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The Invention of Coinage in Lydia, in India, and in China

I: Coinage Thrice Invented

All modern money is at least notionally coinage: although in fact the use of coins in modern societies is extremely restricted—try to buy a car, or even a bicycle, with coins and you will see what I mean—moderns speak of all their ways of transferring value as if they were ways of transferring dollars, pounds, or Euros, and they speak of those units as if they were large coins¹ each of which is worth a given number of smaller coins. Even in those places such as prisons, D.P. camps, and fourth-grade classrooms where real coins are hard to come by, the available items (cigarettes, bread rations, or, among the schoolchildren of my country, apricot pits) are conceived of as being substitutes for coins, which are considered “real” money.

All modern coins, in turn, are descended from the coins that appear to have been invented in the kingdom of Lydia in Asia Minor somewhere around the year 600 BCE² and that spread throughout Greece in the following centuries: disk-shaped,

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I use throughout this article the Pin Yin system of transliteration currently in use in mainland China. The reason is neither scholarly nor political, but rather that I am more familiar with it.

¹ Or, since the twentieth century, banknotes, which are now generally thought of as “real money.”

² On the dating of Lydian coinage see below, p. 13.

made of gold, silver, bronze or imitations thereof, with both sides bearing an image produced by stamping; one side is often a human head.

Lydia was not, however, the only place where coins were invented, nor are Greek-style coins the only ones that have existed. In India and in China,³ indigenous forms of coinage yielded place to the western-style forms: Indian coinage has followed western practice since the Hellenistic age, while China finally adopted western-style coins only with the Nationalist revolution of 1911.⁴ It is my intention in this paper to examine certain parallels in the political situations that led to the development of coinage in these three places, and to suggest a reason why it was in these particular places, and at this particular time, that coins first appear.

Money and coinage. Before we continue, I must distinguish between coinage and money, a distinction generally recognized today but still necessary for our discussion. Coins, small, metal objects with an identifying mark that serve exclusively as money and are produced for that purpose⁵, are an invention, an idea that first appeared in a given place and time and then spread to other societies by means of cultural influence and imitation. Money, on the other hand, which we may define broadly as a standardized item generally acceptable in trade not for its particular use but because the person accepting it can later exchange it for whatever he needs, is a phenomenon that tends to appear when a culture reaches a certain level of complexity.⁶ One cannot properly speak of the “invention” of money;⁷ it is not an idea that passes from one society to another by imitation, but a cultural phenomenon that

³ For my reasons for excluding Egypt and Mesopotamia, see below, p. 10.

⁴ In fact many local issues of modern-style coins had been minted in the last years of the empire, and a switch-over to a new-style currency system had already been legislated, but not completed, at the time of the revolution. Peng 659-706.

⁵ And therefore are interchangeable (“fungible”): on the importance of this criterion see Helfferich 22-3.

⁶ Pryor, pp. 161-83. Pryor’s definition is intentionally somewhat broader than mine. I define money merely to distinguish between it and coinage, and so have chosen a short and comprehensible definition rather than a methodologically productive one.

⁷ At least, not in the economic sense used in this paper, for which it is irrelevant whether the people involved think of themselves as using “money”, or indeed even have a concept of “money.” I have argued elsewhere (Schaps, *Invention of Coinage* 15-7; similarly Seaford 3-6, 16-20, 318-37) that the *concept* of money as a universal item whose possession is synonymous with wealth first appears among the Greeks.

any society may start to use, even without external examples, as the need arises. Primitive societies generally use a different item for each of its various functions; in modern society a single item, coin, performs all the functions of money.⁸ In Mesopotamia and the Levant, silver was a true all-purpose money long before coins were invented; but the Babylonians and the Phoenicians did not use coins. They weighed their silver at each transaction, and continued to do so even after coins minted abroad had begun to come into their hands. I have dealt elsewhere with the question of what significance there was to the invention of coinage in a world that already used money freely;⁹ for the current investigation it is sufficient to note that the invention was important enough to be imitated, in the fullness of time, throughout the world.

II: Three Different Technologies.

That coins were not an invention that simply spread from Greece eastward to China, or from China westward to Greece, or from India outward to China and Greece, is obvious to anyone who glances at the early coins of these three societies. The earliest coins in what became the Greek tradition were apparently coined by the kings of Lydia, a non-Greek kingdom of western Asia Minor.¹⁰ These early coins were made of electrum, an alloy of gold and silver, both of which were panned in ancient times from the Pactolus River that flows by the Lydian capital of Sardis. They were



⁸ This, at any rate, is the orthodox interpretation, for which see Polanyi 264, 266, Quiggin 4 and Einzig 428-30; in fact the modern situation is more complicated than usually admitted, as Melitz 1021-3, points out. For further **Figure 1: A Lydian electrum coin of royal issue, with double incuse square (Weidauer Series XVI)**

⁹ That is the subject of Schaps, *Invention*

¹⁰ The Lydians were not Greeks, but their history is known to us chiefly through Greek sources and through the work of classical archaeologists; the spread of coinage, moreover, took place in Greece much more than in Lydia; see Osborne 250-59. I shall therefore occasionally speak of Greece and Greek history when explaining what happened in Lydia, for there is no independent discipline of Lydian history.

disks of metal that had been struck with a hammer on a surfacing bearing an intaglio pattern. The intaglio design produced the obverse¹¹ of the coin; the reverse held simply the mark of the hammer, a mark known to numismatists as an incuse square. Later a second intaglio image replaced the incuse square, producing a form that remains, with some variation,¹² down to the present day. (Fig. 1).

Indian coins do not resemble the coins of the Greeks. They are rarely disk-shaped; sometimes they are entirely irregular, but more commonly they take the shape of a short bar, often with bits chopped off one or more corners. (Fig. 2).

The punch-marks are of two types. The “primary” symbols are deeply impressed on the obverse, and were apparently made after the blanks had been heated or annealed. Most coins, however, also bear various shallow marks, punched when the metal was cold,



Figure 2: A rectangular punch-marked coin. One corner has been cut off to make the proper weight.

either as test-marks to prove that the coin was solid silver, or else—perhaps more likely, since there were so many of them—as marks of ownership or marks that a particular individual guaranteed the coin.¹³ There is no fixed place for either type of mark; unlike a Greek coin, which has on each side¹⁴ a single picture that occupies the whole of its side, an Indian punch-marked coin has a number of small punches, each of them an identifiable pattern, which may be found anywhere on the face of the coin, rather like a train-ticket that has been punched by a conductor.

The primary punch-marks may be from one to five in number; what is significant for our purposes is that they appear in regular series, with the same number and types punched on many coins, leaving little doubt that these primary marks served to identify the mint, moneyer, or jeweler that produced them, or the ruler who

¹¹ The obverse is the more important side of the coin (“heads”: on Greek coins, usually the emblem of the city or the head of the ruler), the reverse the less important (“tails”, often with an ethnic designation).

¹² The biggest change is due to the fact that coins are no longer struck by hand, but by machine, producing a much more regular disk, with the image always filling the entire surface.

¹³ Lahiri 17; Gupta and Hardaker 6-7.

¹⁴ After, of course, the earliest coins whose reverse had only a punch-mark.

authorized them. The secondary marks, on the other hand, may number anywhere from zero to fifteen.¹⁵ Their chief historical interest—since we can have no real hope of identifying the person to whom they belonged—is in the clear evidence they offer



Figure 3: A Pre-Qin spade coin.
Courtesy of Paul Liu.

that these coins circulated from hand to hand: whatever their use, they were by no means items to be held indefinitely in a single person's treasure-chest. Some coins are counter-marked on the reverse with one of the primary marks. These marks have been thought to be a guarantee of their authenticity and a means of preventing further marking which could obliterate the original marks entirely; a recent study takes them to be marks of successive rulers.¹⁶

Figure 4: Knife coins. Courtesy of Paul Liu.



The earliest coins are saucer-shaped, made from a blob of silver heated so that it spread more or less evenly before having the punch applied; but soon the coins take the shape of bars, for reasons that were presumably technological. The coiner first made a large plate of silver or other metal,¹⁷ then cut it into rectangular pieces that he proceeded to mark by punching, either applying the primary marks while the silver was still hot or reheating it for the purpose.¹⁸ Unlike the Greek coins, where the weight of the flan was guaranteed by the production process, the Indian coins were apparently weighed only after having been cut from the original plate. To achieve the

¹⁵ Lahiri 17; Gupta and Hardaker 7, state that coins have been found with over thirty such marks.

¹⁶ Gupta and Hardaker 7; Agrawal and Rai 153-61.

¹⁷ The metallurgical tests of Agrawal and Rai have demonstrated, contrary to previous accounts, that although the coins generally have an outward appearance of silver, they were in fact heavily alloyed with other metals, with different alloys corresponding to different issues.

¹⁸ For the precise procedures (two somewhat different procedures can be recognized) see Agrawal and Rai 21.

proper weight, it was always possible to chop off an edge of the coin, producing the more irregular shapes that share the field with squares and rectangles.¹⁹

Chinese coins were something else again. In some places they are shaped like spades, in others like knives, in others like cowries—what the Chinese call “ant-nose coins”—and in some they are simply disks.²⁰ (Figs. 3, 4, 5). The knives and disks usually have a hole in them, and the spades sometimes do as well, indicating that they were meant to be carried on a string; Chinese still speak of “a string of cash”, and the hole did not disappear from Chinese coins until they were superseded by western types.

The coins of China were neither struck like those of Greece nor punched like those of India, nor were they made of gold or silver.²¹ They were made of bronze²² and cast in a clay mould that was broken to remove the completed coin. The Chinese here



Figure 5: “Ant-nose” coin.

were using their own customary method of metal work: cast bronzes of extremely high quality had been important items of wealth in China for centuries, and they might often have a short inscription commemorating the person or occasion for whom or for which they

were made. The spade, knife, and disk coins, which almost always bore a few characters, were also “valuable bronzes” in their way. To

some extent all of these forms originally derived their value, as Greek and Indian coins certainly did, from the weight of metal they contained;²³ the names and nominal values of the later coins of China are often those of weights (*banliang*, “half-ounce”,

¹⁹ Lahiri 16-7.

²⁰ It has been claimed that a recent find of dagger-axes found in Shaoxing were also a form of currency; see Zhou for a rebuttal.

²¹ There was one exception to this rule: in the southern state of Chu, thin square plates of gold, with appropriate characters punched on them, seem to have circulated at the same time as the other pre-imperial forms: Li 392-6. It cannot be said whether this coinage, anomalous in China, has any connection with the Indian punch-marked coins.

