

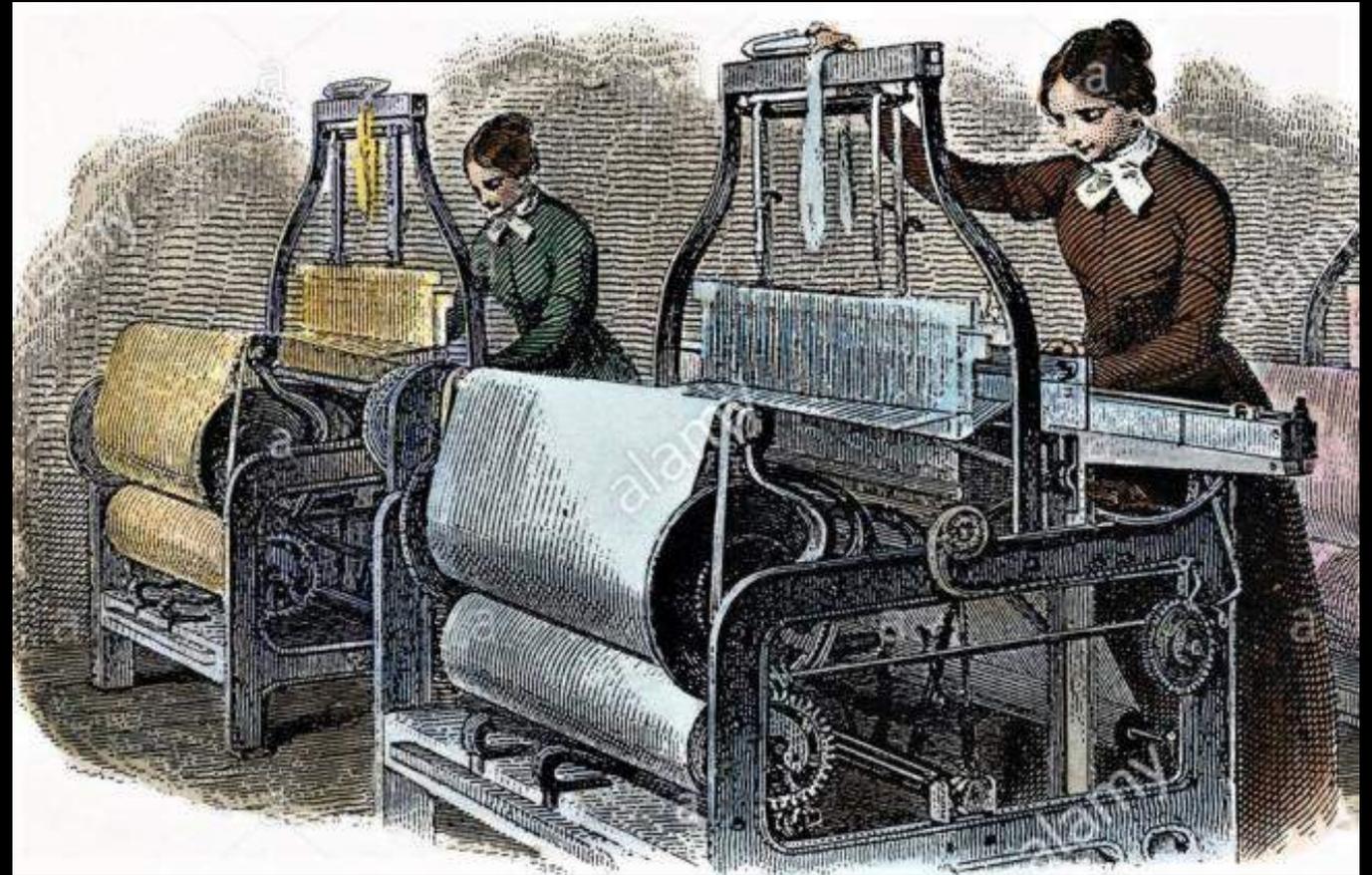
The Ecology of Trust Mechanization

Quito
April 2019

*First, just to remember
what mechanization is ...*



There's
something about
what this weaver
is doing ...



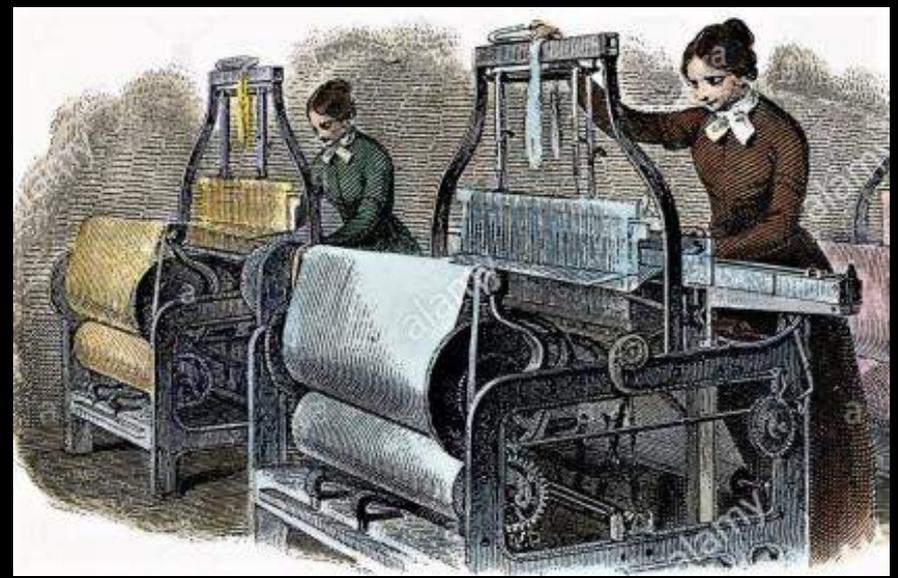
... that can be mechanized, and has been mechanized.

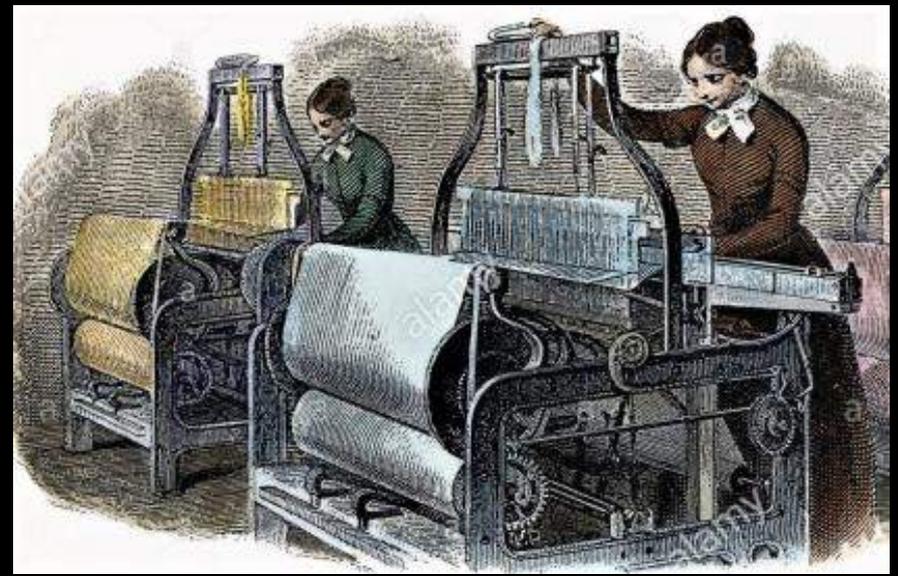


There's also something about what this paper-making artisan is doing ...

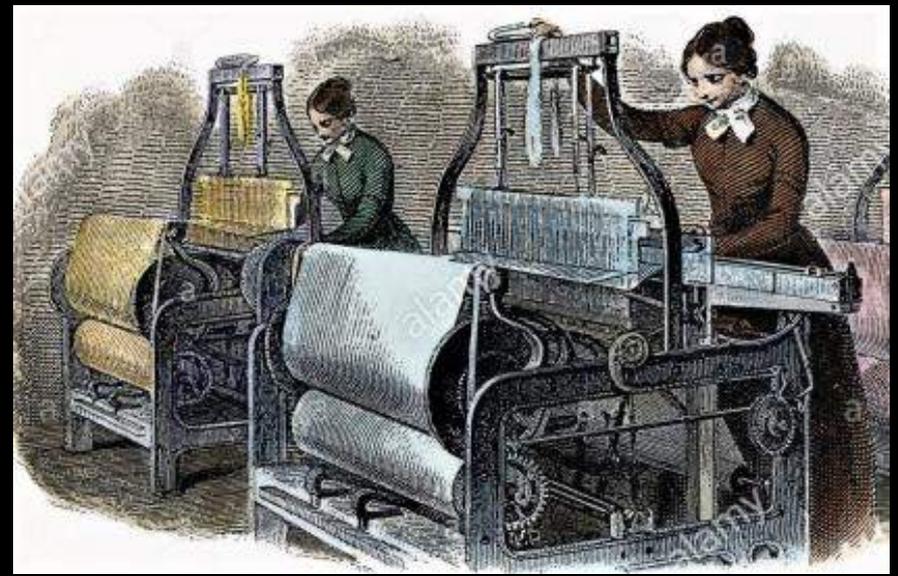


... that can be mechanized, and has been mechanized.

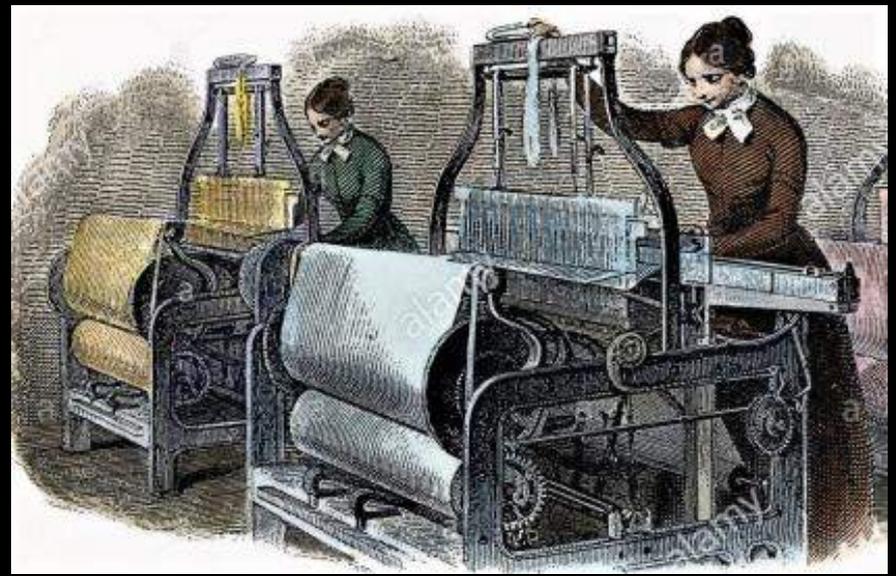




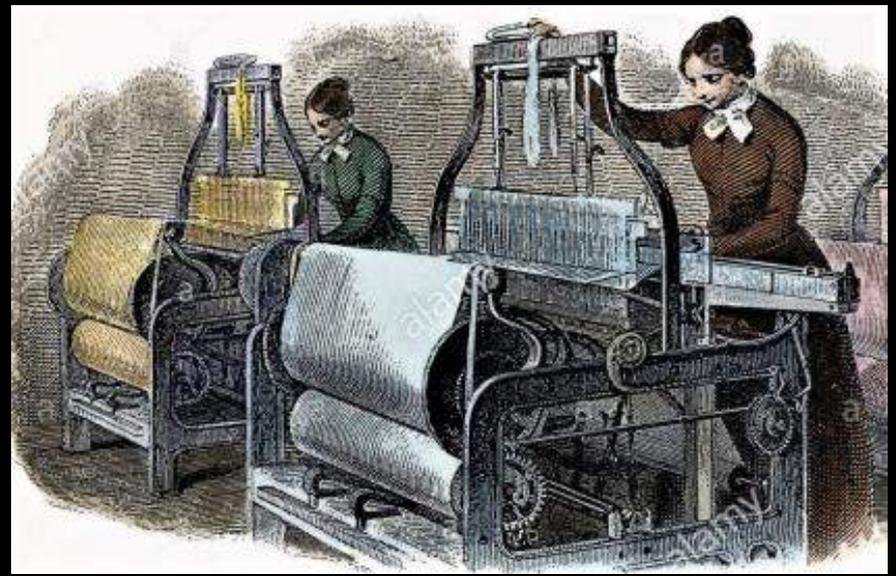
WHAT exactly is being mechanized?



