts, with similar forms from Bristol-Shiktehawk (on black background).

Top: Boucher Cemetery, Vermont and Killarney site, Ontario (last one on the right). (Greenman 1966; Heckenberger et al. 1990). Bottom: Riverside Cemetery, Michigan (Hruska 1967). Note the similarities between the bipointed and stemmed bifaces from Boucher (Middlesex) and Riverside (Red Ocher).
Figure 4.8 – Idealized Turkey-tail types and matching artifacts from Bristol-Shiktehawk (outlines) and Augustine Mound (bottom right).

Not to scale. Adapted from Didier (1967).
Figure 4.9 – Side-by-side comparison of bifaces from Ccdv-3 with bifaces from Red Ocher features.
a) Various sites, Michigan (Fitting 1970); b) Dyer Site, Indiana (Ritzenhaler and Quimby 1962); c) Riverside cemetery, Michigan (Hruska 1967); d) Martin cache, Michigan (Krakker 1997). The stemmed point in the center of the middle row is from the Bradstreet Collection.
Figure 4.10 – Points from the GFC Collection with haft elements comparable to turkey-tail points.

(Photo: Alexandre Pelletier-Michaud)
Figure 4.11 – Artifacts from group 2 displaying fluid curves and a recurved tip with tree leaves showing a similar morphology.

(Beech leaf image taken from Oregon State University website:
Figure 4.12 – Morphological comparison of paddles with bifaces from CeDv-3.

Chapter 5 - Conclusion

In this thesis, I have explored the question of ceremonialism and lithic technology in the Early Woodland period in the Northeast, through the technological analysis of a biface assemblage from the Middle St. John River Valley. By working on an assemblage from an amateur collection, I have also explored the matter of the amount and quality of information that can be obtained from artifacts for which little or no scientific record of excavation exists. Finally, my thesis aimed to make available information on a region of New Brunswick that has received very little archaeological attention apart for the activities of private collectors.

The data collection phase of my research followed an approach based on the concept of chaîne opératoire. I gathered all the information available on the bifaces’ use-lives from the artifacts themselves, and examined the steps of lithic material selection, manufacture, morphology, use-wear, breakage and post-depositional weathering. From my primary results, I evaluated the level of cohesion within the assemblage, considering all the factors mentioned above. Next, I situated the collection – as an assemblage and as individual artifacts – in the archaeological landscape of the Northeast, in order to suggest temporal, cultural, geographical and functional connections. Finally, in light of my findings, I explored notions of ritual, ceremony and symbolism in how they intersect with lithic technology.
Through archival research, I was able to identify 37 bifaces as belonging to the Bristol-Shiktehawk assemblage collected by George Frederick Clarke in 1932 – 35 in the GFC collection at UNB and two others known only from archival material. Based on the results of my primary analysis, I assessed the consistency of traits within assemblage, confirming its technological and morphological cohesion, and suggesting the artifacts share cultural context. As a result of my analysis of intra-assemblage variability, I proposed the existence of five different groups within the assemblage based mostly on morphology, although these groups may or may not denote different functions, origins or depositional events.

Three elements of my primary analysis stand out. First, I proposed a new raw material designation, Quoddy Cream-Speckled Rhyolite (QCSR), for a previously mislabeled Quoddy region lithic material, and assigned it to over one quarter of the assemblage. This observation suggests a pattern of coastal lithic procurement for a deep interior site that has seldom been documented in New Brunswick, and should contribute to the discussion on both lithic acquisition and prehistoric population mobility in the region. Second, I identify the existence of morphological pairs of artifacts, some of which are composed of a stemmed biface and an unstemmed one. Third, I have significantly expanded the study of surface and edge wear in large biface assemblages, indicating the ubiquity of wear on the surface and edges of the artifacts, including a recurring pattern of tip grinding for which I could find no parallel in the Northeast.

In my comparative analysis, I observed that the composition of the Bristol-Shiktehawk assemblage, combining large stemmed forms with smaller, unstemmed
ones, was characteristic of bifaces assemblages associated with the Middlesex and Red Ocher complexes of the Early Woodland period. I found that some stemmed points in the assemblage were technologically and morphologically very similar to points associated with the Late Archaic period in the Far Northeast (the Moorehead and Maritime Archaic traditions). Although one biface in the assemblage is reminiscent of Terminal Archaic forms of New England, the rest of the collection is mostly consistent with forms associated with the Early Woodland complexes named above. The connections with the Red Ocher complex of the Midwest appear the strongest, and are based on morphology, manufacture and use-wear patterns. In summary, my comparative analysis paints the portrait of an assemblage which, while appearing cohesive enough to suggest a single deposition event, possesses characteristics of “complexes” that have been defined as geographically distinct. I am interpreting these results as supporting the existing views that:

1. There seems to be some cultural continuity between the mortuary practices of the Archaic period, including the Maritime Archaic and Moorehead traditions, and Early Woodland mortuary ceremonialism in the Maritime Peninsula and the Northeast (Dragoo 1976; Heckenberger et al. 1990:138; Pleger 2000; Petersen 1995:221; Rutherford 1990), and;

2. Early Woodland mortuary complexes that have been defined on regional peculiarities probably represent snapshots of variability within a single broad, fluid phenomenon, with the participation of communicating, culturally-linked populations from the Maritime Peninsula to the Midwest (Blair 2004:39; Heckenberger et al. 1990:111; Loring 1985; Ritzenthaler and Quimby 1962).
In the context of the results of my assemblage-based analysis, coupled with my comparative research, I have discussed the artificial dichotomy between the concepts of utilitarian and ritual as it is often applied to the study of stone tools. I have raised the issue of how this separation probably does not reflect the worldviews of Pre-contact populations, therefore hampering our comprehension of ritualized behaviour, especially the integration of ceremonial practices inside the realm of “everyday” practices. Oral traditions collected by ethnohistorians suggest that flaked stone technology, as an indispensable but high-risk technical activity, had its place inside creation myths and mythological stories in the Northeast, a fact that must be taken into consideration when attempting to understand the ritual or ceremonial function of lithic artifacts.

Finally, I proposed the possibility of morphological symbolism within the assemblage, with some of the bifaces possibly emulating the shape of tree leaves. Although this does not seem to have been previously explored, I suggest the possibility of the symbolic value of tree leaves as a metaphor for the seasonal cycle of life and death, which may have extended to a funerary symbolism of an afterlife. I also point out the morphological similarities between stone implements and canoe paddles, which may have held meaning in the intricate relationships between lithic procurement and technology, canoe travel, and the ceremonial landscape. I understand that these ideas of symbolism in lithic tool forms may be controversial, and I believe that they should be applied to and tested against other ceremonial assemblages in the Northeast to assess their validity.
Within the Maritime Peninsula, I believe that it is the notion of interconnection between coastal and interior areas that may be the most fruitful to pursue. At a broader level, the relations between mechanical use-wear and ritualized use, the reevaluation of regional ceremonial complexes, and the possibility of lithic tool symbolism will, I hope, stimulate research into unexplored avenues of lithic studies and regional culture history. In conclusion, I humbly hope that my research will contribute to our still very fragmentary comprehension of one of the least understood period of prehistory in the Northeast.
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Appendix A - Individual artifact descriptions\textsuperscript{62}

\textsuperscript{62} References to left/right side and top/back face are based on the orientation of the outline sketches.
8-4
L: 8.34 cm    MW: 5.09 cm    MT: 1.15 cm    W: 40.2 g

Morphology: Roughly pentagonal; straight, oblique base, edges are convex below the waist, concave between the waist and the tip. The tip is rounded, the shoulders are well defined and located about one quarter of the length from the base. Plano-convex section, straight profile.

Manufacture: Hard to read because of the nature of the material. Primary flakes are fairly small, those visible appear perpendicular to the edges. Steep retouch above the shoulder – short, deep pressure flakes – maybe re-sharpening. Lots of hinging on left side of both faces. The straight part of the base is either formed by the preserved striking platform or by a fracture, which would imply that the biface was originally stemmed.

Material: Dark grey-green groundmass more or less obscured by invasive cream-colored speckles. Relatively fine-grained, chalky, weathered texture in paler areas.

Sections examined for use-wear
L: 11.36 cm  MW: 6.82 cm  MT: 1.11 cm  W: 92.2 g

**Morphology:** Bipointed, oval shaped. No defined waist, widest point is well centered. Tip is pointed, base forms a small nub with a flat edge. Mostly plano-convex cross-section.

