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MONEY, MONEY, MONEY

> Currency: None. Actually there are three freely convertible currencies in the Galaxy, but none of them count. The Altairian dollar has recently collapsed, the Flainian Pobble Bead is only exchangeable for other Flainian Pobble Beads, and the Triganic Pu has its own very special problems. The exchange rate of eight Ningis to one Pu is very easy to understand, but as a Ningi is a triangular rubber coin six thousand eight hundred miles on one side, nobody has ever collected enough Ningis to own one Pu. Ningis are not convertible currency as the Galactibanks refuse to deal in fiddling small change. From this it may be deduced that the Galactibanks are also the product of a deranged imagination.
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> DOUGLAS ADAMS, *The Restaurant at the End of the Universe*

You wanted to talk to me about money.

I did indeed. Let me test your reaction to the following story: On August 22, 1994, two retired musicians, Bill Drummond and Jimmy Cauty, flew to Jura, in the Inner Hebrides off the west coast of Scotland. They brought with them a cameraman, a journalist (Jim Reid of *The Observer*) and twenty thousand £50 notes, bundled and tightly wrapped in plastic bags. A million pounds. (It's worth about £1.5 million or $2.5 million in today's money.) Drummond and Cauty had, it is said, emptied their bank accounts to put the money together.

In the early hours of the next morning, the four men traveled to a remote boathouse, and with the rain hammering down outside, Cauty and Drummond made a small pile of these bundles of notes while the others acted as witnesses. Drummond and Cauty stripped out a £50 note each, lit them with a cigarette lighter and set the rest of the money ablaze. When the dense blocks of cash would not catch, they pulled out the notes three or four at a time, crumpled them and threw them on the fire. The whole job took a couple of hours.

What a waste!

You think so? Plenty of others thought so, too. Drummond and Cauty, formerly of the hugely successful band The KLF, caused outrage. They saw their action as an artistic statement. The art world didn't seem to agree. What most people did agree on was that whether motivated by art, a desire for attention or some rock-and-roll sense of excess, Cauty and Drummond had committed a dreadful waste of resources. The *Observer* article in which Jim Reid described what he witnessed finished with a list of what £1 million could have bought, including "RWANDA—2,702 kits which will feed a total of 810,810 people" and "HOMELESS—B&B accommodation for 68 families for one year in London or 106 families outside London."

When Drummond and Cauty appeared as guests on a television chat show, Ireland's *Late Late Show*, hosted by Gay Byrne, they got a hostile reception as they discussed their "art." There were sharp questions from Byrne, and the studio audience was furious at the senseless destruction.[1] Couldn't the men have given the money to a good cause instead?

Drummond protested: "If we'd gone and spent the money on swimming pools, Rolls-Royces, I don't think people would be upset. It's because we've burned it that people are upset. And I know that this is a kind of corny thing to say and it doesn't really stand up but seeing as you're talking about the charity angle . . . us burning that money doesn't mean there's any less loaves of bread in the world, any less apples, any less anything. The only thing that's less, is a pile of paper."[2]

At that point, Byrne challenged Drummond and said that there could have been more apples or bread in the world if they'd used the money wisely. The audience applauded Byrne and jeered Drummond as he tried to continue.

You're going to tell me Byrne was wrong and Drummond was correct. Am I right?

You are indeed. The simplest way to see that is to ask how much it would have cost the Bank of England to print £1 million to replace what Drummond and Cauty incinerated. Based on what I can glean from the Bank of England (who are slightly coy but say it's "a few pence" per banknote) and from information published by the U.S. Federal Reserve, the cost of printing twenty thousand £50 notes would have been no more than £2,000, about $3,000. When Drummond said that his own argument "doesn't really stand up," he was mistaken; it stands up perfectly. And when he said that he hadn't destroyed bread or apples, only paper, he was absolutely right. All he and Cauty had destroyed was $3,000 worth of paper.

In fact, far from committing a senseless waste of resources that could have gone to the needy, Drummond and Cauty had made a little gift to every one of their fellow countrymen. Instead of being outraged, people should have been thanking them.

Thanking them? For what?

Think about what happens every time the Bank of England prints extra banknotes. If there's not enough demand for goods and services to match the potential supply (and if sticky prices prevent adjustment), then the extra money should mean more demand for existing resources at the same price—this is the babysitting co-op scenario we explored in the last chapter. But if people are already demanding everything that's being supplied in the economy, then prices will have to rise instead.

Flip the scenario around. If Drummond and Cauty were burning money in an economy already suffering from deficient demand—say, burning scrip in the babysitting economy—then they were making a bad situation worse. (Even then, the Bank of England could push a button at any time and reverse the damage, at a printing cost of a couple of thousand pounds.) But if, as is more likely, Drummond and Cauty were burning money in an economy where supply and demand balanced out, the resulting effect is simple to describe: average prices in the economy would drop.

