

ARTICLE

Economic Analysis of Legal Institutions: Explaining an “Inexplicable” Rule of Roman Law

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INTRODUCTION

Barter, the direct exchange of one item for another, is a transaction form of great antiquity.¹ Before the introduction of money, the standard by which the relative value of goods is measured, an individual traded a bundle of goods in his possession for some other, preferred bundle of goods. Some have even suggested that in certain early societies barter was not merely an economic transaction, but also an institution that helped to hold small communities together by encouraging ongoing relationships.²

In spite of the important cultural and economic roles of barter in ancient societies, most early legal systems generally disfavored the enforcement of executory barter contracts. Presumably this unenforceability impeded the use of executory barter agreements. Even after money was in general circulation, executory contracts of both barter and sale often remained unenforceable, and in certain instances were even considered pernicious.

The development of a flexible and useful executory contract of sale in Rome has often been applauded as one of the great advances in the legal system.³ It is cited as one of the developments in Roman law that fundamentally affected western law.⁴ However, this new development did not affect executory barter

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1. See, e.g., TACITUS, *GERMANIA* ch. 5, pt. 5, at 48 (ed. 1894) (“interiores simplicius et antiquius permutatione mercium utuntur”); see also *Genesis* 25:29-34.

2. See *infra* text accompanying notes 66-79.

3. See, e.g., A. WATSON, *THE EVOLUTION OF LAW* 12 (1985) [hereinafter cited as A. WATSON, *EVOLUTION*]; H. MAINE, *ANCIENT LAW* 324 (1963).

4. See A. WATSON, *EVOLUTION*, *supra* note 3, at 4, 12; H. MAINE, *supra* note 3, at 324-35.

arrangements, which remained unenforceable until the late classical era. Thus, executory barter agreements were unenforceable in Rome while executory contracts of sale were legally binding. This result is seemingly at odds with the historical development; one would have expected the first innovation to have been followed by a second.

This article resolves this apparent inconsistency. Its thesis does not deny the role of legal culture in the development of legal values. However, it explains why the unenforceability of *permutatio*, the contract of barter, was sensible under the circumstances. In addition, this article shows how economics can provide a useful analytical framework for understanding legal institutions in general.

Section I briefly discusses the institution of barter. Section II describes the status of barter in classical Rome. Section III evaluates some of the proffered literary, historic, and anthropologic explanations for the unenforceability of the executory barter contract. Section IV shows that the unenforceability of barter is consistent with the fundamental theorems of welfare economics.

I. BARTER THROUGH THE AGES

This analysis of barter is premised on three uncontroversial assumptions. First, money, a fixed standard measuring the relative value of goods, is of relatively recent invention.⁵ Second, no person is entirely self-sufficient.⁶ Third, an individual maximizes his utility; that is, he strives to do as well as he can with the resources in his possession.⁷ These assumptions suggest that early man traded goods before money was readily available.⁸

A modern individual, who has ready access to currency, may prefer a barter transaction. Often this preference reflects a preoccupation with the tax laws rather than with the independent merits of barter.⁹ But we no longer view barter as different from money-denominated exchanges; rather, treating the distinction between them as insubstantial, we apply the same legal rules

5. See, e.g., A. WATSON, *EVOLUTION*, *supra* note 3, at 23 (money was not introduced in Rome until around 275 B.C.).

6. See, e.g., J. Donne, *Devotions XVII* ("No man is an island, entire of itself; every man is a piece of the continent, a part of the main. . .").

7. See, e.g., E. MANSFIELD, *MICROECONOMICS* 53 (1985); H. VARIAN, *MICROECONOMIC ANALYSIS* 84 (1978).

8. See, e.g., D. MACDOWELL, *THE LAW IN CLASSICAL ATHENS* 138 (1978) (citing HOMER, *ILIAD* bk. 7, lines 702-05); HOMER, *ILIAD* bk. 7, line 472; HOMER, *ODYSSEY* bk. 1, lines 184, 431, bk. 15, line 416; see also F. PRINGSHEIM, *THE GREEK LAW OF SALE* 86 (1950); A. WATSON, *EVOLUTION*, *supra* note 3, at 23 ("Until the introduction of coined money [in Rome] around 275 B.C., a barter-type situation must have been the most common type of commercial transaction." (footnote omitted)).