**Manufacture:** Ventral face minimal thinning, large face remnant; smaller flakes shape the edge and are removed perpendicular; dorsal - large, thin thinning flakes, meeting at ridge slightly offset to left. Left side appears later. Some hinging. Large flakes removed perpendicularly to edge in a sub-parallel fashion. Smaller flakes on arrises, not systematically. Striking platform is preserved at the base, remnants of the percussion bulb are visible.

**Material:** Fine-grained. Groundmass at the tip is dark grey with small rust-colored speckles; the speckles become enclosed in light green eyelets in the mid-section which merge to form the groundmass towards the base.

**Condition:** Whole. Ground at the tip on both faces in multiple striated facets.

Sections examined for use-wear
10-3
L: 13.65 cm  MW: 4.9 cm  MT: 1.3 cm  W: 69.6 g

Morphology: Bipointed, elongated diamond shape. No defined shoulders, widest point slightly offset towards the base. Tip is pointed, base is more rounded. The edges are convex below the widest point, concave above that point turning to straight 2 cm below the tip. Mostly lenticular cross-section

Manufacture: Both faces: large, thin thinning flakes, perpendicular to edges, mesial ridge, hinging mostly on left side. Smaller flake removals on arrises almost systematic. Steeper edge, hinged, deep, small flakes within concave section.

Material: Very dark gray/black, fine-grained. No thin-edge translucency. Small phenocrysts give a “dimpled” appearance.

Condition: Fractured around lower third, glued. Ground at the tip on back face in a single striated facet.

Sections examined for use-wear
Morphology: Bipointed, elongated diamond shape. No defined shoulders (lightly on left side), widest point roughly centered. Tip is pointed, base comes just short of a point and is straight. The edges are convex all around but concave on the right side between 2 and 5 cm from the tip. Lenticular cross-section.

Manufacture: Large, thin thinning flakes, perpendicular to edges, forming mesial ridge on both faces. Smaller flake removals on arrises almost systematic. Very small flat surface at base is probable cortex and/or striking platform remnant.

Material: Medium brownish grey, fine-grained with some granular texture. Some thin-edge translucency. One area of lighter variegation on top face, left edge at widest point.

Sections examined for use-wear
10-5

L: 14.5 cm  MW: 4.5 cm  MT: 1.14 cm  W: 67.0 g

**Morphology:** Bipointed, elongated diamond-shaped. Well-centered waist, edges are slightly convex towards the base, slightly concave towards the tip. Not a lot of differentiation between base and tip; orientation based on retouch patterns and comparison of concavity with 10-3 and 10-4. Lenticular cross-section, plano-convex in places.

**Manufacture:** Smaller thinning flakes but very thin, perpendicular to edges and forming a mesial ridge. Some smaller flake removals on arrises.

**Material:** Dark gray groundmass with faint darker variegation. Good thin-edge translucency. Fine-grained, glassy texture.

**Condition:** Oblique transverse fracture just above lowest third, glued. Cleaned on top face.

Sections examined for use-wear
10-6

L: 9.82 cm  MW: 3.66 cm  MT: 1.05 cm  W: 34.7 g

**Morphology:** Bipointed, base more rounded than the tip. Asymmetrical edges, convex all around but more strongly so on the right side, straightening towards the tip. Regular outline, lenticular cross-section.

**Manufacture:** Large, thin thinning flakes, perpendicular to the edges, mesial ridge. Some smaller flake removals on arrises. Steep retouch/damage at the base.

**Material:** Dark gray, porphyritic. Small, squarish white phenocrysts, mostly regular in size. Some thin edge translucency.

**Condition:** Whole. Surface arris-wear especially strong around mesial section.

Sections examined for use-wear
10-7

L: 11.65 cm  MW: 4.75 cm  MT: 1.15 cm  W: 61.9 g

Morphology:  Bipointed, base more rounded than the tip. Asymmetrical edges, more strongly convex on the left side. All edges overall convex except for a small section on the right side just below the tip, giving the effect of a recurved tip. Regular outline, lenticular cross-section.

Manufacture:  Large, thin thinning flakes, mesial ridge stronger on back face. Flake removals perpendicular to edges. Some smaller flakes removals on arrises. Possible small flake blank face remnant on top face at the base. Retouch inside concave section mostly unifacial.

Material:  Medium greenish grey groundmass, fine-grained. Small sub-circular white phenocrysts, denser towards base, almost absent at tip.

Sections examined for use-wear
10-8

L: 14.22 cm    MW: 6.08 cm    MT: 1.4 cm    W: 100.0 g

Morphology: Bipointed, diamond-shaped, very regular outline. Both sides are strongly convex, with no well-defined waist. Small concave section on right side below tip and left side above base. Lenticular cross-section.

Manufacture: Large, thin thinning flakes, perpendicular to edges, mesial ridge. Smaller flake removals on arrises almost systematic. Hinged thinning flakes removed from the left side on both faces. Small remnant of striking platform preserved at base; thinning scars above it suggest systematic removal of percussion bulb.

Material: Very dark gray/black, fine-grained stone. Minimal thin-edge translucency. Very scarce lighter gray variegation.

Condition: Whole. Ground at the tip on both faces, forming multiple striated facets.

Sections examined for use-wear
Morphology: Oval-pointed, strongly rounded base, blunted tip. Strongly convex edges with small concave sections on both sides in the upper half. Lenticular cross-section.

Manufacture: Very large thinning flakes, varying in size, mostly removed perpendicularly to the edges. Smaller flake removals on arrises almost systematic. Mesial ridge is disrupted by larger flakes - not really present. Thick base, probable remnant of striking platform; probable remnant of flake blank dorsal face at the tip on the top face.

Material: Medium to light greenish gray groundmass, some thin-edge translucency, fine-grained. Planar cream-colored variegations, much denser towards the tip.

Condition: Transversely fractured just above upper third, glued. Differentially weathered from side to side at fracture point. Very strong surface arris-wear on mesial section of back face.

Sections examined for use-wear
10-10

L: 17.8 cm  MW: 5.22 cm  MT: 1.3 cm  W: 110.3 g

Morphology: Lanceolate, almost bipointed with a square base. Both sides convex, slightly more so on the left. Contracting stem with weak, open, poorly-defined shoulders, slightly more defined on the right side. The tip is not sharply pointed. Cross-section alternating between biconvex and plano-convex.

Manufacture: Large and thin thinning flakes, a few thicker, hinged ones from the left side on both faces. Flakes removed perpendicularly to the edges. Faint mesial ridge on back face. Systematic arris ridge removals. Mesial section of top face is dominated by probable remnant of the ventral face of the flake blank. Blunted base formed by fracture or striking platform remnant.

Material: Dark gray/black groundmass, turning to medium greenish gray in places. Small, sub-circular, cream to rust colored phenocrysts, some hollowed out. Fine grained, rougher in places. No apparent thin-edge translucency.

Condition: Whole. Ground at the tip on both faces in multiple facets. Grinding extends almost 2 cm from tip on top face.

Sections examined for use-wear
10-100
L: 16.3 cm  MW: 5.75 cm  MT: 1.11 cm  W: N/A

Morphology: Bipointed, lanceolate with convex edges, slightly more so on the left side. Very regular outline. From Wintemberg: “Lenticular in cross-section from side to side and end to end, but one face slightly flatter than the other”.

Manufacture: N/A

Material: From photographs, appears very similar to 10-2, 10-9, 14-3, 52-26 and 52-42. From Wintemberg: “Black or dark grey chert-like rock”.

Condition: Location unknown; known only from photographs, and sketch by W. J. Wintemberg.
10-101

L: 14.3 cm  MW: 4.08 cm  MT: N/A  W: N/A

Morphology: Lanceolate, rounded base with pointed tip. Convex sides, slightly more so on the left. Small concave sections just below the tip give the effect of a recurved tip. From Wintemberg: “Lenticular in cross-section”.

Manufacture: N/A

Material: From Wintemberg: “Mottled maroon colored cherty rock”.

Condition: Location unknown; known only from sketch by W. J. Wintemberg.
Morphology: Lanceolate, elongated, convex sides with widest point towards lowest third. Contracting stemmed with small flat base. Very symmetrical, well defined shoulders opening at an obtuse angle. Small concave section around center of blade on both sides. Lenticular cross-section.

