

The Buffalo Jump

[The prairies are a] vast and worthless area ... a region of savages and wild beasts, of deserts ... cactus and prairie dogs ... to what use could we ever hope to put these great deserts? – Daniel Webster cited in Lewis Henry Morgan, 1859–62

These great Plains appear to be given by Providence to the Red Men for ever, as the wilds and sands of Africa are given to the Arabians. – David Thompson, 1784–1812

A couple of dusty pickup trucks ease their way off the gravel road onto the hard, baked prairie. The archaeology crew drops to the ground, dressed in hi-tech hiking boots, white sport socks, shorts made of space-age material with countless pockets and zippers, T-shirts and ball caps emblazoned with a variety of logos, dumb jokes, and names of rock bands. Shovels, pails, and toolboxes in hand, they shuffle over towards the imposing sandstone cliff, setting up for another day of routine work. Within moments their casual stride has them standing on soil where, long ago, people once ran frantically in all directions, their hide clothing covered in blood and guts, shouting instructions, whooping with excitement, sometimes crying in anguish, all trying to kill buffalo and to get out of the way of the wounded ones determined to kill them first. The screens for sifting soil from the dig are hung from tripods made of two-by-four lumber, set up at the same place where tens of thousands of bison came flying over the edge of a high cliff – the thundering of the deadly stampede ending with an eerie moment of silence as the animals became airborne, followed immediately by a series of horrible thuds, bellowing, and groans as the massive bodies slammed onto the earth and into each other. The crew members swing their legs into the excavation pits, dragging their simple digging tools with them, inspecting the dense layers

Imagining Head-Smashed-In

Archaeologists excavate the same piece of earth where ancient people once butchered buffalo. (left: Courtesy Royal Alberta Museum; right: Courtesy Head-Smashed-In Buffalo Jump)



of smashed bison bones they were working on the day before – the very same bones that once supported the mighty buffalo whose blood flowed into the parched soil and whose subsequent butchering left behind mounds of steaming entrails, retched stomach contents, and stinking excrement. As you set up a lawn chair and pour the first cup of coffee from your thermos, it can seem a little incongruous. Welcome to Head-Smashed-In Buffalo Jump.

The archaeological crew and the ancient buffalo hunters occupied the exact same place on the earth, just separated by time. When you become attuned to studying the past, it can be a strange and humbling experience to know that you are walking on the very same patch of earth as did people who, not such a long time ago, were of an utterly different culture and walked it under such unimaginably different circumstances.

There may be no other type of archaeological site that can match the drama, can fire the imagination, and has a story as utterly compelling as that of a buffalo jump. Certainly the archaeological richness of the globe – pyramids, temple mounds, ancient cities, and great stone monuments – is one of imposing structures and fantastic stories. But I wonder if any can compare to the sheer excitement of watching a buffalo jump or pound (a wooden corral) being used. Eyewitness accounts of mass bison kills reflect the horrific moment. “A dreadful scene of confusion and slaughter then begins,” wrote Henry Youle Hind in 1857, “the oldest and strongest animals crush and toss the weaker; the shouts and screams of the excited Indians rise above the roaring of the bulls, the bellowing of the cows, and the piteous moaning of the

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calves. The dying struggles of so many huge and powerful animals crowded together, create a revolting and terrible scene.”

It is surely one of the great dramatic stories in the course of human history. If a herd of one hundred bison were run off a cliff at a single event (a number considered average), there is nothing in the four million years of human evolution when a comparable amount of food was procured at one time. Elephants, mammoths, rhinos, giraffes, and other animals larger than bison have been preyed upon for thousands of years. But these were usually killed individually or, at most, a few at a time. Caribou and various members of the deer family have been killed in great numbers by hunters over various regions of the earth, but the resulting biomass of the carcasses would never approach that of a bison kill. Even the killing of a huge bowhead whale by the Inuit of the Arctic, the largest animal ever hunted by indigenous people, would yield less meat and fat than an average buffalo jump. Through millions of years of adaptation, mass killing of bison on the Great Plains

A successful buffalo jump would have been a spectacular event (literally earth-shaking) that provided a staggering amount of food, hide, and bone. (Courtesy Head-Smashed-In Buffalo Jump)

Next page: The beauty of the landscape masks the deadly purpose Head-Smashed-In served. The killing cliff is in the distance. (Courtesy Royal Alberta Museum)





of North America, using jumps and wooden corrals, was the most productive food-getting enterprise ever devised by human beings.

And of all the buffalo jumps known from across western North America, there is perhaps none more imposing, more perfectly designed, more consistently executed, more lethal than Head-Smashed-In. It has been recognized by the Province of Alberta as a Provincial Historical Resource, by the Government of Canada as a National Historic Site, and by the UNESCO World Heritage Organization as the premier example of a bison jump in North America. It is, if I may use the phrase, the Mother of all Buffalo Jumps.

This book is the story of Head-Smashed-In Buffalo Jump. But it is more than that. It is the story of tenacious people in their relentless pursuit of an extraordinary way of life. With few exceptions these people were, and still are, nameless and faceless. They exist in a land of shadows we call the past, a period as vast as it is murky. It is a period that, despite its intrinsic opacity, never fails to stir our curiosity and imagination. The past is the ultimate abyss. We can venture to the moon, to the bottom of the oceans, penetrate the deepest jungles, and explore the far reaches of the universe. We can never go to the past; hence, we can never truly know it. We can only approach it obliquely: poking, prodding, conjecturing, and mostly puzzling, as if peering around corners through the narrow lens of a periscope – seeing only little pieces of the past at any one time. But it is important to peer into this abyss. Because it reflects, mirror-like, what it means to be human. Because we learn about what human beings have been and of what they are capable. And because, if we look back far enough into this shadow land, we are all one.