9. See, e.g., E. GRISWOLD & M. GRAETZ, *FEDERAL INCOME TAXATION: PRINCIPLES AND POLICIES* 116-21 (1976).

to both.¹⁰ The reason for this is that, although the exchange media in a modern barter transaction are goods and services, trading parties conceptually denominate the deal in money.¹¹ Since all parties to the transaction have ready access to the money prices of each commodity traded, they are readily able to translate the exchange into money terms. Thus, the modern barter transaction is fundamentally unlike that of the ancients, who had no ready access to money. They could not choose between denominating their trades in money or in goods, and this influenced their conception of the barter transaction.

Barter exchanges were common in antiquity but were temporally circumscribed. In general, ancient law did not recognize executory agreements. Trade was considered essentially a marketplace transaction, and the goods were traded on the spot;¹² a trade was either complete or nonexistent.¹³ Even after money became readily available, most early societies did not recognize executory agreements.¹⁴ For example, Athenian law did not recognize sale on credit. "[U]ntil the buyer paid, the sale had not legally been made and the land or goods remained the property of the seller."¹⁵

Some even viewed executory contracts as pernicious. For example, Plato wrote:

Let there be a general rule that every one shall enter into voluntary contracts at his own risk, and there will be less of this scandalous money-making, and the evils. . . will be greatly lessened in the State.¹⁶

[In the marketplace, parties] shall exchange money for goods, and goods for money, neither party giving credit to the other; and he who gives credit must be satisfied, whether he obtain his money or not, for in such exchanges he will not be protected by law.¹⁷

II. BARTER AT ROME

Stipulatio

In Roman law, the earliest legally enforceable promise is generally agreed to have been the *stipulatio*, a formal promise binding one party unilaterally

10. See, e.g., *Commonwealth v. Clark*, 80 Mass. (14 Gray) 367 (1860); 33 C.J.S. *Exchange of Property* § 1(b) (1942).

11. See, e.g., Rev. Rul. 24, 1979-1 C.B. 60 (members of barter clubs must report fair market value of services received in exchange for services rendered).

12. See, e.g., F. PRINGSHEIM, *supra* note 8, at 87 (executory agreements not enforceable in ancient societies of Rome, Egypt, Babylon, Assyria, and Germany); see also W. BUCKLAND & A. McNAIR, *ROMAN LAW AND COMMON LAW* 213 (1936).

13. J. JONES, *THE LAW AND LEGAL THEORY OF THE GREEKS* 228 (1956).

14. See D. MACDOWELL, *supra* note 8, at 138; see also ARISTOTLE, *NICOMACHEAN ETHICS* 1162, 1164b; R. POSNER, *THE ECONOMICS OF JUSTICE* 182 (1981).

15. D. MACDOWELL, *supra* note 8, at 138. See also J. THOMAS, *THE INSTITUTES OF JUSTINIAN* 231 (1975) ("Greek legal systems did not have a consensual sale, only cash sales, and thus an agreement to buy or sell could be resiled from with impunity by either party.")

16. PLATO, *REPUBLIC* bk. 8, § 556B.

17. PLATO, *LAWS* bk. 8, § 849E; see also *id.* bk. 11, § 915.

to some course of action.¹⁸ Unlike the other enforceable obligations that an individual could willingly assume, the *stipulatio* was defined by its form rather than its function.¹⁹ The *stipulatio* was an oral agreement and did not require any writing to be enforceable. Although its origins are obscure, it appears to have been available to obligate an individual to any promise that was not illegal or immoral.²⁰