Manufacture: Large, thin thinning flakes, mesial ridge on both faces. Flakes near tip angled downwards; rest perpendicular to edges. Rough, flat, base.

Material: Dark gray/black groundmass, turning to medium greenish gray in places. Small, sub-circular, cream to rust colored phenocrysts, some hollowed out. Fine grained, rougher in places. No apparent thin-edge translucency. Banded variegation mostly defined by density of phenocrysts and color of groundmass.

Condition: Straight fracture towards the center point, glued. Differentially weathered from side to side at fracture point. Strong surface arris-wear on mesial section of back face. Ground at the tip on both faces, forming a single facet per face.
51-10

L: 8.65 cm  MW: 4.6 cm  MT: 1.24 cm  W: 51.4 g

**Morphology:** Broad, lanceolate with rounded base. Convex edges with small concave sections above the base on both sides, forming a poorly-defined stem.

**Manufacture:** Large and thin thinning flakes, perpendicular to edges. Weak mesial ridge on back face, no ridge on top face. Unsystematic arris ridge removal. Small fragment of striking platform preserved at the base, apparently with cortex present.

**Material:** Medium-dark blueish gray groundmass, fine-grained but with rougher texture in places. Minimal thin-edge translucency. Dark gray and white phenocryst of irregular shape, size and distribution.

**Condition:** Transversely fractured just above upper quarter, tip missing. Differentially weathered from face to face.

Sections examined for use-wear
**51-40**

**L:** 12.58 cm  **MW:** 4.14 cm  **MT:** 1 cm  **W:** 50.4 g

**Morphology:** Lanceolate, convex sides with widest point in the mesial portion. Contracting stemmed with small rounded base. Very symmetrical, well defined shoulders opening at an obtuse angle. Small concave section just below tip on left side. Plano-convex cross-section. Very regular outline.

**Manufacture:** Large, thin thinning flakes, removed parallelly, perpendicularly to the edges. Mesial ridge offset to left on back face. On large overshot flake scar dominates center on top face. Arris ridge removal is almost systematic. Notching flakes removed from alternate faces at the shoulder. Fine, mostly unifacial retouch all around, absent on stem.

**Material:** Medium greenish gray, fine grained, no apparent thin-edge translucency.

**Condition:** Whole. Lightly differentially weathered from side to side at fracture point. Strong surface arris-wear on mesial section of back face. Ground at the tip on both faces, forming multiple facets.

Sections examined for use-wear
51-41

**L:** 14.6 cm  **MW:** 5.2 cm  **MT:** 1.6 cm  **W:** 109.3 g

**Morphology:** Bipointed, lanceolate with widest point slightly offset towards the tip. Base more rounded than the tip. Convex edges, more rounded on right side, almost straight above and below widest point on left side.

**Manufacture:** Large, thin thinning flakes, irregular mesial ridge on both faces. Flake removals mostly perpendicular to edges. Arris ridge removal almost systematic. Mostly unifacial fine retouch all around. Potential remnant of cortex or flake blank face on left side of tip, top face.

**Material:** Light greenish gray groundmass, fine-grained with glassy texture. Some dark variegation on left side of top face. Light gray and chalkier in texture where weathered.

**Condition:** Whole. Strongly differentially weathered from face to face. Strong surface arris-wear on mesial section of back face, small polished sections on top face. Lateral fracture on right side of base.

Sections examined for use-wear
51-84

L: 10.44 cm  MW: 5.55 cm  MT: 1.34 cm  W: 61.6 g

**Morphology:** Broad, lanceolate, strongly convex sides, more so on right side, with widest point around lowest third. Contracting stemmed with pointed base. Very symmetrical, well defined shoulders opening at broad angle. Small concave section just below tip on right side. Lenticular cross-section. Very regular outline.

**Manufacture:** Large, thin thinning flakes, perpendicular to edges, mesial ridge on both faces. Arris ridge removal semi-systematic. Systematic, parallel retouch on widest part of blade. Flat base formed by potential striking platform remnant.

**Material:** Very light greenish gray, minimal thin-edge translucency. Faint, linear paler variegations.

Sections examined for use-wear
51-96

L: 10.54 cm  MW: 4.25 cm  MT: 1.12 cm  W: 45.4 g

Morphology: Lanceolate, convex sides with widest point around lower third. Small concave section just above base on right side. Plano-convex to lenticular cross-section. Curved tip to base profile.

Manufacture: Thin thinning flakes, some large. Hard to read because of coarser stone. Weak mesial ridge on both faces, disrupted by large flake scars. Flat, diagonal base formed by probable striking platform remnant.

Material: Medium greenish gray groundmass, medium grained texture. Some tight flow-banding visible on back face. Light greenish gray on weathered face.

Condition: Transversely fractured presumably around upper sixth, tip missing. Differentially weathered from face to face.

Sections examined for use-wear
**51-107**

**L:** 7.62 cm  **MW:** 3.62 cm  **MT:** 1.06 cm  **W:** 28.1 g

**Morphology:** Generally lanceolate, widest point around lower third. Convex edges, more so on the left; small concave section due to damage. Contracting stemmed with asymmetrical shoulders, more strongly defined on right side. Asymmetrical stem edges, making the stem angled towards the right. Base is flat and oblique.

**Manufacture:** Thin thinning flakes, some large, some long. Flaking is somewhat random, no mesial ridge. Flakes removed perpendicular to edges. Unifacial retouch on tip the shoulder, little edge straightening in between. Base formed by preserved cortex section, presumably striking platform.

**Material:** Strongly banded blueish gray groundmass. Bands of varying tint and thickness. Glassy, fine-grained texture, with strong thin-edge translucency.

**Condition:** Whole. Edge damage above left shoulder.

Sections examined for use-wear
51-118

L: 7.04 cm    MW: 2.63 cm    MT: 0.84 cm    W: 14.6 g


Material: Banded greenish gray mottled groundmass. Bands of varying tint and thickness. Glassy, fine-grained texture, with strong thin-edge translucency.

Condition: Whole. Differentially weathered from face to face.

Sections examined for use-wear
52-18

L: 8 cm  \hspace{1cm} \textbf{MW}: 4.02 cm  \hspace{1cm} \textbf{MT}: 1.9 cm  \hspace{1cm} W: 26.3 g

\textbf{Morphology:} Broad lanceolate outline, symmetrical convex edges only disrupted by small concave section below tip on right side. Widest point around lower third, small straight base.

\textbf{Manufacture:} Thin thinning flakes, varying size. No ridge, random pattern due to flake blank attributes. Flake scars perpendicular to edges. Systematic arris ridge removal. Changing retouch patterns. Large remnant sections of both flake blank faces. Distal end of flake blank at base of biface, formed by hinge termination.

\textbf{Material:} Very dark gray/black, fine-grained stone. No thin-edge translucency. Some linear lighter gray variegation.

Sections examined for use-wear
**52-21**

**L**: 10.19 cm  
**MW**: 4.9 cm  
**MT**: 1.23 cm  
**W**: 61.3 g

**Morphology**: Bipointed with neither end very sharp. Relatively well-centered widest point. Convex edges but asymmetrically curved, more regular on the left side. The base is very oblique, creating a pointed end. Lenticular cross-section.

**Manufacture**: Large, thin thinning flakes, mostly perpendicular to edges. Very large, deeply hinged flake cutting deep into top face. Disorganised flaking pattern probably due to nature of stone. Systematic arris ridge removal. Dense, invasive unifacial retouch on top face towards tip, minimal flaking around base. The oblique base is formed of preserved section of cortex, potentially a striking platform remnant; directly adjacent section on back face may be flake blank face remnant.

**Material**: Medium brownish red, fine-grained, no thin-edge translucency. Evidence of “lamellar”, slate-like fracturing in places.

**Condition**: Whole. Two grooved, highly polished, striated area to the right of the label on the back face.

Sections examined for use-wear
52-22

L: 9.1 cm  MW: 4.19 cm  MT: 1.25 cm  W: 49.1 g

Morphology: Lanceolate, contracting stemmed. Edges of the blade portion are convex, strongly on the left, almost straight on the right. Stem is mostly symmetrical but offset towards the left with regards to the width of the blade. The base is pointed and shoulders are broadly open, not strongly defined. Lenticular cross-section.