People who are anonymous need not be unknown. It is the role of archaeology and history to breathe life into those whose voices have been stilled by time. Studying the past comes with many serious obligations, just one of which is to engage in what is admittedly speculative when creating reconstructions of what life might have been like in ancient times. It can be a daunting prospect, knowing that you have to speak for people who are no longer here to speak for themselves. A great weight can descend upon you as you wonder if you have represented these voiceless cultures fairly, accurately, respectfully. But to not speak up would certainly be a disservice. It would condemn great amounts of information about ancient peoples to dusty library shelves and arcane academic publications, and deny most of humanity the

knowledge of spectacular triumphs and dismal failings of our fellow humans. More importantly, it would be a disservice to the history of a people who left no written history – people who deserve, as much as any of us, to have their story told. Why else study the past if not to bring it back to life?

For more than twenty-five years I have been linked with Head-Smashed-In Buffalo Jump. Sometimes, just as a visitor, I have walked along the top of the cliff where so many bison plunged to their deaths, and strolled through the Interpretive Centre where two million people have experienced the story of the jump. But mostly, Head-Smashed-In has been my career. As an archaeologist I directed excavations at the site for ten years, was a member of the team that planned and developed the interpretive centre, and I have stayed involved in the research and operation of the site. It is a place to which I continuously return: helping to train new guides, leading public tours, giving lectures, assisting with renovations to the display galleries. The story of the jump, and all that went into making the great bison kills possible, has captivated me. It's a story that should not be left, like the bones of the mighty beasts, to fade and decay with time.

The saga of hunting and killing buffalo at Head-Smashed-In is a paragon for the many stories from across the reaches of North America and beyond. At its core it is a story of courage and cunning, of violence and bloodshed, of survival and defeat, of a people's mighty struggle, spanning thousands of years, in one of the most challenging environments on earth. Before the development of agriculture and, eventually, industrialization, Aboriginal people all over the world hunted game animals as the staple of their ancient way of life. But none did so in a more spectacular fashion than the Aboriginal people of the Great Plains when hunting bison. The lesson from this story is simple; there is practically no limit to the depth of creativity human beings have brought to bear in order to make their world liveable. The ingenious solutions these hunters devised to stalk and kill mighty herds of bison were little known to archaeologists to begin with – existing in obscure and out-of-print historic literature and in the memories of Native elders – and are in danger of fading completely from modern knowledge. This should not happen. The story is simply too compelling, too inspiring, too important. It needs to be remembered for what it was – an astonishing triumph of intelligent humans over circumstances stacked overwhelmingly against them.

Imagining Head-Smashed-In



Horses were introduced to the Northern Plains early in the 1700s, giving rise to new methods of communal hunts such as this surround. Painting by George Catlin. (Courtesy Bruce Peel Special Collections Library, University of Alberta)

Communal Buffalo Hunting

Now ye manner of their hunting these Beasts on ye Barren ground is when they seek a great parcel of them together they surround them with men which done they gather themselves into a smaller Compass Keeping ye Beasts still in ye middle and so shooting ym till they break out at some place or other and so get away from ym. – Henry Kelsey, 1691, cited in Ewers, 1955

Head-Smashed-In is just one type of what are commonly called communal bison kills. These are not the result of a solitary hunter out searching for food for his family, nor of a couple of people working as a team. They are communal in the sense that many people, indeed many groups of people, had to come together and work co-operatively to make these great kills possible. In the more than twelve thousand years in which we can trace Aboriginal history in western North America, people discovered and exploited a bewildering array of ways to kill bison. They trapped buffalo that were mired down at watering holes, ambushed them as they plodded along ageless trails, drove them into deep snow banks where their short legs failed them, cornered them in dead-end canyons, killed them as they swam across rivers and lakes, drove them onto frozen lakes and rivers, herded them into wooden

corrals, and drove them over every imaginable kind of precipice. Certainly, solitary hunting, of a wide range of game animals, was a regular and continuous part of life for all Plains Indians groups since time immemorial. But communal hunting of bison was the mainstay of their existence.

Communal hunting brought people together, people who normally would not have lived together as one group. This book is about how these massive hunts took place and the aftermath of butchering and processing the spoils. Yet it bears mention that communal hunting, aside from providing critical supplies of food, also served a great number of social purposes in Plains culture. Any large-scale gatherings of dispersed groups of related people would have been precious moments in ancient times. Friends and relatives were reunited. Enemies eyed each other warily. Stories and experiences of times apart were shared. Marriages were arranged, trade goods exchanged, business conducted. Great ceremonies were held, songs sung, prayers offered. David Mandelbaum, the noted scholar of the Plains Cree, said that the meeting of Plains Cree at a mass buffalo kill was “the nucleus for a large gathering of families.” When you consider that nearly all the Plains groups spent thousands of years traversing an immense landscape, of necessity split into small groups of probably fifty to seventy people, coming together perhaps once or twice a year in numbers in the hundreds or a few thousand, you can appreciate the magnitude of the importance of these gatherings. They must have been extraordinary opportunities for meeting many necessary and rewarding social needs – something every bit as central to life as the mass provisioning of food. But that is another story, and another book. Whatever the perspective, communal hunts made life on the Plains not just possible but often quite comfortable.

There are many myths and stereotypes about Native people of North America, perhaps none more than for the tribes of the Plains Indians – the great horse-mounted warriors and hunters who have been the stuff of countless movies, books, TV shows and children’s toys. Indeed, to many the Plains Indians are the quintessential Native people, the very definition of “Indianness.” All a Seminole, a Hopi, a Dene, or a Haida person has to do is don an eagle feather headdress and, in the eyes of just about the whole world, the person becomes an “Indian.” In this book I will challenge some of these stereotypes, at least those that pertain to the buffalo hunters of the Plains. And for

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For people around the world, horse-mounted Blackfoot people as depicted in this photograph from the early 1900s became emblematic of Plains Indians. (Courtesy Glenbow Archives/NC 48-14)



my immediate purpose, let's consider the common image of ancient Plains people residing in a land as yet unmarked by the hallmarks of settlement and civilization, as living a hand-to-mouth existence in a state of near constant starvation.