They wouldn't drop much, it must be admitted. Drummond and Cauty burned £1 million at a time when there were £18 billion of notes and coins in the hands of private individuals and companies, or 18,000 times more than Drummond and Cauty incinerated. That number fluctuated by hundreds of millions of pounds from month to month. So the effect of Drummond and Cauty's "art" was probably undetectable. Still, it was there in principle: something that cost £180 would, on average, have its price lowered by one penny as a result of the money burning. By shrinking the money supply by £1 million, Drummond and Cauty had effectively given £1 million away, in the form of slightly lower prices, to everybody in the world who owned some British pounds.

What a shame Drummond didn't call you for some media training.

I doubt that would have helped—it's a counterintuitive case to make. The fundamental problem is that when we think about money, we instinctively think about individual purchasing power—about all the things that *we* could buy if *we* had that money. But from the point of view of society as a whole, things don't work like that. Drummond and Cauty destroyed £1 million worth of *their* purchasing power. But they didn't destroy £1 million worth of society's resources. Logically speaking, if you destroy your own purchasing power, but not society's purchasing power as a whole, then you must have given your purchasing power away—which is exactly what Drummond and Cauty did.

If you're going to be in charge of an economy, you need to get out of this instinctive habit of thinking about "money" as being equivalent to "things you could buy with the money." For an individual, it is; for a society, it's not. As P. J. O'Rourke once said, microeconomics is about the money you don't have, while macroeconomics is about the money that the government is out of. And that's a different kind of money altogether.

Now, I hope you're not one of those readers who skip the nice quotes I've carefully chosen to put at the top of each chapter?

Er . . . no. Honest.

Glad to hear it. Oddly enough, there is a near real-world equivalent to the Ningi, the triangular rubber coin larger than Mars that was dreamed up by the humorist Douglas Adams. It can be found on the island of Yap, in Micronesia in the West Pacific. This coin, the rai, is a stone wheel with a hole in the middle. Some rai are fairly portable—a hand-span or less across, and the weight of a couple of bags of sugar. But the most valued stones are far bigger—one British sailor wrote in the late nineteenth century of a stone wheel that was four and a half tons in weight and more than nine feet in diameter. In other words, it was almost completely immovable.[3]

Yap's stone money used to be a serious business. The stones were quarried and carved on the island of Palau, 250 miles away. One Victorian naturalist witnessed four hundred men from Yap, a tenth of the adult male population, at work in the quarries of Palau. Getting the stones from Palau to Yap on a little bamboo boat was a difficult and sometimes lethal affair—some of the stones weighed as much as two cars. (And rai were especially valuable if someone had died on the expedition to fetch them.) The biggest stones might have been used for major transactions such as buying land or wives; more modest-size stones—a couple of feet across—were exchangeable for a pig. Even then, it would have been a lot easier to move the pig than to move the stone.

All this meant that for purely practical reasons, the Yap islanders had to develop an important monetary innovation: they divorced ownership of the stone from physical control of the object. If you wanted to buy my pig, that transaction would be publicly witnessed: I'd give you the pig and, in exchange, you'd transfer ownership of one of your stones—the one leaning against the tree, second on the left behind your hut. Now everybody would know that that particular stone was Tim's stone. You and I wouldn't have to go to the trouble of actually moving the thing.

One day, a crew from the quarries was bringing a new large stone from Palau when they ran into a storm not far from the coast of Yap. The stone sank, and the men swam to shore to tell the tale of their lucky escape and their loss. But of course, if the stone propped up outside your hut doesn't need to move around to change ownership, why should the stone at the bottom of the sea be any different? This giant stone on the seabed had an owner—the chief who had sponsored the expedition to get it.

And now his ownership could be transferred to another rich islander, and then to another, just as with any other stone. It was perfectly good money, even though it was out of sight and out of reach.

Yap's monetary system sounds pretty close to insane, if you ask me.

Ah, but is it? For many years the monetary systems of the developed world were based on gold. The gold itself—heavy stuff, although the ingots were not usually as heavy as a giant stone doughnut—would be left in bank vaults, after having been mined at great cost and risk from far-off lands. Naturally, in an anonymous urban society such as London or Venice, nobody could use the Yap Island honor system of "Everyone knows that's Tim's gold lying there." But the idea was much the same. The gold, like the stone rai, rarely moved. It stayed in the bank vaults. People would instead carry around pieces of paper recording the fact that they owned the gold.

