Getting out of the Head-Smashed-In camp must have been a far bigger chore than getting in. People were leaving with tens of thousands of kilograms of bison products that they didn’t have when they arrived, and it all had to be hauled away by the people themselves, and by their dogs, using a sled of crossed poles lashed together (a *travois*). It is inconceivable that the several hundred people who occupied the campsite could take everything with them in one trip. Given the tremendous loads that had to be carried, and the need to make the trip several times, where would these people go?†

Flowing west to east past the southern end of the Porcupine Hills and coming within a couple kilometres of the buffalo jump is one of the major waterways of southern Alberta, the Oldman River. It didn’t get its name from the song but, rather, from the translation of the word the Blackfoot had given to the river. *Napi* means Old Man, in Blackfoot; the Oldman River is Napi’s river. Napi is one of the most important characters in the spiritual world of the *Niitsitapi,*

† Father Hennepin remarked on the amazing strength of Native women, claiming that when moving camp they routinely carried 200 – 300 pounds of gear.

*Packing up the spoils of the kill and moving off to better campsites would have been an enormous chore, which took hundreds of people several days. (Courtesy Head-Smashed-In Buffalo Jump)*

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Imagining Head-Smashed-In

† Many of the original names for Aboriginal groups across North America translate as “the people” or “the real people.” This is true for tribal names such as Inuit, Beothuk, Innu, and Dene among many others. Names we are more familiar with were often given to the people by visiting Europeans, such as Sioux, Gros Ventre, and Nez Perce, which were named by the French.

In contrast, Aboriginal groups tended to call their neighbours by less flattering, derogatory terms. After all, they were not part of the “real people.”

The Blackfoot people; literally, the Real People.† Napi’s river was the lifeblood of the Niitsitapi. It provided dependable water year round, an important avenue of transportation, shelter from winter, and trees for fuel, and it attracted game animals that the people depended upon. Most important to our story, it provided a close refuge from the buffalo jump, a place to retreat to with the spoils of the kill.

Recalling that we believe many of the great communal kills were conducted in the fall to secure supplies for the coming winter, the people leaving Head-Smashed-In would have been seeking a suitable winter campsite. The valley of the Oldman River offered everything the hunters required for winter survival. Best of all, it was exceedingly close. Round trips from the jump to the valley, even with heavy loads, could be completed in a couple of hours. Even while the butchering was still going on, men, women, and children carried loads on their backs, and every dog pulled a travois with piles of meat and hides.

Seen from above it must have resembled a procession of ants - small, dark objects in sinuous lines connecting the source of food with the place that was to become the nest.

The valley of the Oldman has extensive flatlands where floodwaters have smoothed the earth. These flats offered an almost endless expanse of places to spread out in a large camp and to finish the business of converting the bison remains to food and products of hide. I can picture the dozens, perhaps hundreds, of bison hides stretched out
to full size and pinned to the valley bottom with wooden pegs, looking like big brown scabs on the landscape. Dozens of tipis would have been pitched across the flats, clustered into small groups of closely related kin. Tipis might have been set close to the steep banks of the valley, using the surrounding high ground to protect people from the fury of winter winds and storms, or perhaps in amongst the cottonwoods that, serpent-like, hugged the meandering course of the river. In autumn, fires and cooking pits were scattered around and between the clusters of tipis, and the camp would have been a buzz of outdoor activity. But as winter approached, gathering wood began in earnest, and the chores of daily life moved indoors. A more perfect winter camp than the nearby Oldman River would be hard to imagine. Though we cannot yet prove the connection, all reason points to this place as the destination for the throngs of fully laden people making their way from the buffalo jump.
Imagining Head-Smashed-In

Buffalo Hides

Whilst in the green state, [hides] are stretched and dried as soon as possible; and, on the return of the nation to the village, they are gradually dressed during the intervals of other occupations. – Edwin James, 1820

Imagine the loads that had to be transported! The hides alone from one hundred and fifty animals would have weighed thousands of kilograms. Yet hides were essential for making tipi covers, winter robes and blankets, mittens, caps, moccasins, containers for carrying possessions, and untold other products. The demand for tipi covers accounted for the greatest number of hides. A single tipi required a couple years. Tipi covers, as much as the precious meat and fat, were essential for the survival of the people and were a major reason that great communal buffalo hunts were conducted. But here’s the rub.