²² Although the early coins of Rome, as is well known, were also made of bronze, they were struck, not cast, and developed out of the earlier use of weighed bronze (*aes rude*) under the influence of the Greek coins that were used by the cities of Sicily and South Italy.

²³ They varied considerably in weight, but were quite standard in their size: Thierry, “Monnaie et monnaies” 62-3. It was more important that they be easily recognizable and convenient than that they include any particular weight of bronze.

sanzhu, “three-grainer”), but their value was often marked up by the government—a markup that was accepted in practice only within certain limits.²⁴

Chinese coins were not utensils; not in any way. One might have imagined—indeed, when I began my research, I did imagine—that utensil coins were an example of Gresham’s law,²⁵ by which bad money drives out good: at first, so I thought, people used spades for trade, but since in trade one spade counted for the same as any other, they soon did not bother making spades good enough for digging, and over the course of time the real spades were replaced by mere symbolic spades, the spade-coins. One might indeed have imagined that, but that is not the story that archaeology tells. The spade-coins and the knife-coins appear suddenly, with hardly any intermediate stages.

The earliest spade-coins, indeed, have a hollow socket as if to hold a wooden handle; but they are much too thin and too small to have been used for digging. The coins of China, no less than those of Greece and India, seem to have been an invention, not a gradual development.



The spade- and knife-coins lasted only until the unification of China under Qin Shih Huang Di in 221 BCE; at that point the coins of Qin, cast bronze disks with a square hole, superseded all the earlier forms and remained the standard form until the last decades of the Manchu empire.²⁶ (**Fig. 6**)

III: Contact or Coincidence?

Figure 6: A Qin “half-ouincer.” Courtesy of Paul Liu.

²⁴ Scheidel 6-14.

²⁵ Einzig 413-415, demonstrates that this well-known law holds for primitive money no less than for all-purpose money.

²⁶ Not that these two millennia knew no further experimentation: a few centuries passed before coins achieved their “normal”, lighter form. Nor was the imperial monopoly on coinage always respected, even in theory: see Thierry, “Monnaie et monnaies” 60-1, and for more detail Peng, *passim*.

All of the cultures that we have mentioned are cultures rich in accomplishments, both technological and artistic, whether they invented coinage on their own or adopted it from others. The coins of Lydia still seem to be the earliest that can be dated with certainty,²⁷ but at any time a well-executed excavation could change that appearance. I shall accept, for the sake of argument, the claim of the Lydians, but the question remains whatever relative chronology we adopt: did these three peoples invent coinage independently, or did one or two of them merely adopt a foreign innovation?

At first glance the idea of these three coinages being a matter of imitation seems preposterous. If there is one thing that seems clear from a punch-marked coin, it is that the person who first thought it up had never seen a Greek coin—or if he had seen one, it had not impressed him. The punch-marked coin is made by an entirely different metallurgical process, with markings placed randomly and with little visible relationship to the kind of artisanship that distinguishes Greek coinage. A Chinese spade-coin or knife-coin is something else again, made of a different metal, by a different process, its weight imprecise, and flaunting the fact that it is not an imitation coin but an imitation tool. It is hard to believe that people as sophisticated as the Indians and the Chinese could not have produced a good imitation of a Greek coin, if that was what they were trying to do.

And for all that, there are indications that the three coinages may not be entirely independent. Silver was foreign, scarce, and out of favor in Vedic India;²⁸ the idea that it could become the embodiment of value can only have been an imported one. We must suspect foreign influence, and the most reasonable presumption is that here, as in Greece, it was the influence of the pre-existing trade of Mesopotamia that was the decisive factor. A few archaeological finds seem to bear this out: a piece of silver found at Mohenjo-Daro, dating from the early second millennium and said to bear a cuneiform character,²⁹ may perhaps be discounted, but a hoard of ingots and

²⁷ See below, p. 13.

²⁸ Dhavalikar 332.

²⁹ Kosambi, "Origin and Development" 85-9.

Hacksilber from Nūsh-i Jān, a mound in Media, is more suggestive. Although the cultural and economic connections of Media were with Assyria and Babylonia at least as much as with India, the ingots found at Nūsh-i Jān bear some resemblance to the Indian “bent-bar” currency of which the earliest examples are found in the Chaman Huzūrī hoard from Afghanistan.³⁰ This seems to offer at least a plausible route for the intrusion of monetary silver from Babylon through Iran and Afghanistan to India. If this reconstruction is true, the use of silver as money (at least as special-purpose money) will have come to India, as it came to Greece, under the influence of Mesopotamia, while the punch-marked coinage itself will have been an indigenous invention of India.

Chinese coins, too, for all of their individuality, may not be as isolated as Westerners tend to think. Even if they had seen coins, it would not have been unreasonable for the Chinese to produce their own by the technique of casting bronze, which was developed to a high standard of art in China. The spade-coins and knife-coins, indeed, may be thought to tell against this idea, and the only literary evidence that spades and knives had been used for exchange before the invention of coinage is suspect;³¹ but the idea of using the shape of utensils to indicate value would have been no less clever a thought if the person who thought of it knew that other people in other places had used other shapes. Indeed, the disk shape, which may be quite as ancient as the spade and knife, may support the idea of connection as much as the spade and the knife may argue against it.³²

Lastly, we should note that even if no Greek coin had found its way to India and no Indian coin to China when the first such items sprung up in their new home, that does not necessarily mean that the inventions were entirely unconnected. There was nothing revolutionary about the technique of striking coins in Lydia; Assyrian or Egyptian workmen surely would have been capable of casting coins a thousand years

³⁰ Bivar 101, Dhavalikar 335-6. The bent-bar coins seem to be found only in places under Persian influence: Bivar 101, from Walsh 2.

³¹ See below, p. 20.

³² Of course this is not the only possible explanation; it is more commonly, and not implausibly, taken to be an imitation of a ring.

earlier, had they wished to do so. What was new was the idea of carrying on trade exclusively by means of an “official” medium guaranteed by a stamp. If that, for the Indians and Chinese, was an idea whose time had come—and we shall still have to ask why that should have been the case in India and China but not in Babylonia or Scythia—the idea may have passed even if the physical item did not. There may be more to cultural influence than mindless copying.

Once all of that is said, however, the simplest explanation is still that the very different-looking coins of Greece, India, and China were indeed three independent inventions. And even if the basic idea may have traveled in one direction or another, mere diffusion cannot explain why these three societies adopted this idea so thoroughly that coins became the essential medium of their economy, while other societies developed far-flung economies without inventing coins.

Surely the peoples of the near east had nothing like it. These people were by no means moneyless: Egyptians, even when bartering, evaluated the articles being traded as so-and-so many units of copper, and the rich hoarded certain items specifically for use in trade. Much more monetized was Mesopotamia, where trading firms, contracts, mortgages, leases, interest rates, price fluctuations, and many other matters that we associate with money are abundantly documented.³³ Many scholars have gone further and seen certain items turned up by the spade as “practically” coins, or at least predecessors of coins.³⁴ In Egypt we find a picture of rings being weighed against merchandise; in Babylonia there is non-negligible evidence for the presence of rings and coils of more or less regular weight having been hoarded, and presumably made, for uses that were probably monetary.³⁵ For all that, it must be clear by now that what was happening in Lydia and Greece, in India, and in China, was something quite unlike anything known to us from Egypt or Mesopotamia. Where real coinage

³³ Le Rider 1-39; Schaps, *Invention of Coinage* 42-52; and see now Vargyas, *History of Babylonian Prices*.

³⁴ The description of the predecessors of coinage is often repeated, and was best developed by Miriam Balmuth in the articles cited in the bibliography. I have argued elsewhere (Schaps, *Invention of Coinage* 222-35; similarly Le Rider 17-35 and Seaford 318-337) that none of these “predecessors” can have functioned as currency.

³⁵ On this see the articles of Dayton and Powell.

appears, we find small, interchangeable metal items with a standard mark clearly displayed on them that occur by the hundreds or thousands at a multitude of sites. There can be no denying the name of coins to the early Indian and Chinese coins, and Egyptian and Mesopotamian sites have nothing like them.

Lydia, India, and China probably invented coinage independently of each other; and even if that was not the case, they surely developed the use of coins independently of each other. It is possible that these three independent events had independent causes, and that none of them has any light to shed on the others; but it is surely worthwhile to consider the possibility that there were similar conditions in these particular places that made coinage a plausible and a useful innovation.

IV: The Political Background of Coinage and its First Appearance

The earliest Greek cities of Asia Minor—Miletus, Smyrna, Cyme and others—dated from the end of the second millennium BCE, shortly after the end of the Mycenaean period. The Greeks of Asia Minor, however, like those of the mainland, were few in number, poor and isolated, during the eleventh, tenth and ninth centuries. With the beginning of the eighth century we find in Ionia, as in mainland Greece, a notable increase in the size and number of settlements, and signs of a revitalization of international relations and commerce. New colonies were founded in Asia Minor itself, and the established cities sent out colonists of their own.³⁶ Precious metal, chiefly silver, was used in international trade, at least with the Phoenicians. Among themselves, however, those Greeks whom we can document apparently used, at least at first,³⁷ nothing more than utensils: bronze tripods, bronze cauldrons, and iron spits

³⁶ On this “Ionic Renaissance” (Cook’s phrase) see Roebuck 61-70; J. M. Cook 46-60; Huxley 55-84; Emlyn-Jones 25-32.

³⁷ John Kroll has argued (“Silver” and “Observations”, followed by Kim, “Archaic Coinage” 15-7 and Seaford 93 n. 31) that the Athenians, at least, developed a true bullion economy before the invention of coinage; although there is no doubt that weighed silver was used in international trade and as a store of value, I remain skeptical about its use in the marketplace (Schaps, “Conceptual Prehistory”). Cf. below, n. 138.

all seem to have served, but none of these were produced in quantities that could suffice for any but a very clumsy medium of trade.³⁸

In Lydia itself this surge of prosperity was associated with the rise of a new dynasty under the king Gyges, whose wealth became proverbial,³⁹ and might still have been so had it not been so greatly surpassed by that of his last royal descendant, Croesus. An expanding economy offers a fertile field for new modes of economic activity, and the invention of coinage is undoubtedly in some sense a result of the increased prosperity of Lydia and Ionia, and of Greece in general, in the early archaic age.