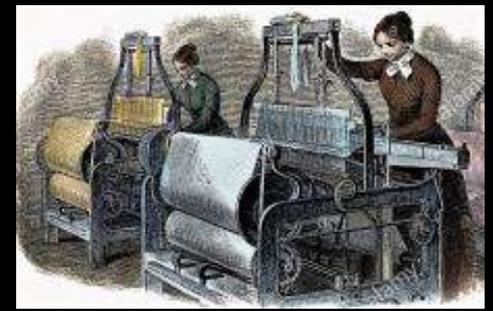
Are the machines doing exactly the “same thing” as the humans used to do?



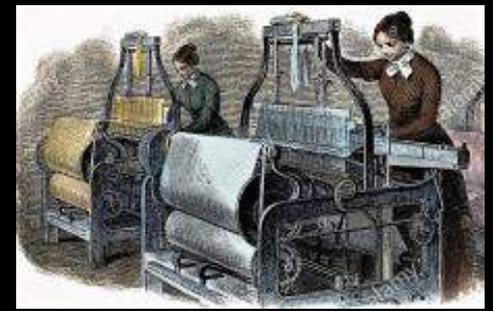
Are the *humans* doing the same thing that they used to do?



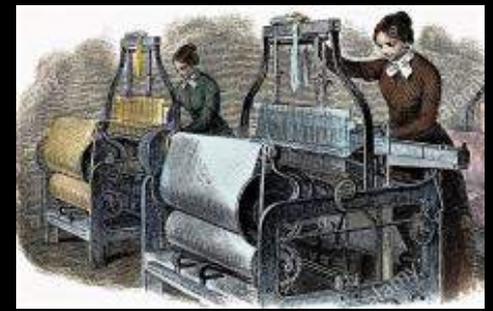
Why did capital want to mechanize these activities?



Let's set these two examples aside for a while ...



... to consider
a third
example.



The **most** difficult **thing** to understand about blockchain, Bitcoin, and information capitalism since around 2005 is that it is concentrating on mechanizing ***this***.



But what is *this*? What skills does this picture show?



– Being able to recognize and understand an individual



- *Being able to recognize and understand an individual*
- *Being able to translate*



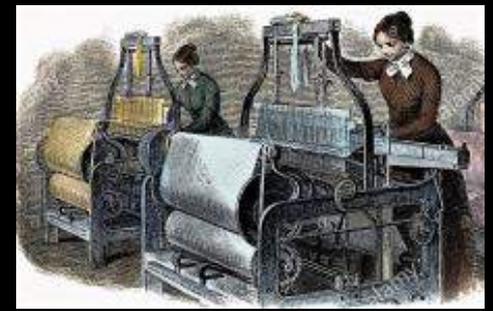
- *Being able to recognize and understand an individual*
- *Being able to translate*
- *Being able to trust*



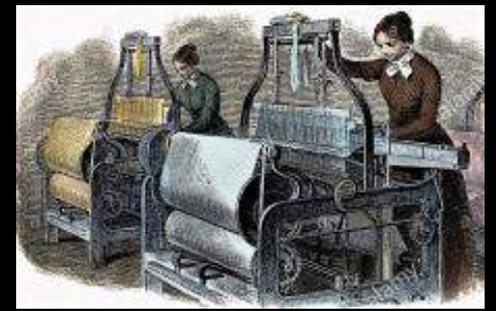
- *Being able to recognize and understand an individual*
- *Being able to translate*
- *Being able to trust*
- *Being able to negotiate*



Our three examples of skills must be considered **together**. Capital approaches them as similar activities. So should we.



But how does capital propose to mechanize *this*?



*** *TECHNICAL INTERLUDE* ***

A “perfect storm” linking three interdependent streams of computer mechanization since ~2005:

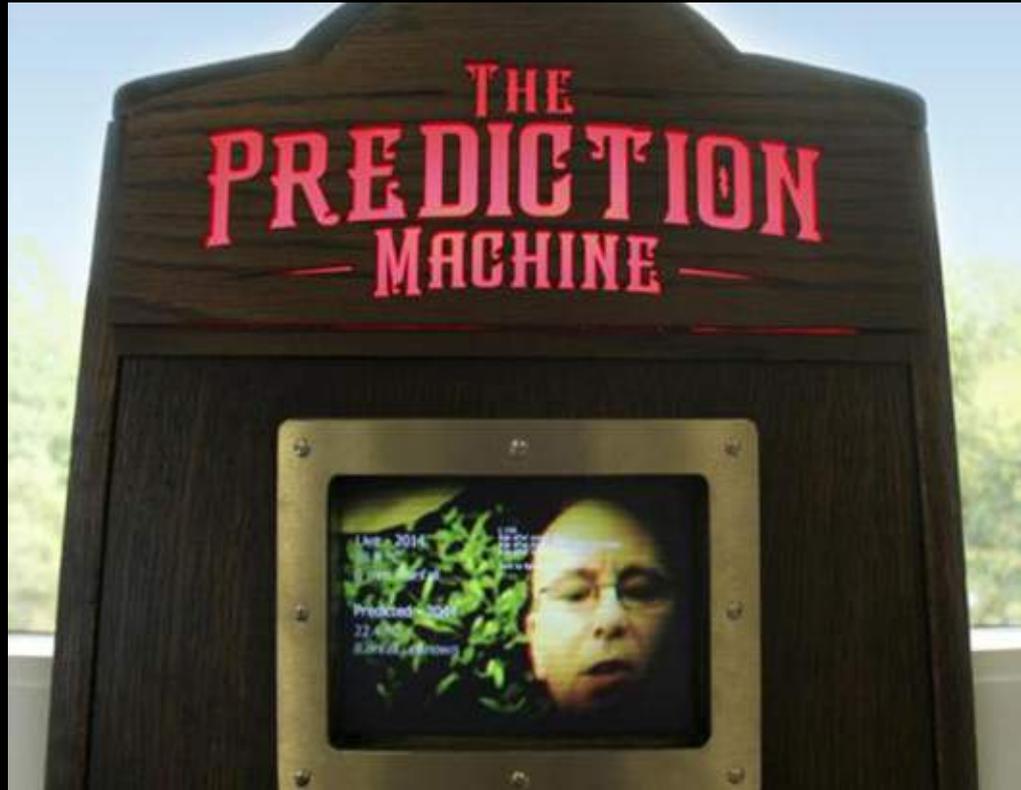
 Renaissance of **neural-net or deep-learning approaches**: software that can continuously teach itself what algorithms are best at predicting whatever it wants to predict.

 Construction, via lots of unpaid human labour (ours), of huge **libraries of digitized bits** of information out of undigitized flows of human culture – encoded images, sentences, etc.

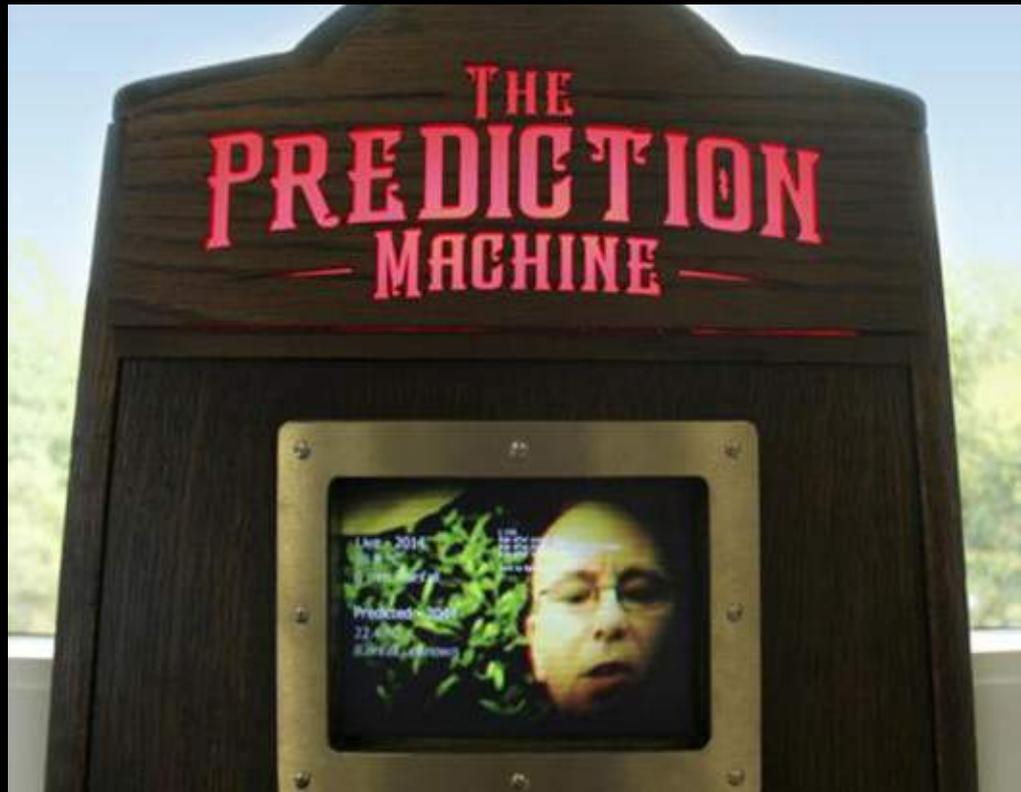
 Increases in processing **speed** and capacity enabling conversion of these mountains of data into cheap, accurate predictions in very short times.

Result:

Capital is now able to predict many of my actions better than I can myself.

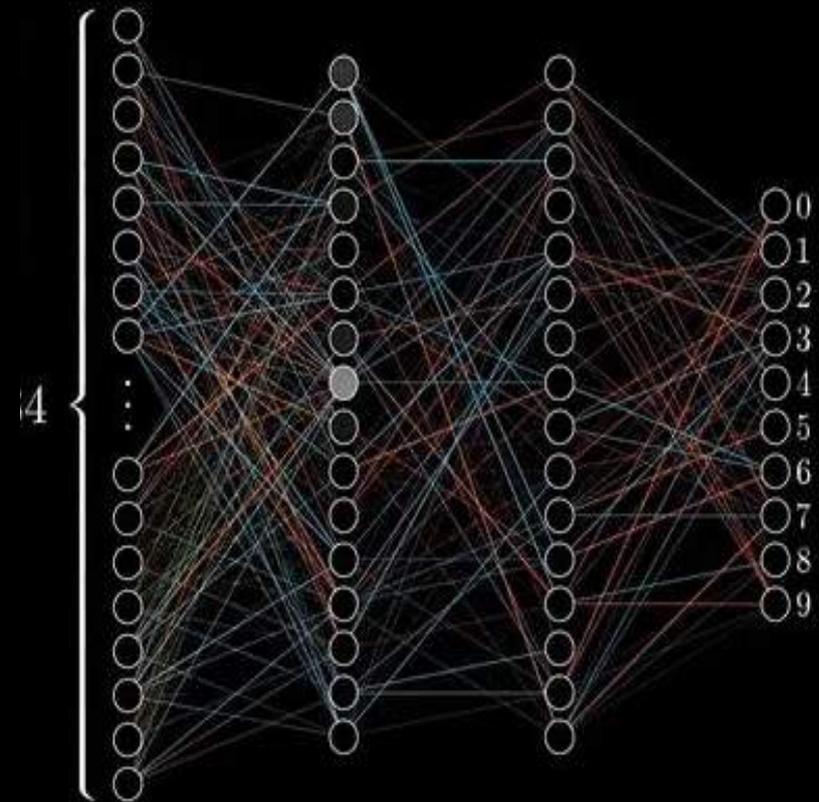


The new prediction machine is harder to *picture* than the mechanized loom or paper mill because it isn't really located in any one place.

