

Commentary — From the Margins

Alpha & Omega

Part Eleven: Epigenetics

16.

The visible reveals the invisible, the physical reveals the spiritual—and the concept of culturally retained memory actually falls into the usually unknown scientific discipline called *epigenetics*, a term referencing *that* something extra or above the tightly wound DNA molecule in every cell’s nucleus that *tells* the DNA molecule which genes to transcribe for the task at hand. One of these extras are methyl groups that attach themselves to the tightly wound, double helix molecule to tell the molecule which genes to copy or transcribe or to write out as if writing out chemical formulas or recipes from a cookbook, with these methyl groups serving as bookmarks so that the same genes are reproduced to complete a body part or repair a part.

Methyl group are only now being understood, but exactly what can be transcribed via methyl groups or methylation still isn’t fully comprehended. What research has shown is that methyl groups are probably responsible for non-physical aspects of character, from cowardice to poor mothering “instincts” and are responsible for earlier generations (great-grandparents) deemed as “bad blood” (*So-’n-so is no good for he comes from bad blood*).

There remains debate over how much seemingly non-physical transcription occurs, and whether methyl groups transmit generational traits that are not part of the DNA code. Apparently, they do—and while it was initially believed that epigenetic changes occurred only prior to birth, end of the 20th-Century research has shown that methyl grouping, epigenetic changes occur post birth, especially in the first year, two years, three years of life when “personality” is formed in a human infant. However, these epigenetic changes occur in any stressful situation, regardless of age; thus, the children of Holocaust survivors, while genetically identical to children of parents that avoided being caught-up in the Nazi dragnet, nevertheless differ from their DNA cousins in non-physical traits such as how they respond to bullying, threats to life and property, sexual relations, even Sabbath observance. And the same will and does apply to American veterans suffering from post-traumatic-shock as they return home from multiple tours of duty: they return home as a different person than the one who went to war. Same can be said for, especially, young victims of sexual molestation ... the entirety of their lives are altered by the formation of methyl groups; for the genes regulating the production of glucocorticoid receptors in their hippocampus will be highly methylated, meaning the person will have differing sensitivity to stress hormones for the person will have fewer glucocorticoid receptors than normal (methylation is a form of DNA sabotage originating within the person’s own body as the person involuntarily responds to, especially, negativity) and the mother will pass the altered number of glucocorticoid

receptors on to the next generation. Thus, sexual molestation or war will effect the offspring of survivors for generations (apparently less so for male survivors than for female survivors that produce the ovum).

In other words, the offspring of male participants in horrific events differ from the offspring of female participants in the same event in significant ways through methylation causing fewer glucocorticoid receptors to be produced in the hippocampus of the offspring for generations, with this methylation now working as a form of retained memory of the horrific events. The person who is calm, brave, courageous will have high levels of glucocorticoid receptors; whereas the person who is irritable, nervous, subject to sudden mood swings will have a lower level of receptors. Thus, the female child who has suffered from poor mothering will not herself be a good mother or a good marriage prospect: she will be a difficult person with whom to dwell, something that her outward appearance (affected by her DNA) will probably conceal.

A person's outer appearance is visible; is what initially attracts the attention of the opposite sex, but youth conceals the inner self of the person: a man or a woman really has few clues available to the person that can effectively reveal the what the other person wishes to conceal from a prospective spouse; thus, mothers tell daughters to have nothing to do with a man that doesn't like children or pets, and fathers used to tell sons to have nothing to do with girls that were promiscuous. In each case, the advice remains valid even if no longer applied; for whether a man likes pets or a girl likes petting has to do with methylation and epigenetic expressions of genes in the brain, expressions that affect personality.

A person is the compilation of who parents were and what parents and grandparents and great-grandparents experienced. But this section isn't about marriage or even about the giving of marriage advice: it is about the possibility a retained cultural memory versus personal memory, with epigenetics passing on more than a nervous mother producing nervous daughters and granddaughters.

The following long excerpt is from the essay, "A Sojourner," found in the collection *From the Margins*:

A Sojourner

The poet Wendy Rose told a Fairbanks audience that when she asks her minority students where "home" is they identify the places of their ethnic origins, but when she asks this of Anglo-American students they identify where they currently live. Home is, to them, a concept rooted in the present. Wendy's observation was that the psyche of Anglo-Americans lacks a strongly held sense of place.

