

Pari Perspectives

"The future has an ancient heart"
CARLO LEVI

**Ideas in Science, the Arts,
Spirit and Community**

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The Common Good



Discerning Bohm's Algorithm in the 21st-Century Hermeneutic of Artificial Intelligence

DONNA KENNEDY-GLANS and DON HILL

It's 2021 and all is not well in Alberta. Canada's petro-state province has been clobbered with a triple whammy—the pandemic, an oil crisis, and a crippled economy. In a very anxious world, this could be the nadir or an apex moment—or *both*—for Alberta.

And while there's been a pause or awakening, an opportunity to see the world anew and move toward alternative futures, the pull of polarized thinking—dark pitted against the light and fear versus hope—pushes Albertans to pick a side and hang on for dear life and their livelihood.

So what to do?

'Hold the space in *creative suspension*,' David Peat would likely counsel if he were still with us. 'True creativity appears when we stay within the tension of a question or issue and don't rush to assuage our insecurity with easy solutions.'

Holding the space in a time of monocultures—uncontrollable rage, polarized political thinking—*feels* like the *deadly embrace* in computational science (when two software programs 'are each waiting for the other to complete—or even just to produce a data value—before proceeding'); this deadlock of 'dynamic inaction' foreshadows a computer crash, but it also identifies the perturbation point to debug the paralyzed programming.

Understanding the need for movement (and the perils of getting stuck), we co-author blogs and podcasts under the masthead 'Beyond Polarity,' probing the algorithm capable of resolving the tension of deadlocked opposites.

We are now living inside *The Digital Age*.



Formulated with the numeracy 0 and 1—the basis of all things digital—we find ourselves in a place with placeholders that embody no gender, no country, no cultural politics.

The Hegelian dance of thesis/antithesis birthing synthesis requires collisions and terrifying clashes of interests—the end product is history.

Reframed: the 'poet of thermodynamics' Ilya Prigogine described the calamity of human existence as inspiration and the metrics for a *dissipative structure*—creation and destruction embedded within the same process—a Nobel prize-winning idea, which psychoanalyst Carl Gustav Jung echoed, earlier on, that opposites are complementary, even alchemical in their transformation. And yet, as Bohm hinted, there can be more—much more in a nervous romance inherent with opposites. And we are curious about that.



Ilya Prigogine (1917-2003), physical chemist noted for his work on complex systems

Bohm's Implicate and Explicate Order

Bohm's collaborator Basil Hiley, uses mathematics to explain *implicate* and *explicate order*. Algebra is attractive for people who love math. But what about the rest of us?

Leroy Little Bear, a Blackfoot elder from our territory and well-known to Peat, tells of other ways of knowing, and the indigenous algebra to account for the ineffable.

In his book *Blackfoot Physics*, Peat highlighted the Blackfoot's worldview of spirit—as a subtle energy—concentrated in particular locations on the prairie

landscape; there's an algebra associated with these special places—petroglyph engravings on walls of stone; vision quest enclosures for mountain retreats; or by way of medicine wheels and other careful arrangements of large stones in circular patterns on the plains.

'It's not that it can't happen elsewhere,' Little Bear told Don Hill for a magazine article. 'But there are certain places that act as amplifiers of energy waves that flow through you and me and everyone else.'

In a conversation recorded at Writing-On-Stone, a UNESCO World Heritage site in southern Alberta, Little Bear outlined how Blackfoot renewal ceremonies of ritual singing, held positions (think of yoga), drumming, and other repetitive tasks can induce a state of non-ordinary awareness.

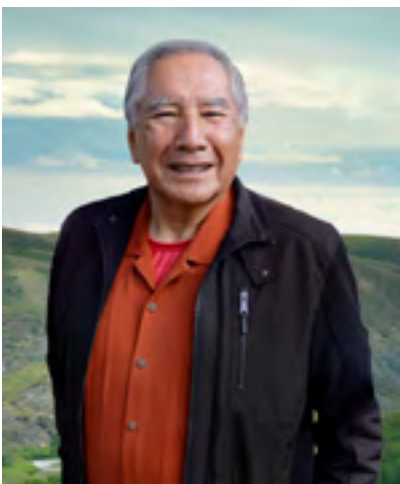
'Talking about these energy waves,' Little Bear concluded, 'it's almost as though you act simply as a conduit, like a radio, picking up these energy waves that are always there and flowing through you and happening at the same time. It just depends where you're tuned.'

From Analog to Digital

The Davids—Bohm & Peat—were big on the art & science of pattern recognition.

The history of art is replete with stories of individuals who had the uncanny sense for discerning patterns transparent to the rest of culture.

Today, computer science is supplanting human beings' ability to spot the Waldo!



Left: Leroy Little Bear, Blackfoot elder; right: medicine Wheel at Nose Hill Park, Calgary Alberta constructed by the Siksikaititapi of the Blackfoot Confederacy



Deep Learning and Machine Learning are the stuff of 21st century AI (artificial intelligence) that play with and identify patterns faster than humanly possible. What's more, the machines can simulate multiple outcomes of untold numbers of scenarios—the implicate and the explicate—modelling what typically might take centuries of human history in a process of multiple cycles of cycles computed in mere moments.

It's all rather dazzling.

And so it is humans, aided by machines, will soon perceive the whole picture—the big temporal picture—unconstrained by time. As Peat explained, we can access consciousness beyond time and space, we can observe past-present-and future; the algebra of this astonishing claim could be re-presented digitally, allowing us to play with time.

Navigating the AI perturbation point

Just as David Bohm was recruited to build the world's first atomic weapon, some of the smartest people in the world have been engaged in an artificial intelligence arms race.