The kings of Lydia were not only prosperous; they were competitors for domination of all western Anatolia, and eventually even more.⁴⁰ When the oracle told Croesus that by going to war against Cyrus he would destroy a great empire,⁴¹ Croesus was not being entirely unrealistic in presuming that the empire to be destroyed would be that of the Medes and the Persians. The Persians themselves, who defeated Croesus, practically achieved what must have seemed to them as a world empire.⁴² It almost seemed that way to the Greeks as well.

It is by no means clear, however, that the first coins were official royal issues. Some twenty coins with the legend .WALWE. might seem to bear the name of the king that Herodotus calls Alyattes, father of Croesus; but from the same place we find others with the inscription .KALI., which is not the name of any Lydian king.⁴³ The prevailing opinion is that the types of the coins (there are some twenty, many more than the two or three kings who reigned from the time coins were invented until the end of the Lydian empire) identify not the king under whom they were struck, but the producer of the coin—perhaps a royal functionary, more likely an independent gold-

³⁸ See Guarducci.

³⁹ Archilochus fr. 19 West.

⁴⁰ For a brief sketch of the rise and fall of the Mermnad dynasty of Lydia see M. Mellink in *CAH* III² 2 643-55.

⁴¹ Hdt. 1.53.3.

⁴² See Cyrus' titles in lines 20-22 of the Cyrus cylinder, and cf. Ezra 1:2 (= II Chronicles 36.23).

⁴³ Wallace, ".WALWE. and .KALI.", with references to earlier literature. See, however, Karwiese 8-14, who argues that Alyattes is indeed meant.

merchant.⁴⁴ Some coins bear a lion, the symbol of the Lydian royal household, and these may have been at least guaranteed by the king's authority.

The earliest coin hoard was originally dated around 700 BCE.⁴⁵ In 1951, however, E. S. G. Robinson reviewed all the finds that had accompanied the coins and concluded that some of them dated from as late as the end of the seventh century; he therefore dated the coins closer to 620 than to 700.⁴⁶ More tellingly, re-excavation of the site by Austrian archaeologists under the direction of Anton Bammer in 1987 and 1988 indicated that the structure in connection with which the coins were found was not the oldest, but the youngest of three early structures on the site: it stands on a layer of sand that was deposited when the other structures were flooded.⁴⁷ The coins that were found there may have been deposited as late as a date between 600 and 560-50.⁴⁸ This still makes them the oldest real coins that can be dated with certainty.

Whether it was Lydia or its Greek neighbors⁴⁹ that first produced coins, it was surely Greece where coinage grew to maturity. Within a matter of decades, a number of Greek cities had begun to mint their own coinage; by the year 480, more than a hundred different mints had been active in Greece.⁵⁰ Electrum, however, did not remain the material of choice. Although some states of Asia Minor continued to use it—the electrum staters of Cyzicus remained the standard Greek “gold” coin until the Hellenistic period⁵¹—most Greek cities from the middle of the sixth century onward produced only silver coinage. Electrum, which did not occur naturally in most of Greece,⁵² was not a convenient medium outside of Asia Minor; and silver, which had

⁴⁴ See Breglia 42, and Furtwängler 157-8.

⁴⁵ Head, “Coins”, particularly 92.

⁴⁶ Robinson, “Coins” 164-5, cf. *id.*, “Date”, and Jacobsthal 85, 90-3. Kagan's two articles, supporting Hogarth's earlier date, and the later study of Weidauer 72-109, have found few supporters among English-speaking numismatists; Vickers has fared no better with his attempt to lower the date to the 540's.

⁴⁷ Bammer 137-8.

⁴⁸ This is the conclusion of Le Rider 59-67, who admits, however, that the question of chronology remains open.

⁴⁹ See Pollux 9.83 for a sampling of Greek ideas about the originators of coinage.

⁵⁰ Osborne 252-55, cf. Kim, “Archaic Coinage” 10 n. 8. Osborne offers a list, and Holle a detailed catalogue, of these mints.

⁵¹ Head, *HN* 522-3.

⁵² Of course, most *poleis* had no indigenous silver, either; but purified silver, whether from Greek or external sources, was much more commonly available than electrum.

long been the dominant metal in Near Eastern trade and in Greek overseas trade as well, was a much more natural choice. Lydia itself, under its last king Croesus,⁵³ replaced its electrum coinage with two different coinages, one of silver and one of gold;⁵⁴ the kings of Persia continued this practice.⁵⁵ In Phoenicia coins began to catch on as the Greeks introduced them. The earliest Phoenician coins date from the mid-fifth century, after a period when Attic minting seems to have slowed down, but they did not spread into the hinterland until some generations later.⁵⁶ It is possible that coins came to be used in Babylon as well, but even if this is the case the Babylonians seem to have treated them no differently from any other item of silver, to be thrown into a scale and valued by weight.⁵⁷ Gold coins, used more for hoarding and for gifts than for retail trade, did indeed spread throughout the Persian empire and beyond it; the Persian silver *sigloi*, on the other hand, seem to have been minted and used chiefly in western Asia Minor.⁵⁸ Coinage in the west, in its first century, was very much a Greek phenomenon. As the sixth century progressed, the coins of Aegina (the “turtles”) were the first issue to spread beyond their immediate place of issue, reaching Asia Minor, Lebanon, and Egypt.⁵⁹ Coins of Thrace and Macedon, where productive silver mines existed, found their way to Egypt and the near east in significant numbers,⁶⁰ and by the early fifth century, the “owls” of Athens became the

⁵³ This is the generally accepted opinion; Le Rider 101-21, suspects this coinage of being a Persian innovation.

⁵⁴ Whether Croesus copied or inspired the Greek cities depends upon the relative chronology, which has become uncertain since recent research has lowered the dates for the earliest Aeginetan coins. See Holloway 9-16; Price and Waggoner 84; Holle 75-7.

⁵⁵ On the relationship between the Lydian Croesids and the Persian darics and sigloi, see Carradice 90-3, and Le Rider 123-64.

⁵⁶ Starr, *Athenian Coinage* 81-4; Elayi and Elayi 386, cf. Betlyon 3-4.

⁵⁷ That coins arrived early in Babylon and were in common use there is the theory of Vargyas, “*Kaspu ginnu*” and *History of Babylonian Prices* 24-34; cf., however, the comments of Le Rider 30-35.

⁵⁸ Carradice 89-90, confirming the earlier results of Schlumberger. Vargyas, “Darius” 43 n. 37, argues that the siglos was “widely used in the economic life of the empire”, a conclusion based on his claim (see previous note) that they were “widely circulated in Babylonia” at the time (41). In fact the mentions of *kaspu ginnu* that Vargyas believes to refer to coined silver seem to be confined to Babylon and its environs (*History of Babylonian Prices* 32). He does not dispute the fact that even in Babylon coins were used merely as one form of silver, no more valid than any other silver of similar fineness. Cf. Le Rider 169-74.

⁵⁹ Kraay, “Hoards” 78-9.

⁶⁰ *Ibid.* 82-3.

first truly international currency, so widely used and recognized that they became the coinage *par excellence*,⁶¹ of which other states' first coinages were occasionally mere imitations⁶² or replacements.⁶³

We cannot trace the introduction of coinage in India with anything like the detail we have offered for Greece: the shortage of historical documentation⁶⁴ makes the role of archaeology even larger than in Greece: not only the existence of the coins, but their historical context as well, must be learned as best we can from what the spade can dig up. What the literary sources and archaeology do make clear is that the society of the early Aryans was not a commercial society. There were tokens that served as ways of storing wealth, and that might be given as presents from one noble to another. Cowrie shells, a form of money whose geographic extent is probably unsurpassed to this day, were apparently at one time a form of treasure,⁶⁵ and various gold ornaments known as *nishkas* probably served the same purpose;⁶⁶ but we do not know to what extent either of these, or indeed anything else, might have served as a medium of commerce. The commercial caste of India has left little direct impression on the early literature.⁶⁷

⁶¹ *Ibid.* 80-2.

⁶² Meshorer, I 13-8.

⁶³ Elayi and Elayi 386.

⁶⁴ "India has virtually no historical records worth the name... In India there is only vague popular tradition, with very little documentation above the level of myth and legend. We cannot reconstruct anything like a complete list of kings. Sometimes whole dynasties have been forgotten. What little is left is so nebulous that virtually no dates can be determined for any Indian personality till the Muslim period. It is very difficult to say over how much territory a great king actually ruled." Kosambi, *Ancient India* 9-10.

⁶⁵ See Prakash and Singh 55, for a speculative suggestion of how the value of a cowrie may have been incorporated in an early system of coin values.

⁶⁶ On *nishka* see Goyal 55-61.

⁶⁷ Kosambi, *Ancient India* 15-6; cf. Goyal 19-23.

Punch-marked coins, once invented,⁶⁸ are found throughout India, but most of the various types are more or less restricted geographically. P. L. Gupta identified these as issues of the various *Janapadas*, the tribal states of which India in the fifth and fourth centuries BCE had quite a number (the sixteen largest enjoy the title *Mahā-Janapada*, “great” *Janapada*). Other issues are distributed very broadly throughout India; these Gupta connected with the *Janapada* of Magadha, and the Nanda and Maurya dynasties that began from Magadha and united most of India under their rule in the course of the late fourth and the third century.⁶⁹ Other scholars, however, are skeptical with regard to Gupta’s chronology, suggesting rather that the local issues may be just that, coinages that were issued by local coiners at the same time that other coins were being spread throughout India.⁷⁰

Who issued the coins? It would seem reasonable to presume that when a single type of coin, with a single set of symbols, appears throughout the subcontinent, we must be dealing with a governmental issue; this is the case of the Magadhan coinage, known as *kārshāpanyas*. But even if the government prescribed the particular punches to be used, we cannot be sure that it was state employees who made them, nor can we determine the extent of state control over coining. The local issues, furthermore, may have been issued either by local magnates or by merchants; in fact, the *Arthaśāstra*, a contemporary manual of statecraft, makes it clear that even in the Maurya period, a private person could make coins as long as he took them to the mint to be checked for weight and fineness, and to have the proper marks placed upon them.⁷¹ The survival of this practice in a period of radical centralization strongly

68 It was once held (by Europeans) that the punch-marked coins originated under the influence of the Macedonian conquest, but that can no longer be maintained. A hoard found at Taxila included more than a thousand punch-marked coins, many of them very worn, along with two coins of Alexander the Great and one of his brother and successor Philip Arrhidaeus in almost mint condition (Walsh 1-2). The presumption must be that such a hoard was deposited only a short time after the Macedonian conquest, and that the punch-marked coins had by then been circulating for a good time. This presumption is strengthened yet more by the Chaman Huzūri hoard, which includes forty-three silver punch-marked coins together with Athenian and Achaemenid Persian coins—that is, coins that predate Alexander entirely. This hoard, indeed, strongly suggests that Greek coins were to be found in India before the Macedonian conquest, but whatever influences there may have been, Indian coins were surely not an importation of the Hellenistic period. Although there remains some uncertainty, the dates offered for the appearance of punch-marked coins now generally fall in the sixth or fifth century (Mitchiner 5-6, 20; Dhavalikar 335; Sinha and Sharma 33; Gupta and Hardaker 1, 11; Goyal 65-71).