At first this was a purely private arrangement: a merchant with some gold would rent space in a secure vault from a goldsmith. The goldsmith would give him a note acknowledging that the gold belonged to the merchant. If the merchant wanted to buy something from a second merchant, he'd take the note to the goldsmith, collect his gold, use the gold in the trade, and then the second merchant would take the gold back to the goldsmith and collect his credit note. After a while, it became obvious that it was easier to pass around the credit notes than to go back and forth to the goldsmith all the time.

Banknotes such as the U.S. dollar and the pound sterling were descendants of this system. (Paper money has a much longer history, however. Kublai Khan, Chinese emperor in the thirteenth century, introduced a system of purely paper money that astounded the visiting Italian merchant Marco Polo.) Modern British and old American notes promise to pay "the bearer on demand," a promise that once referred to redeeming the banknote in gold, just as with the private goldsmiths' banknotes. But modern currency is no longer linked to gold at all—it once was but most countries broke that link, the "gold standard," in the early 1930s.

So why do English banknotes still say "I promise to pay the bearer on demand"?

It's a quaint relic of the old system. That promise no longer refers to gold—it merely means that you can go to the Bank of England and exchange a £10 note for two fivers. The Bank of England comments, "Public trust in the pound is now maintained by the operation of monetary policy," apparently with a totally straight face.

And that sums up the real difference between the Yap islanders and the monetary system of modern economies. On Yap, they have this crazy system where the precious stone can be perfectly good money even when it is at the bottom of the sea. In the modern world, we have a far crazier system: the precious metal can be perfectly good money even though *it isn't there at all.* We just circulate the bits of paper, with their nods and winks toward the old days when they were claims on gold in a vault. Now they are claims on nothing in particular, and somehow also claims on anything at all. Douglas Adams himself couldn't have made it up.

So if we want to think clearly about what function money serves in an economy, we should start by realizing that money doesn't have to be pieces of paper or metal coins—it can be gigantic stones. Nor does it have to be intrinsically valuable. True, gold and rai were valued for much the same reason: they were beautiful and rare. Another early commodity money, salt, was valued for very practical

reasons—it's both tasty and essential for life. Yet there are lots of intrinsically valuable items that don't make good money; a Ferrari is valuable, but not easily divisible—you can't offer one of its wheels in exchange for a vacation. Moreover, something can function perfectly well as money without having much intrinsic value at all—as we have seen, anyone who conducts business in British pounds would be quite happy to hand over £1 million worth of goods in return for printed paper worth only a couple of thousand. Money systems such as the goldsmith's notes were initially anchored to an intrinsically valuable commodity, but against all intuition that valuable commodity turned out to be unnecessary. All that is necessary for money to have value is for everyone to believe that it has value.

Right. How do you achieve that?

The textbook view of money is that it has three roles: as a medium of exchange, a store of value and a unit of account. As we'll see, each of these functions can in some circumstances be peeled away from the others, but the best money will have all three together.

Let's take each role in turn. A medium of exchange is a way of keeping track of transactions. In modern societies, paper money is a medium of exchange. If I can supply laundry services and I want a new computer, I don't have to find a computer retailer who needs his clothes washed and ironed. I can simply do some laundry for anyone in exchange for cash, before spending the cash to buy the computer. The money facilitates that chain of transactions.

We can think of the circulation of paper money as a way of keeping track of contributions to society that somebody somewhere has found valuable. When I did the laundry I made a valuable contribution, and the cash I received was a formal record of that. When I bought the computer, I redeemed my contribution and surrendered the cash. In principle, such transactions could all be recorded in a gigantic centralized database. That's what happens on Yap—the population is small enough that the giant database, keeping track of who owns which stones, can be in their heads. Paper money made that database unnecessary in societies that were too big to use the Yap system, but is increasingly giving way to a giant database as we use debit cards and Internet banking more than notes and coins—a computerized version of the Yap islanders' collective memory.

The second function of money is to store value. A dairy farmer hoping to save for retirement cannot just put churns of milk in his basement: the milk is unlikely to retain its value long enough to be of much use. But if the farmer sells the milk for cash, he can certainly put the cash under his mattress —or in a bank account—and store value in that way.

There's a connection between money's function as a medium of exchange and as a store of value. The medium of exchange allows us to move purchasing power through space—from one situation (doing the laundry) to another (buying a computer). The store of value moves purchasing power through time. Still, good stores of value are not necessarily good media of exchange, and vice versa. A house can be an excellent store of value, but anyone who has ever tried to buy and sell property can attest that it's a lousy medium of exchange. The rai of Yap were a very good store of value, but the medium of exchange wasn't the stones themselves, it was the Yap society's mental bookkeeping.

