Imaginary Currency and Real

Guillotines: The Intellectual Origins of

the Financial Terror in France

Thomas M. Luckett

All the nations of Europe know two sorts [of currency]. Besides real currencies such as the écu, the louis, the crown, which are pieces of metal marked with a known imprint, and which circulate under these denominations, each [nation] has created a kind of fictitious currency, called “of account” or “numerary,” the denominations and divisions of which, without corresponding to any piece of real currency, form a common scale to which we refer the real currencies, evaluating them by the number of parts of this scale to which they correspond. Such in France is the livre of account, or numerary livre, composed of twenty sous, each subdivided into twelve deniers. There is no coin that represents a livre.

—Turgot¹

Monetary treatises written in early modern Europe often begin with what seems today a rather mysterious distinction between material and


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immaterial currency. The material currency, variously called "real," "effective" or "physical," was simply the coinage, particularly the silver and gold coins whose value was thought to depend, at least in part, on their intrinsic metal content. Coins were not marked with any denomination, but they had descriptive names, often based on the images they bore. The immaterial "currency of account"—known also as "imaginary," "theoretical," "fictitious," "ideal" or (at least for a time in France) "numéraire"—was by law the unit in which all prices, accounts and debts were recorded, yet it had no physical existence. Carlo M. Cipolla has aptly described it as a "ghost money," an invisible presence that animated the coin much as the soul animates the body. Royal edict fixed the equivalence between the two monies, which the monarch could thus alter at will. Between the thirteenth and the early eighteenth centuries, European states frequently devalued their currencies of account by "augmenting the value of the coinage." Debtors, including the king himself, could then repay their debts with a smaller quantity of coin. Writing in the nineteenth century, Jean-Baptiste Say could thus dismiss the whole idea of imaginary money as a subterfuge for state bankruptcy.2

The passage quoted above from Turgot's 1769 article "Valeurs et monnaies" is thus entirely typical of monetary conceptions under the Old Regime, yet it also presents a puzzle. After the first quarter of the eighteenth century, nearly all European states ceased to devalue their currencies of account. In France the last great "augmentation" occurred in 1726, after which the silver content of the livre tournois (or franc) remained essentially unchanged down to 1914. "Coins now represented exact multiples of the livre tournois," writes François Crouzet, "and the stability that followed 1726 led gradually to the confusion of the real currency with the 'unreal' currency of account."3 Or so at least it should have, but the example of Turgot demonstrates that in fact it did not. Well after 1726 Turgot drew distinctions between the two types of currency, and he was not alone. In the same period monetary treatises by the baron de Montesquieu (1748), the chevalier de Jaucourt (1765) and the marquis de Condorcet (1790) all treated the distinction between material and


Immaterial currency as axiomatic. Why did the theory of the two currencies continue to dominate French monetary thought when it would appear to have outlived its usefulness?

Perhaps money is always mysterious, but we use it so frequently that we forget to be puzzled. Why do unredeemable banknotes have value in some societies, why cowry shells or silver tokens in others, and electronic bank accounts in still others? In the article already cited Turgot asserts that money, like language, is a culturally specific system of signs. "Money has that in common with all kinds of measures that it is a sort of language that differs, among different peoples, in all that is arbitrary and conventional, but resembles and identifies with itself, in certain respects, by its relation to a common standard" (that is, to value). 4 If, in the spirit of Turgot, we consider the theory of the two currencies as an element of early modern political culture, and not simply as a cynical excuse for royal default, then we can begin to solve the enigma of its persistence. As we shall see, in eighteenth-century France the theory remained vital because the semi-miraculous ability of the king to impose abstract value on mere matter was traditionally considered one of the principal marks of sovereignty. Talk of immaterial currency thus implied a reflection on the nature and legitimacy of the monarchy itself. Though the Enlightenment tended to reject all immaterial bodies as an illusion, and thus to cast doubt on the sacrality of both the monarchy and its coins, by 1793 the Convention embraced the theory of the two currencies as a means to prove that sovereignty had now passed to the nation.

I

The theory of the two currencies was international, and one can easily cite examples, for instance, from early modern Germany, Britain and Italy. In France, however, it took on a distinctive interpretation closely related to the French conception of divine right monarchy. In his article "Monnoie" in Diderot's Encyclopédie, Louis de Jaucourt distinguishes sharply between the French and British understandings of money. Though French himself, he follows the logic of John Locke and (without naming him) John Law in rejecting the French position. He thus singles out for criticism a characteristic work by Jean Boizard who had defined money as "a portion of matter to which the public authority has given a definite weight and value." On the contrary, Jaucourt responds, "money does not receive its value from the public authority, as Mr. Boizard claims." Rather, "the matter

gives it its value." The value of that matter, whether gold or silver, depends in turn solely on its usefulness. Jaucourt even criticizes Locke himself for having occasionally slipped into this typically French error. "It is not surprising that Mr. Boizard, a Frenchman, erred in his ideas on money, but Mr. Locke, an Englishman and a profound thinker who made himself famous by his beautiful works on this subject, should not have fallen into a misconception similar to that of Mr. Boizard. He thinks that men by common consent have given an imaginary value to money." Jaucourt's passing criticism of Locke depends on a misquotation, since Locke in fact states that mankind has "consented to put an imaginary value upon gold and silver," not upon money itself, the value of which, he insists, depends on its gold or silver content. Such subtleties aside, however, Jaucourt's statement suggests that Boizard was representative of a distinctively French belief that the king as sovereign possesses the unique ability to join the material and immaterial currencies into one.5

