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Federal Reserve Bank of Cleveland

Island Money

by Michael F. Bryan

Equally remarkable...is the native money of Yap... These pieces of money are disks of aragonite, a stone in appearance, like large crystals of quartz. ...We had information of one piece...being nine feet four inches in diameter and weighed four and one half tons. These extraordinary stones are set up in front of the owner's house, his importance and wealth being betokened by the number of "dollars" he can set up.

J. R. LeHunte, "Report of HMS Espiegle," October 10, 1883[1]

On a small group of islands in the South Pacific, the people use a "money" so astonishing it often gets mentioned in classroom discussions on the subject. This *Commentary* takes a closer look at the stone money of Yap and asks what such an odd form of money can teach us about our own.

Economists are fond of describing their economic models by telling stories about imaginary islands where inhabitants have particular preferences and endowments and trade in rather isolated and simple markets. These "island economies" are almost cliché in the profession.

In this *Commentary*, I turn that parable on its head by considering the unique and curious money of Yap, a small group of islands in the South Pacific. This is a useful exercise because we rarely think very carefully about the nature of our own money—it does what we ask of it, and that is generally all we care to know about it. But to gain a deeper understanding of money, we need a better appreciation for the role money plays. A good way to gain this appreciation is by examining a money that is far removed from our personal experience. This provokes us to ask the crucial questions: What problem is this money solving, and why is this particular object a good solution to that problem? Like the theoretical islands used by economists to illustrate the essential characteristics of an economy, the stones of Yap may help us see better what makes money, money.

■ Hard Currency

For at least a few centuries leading up to today, the Yapese have used giant stone wheels called *rai* when executing certain exchanges. The stones are made from a shimmering limestone that is not indigenous to Yap, but quarried and shipped, primarily from the islands of Palau, 250 miles to the southwest.[2]

The size of the stones varies; some are as small as a few inches in diameter and weigh a couple of pounds, while others may reach a diameter of 12 feet and weigh thousands of pounds (figure 1). A hole is carved into the middle of each stone so that it may be carried, either by coconut rope strung through the smaller pieces, or by wooden poles inserted into the larger stones. These great stones require the combined effort of many men to lift.

Expeditions to acquire new stones were authorized by a chief who would retain all of the larger stones and two-fifths of the smaller ones, reportedly a fairly common distribution of production that served as a tax on the Yapese. In effect, the Yap chiefs acted as the island's central bankers; *they* controlled the quantity of stones in circulation. Even after the arrival of Western ships in the latter half of the nineteenth century, Yap chiefs still had considerable influence over the numbers and distribution of stones being brought to the island.[3]

The quarrying and transport of rai was a substantial part of the Yapese economy. In 1882, British naturalist Jan S. Kubary reported seeing 400 Yapese men producing stones on the island of Palau for transport back to Yap. Given the population of the island at the time, this estimate suggests that more than 10 percent of the island's adult male population was in the money-cutting business.

■ Weights and Measures

Curiously, rai are not known to have any particular use other than as a representation of value. The stones were not functional, nor were they spiritually significant to their owners, and by most accounts, the stones have no obvious ornamental value to the Yapese.

If it is true that Yap stones have no nonmonetary usefulness, they would be different from most "primitive" forms of money. Usually an item becomes a medium of exchange after its commodity value—sometimes called *intrinsic* worth—has been widely established. Lacking intrinsic worth, Yap stones may be an especially useful object of study for students wishing to understand the significance of U.S. dollars, which, after all, have no value other than as a monetary unit; they're what economists call a "fiat" money.

Precisely how the value of each stone was determined is somewhat unclear. We know that size was at best only a rough approximation of worth and that stone values varied depending upon the cost or difficulty of bringing them to the island. For example, stones gotten at great peril, perhaps even loss of life, are valued most highly. Similarly, stones that were cut using shell tools and carried by

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canoes are more valuable than comparably sized stones that were quarried with the aid of iron tools and transported by large Western ships. The more valuable stones were given names, such as that of the chief for whom the stone was quarried or the canoe on which it was transported. Naming the stone may have secured its value since such identification would convey to all the costs associated with obtaining it.