John Haines, citing D.H. Lawrence, wrote about a sense of place. He wondered whether a true literature of the north could develop when so much of what is written about Alaska is, in his terminology, "travel writing."

To start discussions about what is *literature*, I have used, in classes, John's essay about whether a genuine literature of the North will appear; I believe John's point is well made. However, I believe his observations fall within a larger discussion of whether individually important texts only validate personal experience. The texts John would recognize as having a sense of Alaska as "place" would be those that validate John's experiences of living in rural Alaska. "Home" for John is a site east of Fairbanks, a little off the road and painted blue the last time I passed by.

I began fishing Kamloops trout in British Columbia's lakes in 1967. Each year I ventured a little farther north as if I were a fledgling testing my wings. I wanted to relocate to British Columbia, and I even accepted a job in a Prince George pulpmill in 1969. But the mill's personnel manager said he expected the mill to shortly go out on strike, that I should wait until the strike was settled before I moved north. He expected the strike to last a couple of weeks. However, the strike lasted six months, and by the time it was settled, my gunshop upriver from Siletz was keeping me too busy to think about moving: Hart Mountain National Antelope Refuge had been opened to muzzleloading deer hunters for the first time in 1969. I had far more rifles to build than I could for hunters who wanted a crack at the refuge's large mule deer bucks that only knew the killing range of an archer with an arrow. So I stayed in Oregon, shot high power competition, hunted deer with a muzzleloader, and caught many, many steelhead for the next five years. But I didn't buy property in Lincoln County even though I could have and should have. I didn't want to get stuck there. I felt an urge to move-on, to move North, an urge that warred with a desire to stay where I was. Each impulse was equally strong. And if I had been one of Wendy's students, I would not have known where home was. I would have answered that it was where I lived there at Twin Bridges, five miles upriver from Siletz, Oregon. It certainly wasn't Indiana where I was born. Nor was it Holland, nor Bavaria from where ancestors once came. It wasn't really where I lived, but I would have had no other answer to her question. I would have hummed and hawed like many of her Anglo-American students even though some Native American blood flows in my veins.

I didn't travel north of Mackenzie, British Columbia, until 1974, when George Connor asked if I wanted to drive a vehicle to Homer, Alaska, for him. I had wanted to go to Alaska since high school; I wanted to talk to Harold "Bill" Fuller, a muzzleloading gunmaker at Cooper Landing. So after confirming that the road to Homer went through Cooper Landing, I bounced my way to Alaska in George's early Toyota Land Cruiser, towing all the way his sixteen foot speed boat on an eight-foot-wide trailer.

Alaska impressed me much less than I anticipated until I started around Turnagain Arm and up over Silvertip. I liked the Kenai Peninsula and everything I saw. I was smitten as much as I had been by Cecille Sax, my first love. And yes, the semi-realization of the romance of the North produced the same type of feelings of fascination and desire I had experienced at fourteen when holding hands. Puppy love might not be love, but the emotions it produces are hypnotic.

I took a job in North Kenai felling timber, or rather, felling what the Peninsula calls timber. But after a year and a half of gyppo logging and repairing chainsaws, and after buying an acre of undeveloped land off Kalifonski Beach Road, I faced beginning my second winter North without adequate housing and with very little money. Kathy, my oldest daughter, had started school a year earlier, but she was on Correspondence Study through the State of Alaska. I didn't really have a reason for staying on the Peninsula that second winter; so I returned Outside, where I felled white pine in northern Idaho until heavy snow pushed us, as it does deer, downhill all the way back to Lincoln County, Oregon.

Leaving my wife and daughters in a Newport studio apartment with the rent paid for a couple of months and the refrigerator full, I headed back up the Alaska Highway in February 1976. As far as actual travel is concerned, this would be the toughest trip of the many I have made up and down the Highway. I would arrive in Soldotna with four dollars and an empty gas tank.

