

Teaching: From the Stone Age to AI

by Crawford Kilian

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Thank you very much for inviting me to speak with you today. Those of us now of retirement age have lived through some of the most dramatic changes education has ever seen, and I know I'm not the only teacher to retire while mumbling "What the hell was *that* all about?"

When I started teaching in 1967, high tech in education was the overhead projector and the dittograph. Before I left teaching, I was designing online courses and writing a textbook on how to write for websites. I retired in 2008, just before the iPhone hit the classrooms, and now our young colleagues are wrestling with AI.

I'll come back to AI, but first I want to talk a little about my post-teaching retirement. It's been said that going to college seriously interferes with one's reading, and so does teaching. Once I was safely retired, I started reading a lot. I was beginning to look for writers with a different take on both history and the present. The history I'd been brought up on didn't explain how a half-century of ever-expanding education in North America could have resulted in the early 21st century as we have experienced it.

So I found writers like Kurt Andersen whose book, *Evil Geniuses: The Unmaking of America* <https://thetyee.ca/Culture/2020/08/28/Evil->

Geniuses-Rich-Taking-Control/ documented the neoliberal takeover of the United States, the United Kingdom, and Canada. That explained a lot about why education was chronically underfunded, because the neoliberals didn't want public institutions to succeed.

I read *The Nutmeg's Curse* <https://thetyee.ca/Culture/2022/01/19/System-That-Drives-Our-World/>, by Amitabh Ghosh, which traced the origins of capitalism to the trade policies of Jan Pieterszoon Coen, who worked for the Dutch East India Company in the 17th century. His thesis was that there is no trade without war, and no war without trade.

I also read Ghosh's *Smoke and Ashes* <https://thetyee.ca/Culture/2024/03/19/What-Opium-History-Tells-Us-Today-Drug-War/>, about the opium trade in China and how it became the foundation of some of the greatest American fortunes.

And I read David Graeber and David Wengrow's remarkable book *The Dawn of Everything* <https://thetyee.ca/Culture/2024/03/19/What-Opium-History-Tells-Us-Today-Drug-War/>, which invites us to consider that our Stone Age ancestors were just as smart as we are, and probably smarter. Moreover, Graeber and Wengrow argue that we weren't just generic hunters and gatherers for 200,000 years. Instead, we lived in many different kinds of society, from authoritarian horror shows to egalitarian democracies.

That led me to think about my own education in 1940s California. The history we were taught started with Christopher Columbus and segued rapidly to the triumph of Europe over peoples of which we knew little and cared less. They were savages whose function was to bite the dust when shot off their horses by the brave pioneers sheltered by their circled wagons.

I recall learning in grade 3 or 4 about the Yang-Na, a tribe living in the Los Angeles region who came under the control of Spanish priests working the California missions. But I didn't learn their fate until I was retired, when I read a book, *Eternity Street* <https://thetyee.ca/Culture/2016/05/30/Wildest-West/>, about the early days of Los Angeles. It mentioned in passing that the Yang-Na were allowed to get drunk on Saturdays; then they were arrested and auctioned off for a week's slave labour until the next Saturday rolled around. The Yang-Na effectively vanished in an 1862 smallpox epidemic that raged up and down the west coast; here in B.C., a third of the 60,000 Indigenous people living on the coast died of smallpox within a year or two.

Well, why hadn't we learned that in school? Very simply, doing so would have turned us from the heroes of our own story to the villains in an Indigenous tragedy. Seventy-five years later, the Trump government is busy literally whitewashing the facts we now know about American history, trying to take Americans back to the sanitized mythology I was taught.

Now one effect of mythology is that it doesn't encourage close analysis of mythic figures; they're gods or demons or superhumans, simplified for storytelling purposes. And the effect of the mythology I learned in school all those decades ago was that I didn't really think much about the preliterate people who preceded us. The real action, the real interest, was in the farming peoples who developed writing to support a modern hierarchical state, complete with kings, priests, and warriors.

Writing was the big breakthrough that permitted the creation of modern states. It enabled rulers to assess their own resources and to allocate them to ensure the strength of the state. That required a literate class, and that required education. The Sumerians invented the first classroom as an administratively convenient way to teach groups of children. Other agricultural states, like those of ancient China, seem to have independently invented the classroom for similar reasons.

And that led me to ask myself a question. If the Sumerians and Chinese taught children with methods we would recognize, what did the preliterate peoples do?

One thing we know about Stone Age peoples is that their surviving technologies, in the form of spears, arrowheads, blades and axes, were remarkably conservative. A single style of arrowhead, for example, could

be found in sites dated many centuries apart. Then that style would vanish and another would take its place, perhaps introduced by a new people.