The idea that the early life of Aboriginal inhabitants of the Plains might actually have been quite comfortable will come as a surprise to some readers. How could people possibly be comfortable while scrounging the barren, windswept Plains (on foot), subject directly to wild extremes of weather, possessing none of the modern conveniences we take for granted – all to secure a morsel to eat and a safe, warm place to sleep? Many Europeans painted a bleak picture of the Plains. “We have little apprehension of giving too unfavourable an account of this portion of the country,” Edwin James proclaimed in 1820; “The traveller who shall at any time have traversed its desolate sands, will, we think, join us in the wish that this region may for ever remain the unmolested haunt of the native hunter, the bison, and the jackal.” Lewis Henry Morgan, in 1859, stated “The prairie is not congenial to the Indian ... [as it] neither affords the cover and shelter which the Indian both desires and needs ... there is not a tree, not a shrub, nor a thing of timber with which to kindle his fire, nor a spring perhaps to slake his thirst.”

It's hard to imagine people living in such conditions as somehow in a state of peace, plenty, and tranquility. Yet the observations of Daniel Harmon, when exploring western Canada early in the nineteenth century, could hardly apply to a desolate people living on the verge of starvation: “In fact, those Indians, who reside in the large plains or

prairies, are the most independent, and appear to be the most contented and happy people upon the face of the earth. They subsist upon the flesh of the buffaloe." The bounty of the Great Plains, and the relative good life provided by hunting buffalo, was not lost on the extraordinary explorer and fur trader David Thompson. Nearly starved to death during his trek through the Rocky Mountains, he emerged onto the Plains and exclaimed, "As we are now in the land of the Bison we hope no more to be in want of Provisions."

Let us think back to people who roamed the Great Plains for the past twelve thousand years. There is no denying that life would have at times been excruciatingly difficult and immensely challenging. No doubt tragedy struck often: people died in battle, in accidents while hunting, of starvation and thirst, torn apart by grizzly bears, lost and frozen in relentless winter snow storms, from illness, and occasionally, if they were lucky, from old age. People in their fifties were old indeed, back then, and were probably revered for the knowledge, skill, luck, and spiritual power that had got them that far.

We can think about all the things that could go wrong in ancient times, because we can easily imagine how helpless we would be if suddenly put in that same environment and deprived of all the conveniences that make life both easy and possible. It is harder to think about things actually going right, about being comfortable in the past, because we could never picture ourselves surviving under the extraordinary conditions that confronted ancient hunters on a daily basis. We could never picture ourselves having the skill, stamina, knowledge, luck, and perhaps spiritual power to pull off a massive kill of a herd of huge beasts that could literally feed, shelter, and clothe a people for many months afterward. The stereotype of ancient Native people living on the verge of starvation and scrounging for existence is prevalent because nowhere in the popular media has the opposite ever been portrayed, and the reason it hasn't stems not so much from an attempt to denigrate the ancient way of life of Native people but, rather, from simple ignorance of the incredible story that lies behind the hunting of huge herds of buffalo.

If hunters of the Plains were engaged in the most rewarding procurement of food ever devised by human beings, maybe life wasn't so bad after all. After nearly perishing in the mountains, Lewis and Clark came back out on to the Plains and proclaimed, "Here we halted and dined, and now felt, by the luxury of our food, that we were

† Grinnell was also a devoted naturalist who played a key role in establishing Glacier National Park. He, not the namesake, founded the first John J. Audubon Society and published the first *Audubon Magazine*. A lifelong defender of Indian culture and rights, he was, ironically, the naturalist on George Armstrong Custer's 1874 and 1875 expeditions to the Black Hills and to the Yellowstone. Grinnell declined Custer's invitation for the following season, citing commitments at Yale's Peabody Museum. In the summer of 1876, without Grinnell, Custer marched on to infamy at the Little Bighorn.

approaching once more the plains of the Missouri, so rich in game." If hunting buffalo yielded a life of considerable comfort, you would expect that it would be remembered fondly. George Bird Grinnell, a great chronicler of Plains culture, interviewed Blackfoot elders decades after the end of the buffalo hunting days.† He reported that eyewitnesses to the final communal hunts "even now speak with enthusiasm of the plenty that successful drives brought to the camp."

Not Just Any Cliff

In some part of its course, [the] valley is bounded by precipitous cliffs ... Our guide informed us that the Indians, a few years since, destroyed every individual of a large herd of bisons, by driving them over the brink of one of these precipices. – Edwin James, 1820

I have driven countless times through the country of the northern Plains with friends or guests beside me. And one of the most commonly made statements as we pass yet another bedrock outcrop, steep river bank, sheer cliff – all of which are common to this broken, desiccated country – is, "Do you suppose that's another buffalo jump?" It's easy to be forgiving. After all, they are riding next to someone who studies these features, and it's not always easy to make conversation on arcane topics such as buffalo jumps. More to the point, the casual passenger simply doesn't know of the great range of aspects of the landscape that must be just right for a steep drop to have functioned as a buffalo jump.

As much as anything, this book is an answer to the question my passengers pose. The prairies are littered with cliffs, drops, inclines, and precipices that were never used by anybody for anything. Why a very few cliffs were selected to be something very much more is the story behind how a buffalo jump works (or in the negative sense, why so many seemingly suitable places were ignored by Native people). It all has to do with the application of ingenious trickery and astounding knowledge to an exceedingly complex set of landscape requirements that made most steep drops entirely unsuitable for driving bison to their deaths.

Many early European visitors to the Great Plains were privy to the inner workings of the great communal hunts and wrote of their amazement at the skill and cunning of the Native inhabitants in the art

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of rounding up, driving, and killing huge herds of bison. But occasionally the true genius of the trickery escaped them. Alexander Henry,[†] an otherwise astute observer of Native culture, attributed efforts to drive bison over a cliff to sheer laziness: “So much do these people abhor work that, to avoid the trouble of making proper pounds [wooden corrals], they seek some precipice along the bank of the river, to which they extend their ranks and drive the buffalo headlong over it.” This book aims to dispel such misconceptions. Not only were buffalo jumps an extraordinary amount of work; they were the culmination of thousands of years of shared and passed-on tribal knowledge of the environment, the lay of the land, and the behaviour and biology of the buffalo.