Jaucourt supplies the names of eight French "savants [who] have written on real and fictitious currencies, whether those of the ancients or those of the moderns": Budé, Du Moulin, Sarot (sic for Savot), Du Cange, Bouteroue, Le Blanc, Boizard and Dupré de Saint-Maur.6 Spanning more than two centuries, Jaucourt's implied bibliography is highly selective. Remarkably, he nowhere alludes to book 22 of Montesquieu's *Esprit des lois*, which includes the most widely read discussion of imaginary currency then available in French. Montesquieu was the eighteenth century's leading exponent of an oppositional tradition in French political theory that, while not suggesting that the monarchy should be abolished, sought nevertheless to limit royal authority and strengthen representative


institutions, including the Parlement of Paris. Certainly Jaucourt would have read Montesquieu, but perhaps he had too much respect for this elder statesman of the Enlightenment to point out that he too had believed in the existence of immaterial currency. Instead, Jaucourt chose to restrict his list of French authors to those who represent the royal administration.

Since the sixteenth century French monetary authorities had developed what Jotham Parsons describes as a “specialized, expert and increasingly systematic tradition of monetary thought.” Jean Boizard and Claude Bouteroue in particular were both councilors in the Cour des Monnaies under Louis XIV. Charles du Cange and Nicolas-François Dupré de Saint-Maur both served as royal treasurers, the first in Amiens and the second in Paris, and François Le Blanc is known to have based his research in large part on Bouteroue's unpublished manuscripts. In his preface, Boizard describes how he began to master his profession in 1663-64 when he first received an appointment to the Cour des Monnaies: “I then sought all possible means to instruct myself, as much from the knowledgeable people whom I consulted, as from the memoirs they communicated to me, so as to fulfill the duties of my commission with the greatest exactitude that I could.” Having written up what he learned, he was then surprised to find his treatise circulating in manuscript among his colleagues, and so at last decided to publish. Though Boizard's account of the origins of his book doubtless includes a certain amount of false humility, it suggests something of the governmental milieu in which French monetary theory developed and perpetuated itself from generation to generation. By criticizing the resulting tradition of monetary thought as a French error, and by neglecting to include in that category the much more Parlementary writings of Montesquieu, Jaucourt in fact attacks an aspect of French royalist thought closely linked to the rhetoric of divine right monarchy.

French legal theory had long considered the exclusive right to issue money to be one of the central marks of sovereignty. In his Six Livres de la République, Jean Bodin had assimilated the control of the currency to the king's legislative power. “As for the right of coining money, it is of the same nature as law, and only he who has the power to make law can regulate


the coinage." He even asserts that the French word for "law" derives from that for "alloy," and originally referred simply to the king's authority to set the degree of purity for coins. The etymology of course is false, and Bodin wisely dropped it from later editions, but it appears to represent a contemporary confusion between the homonyms la loi and l'alloy, as if they were the same thing. Later monetary treatises came to distinguish between two separate marks of sovereignty in the regulation of the coinage: the authority to mint coins, and that to determine their value. Thus Boizard, citing a host of previous authors, asserts that "the power to mint money belongs by right to sovereign princes alone." In a separate chapter, repeating almost word for word the formula from Bouteroue, he states that "the price in exchange of coins depends on the prince, and it is not permitted to the people to change it." Perhaps a third mark of sovereignty was the image of the monarch on the coins. Bouteroue suggests that the "faces and arms of princes imprinted on the coins should be sufficient to mark their power."  

The theory of the two currencies bears an unmistakable resemblance to the doctrine of the "king's two bodies," especially as it was understood in early modern France. As Ernst H. Kantorowicz and Ralph E. Giesey have demonstrated in now classic studies, late medieval jurists worked out an explanation of royal authority by arguing that the king has two bodies, one mortal and visible, the other immortal and invisible. At the very instant the king dies, his immortal body joins with the mortal body of his successor, so that there is never an interregnum. "For it is beyond doubt that the king never dies, as they say," states Jean Bodin in a frequently quoted passage, "and that as soon as one is deceased the nearest male of his stock is seized of the kingdom and in possession thereof before he is crowned." In France the doctrine of the king's two bodies was associated with the Catholic mystery of the real, but invisible, presence of Christ's body in the host. French coinage was thus the image of the king, not only in the sense that it bore his likeness, but also in that it shared his dual nature. Bouteroue uses Aristotelian language to explain this dual nature as a distinction.


between “matter and form.” Whereas the matter of the currency is the metal from which it is made, its form “consists of the weight and size of the minted coin, the imprint and figure that it bears, and the value that one gives it”—that is, of precisely those aspects that depend upon the sole will of the sovereign. Boizard uses similar language, describing the value of the money as an aspect of its form. 12

