1. *Golden Futures*. Orit Halpern
   1. Introduction
      1. Setting: Mining in Quebec.
      2. Proposition (truth): Mines are more than holes in the earth.
      3. Proposition (truth): **T**hey are choke points of both the subsurface and the surface, and of the past and the future: “a narrow aperture between below-ground matters forged millions of years prior and above-ground dynamics constitutive of present and future life.”
   2. Description of geological history and mining process.
      1. Geology of the Canadian Shield
      2. The link between geology and mining: the glaciers pushed up minerals but now they are scarce.
      3. Proposition (truth). Prediction that all metals and energy sources on Earth will be depleted by 2155.
      4. New modes of mining to extract minerals. Toxicity of new modes of mining.
      5. Proposition (truth). Short concessions of land. Increase of efforts to extract minerals.
   3. More in-depth description of mining process
      1. Rock without ore laid to rest in 20km of tailing ponds that lie behind mining installation.
      2. Gold and the hedging of market bets against more volatile derivatives and futures markets.
      3. Markets expect more gold in the future than could be produced at new rates of production.
   4. Datafication
      1. The connection between data mining and metal mining.
      2. Mine is covered by a network of information-gathering sensors monitoring water, humidity, temp, winds, geological stability, topology.
      3. 1 ton of rock dug up for one gram of gold.
      4. The mine will produce 700,000,000 tons of waste rock.
   5. Visualizing amount of gold in the world.
      1. All the gold mined in the world, ever, could fill two Olympic swimming pools.
      2. This drives a constant search for new veins of ore.
      3. The mine is being monitored in order to protect from contamination and to maximize its yield of gold at the same time.
      4. How to guard from waster rock getting into water, turning into acid, and destroying surrounding ecosystem, and how to calculate to turn as much profit as possible: use of data.
   6. Speculation:
      1. As experts sort through the detritus in hope of turning waster into resource, evermore wastelands and industrial processing zones have emerged
      2. **Thesis**: “To avoid these terminal thresholds of resources and toxins, the mine must conquer the limits of space by deriving value from the future.”
   7. Derivatives:
      1. derivates are financial instruments that allow a certain amount of something to be traded at some point in the future at an agreed upon price.
      2. One can also bet on the cancelation of an order (or the default of a loan).
      3. The result is that the size of the derivatives markets overshadows the world’s GDP by 20 times.
      4. You can sell your bet before the event happens
      5. Money derives from bets on relations between times. You can swap the bet of packets of mortgages for gold futures without homes being sold.
   8. What is the relation between derivation and extraction? **(The answer to this questions forms the basis for the paper’s conclusions, which are built upon the previous propositions).**
      1. We are constantly planning our destruction of the environment in search of increments of changing future values to bet on.
      2. Our planet is now a hedge bet, where finitude in life is converted to surplus information for future speculation.
   9. Uncertainty (Conclusions and questions).
      1. By tying together disparate actions and objects into a single assembled bundle of reallocated risks to trade, derivatives make us more indebted both to each other and to the planet itself, which is often the literal matter of such exchanges (Martin 2014). **The political and ethical question thus becomes how we might activate this increased indebtedness in new ways, ones that are less amenable to the strict market logics of neoliberal—perhaps now neoextractionary—economics.** All futures are bets. Our task now is to open those risk assessments and extractionary hedge bets to the uncertainty that faces all life on earth.

Remaining Questions/Gaps in the argument, etc.:

What is neoliberalism? How does it tie into this argument?

What is extractivism? How does it tie into this argument?

Why are derivatives legal? Do they have a productive purpose?

How did derivatives develop? What institutions and technologies sustain derivatives? (Stock exchanges, banks, laws and norms regulating market exchanges, data analysis and algorithms).