Most people who have ever heard of a buffalo jump by name have only heard of one: Head-Smashed-In. For over twenty years it has featured an award-winning interpretive centre, which has attracted over two million visitors. But the Plains of North America are littered with the remnants of buffalo jumps as well as other mass bison kill sites. The great majority of these are known only to a few archaeologists and local residents. We will never know how many buffalo jumps were constructed and used over the past thousands of years; many have yet to be discovered, many have disappeared due to natural erosion and to the destructive encroachment of modern settlement.

Select locations, such as this rocky edge of Pine Coulee in southern Alberta, fit the stringent criteria for use as a buffalo jump. (Courtesy Royal Alberta Museum)

[†] Confusingly, two Alexander Henrys figure prominently in the early fur-trade history of western North America, the older one being the uncle of the younger. Henry the elder travelled the west between 1760 and 1776. His nephew travelled the same territory between 1799 and 1814. All my references to “Alexander Henry” are to the younger; I have designated his uncle as “the elder.”

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It would be wrong to think these kinds of sites are rare. There are about a hundred sites in Alberta alone that are considered to be buffalo jumps or other mass kill places. There must be thousands of known jumps on the Great Plains and thousands more yet to be discovered. Of all the known jumps, Head-Smashed-In was chosen by UNESCO as the very best example of an extant site that typifies all the attributes of a classic Plains buffalo jump. If you only ever get to know the story of one site, Head-Smashed-In is it.

The Site

Twice I have seen buffalo corralled. The first time I was a small boy about four years old. We were camped near the North Piegan in the Porcupine Hills west of the present town of Macleod (Alberta). I don't remember anything about it except that I saw the dead buffalo in the corral. – Weasel Tail, as told to John Ewers, 1947

Head-Smashed-In Buffalo Jump is located in southwestern Alberta, Canada, about a hundred and seventy kilometres south of Calgary and twenty kilometres west of the town of Fort Macleod. It lies at the very southern terminus of a group of beautiful rolling hills known as the Porcupine Hills. They are not true hills, in the sense that they were never uplifted by massive forces within the earth, as mountains were. Rather, they are the remains of a landscape that was once all at the same level as the tops of the hills. That is, they are an erosional remnant (called a *penplain*). The land all around was once all of this same height, and erosional forces over millions of years wore most of it down to the current level of the surrounding plains. But the sandstone bedrock that lies within the area now known as the Porcupine Hills was just slightly harder than elsewhere and so resisted the erosion and remained higher than other areas. The Porcupines, since they lie just to the east of the towering peaks of the Rocky Mountains, are often thought to be part of the mountain foothills. They are not. The Rockies and foothills were uplifted from within the earth, and the Porcupines are unrelated to this event. But the erosion of the Porcupine Hills sandstone left behind many jagged escarpments of bedrock along the flanks of the hills, so that every now and then, although not often, these bedrock walls just happened to lie in precisely the right place for Native hunters to make use of them.

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Head-Smashed-In Buffalo Jump is located in south-western Alberta, about one hundred kilometres north of the Montana border. (Courtesy Head-Smashed-In Buffalo Jump)

The Porcupine Hills stretch for about a hundred kilometres, rising from the Plains south of Calgary and ending to the west of Fort Macleod. They lie like a giant cigar on the land, but a convoluted one, full of wrinkles. The rolling nature of the hills makes for perfect country for bison to live and perfect country in which to hunt them. The wrinkles on the landscape afforded places for bison to graze in a diverse set of environments. The high, exposed hillsides offered sparse grass cover but had the advantages of strong winds for relief from insects and a commanding view for monitoring predators. The deeply carved valleys provided water, thick grass, and trees and brush for shelter from storms. The very same convoluted topography offered many opportunities for ancient hunters to manage the herds, to locate and spy on them, to follow the animals but still remain hidden, and to show themselves when appropriate to do so. One of the key reasons why Head-Smashed-In is one of the premier bison kill sites is because of the deeply complex nature of the topography of the Porcupine Hills. Many other buffalo jumps are simply steep drops at the edge of a broad prairie. They offer no cover for the hunters to use in manipulating the herds. Accordingly, many of these sites were used only a few times, some only once, and some were constructed but never saw a single bison fall to its death. Head-Smashed-In was certainly used hundreds of times, possibly more. It is estimated that the blood of more than one hundred thousand buffalo has soaked into the earth at Head-Smashed-In.

Imagining Head-Smashed-In



Head-Smashed-In, in the centre of the picture, is situated on an east-facing cliff of sandstone in the Porcupine Hills. (Courtesy Head-Smashed-In Buffalo Jump)

The Cliff

On the north we passed a precipice about one hundred and twenty feet high, under which lay scattered the fragments of at least one hundred carcasses of buffaloes, although the water which had washed away the lower part of the hill must have carried off many of the dead. These buffaloes had been chased down the precipice in a way very common on the Missouri, and by which vast herds are destroyed in a moment. – Lewis and Clark, 1804–06