We tend to look down on such slow-changing technologies because we're accustomed to new technologies transforming our lives every few years. But to create a single style of arrowhead or spear point, generation after generation, implies extraordinarily good education.

That in turn implies people endowed with high intelligence, excellent language skills, and near-photographic memories.

Even the smallest hunter-gatherer group would have had a full stock of stories, songs, mythologies, and heads full of useful knowledge acquired from parents and relatives. They would have spent days and nights talking, laughing, grieving, talking shop, and debating. As a general rule, natural selection would have favoured the articulate, the observant, and the good explainers.

Now I can imagine a woman in her late teens or early twenties, a skilled hunter, taking her two boy cousins to find a reliable outcrop of flint. She shows them how to identify a promising chunk of rock, how to break it off, and then how to chip flakes off it. She keeps up a running commentary as she fashions a spear point, and challenges the boys to do the same. Clumsily they chip their first crude points, then break more stones to

practice on. She encourages them, very likely with easy-to-remember songs or chants about technique.

The cousins listen attentively, memorize the songs and chants, and their next points are better. They can take endless hours to practice because the adults' spear points are good enough to keep them well fed, and good hunters enjoy great prestige and authority. The cousins dream of acquiring such status, and keep practicing while listening to the adults talk around the campfire about how to choose the right stick for a shaft, how to butcher prey, how to preserve the hide and use hand axes or blades to dismember the carcass.

By the time the cousins are young men, their mentor may be dead, but they have learned all she had to teach them and they are now hunters the group can rely on.

They are also reliable teachers, teaching their children as they themselves were taught. At night, around the campfire, they talk about their aunt, the great huntress, and how well she fed her people. The children listen, and remember. In a few generations she will be a goddess to whom hunters pray for success.

The more I've learned about the preliterate peoples, the more it's clear that they were in general highly intelligent, highly articulate, and good listeners. Their memories were excellent, and they were very observant.

Some at least must have been able to do complex mathematics in their heads. And they could operate not just in little hunter-gatherer bands, but in elaborate agricultural societies as well.

So someone in Mexico 9,000 years ago noticed a plant called **teosinte** <https://evolution.earthathome.org/grasses/andropogoneae/maize-domestication/> , and thought it might be made a more useful food resource. So they cultivated it through generations, passing their knowledge to their children around the campfire. And eventually they produced what we now call corn or maize. We are the unwitting beneficiaries of generations of ancient Mexican genetic engineers.

Or consider **Poverty Point** https://en.wikipedia.org/wiki/Poverty_Point , in Louisiana, an enormous system of earthworks built between 1700 BCE and 1100 BCE—six centuries. Something induced the hunter-gatherers living along the Mississippi River to gather in what is now Louisiana and build a kind of settlement and ceremonial centre. Whatever they got from it, it seems to have been carried from generation to generation; each generation evidently thought it was worthwhile work and brought up the next generation to continue it. As a functioning culture, Poverty Point seems to have collapsed at about the same time that Troy fell.

And here's an example from Canada. In 1988, archaeologists were working in downtown Winnipeg, in an area known as The Forks. Two elders approached the archaeologists and told them that the site was famous for

an event in the **year 1285** <https://thetyee.ca/Culture/2024/08/09/Winipek-Affirming-Indigenous-Vision-Future/>. A drought had been afflicting much of central North America, and that had led to damaging wars between the peoples. So a conference was called involving at least 10,000 people from nine different cultures, and in 1285 they had met at The Forks to work out a peace treaty.

Working the site, the archaeologists found pottery shards from nine distinctive Indigenous cultures, dated to just the time the elders said the conference had taken place. The story had then been handed down for 700 years, an example of how preliterate peoples, operating in multiple languages, could convene and conduct an international conference and bring it to a successful conclusion.

I could go on, but I hope I've made my point: preliterate societies were skilled at teaching and learning. The arrival of Europeans, especially in the Americas, was a catastrophe. European diseases like smallpox and measles spread on Indigenous trade routes, far ahead of the Europeans themselves. The high fatality rates shattered Indigenous communities, depriving the survivors of the practical knowledge and political wisdom that had passed down through generations.

The agricultural societies of Asia and the Middle East, meanwhile, had been shaping themselves into something like modern states. The sheer numbers of people that could be supported by farming required a small

class of accountants and record-keepers to keep track of food supplies, taxes, and men available for military service. The accountants were often priests, acting with divine authority to determine the bottom line.

Someone had to educate that class, and here's where classrooms in Sumeria and China come in. They created a literate managerial class to help run a hierarchical society, and no better way has emerged in 4,000 years. Most societies since then have done the same, expanding formal education to meet the needs of church and state. Not until the 19th century was the idea of free public education actually adopted in North America. And right from the start, it was seen as a path to social mobility.