When a *stipulatio* was employed in a commercial context, it probably did not stand alone; it probably accompanied some reciprocal unilateral undertaking by the other party. For example, the *stipulatio* might have been undertaken in recognition of a past or future service or delivery of goods.²¹

However, it has been suggested that mutual *stipulationes* were a cumbersome way by which to transact business.²² First, the *stipulatio* had to be made in the presence of both parties.²³ The Romans considered all contracting parties as principals; they did not recognize the doctrine of contractual agency, except in the case of sons under paternal control and slaves. Members of these latter two groups were legally incapable of acquiring property except for those upon whom they were dependent; therefore, if they did acquire property, they were deemed to have acquired it for their principals.²⁴ Thus, if one wanted to create an enforceable obligation by mail or messenger, the *stipulatio* would be useless.²⁵

Second, even when the parties conducted their business face-to-face, their promises by *stipulatio* were unilateral and absolute. A failure by the seller to perform did not release the purchaser from the requirements of his own *stipulatio*.²⁶

Third, because the *stipulationes* were unilateral, it was difficult for a buyer to obtain meaningful assurances that the items purchased actually belonged to the seller and that they contained no latent defects; warranty of title and

18. A. WATSON, *EVOLUTION*, *supra* note 3, at 4, 7-8; *see also* Watson, *The Evolution of Law: The Roman System of Contracts*, 2 LAW & HIST. REV. 1, 4 (1984) [hereinafter cited as Watson, *The Roman System of Contracts*].

19. A. WATSON, *EVOLUTION*, *supra* note 3, at 7-8; Watson, *The Roman System of Contracts*, *supra* note 18, at 4.

20. A. WATSON, *EVOLUTION*, *supra* note 3, at 7-8; Watson, *The Roman System of Contracts*, *supra* note 18, at 4.

21. *See* W. BUCKLAND & A. MCNAIR, *supra* note 12, at 180.

22. A. WATSON, *EVOLUTION*, *supra* note 3, at 13-14.

23. *See* GAIUS, *ELEMENTS OF ROMAN LAW* bk. 3, § 136; *see also* A. Watson, *The Roman System of Contracts*, *supra* note 18, at 9.

24. *See, e.g., Digest* bk. 3, tit. 5, § 14, *translated in* 3 S. SCOTT, *THE CIVIL LAW* 40 (1932); *see also* Watson, *The Roman System of Contracts*, *supra* note 18, at 9. The *Digest* is the comprehensive codification of classical juristic writings that was commissioned by the emperor Justinian in 530 A.D. One of the primary sources of Roman law, the *Digest* collects many older sources, particularly the writings of the principal jurists Julius Paulus (Paul), Gaius, Julian, Papinian and Ulpian. *See* W. BUCKLAND, *supra* note 32, at 20-34, 39-46.

25. *See* GAIUS, *supra* note 23, bk. 3 § 136.

26. *See id.* bk. 3, § 137; *see also* A. WATSON, *EVOLUTION*, *supra* note 3, at 14. This necessarily made the creation of reciprocal commercial obligations complicated.

warranty against latent defect did not accompany *stipulatio*.²⁷ *Stipulatio* was therefore a risky undertaking.

Finally, formal *stipulationes* between friends performing amicable mutual services were considered socially unacceptable. The very request for a *stipulatio* would imply distrust and misgivings.²⁸ Therefore, *stipulatio* would not be used to create legal obligations among friends. In a society composed largely of small communities, this would necessarily restrict the efficacy of *stipulatio*. These aspects of *stipulatio* rendered it an imperfect vehicle for creating reciprocal commercial obligations.

