The Significance of Feature 6-74 at the Bjorklund Site (EaLa-3)

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In 2014, Dr J H Steinbring published on-line an intriguing paper on the earliest North American rock art (Steinbring 2014). In his efforts to identify regional populations responsible for presumed Palaeo-Indian artwork, he called attention to a retrieved adult human burial ("Feature 6-74") from southeastern Manitoba.[1] It was excavated in 1974 at the Bjorklund site (EaLa-3), located near the confluence of the Winnipeg and Whitemouth rivers (Buchner 1982).

EaLa-3 as a whole was a multi-component site comprising Blackduck ("Component 1"), Laurel ("Component 2"), and Pelican Lake/Larter ("Component 3") occupations (Morlan et al 2000; Table 1, this paper). During excavation, these cultures were encountered in basically proper stratigraphic sequence, with some stratigraphic overlap (Table 1): the Blackduck occupation was the uppermost and hence the most recent; the Pelican Lake/Larter horizon was the lowest and hence the earliest, and the Laurel component was in the middle. It was with this Laurel occupation that the human remains were apparently associated (Fig 1).

Table 1: Stratigraphy at EaLa-3 (after Ens 1998)

Levels	DBS (cm)	Cultural Affiliations
1-3B	1-15	"MANITOBA"/BLACKDUCK
2A-4A	4-18	"LAUREL – MB TRANSITION VESSELS"
2A-5B	8-25	"LAUREL LEVELS"
4B-5B	20-25	"INITIAL APPREARENCE OF CERAMICS"
7B-8B	35-40	"PRECERAMIC"

[1] These remains have since been reinterred under the terms of the Province's Policy Concerning the Reporting, Exhumation, and Reburial of Found Human Remains (M Sitchon, personal communication, 2015).

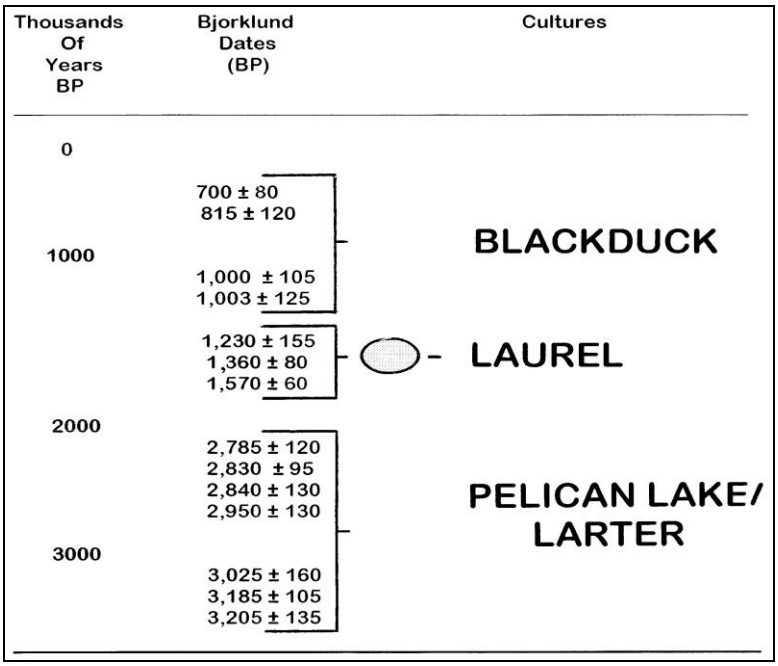

Fig 1. Chronology of the Bjorklund site. The oval represents the position of Feature 6-74.

Dr Steinbring perceived close similarities between the Bjorklund interment and another one – the Gordon Creek Burial – discovered in the 1960s in Colorado (Breternitz *et al* 1974:170). He writes, "there can be no doubt that the two burials reflect a *precisely identical* funereal pattern and probably occupy a similar time zone" (Steinbring 2014; italics mine). The Gordon Creek find yielded an AMS date of 9,650±50 BP[2] (Muniz 2004:253), and presumably this is the "time zone" to which Dr Steinbring assigns the Bjorklund feature which, if accurate, would make it of Palaeo-Indian antiquity and hence the oldest human osteological remains yet found in Manitoba.