Manufacture: Large, thin thinning flakes, mostly perpendicular to edges. Mesial ridge offset to the left, stronger on top face. Notching flakes removed from alternate faces. Arris ridge removal mostly absent; minimal retouch. “Gnawed” base, apparently intentionally damaged by flaking or grinding.

Material: Strongly banded blueish gray groundmass. Bands of varying tint and thickness. Glassy, fine-grained texture, with strong thin-edge translucency.

Sections examined for use-wear
52-23

**L**: 10.36 cm  **MW**: 5.71 cm  **MT**: 1.45 cm  **W**: 61.9 g

**Morphology:** Bipointed, broad, diamond-shaped, well-centered widest point. Right edge is continuous and strongly convex, left edge angles around the center point, and is mostly straight towards the base, convex towards the tip. Small concave sections on both sides just below the tip. Large flake scar creates a concave section just above the base on the right side. Lenticular cross-section.

**Manufacture:** Long, thin, thinning flakes, perpendicular to the edges. Non-systematic arris ridge removal. Discontinuous, well centered mesial ridges. Large conchoidal lateral break one right side of the base. Finer, denser retouch towards the tip. Small flat area just above base on top face may represent a remnant of one face of the flake blank.

**Material:** Light greenish green, fine-grained, glassy texture. Small linear void formations partly infilled with whitish microcrystalline structures. Strong thin-edge translucency.

**Condition:** Whole. Fine tip appears broken.

Sections examined for use-wear
52-24

L: 9.85 cm  MW: 4.5 cm  MT: 1.15 cm  W: 47.8 g

**Morphology:** Lanceolate, widest section around the lower third. The base is broadly pointed. Both edges are strongly convex but asymmetrically curved. Mostly plano-convex cross-section.

**Manufacture:** Thin, large, long thinning flakes, perpendicular to edges. Strong mesial ridge on top face, absent on back. Semi-systematic arris ridge removal. Large flake removal making mid-section very thin. Aggressive basal thinning forming a deeply hinged scar on the back face.

**Material:** Very dark gray, matte, fine-grained. No thin-edge translucency.

Sections examined for use-wear
52-26

L: 10.1 cm    MW: 5.38 cm    MT: 1.3 cm    W: 70.6 g

**Morphology:** Ovoid, broadly pointed at both ends, with a small flat base. Well-centered widest point. Very symmetrical, strongly convex edges. The regularity of the right side is slightly disrupted by edge retouch/damage in the upper half. Lenticular cross-section.

**Manufacture:** Large, thin, long thinning flakes, perpendicular to the edges, strong mesial ridge on top face. Arris ridge removal almost systematic. Unifacial retouch on alternating faces on either side. Base is formed by small flat remnant of cortex, possibly a preserved portion of the striking platform. Flat areas left of the tip on both faces may represent remnants of the original faces of the flake blank.

**Material:** Fine-grained. Groundmass towards the tip is medium greenish gray with small cream/rust-colored phenocrysts; the speckles are enclosed in medium greenish gray eyelets in the mid-section set in a dark gray groundmass; little to no phenocrysts towards the base. Some broad banding visible in the appearance of the groundmass and density of phenocrysts.

Sections examined for use-wear
52-27

L: 12.41 cm  MW: 3.9 cm  MT: 1.09 cm  W: 42.9 g

Morphology: Lanceolate, slender with widest point offset towards the base. Both ends are sharply pointed but more so at the tip. Left side is overall convex but formed of two almost straight sections separated by a rounded waist at widest point. Right side is straight and symmetrical to the left above the waist, but concave below that point, forming a unilaterally defined stem. Lenticular cross-section, very regular outline.

 Manufacture: Thinning flakes of various size and depth, apparently due to nature of material. Flake removals perpendicular to the edges. Mesial ridge not really present on either face. Minimal retouch around base.

Material: Purplish red, fine grained, no thin-edge translucency. Small sub-circular cream-colored inclusions, loosely distributed.

Sections examined for use-wear
**52-28**

**L**: 11.95 cm  \hspace{1cm} **MW**: 4.8 cm  \hspace{1cm} **MT**: 1.2 cm  \hspace{1cm} **W**: 59 g

**Morphology**: Bipointed, well centered widest point. Both ends are sharply pointed, strong bipolar symmetry. Both edges are convex, but more so on the right side. Small convex sections below tip and above base on right side. Lenticular cross-section, very regular outline.

**Manufacture**: Large, thin thinning flakes, perpendicular to the edges, mesial ridge fairly strong on either face. Arris flake removal semi systematic.

**Material**: Medium greenish grey groundmass, fine-grained. Small sub-circular white phenocrysts, denser towards the base. Broad banding defined by two seemingly crystalline medium gray oblique lines surrounded by paler groundmass.

**Condition**: Whole. Oblique transverse fracture just below upper third, well aligned with banding, glued.

Sections examined for use-wear
52-29

L: 7.04 cm  MW: 3.25 cm  MT: 0.98 cm  W: 19.8 g

Morphology: Ovoid outline, coming short of a point to a small flat oblique base. Very regular and symmetrical convex edges. Small concave sections just below tip on both sides. Lenticular cross-section.

Manufacture: Thin and regular thinning flakes, perpendicular to the edges, weak mesial ridges. Arris ridge removal in places. Varied retouch patterns. Rough, flat section, likely representing striking platform preserved at base.

Material: Light gray, fine-grained but lightly granular texture. Some linear. Dark gray variegation.

Sections examined for use-wear
L: 8.55 cm     MW: 4.1 cm     MT: 1.2 cm     W: 35.4 g

**Morphology:** Ovoid, pointed tip, sharp but rounded base. Widest point is offset towards the lower third. Left edge is very regular and strongly convex; right edge is less convex and becomes concave between the widest point and the base, creating a weak, unilaterally defined stem. Lenticular cross-section.

**Manufacture:** Thin, fairly regular thinning flakes, perpendicular to the edges, weak mesial ridge on top face, absent on back. Arris ridge removal almost systematic. Small flat section forming the left side of the base is probable striking platform remnant with cortex.

**Material:** Very pale greenish gray groundmass, fine-grained, with small, densely packed, sub-circular white speckles surrounded by a black outline. No texture difference between groundmass and speckles. Good thin-edge translucency.

Sections examined for use-wear
52-31

L: 9.36 cm    MW: 4.37 cm    MT: 1.2 cm    W: 49 g

**Morphology:** Bipointed, well-centered widest point. Both edges are strongly convex but asymmetrically curved. Lenticular cross-section.

**Manufacture:** Large, thin thinning flakes, perpendicular to the edges. Mesial ridges disrupted, stronger on back face. Large, deep central flake scar on top face appears due to flute-like removal from the base. Flat area on right side of the base on back face is probable remnant of a face of the original flake blank. Top face of tip formed by two steep factures, could be remnants of flakes scars on dorsal ridge of flake blank. Invasive retouch on back face of tip area. Minimal flaking around base, flat lateral break on left side of base.

**Material:** Dark gray/black, fine-grained, no thin-edge translucency. Some apparent banding, very poorly-defined. Some slate-like flat fractures.

Sections examined for use-wear
52-35

L: 9.93 cm  
MW: 4.5 cm  
MT: 1.23 cm  
W: 42.9 g

**Morphology:** Bipointed, roughly centered widest point. Base is more sharply pointed than tip. Edges are convex but asymmetrically curved. Small concave sections just below tip on left side and above base on right side. Lenticular cross-section.

**Manufacture:** Large, thin thinning flakes of various shapes, perpendicular to the edges. Mesial ridge on back face, discontinuous on top face. Almost systematic arris ridge removal. Flat section on back face of base is probably a remnant of an original flake blank face or of the striking platform.

**Material:** Light greenish green, fine-grained, glassy texture. Small linear void formations partly infilled with whitish microcrystalline structures. Strong thin-edge translucency.

Sections examined for use-wear
52-42

**L**: 10.6 cm  **MW**: 5.35 cm  **MT**: 1.3 cm  **W**: 73.2 g

**Morphology**: Ovoid, broadly pointed at both ends. Well-centered widest point. Very symmetrical, strongly convex edges. The regularity of the left side is slightly disrupted by edge retouch/damage in the upper half. Lenticular cross-section.

**Manufacture**: Large thinning flakes, some quite thick, some very thin, removed perpendicularly to the edges. Systematic arris ridge removal. Strong mesial ridge on back face, discontinuous on top. Several higher sections on top face appear to be remnants of the original flake blank’s ventral face.