The French doctrine that the sovereign alone can determine the value of money offered a solution to one of the mysteries of early modern monetary theory: the possibility of seigniorage. Mints obtained bullion by purchasing it on the market, yet somehow gave less bullion through these exchanges than they received. If an individual were to take unminted silver to the mint, the silver coins he received thus contained less precious metal than what he sold. The percentage difference, known as the rendage, had two components: the brassage, which covered the labor costs of the mint itself, and the seigniorage, a royal tax. The seigniorage and brassage duties varied over time and from country to country, and at times regimes even experimented with eliminating them altogether, as Louis XIV did between 1679 and 1689. As we shall see, monetary economists tended to favor the reduction if not the elimination of rendage, which they viewed as an abuse of the king’s authority. The greater theoretical problem posed by seigniorage and brassage duties, however, was how they could exist at all. Why without constraint would merchants purchase coin at a premium? Why, that is, did the king’s coin have greater value than the precious metal that it contained? Apparently, they implied, because the king had imposed additional value by an act of sovereign will. Such power seemed miraculous, much like the reputed ability of French kings to cure scrofula by touching the eyes of its victims. 13

Jacques-Bénigne Bossuet, in his Politique tirée des propres paroles de l’Écriture sainte, argues “that the person of kings is sacred, and that to attempt anything against them is a sacrilege.” 14 French monetary economists could therefore logically assert that the king’s currency is sacred, and in doing so appeal to both pagan and Biblical tradition. “The ancients believed that money is a very holy thing,” states Bouteroue. “They


minted it in the temples in the presence of a goddess who presided over the work, or erected alters in the middle of the mints. The emperors accorded it the name of 'sacred' just as they did to their own person.” Boizard describes a tradition among French authors that “after the flood, Noah having assembled all his descendants to share out the earth, and having proposed the use of weights, measures and money, he also taught them how to mint it, and the metals they must use for this purpose.” As Boizard notes, this story has no basis in scripture, and must therefore have been a legend handed down within the professional culture of the royal mints. The choice of Noah is significant, since following the flood he was effectively king of the world, and so created money by his royal and patriarchal authority. He then turned it over to his heirs who, as the founders of future dynasties, “carried this invention to the countries that fell to them by partition.”

As with attempts on the person of the king himself, any subversion of the king's currency was not simply sacrilege, but an act of treason. Bouteroue points out that counterfeiters usurp the king's exclusive authority to mint coin, “as if worthy to bear the marks of the sole sovereign majesty.” Boizard treats this question at length, and insists that, “of all sorts of fraud, that of false money is the most punishable, because the king alone having the right to manufacture monies, those who do so without the express permission of the sovereign commit a crime of lèse-majesté in the second degree, and must be punished by death.” He includes in the category of counterfeiters those who merely clip coins, as well as mint officials who produce adulterated coins. He even applauds the emperor Constantius for having burned counterfeiters at the stake. Boizard agrees with Bouteroue that merchants who melt down or export the king's currency are also blameworthy, though perhaps not deserving of death.

In recent decades writings on the ideological origins of the French Revolution have argued that, in the course of the eighteenth century, the monarchy lost its sacred status in the eyes of the French people, even as the royal administration continued to employ an outdated rhetoric of divine right. Desacralization stemmed from at least two very different sources. One was the Augustinian theology of the Jansenists, which came to influence the language of Parliamentary resistance to the crown. Jansenists

insisted on the depravity of human nature, including that of the king himself, in contrast with the majesty of God. The other source of desacralization was the French Enlightenment, which in its empiricist and materialist philosophies tended to deny the reality of the sacred altogether. In the following two sections we shall see that a similar fate befell the king's money.

II

Though clearly authoritarian, French royalist ideology paradoxically created a language with which to criticize monarchs themselves when they fell short of its ideals. Bossuet, that most insistent of apologists for the absolute power of kings, reminds us that "royal authority is subject to reason," and that monarchs are obliged to observe the dictates of God and make their subjects happy. "Under a wise prince everything abounds—men, the goods of the earth, gold and silver." The duc de Saint-Simon attributes to the dauphin Louis de Bourgogne the sentiment that "peoples do not belong to kings, but kings to peoples, to give them justice, to make them live according to the laws, and to make them happy through the equity, wisdom, gentleness and moderation of their government." He had learned such ideas in no small part from his preceptor, archbishop Fénélon, whose pedantic novel Téléméque contrasts the prosperity of the subjects of wise kings with the misery of those of despots. Indeed, even the language of the king's two bodies could ultimately be deployed against the monarchy. Dale K. Van Kley has shown that some of the last invocations of the two bodies occurred in the 1760s, when Parlementary magistrates upbraided the mortal Louis XV for contradicting his own "eternal and as it were immutable will."18

So too did French monetary theory exhort kings not to abuse their power to alter the value of money. Bodin argues that monarchs who devalue their currencies are themselves guilty of counterfeiting. "For the Prince is not allowed to change the base of the money to the hurt of his subjects, and still less, of the foreigners who trade with him and traffic with his people, without incurring the infamy of false coiner, since he is subject

to the law of nations.”19 In language similar to that of Bossuet, Bouteroue explains that “the value of money depends on the prince, and it is not permitted to the subject to change it, but in imposing it he should have for sole purpose the utility of his state.” The value of money is, moreover, “a contract of good faith between the prince and his subjects” that the prince must not violate. For “he is not the master, nor the proprietor of the coins, though they bear his face and arms, but they belong to his subjects who possess them.”20