Two radiometric assays (Morlan et al 2000:162) were initially run on Feature 6-74, with the following results: 1,360±80 BP (Gak-5447, on human bone), and 1,230±155 BP (GX-3603, on charcoal from the base of the burial pit); see Table 2.[3] The average of the two dates is separated from the one from Gordon Creek by some 8,200 radiocarbon years. However, Dr Steinbring (2014) rejects the two EaLa-3 dates; in his words, the burial "could not be dated accurately because a large rodent tunnel had penetrated the skeleton, carrying contaminants into and around the body cavity." Other writers have also acknowledged problems with the C-14 dates from EaLa-3 (e.g., Buchner 1982:105).

Altogether, a suite of 14 radiometric dates (including those relating directly to the burial as shown in Table 2) were run on materials from EaLa-3. All were compliant with the regional cultural sequence as it was known at the time of the excavation (1974), and

[2] All C-14 dates in this paper are expressed in radiocarbon years.
[3] A third (AMS) assay run on bone from the burial, produced a count of 1,570±60 BP (Ens 1998).

with the recent (post-3,500 BP) geological history of the lower Winnipeg River corridor (MacPherson 1968; MacPherson et al 1971) within which the site is located. Originally, the burial was provisionally deemed part of the middle (Laurel) occupation (Morlan et al 2000:162). Unfortunately, no diagnostic artifacts were found in association with the interment.

The important thing about these dates and the associated stratigraphy lies with the fact that seven dates from the levels beneath the burial-bearing middle component run from 2,785±120 to 3,205±135 BP. But how is that possible if the overlying occupation and associated burial are in the order of 9,650 BP as Dr Steinbring suggests via cross-dating with the Gordon Creek burial? Can it be that the entire complement of 14 EaLa-3 dates, which conforms to the local natural and regional cultural stratigraphies, is in error?

Even if we do not accept any of the EaLa-3 radiometric dates, problems still exist concerning the suggested 9,650-BP antiquity of Feature 6-74 if we take into account the local pedology and surficial geology. The burial was encountered at a depth of 30 inches BGS, or below the modern ground surface (Buchner 1982:6,104). This places it at the bottom (i.e., in the C horizon) of the modern Whitemouth-series Dark Grey Luvisol soil profile (Smith and Ehrlich 1967:90) with which the burial and encompassing occupation strata were associated.

But the stream-deposited alluvial parent material at the Bjorklund site could only have been laid down after Glacial Lake Agassiz had disappeared locally and the Winnipeg River channel was established. The geologists tell us that the final drainage of Lake Agassiz happened locally ~ 8,800 radiocarbon years ago with the stranding of the Emerado beach (Teller and Leverington 2004:Fig. 4I1). If this estimate is correct, then the burial can only be ~ 8,800 years old at the earliest, not ~ 9,650 years old as hypothesized by Dr Steinbring.

However, further complications arise with Dr Steinbring's hypothesis when we take into account the larger geological scenario. Up until 11,500 BP the future location of the Bjorklund burial was under ice (i.e., sub-glacial). After that and until ~10,600 BP, it was beneath the waters of Lake Agassiz during the lake's Lockhart and early (regressive) Moorhead phases. Around 10,600 BP the water level fell below the elevation of the future Bjorklund site locus, marking the onset locally of the low-level Moorhead phase. The lake level continued to descend to either the Burnside or the Ojata level (Elson 1967:92; Nielsen 1988:45), and then it began to rise again to high levels (Fig 2).

If it was indeed 9,650 years old, it was during this period of extended transgression that the Bjorklund burial could have been put in place. However, the water plane continued to rise, culminating in the Upper Campbell strandline at 9,400 BP (Teller and Leverington 2004: Table 1) and inundation of the site locus. Thereafter, the lake began its final

long-term decline, dropping by 8,800 BP to the Emerado level – the same elevation as that of the Bjorklund site (Fig 2) -- until the lake's terminal evulsion into Hudson Bay (Tyrrell Sea).