Autumn seems the ideal time for mass communal kills because bison were at their fattest and it allowed food to be stockpiled before winter. Indeed, archaeologists can demonstrate that many mass bison kills occurred in the fall. But autumn hides are generally unsuited for making tipi covers. In preparation for the greater insulation demands of winter, the hide of bison gets much thicker through autumn, which is true for both bulls and cows, though bull hides attain much greater thickness.† Since the fall kills captured mostly cows, it’s possible that

The valley of the Oldman River offers extensive flatlands for camping, protection from the winds of the upland prairie, water, and, most importantly, wood for winter fires. (Courtesy Caroline Hudecek-Cuffe)

† David Thompson was present when traditional shields were tested by a new weapon: “They had Shields of Bull’s hide a safe defence against arrows and the spear, but of no use against balls.”
some of the younger cows may have had thin enough hides to work into tipi covers. But the hide of many of the buffalo would have been too thick to be effectively worked into lodge covers. It would be nearly impossible to sew hides that were one to two centimetres thick, and they would be staggeringly heavy to haul from camp to camp. While some of the ways Native people worked hide included thinning it, that required a great deal of work, and there was another, easier way, which was to wait until spring.

Changes in the nature of the buffalo hide over the course of a year were noted by early Europeans. The Earl of Southesk observed, “In buffalo robes the season makes a great difference.” Bison hide gets progressively thinner through winter and is thinnest in the spring. This (and early summer) was the primary season when they were harvested for making tipi covers. While we know that many great kills took place in autumn, there must also have been mass bison kills in spring for the purpose of securing hides.

It is unlikely that fresh bison hides cut from the carcasses at Head-Smashed-In were scraped and tanned at the processing site. The traditional method of tanning hides involved spreading each one out to its full extent and staking it on the prairie to dry in the sun. The drying requires a great deal of flat ground, and it must be in a place where you don’t need to leave any time soon. As already

Huge buffalo hides were stretched out, pinned down with wood or bone pegs, then scraped to remove adhering bits of flesh which were saved to be eaten as a tasty meal. (Courtesy Shayne Tolman)
noted, Head-Smashed-In was not an ideal winter camping place. The space requirement for working on hides was another reason for quitting the site. In addition, hides probably played an important role in transporting food to the campsite, acting as a protective wrap and, possibly, as a skid plate on which food was dragged.

Working a hundred or more hides at the winter campsite would have been one of the longest and most strenuous of activities in the aftermath of a buffalo jump. It is hard to overstate the difficulty of dealing with hide as heavy, tough, and large as that of bison. Indeed, it was these qualities that led to the near extermination of the great bison herds by hide hunters meeting the enormous demand for durable leather.

Exploring the central Plains in the early eighteen hundreds, Edwin James recorded the general method of tanning a bison hide:

*The hide is extended upon the ground; and with an instrument resembling an adze, used in the manner of our carpenters, the adherent portions of dried flesh are removed, and the skin rendered much thinner and lighter than before. The surface is then plastered over with the brains or liver of the animal, which have been carefully retained for the purpose, and the warm broth of meat is also poured over it. The whole is then dried, after which it is again subjected to the action of the brains and broth, then stretched in a frame, and while still wet, scraped with pumice-stone, sharp stones, or hoes, until perfectly dry. Should it not yet be sufficiently soft, it is subjected to friction, by pulling it backwards and forwards over a twisted sinew. This generally terminates the operation.*
James also notes that “for the convenience of manipulation,” hides were almost always divided in half and then sewn back together with sinew once the tanning was completed.

Of course, not all Plains groups worked hides in the same fashion. Absent from James’s account is the frequent reference to the smoking of hides. Among the more northern Cree (where the ground was less suitable for staking out hides), Daniel Harmon wrote that the hide was scraped and treated with brains, then smoked and soaked in water:

They then take it out and wring it as dry as possible; and a woman takes hold of each end, and they hold it over a fire, frequently pulling it and changing its sides, until it is perfectly dry. After this it is smoked with rotten wood, and it becomes fit for use. This last part of the process, is to prevent it from becoming hard after it has been wet.