**Material**: Groundmass on left side is medium greenish gray with small cream/rust-colored phenocrysts, some of which are void; the speckles are enclosed in medium greenish gray eyelets within transition to a dark gray groundmass on the right side. Mostly finer-grained in the darker sections, green sections have a rougher texture.

**Condition**: Whole. Both ends have been ground on both faces, creating multiple striated facets. Tip is ground in a sharpening fashion; base is ground edge-on and made duller.

Sections examined for use-wear
52-43

L: 9.68 cm  MW: 4 cm  MT: 1.1 cm  W: 39.6

**Morphology:** Lanceolate, contracting-stemmed with asymmetrical shoulders opening at a broad angle. Left edge is more strongly convex than the right; sides are asymmetrically curved. Margins of the stem are symmetrical but right shoulder is lower than the left. Lenticular in cross-section.

**Manufacture:** Large, thin thinning flakes, perpendicular to the edges. Very little arris ridge removal. Steep flaking at the base. Mesial ridge on both faces, stronger on back. Base is formed by steep retouch. Small polished area at the tip on the back face is either a cortex remnant or a ground surface.

**Material:** Medium greenish gray/brown. Fine-grained, glassy texture with some thin-edge translucency. Lighter color on weathered areas.

**Condition:** Whole. Differentially weathered from face to face.
Morphology: Lanceolate, widest point roughly centered. Left side more strongly convex than the right. Straight to contracting stemmed with a lightly pointed oblique base. Left shoulder is higher and better defined than the right, which opens at a broader angle. Lenticular cross-section.

Manufacture: Very large, thin thinning flakes, perpendicular to the edges. Mesial ridges on both faces, stronger on top. Shoulders notched from the same face. Systematic arris ridge removal.

Material: Medium greenish gray groundmass, some thin-edge translucency, fine-grained, glassy texture. Planar cream-colored variegations, much denser towards the base.

Condition: Whole. Differentially weathered from face to face. Strong surface arris-wear all over, especially on back face of tip.

Sections examined for use-wear
52-49

L: 7.61 cm  MW: 3.86 cm  MT: 1.05 cm  W: 28.4 g

Morphology: Overall ovoid with a jagged, irregular base forming a weak stem. Left side more strongly convex than the right. Lenticular cross-section.

Manufacture: Large, thin thinning flakes, sub-parallel, perpendicular to the edges. Mesial ridge on back. Square break at the base. Long narrow flakes at base.

Material: Dark gray/black, fine-grained, no thin-edge translucency.

Sections examined for use-wear
L: 7.51 cm   MW: 3.9 cm   MT: 0.91 cm   W: 26.5 g

**Morphology:** Oval-pointed, with a flattened base. Left side very regular and strongly convex, right side marked by two small concave sections above the widest point.

**Manufacture:** Flaking limited to edges on top face, center of the face covered with smooth cortex. Large scars on back face are probably remnants of flake blank ventral face, which probably had its proximal end on the left side. Arris ridge removal in places.

**Material:** Medium greenish grey mottled groundmass with darker linear variegations. Fine-grained, minimal thin-edge translucency.

Sections examined for use-wear
Appendix B – Tables
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<td>Label (B-S); SBU; W; S</td>
<td>GFC</td>
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Identification of the assemblage, condition and general notes. SBU: Illustrated in Someone Before Us (the asterisk denotes an artifact illustrated but not clearly identified with the Bristol site in the book). S: Photographed by David Sanger. W: Included in Wintemberg’s sketches.
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Remnant flake blank attributes
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*Basic measurements and associated ratios. Maximum length (cm), Maximum width (cm), Maximum thickness (cm), Weight (g). * indicates measurement on incomplete item.*
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<td>0.00</td>
<td>0.29</td>
<td>7.30%</td>
<td></td>
</tr>
</tbody>
</table>

Measurements and ratios relative to bilateral asymmetry. The last column represents the absolute value of the width difference between the two sides.
<table>
<thead>
<tr>
<th>Item</th>
<th>Edge Sections suggesting Use</th>
<th>Surface wear</th>
<th>Hafting evidence</th>
<th>Tip grinding</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-4</td>
<td>2/4</td>
<td>Light all over, marked at mid-section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-2</td>
<td>3/3</td>
<td>Moderate all over</td>
<td>Y</td>
<td>Yes</td>
</tr>
<tr>
<td>10-3</td>
<td>3/3</td>
<td>Moderate all over, marked on mid-section</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>10-4</td>
<td>1/3</td>
<td>Moderate all over, marked on convex face</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-5</td>
<td>3/3</td>
<td>Moderate all over, marked on mid-section</td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>10-6</td>
<td>Inconclusive</td>
<td>Marked on both faces, heavier at mid-section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-7</td>
<td>3/4</td>
<td>Light all over, marked on convex side and mid-section</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>10-8</td>
<td>3/4</td>
<td>Light all over, marked on uncleaned face</td>
<td></td>
<td>Yes</td>
</tr>
<tr>
<td>10-9</td>
<td>4/4</td>
<td>Light, marked on uncleaned face</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-10</td>
<td>4/4</td>
<td>Light on ventral, marked on other side and tip</td>
<td>Y</td>
<td>Yes</td>
</tr>
<tr>
<td>10-100</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>10-101</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>14-3</td>
<td>3/3</td>
<td>Light, marked on uncleaned face, (arrises and scars)</td>
<td>Y</td>
<td>Yes</td>
</tr>
<tr>
<td>51-10</td>
<td>3/3</td>
<td>Marked all over</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>51-40</td>
<td>3/3</td>
<td>Marked on both faces, stronger on dorsal</td>
<td>Y</td>
<td>Yes</td>
</tr>
<tr>
<td>51-41</td>
<td>Inconclusive</td>
<td>Moderate, marked on weathered side, marked area on other</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>51-84</td>
<td>2/2</td>
<td>Moderate, marked on mid section on both faces</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>51-96</td>
<td>3/3</td>
<td>Light, marked on mid-section on both faces</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>51-107</td>
<td>Inconclusive</td>
<td>Moderate, marked around mid-section</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>51-118</td>
<td>3/3*</td>
<td>Light to moderate all over</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>52-18</td>
<td>3/3</td>
<td>Light, moderate around mid-section</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Artifact</td>
<td>Rating</td>
<td>Description</td>
<td>Y/N</td>
<td>Notes</td>
</tr>
<tr>
<td>----------</td>
<td>--------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----</td>
<td>-------</td>
</tr>
<tr>
<td>52-21</td>
<td>3/4</td>
<td>Moderate to marked, ground/polished area on mid-section</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>52-22</td>
<td>2/3*</td>
<td>Moderate to marked, marked on mid-section</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>52-23</td>
<td>1/4</td>
<td>Light, marked on high areas around mid-section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52-24</td>
<td>3/3</td>
<td>Moderate, marked on cleaned face and at base</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>52-26</td>
<td>3/3</td>
<td>Light, marked around mid-section</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>52-27</td>
<td>3/3</td>
<td>Moderate, marked around mid-section</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>52-28</td>
<td>3/3</td>
<td>Light, moderate on labelled face, marked at mid-section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>52-29</td>
<td>Inconclusive</td>
<td>Moderate, marked around mid-section</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>52-30</td>
<td>3/3</td>
<td>Moderate, marked around mid-section</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>52-31</td>
<td>3/3</td>
<td>Moderate, marked on cleaned face</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>52-35</td>
<td>Inconclusive</td>
<td>Light, marked on mid-section and unlabelled face</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>52-42</td>
<td>1/3</td>
<td>Moderate, marked on mid-section and uncleaned face</td>
<td>Y</td>
<td>Yes</td>
</tr>
<tr>
<td>52-43</td>
<td>4/4</td>
<td>Moderate, marked on mid-section and unlabelled face</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>52-45</td>
<td>3/3*</td>
<td>Marked on high arrises all over and at tip</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>52-49</td>
<td>2/3</td>
<td>Moderate, more marked at mid-section</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>53-5</td>
<td>3/3</td>
<td>Moderate, marked at mid-section</td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>

Summary of use-wear observations.

