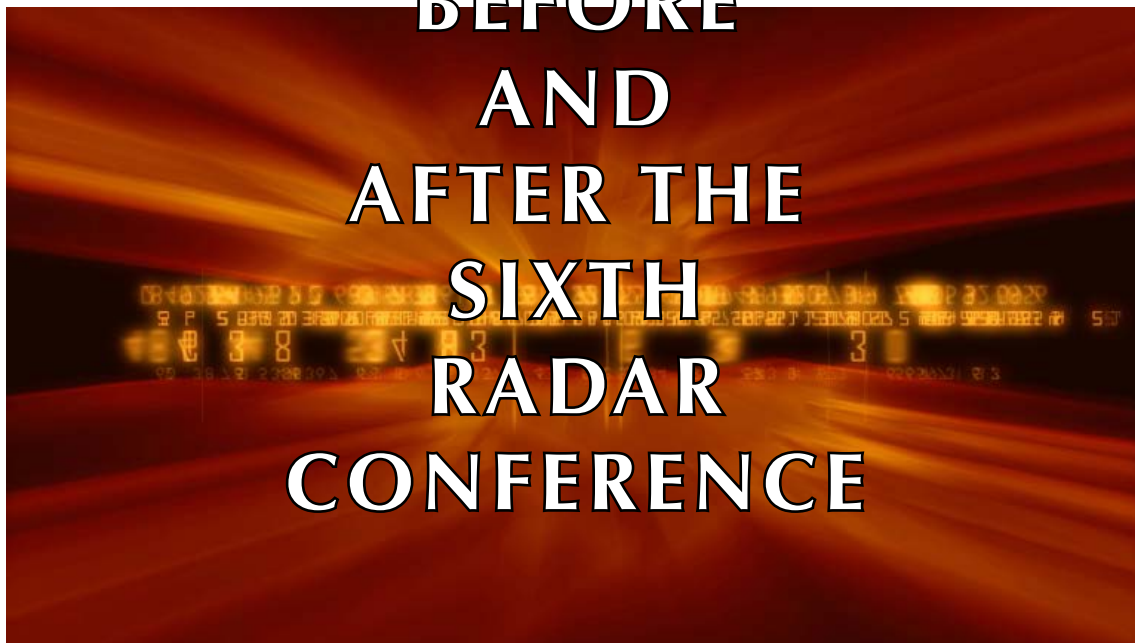


# BEFORE AND AFTER THE SIXTH RADAR CONFERENCE



Byron Peters, ANTI-RACIST MATHEMATICS AND OTHER STORIES: PART 1 (PURE DIFFERENCE). Video Still. 2017

**PURE DIFFERENCE**, the first chapter of Byron Peters' ongoing video series **ANTI-RACIST MATHEMATICS AND OTHER STORIES** describes the realm of numbers as "a world dominated by the countable." This is a world defined by the logic of capitalism, by the quantifiable. Here, a system described through number is cold, codified, tyrannical. Within this system, a soldier, a worker, an entity is, as the saying goes, "nothing but a number".

I wish to present some complementary, occasionally contradictory stories that describe not the systems that oppress us, but how these systems are inevitably upset and subverted. I also wish to consider how cultures rooted in non-European traditions might understand reified systems of knowledge, such as mathematics, in ways that present creative and epistemologically distinct challenges to colonial, patriarchal, and capitalist ways of knowing and being.<sup>1</sup> This approach is not simply a pretext towards opening possibilities for new ways of thinking (although it is fun and interesting to talk about such possibilities), but also supports the idea that reality, which includes mathematical reality, is far more complex than any system that can ever be rationalized. This complexity must be recognized, not systematized.

If we trace their genealogy, we find that the seemingly reasoned study of maths and sciences are historically rooted in investigations to discover the magical and spiritual properties of the

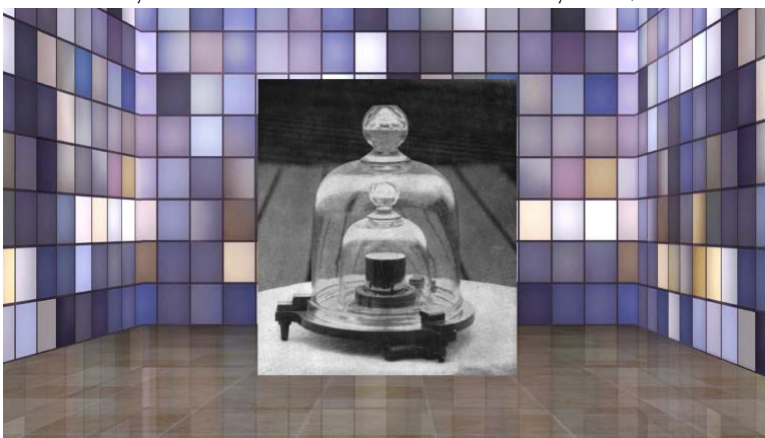
world around us. Just as chemistry owes a debt to alchemy, embedded in the study of number is numerology. In his time, Pythagoras was not simply known as a mathematician but also as a cultic leader claiming supernatural powers and a golden thigh imprinted with the image of Apollo.<sup>2</sup> His teachings were indebted to Iranian cosmology, much as Fibonacci, as is pointed out in **PURE DIFFERENCE**, owes many of 'his' ideas to scholars of the Islamic Golden Age. Drawing from Near Eastern scholarship, numbers and ratios were imbued with ethical, sacred, and cosmological qualities in the Pythagorean tradition.