Enormous labour was expended taking scores of fresh, greasy hides and converting them to life-saving articles of clothing, beds, and blankets. Without the thick hides of the buffalo for protection, it is unlikely that humans could have survived through a Great Plains winter. Days and weeks were spent wrestling with the huge and heavy skins. But even the thankless task of hide tanning had its occasional rewards. On his 1850 trip up the Missouri, Thaddeus Culbertson noted that the fine bits of meat and fat scraped from the inner side of the buffalo hide were cooked, mixed with dried berries, and eaten. The result was “esteemed,” Culbertson proclaimed, “a most rare dish.”

Astonishingly, bison hide was occasionally cooked for the express purpose of consumption and, furthermore, it was pretty good. George Bird Grinnell describes how the Cheyenne went about preparing this special dish:

The hide of the buffalo-bull was eaten. One way of cooking it was in a saucer-shaped depression dug in the ground, and lined with grass or leaves, on which were spread out large pieces of the fresh hide. Over the hide were two or three layers of green leaves, and on the leaves were placed a number of ribs or other flat bones to hold the leaves down. A layer of about four inches of clay was spread over this and was pounded down solidly and smoothed off, and on this floor of clay was built a large fire of dry wood which was kept burning for three or four hours. Then the fire was swept aside, the clay, bones, and leaves were removed, and the hide taken out. The hair slipped off easily from the hide, which was quite tender and very good.†
Bringing to bear all the advantages of modern technology has done little to lessen the difficulty of working bison hide. Those of us working to build the Head-Smashed-In Interpretive Centre tried to commission both Native and non-Native people to tan and sew enough bison hides to fashion a tipi cover. Everyone who started the project gave up in exasperation. Eventually, we too gave up and made a tipi cover out of cow hide. Years later, wanting a more authentic display, we tracked down a group of Cree people who had made several bison hide tipi covers for another First Nations interpretive centre at Wanuskewin Heritage Park, near Saskatoon. These people flatly refused to consider another job, saying it was just too much hard work, regardless of the money.†

Ancient hunters had no such prerogative. Hides were critical to their survival. Eventually, over many days, the hides from the slaughtered animals made their way from the kill site to the winter camp. Here, people (mostly women, we believe) laboured over them for days on end, converting them to winter footwear, bedding to sleep on and blankets to pull over you, cape-like robes to drape over your shoulders, some heavy clothing, and a wide variety of containers like bags, satchels, shields, and drums. The amazing hide of bison had served the animal well in its lifetime, and so too it served the people who took it.
Pemmican

As the Indians use no salt in the preservation of their meat, the lean part is cut into thin slices, and hung up in their tents, and dried in the smoke, and the fat is melted down; and in this situation, it will keep for years. – Daniel Harmon, 1800–19

One of the final stages of converting the fresh buffalo meat to storable food was making pemmican, some of which might have transpired at the jump itself. Because of its time-consuming nature, my instinct tells me that much of this work would have taken place at the camps set up in the Oldman valley. But then my instincts also suggested that the laborious boiling of bones to extract grease would likewise be an activity better suited for the roomy expanse of the river flats, only to find abundant evidence of this activity at Head-Smashed-In. However, pemmican making doesn't leave the dramatic and unmistakable scars in the ground that bone boiling does (with its deep pits and mass of fractured rock and bone), so it's quite possible that we simply don't have the evidence to prove the making of pemmican at Head-Smashed-In. Whatever the location, the making of pemmican was one of the most crucial chores that ancient hunters faced, often spelling the difference between life and death during the coming winter.

Why attribute such critical importance to just one of the many products obtained from the mass kills? Because pemmican is food that can be stored for a very long time, making it is of tremendous significance to people who lived year in and year out wondering where their next meal would come from. Their livelihood, like themselves, was always on the move. It was impossible to predict when and where bison or other large game would be encountered. Although it is abundantly clear that early Native hunters thoroughly understood nearly everything about the animals on which they subsisted, some things were difficult to understand because they were by nature incomprehensible. Certainly, seasonal and long-term patterns of bison movement were well known to the hunters, but in the short term, nearly anything was possible. The historic record is replete with examples of bison hunters going to bed surrounded by vast herds of animals and waking up to find, as far as the eye could see, the prairies deserted.† Modern wildlife experts are equally at a loss to predict where a free-roaming bison herd will move over the short term. For ancient people, with only their own feet to propel them, this was a formidable problem.