The final function of money is in some ways the most important, and the strangest. Money is a unit of account. An alternative way to phrase that is to say that money is a kind of reference point, a standard of value. Let's reach for another analogy with mass. I could tell you that I weigh 88 kilograms, or 194 pounds, or 176 bags of sugar. You might think it doesn't matter which way I choose to express it, right?

Of course. Whichever way you say it, you still weigh just the same.

I used to think that, too. But I've come to realize that the unit of account does sometimes matter; my undergraduate tutor, Anthony Courakis, took great pains to persuade me of this. Imagine you have a million dollars' worth of financial assets—a pile of bonds, shares and various currencies with a total value of a million bucks.

Lucky me.

Indeed. Now, you could call that £641,500, at the time of writing, or €795,800. Or you could call it 10,893 barrels of oil. Or 1,730 shares in Apple. Of course, none of those descriptions are literally true: you don't literally have 1,730 shares in Apple, and you don't literally have a heap of a million dollars, you have a whole load of different assets with that total value. The question is, what would be the most helpful way to think about your net worth?

The answer is that the most valuable way of tracking your net worth is to find out what unit of account is stable relative to the kinds of things you want to buy. If you plan to retire to Florida, then it's probably helpful to think of yourself as a dollar millionaire. If you want to buy a house in Edinburgh, it would be more helpful to think of yourself as a sterling six-hundred-and-forty-one-thousandaire. If your plans involve digging a giant hole and pouring Brent Crude into it, then it might be helpful to think of yourself as an oil ten-thousand-barrelaire; but otherwise, barrels of oil would be unlikely to be a helpful way to think of your net worth. The same goes for Apple shares: over the past year, at the time of writing, your million dollars would have fluctuated between almost 3,200 Apple shares and a little over 1,500 Apple shares—at all points still being worth a million dollars. Unless your local shops accept payment only in Apple shares, it's probably more helpful to use dollars as your unit of account.

That's what I mean by a standard of value: if you want to keep track of how you are doing, it helps to choose a unit of measurement that is stable relative to the problem at hand. This will often mean thinking of your salary or your net worth in terms of a currency, because good currencies typically are quite stable relative to all the things you might want to buy. It is confusing to think of your salary in terms of Apple shares; for that matter it is confusing to think of your salary in terms of apples.

Over the years, when commodities have been used as money, the fact that they've been stable units of account has been hugely important.

For example, salt was used in early contracts—it's the basis of the word *salary*, and it seems likely that Roman soldiers were originally paid in salt. This makes sense, because salt had a very stable value. The demand for salt is stable, because everybody needs a bit, but nobody wants a lot; the supply of salt, meanwhile, was also stable, because it was produced by age-old techniques. If both supply and demand are stable, so is the price—and price stability is just what you need in your unit of account.

But this all seems mind-bogglingly obvious—why on earth wouldn't a U.S. citizen think of her salary as dollars rather than jelly beans, or apples, or salt? Or a German citizen think of his salary as euros, not bratwurst?

If it seems completely obvious, it's because the unit-of-account role of money is so basic, so absolutely fundamental, it's hard to think yourself into a scenario where it comes into conscious play.

One recent example that made me chuckle was a tweet from James Rickards, an enthusiast for gold and for a return to the gold standard. In April 2013, as the price of gold was collapsing, Rickards commented, "Last week I had x ounces of #Gold. Today I have x ounces. So value is unchanged. Constant at x ounces. Dollar is volatile though. #ThinkOz." Now, I don't have a view either way on where the price of gold is going next, but it's pretty clear that this tweet is absurd, and thinking about how money needs to be a good unit of account tells us why. If Rickards wants to buy a hamburger, or a suit, or a car, he'll find that the dollar hasn't been volatile at all: the prices of these things have changed slowly when measured in dollars. They have gyrated wildly when measured in ounces of gold—which is why gold is not money, at least not at the moment. It may be a good investment or a bad investment, but that's a different question.

One could tell a similar story about Bitcoin, a decentralized electronic "currency." Bitcoin was developed in 2008 by a mysterious person or group of people with the pseudonym Satoshi Nakamoto. He, she or they developed a way by which Bitcoins could be produced, or mined, slowly—a bit like gold. Some people love Bitcoin for the same reason that some people love gold—it's independent from any government, and there's a hard limit on how many Bitcoins can ever exist. But just like gold, Bitcoin is not money for a very simple reason: it's far too volatile. On April 10, 2013, for instance, the price of Bitcoins dropped by 61 percent. Again, Bitcoins may prove to be a smart long-term investment. But they aren't money. Maybe that's obvious to you, but there are a lot of gold and Bitcoin enthusiasts out there who don't seem to have realized this.

This does suggest, though, that a dollar isn't automatically money either—it's only money if it keeps a reasonably stable value.

Absolutely.