Public education turned out to be a virtuous cycle. Literate kids created a demand for printed news and entertainment. Even the penny-dreadfuls and dime novels of the late 19th century offered thrills and interesting ideas to the young people who could read them.

Strikingly, print also encouraged the rebirth of oral culture. It had never really gone away, but it was the culture of the lower classes. *Huckleberry Finn* is a kind of homage to that culture: Huckleberry's Pap is a foul-tempered illiterate, and Huckleberry's language is no better than his – but Huckleberry shows that the American oral vernacular is capable of creating a detailed and nuanced narrative.

As well, oral culture flourished in the middle classes. Popular writers like Charles Dickens published their novels first in instalments, and when the latest instalment arrived on a ship from Britain, families would rush home and someone, usually the father or mother, would read it to the enthralled family. For that matter, Dickens and many authors went on stage to read from their written works.

The print culture of the 18th and 19th centuries of course was the result of the printing press, which opened literacy to a far broader population. Printing was an enormous cultural shock, and it took centuries to assimilate its effects. In the 20th and 21st centuries, more shocks were to arrive.

Now I'm going to launch us from the conquest of the Americas to the middle of the 20th century. The Second World War has ended in victory for the Americans and their allies, a victory thanks in large part to education. Armies have always been schools as well, but the armies that won the war were among the finest educational institutions the world had ever seen, and their graduates were masters of logistics, technology, and a range of skills that would serve them well in peacetime.

One of the first demands that Canadians and Americans made on their peacetime governments was better access to education. They wanted their kids to get at least through high school, and if possible go on to some kind of post-secondary. Veterans, most of them old enough to remember the

Dirty Thirties very well, wanted more education, and got it. In both Canada and the U.S., community colleges and public universities found themselves teaching teenagers and people in the 30s in the same classroom, and the demand did not ease.

If anything, it increased as young families began the baby boom, which lasted for 20 years. Free public education had been theoretically available for many years, but in practice many children had had to drop out for economic reasons – especially in the Depression. Some of those dropouts had made up for it by going back to school after the war, and all parents wanted a better life for their kids than they had known. Education was critical, and dropouts were considered failures of the system.

So political pressure was intense to build more schools, more colleges, more universities. They still offered some trades training, but the emphasis was always on college prep – getting the kids ready for post-secondary and upper-middle-class professional occupations.

To give you a sense of how rapid the growth in education was, I consulted Perplexity.ai , an AI search engine, and asked it what percentage of Canadians were post-secondary graduates in 1950, 1960, and 2000. Perplexity told me that just 6 percent of Canadians were enrolled in post-secondary in 1950, so the percentage if graduates would have been somewhere between 5 and 8 percent.

In 1960, **11.9 percent of the population** https://publications.gc.ca/collections/collection_2017/statcan/CS81-601-1980-eng.pdf aged 15 or more had graduated from some kind of post-secondary, with men slightly ahead at 12.5 percent and women at 11.2 percent. In 2000, 38.2 percent had a post-secondary credential, and this year, 2025, 63 percent of Canadians aged 15 to 64 have achieved a post-secondary credential – the highest proportion in the G7 nations.

I was born in 1941, which makes me a war baby, and it was my demographic that benefited the most from the education boom. While we were still in high school, the Russians put a satellite into space and a scare into western governments. Because of a perceived education gap between us and the Soviet Russians, governments poured money into education at all levels. That meant that kids like me could take advantage of more scholarships to more universities, and we graduated just as the first baby boomers were entering high school in the early 1960s.

I started my teaching career in 1967 at the old VCC King Edward campus, which was then just two years old, and moved in the following year to brand-new Capilano College on the North Shore. We didn't know it yet, but the baby boom was over. But who cared? The last of the boomers wouldn't arrive in our classrooms until the mid-1980s. So students arrived in their hundreds and then in their thousands.

The education they got was classic Sumerian style: at VCC, in a repurposed high school building, the desks were still on rails. They got what I learned to call “full frontal teaching”: someone standing in front of them, lecturing, explaining, and scrawling on a chalkboard, just as we war babies had been taught.

But something else was going on that would make our students very different from ourselves. Movies had been a staple of cultural life from the early years of the century. Every home had had a radio since the 1930s, and by the early 1950s Canada was broadcasting TV (a lot of Canadians living near the border were already tuning in to American stations). By the 1960s, movies, radio and TV were beginning to replicate the collective experiences our Stone Age ancestors had, sitting around their campfire: they were watching and hearing stories about heroes, about the great forces that ruled the world, and about how to enjoy life.

Print-based education found itself competing against a revived oral education, complete with singing and dancing and dramatic stories. I could see the kids mentally changing channels right in my classroom, looking for something, anything, more interesting than me explaining essay structure or subject-verb agreement.