Table 2. Radiometric Dates from the Bjorklund Site (from Morlan et al 2000)

EaLa-3, Bjorklund: on a ridge, 259 m asl, above the north shore of Whitemouth River near its confluence with Winnipeg River, southeastern Manitoba (NTS 62 I/01). Three components include Blackduck, Laurel, and Larter or Pelican Lake. Sources: Buchner, 1979, 1982; Ens, 1998; Meiklejohn, et al. 1994.

GaK-4712, moose bone collagen, *Alces alces*, from component 1, submitted by A.P. Buchner

normalized age:	700 ± 80
	$\delta^{13}C$= -20‰e
uncorrected age:	620 ± 75

Significance: Woodland, Blackduck

GX-4146, beaver and moose bone collagen, *Castor canadensis* and *Alces alces*, from component 1, submitted by A.P. Buchner

normalized age:	815 ± 120
	$\delta^{13}C$= -20‰e
uncorrected age:	735 ± 120

Significance: Woodland, Blackduck

GX-4143, red fox bone collagen, *Vulpes vulpes*, from component 1, submitted by A.P. Buchner

normalized age:	1000 ± 105
	$\delta^{13}C$= -19‰e
uncorrected age:	900 ± 105

Significance: Woodland, Blackduck

GX-4142, beaver, otter, bear, moose, hare, and muskrat bone collagen, *Castor, Lutra, Ursus, Alces, Lepus*, and *Ondatra*, from component 1, submitted by A.P. Buchner

normalized age:	1003 ± 125
	$\delta^{13}C$= -20‰e
uncorrected age:	923 ± 125

Significance: Woodland, Blackduck

GX-3603, charcoal, from component 2, unit S55/E30, Feature 6-74, Level 15, from base of pit feature, submitted by J. Steinbring

normalized age:	1230 ± 155
	$\delta^{13}C$= -25‰e
uncorrected age:	1230 ± 155

Significance: Woodland, Laurel ?

NSRL-3127, human bone collagen (XAD-gelatin), *Homo sapiens* (1.44 mg), from component 2, feature 6-74, individual Z17, submitted by D.A. Ens

normalized age:	1570 ± 60
	$\delta^{13}C$= ?‰

Significance: Woodland, Laurel ?

GaK-5447, human bone collagen, *Homo sapiens*, from component 2, unit S55/E30, Feature 6-74, Level 15, bone within pit feature, submitted by J. Steinbring

normalized age:	1360 ± 80
	$\delta^{13}C$= -19‰e
uncorrected age:	1260 ± 80

Significance: Woodland, Laurel ?

GX-4144, bison bone collagen, *Bison* sp., from component 3, submitted by A.P. Buchner

normalized age:	2785 ± 120
	$\delta^{13}C$= -20‰e
uncorrected age:	2705 ± 120

Significance: Archaic, Pelican Lake (Larter)

GaK-4713, bison bone collagen, *Bison* sp., from component 3, submitted by A.P. Buchner

normalized age:	2830 ± 95
	$\delta^{13}C$= -20‰e
uncorrected age:	2750 ± 95

Significance: Archaic, Pelican Lake (Larter)

GX-4148, charcoal, from component 3, submitted by A.P. Buchner

normalized age:	2950 ± 130
	$\delta^{13}C$= -25‰e
uncorrected age:	2950 ± 130

Significance: Archaic, Pelican Lake (Larter)

GX-4149, bison bone collagen, *Bison* sp., from component 3, submitted by A.P. Buchner

uncorrected age:	2840 ± 130
	$\delta^{13}C$= -20‰e
normalized age:	2920 ± 130

Significance: Archaic, Pelican Lake (Larter)

GX-4150, bison and beaver bone collagen, *Bison* sp. and *Castor canadensis*, from component 3, submitted by A.P. Buchner

normalized age:	3025 ± 160
	$\delta^{13}C$= -20‰e
uncorrected age:	2945 ± 160

Significance: Archaic, Pelican Lake (Larter)

GX-4147, bison bone collagen, *Bison* sp., from component 3, submitted by A.P. Buchner

normalized age:	3185 ± 105
	$\delta^{13}C$= -20‰e
uncorrected age:	3105 ± 105

Significance: Archaic, Pelican Lake (Larter)