69 Gupta and Hardaker 1-4.

70 Goyal 86-94.

71 Kosambi, *Ancient India* 154-5.

suggests that the earliest coins were also made by merchants or silversmiths. That seems to have been the belief of people who dealt with these coins in later ages, for the fifth-century CE monk Buddhaghosa explained the nature of understanding as follows:

Suppose that three persons: one an undiscerning child, one a peasant, one a banker, see a heap of coins⁷² on a counter. The undiscerning child just knows that the coins are pretty and variegated, long, square, round; but does not know that they are held to be valuables for the use and employment of men. The peasant knows that they are pretty and variegated, and that they are held to be valuables for the use and employment of men; but does not know such distinctions as: This coin is genuine, that false, and that half genuine. The banker knows all the varieties: he knows that by looking at the coins, or by striking them and listening to the sound, or by finding out what smell or taste they have, or by holding them in his hand. He knows further that they were made by such and such a master⁷³ in such and such a village, market town, city, or on such and such a hill, or by the banks of such and such a river.⁷⁴

Buddhaghosa was not himself a banker, and almost a millennium separates him from the first punch-marked coins; but his presumption that they were local issues, and that an expert could recognize each artisan's coins, says quite a bit about the nature of coinage in India. It is hard for me to think of any period since the invention of coinage in which a European money-changer would be able to know that particular coins "were made by such and such a master in such and such a village,

⁷² Goyal 33, states that the reference is to *kārshāpanyas*, and although I have not seen the original text, the fact that coins are "long, square, [or] round" seems to indicate that punch-marked coins are at least some of the ones he is imagining.

⁷³ *Āchārya*, artisan.

⁷⁴ Buddhaghosa, *The Path of Purity* XIV.2.

market town, city, or on such and such a hill, or by the banks of such and such a river.”

When the state was strong enough, it controlled the coinage as best it could. The *Arthaśāstra* put it succinctly: “The treasury is based upon mining, the army upon the treasury; he who has army and treasury may conquer the whole wide earth.”⁷⁵ But in between the mines that the king should control and the coins whose production he should regulate, the metal might pass through a number of hands before it was ever turned into the final product.

Whatever the original purpose of the coins, the secondary marks make it clear that in India as in Greece they quickly became a common, and eventually more or less universal, medium of payment. Coined money was a strong force in the administration of the Magadhan state, and it is presumably not accidental that the heyday of punch-marked coins corresponded with the most thoroughly monetized economy that India knew before or after.⁷⁶

In China of the Western Zhou period (1066-771 BCE), riches were expressed in terms of possessions, and the economy was organized around a system of lands that were publicly owned and distributed to those who worked them—though these peasants might be given away, apparently with their land, by the king to a noble.⁷⁷ Media of exchange, when they are found, are generally cattle, sheep, silk and grain,

⁷⁵ This is the way Kosambi, *Ancient India* 154, quotes *Arthaśāstra* 2.12.27; typically, Kosambi has given a non-literal translation that strikes to the heart of what the author has to say. More literal is the translation of Shamasastri 90: “Mines are the source of treasury; from treasury comes the power of government; and the earth whose ornament is treasury is acquired by means of treasury and army.” Cf. also Rangarajan 259. These words come at the end of a chapter describing minutely the various mines, coins, taxes, and the jobs of the officials in charge of them, and there is no doubt that the author is trying to stress, as Kosambi’s translation does, the importance of the control of metallurgy for consolidation of a kingdom’s power.

⁷⁶ On cash in the Magadhan economy see Kosambi, *Ancient India* 152-7.

⁷⁷ On the “well-field system” see briefly Li 481-4.

rather than cowries or utensils.⁷⁸ Taxes were mostly levied in kind rather than in money of any sort.⁷⁹

China, like India, had once used cowries as a sign of wealth; in Chinese, many words connected with the idea of value have a picture of a cowrie as part of their ideogram. The ideogram whose pictures can be described as “cowrie + divide” means “poor”; “cowrie + few” gives “cheap”; “cowrie + work” = “tribute”; “cowrie + natural ability” = “wealth”.⁸⁰ For China, there can be no doubt that cowries were used to reward meritorious actions and to pay for service, and the value of gifts is often stated in terms of *bei*, cowries.⁸¹ They may have served as a medium of exchange as well.⁸² Even stone and bronze imitations were used; the oldest of these go back to the Neolithic period, but they became particularly common at the end of the Western Zhou period, and even more in the Spring and Autumn period (722-481 BCE).⁸³ At this time they generally appear as grave-offerings, presumably because the real cowries, whose supply was limited and which could not be manufactured, were needed for transactions among the living.⁸⁴

⁷⁸ Hu 3.

⁷⁹ *Ibid.* 14. Hu does believe that there were money taxes, since there were—or are said to have been—“tariffs, poll taxes, and certain other commercial taxes” (16); but whether we take these to have been paid in cowries, coins, or in some other medium that was evaluated in terms of a standard of value will depend on how we think payments were generally made at the time. The expression of a value in terms of a given unit or commodity does not necessarily imply that it was in fact that unit or commodity that changed hands: see Schaps, *Invention of Coinage* 12-15, 38-40, 45-46, 224-25.

⁸⁰ The first two examples are from Peng, xxii. More can easily be offered by anyone who has a Chinese dictionary organized by radicals. It would appear that a detailed study of the semantic fields of the characters including the *bei* (cowrie) radical could offer a good deal of information about the functions of cowries; but such a study would have to take care (a) to note carefully the first known appearance of the character, for the radical in time takes on an abstract meaning no longer connected with the physical cowrie shell; (b) to note carefully the meaning of the character in its early uses, excluding later expansions of its semantic field.

⁸¹ Thierry, *Monnaies chinoises* 39-44; Hsu, “Spring and Autumn” 581.

⁸² Use of cowries in payment for services and as a measure of value is abundantly documented; some examples are quoted by Thierry, *Monnaies chinoises* 39-41. If, however, there is any contemporary reference to their use in trade, Thierry does not mention it, but seems to presume that whatever performed the first two functions must have performed the last, a presumption for which innumerable counterexamples could be offered: see Einzig 428-30.

⁸³ Peng and Zhu 13-4.

⁸⁴ Thierry, *Monnaies de Chine* 12. The imitation cowries in the burials are presumably a reflection of the same beliefs about the afterworld that appear more spectacularly in the army of thousands of life-size terra-cotta warriors found near the Qin dynasty tombs in Xi’an.

The use of ersatz cowries for burial goods suggests that the need for cowries was outstripping the supply. The peak of cowrie use appears to have been in the early Spring and Autumn period; from the seventh century BCE onward, cowries are less common, and usually concentrated in a few tombs.⁸⁵ It may have been the availability of the new coins that made cowries less attractive; alternatively, the discovery of cowries may not have been able to keep up with the needs of an expanding economy, so that they were superseded by other forms of money, of which coins were the last and most successful. What else might constitute wealth in China? That would depend upon one's class. An early book tells us:

If one inquires as to the riches of the ruler, the answer is quantities of land and the produce of mountains and marshes. If one inquires as to the riches of the high officials, to reply that they have the power to engross food, utensils for sacrifice and clothing would not be false. If one inquires as to the riches of the common people, one would reply with the number of their livestock.⁸⁶

For payments, however, we are told that the wise first rulers (those whom moderns consider to have been more or less legendary) “used pearls and jade as their superior method of payment, gold as their middle method of payment, and knives and spades as their lower method of payment.”⁸⁷ We have here the same phenomenon of “special-purpose money” that we mentioned above as being generally used among peoples who have no coins; and it is worth noting that although utensils might serve for payment here as they seem to have done in Greece, the most prestigious form of payment was not precious metal, but precious stones. The same hierarchy of value can be seen in the fact that when imitation cowries made of bone or of stone were used as

⁸⁵ Peng and Zhu 9-12.

⁸⁶ *Record of Rituals*, quoted in Peng 5.

⁸⁷ *Guan Zi*, quoted *ibid.* 7; “method of payment” is the meaning Peng offers for the term *bi* in the text, a term which later came to mean “money”. The *Guan Zi* as we have it, however, is an eclectic book much of whose material is a good deal later than it claims to be, and this passage may be nothing more than an inference from the later use of knife- and spade-coins.

burial goods and real cowries were used for monetary purposes, jade and turquoise cowries, which were also made, were kept exclusively as treasure.⁸⁸

Another phenomenon that goes back long before the introduction of coinage is the cast-bronze utensil, a vase, cauldron, or other item that might perhaps be given as a gift but might equally well simply be made at a certain time, to memorialize the occasion on which it was given or made and the relationship that lay behind it. Sometimes characters on the bronze would state the occasion explicitly. These bronzes were never money in any commercial sense—on the contrary, they would likely have been guarded jealously and even hidden from the view of strangers—but they were valuable items that would be held by their owners and passed down to their heirs. That the coins that eventually were chosen to embody value took the form of cast bronze items with characters on them is not likely to be unrelated to the age-old practice of enshrining a precious moment in a cast bronze vessel.

Recent research has added another facet: in the ancient Wu state, during the centuries before the introduction of coinage, many hoards have been found of broken-up pieces of bronze. These pieces came from ingots of an artificial alloy of high lead content and low tin, not very useful for casting vessels but cheap and easily broken; the earliest coins show a similar composition. Since the pieces in a given hoard never fit together and often differ greatly in their lead and tin content, they appear to have circulated after being broken up, so that any given hoard contains miscellaneous pieces of diverse origins. All of this suggests that bronze was circulating, presumably by weight, as a medium of exchange well before the introduction of coinage.⁸⁹ This in no way requires us to believe that these pieces of bronze were the only medium in use in the marketplaces of Wu;⁹⁰ nevertheless, the fact that bronze seems to have been

⁸⁸ Thierry, *Monnaies chinoises* 46

⁸⁹ Dai and Zhou, cf. Thierry, *Monnaies chinoises* 48. Chinese coins, however, were in practice rarely if ever valued by their true weight, as mentioned above, p. 7. Although they were nominally equivalent to a weight of bronze, the issuing authorities tried to treat the coins as if they were cowries, items whose value was established by custom, any one of which was equivalent to any other. When the overvaluation became too obvious it does not seem to have been successful for long: Scheidel 6-14, cf. Thierry, “Monnaie et monnaies” 60.