Asterisks mark artifacts on which “fresh” retouch was observed.
Appendix C – Use-wear

(PHOTOS: Alexandre Pelletier-Michaud)
<table>
<thead>
<tr>
<th>Specimen</th>
<th>Section</th>
<th>Location</th>
<th>Observed condition</th>
<th>Interpretation</th>
<th>Photo</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-4 B</td>
<td>Right</td>
<td>Right side, mid-blade.</td>
<td>Jagged edge, some polish.</td>
<td>Suggestive of retouch.</td>
<td></td>
</tr>
<tr>
<td>8-4 C</td>
<td>Left</td>
<td>Left side, close to tip.</td>
<td>Heavy wear, pitted, jagged edge.</td>
<td>Suggestive of use; damage could be due to weathering of stone.</td>
<td></td>
</tr>
<tr>
<td>8-4 D</td>
<td>Right</td>
<td>Right side, close to tip.</td>
<td>Heavy wear, pitted, jagged edge.</td>
<td>Suggestive of use; damage could be due to weathering of stone.</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:** Patterning of wear and retouch suggests heavy use followed by invasive retouch.
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Left side, just below widest point.</td>
<td>Medium polish, unifacial damage.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>B</td>
<td>Right side, just above widest point.</td>
<td>Polish inside flake scar, damaged, pitted, polished edge below.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td></td>
<td>All three sections suggestive of use and differential edge preparation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>A</td>
<td>Left side, center of upper blade portion.</td>
<td>Medium glossy polish, damaged, pitted appearance</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>B</td>
<td>Right side, top half of upper blade portion.</td>
<td>Mostly unifacial micro-flaking, heavy grinding wear, pitted appearance.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>C</td>
<td>Right side, lower half, from center of edge to base.</td>
<td>Unifacial micro-flaking, Heavy wear, pitted appearance.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>Notes</td>
<td>All three sections observed show signs of use, although wear patterns do not allow to differentiate between blade and haft areas.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>10-4</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Right side, top-center section of upper half.</td>
<td>Medium polish, fine edge, fairly undamaged.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>B</td>
<td>Left Side, top-center section of upper half.</td>
<td>Medium polish, unifacial micro-flaking.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>C</td>
<td>Left side, below center of bottom half.</td>
<td>Light wear, fine, undamaged edge.</td>
<td>Not suggestive of use.</td>
</tr>
</tbody>
</table>

**Notes**

One out of three sections is suggestive of use.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Left side, center part of upper half.</td>
<td>Unifacial micro-flaking, fine edge, some heavier polish at edge of section towards tip.</td>
<td>Suggestive of fine retouch following use.</td>
</tr>
<tr>
<td></td>
<td>Section</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>---</td>
<td>---------------</td>
<td>------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>B</td>
<td>Right side, upper part of upper half.</td>
<td>Unifacial micro-flaking, wavy but fine edge. Polish at end of section towards tip.</td>
<td>Suggestive of fine retouch following use.</td>
</tr>
<tr>
<td>C</td>
<td>Right side, center part of lower half.</td>
<td>Unifacial micro-flaking, fine edge, little polish</td>
<td>Suggestive of fine retouch/haft preparation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>All three sections are suggestive of use and/or retouch related to use.</td>
</tr>
<tr>
<td>A</td>
<td>Left side, center part of the upper half.</td>
<td>Unifacial micro-flaking, wavy, fine edge, mostly undamaged.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td>B</td>
<td>Right side, center part of upper half.</td>
<td>Unifacial micro-flaking, straight fine edge, mostly undamaged, light polish.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>C</td>
<td>Right side, center part of lower half.</td>
<td>Moderate wear/polish, unifacial micro-flaking.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td>Notes</td>
<td>All three observed sections are inconclusive.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A</th>
<th>Left side, center part of upper half.</th>
<th>Unifacial micro-flaking, worn over, stronger wear near margins of section.</th>
<th>Suggestive of use</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Left side, close to tip of upper half.</td>
<td>Unifacial micro-flaking, fine, mostly undamaged edge.</td>
<td>Not suggestive of use</td>
</tr>
<tr>
<td></td>
<td>Left side, widest point.</td>
<td>Unifacial micro-flaking, strongly worn, “pitted” appearance.</td>
<td>Suggestive of use or heavy wear.</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------</td>
<td>----------------------------------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>C</td>
<td>Right side, lower half, close to base</td>
<td>Unifacial micro-flaking, fairly strong polish, jagged edge</td>
<td>Suggestive of use/haft preparation</td>
</tr>
<tr>
<td>D</td>
<td>Notes</td>
<td>Three out of four sections show wear patterns suggesting use and hafting.</td>
<td></td>
</tr>
<tr>
<td>10-8</td>
<td>Left side, between tip and center of upper half.</td>
<td>Strong polish over attrition flaking, giving pitted appearance, jagged edge – micro-flaking is on other side from the end of damaged section to the tip, polish is lighter.</td>
<td>Suggestive of use, perhaps in a scraping motion.</td>
</tr>
<tr>
<td></td>
<td>Section</td>
<td>Location</td>
<td>Observations</td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td>B</td>
<td>Right side, between tip and center of upper half.</td>
<td>Attrition flaking, rounded polish.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>C</td>
<td>Left side, between base and center of lower half.</td>
<td>Light polish, retouch inside large “pseudo-notching” flake scar.</td>
<td>Suggestive of haft preparation.</td>
</tr>
<tr>
<td>D</td>
<td>Right side, between base and center of lower half.</td>
<td>Some attrition flaking, worn appearance.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>Notes</td>
<td>All four observed sections are suggestive of use and haft preparation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Section</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
<td>-------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>A</td>
<td>Left side, center of upper half.</td>
<td>Mostly unifacial micro-flaking, heavy wear, pitted sections associated with strong surface wear.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>B</td>
<td>Right side, center of upper half.</td>
<td>Mostly unifacial micro-flaking, heavy wear.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>C</td>
<td>Right side, across widest point.</td>
<td>Strong edge and surface wear, no distinct flaking pattern.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>D</td>
<td>Left side, just below widest point.</td>
<td>Mostly unifacial micro-flaking, strong polish.</td>
<td>Suggestive of use.</td>
</tr>
</tbody>
</table>

**Notes**

All four observed sections are suggestive of use.
<table>
<thead>
<tr>
<th></th>
<th>Section Description</th>
<th>Observations</th>
<th>Suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Right side, center of upper half.</td>
<td>Unifacial micro-flaking, strong wear, jagged edge.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>C</td>
<td>Left side, edge of stem and shoulder</td>
<td>Fairly strong polish on shoulder (top), much weaker on stem (bottom).</td>
<td>Suggestive of use and hafting.</td>
</tr>
<tr>
<td>D</td>
<td>Right side, just below widest point.</td>
<td>Strong wear.</td>
<td>Suggestive of use</td>
</tr>
</tbody>
</table>

**Notes**: All four observed sections show signs of use and hafting. Different patterns observed on stem, shoulder and blade areas.
<table>
<thead>
<tr>
<th></th>
<th>Left side, center part of upper half.</th>
<th>Edge dulling much weaker on section than beyond. Unifacial discontinuous retouch, oblique edge/surface polish.</th>
<th>Differential wear patterns along edge are suggestive of use.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B</strong></td>
<td>Right side, across widest point.</td>
<td>Little wear or retouch above widest point, Unifacial flaking, strong wear below and onto shoulder.</td>
<td>Suggestive of use and hafting.</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>Right side, section covering center part of upper half.</td>
<td>Strong wear above center point, much lighter wear below.</td>
<td>Suggestive of use.</td>
</tr>
</tbody>
</table>

**Notes:** Wear patterns are suggestive of hafting and use. Sections showing heavy wear inversely correlate with “damaged” sections, suggesting retouch following use.
<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>Right side, top of upper half just below broken tip.</th>
<th>Bifacial flaking, fairly strong wear, jagged edge.</th>
<th>Suggestive of use.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Right side, bottom of lower half starting at base.</td>
<td>Strong polish, “pitted” appearance, wavy edge.</td>
<td>Suggestive of haft wear.</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Left side, center section across widest point.</td>
<td>Unifacial flaking, fairly strong polish, straight edge.</td>
<td>Suggestive of use.</td>
<td></td>
</tr>
</tbody>
</table>

