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Babbage

Science and technology



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Energy from cash

The power of money

Apr 12th 2012, 11:48 by L.L. | MADRID

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HIGH-SPEED currency trading uses oodles of computing power to exploit short-lived price differences in international foreign-exchange markets. Jonathon Keats proposes an alternative: exploit the electrical differences between currencies to power a low-speed computer. In an exhibit which opens on April 12th at the Rockefeller Centre in New York Mr Keats, a concept artist (or, as he likes to call himself, an experimental philosopher), introduces the notion "electro-chemical arbitrage". An engineer might call it a battery.

When a battery's electrode is immersed in its electrolyte, positive metal ions are formed on its surface. These ions pass into the solution, making the electrode progressively more negative as the positive charges move away. A dynamic equilibrium is created between those ions leaving and those attracted back to the negatively charged metal surface. At the other electrode, meanwhile, a similar process is taking place. If both electrodes are made of the same metal, each will charge to the same extent, and so no current will flow. Use different metals, though, and their reactivities will differ; one will become more charged than the other, producing a voltage. Close the circuit using an external wire and the electrons will flow through it to balance the current flowing through the electrolyte. That external current can then do useful work, like powering electric gadgets.

An American cent is 95% zinc with a copper coating. The Chinese fen (nominally worth about one-sixth of a cent), meanwhile, is coated in aluminium. Crucially for Mr Keats's project, copper and aluminium react at different rates with a salt solution. So by placing the Chinese and American pecuniary electrodes in a petri dish filled with brine, and stringing together a handful of such mini-cells (see picture), he could conjure up a potential difference as high as 18.7 volts. That is enough to power three handheld calculators.

The coins will not last for ever: the chemical reactions leave them corroded and depleted (which is why all chemical batteries run out of juice after a while). Still, they should be more than enough to crunch some simple sums. That initial order, from Jon Tolson, of Tolson Capital Management, a financial services firm in San Francisco, is to add 5 and 17. Mr Keats is running that first calculation free of charge, "in the interest of attracting a

About Babbage

In this blog, our correspondents report on the intersections between science, technology, culture and policy. The blog takes its name from Charles Babbage, a Victorian mathematician and engineer who designed a mechanical computer. Follow us on Twitter: [@EconSciTech](#)

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larger data-processing contract". Good luck with that.

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FormerRepublicanApril 12th, 17:18

What would be much more impressive is if the current flow would predict currency flows. For example, debasing the US currency while enhancing the Chinese currency would predict a decline in the value of the dollar vis a vis the yuan.

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Two-ContinentalApril 12th, 16:30

Hm. Already done by Walter White.

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A.Non-ImusApril 12th, 15:31

Here's what I sent to friends and family. Feel free to copy it to yours.
Greetings to my Fellow Engineers and Coin Collectors,

This morning's Babbage Blog on The Economist Website bridged the divide between Art and Science with an electrolyte and said, "Let there be light. And behold there was light."

And a current flowed from currency to currency with such power and efficiency, that it could drive a small computer, actually an old calculator. Don't you have an old calculator for which you can no longer buy batteries?

We can now turn domestic and foreign currencies into useful power. All those old pennies that the United States, Canada, et cetera no longer want to mint or circulate can now do something useful.

Here's the link to "Energy from Cash":
<http://www.economist.com/blogs/babbage/2012/04/energy-cash>

A penny for your thoughts?

Looking forward to hearing your thoughts on "Turning Currency into Electric Current"

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xixiemilyApril 12th, 13:57

the content of the article is quite different from the expectations i got after looking at the title.

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QXrtVbd3CR

April 12th, 13:35

Typo, Babbage style - just kidding, I read Babbage and I've always enjoyed it but an 'an' before 'battery' is novel. May be the 'battery' was an afterthought: "When an battery's electrode is immersed in its electrolyte"

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Connect The Dots

April 12th, 13:28

Ironically Gold doesn't corrode. And will not generate power.
Wall Street arbitrage banks like Goldman Sachs can have a green, natural electric source for their high speed computer margin trades: they could keep Electric Eels in their sharktanks.
Hammer head sharks also generate electric fields and they are also an apt symbol.
A pound of flesh for electricity seems fair.

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St. Teilo

April 12th, 13:24

If Babbage wouldn't mind to edit this article when the experimental philosopher adds 5 and 17. We all are dying to know the answer.

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WhiskyTangoFoxtrot

April 12th, 12:40

"the chemical reactions leave them corroded and depleted"
Does that mean the Chinese and American governments can come after him for destroying currency> =P

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jouris in reply to WhiskyTangoFoxtrot

April 12th, 14:40

Fortunately for the artist, pennies (but not other coins) are exempted in the American law against "defacing the currency." No idea what Chinese law on the subject says, however.

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icemanofbinghan

April 12th, 12:05

interesting~~

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Francis084

April 12th, 11:51

"An engineer might call it a battery."
best sentence of the article

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luso_star

April 12th, 11:36

pointless, did that experiment in high school. The so called Daniel Cell.

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Looks into the abyss

in reply to luso_star

April 12th, 18:12

He did mention he's a concept artist...

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Dhruv

April 12th, 11:11

Ha, thats just Awesome!

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