Couple that with the deployment of low-earth orbit satellites—not one square metre of the planet will be obscured—everyone will have axis (sic) to the data 'cloud' encircling the earth (an ironic spin on Pierre Teilhard de Chardin's theorized *noosphere*).

Access to facts and figures will be lightning fast; AI decision-making even faster, as positive feedback loops feed the machines. The privacy of one's own mind will be in question as sensors monitor all vital signs and tease out hidden variables to make predictions. Omniscient machine intelligence and 24/7 digital surveillance will breathe life into the mythical gods that once watched over humanity.

We're pretty much there already.

Computers running with sophisticated algorithms can



Artist's impression of satellite space debris

make decisions on their own—stock market investments, social media, Amazon and so forth—human beings are optional.

Since machines will no longer require human intervention to 'think' and observe, what's ahead could be the best of times *and* the worst of times. How we navigate this perturbation point is critical.

Is there a place at the table for Peat's process of gentle action?

The brilliant physicist John Stewart Bell knew quantum mechanics 'carries in itself the seeds of its own destruction.' You might recall Karl Marx saying something similar about Capitalism.

Right now, a monoculture of rage is gaining strength around the world. People feel wronged and have taken to the streets. Cancel Culture is a 'thing'. There is an economy of anger—social media fed with algorithms spits out advertising and propaganda—a positive feedback loop that thrives on chaos. You might consider this a negative scenario—the bugs and the flaws exploited to no end—but we think of it as data.

Flaws have a useful purpose.

In the late 1990s, Hewlett-Packard used defective computer chips to test a heretical idea: imperfections (which typically crash a computer system) could be exploited for good result. Engineers, intentionally using buggy processors deployed in H-P's Teramac, learned that defect-tolerant architecture could *outperform* conventional workstations.

Human brains function in a parallel way; our central nervous system will continue to cogitate even if one aspect of our humanness is buggy and perceives the world somewhat differently than norm (in some instances, a distortion is considered an aesthetic!).



Humanity is on the verge of a dynamic perturbation point in this new era of machine learning. We are positioned to advance and accelerate human intelligence. That humanity is flawed is not a negative, it's just data.

A Post-Human Era

At one time the very thought of electricity and discarnate voices heard over great distances was attributed to the gods. Religious ontology tended to be the arbiter of what's what—the software running human hardware—local cultures held in check with a governor on how things—must-be or else!

As the 19th century unspooled, extraordinary inventions altered the lives of ordinary people. The phonograph, photographic film and cinema, steam locomotion and the internal combustion engine, the telegraph and the telephone—there seemed to be no limits to what humanity might do next with boundless imagination. Mary Shelly's *Frankenstein* perturbed readers to consider the implications of a limitless curiosity supported by the capacity to make whatever pops into one's head. It was a horror story.

Which brings us to the present and smart machines of our own creation that run the world without the necessity of human oversight.

While many believe humanity will always be in charge, there are thoughtful people who consider the probability we will be outrun and overwritten by an artificial (or



alien) intelligence. The inventor and entrepreneur Elon Musk, while wary of AI, nevertheless, is determined this year to embed the first neural implant to enhance human cognition—a digital prosthetic—if you can't beat 'em join 'em embrace with machine intelligence—heralding the onset of a Post-Human era.

David Peat's invocation to 'hold the space in *creative suspension*' suggests, well...a whole lot of things for the immediate future—a digital future defined most certainly (or defiled) by algorithms.

Humans vs Machines could be a polarizing seesaw with no end. It's also possible to move beyond polarity, to transcend and syncopate the dynamic as one might a Bach keyboard in musical counterpoint—playing the two distinctive monocultures off each other—creating the conditions for an emergent 'third voice.'

It's kind of like the tango.

Dancing with a partner with sharp stiletto heels is dangerous, one slip and all fall down go boom. Yet skilfully executed and in balance—one partner neither dominant nor acquiescing to the other—both participants in a



perpetual *creative suspension* can achieve a mutually satisfactory outcome. The glorious art is the dance of equals as opposites; an algebraic expression.

Would it be naive to think smarter humans, better machines and machine-guided humanity will be the art of algorithms derived with *gentle action* in mind?



DONNA KENNEDY-GLANS Crossing boundaries is Donna's 'thing.' Born into a farming family in southern Ontario, Donna went to law school then moved to the western prairies where she jumped into the global energy business with two feet, working on projects in more than thirty-five countries. Donna's been elected as a politician and appointed to a ministerial portfolio responsible for electricity and renewable energy; published on a range of topics from corporate integrity to gender equality; founded a capacity building non-profit to support female leaders in Yemen that now works on First Nations reserves in Alberta. Presently, she serves on the board of The Banff Centre for Arts & Creativity and otherwise does whatever it takes to bring together good ideas and good people to do good work.



DON HILL He's that bald, yes. And he's a sound designer/artist, writer, broadcaster, and interactive digital media producer. Don's television programmes have been screened around the world. A former host of *Tapestry*, CBC Radio's national programme on religious life and ontologies, he's also presented numerous documentaries on CBC Radio in Canada. Don's investigation of psychoacoustics of 'place' inspired his augmented history app *Edmonton Soundwalks*, a 3D audio guide for mobile phones. *Special Places: Writing-On-Stone* is an immersive 360 video presentation that scales from full-dome screens to VR (virtual reality) headsets. In residency with the UK's renowned *Blast Theory*, he recently made *WRGO*, a surreal 3D audio narrative. Presently, he's a science podcaster with Genome Canada (Alberta).