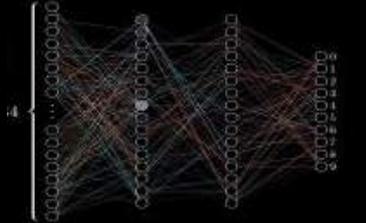




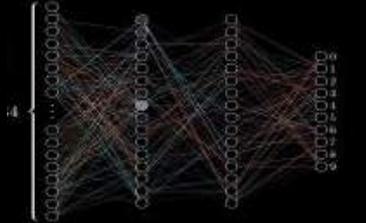
One part of the machine is our smartphones and computers, which are always collecting data that we are digitizing for it for free ...



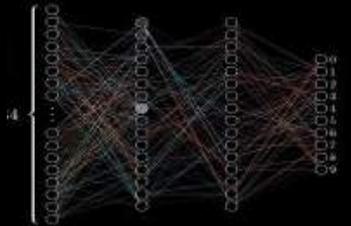
Another part consists of deep learning algorithms ...



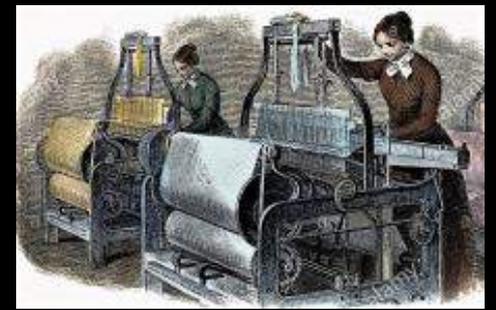
Then there are huge, energy-hungry data centers ...



...full of 100,000s of servers ...



... giant cooling systems and fiber links ...



It's this "global machine" that is automating the skills of translation and of understanding individual human beings.



But again, we have to ask:

- ➡ *What exactly is being mechanized?*
- ➡ *Are the machines doing the “same thing” the humans used to do?*
- ➡ *Are the humans doing the same thing they used to do?*

and, above all:

- ➡ *Why does capital want to mechanize these activities?*

Start with that last question

One simple example (there are many others):

Capital always wants to move fast from

PRODUCTION → SHOPPING → BUYING

If it can streamline shopping, then it can move more quickly and “efficiently” from **PRODUCTION** to **BUYING**:

PRODUCTION → [SHOPPING] → BUYING

If capital can predict how every individual will respond to any product, it can put that product in front of you quickly on your phone or computer.



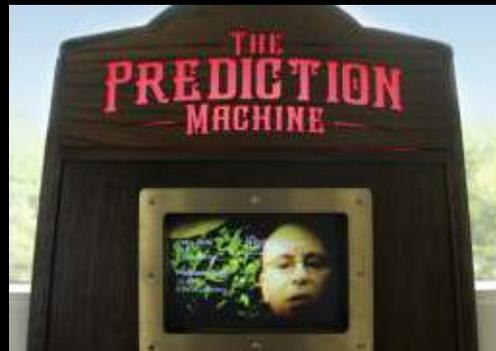
Eventually it can **eliminate shopping entirely** by shipping a product to you *before you have ordered it*. It can do this because it has **predicted** your individual response so well that it can be confident you will not angrily send the product back and will accept the bill:



That also gives us an answer to another question:

Is the machine doing the “same thing” the humans used to do?

As with the example of the weaver and paper-maker, the answer is “no”. The machine is **predicting our actions statistically** (and the actions of hundreds of millions of others) on the basis of past patterns of behaviour.

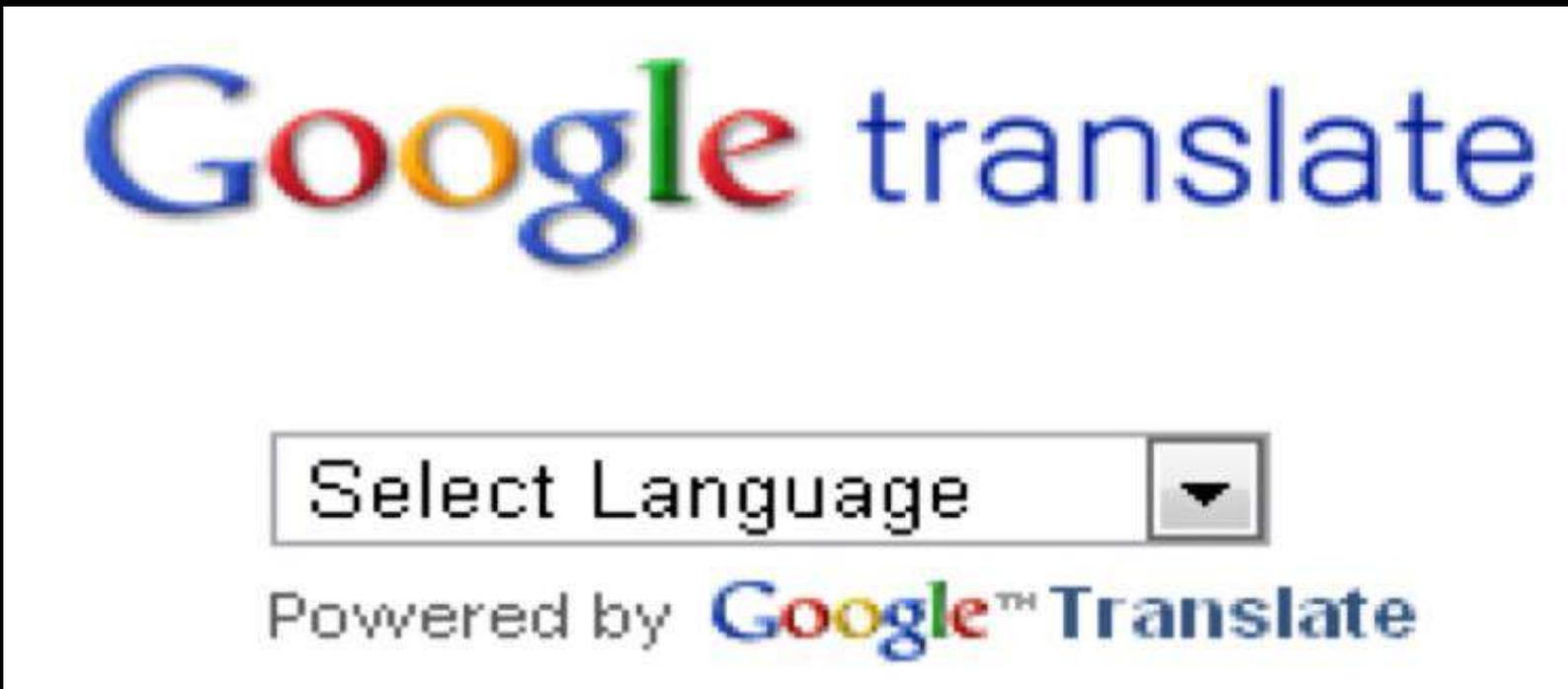


It is not “**understanding**” us in the traditional, low-impact, labour-intensive sense.

The machine eliminates the need to pay millions of human beings to go to work “knowing” millions of other human beings in conventional ways. Instead, it uses “brute force”: lots of energy and lots of unwaged human labour (ours) to digitize thousands of pieces of past experience that it then processes through learning algorithms.



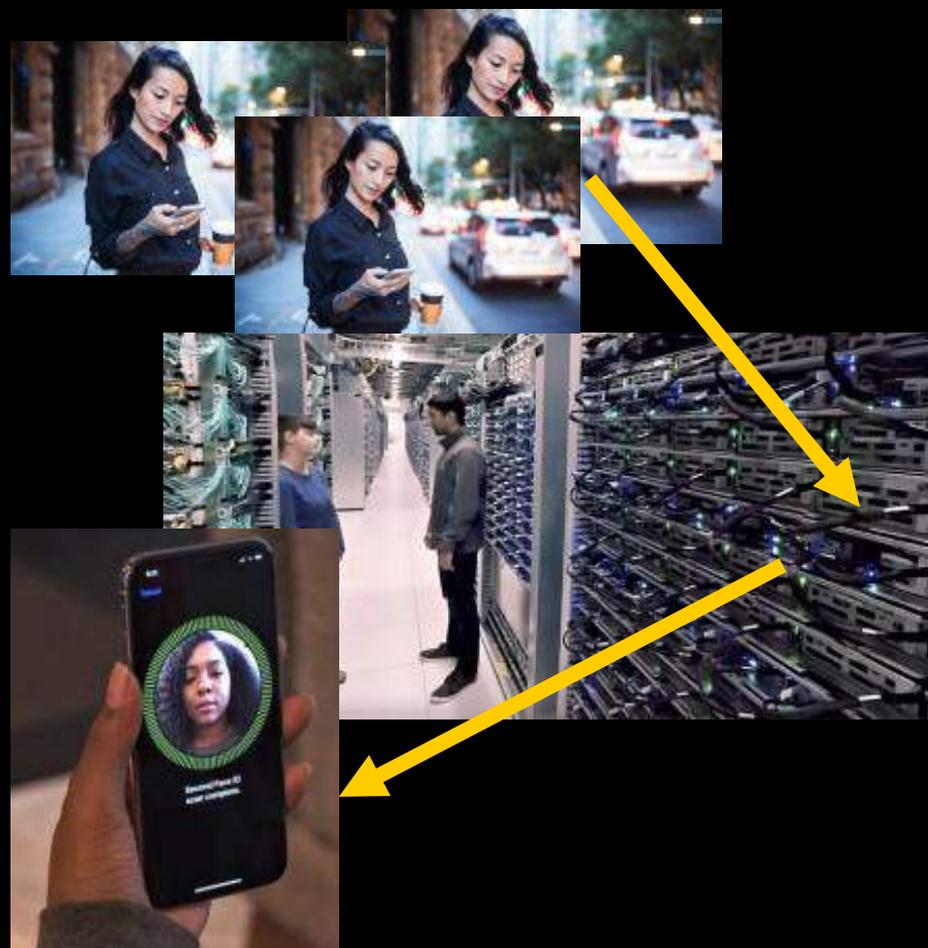
Nor is the machine “**translating**” us in the traditional, labour-intensive, ecologically low-impact sense. Instead, it is **predicting statistically** what good human translators would do when presented with any one of millions of sentences or paragraphs.



The machine makes millions of people work for free – *not* doing the traditional labour of translation, but rather digitizing millions of sentence-to-sentence pairs that the machine can use to *predict* what a good translation of any sentence should be.