† The patchy distribution of bison was a fact commented on by European travellers. Josiah Gregg recorded that “as they incline to migrate en masse from place to place, it sometimes happens, that, for several days’ travel together, not a single one is to be met with; but, in other places, many thousands are often seen at one view.” Edwin James camped on the Platte River with the Plains around him covered with “immense herds of bisons, grazing in undisturbed possession, and obscuring, with the density of their numbers, the verdant plain.” Surveying the same territory the next morning, he remarked with astonishment that “upon all the plain which last evening was so teeming with noble animals, not one remained.”
The vagaries of game movement made for a deeply uncertain life (accounting in part for the universal Plains trait of a heavy reliance on help from the spirit world). Stored food was the critical bridge to help weather periods of scarcity, and pemmican was the most storable food of all. Properly made and under ideal conditions, it could last for more than a year. At a minimum it provided months of dependable, energy-rich food, perhaps just what would be needed when bison herds, like the wind, simply vanished from the surrounding prairie.

The massive cuts of bison meat, lightened and preserved by slicing and drying, became the key ingredient of pemmican. Once the flat, jerky-like sheets of meat were thoroughly dried, they were suitable for storage or they could be converted into pemmican. For the latter, the jerky had to be mixed with other ingredients, and to make this possible the sheets of dried meat had to be pulverized into tiny flecks of meat. The meat was pounded with large stone hammers (mauls) tied to wooden handles and with blunt wooden sticks. For this you needed a flat, hard surface, and one that would keep dirt from mixing with the food. In all likelihood, bison hides were spread out on the ground to provide a clean working space. Flat slabs of rock, such as sandstone from the cliff of the jump, would probably be laid out on or under the hides to serve as anvils on which to pound the meat.

Once the proper space was set up, people settled into a routine of long hours and days of pulverizing the strips of dried meat.

Smashing strips of meat into small flecks allows the meat to dry even more completely than just making it into jerky, especially if the weather was sunny, warm, and windy. Greater drying of the pounded meat explains in part why pemmican was the most storable of food supplies. With the meat reduced almost to powder, it was then mixed with fat. Fats in game animals are often classified as either hard or soft (the difference stemming from which fatty acids form the bulk of the fat). Hard fats are found deep in the body cavity, such as around the major organs. These fats don’t need to be very flexible. Soft fats include those of the legs and the subcutaneous fat just under the skin. These fats, located near the outside of the body, are more fluid (softer) in nature, otherwise they would become rigid in cold weather. If the fats of the legs (marrow and bone grease) were hard fats, the legs of the animal would become stiff in winter and inhibit movement. Soft fat was much preferred, as David Thompson noted, because “when carefully melted [it] resembles Butter in softness and sweetness.”
Both hard and soft fats are well documented as being used in pemmican making. The choice of which probably depended on how much of each type was on hand and on the quality of pemmican desired. Not all pemmican was the same. Among the Blackfoot, Grinnell reported, “a much finer grade of pemmican was made from the choicest parts of the buffalo with marrow fat,” that is, from the soft fats of the legs.

No doubt fat obtained from boiling large leg bones was one of the choicest fats used. Not only is this one of the softest fats in the body, if taken directly from the cooking pits it would have been in a warm, fluid state, making it ideal for mixing in with shreds of dried meat. Historical records indicate that warm grease or tallow was scooped from the cooking pits and mixed with the pulverized meat. The Blackfoot, according to Grinnell, constructed “a trough made of bull’s hide” to hold the mixture and stirred the mash with a long wooden spade. The hands of the ancient hunters must have glistened with the sheen of warm, slippery fat. While this mixture of meat and fat could technically be called pemmican, and stored as it was, there was often a third, final ingredient, fruit.

Most accounts of pemmican-making from the northern Plains mention the inclusion of a type of berry or fruit into the mix. For the region around Head-Smashed-In, the berries of choice were the saskatoon and chokecherries. A pleasant cluster of saskatoon bushes grows at the site today, snaking up the side slope of the spring channel toward the cliff. We don’t know if these would have been there a thousand years ago, but saskatoons and chokecherries are ubiquitous in the region and would never have been far away. Historic accounts of pemmican-making always mention improved taste as the reason for adding berries to the mix, and it is true that it is much more palatable with a healthy complement of saskatoons or chokecherries. However, there may be a more important purpose served by the addition of fruit to pemmican.

Many plants, including fruits, contain tannins (also called tannic acids). These astringent chemical compounds have well-documented antimicrobial properties. Tannins are part of the plant’s natural defense mechanism against fungal and bacterial attack. They have long been associated with the process of turning hide into leather (hence the term tan, from the French tanin, and the colour of the same name comes from the appearance of tanned leather). Tanning is, of course,
Groups of people, mostly women, spent days and weeks after the kill making pemmican. They pounded dry meat, mixed it with fat and berries, then stuffed the result into hide bags called parfleches. (Courtesy Shayne Tolman)

essentially a process of preservation; fresh hides are converted to durable leather that will last for years. Although the specific tannic acid content of saskatoons and chokecherries is not well studied, it is almost certain that adding berry tannins to the mix of dried meat and fat furthered the cause of prolonging the life of the food by inhibiting bacterial growth. Whether or not the hunters were aware of this added benefit, or simply added fruit to pemmican for its pleasing taste, we can't know for sure. My hunch would be that it was no great mental leap for someone to recognize that pemmican made with berries tended to last longer than pemmican without.

Picture an array of brown hides stretched out on the prairie, workers kneeling to the sides and mixing together a mash of meat, soft fat, and crushed berries. When all the ingredients were thoroughly mixed, the mash was ready to be put in its final receptacle, heavy bags made of buffalo hide. Bags were made from several pieces of hide sewn together, forming large sacks that would typically hold between forty and fifty kilograms of pemmican, though perhaps smaller in the days before the horse. As David Thompson described, the pemmican bags were “about thirty inches in length, by near twenty inches in breadth, and about four in thickness which makes them flat, the best shape for stowage and carriage.”
As air is the enemy of preserved food, it was essential that the mash was made as dense as possible, pounding and squeezing out all the air from the mix and from the hide bags. Aboriginal epicures were well aware of this requirement; Grinnell noted that pemmican was “shovelled into one of the sacks, held open, and rammed down and packed tight with a big stick, every effort being made to expel all the air.” The hide containers were then sealed, either by wrapping leather straps around them or at times by sewing them closed.

The completed product was a dense, nutritious, storable food that could serve as either a staple or as an emergency ration in times of shortage. Properly made and packaged pemmican had an enormously long shelf life. But the conditions the people would face in the months to come would likewise determine the fate of the stored food. As Daniel Harmon observed in 1800, “If kept in a dry place, it will continue good for years. But, if exposed to moisture, it will soon become musty, and unfit for use.” It is known that Plains groups sometimes buried pemmican bags in the ground and tucked them into the banks of rivers. The intent was to help protect them from the elements and to lighten the load of the people when decamping. The intent also must have included plans to return to these valued caches.

That pemmican was an exceptional food substance is beyond doubt. Not only did it tide over Native groups for thousands of years, it proved to be the backbone of the exploration and fur-trade era in western North America. So rich and dense was the mix of meat and fat that it tended to fill the stomachs of even the hungriest traveller. David Thompson, with a slag to his canoe-paddling companions, commented that pemmican is “the staple food of all persons, and affords the most nourishment in the least space and weight, even the gluttonous French Canadian that devours eight pounds of fresh meat every day is contented with one and a half pound pr [per] day.” Naturalist John Audubon said that the men on the barges plying the Missouri subsisted almost entirely on buffalo meat and pemmican. The famed Arctic explorer Vilhjalmur Stefansson was deeply interested in the diet of hunting peoples, especially those, like the Inuit, who depended entirely on meat. To test the health of such a diet, on several occasions he subsisted for up to a full year on an exclusively meat diet, with pemmican making up the bulk of his consumption. At the end of these tests his doctors found him to be in perfect health.
Imagining Head-Smashed-In

In the aftermath of a successful bison kill, hundreds of bags of pemmican must have been made. This represents an enormous stash of dependable food, giving people a security unattainable if they had to rely on fresh meat alone. It must have been a laborious and tiring job: continuous pounding and grinding of countless kilograms of meat until it turned to the consistency of powder, mixing in the fat and berries, stuffing into hide bags. Days and weeks passed before the pemmican making was completed, another reason why I suspect pemmican making was more an activity of the permanent camps rather than at Head-Smashed-In. Bone grease rendered at the kill site could have been re-warmed at the camp site before it was added to the meat mixture, but the archaeological record is silent on the location of this activity.

Fat was the key ingredient to the nutritional value of pemmican. For reasons discussed earlier, fat, not meat, was the essential food of survival to hunting and gathering cultures. Eating a mix of dried meat and berries was the path to certain death. Adding fat to the mix reversed your fortune to one of comfort and survival.

Plains people had made pemmican quietly and consistently for thousands of years. That we know a fair bit about it now stems from the importance pemmican took on in the early Euro-Canadian colonization of the West. Foreigners arrived with few of the life skills that the Natives had mastered and were to a very large extent dependent upon them for survival. The early settlers could ride horses and shoot bison with guns, but, at least initially, they shot the wrong animals and at the wrong time of year, ate the wrong body parts, and knew little of how to preserve any of the carcasses. George Catlin’s first kill of the largest (hence oldest) bull he could find is a classic example of this initial folly.

The Aboriginal people taught Euro-Canadians about the differences between bull and cow bison, the changes in the animals over the seasons, the relative nutrition of different parts of the animal, and about pemmican. And the Native people made quite a business out of supplying pemmican to the foreigners in exchange for guns, horses, metal tools, tobacco, clay pipes, glass beads, and a host of other desired goods. It has been said that without pemmican there would have been no fur trade in the Canadian West.
Snow Falling on Cottonwoods

The beauty of an Indian camp at night deserves a passing word. It can never be forgotten by one who has seen it and it can hardly be pictured to one who has not. The top of each conical tent, stained with smoke, was lost in shadow, but the lower part was aglow from the central fire and on it the moving life inside was pictured in silhouette, while the sound of rippling waters beside which the camp stood accentuated the silence of the overhanging stars. – A.C. Fletcher and F. La Flesche, for the Omaha, 1911

Almost everything I have discussed in the past few chapters has a frantic pace to it. There was the pounding excitement of the drive and the kill, and the rush to process the immense mass of food and materials before they were lost. I can only imagine that during this time there were limited opportunities to sleep, eat, socialize, repair tools, bathe, recall the story of the hunt, procreate, dance, sing, and relax. Slowly, in the weeks following a great kill, life gradually took on a languid pace. All the parts that made up the complex and routine life of Native inhabitants of the Plains filtered back into their world. People feasted and celebrated the success of the kill, tempered against the omnipresent signs of the coming of winter. Ducks and geese cruised overhead on their migratory flights. Gophers retreated to their underground lairs. Leaves on the cottonwoods turned brilliant yellow, willows and wild rose flaming orange.
As autumn weather sets in, people prepare for winter: camping in valley bottoms, gathering wood, and settling down to life inside the tipi. (Courtesy Head-Smashed-In Buffalo Jump)

Soon small, crystalline pans of ice began to flow down the Oldman River. Skiffs of snow came, angled wedge-shaped against rises in the land, and melted. But as the sun dipped lower in the southern sky, and the heat of the day diminished, eventually the snow held. The golden land of dried grass was blanketed with white sandy granules driven by the incessant winds. Tipi liners were hung from the inner sides of the poles to add an extra layer of warmth. Firewood, split with crude stone wedges and hammers, was stashed inside and outside the dwellings, sometimes piled on the outer edges of the hide tipi to help stave off the cold. People ventured out to search for fresh game on mild days and retreated to the safety of camp when temperatures plummeted and winds picked up. They told stories of the great hunt — of the near misses, the close encounters, the acts of immense bravery. They reaffirmed their faith in the all-enveloping power of the Great Spirit. They thought about the future, assured for the time being that at least there would be one. People hunkered down for another winter, awaiting the fresh grass of spring, buffalo cows dropping their calves, and the fattening months of summer.