GX-4145, bison bone collagen, *Bison* sp. innominate, from component 3, unit N70/E45, Feature 2-75, Level 4B-6, submitted by A.P. Buchner

normalized age:	3205 ± 135
	$\delta^{13}C$= -20‰e
uncorrected age:	3125 ± 135

Significance: Archaic, Pelican Lake (Larter)

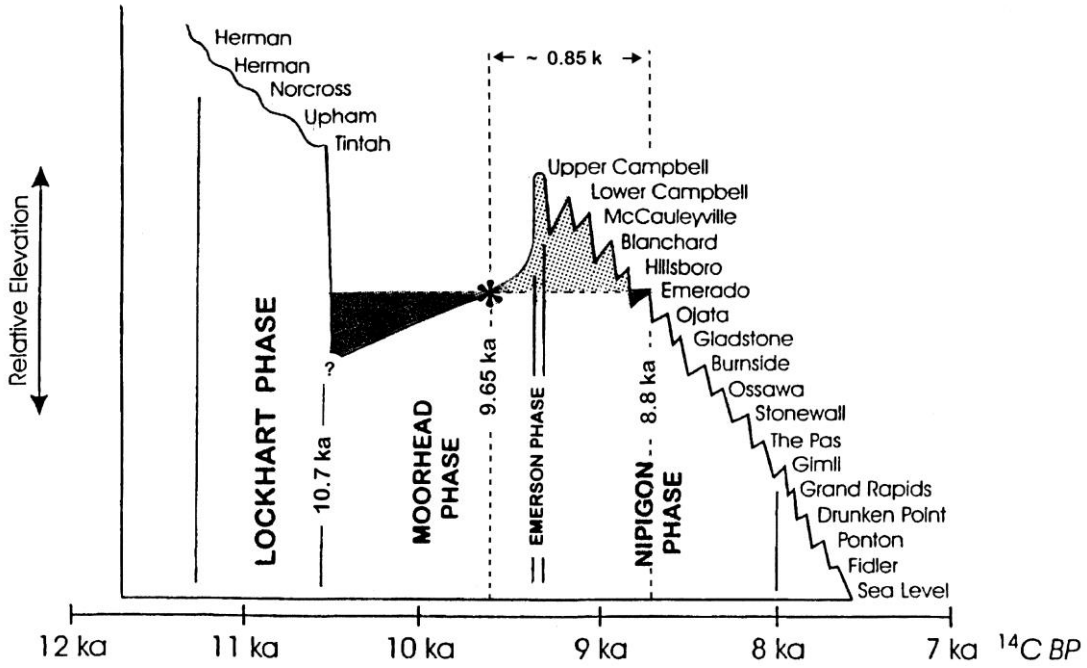

Fig 2. Temporal-elevational chart of Lake Agassiz history with particular reference to the 10,600-8,800 time period (adapted from Thorleifson 1996; Fisher and Souch1998; Leverington and Teller 2003; Fisher 2005; Fisher et al 2008). The asterisk marks the position of Feature 6-74 according to the Steinbring interpretation. The black wedges represent the times when, and the elevations at which, the Bjorklund site locus was sub-aerial. The lightly-shaded segment demarcates the time when, and the elevations at which, the site locus was sub-aqueous and being buried beneath > 25 ft of lake deposits.

This means that between ~ 9,650 and 8,800 BP – a period of some 850 years -- the offshore EaLa-3 location was not only uninhabitable but was being deeply buried under 25+ feet of lacustrine "mud" (MacPherson 1968:Fig 5; Fig 3, this paper) -- far beneath the 30-inches BGS depth in alluvium at which the burial was discovered in 1974 (Fig 3). In other words, if the EaLa-3 burial were 9,650 years old, it would have been found beneath >25 feet of Agassiz mud, including the 30 inches of modern alluvial soil, not just at the base of the modern soil profile in which it was in fact uncovered.