It is from such lineages that present day number theorists continue to uncover the special, multitudinous properties and relationships contained within and between numbers. For instance, we can consider primes, squares, cubes, sums of sequential squares and cubes, numbers that can be expressed as the sum of a series, perfect numbers, friendly numbers, not to mention figurate numbers that form tetrahedral shapes or the vertices of a nested pentagon or a hypercube. It is an investigation of infinite measure (and as **PURE DIFFERENCE** hints at in its passing reference to Cantor's concept of aleph-null and aleph-one, there also happens to be an infinite number of different types of infinities).

In short, numbers, like all entities, can be so much more than what they are understood as

under the rubric of capital. Indeed, they are imbued with idiosyncratic, qualitative, even culturally inherited properties. At the very least, every number is unique in that it can be broken down into a unique combination of primes and possess special relationships to other numbers. But for the zealots, the study of numbers is much more, a gateway to a realm of abstraction that hints at the underlying, immutable, yet capricious nature of the universe. Or, as summed up by the inimitable mathematician Srinivasa Ramanujan, "An equation for me has no meaning unless it expresses a thought of God."

I open Theresa Hak Kyung Cha's **DICTEE** to a list of numbers written as calligraphic Chinese ideograms. Two corresponds to yin and yang, three is for Heaven, Earth, and humans. She names the four cardinals, the five elements, the seven stars of the Big Dipper, the eight diagrams. Listen sits across from me as I read. I take out their edition of the **I CHING** and three Canadian quarters. Tossing the coins conjures broken and unbroken lines—the yin/yang of Cha's number two—that are grouped into a series of three line (or 3-bit) characters (again, reminiscent of Heaven, Earth, and human life). Consequently, there are 23 possible three-line combinations of yin and yang that equal the Eight Diagrams, which, in combinations of two, total 6-bits of possibility, or 64 hexagrams. This, the material of **THE BOOK OF CHANGES**, written in binary code, is the same elemen-



<sup>2</sup> Thomas McEvelley, **THE SHAPE OF ANCIENT THOUGHT**. (New York: Allworth, 2002), p 668.

<sup>1</sup> In guiding my thoughts, I am especially indebted to **DISRUPTING LIFE/NOT LIFE**, a 2015 keynote address given by Kim Tallbear that discusses how conversations around New Materialism in STS studies ignore Indigenous knowledge systems' thousands of years old understanding of the animacy of objects and non-human entities. She additionally points to the discomfort of academics rooted in Protestant secular traditions in addressing the spiritual. Drawing from Dakota scholar Vine Deloria, she describes an Indigenous metaphysics that "includes [...] the co-constitutive entanglements between the material and the immaterial that is Indigenous peoples' social relations" which includes relations with spirit beings.

tal structure that flows through our daily lives as digital information. In this way information, represented by ones and zeroes, can be understood not only as data but as light and dark, yes and no, movement and stillness. Each datum becomes a conduit for change.

6-bit BCD (with each character corresponding to one of the sixty-four hexagrams) was a character encoding used by early IBM computers including the IBM 704. One version of this vacuum-tubed behemoth was housed for a time in Building 26 of MIT in Cambridge. As detailed in Steven Levy's **HACKERS**, IBM represented "stifling orderliness" embodied in "the button-down white shirt, the neatly pinned black tie, the hair carefully held in place, and the tray of punch cards in hand."<sup>3</sup> This bureaucratic spirit is evoked in the 8-channel sound installation **ADDED VALUE**, where a Venezuelan choir re-performs verses first sung at the Sixth Weather Radar Conference, held at MIT in 1957. Exuding hubristic positivism, "Measure Everything, Everywhere, All the Time" cries out hungrily for all-encompassing mastery of the world through information. MORE DATA, MORE DATA, / FROM POLE TO EQUATOR / WE'LL GAIN OUR SALVATION / THROUGH MASS MENSURATION.<sup>4</sup>

However endemic this poetically expressed totalitarian position, there are indeed other strains, currents, and paths through which data may be distributed. For instance, on the third floor of Building 20 at MIT, practically next door to the IBM 704, was the headquarters of the Tech Model Railroad Club, one of the first wellsprings of hacker culture. Only three years after the Sixth Weather Radar Conference, stemming from the same institution, the very same culture of early computer development, we find a "Sandberg-esque" poem by early computer hacker Peter Samson of arguably (marginally?) superior quality, printed in F.O.B., the newsletter of the Tech Model Railroad Club.