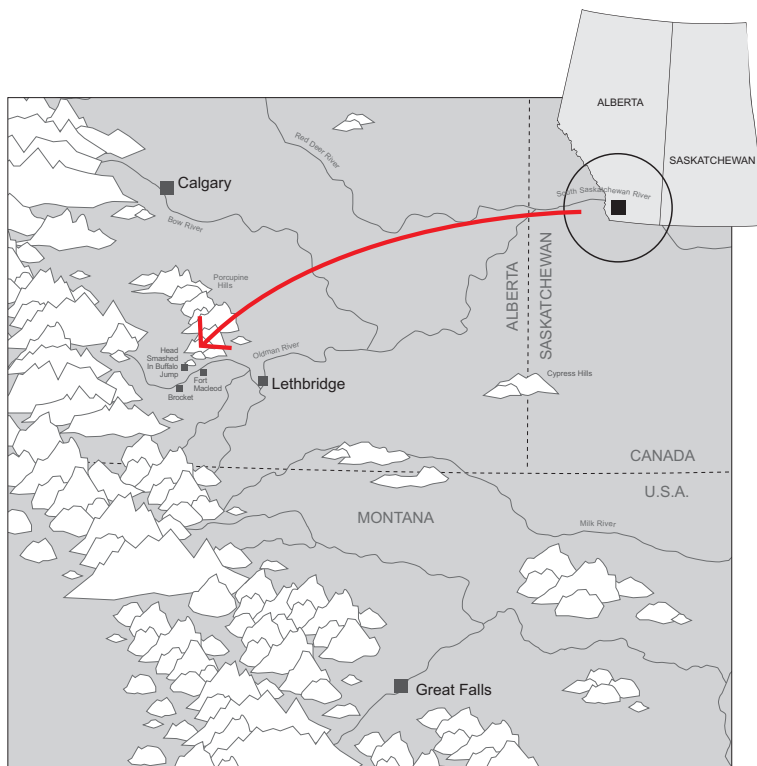
Unlike the Rockies, where the beds of rock are thrust up and tilted, the sandstone that forms the jump-off at Head-Smashed-In lies in straight, horizontal layers. This is to be expected when the sand that composes the hills was deposited at the bottom of a great inland ocean. The fine layers of slightly different sediment within the massive sandstone of the hills form bedding planes, which cause the exposed edges of the rock to break off in large angular blocks and topple from the cliffs. This process has been going on for millions of years, and as rocks keep toppling, the face of the cliff slowly retreats toward the centre of the hill. The fallen blocks land at the base of the cliff, where they roll, shatter, and are slowly covered with fine wind-blown sand and silt. The result is an apron that forms all along the exposed edges of the cliff. This apron is naturally highest up against the bedrock, where most of the toppling occurs, and it tapers as it slants down to meet the

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lower level of the surrounding prairie. The killing took place at the high end of the apron, near the rock face, where a small bench lies in the shelter of the cliff.

The top of the cliff at the main kill site of Head-Smashed-In is now about ten metres higher than the bench of the apron, but it would have been even higher during the millennia when bison were being slaughtered. While the cliff has not got any higher (in fact, continuing erosion has made it slightly lower) the apron has. Over the years that the site was used, bedrock continued to topple, vegetation grew and died, soil drifted in, and the bones of countless buffalo were added. From the main kill site, the edge of the cliff trends roughly north to south, and as it moves in both directions, it gets gradually lower until it is just a few metres high.

The deepest and oldest buffalo bones and stone tools recovered at Head-Smashed-In are found nearly ten metres below the current surface of the apron. The math is easy: the cliff is currently ten metres



The buffalo jump is located at the very southern end of the Porcupine Hills, north of the Oldman River, and west of the town of Fort Macleod. (Courtesy Royal Alberta Museum)

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The cliff face at Head-Smashed-In is now a ten-metre vertical drop. It was likely higher in the past. (Courtesy Royal Alberta Museum)

above the apron, and the oldest bones are buried nearly ten metres below the top of the apron. This means that the first animals to plunge over the cliff at Head-Smashed-In were falling nearly twenty metres. Undoubtedly this was a lethal drop, and few of the fallen animals would survive. Many buffalo jumps shared this same deadly trait. Alexander Henry wrote in 1809 that bison “not killed or entirely disabled from the fall ... are generally so much bruised as to be easily dispatched with the bow and arrow.” But over time, as the apron at Head-Smashed-In rose against the face of the cliff, the height of the drop continued to diminish, which meant that more animals would only have been wounded and would have to be killed by hunters waiting below.

How Long Have Buffalo Jumped?

The usual manner of hunting buffalo was by making pens at the edge of a precipice and driving the animals over, sometimes killing them by hundreds and even thousands. – Lt. Bradley, cited in Ewers, 1968

With the oldest bones and artifacts buried some ten metres below the current ground surface, Head-Smashed-In surely ranks as one of the deepest sites in North America. It also presents enormous challenges to archaeologists. Excavating to that great depth is both tricky and

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dangerous. The sides of the excavated areas must be shored up with massive beams and plywood to prevent what would surely be a fatal collapse of soil on the crew members. Besides being one of the deepest and thus most hazardous, Head-Smashed-In is also one of the oldest buffalo jumps, maybe the oldest, depending on who you believe.

The oldest layers of buffalo bones and stone tools at Head-Smashed-In date to about fifty-eight hundred years before present (BP). The only known exception is a site in Texas called Bonfire Shelter. Excavation of the small shelter in the rock at the base of a high, steep cliff produced artifacts and bison bones dated to ten thousand years BP. Those excavating Bonfire Shelter argued that bison were driven over the high cliff and butchered at the mouth of the small rock shelter. But others are not so sure. The site lies near the end of a narrow gulley, and some archaeologists think that herds of bison were ambushed as they grazed in the canyon and the butchered parts were then brought into the shelter. The jury is still out on this debate, and so the status of Head-Smashed-In as the oldest buffalo jump remains ambiguous. It does seem odd that Native inhabitants of Texas discovered how to drive bison over a cliff ten thousand years ago but another four thousand years would pass before anyone else would try the trick again.

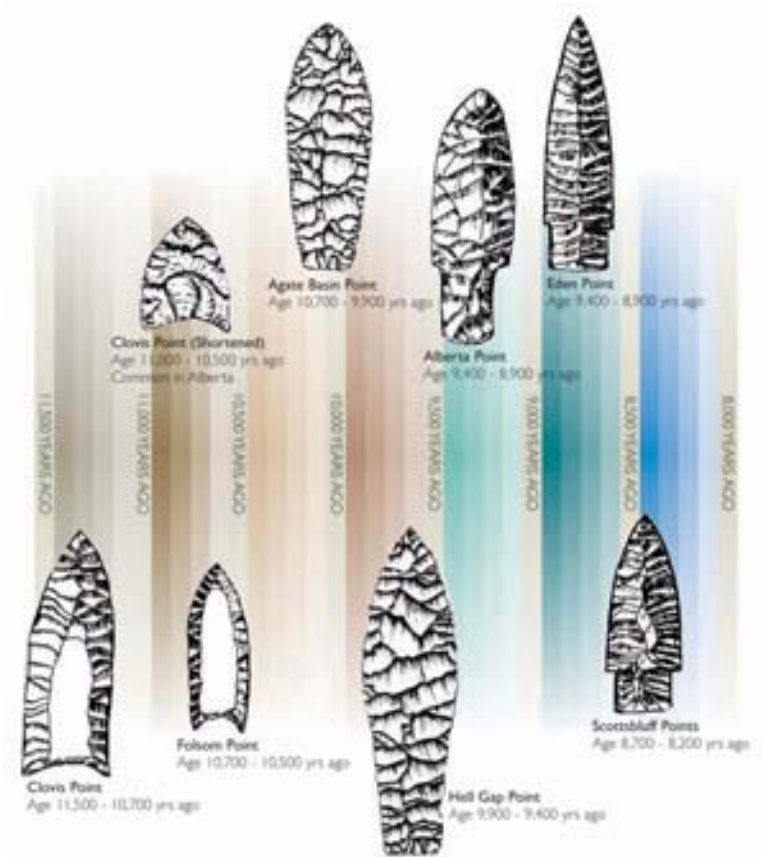
Whatever the case, Head-Smashed-In is among the oldest of buffalo jumps. Furthermore, there is solid evidence that ancient hunters



