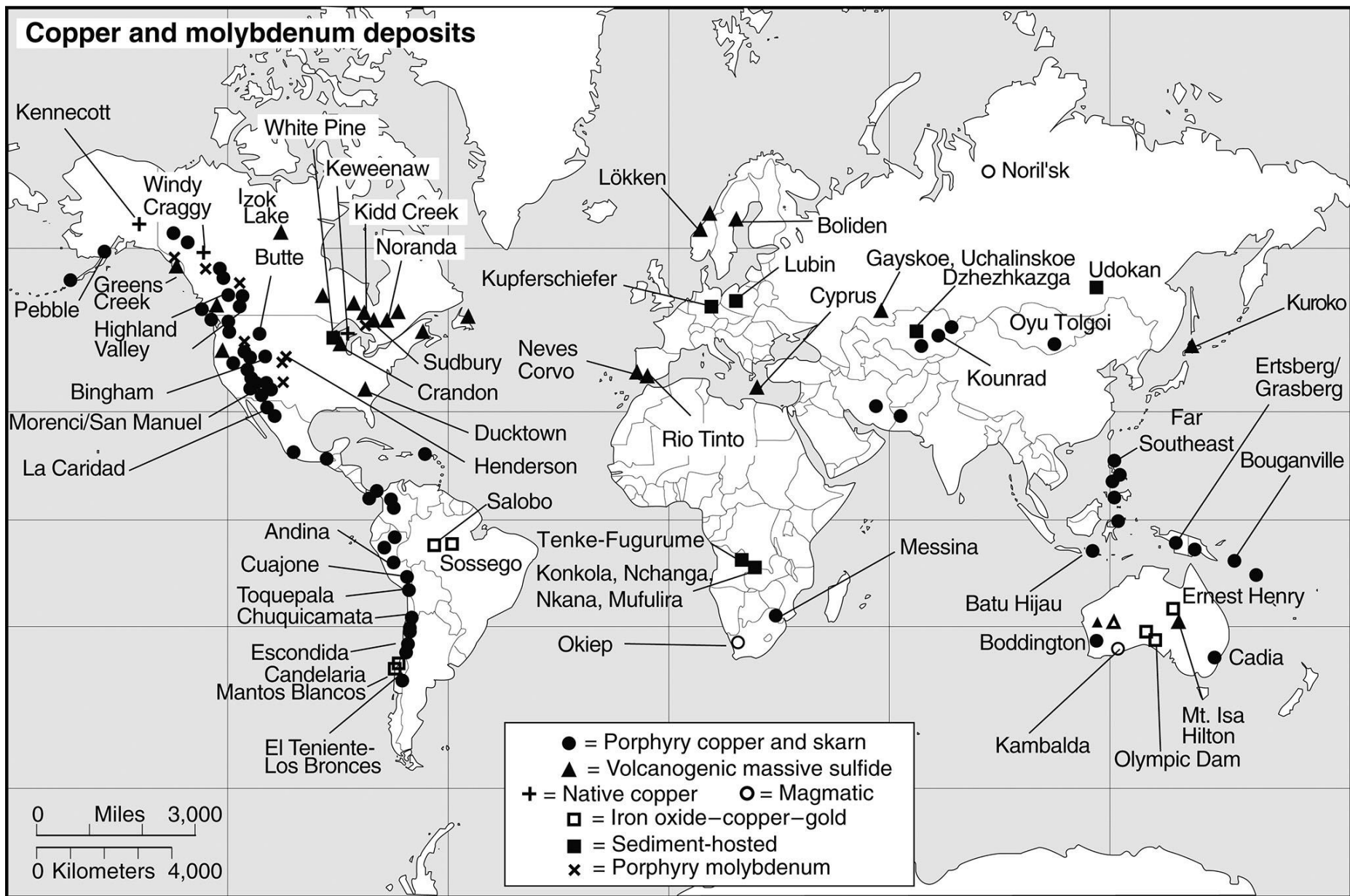


Butte, Montana Copper Mine

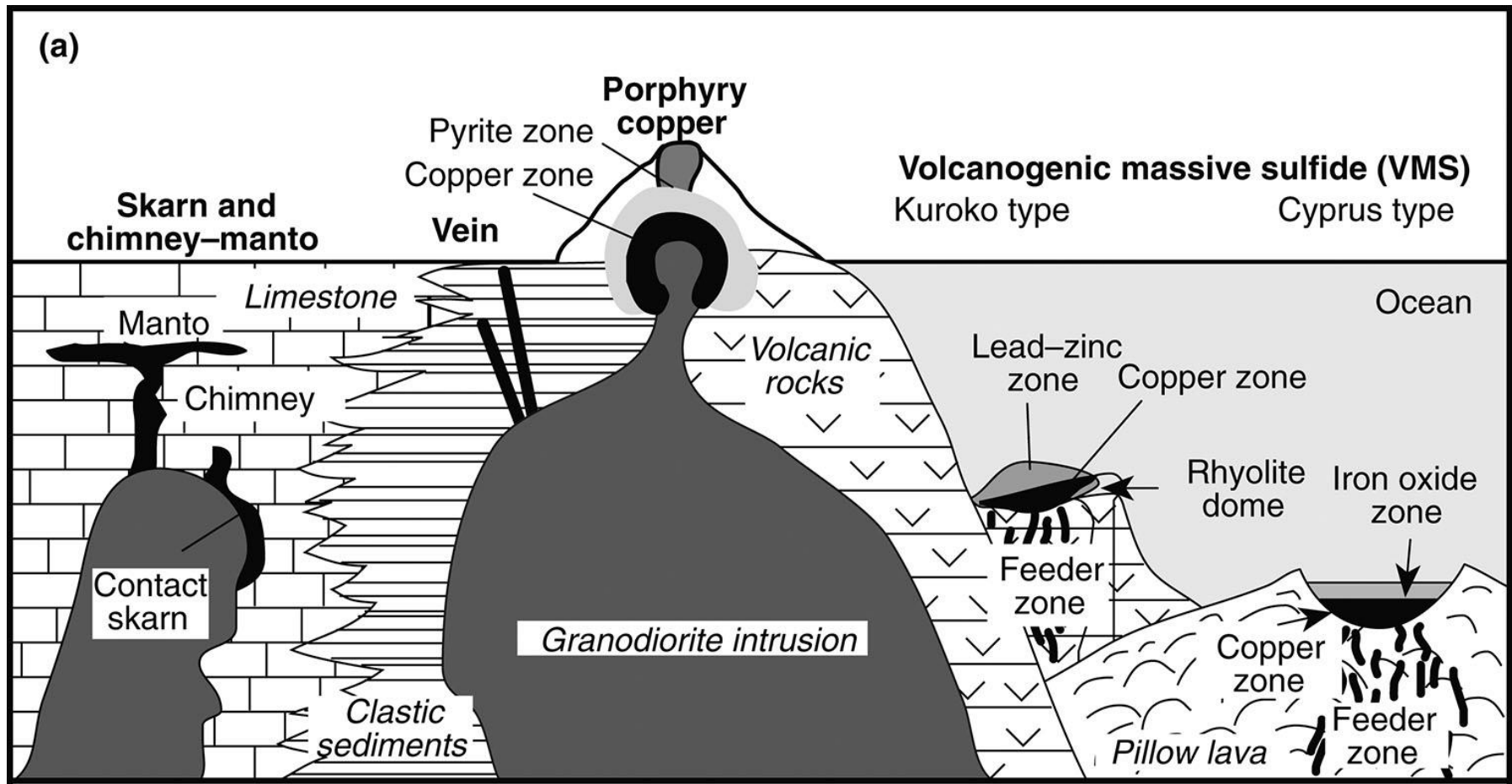


Copper and molybdenum deposits



Questions we will address:

- Where do valuable minerals come from?
- How are they concentrated in the Earth?
- How do we find them?
- What's an “ore” mineral?



Volcanic – intrusive environment of “base metal” deposits (including copper!)

From Kessler and Simon, 2015





A Brief History of Copper (Cu)

- 5,600 years ago, copper used for weapons in the Middle East
- 5,000 years ago, it was combined with tin to make bronze (The Bronze Age begins!)
- Copper + Zinc = Brass
- Gave way to iron ~3,000 years ago
- Industrial age revival because of it's electrical properties
- Used in motors, generators, wiring
- Brass used for ammunition
- Today's cars contain 25kg of copper and 1km of wiring!