*Switch Thrower for the World,  
Fuze Tester, Maker of Routes,  
Player with the Railroads and the System's Advance  
Chopper;  
Grungy, hairy, sprawling,  
Machine of the Point-Function Line-o-lite:*

*They tell me you are wicked and I believe them; for  
I have seen your painted light bulbs under the lucite*

*luring the system coolies...*

*Under the tower, dust all over the place, hacking with  
bifurcated springs*

*Hacking even as an ignorant freshman acts who has  
never lost occupancy and has dropped out*

*Hacking the M-Boards, for under its locks are the  
switches, and under its control the advance around  
the layout,*

*Hacking!*

*Hacking the grungy, hairy, sprawling hacks of youth;  
uncabled, frying diodes, proud to be Switchthrower,  
Fuze-tester, Maker of Routes, Player with Railroads,  
and Advance Chopper to the System.<sup>5</sup>*

The track diverges. Before you, there are two possible paths. Following one avenue, you come upon another fork in the road, then yet again upon another. The track loops around and upon itself. Ferreted underground, a hacker throws the switches. She navigates a trajectory, bypasses the many snares that are embedded in the system. The path that she encounters is never the most obvious one. It is certainly never boring.

**BEFORE AND AFTER THE SIXTH RADAR CONFERENCE** guides us along just a few of these hidden avenues, stopping, starting, hinting at ways to go. However, unlike the scientists of the Sixth Weather Radar Conference, the choir that makes up this polyvocal narrative does not sing in unison. Reflected in multiple channels of sound, we are presented with multiple histories, songs, and narratives. It is a reminder that just as there are many potential routes within a system, within an event that might be named history, there are many exciting ways to tell a story.

<sup>3</sup> Steven Levy, **HACKERS: HEROES OF THE COMPUTER REVOLUTION**. (New York: Doubleday, 1984), p 30.

<sup>4</sup> As alluded to in **PURE DIFFERENCE**, this exhortation of control through data materializes insidiously in the punch card machines invented by Herman Hollerith, technology made available during WWII through illegal business transactions between IBM and Nazi Germany. The census operations carried out using 'Hollerith machines' proved indispensable in singling out Jews, Roma, and other ethnic groups undesirable to the Nazi regime, as described in Edwin Black's **IBM and the Holocaust**.

<sup>5</sup> Levy, **HACKERS**, p 10–11.



**STACEY HO** is an artist, writer, and curator living on unceded Coast Salish territories. Her practice considers intersections of culture, history, and embodied experience from a feminist perspective. With a background in photography and performance art, she often incorporates language, sound, and gesture into her work. She is presently developing a body of work around listening, place, and memory with assistance from a Project Grant from the Canada Council for the Arts.

**BYRON PETERS** is an artist and writer of Chinese-Canadian and European descent. His practice critically engages labour and materiality in the context of emerging technologies, economic imaginaries, prison education, and the effects of gentrification and displacement.

This text accompanies the exhibition  
**BYRON PETERS: BEFORE AND AFTER THE SIXTH RADAR CONFERENCE**

**ANTI-RACIST MATHEMATICS AND OTHER STORIES: EPISODE 1 (PURE DIFFERENCE) (2017)**  
**2-CHANNEL VIDEO, 22 MIN** Debut episode in a series of educational videos towards a post-capitalist school system.

Voiceover: Aisha Ricketts  
Sound Design: Josh Stevenson  
Animation for excerpt from Ursula K. Le Guin's **THE DISPOSSESSED**: Shamina Sharma Mixing &

**ADDED VALUE (2016) DOLBY 7.1 SOUND, 23 MIN** 8-channel sound installation and film score for a far-future documentary on surplus value

Score performed by C. Diab (Bowed Guitar & Trumpet) and Byron Peters (Fire Alarm) Recorded at Big In Japan Recordings (Vancouver) Mixed by Luis Al-mau (London, UK)

"THE FIREBREAK" / "FENG SHOU LUO GU (HARVEST GONGS AND DRUMS)"  
Written by Li Zui!  
Source: China National Radio (CNR) Shortwave Jamming Signal

"MEASURE EVERYTHING, EVERYWHERE, ALL THE TIME" (Theme Song of the Sixth Weather Radar Conference, M.I.T., 1957)  
Lyrics by Aaron Fleisher  
Arranged and Performed for **ADDED VALUE** by Dampognmusic's Choir (Zulia, Venezuela)

"I CAN'T GET YOU OUT OF MY HEAD"  
Written by Cathy Dennis and Rob Davis for Kylie Minogue  
Arranged and Performed by C. Diab

"GOING HOME"  
Written by Kenneth Gorelick ("Kenny G")  
Arranged and Performed by C. Diab

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