The first major dig at Head-Smashed-In was begun in 1949 by Boyd Wettlaufer, a pioneer in the archaeology of western Canada. (Courtesy Royal Alberta Museum)

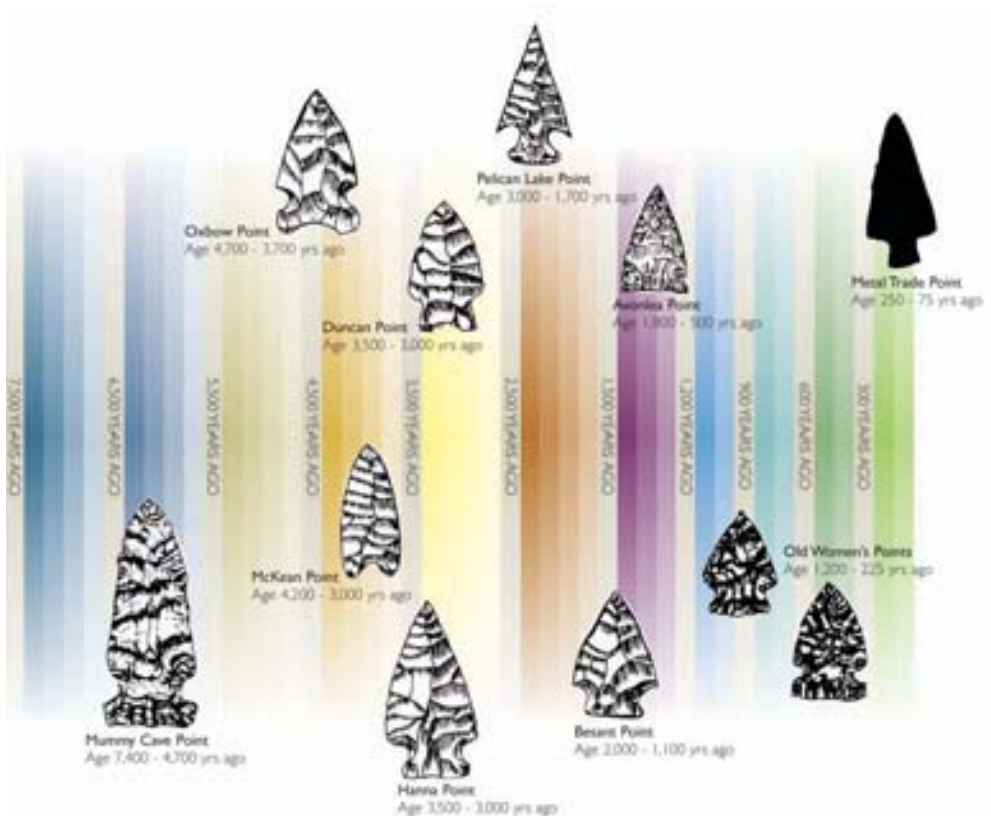
Imagining Head-Smashed-In

These are typical styles of spear points found at archaeological sites on the Northern Plains, arranged by age from left to right. (Courtesy Royal Alberta Museum)



inhabited the site more than nine thousand years ago. One of the earliest archaeologists to excavate Head-Smashed-In, Boyd Wetlaufer, was working at the site in 1949. The farmer working the land at the time had made good use of the natural spring that flows out from under the sandstone bedrock. The spring, probably over thousands of years, has carved a narrow V-shaped channel that cuts through the slope beneath the cliff and then flows across the prairie. The farmer bulldozed an earthen dam at the base of the slope, making a pond of a small pool of spring water for his cattle. Bulldozing the earth beneath the cliff exposed a wealth of artifacts, including stone tools and buffalo bones. Among the stone tools Wetlaufer found were two spear points of a style known to be extremely ancient.

If the truth be told, archaeologists can't tell much about the age of many stone tools simply by looking at them. The reason for this



ignorance is simple: the style of many stone tools didn't change for thousands of years. Over much of North America, stone chipped or ground into tools used for cutting, scraping, drilling, and hammering remained pretty much the same over great periods of time. Thus, handed a simple stone knife I can't tell you if it is eight thousand or five hundred years old. To find out the age of generic-looking tools, such as stone knives and scrapers, you need to recover them lying in the ground next to something that can be dated using the radiocarbon technique, such as bone or wood. Stone tools themselves cannot be dated with the radiocarbon technique, but points used to tip killing weapons are a different kettle of fish.