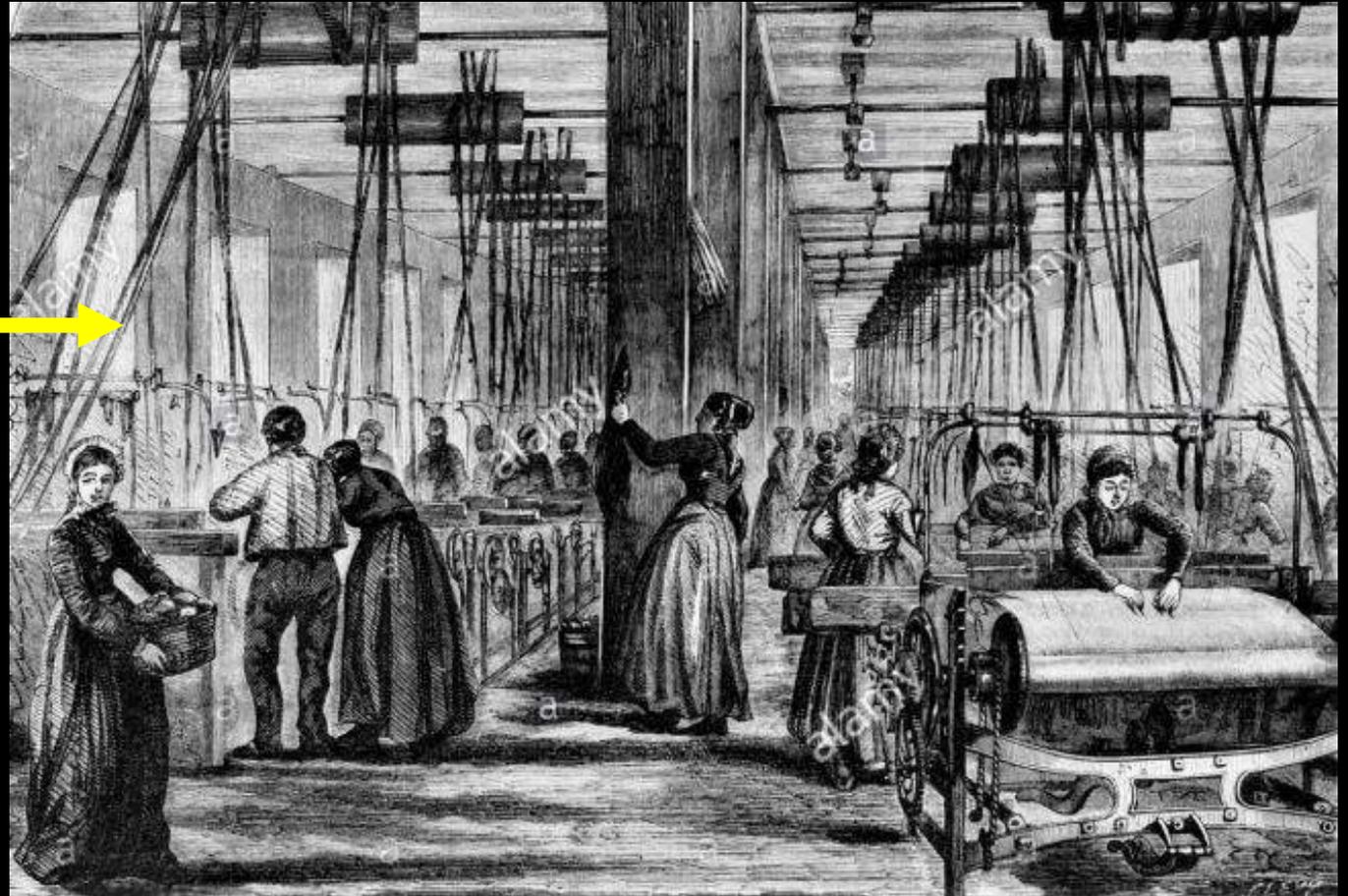
Similarly, the machine seemingly reduces the amount of human labour needed to recognize faces by changing acts of conventional *recognition* into acts of statistical *prediction* based on millions of digitized images that we give it for free. This scales up the capitalist “production” of recognition.



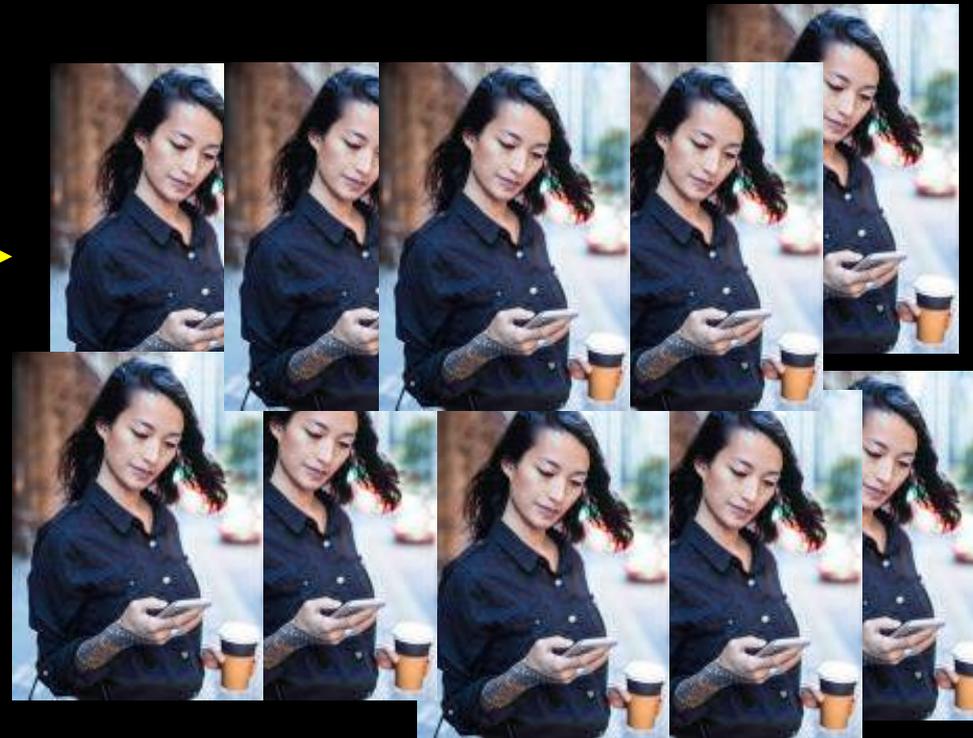
But is the machine really “saving labour” or just *changing its nature*?

In fact, both left and right are wrong when they repeat the capitalist fantasy-cliché that the threat of the machine is that it will “replace humans” or “eliminate” or even “reduce” human labour. Like 19th-century factory machines, 21st-century prediction machines are *increasing* human labour – but only human labour of a certain kind.

Just as “mechanizing weaving” increased human labour of a certain kind – the tedious work of “helping the machines” ...

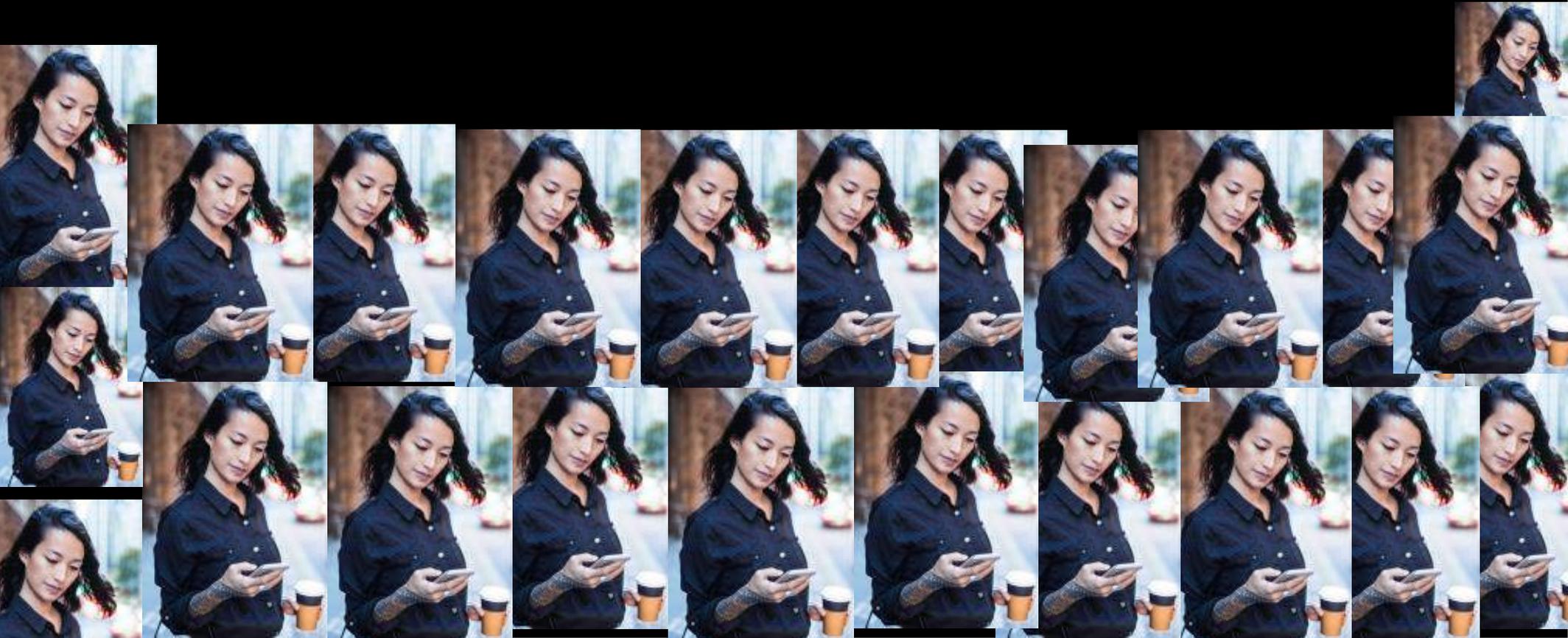


... so, too, “mechanizing recognition, translation and understanding” *increases* human labour of a certain kind – the often fun but unpaid work of “helping the prediction machines” by labeling and digitizing images, pairing sentences in different languages, etc. ...



Hundreds of millions of people become “machine teaching assistants”, contributing hours of unpaid labour every day to corporations like Google, Facebook, Microsoft, Amazon and IBM.

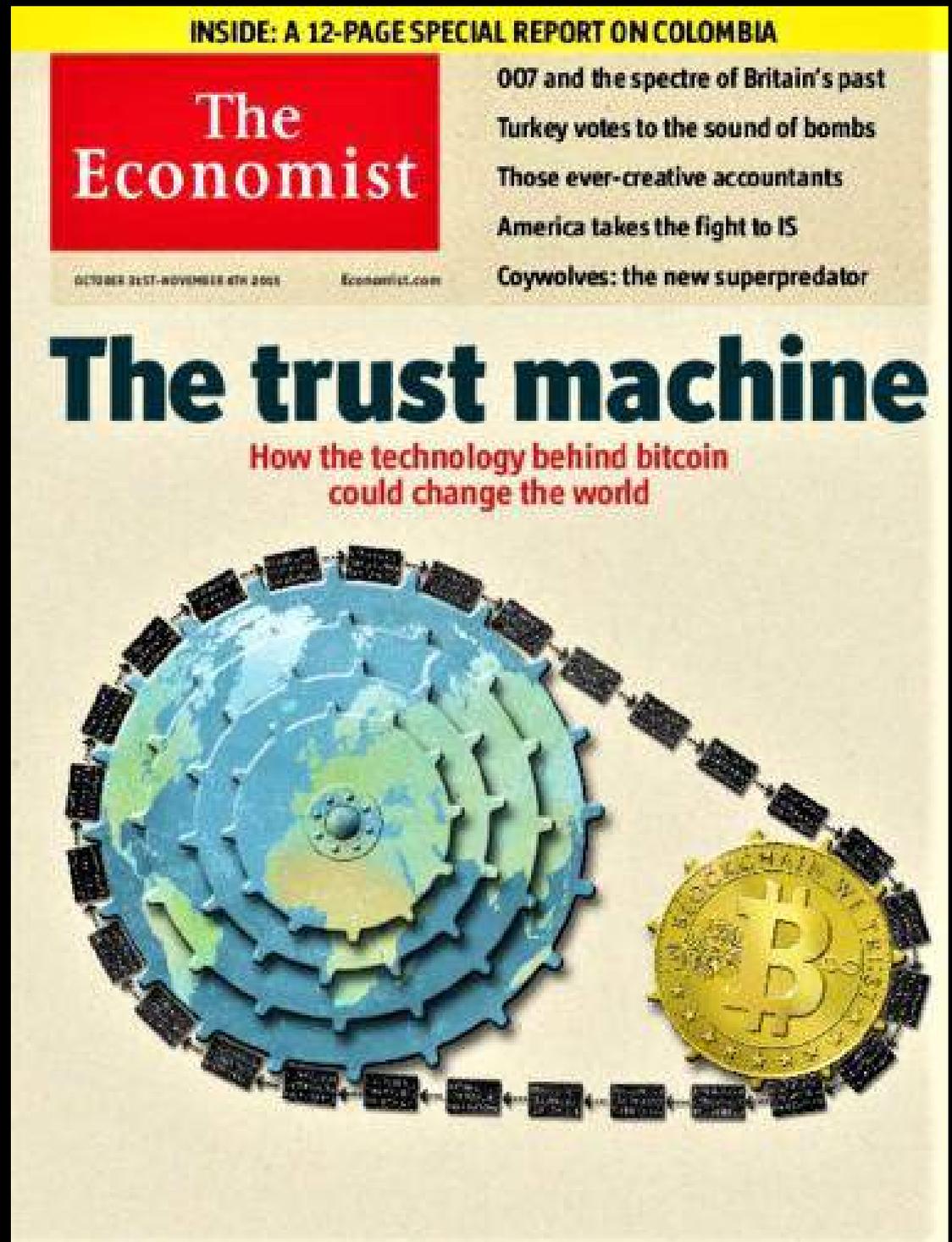
Whatever new machines it acquires, capital remains perpetually hungry for fresh, living human labour to exploit. This is as much a feature of capital’s ecology in the 21st century as much as it was in the 19th century.