**Notes**
All three sections exhibit evidence of use or haft wear.

<p>|   | A | Left side, center of blade above widest point. | Heavy unifacial retouch, strong wear. Wear much weaker below and above section. | Suggestive of use. |</p>
<table>
<thead>
<tr>
<th></th>
<th>Right side, center of blade across widest point.</th>
<th>Localized unifacial micro-flaking, strong polish.</th>
<th>Suggestive of use.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Left side, stem and inside of shoulder.</td>
<td>Little retouch, polished edge wavy at the shoulder and straight along the stem.</td>
<td>Suggestive of haft preparation/wear.</td>
</tr>
<tr>
<td>C</td>
<td></td>
<td>Suggestive of use.</td>
<td></td>
</tr>
<tr>
<td>Notes</td>
<td>All three sections show evidence of differential edge preparation, use and hafting.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Right side, just above widest point.</th>
<th>Irregular fine retouch pattern, light edge polish.</th>
<th>Inconclusive.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Left side, center part of upper half.</td>
<td>No systematic retouch, limited polish.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td></td>
<td>Left side, starting at base.</td>
<td>Steep unifacial flaking, very little polish.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------</td>
<td>------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>None of the sections show evidence of use-wear. Steep retouch on the base could indicate haft preparation or intended use as a scraper; this trait is seen on other specimens.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Left side, upper half of blade section.</th>
<th>Unifacial retouch, straight, fine edge, some polish. No fine retouch on tip.</th>
<th>Suggestive of use and retouch.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Right side, upper half of blade section.</th>
<th>Unifacial retouch, some polish.</th>
<th>Suggestive of use and retouch.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>B</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Notes</strong></th>
<th>Both sections show evidence of use and retouch.</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Description</td>
<td>Notes</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Left side, center of upper half. Worn, damaged edge, pitted appearance.</td>
<td>Suggestive of use.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sharp, undamaged edge below this section.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Right side, center of upper half. Heavily polished, blunt edge. Sharp,</td>
<td>Suggestive of use.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>undamaged edge below this section.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Right side, below widest point. Very aggressive unifacial retouch, localized</td>
<td>Suggestive of use.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>glossy polish, little polish below. No retouch on lower third down to base.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Notes Unifacial retouch switches face around the widest point on both sides.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Differential patterns of retouch and wear along the whole outline strongly</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>suggest use and hafting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Section</td>
<td>Location</td>
<td>Retouch Type</td>
</tr>
<tr>
<td>---</td>
<td>---------</td>
<td>----------</td>
<td>--------------</td>
</tr>
<tr>
<td>A</td>
<td>Right side, just above shoulder.</td>
<td>Unifacial retouch, very fine edge.</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Left side, above center point of upper half.</td>
<td>Aggressive unifacial retouch, jagged edge, some polish.</td>
<td></td>
</tr>
</tbody>
</table>

**Notes**: All three sections show evidence of retouch but the light wear observed is not conclusive of use.
<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>B</strong></td>
<td>Left side, center part of upper half.</td>
<td>Jagged, damaged edge, some polish.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>Right side, below widest point.</td>
<td>Largely unretouched, undamaged, wavy edge. Below this section, steep retouch, heavy damage.</td>
<td>Suggestive of haft preparation/wear.</td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>Right side, just below tip.</td>
<td>Strong unifacial retouch, wavy edge, pitted appearance, some glossy polish.</td>
<td>Suggestive of use.</td>
</tr>
</tbody>
</table>

**Notes**

All three sections observed are suggestive of use; the steep retouch observed on section A is differentially bleached then the rest of the surface, suggesting retouch and use happening long after the manufacture and perhaps original disposal of the artifact.
<p>| | | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>B</strong></td>
<td>Right side, just above base.</td>
<td>Steep retouch, unifacial on opposite face than higher on edge. Very little wear.</td>
<td>Suggestive of haft preparation.</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>Left side, just above widest point.</td>
<td>Strong wear, micro unifacial retouch, pitted appearance. Retouch switches face at widest point.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>All three observed sections are suggestive of use and hafting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>Right side, just below tip.</td>
<td>Strong unifacial micro-retouch, damaged edge, somewhat jagged, moderate polish in places.</td>
<td>Suggestive of retouch and use.</td>
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</tr>
<tr>
<td><strong>B</strong></td>
<td>Left side, just below widest point.</td>
<td>Attrition micro-flaking. Striated ground areas associated with adjacent surface grinding.</td>
<td>Suggestive of use and/or hafting.</td>
</tr>
<tr>
<td><strong>C</strong></td>
<td>Left side, just above base.</td>
<td>Bifacially damaged edge. Slight polish with some areas of high polish.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td>Right side, across widest point.</td>
<td>Lightly polished, moderately damaged edge. No clear retouch.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>Three out of four inspected sections present signs suggestive of use.</td>
<td></td>
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</tr>
<tr>
<td>A</td>
<td>Right side, just below tip.</td>
<td>No fine retouch visible. Light polish, stronger on crests. Edge mostly fine.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td>B</td>
<td>Left side, across widest area.</td>
<td>Heavy damage. Jagged, pitted edge, not polished. Damage much stronger then beyond section.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>C</td>
<td>Left side, just below tip.</td>
<td>Light damage on fine edge, slight polish. Some moderately large flake removals appear fresher than the rest of the surface.</td>
<td>Suggestive of use.</td>
</tr>
</tbody>
</table>

**Notes**

Use evidence appears limited to one side of the biface. Some evidence of retouch or damage done much after weathering of the piece.
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Condition</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Left side, just below tip.</td>
<td>Some unifacial retouch, some damage, light polish.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>B</td>
<td>Left side, central part of section between base and widest point.</td>
<td>Coarse unifacial flaking, some polish, fairly undamaged.</td>
<td>Suggestive of use and retouch.</td>
</tr>
<tr>
<td>C</td>
<td>Right side, just above base.</td>
<td>Some glossy polish on edge of deep flake scars. No visible fine retouch.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td>D</td>
<td>Left side, just above widest point.</td>
<td>Unifacial retouch, thin edge, light polish, light damage</td>
<td>Inconclusive.</td>
</tr>
</tbody>
</table>

**Notes**
Two of four sections show signs suggestive of use.
<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>Left side, just above widest point.</td>
<td>Finely, unifacially retouched, straight edge. Some damage and polish.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Left side, just above base.</td>
<td>Wavy, unretouched edge. Slight polish and damage.</td>
<td>Suggesting of area differentiation and hafting.</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>Right side, center part of section between widest point and tip.</td>
<td>Very similar to section A; Finely, unifacially retouched, straight edge. Some damage and polish.</td>
<td>Suggestive of use.</td>
</tr>
</tbody>
</table>

**Notes**
All three observed sections show signs of differential preparation and use.
<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Wear and Damage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Right side, center of section between tip and widest point.</td>
<td>Heavy, steep unifacial retouch, worn edge, moderate damage and polish.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>B</td>
<td>Left side, center of section between base and widest point.</td>
<td>Some retouch, mostly undamaged, unpolished, wavy edge.</td>
<td>Suggestive of haft preparation.</td>
</tr>
<tr>
<td>C</td>
<td>Left side, just above base.</td>
<td>Unifacially retouched, damaged edge, worn appearance, overall light polish.</td>
<td>Suggestive of use.</td>
</tr>
</tbody>
</table>

Notes: All three observed sections show signs of differential preparation and use.
<table>
<thead>
<tr>
<th>52-27</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
</tr>
</tbody>
</table>

Left side, across widest point.

Strong unifacial micro-retouch/attrition flaking. Some polish and damage on high points. Collapsed section ends at widest point, below this retouch is not as fresh and the damage and polish is much stronger. Retouch switches face just below widest point where edge collapses into stem part.