Points changed in style over time, both with different groups of people and with different types of weapons. The oldest type of weapon used in North America is the simple thrusting spear. The stone points that tipped them were large and heavy – much too big to have been used on arrows. (The bow and arrow is relatively recent on the Great

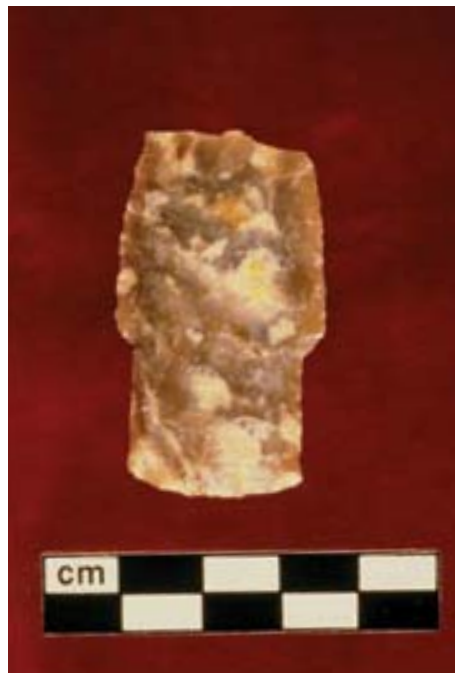
These styles of points were attached to long throwing darts and, beginning with Avonlea, to arrow shafts, by Northern Plains hunters. (Courtesy Royal Alberta Museum)

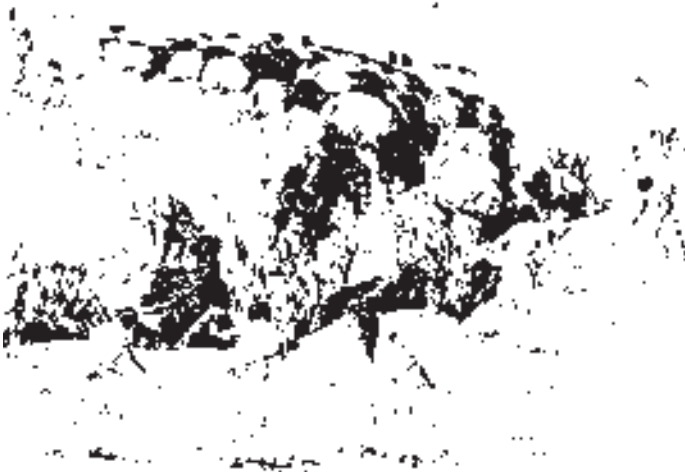
Imagining Head-Smashed-In

Plains, dating to just the last two thousand years.) Spear points come in all kinds of shapes and sizes, reflecting the people who made them at different places and in different times. Now that many sites have been excavated and dated across North America, we have a pretty good idea of the changing styles of spear points, and archaeologists have usually named these styles based on the first place they were discovered. Thus, Clovis spear points, first discovered near Clovis, New Mexico, are known to date to about eleven and a half thousand years ago, while Folsom points, also from New Mexico, date to about ten and a half thousand years ago. And so on.

What Boyd Wettlaufer found scraped up on the earthen dam in the spring channel at Head-Smashed-In were two examples of a spear point type known as Scottsbluff. These are large, beautifully made points first recognized as a distinct variety at a site near Scottsbluff, Nebraska. They have been repeatedly dated in the age range of nine to nine and a half thousand years BP. What does this tell us about Head-Smashed-In Buffalo Jump? Does it indicate that people were driving bison over its sandstone escarpment at the same time that Bonfire Shelter was being used?

Boyd Wettlaufer found this Scottsbluff-style spear point on the prairie beneath the cliff at Head-Smashed-In. The find indicates the site was occupied some nine thousand years ago. (Courtesy Royal Alberta Museum)





Nine thousand years ago the people who made Scottsbluff spear points may have driven herds of bison into the spring channel at Head-Smashed-In. (Courtesy Head-Smashed-In Buffalo Jump)

The simple answer is no. The two Scottsbluff spear points that Wettlaufer found came from within the spring channel at the base of the slope where the prairie begins. They did not come from the deep excavations conducted at the base of the cliff where the oldest layers of buffalo bones and artifacts had been discovered. In other words, these ancient points were not found in association with the use of Head-Smashed-In as a buffalo jump. Rather, they indicate that sometime around nine thousand years ago people occupied the flats that extend to the east of the sandstone cliff.

Until more excavations at the site are conducted, it is anyone's guess what people were doing at Head-Smashed-In that many years ago. Perhaps they camped on the pleasant flats beneath the cliff, cut up parts of game animals they had killed, cooked a few meals, collected local berries or wood for fires, erected some form of shelter, and then moved on. Intriguingly, makers of the Scottsbluff points may have even driven bison to their deaths at Head-Smashed-In, but they would not have done so by bringing them to the edge of the cliff. It's possible that Wettlaufer's finding of ancient spear points in the bottom of the spring channel is not fortuitous; perhaps as early as nine thousand years ago hunters ran small herds of bison into the spring channel, then killed and butchered them on the spot. Whatever the case, hunters apparently camped in the shadow of the great cliff, not realizing the lethal potential of the sheer face of rock. That would come thousands of years later, about fifty-eight hundred years ago.

Blood on the Rocks: The Story of Head-Smashed-In

There is no doubt that the name of the site is unusual and intriguing. There are a lot of people who can't quite figure what to make of it. It shows up as a question in the game *Trivial Pursuit*, it appeared in the humour magazine *National Lampoon*, it was jokingly discussed by the widely syndicated newspaper columnist Dave Barry (who just simply couldn't believe that there was a place in the world where you could dial a phone number and someone would answer, "Head-Smashed-In Buffalo Jump. May I help you?"). The unusual name of the site has presumably led quite a few tourists to veer off the main highway just to see what the heck a place called Head-Smashed-In could possibly be. There is a great and tragic story behind the name of the jump, but stories in Blackfoot culture aren't just stories; they are also the way history is reckoned and recorded.

During the ten years I directed archaeological excavations at Head-Smashed-In Buffalo Jump we intentionally set up our dig so that we were located in the heart of the tourist area. We wanted people to see us, approach the dig, linger, and ask questions. Our excavation was right out in the middle of what we call the processing area, a broad expanse of prairie stretching away from the cliff, where the carcasses of the slain animals were dragged down from the kill to be fully butchered (processed). The sheer cliff towered behind us, often lit in a warm golden hue from the mighty sun beating against the beige sandstone rock. The Porcupine Hills sandstone is rich in iron content, and when the iron particles are exposed to the elements they oxidize, turning a rusty orange colour. Portions of the cliff face are swathed with patches of reddish rock. In a decade of greeting tourists at the site of our excavations, I can't count how many people pointed to the red splotches on the cliff face and deduced how clever the Native hunters were to drive the bison over the prairie, up the slope, and smash them face first into the sandstone cliff.