That leaves the question:
How does capital automate the *trust* in
this picture? How does it mechanize *this*
kind of relationship?

That is, how does it build the “trust machine” that *The Economist* talks about?



another ***** *TECHNICAL INTERLUDE* *****

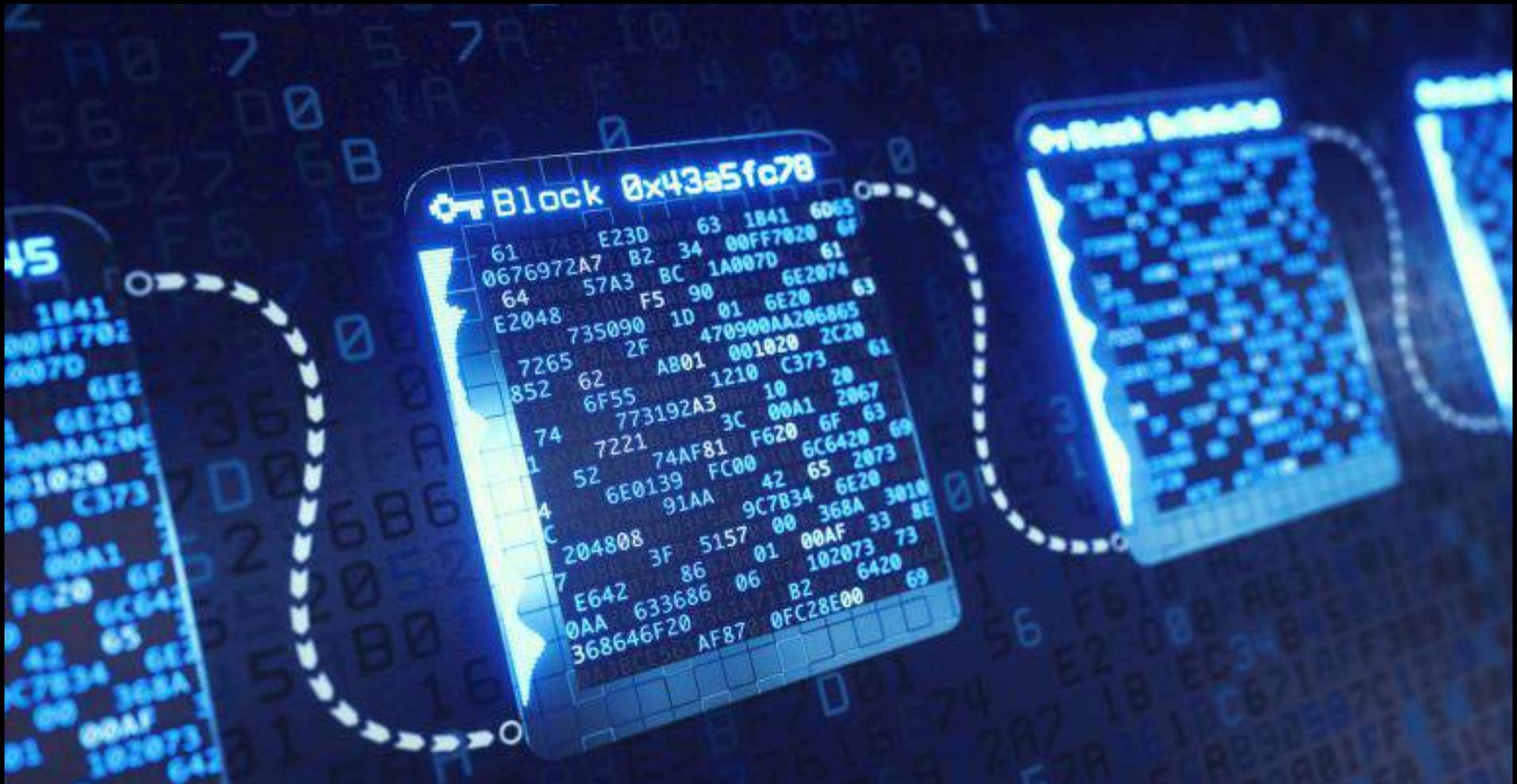
The answer involves all the technologies we've already talked about, especially:

- computer speed
- big data
- the internet

BUT ALSO:

- advanced post-1970s cryptography
- even larger amounts of energy

This is *blockchain* ...



Blockchain is like an accounting ledger that records transactions ...



... *except that:*

Unlike ordinary ledgers, blockchain records are hard to tamper with once they have been collectively verified, for mechanical reasons. Too much energy-intensive cryptographic work would be required. Every few minutes, new verified record-books (“blocks”) encoding all sorts of transactions from everywhere are electronically and cryptographically fused to the previous chain of record-books (blocks). You would have to alter every bit of the subsequent world-historical record of transactions if you wanted to cheat.

... plus:

The whole chain is stored on thousands of computers worldwide. It is shared on a “world machine” that is not located in any one place. Once encoded, every transaction is securely recorded, open to view, and yet anonymous. The fact that it happened is verifiable by everyone and can't be denied by anyone, even though no one need know what it was. You don't need a background of trust or understanding with anyone in order to be confident enough to enter into a commercial transaction with them.

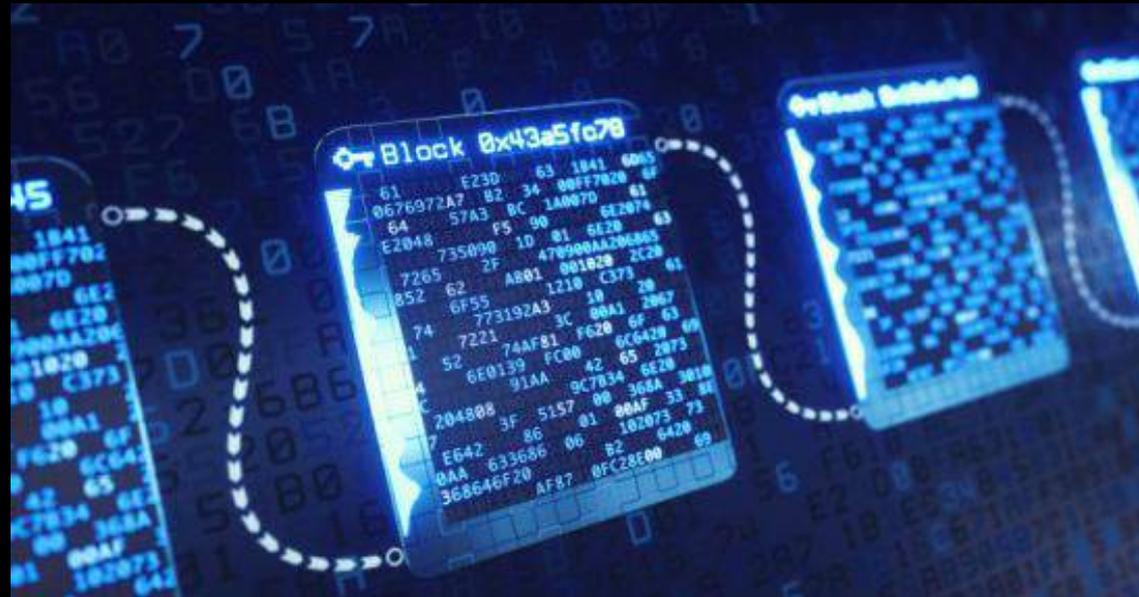
So if you don't know anything about someone,
and can never meet with them ...



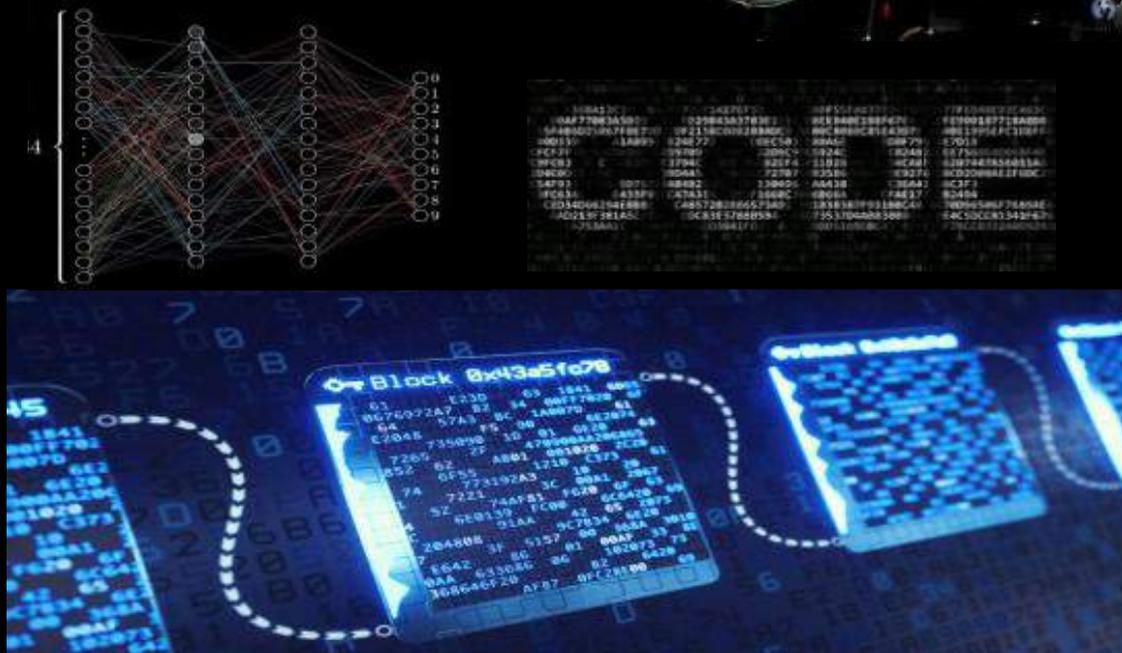
... and you don't want to pay a bank, a lawyer,
an accountant, a notary, or a state agency to be
an intermediary ...