⁹⁰ On the existence of such markets see Dai and Zhou 300.

being produced specifically for use in exchange is noteworthy, and not paralleled in Greece,⁹¹ where pre-coinage utensils were apparently fully useful items, and the silver used for exchange was held to a high standard of purity.⁹²

In China as in India, there are terms in literature that might suggest the existence of coins in very early times, but archaeology finds them no earlier than the latter part⁹³ of the Spring and Autumn period; a literary reference refers to a reform of coinage in 524.⁹⁴

In the late Spring and Autumn period, and even more in the following “Warring States” period (481-221 BCE), we find small bronze objects that are universally admitted to be coins.⁹⁵ During the Warring States period, although the King of Zhou was the nominal emperor, there were in fact a number of large states competing for dominance, a rivalry that lasted for centuries until the Qin finally came out on top, establishing a dynasty that lasted for only fifteen years but an empire that lasted, at least notionally, for two millennia.

Here, too, as in Lydia, Greece, and India, the coins were standardized within a given political unit: although we find disk-coins, knife-coins, spade-coins, and ant-nose coins, each state used only one. In Greece and in Asia Minor, the invention of coinage accompanied the transition from a “Dark Age” of small communities with a very localized economy to larger states with integrated economies and pretensions to broad dominion. In China, the period before the appearance of coins had been characterized by a feudal economy that, like the Greek system of gift-exchange and of

⁹¹ There was a parallel in Babylon: Powell, “Contribution.”

⁹² See, for example, Cowell and Hyne 171, table 7.5.

⁹³ Hsu, “Spring and Autumn” 581; Li 376, speaks of the middle Spring and Autumn period, but the difference may be one of terminology. Li 371-398, gives the fullest account of early Chinese coinage readily available in English, though much has continued to happen in Chinese archaeology in the thirty years since his book was written.

⁹⁴ Li 372; the literary reference is to the *Guoyu*, chapter “Zhouyu”, second half. This reference cannot be relied on blindly as a firm date for the use of coinage, since there are earlier literary dates as well that are now discounted as later fabrication, and this might be no better than they.

⁹⁵ Coole’s *Encyclopedia* is an exhaustive catalogue, now very much out of date but containing a great amount of information not otherwise available in English. Li 371, states that Coole contains “the overwhelming majority” of pre-Qin coin types, and that its bibliography is “reasonably complete.”

utensil money, could not have supported the large-scale exchange of goods.⁹⁶ Whether coinage was cause or effect, its development coincided with the transition from a thoroughly feudal economy to one in which market trade played a larger part.

V: Theories of the Invention of Coinage

The question of what may have motivated the person who first struck coins is an intriguing one, and western numismatists and historians have offered numerous ideas.⁹⁷ For convenience I shall divide them into three families: those who see the origin of coinage in the growth of the economy, those who see it in the growth of the state, and those who see it in the peculiar characteristics of electrum.

Growth of the Economy. The first and perhaps most widespread theory began with Aristotle:

For when, by importing things that they needed and exporting things of which they had too much, people became dependent upon more distant places, the use of money was invented out of necessity. For not all of the things that are required by nature are easy to transport; and so for use in exchanges they agreed among themselves to give and take something of a sort that, being itself one of the useful items, was easy to handle for the needs of life, such as iron or silver, or anything else like that. At first it was simply defined by size and weight, but finally they also added an impressed

⁹⁶ Hsu, "Spring and Autumn" 582. Thousands of coins may seem impressive to an archaeologist, but of course caution is in order with regard to the extent to which China became a cash economy at this period: Lewis 607.

⁹⁷ I ignore here those whose theories dealt with the invention of money, even when, like Laum, they thought money first to have appeared with coinage; since, as explained at the beginning of this article, money is a phenomenon that appears spontaneously rather than by diffusion, these theories are no longer seriously entertained. (See now, however, Seaford 102-9).

stamp, to free them from measuring it, since the stamp was put on as a sign of the amount.⁹⁸

Although this story is still repeated by economics textbooks on the rare occasions when they mention the subject, it is no longer plausible. Anthropology has shown us that very complex economic arrangements may exist in the absence of coinage, and archaeology has shown us that the near east had a highly developed monetary economy for almost two millennia before coins came on the scene. The final blow to this theory came in '64, when Kraay demonstrated that the earliest Greek coins are hardly ever found far from their point of origin.⁹⁹ Although precious metal had surely been used in international trade well before coins were invented, the Phoenicians, who were the greatest of traders, always weighed the metal, and indeed continued to do so long after the Greeks had started using coins. Even today, coins rarely change hands in international commerce: the sums involved are too large.¹⁰⁰ If coins were supposed to enhance international trade, they do not seem to have had any immediate success.

If international trade was not the impetus, perhaps local trade was. Herodotus states that the Lydians “were the first of people that we know to strike gold and silver coinage and use it, and the first to be retail traders.”¹⁰¹ This does not explicitly say that coinage was invented for retail trade,¹⁰² but it surely suggests it, and the Roman jurist Paulus¹⁰³ said it explicitly, though not on the basis of any historical research. The

⁹⁸ Arist. *Politics* I 9.7-8 (1257a 31-41), cf. (with a slightly different explanation) *Nicomachean Ethics* V 5.8-10 (1133a 8-24). I discuss these two passages at somewhat greater length in Schaps, *Invention of Coinage* 5-7.

⁹⁹ Kraay, “Hoards” 88, cf. above, p. 14. Kim, “Archaic Coins” 12, does not seem to be speaking of the earliest issues when he says that “archaic coins ... ended up great distances from their issuing cities.” I do not know whether Kim adduces further evidence in his M. Phil thesis, “Greek Fractional Silver Coinage”, which was not available to me.

¹⁰⁰ R. M. Cook 260. The size of the sums would not have prevented the ancients from using coins, but another consideration would: an ancient merchant traveled with his wares, and after selling them in a foreign port, it would be wasteful for him to make the return journey “empty”, with coins in his purse but no cargo in the hold to be sold at a profit in the next port.

¹⁰¹ Herodotus 1.94.1.

¹⁰² It does not even necessarily refer to the invention of coinage; Six 210 n. 69, and more recently Balmuth, “Remarks” 3, note that it may mean only that the Lydians were the first to strike a *bimetallic* coinage, which (unless Le Rider, above n. 53, is correct) they almost certainly were.

¹⁰³ *Digest* 18.1.1.

minute dimensions of some of the earliest electrum coins¹⁰⁴ lend some plausibility to the suggestion, for they would hardly have been necessary in large-scale commercial dealings. There are those who doubt, however, that shopkeepers had the influence required to bring about such a signal invention merely for their own convenience;¹⁰⁵ and other suggestions have been made.

The general objection to economic theories of the invention of coinage was stated by Helfferich a century ago: “Our whole economic system is based upon the existence of money. It appears to be so eminently useful and necessary in our scheme of things that one cannot even conceive of its absence. But just for this very reason, it is clear that in many respects money must have preceded our institutions. In many important respects economic organisation appears to be the product of money, and it is, therefore, inadmissible to ascribe the origin of money to its special suitability for our existing scheme of things.”¹⁰⁶ Aristotle and Paulus do not quite fall into this trap, but the economy that they envision is one that was always a market economy: coins came about when exchange came about, because before this there was only a primitive condition with no economy to speak of. In fact there are economies in which exchange plays only a marginal role, and there are various forms of money where there is no coinage. An economic theory of the invention of coinage is not inadmissible *per se*, but it must be fitted into the known historical framework, not invented *a priori*.

Growth of the State. Robert Cook, noting that the most obvious use for coins would be to make a large number of identical small payments, suggested that they were first invented for the payment of mercenaries¹⁰⁷—a theory, however, that leaves open the question of what the mercenaries were expected to do with them, if the idea of

¹⁰⁴ The smallest is one ninety-sixth of a stater, about one-seventh of a gram: Head, “Coins” 77. Although Kraay, “Hoards” 85-88, claimed to demonstrate that small-denomination coins were rare in the earliest issues, more recent scholars have not followed him: cf. Holle 187-8 and Kroll, *Greek Coins* 4, and most particularly Kim, “Small Change”.

¹⁰⁵ Kraay, “Hoards” 89. This is all the truer for China, where merchants were a despised class: Li 470-3. In India, on the other hand, they were quite influential, if Kosambi, *Ancient India* 100-1, 124, is to be believed.

¹⁰⁶ Helfferich 3. The first German edition of Helfferich’s book was published in 1903.

¹⁰⁷ R. M. Cook 261.

using them in trade had not yet occurred to anyone. M. J. Price suggested that they were designed to be “far more akin to gifts (or medals) than to coins as we know them,”¹⁰⁸ though one-seventh of a gram of electrum, if it had no value in trade, would not make much of a medal. Colin Kraay suggested more generally that they were designed to provide a universally recognizable standard of payments to the state, to make it possible for the state to control the value of the metal it received.¹⁰⁹ Robert Wallace criticizes this theory because it does not explain the restriction of the earliest coins to electrum;¹¹⁰ it may be added that a decision on the part of the state to require payment in a form whose possession was not, at first, general in the population, and which could be obtained only through the state, its agents, or its authorized coiners, would require every person to pay essentially a double fee, once when he bought the coin and again when he paid it to the state. Such a system would be cumbersome for the state itself and even more so for those who had to pay; worse, its unfairness would be obvious, so that it would probably arouse fierce opposition that would outweigh any eventual increase in convenience when the system was in place.¹¹¹ In the final analysis, no explanation of coinage that involves the state can be convincing if it does not explain how the coins were to circulate through the population so as to be available for continued use.

The problematic nature of electrum. Since electrum is an alloy of silver and gold, its actual content may vary greatly; since gold is more valuable than silver, the value of a given weight of electrum may vary similarly. Sture Bolin, noting that the gold content of the earliest coins might be (and in fact demonstrably was¹¹²) diluted, considered their invention to be no less than a governmental swindle: the government, requiring that the coins be accepted as if they had more gold than they really did, will

¹⁰⁸ M. J. Price 7.

¹⁰⁹ Kraay, “Hoards” 89-90.

¹¹⁰ Wallace 388.

¹¹¹ The ostensible convenience of having coins that could be accepted without weighing, although mentioned as long ago as Aristotle, does not in fact seem to have been appreciated; on the contrary, as Wallace (*ibid.*) mentions, a large number of coins would probably have to be weighed to make sure that they had not been clipped or adulterated.