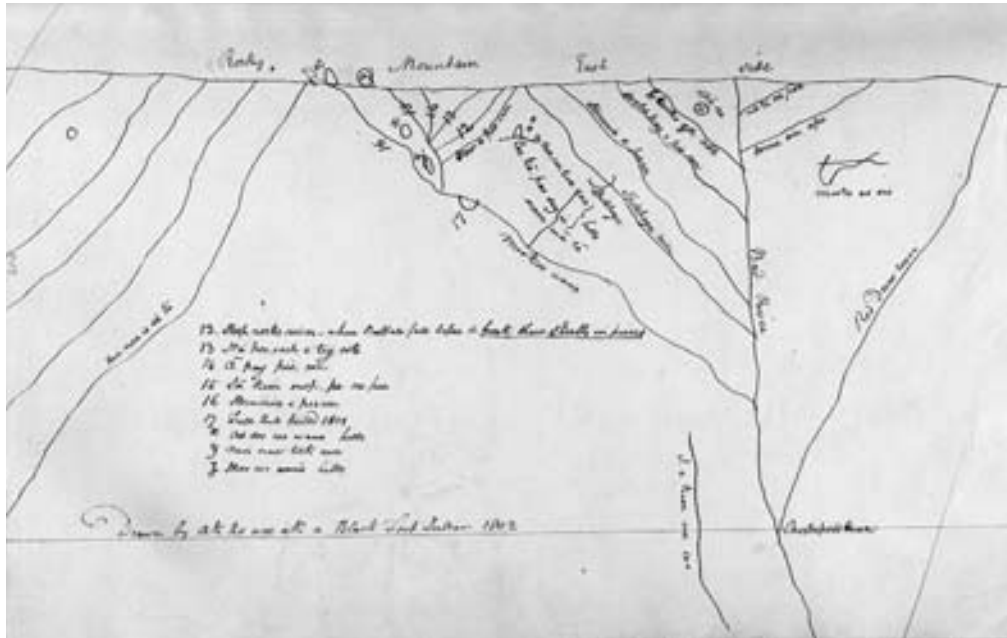
The real story is just as good. Only the iron stains aren't blood, and the blood isn't that of the buffalo. There is a traditional story handed down through generations of Piikani (also known as Peigan, one of the three divisions of the Blackfoot people) elders. One of the times when the jump was being prepared for use, a young man, too young to be involved in the immediate chase and kill, wanted to be part of the great event. He had seen previous jumps take place and, like everyone,

was enthralled with the sight of the huge beasts pouring over the cliff. He asked if he could witness this first hand by hiding under a ledge of the cliff, just below where the plunge would take place. And so he scampered along the cliff until he found a protective overhang and plastered himself against the rock face. The drive of animals began.

The spiritual power was strong that day. A great herd was brought forth and buffalo poured from the cliff like a waterfall. The brown, shaggy bodies slammed into the earth and piled one upon each other. Higher the mass of bodies grew until finally it reached the hiding place of the young man. He disappeared from view. When the waterfall of bison finally came to an end, the hunters waiting below scrambled up the slope of dead and dying buffalo, pulling them away from the rock face. They found the young man crushed against the cliff, his head smashed in.

The story has been a source of consternation among the Blackfoot elders who for years helped with the development and interpretation of Head-Smashed-In. It most decidedly is a well-remembered story in their culture, and there is ample historic evidence for a place on the east side of the Porcupine Hills that is called something like Head-Smashed-In. The great fur trader and explorer Peter Fidler trekked through southern Alberta in the late 1700s and early 1800s. Along with fascinating journals (he was the first white person to contact certain Native groups in southern Alberta), he consulted a map of the western Plains drawn for him by an Aboriginal informant. Many of the place names are in Blackfoot, but in one place there is a dot on the map and the notation, "Steep rocks where buffalo fall before and break their skulls all to pieces." Of course, the map is not precise enough to determine the exact location of the site. About a hundred years later, George Dawson, one of Canada's pioneer and legendary geologists, also traversed the country of southern Alberta. He left detailed maps and journals of his journey, recording many place names and significant features including a number of buffalo jumps. Among the names of jumps he recorded is "Where we smashed their heads in the mud." Again, the map he prepared is insufficient to compare with the modern location of the site. There is no doubt that these two travellers recorded a buffalo jump with a name much like the one we now know as Head-Smashed-In. But was this site the jump now known around the world as a UNESCO World Heritage Site? Or was this some other site, presumably nearby but (for the moment at least) a place lost to history?

Imagining Head-Smashed-In



A map drawn by a Blackfoot man, Ackomokki, for Peter Fidler in 1802 plots a place (#12) with the caption: "steep rocks where buffalo fall before and break their skulls all to pieces." This is certainly a buffalo jump but it is impossible to conclude that it is Head-Smashed-In. (Courtesy Hudson Bay Company Archives/N4797)

Many Blackfoot believe the latter. They assert that the story of how Head-Smashed-In got its name is quite correct but that the location is wrong. They maintain that the buffalo jump where the young man met his unfortunate end is actually located elsewhere, often said to be somewhere on Willow Creek, a tributary to the Oldman River to the north of Head-Smashed-In. I sat in many meetings where I was lectured on how we got the wrong name for this place. Patiently I tried to explain that perhaps this was the case, but the name was now enshrined on numerous road signs, plaques, brochures, in travel information, the World Heritage list, and throughout the displays inside the interpretive centre. I hinted at how difficult it would be to change it now. Inevitably I was met with knowing smiles and nods of heads. The elders understood the economics and the politics of the situation. They knew the name was likely fixed for good. They just wanted to make sure I knew that we got it wrong. Of course I had to ask, so what did you call this place? I only ever got one answer: "We always just called it the buffalo jump." Which seemed to make sense: if there was one jump that stood out against all others, if there were a Mother of all Buffalo Jumps, I think that's what it might be called.