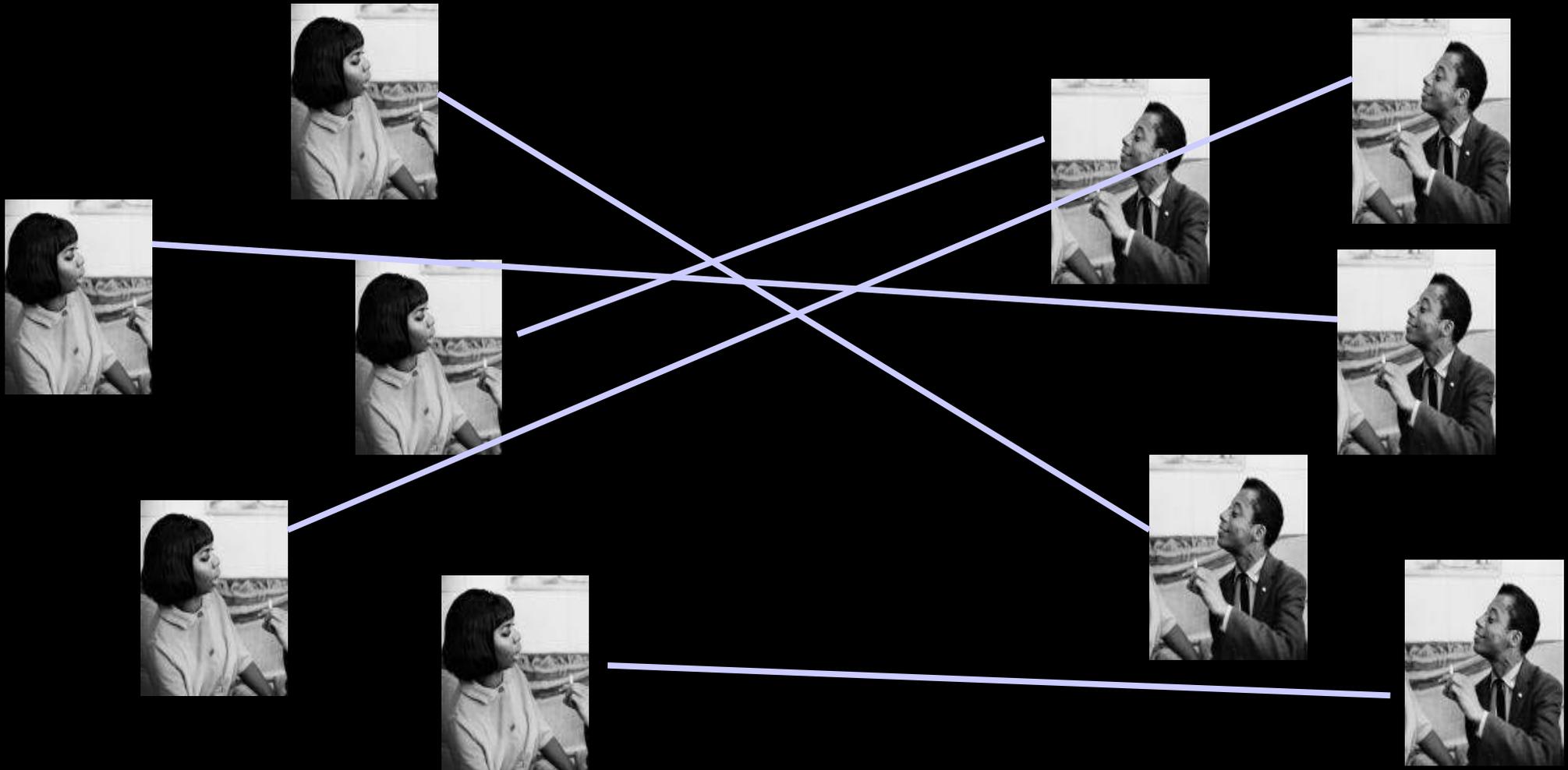
... you can use a mass-produced “trust substitute” that allows you to have a direct, secure, efficient “automatic relationship” with them.



... or – better yet – an automated, self-executing “smart contract” housed on top of the blockchain that independently senses changes in the world through image recognition, mechanized translation, etc., and cannot be disputed or tampered with.



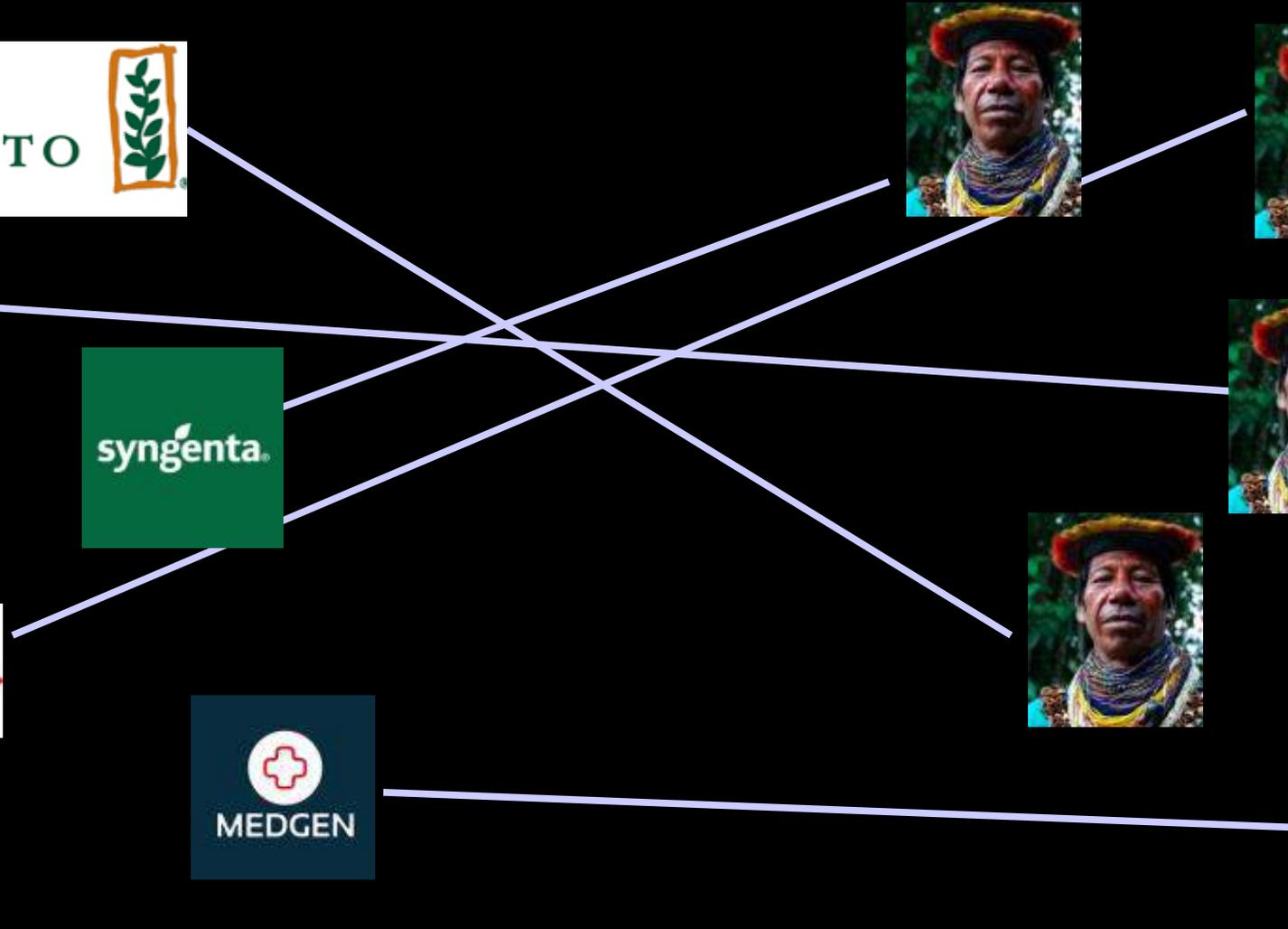
And millions of other individuals
or companies can do the same.



So suppose we digitize millions of tiny pieces of indigenous knowledge and genetic information from the Amazon and make it available to companies willing to sign “smart contracts” with local peoples.



Then thousands of indigenous leaders can enter directly into individual, cheat-proof, cheap agreements with corporations, which *automatically* send them a few centavos every time a product based on their knowledge is sold.



This is the idea of the Brazilian entrepreneur Juan Carlos Bustillo-Rubio, who is promoting an Earth Bank of Codes as an “eBay” of intellectual property.