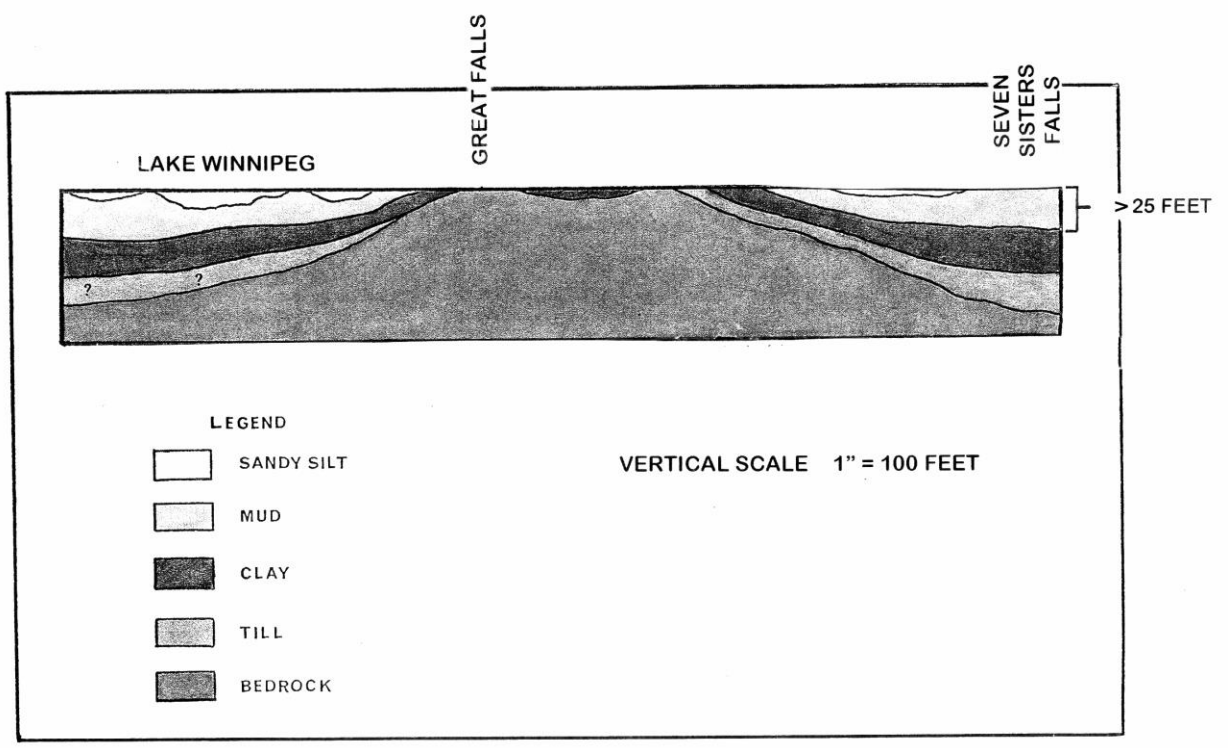

Fig 3. Geological cross-section from Lake Winnipeg on the north to Seven Sisters Falls to the south. The mud overburden, deposited between 9,650 and 8,800 BP, lies atop the surface of lacustrine clay in which the burial would have been placed if it were 9,650 years old. However, Feature 6-74 was found nowhere near that depth (> 25 feet). Diagram after MacPherson 1968).

Theoretically, then, there was a very brief window of opportunity (Fig 2) when a person could have been interred at the location of the Bjorklund site around the 9,650 BP time level. However, had that been the case, the feature would have subsequently been buried under > 25 feet of lacustrine deposits (McPherson, et al 1971:280; Fig 3, this paper) before Lake Agassiz withdrew from that portion of its basin for the last time and the site location was once again inhabitable by human beings (Fig 2). However, the burial was discovered, not at a depth of >25 feet BGS in lacustrine deposits, but at 30 inches BGS in alluvium that could not have begun accumulating until after 8,800 BP at the very earliest. In sum, Dr Steinbring's reasoning does not seem to have taken into account the Holocene geology or recent pedology (Fig 4) of the Bjorklund site locality.