¹¹² Bolin 24, Table 2; Kraay, “Composition”; Cowell and Hyne 172.

have pocketed the extra gold that should have gone into their manufacture.¹¹³ Lest one take this as a paranoiac conspiracy theory, we should note that it is the regular practice of states, from antiquity to modern times, to sell their coinage at a value somewhat higher than its bullion value, making a profit on the coining process; the difference is called *seigniorage*. Wallace points out, however, that at a certain point debasement of electrum becomes visible to the observer, and if carried out surreptitiously would make the coins unwelcome in the marketplace, defeating their purpose.¹¹⁴

R. Ross Holloway also noticed the variability of electrum, but according to him the issue of coinage was designed not to exploit that variability for a royal profit, but rather to eliminate it for the public good, by having a stamp that would guarantee its value.¹¹⁵ How the “guarantee” would prevent tradesmen and customers from presuming the worst about a given coin’s value is not something that Holloway explains; but Robert Wallace has filled in the gap by suggesting that the original issuer, who was identifiable by the stamp on the coin, would always receive it at the value he had originally received for it¹¹⁶—a value that must have been artificially fixed, if the composition of the coins was indeed as variable as Bolin, Holloway, and Wallace all believed. (In fact, more recent investigation has established that the gold/silver ratio of the royal Lydian issues, though depressed, was quite constant.)¹¹⁷ The motivation for such a guarantee Wallace identifies as the stabilization of the price of electrum, which “presumably brought some profit to the issuing body.”¹¹⁸ Wallace does not specify what profit this might have been; he excludes seigniorage, since he thinks that Bolin’s swindle would have prevented the acceptance of coins when they were a new invention.

¹¹³ Bolin 11-45.

¹¹⁴ “There is sufficient difference in color between coins of 60% silver and coins of 40% silver to result not in standardized issues, but in endless doubts and disputes over particular coins... By a variant of Gresham’s Law it seems more likely that deceptive manipulation of the alloy would tend rather to have discredited electrum coinage.” Wallace, “Origin” 388-9.

¹¹⁵ Holloway 10-13.

¹¹⁶ Wallace, “Origin” 393.

¹¹⁷ Cowell and Hyne 172.

¹¹⁸ Wallace, “Origin” 395.

According to any theory that sees the purpose of coinage in stabilizing the price of a naturally variable alloy, the essential purpose of a coin was to represent a certain externally fixed value, a value that was not equivalent to its uncertain bullion worth. It is a weakness of any such theory that Lydian and Greek coins, unlike our own,¹¹⁹ never carried upon them any sign or numeral to represent their value. On an Attic tetradrachm the owl appeared in profile with an olive sprig in the upper left, while on the triobol the owl is full-face with olive branches on either side;¹²⁰ but neither coin bears any symbol directly stating its value, and often coins of different denominations bear the same images. If the entire purpose of coinage had been to establish a standard value for these small bits of stamped metal, it would seem that their stamp should have included a mark indicating their value, just as weights were (and are) often marked with a number or symbol indicating their weight. This was never the case.

The electrum theories may explain why Lydia invented coinage; they cannot explain why the invention spread so quickly and thoroughly to Greece, where electrum had not been in use before, and where coins, almost from the beginning, were made of silver held to a high standard of purity. Édouard Will suggested that coinage offered a standard by which the nascent Greek *poleis* could evaluate and equalize the responsibilities of a citizen and the damages that he might cause or suffer. This explanation, not unreasonably for its time, confuses coinage and money; in fact Greece used the ox as a standard of value already in Homeric times, and in some places used utensils as a medium of exchange in the archaic age.¹²¹ The Greeks could, and did, estimate a person's worth and the appropriate recompense for offenses in those terms before they had ever seen a coin. Another suggestion is that the coin

¹¹⁹ But like most early Chinese coins, whose characters are not numerals, though the character "half" occasionally occurs on them: Peng 42-46. Such interpretations as I have seen of the punch-marks on Indian coins do not consider them to have been signs of weight or value, but what they do mean still requires further investigation.

¹²⁰ For an illustration see Head, *Historia Numorum*, pp. 371-2, figs. 209 212.

¹²¹ Schaps, *Invention of Coinage* 69-71, 82-88.

was a symbol of the state's authority;¹²² it is not clear why this particular symbol should have appealed so much to the Greeks, when the city-states of the near east and Italy, never short in local patriotism, issued their own coins only after long contact with the Greeks had made coinage the normal form of money. I shall have more to say about why coinage appealed to the Greeks,¹²³ but whatever the reason, it certainly was not because it stabilized the value of electrum.

VI: Applicability of the Theories to India and China.

It will be seen that some of these theories are more easily exportable to the situation in India and China than others. Aristotle's explanation may perhaps be acceptable (scholars of ancient Indian numismatics, like modern economists, take it for granted), but there is an undoubted problem of scale involved. The largest communities of Dark Age Greece are unlikely to have reached as many as a thousand inhabitants;¹²⁴ the archaic age seems to have seen a dramatic increase, but the estimates even for Athens in the time of its greatness do not surpass some two hundred thousand inhabitants, including women, children, and slaves.¹²⁵ The urban population of ancient Lydia is not knowable in the current state of research, but its communities are not remarkably large in Greek terms. In India, on the other hand, the Mauryan empire is said to have had an army of four major corps, with six hundred thousand infantry, thirty thousand cavalry, eight thousand chariots, and nine thousand elephants; on this basis, even allowing for exaggeration, Wolpert presumes that there were close to fifty million people in South Asia by the third century BCE.¹²⁶ The largest of the warring states of China are said to have been able to raise armies of a

¹²² Snodgrass 135; Martin has argued at length that this motivation was never decisive, but his evidence, entirely from classical and Hellenistic Thessaly, can only be suggestive, if that, about sixth century communities.

¹²³ Below, pp. 41-43.

¹²⁴ Tandy 19-23.

¹²⁵ Cf. now, however, Hansen, "A Note" and *The Shotgun Method*.

¹²⁶ Wolpert 59. I suspect, however, that Wolpert may underestimate the possibilities for exaggeration in information that is passed from generation to generation.

million soldiers by conscription.¹²⁷ If Aristotle is right that the growing need for trade between communities forced the invention of coinage in the Greek archaic age, it is hard to see how the Indians and the Chinese did without it until their communities were an order or two of magnitude beyond those of the Greeks.

Other hypotheses may be more exportable. Such knowledge as we have from India and China does suggest that there was a good deal of market trade when coins appeared. The need for mercenaries was obviously very great in the time of the *Janapadas* and the Warring States, so that the mercenary theory is quite congenial to the situations we have noted. Surely the *Arthasāstra*'s dictum that "the treasury is based upon mining, the army upon the treasury" suggests that this idea was not far away from the mind of a ruler. Still, the major problem with this theory—why would the mercenaries accept coins, if they were not valuable for trade?—is no less applicable to India and to China than to Lydia. Seigniorage is not a likely explanation for India, where the punch-marked coins do not seem to have been state issues; in China, on the other hand, standardization of weight was inexact and not universal, and it will not have been difficult for the rulers to overvalue the coins, as they surely did in later periods.¹²⁸ Kraay's more generalized theory of state intervention—that coins were invented to be acceptable for all state-sanctioned payments—are based in the history of the developing *polis*, and do not seem to offer much explanatory power when applied to India and to China; on the other hand, it cannot be doubted that the propaganda value of coinage, which introduced the royal stamp of authority into the purse of every individual who had something of his own, was great and appropriate in the large states of wide ambitions that characterized the political situation in each of the places we have seen. The theories that locate the stimulus for coinage in the problematic nature of electrum are the least exportable of all, since electrum played

¹²⁷ Roberts 23, basing himself on Hsu, *Ancient China* 71. It is not at all clear that the difference in the size of the *communities* was very great; Hsu quotes 70,000 families, which is larger than anything Greek but—remembering the Greek slave and metic population—not necessarily that far from the mark. Nevertheless, what we must compare are the issuing authorities, which in Greece were the individual *poleis*, in China the kingdoms (and, where they could get away with it, their vassals: Thierry, *Monnaies chinoises* 38).

¹²⁸ Scheidel 3, 6-14.

no role in the coinage of India or of China. They may be acceptable if it turns out to be true, as we have presumed in this paper, that the Lydians invented coins before the Indians and the Chinese, and if it should also be true that coinage passed from west to east by imitation. This would still require us to explain why these two societies found coins a worthwhile institution, but that is no different from the problem of explaining why Greece adopted coinage when it did not use electrum. If, however, Indian or Chinese coinage proves to be earlier than Lydian, or even if it should be a later independent invention, the electrum theories obviously cannot explain what happened in India or in China.

VII: Parallels and contrasts

In a very vague mode of thought, we might think that Greece, India, and China represent the three great cradles of civilization, and a phenomenon that appears in all three of them may be taken as almost universal. At closer inspection, this idea cannot be maintained. Egypt and Mesopotamia may boast claims no weaker than the three lands that we have considered; one might go further afield to the Aztec and the Incas, peoples who commanded vast wealth in precious metal, ruled over great stretches of territory and teeming cities, and yet did not coin their silver and gold. Whether they each invented it independently or whether it passed from one to the other, Lydia/Greece, India, and China all proved fertile ground for an institution that neither originated nor was quickly adopted in other civilizations no less advanced culturally and economically. In fact, there are some parallels in the development of the economies of Lydia, India, and China that may be significant for our understanding of their role.

In the political sphere we are dealing in all three cases with relatively¹²⁹ large states, dominated internally by a dynast or king but challenged externally by other states of similar size and resources competing for supremacy. In all three places, the

¹²⁹ That is, relative to the same society's previously existing political units.

competing states among which coinage first arose eventually fell before a single dynasty that unified the entire area: Asia Minor became a part of the Achaemenid Persian empire, India fell under the hegemony of the Nandas and the Mauryas, China under the Qin. This parallel of later development is not directly relevant for the invention of coinage—the kings of Lydia, the rulers of the *Janapadas*, the lords of the Warring States, did not know that they were all doomed to fall before a single conqueror—but it does indicate the strong international competition that preceded the establishment of a unified empire. It was in this environment of deadly competition among wide-ruling dynasts that coinage was first invented.