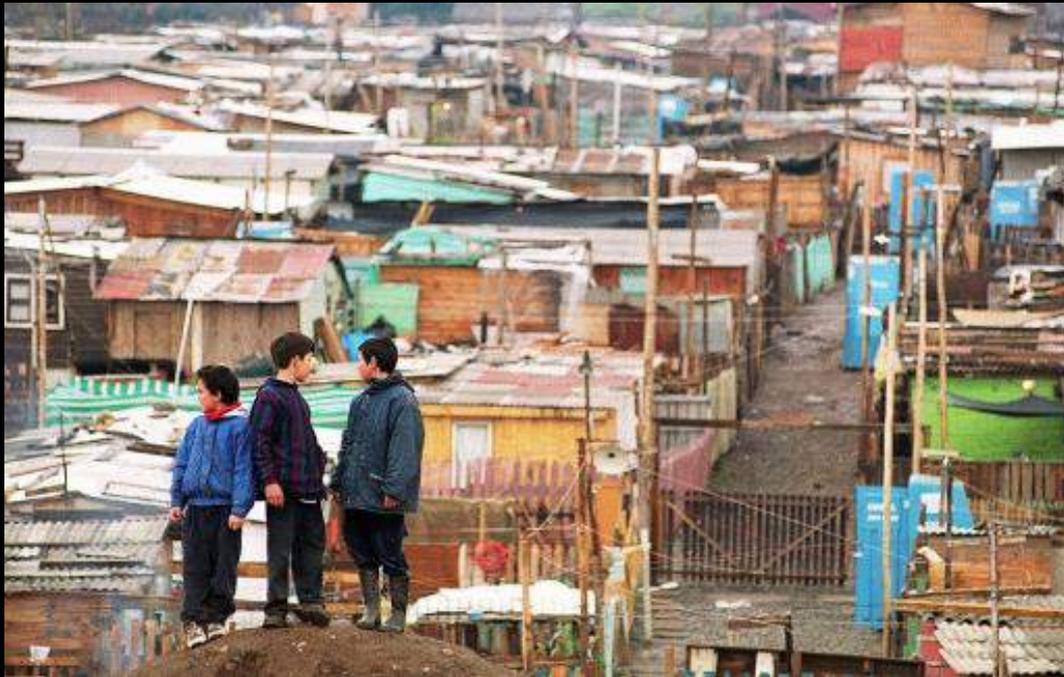
**Earth Bank
of Codes**

We need a Silicon Valley for the Amazon

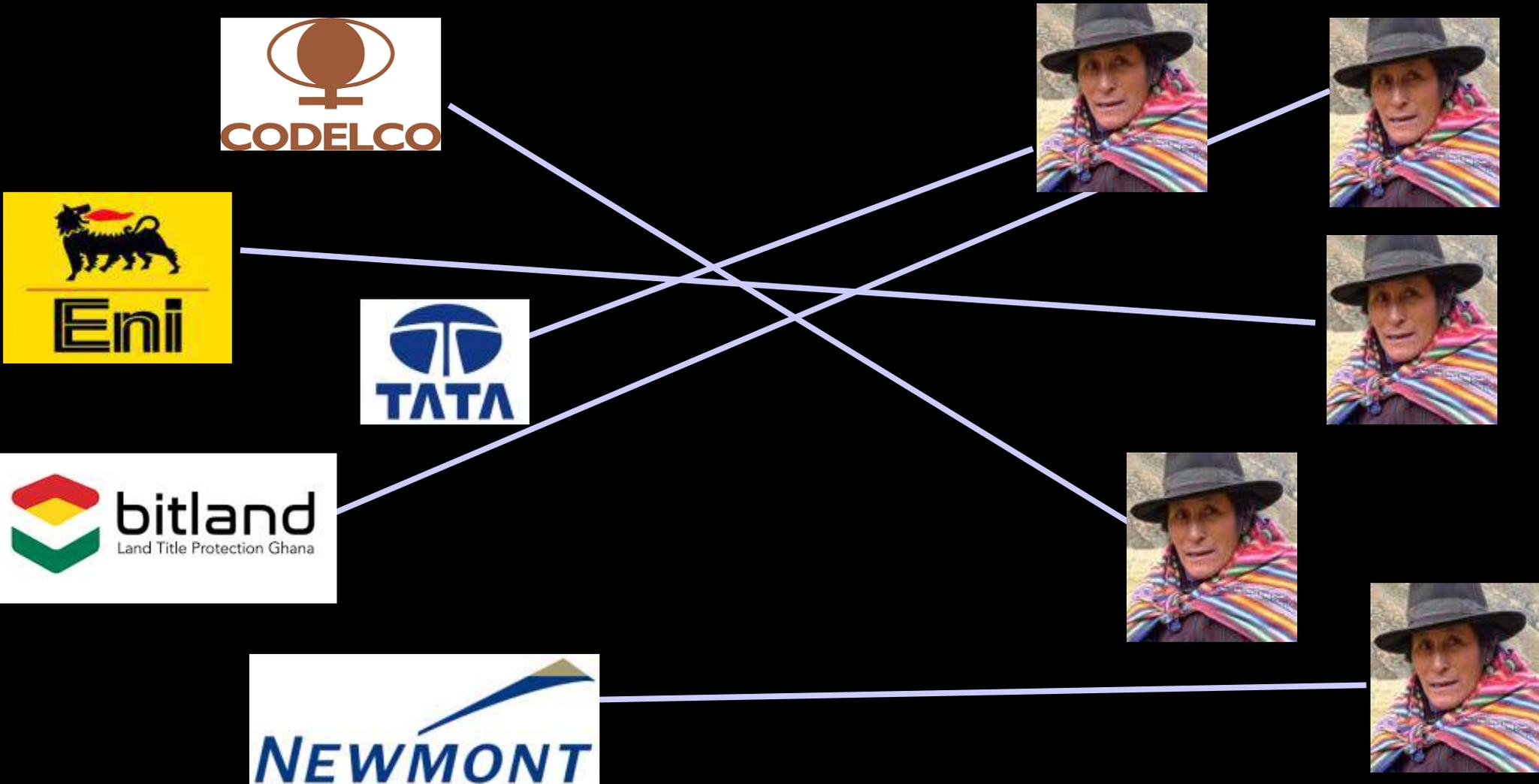
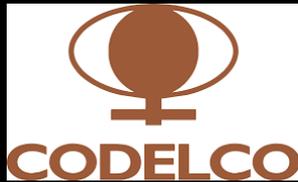
**Juan Carlos Castilla-Rubio
Chief Executive Officer, Planetary Skin Institute**



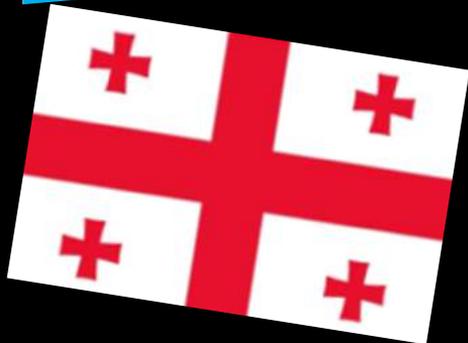
Or suppose the state recognizes, digitizes and puts on the blockchain millions of pieces of evidence of formal and informal land rights in slums and rural areas, pre-empting leftist insurgent strategy.



Then, maybe, for the first time, without having to trust untrustworthy bureaucracies or creepy private agents, poor people can be persuaded to transfer their lands to mining companies or property developers – *no violence necessary!*



This is the idea of Hernando de Soto Polar, the Peruvian minerals trader and World Bank property consultant, who is already working with the governments of Guatemala and Georgia to realize his blockchain dream.



By mechanizing away search and transaction costs, blockchain promises to help capital reach into smaller and smaller pores of the life of humans and nature, making it possible to trade little things that used to be too much trouble to trade ... and speed up trade in things that are already traded.



As usual, capital is claiming that if there are any environmental problems with this, it's not because of capitalist value relations, but because there are not yet *enough* of them.

So for capital, the biodiversity problem is not commodification, but that not *enough* biodiversity has been commodified. Hence the blockchain-based Earth Bank of Codes is supposed to save global biodiversity.



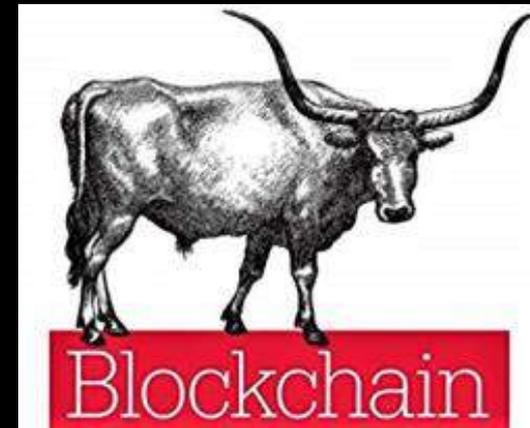
Similarly, for capital, the environmental problem with agribusiness is not about capitalism. It is due to the fact that agribusiness is not capitalistic *enough*.



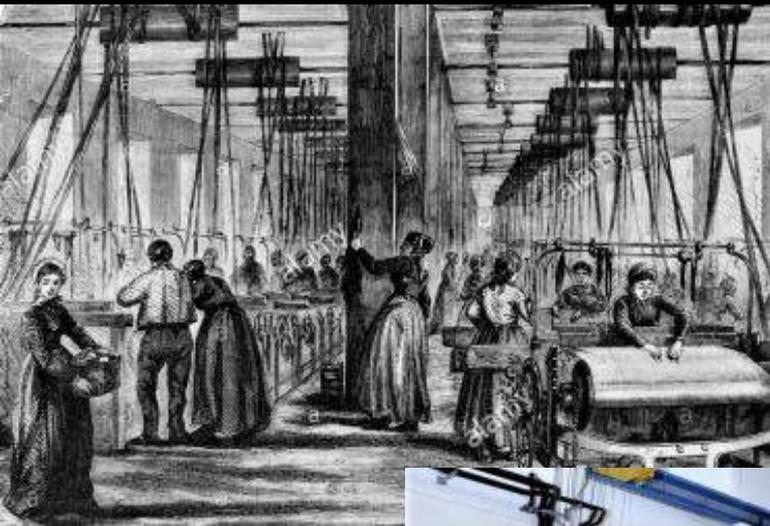
So suppose we make cows into what businessman Don Tapscott calls “*blockchain appliances*” so that every moment of their lives and every transaction involving their milk and meat can be publicly and securely recorded on blockchain.

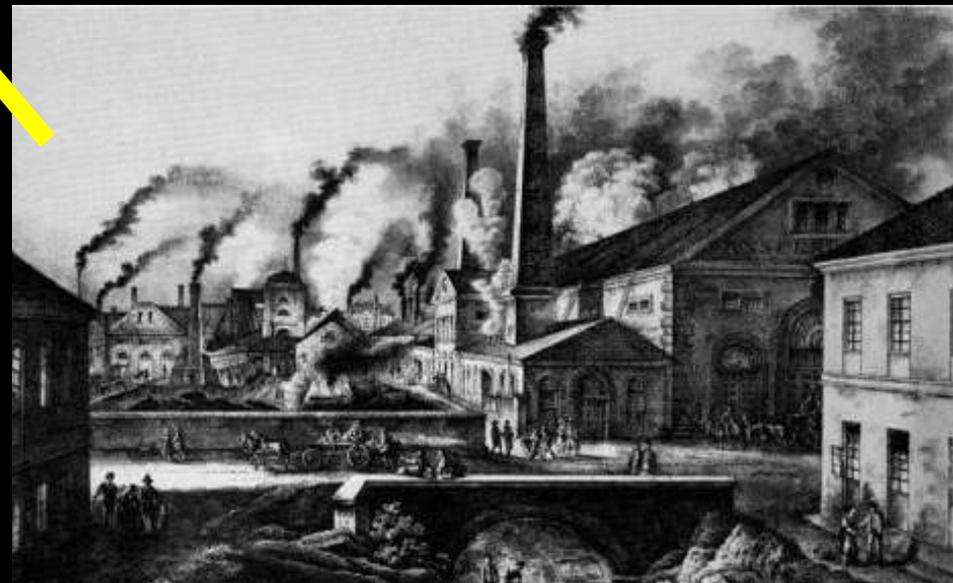
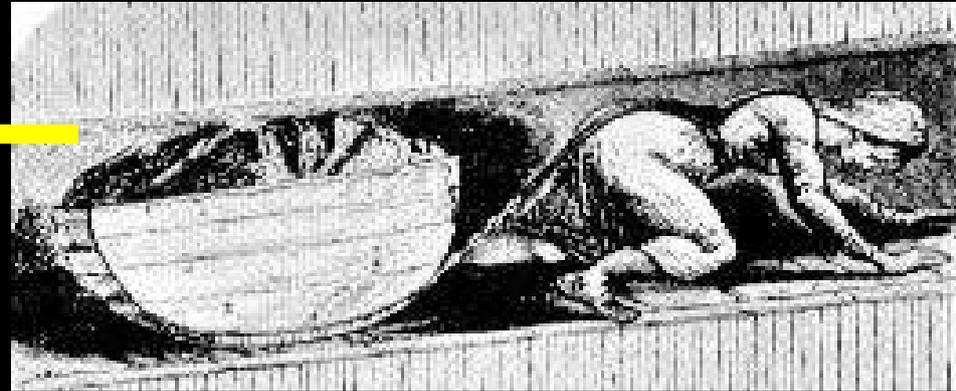
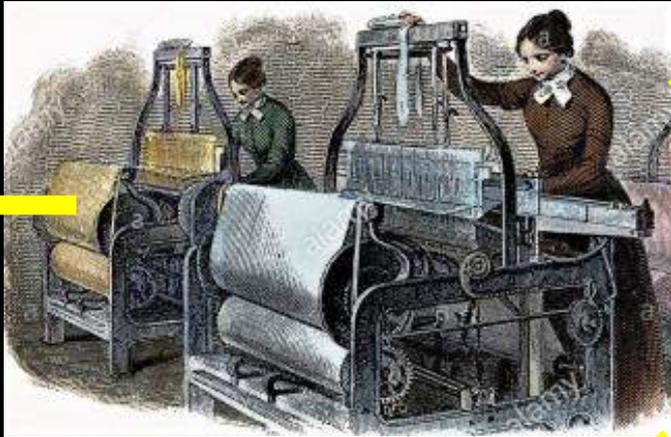
Then consumers themselves can apply the economic pressure to solve any environmental problems that come up along the bovine supply chain. Otherwise, agribusiness can stay just the way it is!

Farmers can track what cows eat, what drugs they are given, their complete health history. Consumers can follow every transaction from farm to supermarket to make sure they are getting the right milk from the right cow.

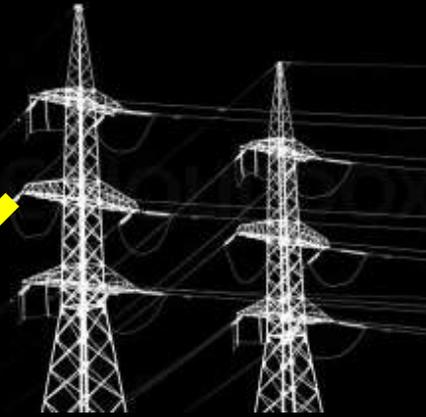


Some of what this wonderful story leaves out is made clear when we remember that blockchain is a chapter in the longer history of capitalist mechanization.





To be productive, dead textile machines needed (and exhausted) the living work of slaves, mineworkers, and Carboniferous-era organisms alike.