But on this trip, as I descended the hill atop of which is Alaskan U.S. Customs, I felt, for the first time in my life, like I was *home*, like I had arrived where I belong. The feeling

was overwhelming all the way to Northway. A real sense of *home*. But by the time I reached Tok, the feeling had faded although I still felt remnants of it for at least a month. I had felt briefly what it was that Wendy's minority students took for granted.

As I drove across that marshy flat just inside Alaska's Yukon border, I felt a spirit rise from the land and interact with my spirit. It wasn't voices or a spirit being in a religious sense or even something overly transcendental. It was truly a sense of arriving home, or returning to where I belonged, with emphasis on *returning*. And that is how I attributed it until I sailed into Dutch Harbor in July 1979.

When I arrived in Soldotna that February day, a Friday to be exact, in 1976, I had no home; I certainly didn't think of that acre of raw ground I owned as home. I was as much of a sojourner as a person can be. Yet I felt something that didn't have a tangible manifestation. I felt a connection perhaps less to the physical landscape than to the romance of Alaska, that Alaskan mystic which is in the soul of that hated metatext about the territorial imperative.

Three years later, I looked around my shop, a chainsaw and outboard dealership that was moderately successful, and I didn't see a gun anywhere, didn't see a clean bench on which I could have stocked a gun. Kenai's economy was lying dead in a cesspool somewhere south of Homer. Three of every four people who stopped by the shop were unemployed. I was literally living in grease. I wasn't liking myself much, wasn't satisfied with the direction I was going either personally or professionally. So I put my shop on the market.

It sold nine days later, sold before I could even change my mind.

I carried the contract. But with the buyer's down payment, I bought a 29-foot Bartender (George Calkins' design), rigged it with a pothauler and headed out to Kodiak to fish halibut.

When season closed in the Pacific, I headed south towards Dutch Harbor—the Bering Sea remained open until Labor Day.

During those three years when I really couldn't get away from my shop for long enough to even catch a humpy—the shop didn't seem able to run an hour without me—I would, every so often, remember that feeling of home I had experienced when I crossed the border that cold February day. I began to wonder what it was that I had really felt, or if I had truly felt anything at all. I could almost remember the feeling, but I didn't feel it. And its memory was becoming more questionable whenever I recalled it.

I thought of myself as an Alaskan. I never expected to be anything but an Alaskan. I had lived with an outhouse at thirty below and colder. I had spent a winter with three daughters in a log cabin too small to park a full size pickup inside. I had moose warm their noses against our windowpanes. I had to chase moose off the shoveled path to the outhouse. I wasn't a cheechako. I even knew where to find ice worms. But I never again felt a sense of *home*. I felt like a sojourner, someone marking time, someone waiting until it was time to again move on. I felt the same thing I felt when I built rifles in Oregon. I was like the patriarch Abraham who lived in a land he didn't possess but a land promised to him. I wasn't looking to go anywhere else, but I knew I wasn't home. It was as if the future and the past had acquired aspects of "place."

On my way to Dutch Harbor, I was again short of money. (There has never been a time in my life when I could enter a restaurant and order a meal without first mentally calculating whether I have enough to pay for it.) Before I arrived in port, I had to catch a few halibut so I could buy more fuel—I laid a longline set in a bay of Akun Island. I laid another set off Akutan, where a female Orca circled the boat all one afternoon. We made eye contact; I talked to her, told her I appreciated her keeping the sea lions that I had

problems with earlier in the day far up on the beach, talked to her as if she were a dog. I have no idea if she even grasped my sentiments, but she hung around (perhaps because I looked a little like one of those sea lions). And I put fifteen hundred pounds of halibut in the hold.

Between Akun and Akutan, I started to feel a return of that sense of arriving *home*. At first the feeling was remembered. Clearly, it was the same feeling I had felt when I crossed into Alaska in 1976. And I tried to dismiss it as just me remembering my return to Alaska.

But as I looked from Lava Point towards Priest Rock at the entrance to Unalaska Bay, that sense of arriving home became absolutely overpowering. And it stayed overpowering as I sailed into Dutch Harbor. I have never felt any feeling as powerful. None. And I wasn't returning to where I had been before.