It is often claimed that the vast ocean that separates Yap from its money supply on Palau is what allowed the Yapese to limit the expansion of their money and thus helped to maintain its purchasing power. But if stone values were in fact set by their marginal cost of production, this—and not the ocean—would have limited the profits from creating new money (what economists call "seigniorage.")

Consider the case of the Irish American David O'Keefe from Savannah, Georgia, who, after being shipwrecked on Yap in the late nineteenth century, returned to the island with a sailing vessel and proceeded to import a large number of stones in return for a bounty of Yapese copra (coconut meat). The arrival of O'Keefe (and other Western traders) increased the number and size of the stones being brought back to the island, and by one accounting, Yap stones went from being "very rare" in 1840 to being plentiful—more than 13,000 were to be found on the island by 1929. No longer restricted by shell tools and canoes, the largest stones arriving grew from four feet in diameter to the colossal 12-foot stones that are now a part of monetary folklore. Yet the great infusion of stones did not inflate away their value. Since the stones of Captain O'Keefe were obviously more easily obtained, they traded on the island at an appropriately reduced value relative to the older stones gotten at much greater cost. In essence, O'Keefe and other Westerners were bringing in large numbers of "debased" stones that could easily be identified by the Yapese.[4]

■ Sticks and Stones

While it's clear that the Yap stones have value for the Yapese, can the stones really be called money? The answer, of course, depends upon how you define money. If you rely on a standard textbook definition, you'd describe money in terms of its functions, for example, "Whatever is used as a medium of exchange, unit of account, and store of value."[5]

Certainly, Yap stones performed at least one of these functions quite well—they were an effective store of value (form of wealth). But every asset—from bonds to houses—stores value and is not necessarily labeled money. To be called money, at least according to the textbook definition, an asset must serve two other functions. It must be a medium of exchange, meaning that it can be readily used either to purchase goods or to satisfy a debt, and it must be a unit of account, or something used as a measure of value.

Yap stones were not the unit of account for the islands. Pricing goods and services in terms of the stones would probably have been difficult for the average islander. One couldn't have simply valued goods in terms of so many feet (or pounds) of "Yap stone," since the stones were generally not valued by their relative size but by the costs associated with bringing them to the island, and this was distinctive to each stone. According to Paul Einzig, prices on the islands were set in terms of baskets of a food crop, taro, or cups of syrup, staples that would be easy for a typical islander to appreciate.

Furthermore, there is some question whether Yap stones were commonly used as a medium of exchange. To be used in exchange, an item must possess certain characteristics—it must be storable, portable, recognizable, and divisible. Certainly, the stones were storable; they can still be found in abundance on Yap, and they have maintained their purchasing power reasonably well over time (particularly compared with other fiat monies, including dollars).

And while it is sometimes claimed that Yap stones suffer as an exchange medium because they lack portability, this may not be completely accurate. In the case of the larger, more easily identified stones, physical possession is not necessary for the transfer of purchasing power. Those involved in the exchange need only communicate that purchasing power has been transferred. If this arrangement sounds improbable to you, remember that most dollar transactions in the course of an ordinary business day occur without the transfer of anything physical. Electronic payments, which represent the overwhelming share of the value of all dollar transactions, require only balance sheet adjustments between banks. In other words, only the *communication* that purchasing power has been transferred is necessary while the actual movement of Federal Reserve notes or some other physical manifestation of dollars is unnecessary.

But while storability and portability may not have limited the use of these stones as a medium of exchange, the other two characteristics—recognizability and divisibility—probably did. The stones were primarily used in exchanges between Yap islanders. Just as with the unit of account, the function of an object selected to be the medium of exchange is to *represent* purchasing power, and people have to be familiar with the value of the object or it can't do the job of representing very well. U.S. dollars, for example, are internationally recognized and enjoy a nearly global circulation. Indeed, at least half and perhaps as much as 70 percent of all U.S. currency circulates outside of the United States. But because Yap historically did not have close cultural ties with any of its trading partners and trade with off-islanders was somewhat infrequent, the stones did not facilitate transactions on these occasions. When transacting with other islands, the Yapese used woven mats (a common exchange medium throughout the South Pacific), while trade with Westerners often involved an exchange of coconuts.