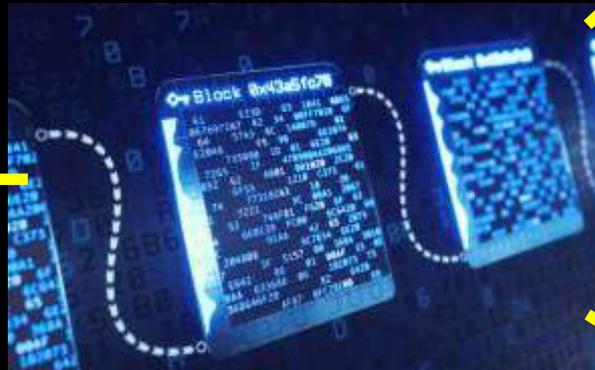
To be productive, dead paper machines need (and use up) the living, fertile energies of rivers, soils, tree genomes and peasants alike.



Bitcoin emissions alone could push global warming above 2°C

Bitcoin is a power-hungry cryptocurrency that is increasingly used as an investment and payment system. Here we show that projected Bitcoin usage, should it follow the rate of adoption of other broadly adopted technologies, could alone produce enough CO₂ emissions to push warming above 2 °C within less than three decades.

Camilo Mora, Randi L. Rollins, Katie Taladay, Michael B. Kantar, Mason K. Chock, Mio Shimada and Erik C. Franklin



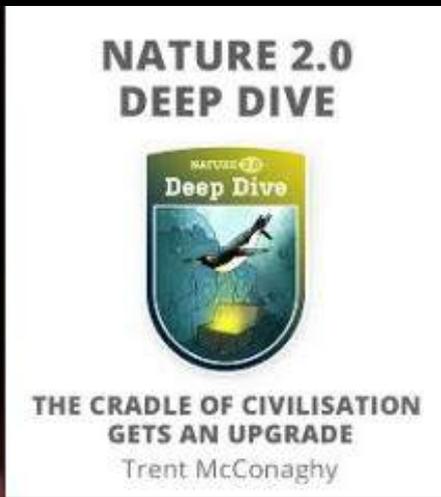
So too, to be productive, dead blockchains and machine learning mechanisms need (and deplete) the energies of workers, the atmosphere, and many other living things.



What about the rights of nature?

Could an expanded capitalism – via blockchain – give us a road toward making the rights of nature more of a reality worldwide?

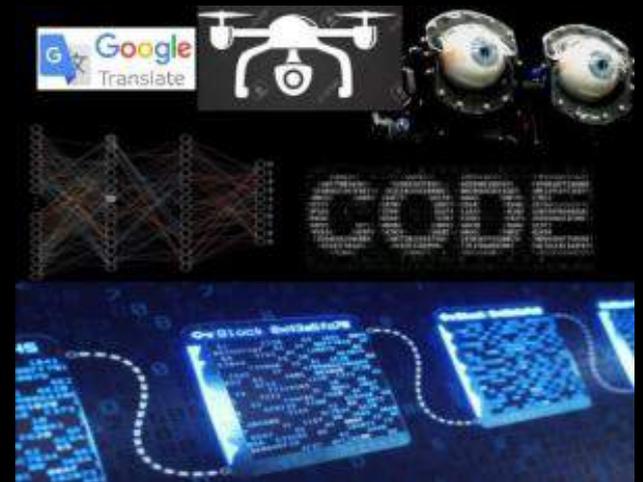




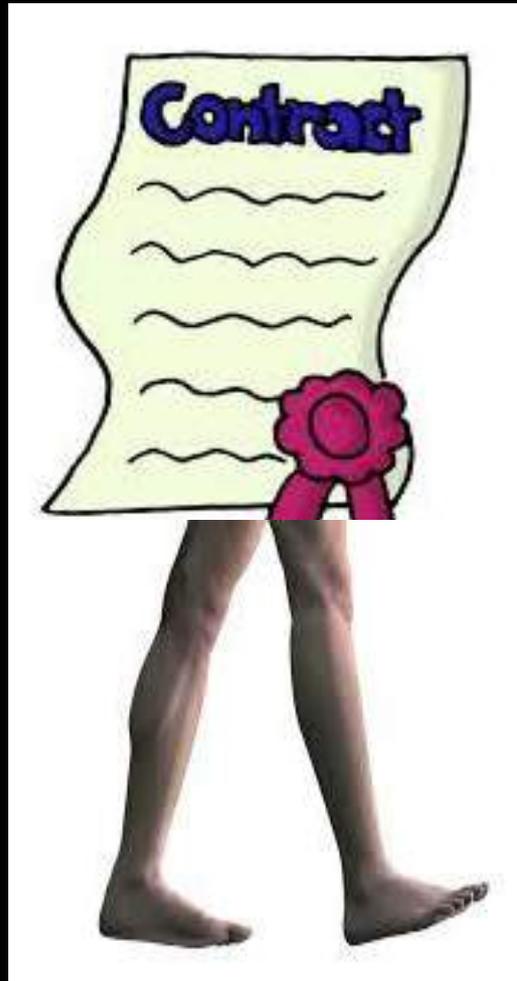
Blockchain nerds say yes!



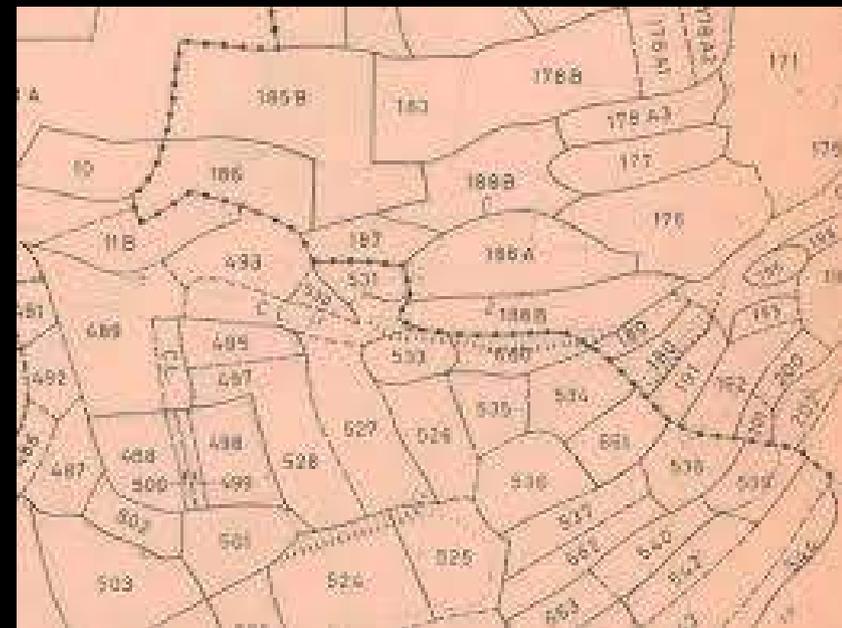
The key lies in that “smart contract” that acts by itself, sensing changes in the world and acting automatically in response according to the agreement pre-programmed into its software.



This smart contract already acts “autonomously.” It executes according to its programme no matter what we do.



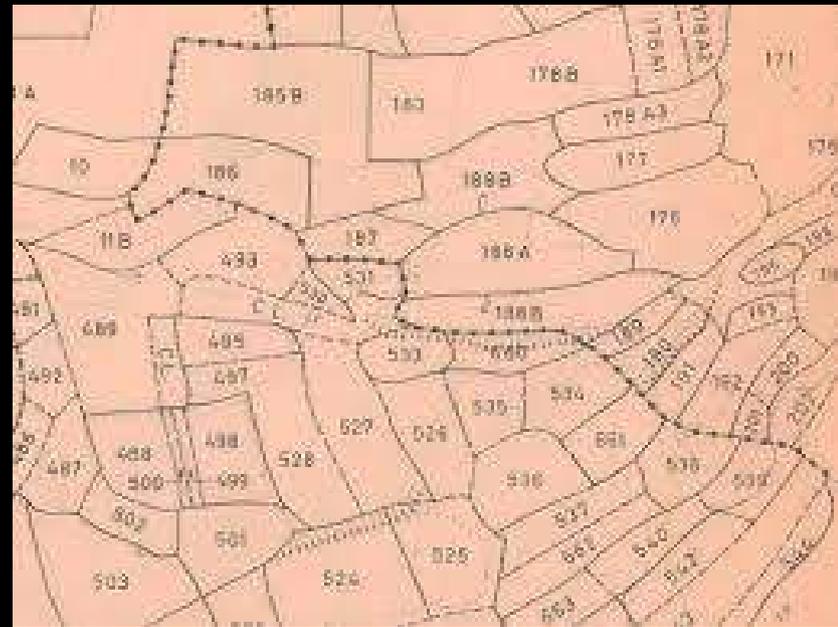
Suppose we allow it also to own private property.

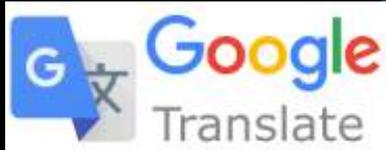


... And equip it with machine learning so that it can improve its own algorithms.

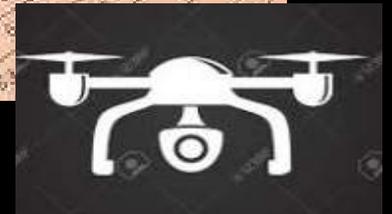
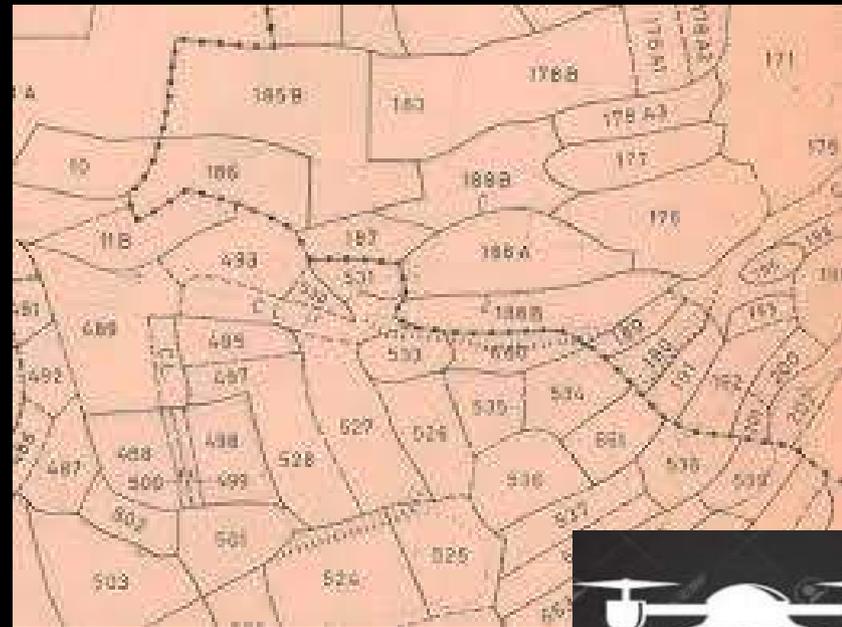


Translate





Why shouldn't it then become an independent agent that can hire its own labour and accumulate its own capital?





Now suppose we graft this independent agent onto a forest ...

... which it then manages according to principles of “sustainable development” or “conservation.”





Voilà! A forest that owns and takes care of itself, independently of greedy, corrupt humans ...



... An autonomous forest plugged into the “internet of things” but animated by its own spirit.



A forest that is its own capitalist manager, its own conservation ranger ...

... A forest entirely independent of, and uninhabited and uninfected by any relationship with corrupt, unreliable human beings.





In short, a forest
with its own
rights ...

... just as
inscribed into la
Constitución de
Montecristi!



What do you call
a forest that
owns itself?

This finishes our little story of capitalist mechanization ... which went from the automation of this ...



... and this ...



... to the mechanization of this ...



... and finally the capitalist mechanization of capital's **own** "human-nature" relationships:



Thank you.