Since no diagnostic artifacts were present with the Bjorklund burial, and if, following Dr Steinbring's lead, we reject the three C-14 dates from the burial itself, then about all we can suggest is that it was laid down between 2,785±120 BP (the latest date from the underlying pre-Laurel Pelican Lake/Larter occupation) and 1,003± 125 BP (the earliest Blackduck date from the site; see also Buchner 1982:115). That puts it thousands of years later than the Gordon Creek Burial, thereby rendering the latter a dubious basis for estimating the antiquity of the EaLa-3 feature.

In sum, there is no way Feature 6-74 can be as old as the Gordon Creek burial. It is indeed remarkable that Dr Steinbring has discerned close physical and cultural similarities between the Gordon Creek and Bjorklund site burials; and further scholarly attention should be accorded them if such is possible given the unavailability now of the EaLa-3 skeletal remains themselves.

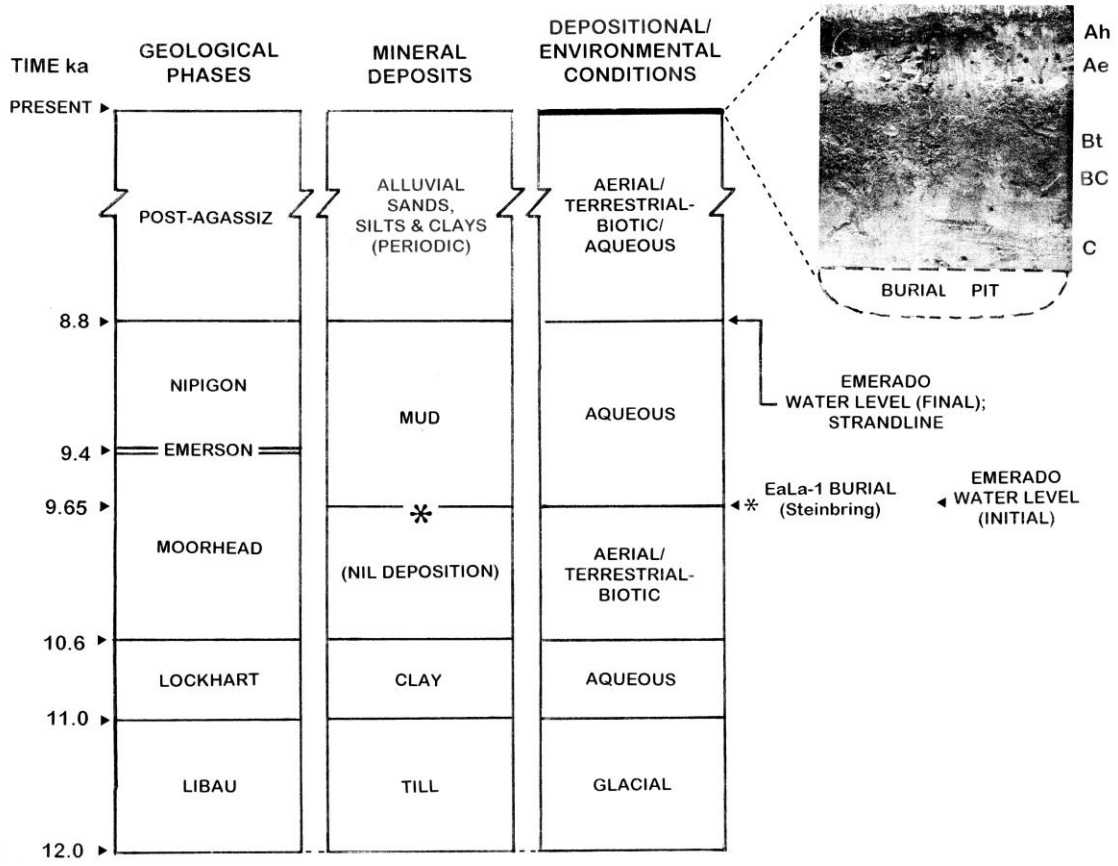

Fig 4. Correlation of the local geological, mineralogical, and environmental sequences of EaLa-3, ~ 12,000 BP - Present. The location of the burial feature (top right), as favoured by the present writer, is shown at the bottom of the modern soil profile. Its stratigraphic position as implied by an antiquity of ~9,650 BP is represented by the asterisk in the centre column.

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