Mutuum

Roman law also recognized a form of transaction known as *mutuum*, which may have developed as a response to the difficulties associated with obtaining a *stipulatio* from a friend or neighbor.²⁹ *Mutuum* became a common form of transaction between neighbors, while *stipulatio* was used in the commercial context.³⁰ *Mutuum*, or loan for consumption, allowed one party to subject another to legal liability without engaging in formal promises before the act.³¹ Instead, the legal obligation arose from the very act of making a loan. *Mutuum*, applying only to the *res quae mutua vice funguntur*, or readily interchangeable goods,³² arose when one party lent another some object for the other's use. The obligee was not bound to return the identical object, but did have to restore to the lender an equivalent quantity of goods of that kind and quality.³³ Since *mutuum* governed economic relations among neighbors, it is unremarkable that *mutuum* did not permit usury: "friends do not demand interest from friends."³⁴ When a borrower failed

27. A. WATSON, *EVOLUTION*, *supra* note 3, at 13-14.

28. See, e.g., *id.* at 10, 16-17; see also Watson, *The Roman System of Contracts*, *supra* note 18, at 5-6. Compare A. WATSON, *EVOLUTION*, *supra* note 3, at 10 ("No stipulation would have been taken precisely because it is morally inappropriate for one friend, performing an amicable service, to demand a formal contract from another.") with *id.* at 126 n.13:

In French law any noncommercial (in the technical sense) transaction above a very small amount can be proved only by a notarial act or a private signed writing except, under article 1348 of the *Code Civil*, when it is not possible for the creditor to procure writing. 'Possible' here refers to moral possibility as well as physical, and in certain close relationships—such as, at times, those involving one's mother, mistress, or physician—the obtaining of a writing is regarded as morally impossible.

29. See, e.g., A. WATSON, *EVOLUTION*, *supra* note 3, at 9.

30. Watson, *The Roman System of Contracts*, *supra* note 18, at 5-6.

31. See, e.g., G. DIÓSDI, *CONTRACT IN ROMAN LAW* 44 (ed. 1981).

32. W. BUCKLAND, *A TEXT-BOOK OF ROMAN LAW* 462-63 (3d ed. 1963).

33. See GAIUS, *supra* note 23, bk. 3 § 90.

34. A. WATSON, *EVOLUTION*, *supra* note 3, at 9. Buckland has suggested that *mutuum* was rare in classical times and that when it was invoked it was usually accompanied by a *stipulatio* for the return of the object. W. BUCKLAND, *supra* note 32, at 463. However, in that case the

to repay the loan, the lender, through the action of *condictio ob rem data*,³⁵ could recover the value of what the borrower had misappropriated and prevent unjust enrichment.³⁶

It has been suggested that *mutuum* originally applied exclusively to loans of money, pursuant to the *lex Silia*, and only later was extended by the *lex Calpurnia*³⁷ to other commodities such as grain, wine, oil, bronze, silver, and gold.³⁸ This argument assumes that if *mutuum* had initially applied to all commodities, including money, then the *lex Silia*, which provided a *condictio* for the return of money, would have been unnecessary.³⁹ This would be the case if the *lex Calpurnia* did, as some have argued, provide for the return of all commodities, including money.

This assumption implies, however, that the Romans considered money to be one of the commodities covered by the *lex Calpurnia*. However, it has been convincingly argued that the Romans did not treat money as a mere commodity, but as a unique exchange medium.⁴⁰ Therefore, it is not inevitable that the *lex Silia* preceded the *lex Calpurnia*, for the commodities reached by the *lex Calpurnia* may not have included money. Accordingly, it would not have been duplicative. In any event, the conclusion that *mutuum* was enforceable for money before it was enforceable for other goods is not inevitable if the Romans viewed money and other commodities as wholly or partially distinct.⁴¹

existence of *mutuum* as an enforceable obligation would be superfluous. Watson's suggestion may be more appealing. He argues that a *stipulatio* was added to *mutuum* only when the transaction was not among friends. A. WATSON, *EVOLUTION*, *supra* note 3, at 9. This *stipulatio* would cover a measure of interest to be charged in connection with the loan—interest that would be inappropriate to charge a friend. Buckland does agree that it was very common for the *stipulatio* connected with *mutuum* to be for an interest payment: *fenus*. W. BUCKLAND, *supra* note 32, at 463.