In the economic sphere, all of these states were in a state of passage from a land-based economy that might loosely be termed feudal to one in which urban markets played a larger role. In Greece and in China, population had increased sharply.¹³⁰ This is not to say that any of them were “market societies” in the sense that modern Europe and America are, but in Lydia, India, and China market exchange began to play a significant role around the time that coinage was invented. It is not a simple matter to know which is the cart and which the horse: did the increase in market exchange encourage the development of coinage, as Paulus¹³¹ would have it, or did the ready availability of coins encourage people to fulfill their needs by purchase rather than by agricultural production?¹³² For none of the three places, as far as I know, can a certain answer be given; but there are some indications. It is at least worth noting that a great revival of international trade had already taken place in Greece a century and a half before the first coins were minted. As we have seen, it cannot have been international trade that stimulated the development of coinage, but at least the transition from land-based wealth to more liquid forms had begun without any stimulus from coins. Land- and lineage-based oligarchies had begun to fall before tyrants in Greece as early as the mid-seventh century BCE,¹³³ in China, the crumbling

¹³⁰ For Greece, Tandy 19-43; for China, Li 490 (against the traditional numbers). For India I have not found any evidence.

¹³¹ Above, p. 24.

¹³² For this uncertainty in Athens see Schaps, “Monetization of the Marketplace”.

¹³³ De Libero 23-30 138, 180-1.

of the feudal system was well underway by the beginning of the Warring States period,¹³⁴ and both the apparent use of broken fragments of bronze¹³⁵ and the imitation-utensil form of the early coins suggest that the people themselves, like the Greeks with their tripods, cauldrons, and spits, had begun to try alternative media of exchange before the first coins were cast.

Another similarity is that the coins spread very quickly within certain geopolitical boundaries. That there was no long period before coins “caught on”, although it is the opposite of the accepted description of “predecessors of coinage”, should in fact not surprise us: nothing can function as an exchange medium unless there is enough of it to make it generally available. If coins, or anything else, are in short supply, they will be hoarded, and will not be available for exchange. More interesting is the fact that their spread was limited to these three areas, skipping over spaces between. In India and China, bordering on peoples whose level of economic development did not include a great deal of commerce, this is hardly surprising: what use would the Mongols have had for coins in the fifth century BCE? In the west, on the other hand, the failure of the Phoenicians to adopt coinage has occasioned a good deal of comment, and suggests that even among monetized societies, coins were not everywhere welcome.

In all three places, the earliest coins bear marks that indicate that they were not minted by the central government. In Lydia there are too many coin-types for the number of kings; in India and China the coins normally include some indication of the locality where they were produced. On the other hand, their circulation seems to have been circumscribed by the political situation. This is perhaps less true in Lydia, where the Persian empire adopted the minting of coins, but the use of these coins tended to be concentrated around their birthplace in Asia Minor. It was certainly the case in Greece, and apparently in India and China as well.¹³⁶

¹³⁴ Li 484.

¹³⁵ Above, p. 21.

¹³⁶ For Greece see Kraay, *Hoards*; for India see the thesis of Agrawal and Rai; for China Li 371-98.

VIII: A unified theory of coinage?

The development of coinage involved three parallel developments: the expansion of market trade to a significant factor in the economy; the emergence of precious metal as a universal medium for that trade; and the production of coins to serve as identical and interchangeable units of that metal. For all three of these developments, the political and military situation of Greece, India, and China was ripe. In all of them large states were engaged in prolonged mortal combat with opposing dynasts. For all of them, their ability to survive and to overcome was dependent upon the armies they could put in the field. This, in turn, was a matter not only of personal loyalty, but also of the resources at their disposal to maintain, reward, and perhaps equip those armies. Gifts of land, and of authority over the workers of the land, were undoubtedly used as enticements and as rewards; such gifts, and the service that was expected in return, were the essence of feudalism.

But feudalism has its limitations. It is well adapted to maintaining an army of occupation, supported by the agricultural labor of the conquered population; it is less conducive to the long-term maintenance of a large standing army designed to fight at the boundaries of the state. Soldiers concentrated at the borders can not easily be supported by their far-away agricultural dependents. If they conquer territory, they will live off that territory; if they lose and flee, they will disband; but if they fight month after month, year after year, without dramatic victories or defeats, they will generally live off plunder, either of the enemy's population or of their own.

Soldiers who plunder may indeed go first for the women, the alcoholic drinks, or the food, but they will also be looking around for things of value that are easily portable. A long-term standing army will tend to accumulate many things that are valuable and portable—and the most valuable and portable items are precious metals and precious stones. It may well have been the protracted wars among the states of these areas that first produced a large population of people with precious metal in

their possession and a greater need for the everyday necessities than for the prestigious uses to which a more elite group would have put it. The soldiers, in short, will have had precious metal and will have been interested in exchanging it.

Scholars have often noted the change of silver from a prestige commodity that was held by members of the elite and exchanged only in the context of noble gift-giving to an item held in some amount by everyone and exchangeable for everything. The fact that this change came about during a period of constant warfare suggests a straightforward reason for the change: the silver that the ordinary people now owned was not the silver that had previously been restricted to their own nobles, but that of their enemies. Once it fell into the hands of the soldiers—each of whom will have had only a relatively small amount—it became available to anyone who had what the soldiers needed.

Where there are people who want to buy there will be people willing to sell, as innumerable tracts on black markets, drug dealing, and prostitution point out. Any reader of Xenophon's *Anabasis* will be aware of the usefulness of markets to an army; for the populace, too, the existence of a market offered a way to provision an army without giving the inhabitants over to plunder.¹³⁷ The constant warfare of the archaic age of Greece, of the *Janapadas* of India, of the Warring States of China, was a powerful impetus for the development of market trade, and in particular for market trade based upon the exchange of precious metal, usually in small amounts. If plunder brought precious metal into the hands of the soldiers, the market will have spread it throughout the population.

The existence of large standing armies may then explain the development of

¹³⁷ Xenophon, *Anabasis* 2.3.24, 4.28, 5.30, 3.1.2, and *passim*. Before Cyrus' defeat and death at Cunaxa, the army had had a market in the camp: *ibid.* 1.3.14. The goods for sale in this market must have come from the country traversed, and presumably the retailers were either locals or camp followers who bought from the locals. It was said that there were also wagons full of emergency rations (*ibid.* 1.10.18), though Roy, 311 n. 93, adduces significant reasons for doubting that there were many, if any, such. After the defeat, Artaxerxes' "guides" first allowed the Greeks a certain amount of plunder (2.3.14: "On the march they arrived at villages, and their guides told them to take their provisions from them", an arrangement certainly much less agreeable to the villagers than a market would have been) before arranging for markets. It is noteworthy that in all cases it was the ruler who was responsible for provisioning the army—even a hostile one, if he could not manage to disband it.

the market and the transformation of precious metal from an elite commodity to a universal medium of exchange.¹³⁸ It does not explain why the precious metal should be stamped into uniform and interchangeable units. It may be that it was simply a matter of convenience in trade, as Paulus would have it, or of paying mercenaries, as Cook suggested—a theory that becomes more plausible once we postulate that markets existed, and that precious metal was acceptable in them, before the first coins were produced. But I think a more general explanation can be offered, and one that fits better with the early literature on coinage.

The new flourishing of markets offered a new resource that could be exploited by the state, or by the palace, to maintain its armies and its retinue. Since a good deal of wealth changed hands in the market, it was always possible for the king to find ways to siphon some of that wealth into his own coffers, without having to alienate the land of his kingdom.

An internal market, of course, does not in itself create wealth for a state;¹³⁹ the existing resources are merely exchanged. In the market no less than in a feudal arrangement, the palace could only appropriate some of the state's resources by forcing the owners to part with their resources (i.e., by taxation), or by alienating some of its own (i.e., by purchase). But the items in the market were by definition surplus items, being offered for sale by the free will of the seller. Buying supplies from those who were willing to sell them, or even demanding a share of them at the time of sale, was a far more painless method of appropriation than plunder or direct confiscation. For rulers powerful enough to influence the economy and insecure enough to have to be circumspect about their public image, the market was, if not technically a source of resources, a very attractive conduit.

¹³⁸ I note, moreover, that Prof. Kroll's claim of a bullion economy in Greece before the introduction of coinage (above, n. 37) would, if true, fit this explanation even better than my own more skeptical stance.

¹³⁹ It does, according to modern economic theory, encourage the increase of wealth by encouraging producers to produce beyond their personal needs; but one may question whether we can credit the rulers of the time with this insight at a time when markets were still in their infancy.

Primitive markets, which may use as a medium of exchange utensils (as in Greece), fragments of precious metal weighed at each transaction (as in Mesopotamia, and perhaps China before the advent of coinage), grain (also Mesopotamia), or cowries (India and/or China, if cowries were ever functional in the marketplace), or may perhaps even have no exchange medium at all, existing by barter (as in Egypt, though there it is not clear that we can speak of markets),¹⁴⁰ are not generally likely to be the major source of a king's revenue. They were, however, a growing resource to be exploited, and the kings were living in times when no resource could be neglected.

The usefulness of the market, however, depended upon its good functioning. If for any reason there were not many goods changing hands in the market, the royal revenues would be reduced. Provisions for the ruler's retinue and army would be harder to find; the resources with which he could reward them would be less than they had been. Ensuring the easy availability of goods in the market, like persuading the gods to send rain, was a royal responsibility that would work for the benefit of both the king and the kingdom.

It does not take a high level of sophistication to discover that when markets are poor, it is either because the producers have little to offer the purchasers—the crops have failed, or the items usually for sale are being hoarded—or because the purchasers have little to offer in exchange: the exchange medium, whatever it might be, is in short supply. The first problem is usually dealt with by rituals to insure fertility, and by laws to punish hoarders; the invention of coinage, in each of the places we have examined, was a definitive answer to the second problem.

If my theory is correct, the first coins were the result of a royal initiative to see to it that the markets would always have an abundant supply of things to exchange for commodities. The palace did not produce them itself: in none of the kingdoms mentioned was the palace a center of production, as the palaces of Mycenaean Greece had been. It sufficed to arrange with metalworkers to produce in large quantities,

¹⁴⁰ On all this see Li 396-7, 470-3; Bickel; Eyre; Schaps, *Invention of Coinage* 37-42, 47-9, 82-8; Vargyas, *History of Babylonian Prices* 284-5.

presumably for appropriate recompense, tokens that could be used by the palace for all of its payments. It may be true, as has been suggested, that it was this government use that caused coinage to spread quickly throughout the population; if my own suggestions are correct, no explanation is needed, for plunder and market trade will already have sufficed. At any event these first coins must have been made with the immediate and express intention of making them acceptable in trade, and in Lydia, where they were made of precious metal, there will have been little problem with that, for they were indeed valuable items. The same was probably true in India, if near eastern contacts were sufficient to have accustomed the Indians to treat silver as a valuable substance to own. In China the coins were made of a prestigious metal, bronze, in the form of the kind of utensils—rings, spades, knives—that will have been current in the market before. Nobody, it may be presumed, would be so foolish as to accept a single toy spade as the equivalent of a real one; but granted that a market already existed, flooding it with interchangeable toy spades, whatever their discount, will have made them immediately the most common, and hence the most commonly acceptable, medium of exchange.