Though fundamentally royalist in the sense that, in contrast with the rhetoric of the Parlement, it assumed the monarchy's absolute power, French monetary theory thus provided a standard against which to measure the policies of kings, and a language with which to denounce the misuse of royal authority. Bouteroue and Boizard offer essentially the same precise list of monetary abuses that the sovereign should avoid: altering the weight or alloy of the coins, raising the value of the coinage with respect to the currency of account, altering the bimetal ratio, charging excessive seigniorage, and manufacturing an excessive number of base-metal coins (since these exchanged with gold and silver coins at a forced rate). Bouteroue does not mince words. “All these methods are unjust,” he states, “if they result only in the prince’s private profit, or if they are not founded on public utility, or on a very pressing need to save the state by this sole remedy, which should never be attempted except in an extreme emergency, and after exhausting all others.” Though far more hesitant than Bouteroue to criticize the king, Boizard also urges that princes who resort to such methods in difficult times should cease practicing them as soon as possible.21

Both authors, moreover, dwell at length on the topic of seigniorage. Bouteroue asserts that many doctors of the church have considered seigniorage unjust, though he allows that a small seigniorage duty may be legitimate. Like Bouteroue, Boizard wishes that both seigniorage and brassage could be eliminated entirely, and that a separate land tax would cover the manufacturing costs of the mints, so that bullion would have the same price whether minted or unminted. He recognizes, however, that without a brassage duty it is difficult to keep coinage in circulation, since


Imaginary Currency and Real Guillotines  127

merchants then have no incentive not to melt it down or ship it out of the
country. François Le Blanc points out that Louis IX charged seigniorage
and brassage duties totaling one sixteenth (or 6.25%) of the silver and gold
sold to the mint, which subsequently came to be considered the maximum
legitimate rate, "for every time [the currency] fell into disorder under his
successors, as frequently happened, the people always demanded that it
be restored to the same state as in the time of Saint Louis."22

The treaties that we have examined so far provide a context in which
to reinterpret one of the French Enlightenment's more profound reflections
on the nature of money. In book 22 of his Espirit des lois, "On the Laws in
their Relation to the Use of Money," Montesquieu builds on the subversive
potential of the theory of the two currencies to develop a critique of what
he perceives to be the despotc policies of the French crown, and to
propose a corrective to those policies. As is often the case with
Montesquieu, he signals the originality of his analysis with a shift in
vocabulary when, eschewing the word "imaginary," he instead
distinguishes carefully between "real monies and ideal monies." Advanced
societies, he asserts, use the latter "only because they have converted their
real monies into ideal monies" as a result of the progressive corruption
of their laws. "At first, their real monies have a certain weight and a certain
grade of some metal. But soon bad faith or need makes them withdraw
part of the metal from each piece of money, leaving it with the same
name." Originally the French livre tournois genuinely represented one
pound (livre) of silver, but over a period of centuries repeated devaluations
gradually rendered it more and more ideal. "The variation can be
continual, because it is as easy to give another name to a thing as it is
difficult to change the thing itself." Far from an occasional emergency
measure that kings would remedy when better times returned, as Boizard
would have us believe, the manipulation of the currency was for
Montesquieu an enduring and cumulative abuse of royal authority that
rendered the monetary regime ever more despotic.23

Montesquieu's choice of the word "ideal" is ambiguous, and one
suspects deliberately so, for it can refer either to universal truths, including
his own beloved natural laws, or to that which is chimerical, "existing only
in the understanding," as the Académie française defined "ideal" in 1762.24
Montesquieu himself does not define the term, which he rarely employs in

22. Bouteroue, Recherches curieuses des monoyes de France, p. 7; Boizard, Traité des
the rest of his corpus, but illustrates his meaning through an anecdote. There exists a region of sub-Saharan Africa, he asserts, where the inhabitants possess no physical currency, but facilitate barter with a “purely ideal sign” that they call the “macute.” “A certain product or commodity is worth three macutes; another, six macutes; another, ten macutes.” The advantage of their system is that it is not subject to royal manipulation. Rather, the macute serves as a transparent and universal measure of the value actually inhering in each object. The value of the macute itself cannot be altered by any arbitrary human will since it derives from the nature of the commodity, much as the laws of nature “derive uniquely from the constitution of our being.” When the number of commodities in society increases, the number of macutes increases by exactly the same proportion, for “there is nothing that is only money, but each kind of commodity is money for the other.” Given the exotic setting of this anecdote in a society that eighteenth-century Europeans considered close to the state of nature, the macute represents money in its natural and uncorrupted state. Montesquieu thus objects not to ideal money per se, which he does not consider imaginary or chimerical, but to any “operation that would render [real monies] ideal” by reducing their intrinsic value. Whereas “money is a sign representing the value of all commodities,” governmental currency manipulation is a linguistic falsification, a lie perpetrated by the monarch against his subjects.25

Montesquieu finds a corrective for monetary despotism, however, in the international exchange market, the topic of the lengthiest chapter of his book 22. Monetary exchange in early modern Europe functioned through the bill of exchange, a credit instrument that developed out of the commercial revolution of the late thirteenth century. The bill of exchange was a negotiable draft that a merchant drew on a foreign correspondent, then sold to a third party. A Parisian exporter with credit outstanding in London, for instance, might write up a bill of exchange promising that his London debtor would pay a certain number of pounds sterling on a certain date, then sell the bill to another Parisian who needed to send a payment to his own London creditor. The market value of the bill in livres tournois depended on the going rate of exchange at Paris on London, which was not regulated by any governmental institution. While the exchange rate fluctuated from day to day in response to market forces, it usually remained within a few percentage points of mint parity, that rate at which one would exchange equal amounts of precious metal.

Imaginary Currency and Real Guillotines

For Montesquieu, the exchange market constantly defeats monarchs who would abuse their power to set the value of money. He agrees with French monetary tradition that the sovereign can decide the “positive value” of the currency by determining the seigniorage duty, the bimetal ratio, the composition of each coin, and the relation of the physical currency to the currency of account. Nevertheless, the exchange market creates a second, “relative value” beyond the sovereign’s control, by which currencies are valued only for their metal content. “The exchange has taught the banker to compare all the monies of the world and set them at their just value.” The exchange market is thus a natural and transparent market like that of Africa, in which the ounce of silver functions like the macute as a universal measure of value, and no one currency is privileged. In the larger context of Montesquieu’s political theory, the exchange market becomes another “intermediate power” that prevents the monarch from invading the rights of his subjects. “The exchange,” he concludes, “has curtailed the great acts of authority, or at least the success of the great acts of authority.”

III

The chevalier de Jaucourt’s Encyclopédie article “Monnoies,” already cited, represents a very different approach to monetary theory founded on British empiricism. Whereas Montesquieu worked within the tradition of the two currencies to upbraid the monarchy for falsely representing the ideal currency with a debased coinage, Jaucourt reduces monetary value to that of the observable precious metal contained in the coins. He is thus at pains to argue that “minting does not give value to money, and its value is not imaginary.” Claiming to draw his ideas primarily from John Locke’s Some Considerations of the Consequences of the Lowering of Interest, and Raising the Value of Money, Jaucourt in reality plagiarizes large sections of his article from the first chapter of John Law’s Money and Trade Considered. (He probably decided against citing Law because the collapse of Law’s financial system in 1720 ruined his reputation as an economist.) Following Law rather than Montesquieu, Jaucourt finds in the exchange market not so much a check on the abuse of royal authority as proof that sovereigns do not have the power to determine the value of the currency

in the first place. "I cannot conceive how men of different nations, or even those of the same province, could have consented to put an imaginary value upon anything, especially upon money, by which all other goods are valued." Instead, the exchange market demonstrates that "money is valued and received according to the quantity and quality of matter of which it is composed."27

Seigniorage gives Jaucourt somewhat greater difficulty, since he cannot deny that coined silver has often traded at a premium to uncoined silver. Here too, however, he is able to lift a response from Law, who had argued that all market value is based on use value. Coins are more useful than unminted bullion since their intrinsic value is known and guaranteed. "If either of these values is imaginary, then all value is imaginary, for goods have no other value than the uses to which they are put, and according to their quantity in proportion with demand." As for the long history of French currency devaluations, Jaucourt points out that when the prince "augments" the value of the coinage, merchants simply raise their prices, and the purchasing power of the coins remains unchanged. Though almost entirely devoid of originality, Jaucourt’s article demonstrates the growing influence the monetary thought of Locke and Law in mid-century Paris, and may well have contributed to it.28

Subsequent monetary writings in France tend to reflect the empiricist approach of Jaucourt’s article. Though hesitant to criticize the king or assign limits to his power, Turgot too demystifies the theory of the two currencies, stripping it of its metaphysical and thaumaturgical elements. For Turgot the imaginary currency is "arbitrary and conventional," and the value of coins depends solely on that of their metal content considered as "merchandise." The monetization of gold and silver, moreover, does not depend on the sovereign. Rather, they have become the universal money "without the intervention of any law, but by the nature of things."29 The culmination of this trend in monetary thought can be seen in a series of memoirs that the marquis de Condorcet, then inspector-general of monies, presented to the National Assembly in 1790. In his opening memoir he describes the imaginary currency as nothing but a device to facilitate accounting. "To reduce values to a common measure, in order to compare them with each other, it was necessary to create a purely nominal unit of value." He goes on, moreover, to offer what is probably the century’s most

29. Turgot, Ecrits économiques, pp. 146-47, 233
lucid explanation of seigniorage, which results, he claims, from the government's monopoly on the minting of coin. "If the manufacture of money were open, then it is clear that the average difference between the value of a bar of silver transformed into coin, and that of a bar of silver not transformed into coin, would be equal to the cost of production, for if it were a bit greater, then there would be an incentive to mint more, and the increased supply would reduce the difference." Like any monopolist, the state is able to charge a higher price for the product it sells—in this case coins—than the market would otherwise allow. Far from constituting a distinct mark of sovereignty, seigniorage can thus be explained by the same laws of supply and demand that reign throughout the economy.

Along these lines, a subtle reflection on the nature of money can also be seen in the philosophes' interest in a curious problem in probability theory then making the rounds in Paris. The theory was known as the Petersburg Paradox, because Daniel Bernoulli had published an article on it in the *Papers of the Imperial Academy of Sciences in Petersburg* in 1738. Involving a flipped coin, the paradox inspired several eighteenth-century writers to deny that physical coins behave like theoretical ones. Analysis of the game's expected winnings, moreover, led to the conclusion that the value of money is subjective and variable. While never explicitly framed as a discussion of the theory of the two currencies, the debate over the Petersburg Paradox thus further undermined the belief that the sovereign can impose a fixed value on the currency.

Probability theory had grown in the seventeenth century out of the analysis of games of chance, notably through an exchange of letters between Blaise Pascal and Pierre de Fermat, and though it would not receive an axiomatic foundation until the development of measure theory in the twentieth century, it was from the start based on a single clear and apparently simple formula for calculating the average result of any wager. According to this formula,

Expected values are computed by multiplying each possible gain by the number of ways in which it can occur, and then dividing the sum of these products by the total number of possible cases where, in this theory, the consideration of cases which are all of the same probability is insisted upon.

Bernoulli's brother Nicolas had been the first to describe a game for which this standard formula produces an absurd result:

Peter tosses a coin and continues to do so until it should land "heads" when it comes to the ground. He agrees to give Paul one ducat if he gets "heads" on the very first throw, two ducats if he gets it on the second, four if he gets it on the third, eight on the fourth, and so on, so that with each additional throw the number of ducats he must pay is doubled. Suppose we seek to determine the value of Paul's expectation.

As it turns out, the average winning for the Petersburg game is infinite:

$$\mu = 1 \cdot (1/2) + 2 \cdot (1/4) + 4 \cdot (1/8) + 8 \cdot (1/16) + \ldots = 1/2 + 1/2 + 1/2 + 1/2 + \ldots = \infty$$

To be fair, then, Paul should wager an infinite amount of money every time he plays the game. Yet "any fairly reasonable man would sell his chance, with great pleasure, for twenty ducats."31

By the early 1760s, the French philosophes came to take a keen interest in the Petersburg Paradox, in part because it appeared to demonstrate the irreconcilability of mathematics with the empirical world. To that extent it substantiated a position that both Diderot and the comte de Buffon had taken a decade earlier when they separately published works arguing that what mathematicians study is unreal. In the preliminary discourse of his *Histoire naturelle* (1749), the comte de Buffon held that mathematical truths are only "truths of definition," identical to the definitions and "suppositions" from which they are derived. Since these definitions are "arbitrary and relative, all consequences that we can draw from them are equally arbitrary and relative. What we call 'mathematical truths' thus reduces to identities of ideas, and has no reality." Four years later Diderot made much the same assertion in his *De l'interprétation de la nature*, where he compares mathematics with a game, and asserts that "the thing of the mathematician has no more existence in nature than that of the gambler. In each case it is but a matter of conventions." Geometry is thus "nothing but metaphysics." Diderot looked forward to a day when it would

be possible to correct pure mathematics with empirical observations, and produce a book that he proposed to entitle "The Application of Experience to Geometry, or Treatise of the Aberration of Measures." Such a project, of course, would require the identification of clear discrepancies between mathematics and nature, and for the moment Diderot had none to offer.32

Buffon finally took up Diderot's challenge in his Essai d'arithmétique morale (1777). In his attempt to create a "moral" or empirical mathematics, Buffon devoted a lengthy section of this essay to the Petersburg Paradox. He began by recognizing that it had implications not only for probability theory, but for the nature of money itself. Bernoulli's thought experiment, that is, concerned coins, but mathematicians had hitherto considered only abstract money obeying the rules of mathematical theory. "The mathematicians who have analyzed games of chance, and whose work in this field deserves our praises, have considered money only as it is susceptible to increase and decrease, with no value except that of the number." Their calculations appeared nonsensical because they did not take into account the difference between real and imaginary money. To resolve the paradox, Buffon first summarized Daniel Bernoulli's own elegant solution to the Petersburg paradox in his 1738 article, which had been to develop the economic principle of declining marginal utility. A single ducat is worth far more to a poor man than to a rich one, and in general the "moral value" of each additional ducat is lower the more we already have, so that even in a fair wager the ducat that we stand to win is worth less to us than the one we stand to lose. If we recalculate Paul's expected gain not in ducats but in units of utility, then the infinite series converges to a finite, and rather small, sum. For the traditional monetary theory of the Cour des Monnaies, the implications of utility theory are devastating. Money, it turns out, can receive no definite or absolute value from the sovereign, since its value is entirely subjective, and different for each individual. "Beyond a certain limit," explained Buffon, "money has almost no more real value, and cannot increase the happiness of him who possesses it."33

Buffon went on to summarize Jean le Rond d'Alembert's solution to the Petersburg Paradox, which has been almost universally condemned by subsequent mathematicians. In a series of essays d'Alembert argued that the physical world does not obey the rules of abstract probability theory,


“for we must distinguish between what is metaphysically possible, and what is physically possible.” Suppose we play a game in which we throw a coin one hundred times. Metaphysically, the probability of all heads is one in $2^{100}$. If the game is played $2^{100}$ times, we would thus expect to get all heads once. In reality, d'Alembert believed, all heads will never occur since it is physically impossible. Instead, several mixed sequences of heads and tails will occur more than once. “In the ordinary course of nature, the same event (whatever it may be) occurs rarely enough two times in a row, more rarely three or four times, and never a hundred consecutive times.” Buffon likewise concluded that, in the real world, any event with a probability of less than one in ten thousand can be treated as impossible. To prove this, he claimed to have performed a physical experiment in which he played the Petersburg game 2048 (or $2^{11}$) times, with a child tossing the coin. His total winnings were 10,057 ducats, for an average of 4.9 ducats per game, well below the infinite winnings predicted by the theory. Again, considered as a commentary on the nature of money, Buffon and d'Alembert's argument tends to undermine the traditional theory of the two currencies by showing that abstract currency cannot accurately reflect the behavior of physical coins.\(^34\)

Let us review the findings of the last two sections. For traditional French monetary theory as it had developed within the professional culture of the royal mints, and also for Montesquieu, a debased coinage is an imperfect representation of the ideal or imaginary currency. For later French Enlightenment authors who drew on British empiricism, the imaginary currency is, on the contrary, an imperfect representation of the physical currency, much as geometry imperfectly describes the world. Before we conclude that the latter theory is more modern, however, we should remind ourselves that it entirely fails to anticipate the possibility of today's fiat currencies, which of course have no intrinsic value. “One can take as a measure of value only that which has a value,” insisted Turgot. “A money by pure convention is thus an impossibility.”\(^35\) We know today that Turgot was wrong, and that the public authority can indeed impose value on useless pieces of paper. When France moved toward a fiat currency in the 1790s, therefore, the empiricist monetary theory of the Enlightenment provided it with little guidance. Instead, as the Republic undertook to monetize the paper currency known as assignats, it reverted to the earlier

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conception of money, and its ability to maintain the value of the new currency became a test of its sovereignty.

IV

On 31 July 1793 leftist delegate François Chabot sparked a lengthy debate in the French National Convention when he pointed out an odd problem resulting from the abolition of the monarchy the previous year. Some 1.7 billion livres in assignats showing the profile of the king (à face du tyran, as Chabot put it) remained in circulation. Embarrassingly, they exchanged on the market at a premium of 10% with the newer assignats showing the symbols of the Republic, as if even from the grave Louis were able to exercise greater sovereignty, and impose greater value on his currency, than the nation could command. Chabot proposed that the Convention punish the unpatriotic stockjobbers (agioteurs) responsible for this situation by demonetizing the royal assignats. Yet as Pierre-Joseph Cambon, chair of the Finance Committee, was quick to point out, “If we attack the monetary title of the royal assignats, will we not run the risk of discrediting the others?”

Much has been written about the paper money of the French Revolution, the history of which it is not possible to retrace here in detail. Intended originally as a bond “assigned” to the income from future sales of lands confiscated from the Catholic Church, the assignat evolved rapidly into a fiat currency. In 1792-93 the Legislative Assembly and its successor, the Convention, unable to levy sufficient taxes, came to fund the revolutionary wars largely by over-issuing the assignat. As Thomas J. Sargent and François R. Velde have demonstrated, however, this policy was initially unsuccessful. Due to a rising velocity of circulation, prices rose still faster than the nominal money supply, so that the real value of governmental cash balances actually declined. In the spring and summer of 1793, faced simultaneously with foreign invasion and civil war, the Convention responded to the crisis of war finance with a series of increasingly punitive monetary reforms. Decrees of 11 April, 1 August and 5 September 1793 demonetized silver. The sale of coin for assignats,

36. Archives parlementaires de 1787 à 1860, première série (1787 à 1799), 100 vols. to date (Paris, 1867-), 70:56-58.

particularly at a premium, as well the sale of goods at a lower price to customers willing to pay in coin, became crimes punishable by lengthy prison terms, and ultimately death if the offender was thought to be motivated by counterrevolutionary sympathies. Finally, under the General Maximum of 29 September, raising prices also became a capital offense. The result was a “guillotine-backed currency” that proved remarkably stable until the Great Terror ended in the summer of 1794.38

Current literature on the assignats tends to argue that the use of the Terror to punish monetary crimes was motivated essentially by financial expediency. As Sargent and Velde explain their findings, “Our view is that the Convention embraced extreme measures reluctantly because it faced extreme fiscal exigencies.”38 As we have seen, however, monetary thought under the old regime was closely tied to a particular interpretation of the marks and duties of royal sovereignty. The financial Terror thus had an ideological dimension that the Revolution inherited from the Old Regime. Specifically, the assignat served as a test of the Republic’s ability to impose abstract value on a physical currency, and the results were not auspicious. The Convention issued the monetary reforms of 1793 within the context not only of a military crisis, but of an exchange crisis. Over the summer the livre tournois fell even faster against foreign currencies than its purchasing power fell within France. On 27 June the Convention closed the Paris stock market, which doubled as the exchange market, hoping thus to disrupt the cabal of stockjobbers, but the exchange value of the livre continued to slide. By mid-July, even after correcting for the silver value of the assignat in Paris, the rate of exchange at Paris on London, for instance, was less than 60% of silver parity.40 Montesquieu, as we have seen, had argued that the exchange market reveals the true value of the physical currency, regardless of governmental subterfuge, and thus indicates the legitimacy or illegitimacy of the regime’s policies. Did delegates to the Convention see the crisis in similar terms?


39. Sargent and Veide, “Macroeconomic Features of the French Revolution,” p. 505. For a very different perspective, emphasizing distributive justice as a motive for the monetary policies of the Convention, see Albert Mathiez, La Vie chère et le mouvement social sous la Terreur (Paris, 1927).

The debates over monetary policy in the Convention might help to resolve the question, but unfortunately the recorded discussions of the demonetization of silver are tantalizingly brief. The decree of 11 April appears to have been prepared entirely in committee, since there is no evidence that it was discussed in the Convention. That of 1 August passed after a short speech from Georges-Auguste Couthon, in which he complained that “a system has been established to refuse the assignats, or accept them only at a loss. One thus colludes indecently to accept your monetary value as if it were not mortgaged, and were based only on public faith.” Couthon thus insisted that the value of the assignat was real, based on its convertibility into land. Attempts to discredit the assignat were an act of treason perpetrated by the enemies of the people. In the even shorter speech with which he introduced the monetary reform of 5 September, Philippe-Antoine Merlin de Douai blamed the falling value of the assignat simply on the aristocracy and its agents. 41 Meager as it is, the evidence thus suggests that when it moved to strengthen the assignat against silver, the Convention was motivated not only by the practical demands of war finance, but also by a desire to prove to its detractors that the Revolution had not issued a debased currency.

In contrast to the decrees on the demonetization of silver, Chabot’s proposal on 31 July to demonetize the royal assignats led to a lengthy and vigorous debate, including a highly emotional intervention from Georges-Jacques Danton. One of the most important questions raised in the debate was the identity of those who currently held royal assignats, and who would thus be hurt by their repudiation. If they had been bought up by stockjobbers, aristocrats, royalists, Austrians and William Pitt, as Chabot and his partisans contended, then expropriation might be just punishment for their crimes against the French nation. Honest citizens would actually gain from the reduction of the money supply, since it would strengthen the remaining assignats. On the other hand, Michel-Mathieu Lecointe-Puiraveau, one of the assembly’s more conservative members, argued at length that counterrevolutionaries had already sold their royal assignats to common artisans, who alone would suffer. He reminded the assembly, moreover, that the Declaration of the Rights of Man guaranteed the property rights of citizens. The issue was complicated by the fact that, as Cambon pointed out, republican assignats had never been issued in denominations of five livres or less, which one would expect to circulate primarily among the poor. Danton finally cut the Gordian knot when he pointed out that regardless of social class, “it is not the men of the

41. Archives parlementaires de 1787 à 1860, vol. 70, p. 75; vol. 73, p. 407.
Revolution who have these assignats.” Those with so little faith in the
Revolution as to purchase them at a premium were by definition counter-
revolutionaries. “Be like nature. She considers only the conservation of the
species, not that of individuals.” 42

Also central to the debate, however, was an attempt to understand why
royal assignats exchanged at a premium in the first place. It was easy
enough to blame counterrevolutionaries, whether for buying them up or
selling them at the inflated price, but the difference in value between royal
and republican assignats held true throughout the market, with the
apparent concurrence of the citizenry. If the monarchy were ever restored,
then the new king would presumably have greater difficulty repudiating
assignats minted under the authority of Louis XVI than those issued by the
regicide assembly. “The rumor has been spread that the assignats with the
royal image were guaranteed, come what may, while those that did not
have it would count for nothing,” explained Lecointe-Puiraveau. French
society thus appeared to be banking on the failure of the Revolution. More
explicitly than any other delegate, Danton, while claiming to know little
about finance, recognized in the fate of the royal assignat a symbolic
struggle between the monarchy and the Republic:

If despotism triumphs, it will erase all the signs of liberty. Well then,
let us not pollute the eyes of the friends of the Republic with the
image of the tyrant whose head has fallen under the blade of the
law. The despots of Europe will say: “What is this powerful nation
that, by a single decree, increases public prosperity, succors the
people, reanimates national credit and prepares new arms to
combat its enemies?” 43

With Danton’s support, and Cambon’s modifications, the measure finally
passed. Since it guaranteed that the government would continue to accept
royal assignats as payment for taxes and national lands, it is doubtful that
the demonetization had any appreciable effect on the money supply,
which in any case continued to grow. The value of the legislation of 31 July
was almost entirely symbolic. Jean-Baptiste Boyer-Fonfrède, one of the
Convention’s last Girondist delegates, bitterly concluded the debate with
precisely this point: “The National Convention should tell the people that
it has approved a political law rather than a financial operation, and that

42. Archives parlementaires de 1787 à1860, vol. 70, pp. 56-60.
43. Ibid., pp. 58-59.
this decree does more to eliminate the emblems of the monarchy than to reduce the quantity of assignats.”

V

The value of money in early modern France was thought to be determined exclusively by the sovereign. He alone could join physical coins, the visible signs of value, with that invisible currency unit that truly measured the value of all commodities. The materialism of the Enlightenment notwithstanding, the result seemed almost magical, and the French knew how to tell whether the magic was being properly performed. They knew that a legitimate sovereign, mindful of his duty to his subjects, would mint a currency with a constant silver and gold content. It would not be subject to frequent devaluation or extraordinary inflation, and its value would not decline sharply on the international exchange market. Indeed, if he so chose, a true sovereign could give his coins value exceeding that of the metal they contained. In the summer of 1793, by all these tests, the Revolution appeared to be failing.

While the financial Terror was undeniably a response to “extreme fiscal exigencies,” the debate over the royal assignats shows that it was a response conceived in the context of a traditional French understanding of money. The struggle to maintain the value of the nation’s currency became, at least in part, a struggle over the marks of sovereignty between the Republic and the ghost of the King, the one who “never dies.” In waging this struggle even the death penalty was justified, since attempts to undermine the value of the sovereign’s currency had long been considered a form not simply of fraud, but of treason. There is evidence, moreover, that concern over this particular mark of sovereignty continued to haunt the Revolution well after the Terror. Several years later, when the Directory returned to a hard-money policy, it began to mint a republican metallic currency, the franc, with a silver content slightly larger than that of the livre. At mint parity, new coins would exchange with those of the old regime, which of course still bore the likeness of the king, at a premium of nearly 1%. Nevertheless, the Council of Five Hundred found it necessary on 10 March 1796 to issue a new decree against those “who decay the coins struck with the mark of the Republic, or refuse to receive them in payment for the value that they bear on the imprint.”