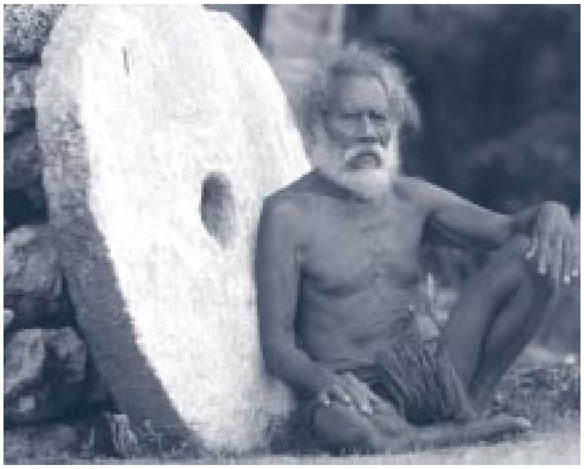
Even on the island, the indivisibility of the stones necessitated the use of other items as media of exchange for most transactions. Most rai are highly valued: By one account, a stone of "three spans" (about 25 inches across) would have been sufficient in the early twentieth century to purchase 50 baskets of food or a full-sized pig, while a stone the size of a man would have been worth "many villages and plantations." Obviously, these stones do not change hands very frequently, since expenditures of such magnitude are rare. For more ordinary transactions, the Yapese either used pearl shells or resorted to barter.

Clearly the stones of Yap do not fit neatly within the textbook definition of money. But perhaps the important question is not whether Yap stones can rightfully be called money based on the textbook definition, but what role do the stones play and how is that role similar to that played by dollars?

■ Rock Record

My reading of the various accounts suggests that the stones, particularly the larger ones, acted as markers, changing hands in recognition of a "gift." Stones

FIGURE 1 STONE MONEY OF YAP



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were often merely held until the gift was reciprocated and the stone could be returned to its original owner. For example, islanders wishing to fish someone's waters might do so by leaving a stone in recognition of the favor. After an appropriate number of fish were given to the owner of the fishing waters, the stone would simply be reclaimed. Occasionally a stone was "exchanged" when one tribe came to the aid of another, say for support against a rival tribe or in celebration of some event. But the stone would reside with the new tribe only until such time as aid of a similar value could be given in return. The stones, then, act as a memory of the contributions occurring between islanders. Anthropologists refer to this as a "gift economy," where goods aren't traded as much as they are given with the expectation of a comparable favor at some later date.

So Yap stones serve as a memory of one's contributions on the island. How does this help us better understand our own money? Consider this: A "memory of contributions" may be a good description of the role money plays in *our* economy. The economic gains to society from specialization and trade are well known to economists. Each person offers "gifts" to the marketplace on the basis of his or her relative abilities and desires. People do this in expectation of being able to enjoy the gifts offered up by others who have different abilities and desires. But how much of the gifts of others can I expect to receive in return for my contribution? In a moneyless world, precious resources are used up in the process of bartering—trying to find someone who values your offerings at an acceptably high level. These "search" costs can be reduced by the introduction of something we can call money, which is nothing more than a claim on the general production of others. The problem that money solves, then, is that it reduces the costs associated with a "lack of a double coincidence of wants." That is, it allows me to trade with someone even though that person doesn't possess a good that I value sufficiently high, but who is willing to offer a sufficiently high claim on the general production of others.

Some have argued, at least as far back as the seventeenth-century philosopher John Locke, that money is merely a communication device that serves as a societal memory of someone's production and consumption. This idea has been developed further by monetary theorists of the past 25 years, and particularly Narayana Kocherlakota of Stanford University. Kocherlakota argues that money is a rather crude technology that allows us to keep track of the balance of our gifts to society relative to others. If Kocherlakota and others are right that "money is memory," it is easy to see why money need not have any intrinsic worth. Fiat money can keep track of transactions as effectively as a commodity, while saving on production and storage costs. In fact, from this perspective, we might foresee a future in which all transactions are costlessly and instantaneously recorded for all to see, making the idea of money, at least as a physical construct, obsolete.