Eventually I adapted my teaching to include lots of jokes, and my classes generally went well. But in hindsight I can see my teaching was most effective when I sat down with individual students and went over their

writing with them, one to one. I didn't know it, but I was teaching them to chip flints into arrowheads.

Meanwhile, demographics began to catch up with us. As the baby boomers tapered off in the late 1970s and early 80s, married women began to turn up in growing numbers. The reason was simple: stagflation and then recession meant that their households needed a second income just to stay above water. We also began to see younger women in previously all-male bastions like business management. And everyone was more serious about their education because so many college grads were already out in the labour force that a diploma or degree was becoming just a lottery ticket: it might get you an interview, but it wasn't a guaranteed job anymore.

At some point government funding for education began to fall behind the demand. Tuition began to rise. International students, a novelty in the 1980s, became essential in the 1990s. By paying the full costs of tuition, the internationals subsidized Canadian resident students. A lot of school districts began to recruit internationals as well. At the post-secondary level, we began aggressively recruiting students in Japan, South Korea, and China.

And a new competitor for student attention made itself known. In a Sumerian classroom, it's just the teacher and the students. In Canadian classrooms, it's now the teacher, the students, and all the internet. By the time I retired in 2008, most of my students had laptops. I tried to exploit

them by challenging students to find information online instead of in their heads. The results were doubtful, at best.

It was even worse in 2010 when I went back into the classroom at another college as a semester-long substitute. The prof I was sitting in for had stipulated no smartphones in class, and trying to enforce his rule nearly ruined the semester for the students and for me. This was three years after Steve Jobs had introduced the iPhone, and my students were already deeply addicted.

I was glad when the semester ended and I could go back to walking my dogs and googling information for writing my articles in The Tyee.

And now we've got AI. I explored ChatGPT soon after it came out and wrote a **Tyee piece** <https://thetyee.ca/Analysis/2022/12/13/New-AI-Chatbox/> about it. And I will confide to you what I didn't say in The Tyee: its first replies read like the quality bullshit that any good English major can produce on demand.

But it also made me consider some of the issues I've been discussing this morning. Writing was a way of fixing information so that any literate person could access it. But as we came to depend on it, our powers of memorization began to fade. Oral culture survived among the illiterate, but literacy offered a way out of poverty and eventually we all took it. With the loss of oral culture we also lost our powers of speech and argument. From

Aristotle's time to our own, rhetoric has been a technical subject for specialists, not a means of expression for everyone.

And now artificial intelligence seems poised to make natural intelligence obsolete. Computers in the classroom taught us to think less about the right answers, and more about the right questions. Now, if you ask an AI chatbot, "What are the best ways to phrase a question for you?" – you'll get a detailed answer, and perhaps some follow-up questions you haven't thought to ask.

At this point you may be expecting some pessimistic conclusion, but I don't have one. Actually, I owe you thanks for inviting me to talk about this, because as I've put this speech together I've come to understand something.

I mentioned our ancestors teaching each other in small groups, and doing it so well that given technologies could be passed down intact through many generations. And I mentioned how at night they must have gathered around a campfire, talking and singing and arguing, passing along stories about their parents and grandparents and great-great grandparents; any further back and the ancestors became mythical superhumans or even gods. That image, of a collective around a campfire, teaching and learning, has stuck with me.

And while writing this speech, I've come to realize that our modern media function the same way. Instead of a campfire, though, we have a movie screen, or a radio, or a laptop, or a smartphone. *The screen is our campfire*, and the collective who gather around the screen are teaching and learning all the time. No doubt our ancestors taught and learned a lot of nonsense along with how to chip a flint arrowhead, and the same is true of us.

Nevertheless, if we can find the right questions, we may be able to stumble our way to better answers, and to assimilate AI into human life instead of merely obeying its dictates. Our ancestors around the campfire talked their way out of some very bad situations by drawing on their collective knowledge. I believe our children will be able to do the same.

Thank you again.

A note on the speaker:

Born in New York City in 1941, Crawford Kilian grew up in Los Angeles and Mexico City. After graduating from Columbia University in 1962, he served in the US Army. Moving with his wife to Vancouver in 1967, he began a 41-year career teaching in BC community colleges; he retired in 2008. Crawford has published over 20 books, both fiction and nonfiction. Most recent is the third edition of *Go Do Some Great Thing: The Black Pioneers of British Columbia* (2022). He also wrote an education column for the *Vancouver Province* from 1983-1994, as well as publishing articles in other newspapers and magazines. Since 2003 he has been a contributing editor of *The Tyee*, a Vancouver online magazine. He lives in North Vancouver with his wife Alice and their Aussie shepherd Perri.