The feeling was, though, that of returning—

Unless some part of Wendy Rose's observation about a psychology of home or place is transferable across generations, I can't explain what I felt. Yes, Howland ancestors had whaled in the Bering, which means they had to pass near Dutch Harbor or put into port there. Otherwise, I know of no reason why I should have felt like I was returning home when I sailed into Dutch Harbor.

Is genetically retained memory possible?

There is some slim evidence to support the idea that the early ancestors of many Anglo-Europeans dwelt, traded and traveled across a landscape that stretches from China to Europe to the lands drained by the Mississippi. This evidence suggests that they came from Parthia and Carthage and Canaan before famine and wars shuffled them around. It has them as sojourners throughout the historic era, with their history being a mostly lost record of their journeys. It suggests that for them (for me) their sense of place, their sense of home is in a time continuum and is not in a geographic location. ...

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I wrote the essay from which the excerpt is taken in the early 1990s. The collection in which it is found was published in 2001 ... it was published before I knew about the research of Michael Meaney, a neurobiologist at McGill University in Montreal, and Moshe Szyf, a molecular biologist and geneticist at McGill, both men jointly publishing papers on methyl groups attached to genes, with these methyl groups residing beside though separate from the DNA molecule, but transmitted from generation to generation with the DNA molecule. Again, the methylation of a person's DNA code is transmitted with the code without being a part of the double helix that determines genetic traits.

Understanding epigenetics causes personality to become “physical,” a thing that reveals the invisible spiritual things of God. And without sufficient evidence to establish beyond doubt that retained cultural memories come from generationally transcribed epigenetic expressions but with enough evidence to introduce the claim, permit me to assert that the sense of *home* I felt when initially sailing past Priest Rock came from a Howland ancestor, whaling out of New Bedford, wintering in Dutch in the 19th-Century. Evidently one of my Howland ancestors—or more than one—experienced the fury of the Bering Sea and relief from that fury when reaching Priest Rock, a distinctive feature when entering Unalaska Bay.

If a person's personality is the production of epigenetic expressions of genes, then the personality of a human person born of God will initially be the same as that of the human person prior to spiritual birth. But following spiritual birth—following receipt of

a second breath of life that brings to the person the indwelling of Christ Jesus—epigenetic changes will occur so that with time, the son of God will outwardly express the personality of Christ Jesus. And here is where I want to begin this section.

The people of ancient Israel were not born of spirit; were not born of God. No one in Israel was the last Adam except for Jesus the Nazarene, the unique Son of the Logos—and Israel, figuratively, was the clay deposit from which the last Adam would be formed. But a human person is to the base elements comprising the person as a son of God is to a human person, such is the complexity that goes into forming a son of God from the raw material of humanity.

The tightly wound, double-helix DNA molecule that is in every cell of a person does not represent exotic elements that are not otherwise found in the physical world, but consists of common elements arranged in an extraordinary manner. Likewise, the methyl groups that serve as bookmarks on the DNA molecule are not composed of exotic elements, but they function to transmit personality traits that previously were thought to be non-physical and produced through nurturing rather than passed from generation to generation as aspects of nature. The courage of a person is dependant upon ancestors; dependant upon weaknesses or strengths of ancestors, with the inner self of a person born of spirit having the Father and the Son as the inner self's ancestors.

The mechanics of behavioral epigenetics, however, are subject to being rewritten through generational experiences, especially trauma; thus, the shock that surviving humanity will experience during the seven endtime years of tribulation will cleanse cowardice from humanity's gene pool without necessarily killing cowards, an interesting juxtaposition that long plagued Christian apologetics: how can a God of love eliminate, say, sexual deviancy in a population without killing every deviant? Why would a God of love bring about worldwide tribulation on the seemingly innocent? Because in doing so, the trauma of survival scrubs methylation from the DNA code, methylation that has been gumming up the transmission of desirable personality traits.

While the DNA molecule has been known to be the genome that structures life, the epigenome functions as desert varnish on this structure; as hydration rind that reveals generational experiences. But with pressure and heat, the etching of past experiences can be scoured away, leaving the person without his or her biologically inherited personality, but with the mind of Christ, who Himself suffered traumatically on the cross at Calvary.

More about epigenetics will come, but for now an introduction is enough.

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