Escondida Copper Mine, Chile

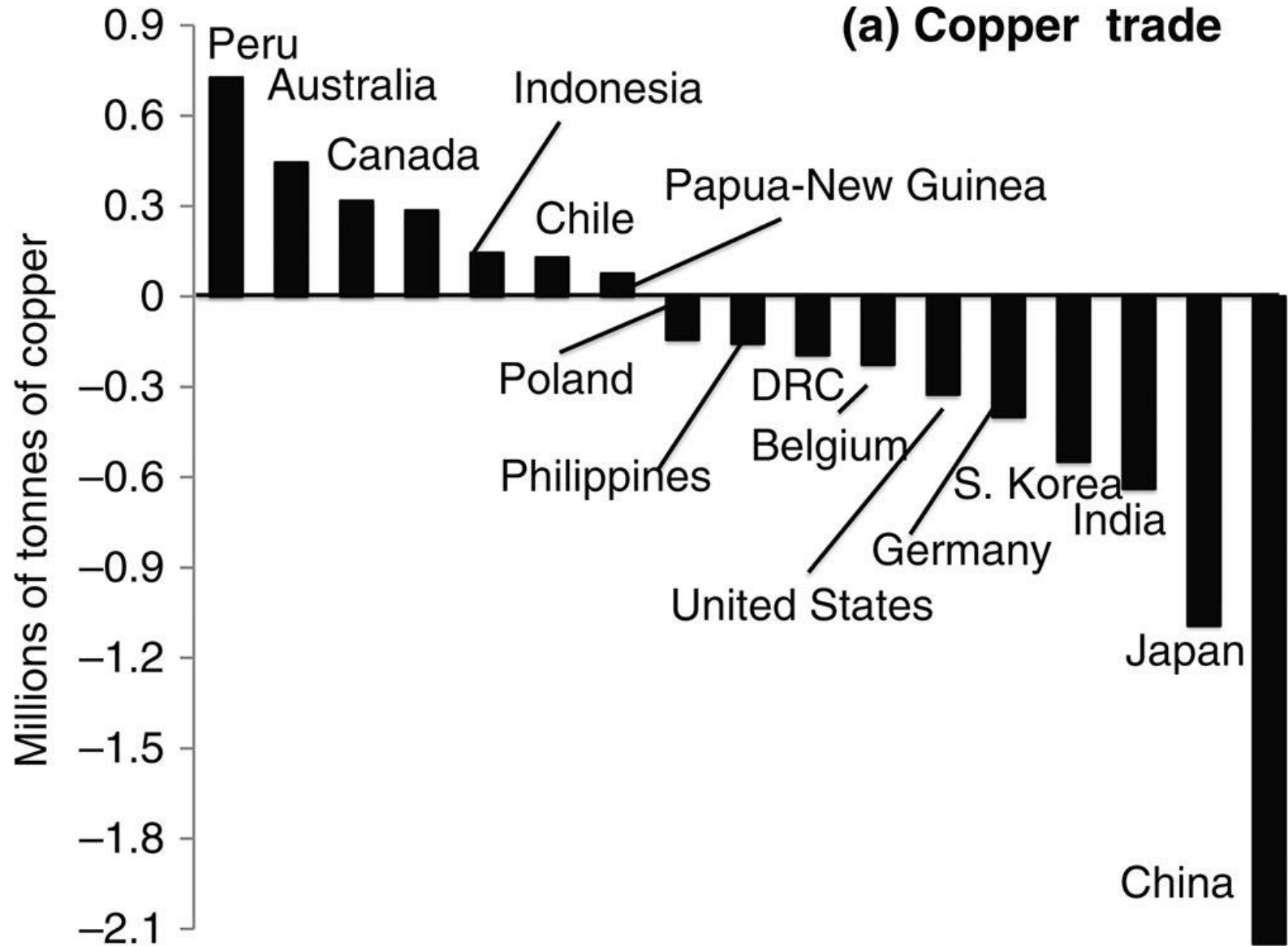


Bingham (Kennecott) Mine, Utah





(a) Copper trade



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In use of technology, what is important to consider?

- What limited resources does it use?
- Environmental Impact (pollution)
- Social Impact (costs and benefits)
- Future Consequences (crystal ball?)