The coins' small size and the marks upon them, besides guaranteeing that they were genuine items of the sort that would be acceptable to others, had another very important function: it kept them in the marketplace. Spades and knives may at some point be retired from the market in order to dig or to cut; silver may be made into jewelry or plate; grain may be eaten, and if people do not eat it rats will. Coins, on the other hand, had no use outside the market. They could, of course, be melted down for bullion, but that was not likely to occur unless the price of coins dipped far below their bullion value, which need not occur in ordinary circumstances. Once a sufficient supply of coins had been produced, the markets could continue to function smoothly as long as the farmers and the artisans could produce things to sell there; and the kings could reap the benefits, both as benefactors of their people and as beneficiaries of the people's prosperity.

I do not think it likely that the kings of Lydia, of the *Janapadas*, and of the

Warring States were unaware of the advantages that a well-functioning market held for them. The wealth of the kings of Lydia was proverbial,¹⁴¹ and they undoubtedly paid a good deal of attention to the question of how to amass wealth. The *Arthasāstra*, no doubt, postdates the invention of coinage, and probably the kings who first used coins would not have expressed themselves so categorically about the importance of the treasury, but it is not likely that they were utterly unaware of the usefulness of movable wealth, nor of the fact that the goods sold in the market could be of great use to them in their battles.

But the most suggestive evidence comes from China, where the earliest economic thinkers paid attention not only to the importance of coin but also to the importance of the market and its potential as a source of royal income. An early Chinese discussion of monetary policy centers upon the question of price-fluctuation, recognizing that an article in great supply is “light” (i.e., cheap), whereas a scarce article is “heavy” (i.e., expensive). It is important to maintain a reasonable balance between a price-level too high and one too low, and it is important to maintain a constant circulation of coins.¹⁴² When the ruler casts many coins and buys items with them from the populace, coins become common, and hence cheap, among the populace; commodities, on the other hand, have become scarce, and hence expensive—and the ruler has them. He can now sell them to the populace for a higher price than he paid for them, causing the coins (which he will now have) to become scarce and expensive, the commodities common and cheap. He can continue this cycle indefinitely, increasing his wealth as he does so.

It may occur to the reader, as it has occurred to François Thierry, that this profitable behavior of the ruler is possible only if he controls the supply of money.¹⁴³ He can do this with a bronze coinage of which he has (or tries to have) a monopoly;

¹⁴¹ Above, p. 11.

¹⁴² These are the ideas of Fan Li, summarized in Hu 35-40.

¹⁴³ It may also occur to the reader that repeating this cycle too often will impoverish the people—and if the ruler has not noticed that, the people will surely remind him. My point, however, is not to discuss the practicality of Fan Li’s ideas, but to show that an ancient Chinese thinker saw the market as a source of wealth that could be mobilized by the state.

he could not do it with cowries, which he could destroy but not create. Fan Li was not discussing the origins of money; but his explanation undoubtedly shows how the invention of coins in China could be a method for the ruler to support the economy and turn it to his purpose.¹⁴⁴

Fan Li's explanation uses certain assumptions: for one, that commodities are limited; for another, that the ruler can buy enough of them to make them scarce. As an explanation of the origin of coinage, it involves a third assumption, that market prices existed before coins were invented. The first of these, though false (for new commodities are being grown and manufactured all the time), is not unknown to ancient thought, and might indeed have been held in any of the cultures we have discussed; the second and third might also apply.¹⁴⁵ It may be, then, that calculations not unlike those of Fan Li lay behind the adoption of coinage in Lydia, India, and China. I think it more likely, however, that it is anachronistic to expect so careful an analysis in a market that still worked clumsily, before the advent of coins. I rather think that the original motivation was provided by the simpler analysis that the market could be exploited only if there was plenty of produce available in it; that the availability of produce depended upon a plentiful supply of whatever was being used as an exchange medium; and that a ruler who could provide such a supply would be able to gain both the love of his subjects and a nice percentage of their wealth.

All of this would not have applied to Mesopotamia and the Levant. For one thing, well-functioning markets had been a regular part of near eastern society for centuries if not millennia, and the exchange-medium (generally silver or barley) was in large enough supply, and widely enough distributed, that market perturbations were generally caused by problems with providing the commodities, not by scarcity of money. More importantly, the palaces were generally supported by regular, traditional levies on produce, levies to which market revenues could provide at best a marginal

¹⁴⁴ Thierry, *Monnaies chinoises* 34-9.

¹⁴⁵ They would not have applied to Greece, where even a tyrant's portion of the state's wealth does not seem to have been one that could have dominated the economy. It may also be doubted that there were regular "market prices" when spits and cauldrons were the medium of exchange.

addition. Lastly, Mesopotamia and the Levant, at the time of the advent of coinage, were not at all in a “Warring States” period, but in a period of superpowers. The Medes, the Assyrians, the neo-Babylonians, and the Persians, one after the other, had conquered almost the whole region, establishing wide hegemonies that were not invincible but with which few rulers could dream of competing. Cultivating Jerusalem’s market would not have made Hezekiah a match for Sennacherib, and cultivating the market of Asshur would have added little to what Sennacherib attained by plunder. Hezekiah could offer a one-time bribe by plundering his own treasures,¹⁴⁶ but he could not hope to provide enough regular income to be of any interest to Sennacherib. When Sennacherib sent his army to Judah after swallowing Hezekiah’s bribe, there was nothing that the latter could do but pray. He did so, indeed, with great success,¹⁴⁷ but there was no need to invent coins for the purpose.

The earliest coins and the Greeks. It is not clear that archaic Greece fits comfortably into the picture I have sketched of a dynast ruling over a wide dominion, challenged by external rivals and seeking economic resources from a newly developing market. There were undoubtedly dynasts in the seventh and sixth centuries, a period known to Greek historians as the age of tyrannies; the market in Athens had its major development under the Peisistratid tyranny in the sixth century, and other cities no doubt had similar developments, though surely most of them remained essentially peasant communities. The city-states of Greece, moreover, were in an almost perpetual state of war, and so were challenged by external threats to an extent that might have been very recognizable to an Indian or a Chinese prince. On closer inspection, however, these similarities do not seem to explain why coinage spread so quickly and so thoroughly in the Greek states. By no means all of the Greek city-states were ruled by tyrants, and there is no observable correlation between tyranny and coinage. Many cities minted coins that are not likely to have had much of a market; and in any event warfare in archaic Greece was mostly fought by citizen

¹⁴⁶ II Kings 18:13-16.

¹⁴⁷ *Ibid.* 19:15-37. This is not the place to discuss the coherence of the Biblical account with the Assyrian royal inscriptions.

armies who provided their own equipment and lived off the land during very brief campaigns. It would take a century or two more before the Greeks discovered the extent to which wars could be fought with money.¹⁴⁸ If archaic Greek cities took to minting coins with enthusiasm, the reason is not likely to have been the need of their dynasts to supply armies, and it is perhaps not a matter of chance that it was the wide-ruling king of Lydia, rather than any local Greek tyrant, who minted the first coins.

One factor that we have identified elsewhere, however, probably was relevant to Greece, and that is the development of a money-based market within a land-based economy. In this respect Greece had probably been more backward than China, India, or even Lydia. In the world described by Homer, purchase took place by barter, with no trade medium at all.¹⁴⁹ The later archaic age seems to have used spits and cauldrons, but these are large and heavy, and trade with them must have been even clumsier than with spades or knives. It was only with the advent of coins that Greece began to have a true system of money. I have argued at length elsewhere¹⁵⁰ that coinage appealed to the Greeks precisely because their own economy had outgrown the primitive and clumsy modes of exchange available to it, and had not yet adopted a more convenient one. Coins were the first real money that the Greeks knew, and as such they represented value itself. Not only were they a medium of trade, they were equivalent to every form of wealth imaginable. Some Greeks, according to Aristotle, believed that wealth consisted of “plenty of coin”;¹⁵¹ it is hard to imagine anyone in India and China making that mistake. It is certainly not the way author of the *Arthaśāstra* speaks, for whom metal, important though it be as a way to achieve power, is not identical with wealth itself.

If coins were, in the eyes of the Greeks, the only things that constituted money, we need not ask further why the cities of Greece embraced coinage once the Lydians had invented it. I believe, however, that the consideration of providing

¹⁴⁸ Schaps, *Invention of Coinage* 138-49.

¹⁴⁹ Homer, *Iliad* 7.472-5; cf. Schaps, *Invention of Coinage* 76.

¹⁵⁰ Schaps, *Invention of Coinage* 16-17.

¹⁵¹ Aristotle, *Politics* I 9.10 (1257b 8-9).

enough coinage for the marketplace was active in Greece, too, and that this is the key for the otherwise curious fact that even very small communities, with no domestic source of silver, often minted coins. Once the idea that purchases were made with coins had taken hold of the Greeks, even a very small marketplace required a supply of coins sufficient to keep it functioning. One could not rely on there being enough Aeginetan or Athenian coins; foreign coins, moreover, would be likely to arrive in the large denominations appropriate for international trade, not the small ones fit for a retail market. Yet worse, the vast number of Greek states meant that all sorts of coins might be available, with neither buyer nor seller recognizing the device and knowing whether it was to be trusted. Stamping the city's emblem on the coins both allowed the city to see to it that enough coins were available, and to keep such silver as the state could amass in the local market, where it was always acceptable. It may be true, as was suggested above, that the interests of tradesmen were rarely if ever decisive in Greek political decisions; but the functioning of the market was in the interest of buyers no less than sellers, and that meant, at some time or other, practically everyone.

The theory here presented is proposed, not proven. It is based on historical parallels that are intentionally phrased in generalities and may not stand up to detailed analysis. Its author is a specialist in one particular area of the three mentioned, and has had to rely on secondary information for the others—indeed, a single author well-versed in Classical Greek, Sanskrit, and Chinese would be hard to come by. Even the theory's underlying assumption, that the invention of coinage in these three places should have a single explanation, may not be true. I hope, however, that this paper will at least encourage scholars to study together parallel developments that have too long been treated in isolation.

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