35. The Latin phrase "*condictio ob rem data*" refers to a legal action for the thing which had been given, for return of the property that had been lent, for restitution. *See infra* text accompanying note 51.

36. *See* W. BUCKLAND & A. MCNAIR, *supra*, note 12, at 174, 181, 237; *see also* Buckland, *Casus and Frustration in Roman and Common Law*, 46 HARV. L. REV. 1281, 1282 (1933).

37. *Lex Silia* and *lex Calpurnia* were statutes, roughly speaking, "enacted" probably before 250 B.C. The *lex Silia* introduced the form of action when the claim was for a determinate sum of money, and the *lex Calpurnia* introduced an action when the claim was for a definite thing. A. WATSON, *EVOLUTION*, *supra* note 3, at 9. It is usually argued that the *lex Silia* preceded the *lex Calpurnia*, although the order of their enactment is disputed. *See id.*

38. *See, e.g.*, A. WATSON, *EVOLUTION*, *supra* note 3, at 8; Daube, *Money and Justiciability*, 96 ZEITSCHRIFT DER SAVIGNY-STIFTUNG FÜR RECHTSGESCHICHTE 1, 11 (1979) [hereinafter cited as Daube, *Money and Justiciability*] (on file with the *Indiana Law Journal*); *see also* GAJUS, *supra* note 23, bk. 4, § 19.

39. *See* A. WATSON, *EVOLUTION*, *supra* note 3, at 8.

40. *See generally*, Daube, *Money and Justiciability*, *supra* note 38.

41. In other words, *mutuum* originally extended only to money only if money is a subset of the set of things. This conclusion is not inevitable if the two were regarded as wholly separate, or as merely partly congruent. This point is important because if *mutuum* was available at an early date to cover all commodities, then the distinction between gift-trade and enforceable contracts becomes less clear. *See infra* at notes 66-79 and accompanying text.

Sale

By around 200 B.C. there arose in Rome, for the first time in recorded history, the possibility of a bilateral, executory agreement.⁴² The origin of this contract is uncertain.⁴³ The sale for a price, called *emptio venditio*, required no particular formula or language to be enforceable. Instead, the contract was enforced if it could be shown that both parties had consented.⁴⁴

In an executory sale contract, the price had to be in money. Otherwise, the parties' agreement would not be the enforceable contract of executory sale, but the unenforceable contract of executory barter—*permutatio*.⁴⁵ However, if the parties had agreed upon a money price, they were free later to arrange to denominate the price in a nonmonetary medium, based on principles of *datio in solutum*.⁴⁶

Solutio was the voluntary extinction of a contractual obligation through performance of one's part of the agreement. *Datio in solutum* permitted the performance of some other act instead of the agreed-upon action as the prestation. Performance of the substituted act released the party from liability, provided that both parties had agreed to the substitution. However, the original obligation could be revived if the substituted performance was inadequate.⁴⁷

In addition, the money price in sale had to be fixed (*certum*). It could not be for a "reasonable" price, or for a future market price. The price had to be either known or immediately ascertainable at the time of making the sale contract. However, parties were free to set any price they could agree upon, so long as they seriously intended it and did not intend merely to mask a gift.⁴⁸

42. See A. WATSON, *LAW OF OBLIGATIONS IN THE LATER ROMAN REPUBLIC* 40 (1965) [hereinafter cited as A. WATSON, *THE LAW OF OBLIGATIONS*].

43. G. DIÒSDI, *supra* note 31, at 44-47.

44. See W. BUCKLAND, *supra* note 32, at 481-85; see also GAIUS, *supra* note 23, bk. 3, § 136 ("In [sales] contracts consent is said to create the obligation, because no form of words or of writing (nor any delivery) is required, but the consent of the parties is sufficient. Absent parties, therefore, can form these contracts; for instance, by letter or messenger; whereas in Verbal contracts presence is necessary."). This gave sale an obvious commercial advantage over *stipulatio*.