Suggestive of use/retouch sequence.
<table>
<thead>
<tr>
<th></th>
<th><strong>Right side, center part of section between widest point and tip.</strong></th>
<th><strong>Systematic unifacial retouch, straight edge. Fairly strong damage and polish - pitted in sections. Above collapsed section edge is retouched but wavy; below is wavy and rough and has little to no retouch.</strong></th>
<th><strong>Suggestive of localized retouch and use.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C</td>
<td><strong>Right side, “shoulder” part where pseudo-stem begins.</strong></td>
<td><strong>Little to no retouch, heavy polish on high parts. Some localized damage. Retouch on lower part of left side begins at widest point.</strong></td>
<td><strong>Suggestive of differential treatment, haft preparation.</strong></td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>All three observed sections are suggestive of differential edge preparation, use and retouch.</td>
<td></td>
<td></td>
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<td>---</td>
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<td></td>
</tr>
<tr>
<td>A</td>
<td>Left side, just above widest point.</td>
<td>Systematic unifacial retouch, straight edge, some polish but mostly fine, undamaged edge. Above this section, edge is wavy and worn, retouch is minimal.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>B</td>
<td>Left side, across widest point.</td>
<td>Retouched edge, strong polish. Edge collapses just below widest point, creating a weak shoulder that is mirrored on the other side. Below collapsed section, no retouch, wavy edge.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
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<tr>
<td>---</td>
<td>---</td>
<td>---</td>
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</tr>
<tr>
<td><strong>C</strong></td>
<td>Right side, across widest point.</td>
<td>Straight edge, systematic retouch.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td><strong>Notes</strong></td>
<td>All three observed sections present evidence of differential edge treatment and wear and are suggestive of use.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>A</strong></td>
<td>Left side, central part of section between tip and widest point.</td>
<td>Fine retouch, fairly straight, fine edge. Little to no polish.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>Left side, just above base.</td>
<td>Coarse unifacial retouch, slightly wavy, polished edge.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td></td>
<td>Side</td>
<td>Section</td>
<td>Retouch</td>
</tr>
<tr>
<td>---</td>
<td>-------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>C</td>
<td>Right</td>
<td>across</td>
<td>Unifacial retouch, straight edge, light polish.</td>
</tr>
<tr>
<td></td>
<td>widest point.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Notes</td>
<td>While all three observed sections are inconclusive on their own, evidence of retouched, straightened edge along the upper blade and wavy, polished edges towards the base suggest differential edge treatment consistent with preparation for use and hafting.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Left</td>
<td>just above</td>
<td>Straight edge, fine unifacial retouch.</td>
</tr>
<tr>
<td></td>
<td>widest point.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Left</td>
<td>just below</td>
<td>Retouched, more damaged than polished.</td>
</tr>
<tr>
<td></td>
<td>widest point.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td>Observation</td>
<td></td>
</tr>
<tr>
<td>---------</td>
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<td>-------------</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>Right side, central part of section between tip and widest point.</td>
<td>Retouched, damaged and polished edge, somewhat wavy.</td>
<td>Suggestive of use.</td>
</tr>
<tr>
<td>Notes</td>
<td>All three observed sections show signs of differential preparation and use.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Left side, central area.</td>
<td>Heavier damage and broader edge than above and below. No retouch observed from collapsed shoulder area down to base.</td>
<td>Suggestive of differential edge preparation and use.</td>
</tr>
<tr>
<td>B</td>
<td>Right side, central area.</td>
<td>Fine, straight edge. Section just above is unretouched and wavy.</td>
<td>Suggestive of differential edge preparation and use.</td>
</tr>
<tr>
<td></td>
<td>Right side, towards base where edge collapses forming a weak shoulder.</td>
<td>Coarse retouch, on opposite face than rest of piece. Wavy edge, some polish.</td>
<td>Suggestive of differential edge preparation.</td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
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</tr>
<tr>
<td>Notes</td>
<td>Differential edge treatment and wear patterns on the observed sections suggests some use and haft preparation.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Right side, central part of lower half between base and widest point.</td>
<td>Jagged, pitted, damaged and polished, straight edge.</td>
<td>Suggestive of hafting.</td>
</tr>
<tr>
<td>B</td>
<td>Left side, just above widest point.</td>
<td>Steep retouch/damage, unifacial retouch switches face at this point.</td>
<td>Suggestive of differential edge preparation.</td>
</tr>
<tr>
<td></td>
<td>Left side, just above base.</td>
<td>Alternating unifacial retouch, wavy edge, fair amount of polish.</td>
<td>Suggestive of differential edge preparation.</td>
</tr>
<tr>
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<td>------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>A</td>
<td>Left side, center of upper half.</td>
<td>Jagged damaged edge, straight above the section, similar wear. Unifacial retouch changes face mid-section.</td>
<td>Suggestive of differential edge preparation.</td>
</tr>
<tr>
<td>B</td>
<td>Right side, center of upper half.</td>
<td>Fairly straight edge, light damage, minimal polish.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td>C</td>
<td>Differential treatment of edge sections suggests hafting, use wear evidence is inconclusive.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Section</td>
<td>Description</td>
<td>Notes</td>
</tr>
<tr>
<td>---</td>
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<td>-------</td>
</tr>
<tr>
<td>C</td>
<td>Left side, just above base</td>
<td>Jagged edge, unifacially flaked, light polish</td>
<td>Suggestive of differential edge preparation.</td>
</tr>
<tr>
<td></td>
<td><strong>Notes</strong></td>
<td>Two out of three sections are suggestive of differential edge preparation; wear appears uniform.</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Left side, stem edge between shoulder and base</td>
<td>Un-systematically retouched, wavy edge, fine, not damaged, very light polish.</td>
<td>Suggestive of haft preparation.</td>
</tr>
<tr>
<td>B</td>
<td>Left side, just above widest point</td>
<td>Edge straightened by unifacial retouch where necessary. Strong polish on crests but otherwise fine, undamaged edge.</td>
<td>Suggestive of differential edge preparation.</td>
</tr>
<tr>
<td></td>
<td>Left side, just below unretouched section leading to tip.</td>
<td>Aggressive retouch causing a break in the overall straightness of the edge.</td>
<td>Suggestive of differential edge preparation.</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td>C</td>
<td>Right side, center of upper half between widest point and tip.</td>
<td>Wavy, unstraightened; waviness perhaps due to aggressive retouch</td>
<td>Suggestive of differential edge preparation.</td>
</tr>
<tr>
<td>D</td>
<td>Notes</td>
<td>Differential treatment of the observed sections suggests some use, retouch and haft preparation.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Left side, center of upper half of blade.</th>
<th>Edge changing from jagged to straight towards tip.</th>
<th>Suggestive of use and retouch.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>B</td>
<td>Right side, opposite to section A.</td>
<td>Fresher damage/retouch, wear on edge and inside scars.</td>
<td>Suggestive of retouch, use or damage post deposition.</td>
</tr>
<tr>
<td>C</td>
<td>Left side of stem.</td>
<td>Wavy, damaged, worn edge.</td>
<td>Suggestive of hafting.</td>
</tr>
<tr>
<td></td>
<td>Notes</td>
<td>All sections suggest use, retouch and hafting. Evidence of post-deposition retouch and use may or not be due to modern damage.</td>
<td></td>
</tr>
</tbody>
</table>

<p>| | | | |</p>
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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>Left side, just above widest point.</td>
<td>Fairly straight edge, unifacial fine retouch, light wear.</td>
<td>Suggestive of differential edge preparation.</td>
</tr>
<tr>
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<tr>
<td>---</td>
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<td>---</td>
</tr>
<tr>
<td>A</td>
<td>Right side, just above widest point.</td>
<td>Jagged edge, bifacially damaged, turning to unifacially retouched, straight edge.</td>
<td>Suggestive of differential edge preparation and use.</td>
</tr>
<tr>
<td>B</td>
<td>Right side, just above widest point.</td>
<td>Fairly straight, unifacial retouch, light polish.</td>
<td>Inconclusive.</td>
</tr>
<tr>
<td>C</td>
<td>Right side, just above base.</td>
<td>Unretouched, damaged and polished.</td>
<td>Suggestive of hafting.</td>
</tr>
</tbody>
</table>

Notes
Two of three sections suggest differential edge preparation, hafting or use.
<p>| | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>B</td>
<td>Right side, just above base.</td>
<td>Jagged edge, unifacial retouch with bifacial damage, marked polish. Suggestive of use, perhaps hafting.</td>
</tr>
<tr>
<td>C</td>
<td>Left side, at widest point.</td>
<td>Minimal retouch, light polish, turning to heavy polish, jagged, damaged edge. Suggestive of use.</td>
</tr>
<tr>
<td>Notes</td>
<td>All three sections are suggestive of use and perhaps hafting.</td>
<td></td>
</tr>
</tbody>
</table>
Curriculum Vitae

Candidate’s full name: Alexandre Pelletier-Michaud

Universities attended (with dates and degrees obtained):

- Université Laval, 2007, B.A., Archaeology
- Université Laval, 2009, Certificate, Visual Arts

Conference Presentations: