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Humboldt Hill

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This grassy hillside lies between British Columbia's Okanagan and Kettle River valleys, just a few kilometers north of Washington State. The region is known locally as the Boundary country. The first cattle arrived here around 1860, hard on the heels of the gold rush, and they have been here ever since. Before that, the only grazers were the occasional wandering herd of elk. Many stories are woven into this countryside and here is one of them.

In 1962 a government agent fenced out a little square exclosure on this grassland, 25 feet on each side, deeming it to be a representative slice of the larger ranching country around it. Then that same agent installed a set of permanent monitoring plots inside the fence and outside the fence, to determine the impact of cattle grazing on the vegetation. This act was totally unprecedented. In those days grass was grass and cows grazed it; such was their mutual destiny. The actual details were unimportant. After all, the grass-cow bond had been in place across Europe for centuries, perhaps even millennia.

Thirty years later another government agent, impressed by this pioneering bit of rangeland research, put up another grazing exclosure, right next to it. That agent - me, was acutely conscious of a scientific pitfall known as the "edge effect," so my new exclosure was considerably larger than the original.

This hillside became a perennial stop for me over the years, to remonitor the plots inside and outside both exclosures, and to mull over the resulting data. Later in retirement, it has become a favored place to sit and vegetate, in both scientific and philosophical modes. Increasingly, I find those two modes to be a comfortable fit. Ecosystem responses to herbivory are sufficiently complex that they can transcend mere data and science. So I find pleasant diversion in keeping the data in mind as I speculate on root causes and philosophical approaches.

The hillside I sit on is part of a regional fabric, woven from both natural and human threads. For reasons not altogether clear to me, I take pleasure in exploring this complex fabric and bringing both storylines to light.

The two exclosures are located a few kilometers off the Crowsnest Highway. From here one has a good view of the rolling terrain of the Boundary country; scattered ponderosa pine on the north-facing slopes, grasslands on the south, aspen in the gullies, and the occasional ranch. To get a broader sense of this countryside, I have reluctantly abandoned paper maps in favor of

satellite imagery. In between my physical visits I often make digital flyovers from the comfort of my office. This portion of the Boundary has some rocky, steep-sided canyons, and a strong north-south orientation. The first Canadian railroad line in the area had to divert south of the Border at Osoyoos and pass through the much gentler American terrain, before it returned to Canadian soil at Midway. The biggest rail barrier was Anarchist Mountain, just east of Osoyoos, which the railroaders were never able to conquer. The Crowsnest Highway was finally able to conquer the Anarchist in the 1950s. At twelve relentless kilometers, it is the longest continuous highway climb in all of Canada.

The high-level satellite images of my exclosure locations, show the obvious southward-trending glacial scars and flutings, and the endless curves of the east-west Crowsnest as it traverses those same scars and flutings. Just to the south of the Highway is the tortuous Rock Creek Canyon and a little ways beyond that, the Border. Zooming even farther out, my exclosures lie about midway between the two tiny, fabled communities of Bridesville and Rock Creek.

The two grazing exclosures have been in place long enough that, together with a middle zoom on the satellite image and a trained eye, I can pick out the two tiny squares. The colors and textures inside the squares are slightly different from those outside. The first time I noticed them I felt oddly ambivalent: proud to have made a change to the earth actually visible from space, but on the other hand, what right have I to do that?

If one is not careful, and often I am not, scientific monitoring combined with philosophical rumination can transform into romance, introspection, and temporary loss of self. I like this frame of mind and consider it a privilege to enter into it. I can put aside the data showing that the native Bluebunch Wheatgrass has twenty percent greater cover inside than outside, or that the opposite is true for the invasive annual, Cheatgrass. Well, not actually put it aside, but internalize it, along with all the other accumulated data about the place—the plant identifications, the cover measurements, the soil horizons, the archival photographs, the memories, even the fence repairs. But “internalizing” is just the beginning, a mere entry point to this mental state I am doggedly trying to construct, or perhaps deconstruct.

Wrestling with this notion, I consulted a mentor from my bookish youth, Johann Wolfgang von Goethe. Goethe called himself a “romantic scientist,” a designation that is sacrilegious today, but was quite acceptable in the early 1800s. Goethe said, in the baroque language of his day, that the naturalist should “attain the habit of philosophizing, so as to distinguish himself from the world, in order to associate himself with it again in a higher sense.” (Apparently womenfolk were not allowed to take this philosophical journey.)

Goethe also recommended a four-step process for observing nature. Step one requires putting aside all foreknowledge of the nature being observed; the second step lets the observer give

his/her imagination free rein; the third reverses the equation, making nature the observer; and the fourth requires the observer to transcend the categories *we* have created for nature, and merge with nature's own archetypes. Goethe's four steps could almost take the fun out of my afternoon sits on this grassy hillside.

Delving further into that early Victorian era, I consulted the works of another romantic scientist from that same time, Alexander von Humboldt (1769-1859). Humboldt, who was openly gay, spent five years exploring the jungles and llanos of Latin America, catalogued 60,000 new plant species, discovered guano, held the world altitude record, became fluent in four languages and, in his spare time, mapped out a route for the Panama Canal. Sometimes I walk to the coffee shop instead of driving there.

Here is a quote from Humboldt:

> *Impressions change with the varying movements of the mind, and we are led by a happy illusion to believe that we receive from the external world that with which we have ourselves invested it*.

What he is saying is: we think we project our human esthetics into nature, and nature then obediently reflects them back to us. No, Humboldt asserts, it is actually the reverse: our esthetic responses originate from nature itself. The skeptic in me says no, this theory is just so much Humboldtian romance. But then I look at the spectacular seashells in my wife's collection.

So the sensation of peaceful detachment I feel as I sit on this hillside was actually *created* by this hillside, and I just happen to be its privileged and receptive audience of one. Honoring this romantic scientist, whose interests ranged from human perception to the economic value of bat guano, I have privately named this place Humboldt Hill.

My responses to the natural world do vary. Nature gives me inner peace. Or nature is indifferent. Nature is infinitely complex. Nature is fascinating; nature can be tediously intricate. Nature poses intriguing questions; nature is a gravely wounded animal. Nature can satisfy my atheist desire for the sacred. Very rarely, nature scares the hell out of me. And so on. Von Humboldt didn't give all those varied responses a name, so I am forced to, calling them *natural evocation*s. Some might laugh this inquiry off, saying it is simple biochemistry. Peaceful scenes in nature trigger the release of the body's endorphins, which make us feel relaxed and contemplative. Okay, fair ball. But who, or what, designed and implemented that endorphin release mechanism? And to what end? Prompting a human into a relaxed, contemplative state in nature seems to fly in the face of self-preservation and Survival of the Fittest. Or perhaps not: maybe to be truly fit we humans must periodically enter a contemplative state, in nature. Either that or sign up for weekly goat yoga.

All this points to the theory that nature evolved, or co-evolved, with the mental well-being of us humans in mind, evoking fear in us when necessary, vastation when appropriate, and a thousand other variants in between. These evocations could be part of nature's natural defenses: triggering reactions of contentment and respect in the observing human, so that same human is less likely to trash the place. If that was the plan, I'd say it isn't working anymore, because we spend most of our time in buildings and automobiles.

My years of monitoring at Humboldt Hill have resulted in some lovely graphs, showing the ebb and flow of various plant species over time. And of course I have taken repeat photographs as well, carefully lining up the camera, previous photo in hand, making sure my retake precisely duplicates the location. Then, along with the graphs, I can contemplate ecological changes over time, like looking through photo albums of our children as they grew up.

These exclosures, known also as rangeland reference areas, were first introduced in the late 1930s. They are found here and there on the native grasslands of the North American West. Typically they are located off the beaten track, so they are not mistaken for gateless horse corrals. Most are two-way, consisting of a grazed control and an exclosure surrounded by a cattle fence; a few are three-way, having an additional exclosure with a higher wildlife-proof fence. The three-way type gives land managers the ability to separate livestock grazing impacts from those of elk, deer, antelope and other native herbivores. A typical reference area re-monitoring session takes two field days: a couple of hours wandering around to actually find the exclosure, then a few more hours to locate the plot markers, and a good full day on hands and knees identifying plants and recording cover values. So it is not surprising that this repeated routine has bonded me to this grassland place. I get to see the same bit of nature in different phases, follow the income and outgo of plant species, and the varying response to wet years and dry years. Nature undressed, if you will, providing me with various Humboldtian impressions.

My best visual story of the Hill came from my return to a childhood hobby. As a boy I built model airplanes, inspired by my engineer father who helped design the B-29 bomber during World War II. My model airplane interest never completely died, and with the recent advent of lightweight lithium batteries and electric motors, I got back into it again.

I took a big, slow-flying powered glider model and strapped a light camera to the underside of one wing. After a few flight tests at a local ball field, I took the glider to the Hill. Crashes are an integral part of model flying, so a certain kind of fatalism has to accompany every takeoff. However this particular flight was successful, and as the glider passed over my exclosure, about thirty meters in the air, I clicked the remote camera shutter. Returning home, I opened up the camera image on my computer and was immensely pleased to see a perfectly in-focus shot showing both the inside and outside of the exclosure, and the fenceline in between. Offering

more detail than the equivalent satellite image, I could see the area outside the fence was the uniform, dimensionless green of invasive Cheatgrass. The inside of the larger exclosure, on the other hand, was lumpy, rough-textured and variable in color, a mix of grasses, forbs and shrubs. The lumpiness was even greater in the old exclosure. That difference in texture and tone was not apparent from either the satellite or from the in-person ground-level perspective. The photo was a mute but eloquent story, of aeronautics, successional processes and grazing impacts.

Ecosystems and humans everywhere have story threads that conflict, collaborate, overlap and merge. The Boundary country is no different. There was the local goldminer John Haywood, who carried a stick of dynamite in his boot, and was an avowed anarchist, hence the name of the mountain. And there is a full-size bronze statue of a Sasquatch, halfway up the Anarchist. Whether it is a good replica or not, is an interesting question. But I want to elaborate on another local story weave that ties in several different threads.

The short-lived Rock Creek Gold Rush (roughly 1859 to 1861) attracted hundreds of prospectors from the US. That influx prompted Governor James Douglas to hire Edgar Dewdney to build the eponymous trail from Hope to Rock Creek, to ensure Canadian dominion over this frontier area. The Gold Rush also attracted Chinese immigrants from Vancouver, BC. These Chinese men were stateless, confined to Vancouver ghettos, and either ignored or actively persecuted by Provincial authorities. So it is not surprising that some found their way to the various gold rushes—Barkerville, Fort Steele, Fraser River and Rock Creek, to name a few. One of these Chinese men, Dick Lum, came to Rock Creek, worked as a miner and then settled down in the area. While there, Dick met and married a Metis woman named Julia Chesaw.

Julia's father was Chee Saw, another Chinese man who ran a successful general store on the Colville Indian Reservation, just south of the Border in Washington State. Julia's mother, Susan Louie, was Syilx and a member of the Colville Tribe. Chee Saw and his family prospered, and people settled near his store. Soon it became a village, aptly named Chesaw. Then gold was discovered on the Colville Reservation and as a result it was cut in half, displacing the local inhabitants. Seeking refuge, or perhaps adventure, young Julia found her way north to Rock Creek, met Dick Lum, and soon they were married. Such a marriage was not uncommon in that period: the Chinese diaspora was overwhelmingly male, and both the Chinese and Indigenous populations were marginalized on both sides of the Border. Dick and Julia went on to have a couple of children. One of them, daughter Rosa Lum, meets and marries Roscoe Rusch, son of a German immigrant from North Dakota, and they start a cattle ranch nearby. Multiculturalism has enjoyed moderate success in Canada, compared to many other countries. Much of that success is based on biracial marriages, like that of Rosa and Roscoe.

Underneath these human stories are the intertwined ecological ones. Syilx and Shuswap peoples

made traditional use of the Boundary country for hunting, harvesting and fishing. They applied cultural burns on a regular basis to keep the grasslands open and productive for game, and later for horses. When the gold miners arrived they started with panning but soon moved on to the destructive techniques of sluicing and placer mining. As a result, little Rock Creek, as it flows into the Kettle, was essentially dismembered. Hard on the heels of the gold miners came the cattlemen, who created a ranching industry based on the graminoid bounty of the Boundary country hillsides. Soon after that, Indigenous cultural burning was made illegal and the subsequent forest encroachment shrank the grasslands. Meanwhile Herefords and Angus devastated the native grasses that had never experienced season-long grazing. Then European grasses and forbs, long accustomed to cattle grazing, arrived by various means. These plants discovered an ecological bonanza, worthy of the Rock Creek gold rush. Weakened native grasses and plenty of soil disturbance. My fellow ecologists would call it the open niche theory.

There is an anchor thread that runs through the weave of these land and people stories, and it is the thread of sustainability. I think 1890 would have been an ideal time for us Settlers to sit down to an unprecedented review of our collective social enterprise. At that time we were here and more or less settled. The gold rushes were over, Indigenous lives and lifestyles had been disrupted, and the fossil fuel machine age was on the near horizon. We could have stopped, gathered, looked around us, and recounted the stories of the day to help us see where we were headed.

We did not have that 1890 sit-down. The sustainability thread is now badly frayed. Looking forward, there will be massive global tears in the fabric.

The noisy racket of a passing grasshopper wakes me from my Humboldt hillside ruminations. Who am I, and what is my personal stake here? As the classic rootless Settler who has lived in more than a dozen places in Western North America? Ecologist, writer and seeker, stumbling toward ecstasy or apocalypse, to which one I am not sure?

Just to the west of Humboldt Hill there is a tiny creek that wanders down through an aspen gallery forest. It is called Rusch Creek, named after that same Chinese/Indigenous/German ranch family. I can’t blame that family and their contemporaries for not having that 1890 sit-down. In those days the landscape spoke of abundance, opportunity, settlement and enrichment. Now as I have my solitary sit-down on Humboldt Hill, I feel this patient land trigger an emotional response in me. It is called empathy.