But this raises an intriguing question. If the stones of Yap were merely markers and nothing more, why did the Yapese expend such great resources to carve them out of the mountains of Palau and carry them all the way back to their island? Wouldn't *any* marker work just as well? It may be that the Yap chiefs did not have sufficient "credibility" to simply decree an object's value. That is, the Yapese may have needed some assurance that the object on which value has been assigned could not be easily replicated for the mere benefit of the issuer.

The importance of credibility in maintaining the value of fiat money is a lesson that central banks around the world have had to learn the hard way. Motivated by the promise of substantial seigniorage, some central banks so overexpanded their money that in many cases, its purchasing power was nearly inflated away. Maintaining the credibility of the central bank is one reason Congress established the Federal Reserve as an institution independent from the U.S. Treasury and largely free of political influence. In this way, the issuers of the money do not have the incentive to profit from its production. Similarly, some nations now mandate inflation targets for their central banks and others have dollarized, meaning they have adopted a foreign-produced money as their own. Indeed, in 1986, Yap, in concert with a group of other island states called the Federated States of Micronesia, entered into a Compact of Free Association with the United States, which, among other things, established the U.S. dollar as their legal tender. So Yap too is now a dollarized economy. Nonetheless, the great stones are still used in some exchanges on Yap today.

■ Stones and Dollars

What is money? The list of functions and qualities one finds in the standard textbook definition does not make for a very deep understanding of the subject. Unfortunately, economists have not yet come to a common agreement about the role of money in our economy. This gap in our knowledge ought to make central bankers a little uncomfortable as they contemplate what constitutes an optimal "monetary" policy. But until the day this important question is answered, maybe we can gain a better understanding of money by considering the objects that others have called money, but which are so removed from our personal experience that we are forced to think about what problem they solve and why these particular objects are good solutions to that problem. Like the remarkable stones of Yap.

■ Suggested Reading

Paul Einzig, 1948, *Primitive Money in its Ethnological, Historical and Economic Aspects*, London: Eyre & Spottiswoode.

Cora Lee C. Gillilland, 1975, "The Stone Money of Yap: A Numismatic Survey," *Smithsonian Studies in History and Technology*, Number 23. Washington, D.C.: Smithsonian Institution Press.

Narayana Kocherlakota, 1998, “The Technological Role of Fiat Money,” Federal Reserve Bank of Minneapolis, *Quarterly Review* 22:3, pp. 2–10.

Charles J. Opitz, 2000, *An Ethnographic Study of Traditional Money*, Ocala, Fl., First Impressions Printing.

Footnotes

1. Gillilland (1975).

2. The people of Palau, however, used beads, not stones, in exchange. Beads are a common medium of exchange in many cultures, but what makes Palau beads a fascinating (and surprisingly omitted) part of the story is that some anthropologists believe the beads used in Palau are not indigenous to that island, but probably came from Yap. If this is true, it means that each island was the source of the other island’s “money” but not the source of its own, locking the two islands in an unusual monetary symbiosis.

3. But Westerners in the South Pacific also shifted the balance of power away from Yap, which had exerted some degree of control over its neighbors, in favor of Palau, which had more regular contact with the traders. This swing in power also shifted some of the tax power enjoyed by Yap chiefs to the King of Palau. According to one account: “The broad paved street of the island of Koror in Palau was not constructed by the inhabitants of Koror but by Yapese as payment for permission to quarry in order to manufacture money” (from Senfft 1903 as reported by Gillilland 1975).

4. It also seems probable that the introduction of the Western sailing vessels greatly expanded the economy of the small island, and this rapid growth may have necessitated a large infusion of “new money” to help maintain price stability.

5. Lawrence S. Ritter and William L. Silber. 1989. *Money, Banking, and Financial Markets*, 6th edition. New York: Basic Books.

Michael F. Bryan is a vice president and economist at the Federal Reserve Bank of Cleveland. *He thanks Linsey Molloy for research assistance and Keith Hart for his thoughtful comments on an earlier draft.*

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Research Department
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