45. However, not all the price had to be in money. Like the *datio in solutum*, see *infra* note 47, this legal rule contains within it the potential for overcoming the strictures against executory barter. See W. BUCKLAND, *supra* note 32, at 485. Like the "one peppercorn" of English contract law, perhaps after *emptio venditio* was developed, the promise of some object or service, accompanied by the promise of a nominal or fictional sum of money, was considered sufficient to make a binding contract.

46. See, W. BUCKLAND, *supra* note 32, at 485.

47. *Id.* at 564. The potential for evading the unenforceability of *permutatio* through this mechanism is obvious. However, it is beyond the scope of this paper to determine how common such use of *datio in solutum* was in Rome.

48. B. NICHOLAS, *AN INTRODUCTION TO ROMAN LAW* 174-75 (1962).

Not only did the price have to be in money, but the objects to be sold had to be identified, whether individually, or as part of a specified mass or as one of a number of specific objects. It was, therefore, impossible to have a sale of generic goods by this method. For example, an executory contract for ten bushels of "best quality" grain was not enforceable while a contract for ten bushels from a particular location was.⁴⁹

Permutatio

Permutatio, barter, became a fully enforceable contract only late at Rome.⁵⁰ In earlier times it was enforceable in a limited sense only. It has been suggested that the remedy for a failure to perform a counter-promise in *permutatio* was limited until quite late to a *condictio ob rem dati*, restitution of the suing party's performance, or an *actio doli*, fraud. The protection of a party's reliance interest may have arisen only later, after Gaius's time, perhaps in the third century A.D.⁵¹ If one party had performed his part of an agreement for an exchange of goods and services, the other party then was obligated only to return the former's performance.⁵² The performance could be a transfer, an act, or an abstention.⁵³

Thus, although *permutatio* was not legally enforceable in its wholly executory stages, it could be enforced once one party had performed. Sale, by contrast, was enforceable before delivery. In effect, the remedies for breach of an executory barter contract protected only the parties' restitution interests, returning the parties to the position that they would have occupied in the absence of the contract.

III. A CULTURAL EXPLANATION FOR THE UNENFORCEABILITY OF *PERMUTATIO*

Contemporary legal systems have little difficulty in enforcing an executory barter transaction.⁵⁴ Barter is considered identical to sale, except for a trivial difference in the medium of payment.⁵⁵ A modern observer is thus perplexed by the fact that the Roman executory contract of sale was enforceable while executory barter was not.

49. *Id.* at 172-73; see also W. BUCKLAND & A. MCNAIR, *supra* note 12, at 213 (the goods were conceived of as on the spot and in the marketplace).

50. See J. THOMAS, *supra* note 15, at 247.

51. F. ZULUETA, 2 THE INSTITUTES OF GAIUS 169 (1953).

52. W. BUCKLAND, *supra* note 32, at 523; see also *Digest* bk. 19, tit. 4, § 1, ¶ 4, in S. SCOTT, *supra* note 24, at 106.

53. W. BUCKLAND, *supra* note 32, at 521.

54. See, e.g., 33 C.J.S. *Exchange of Property* § 1(b) (1942); *Commonwealth v. Clark*, 80 Mass. (14 Gray) 367 (1860).

55. See, e.g., Rev. Rul. 24, 1979-1 C.B. 60.

Professor Watson frames the problem as follows:

For barter between merchants in different places, the only way to make an agreement for a barter situation was for one of them to send to the other, often at considerable expense and inconvenience, a dependent member of his family, such as a son or a slave, to take delivery or engage in mutual *stipulationes*. To say that Roman merchants would not engage much in barter is to forget that the introduction of coined money into Rome is relatively late, and to say that the Roman merchants would not find the law relating to barter inconvenient is to render inexplicable the introduction of such a splendid contract as sale.⁵⁶

Homer

Early commentators were aware of this issue, and attempted to resolve it. Paul, a Roman jurist,⁵⁷ records a dispute between the two major schools of Roman jurisprudence. The jurists Sabinus and Cassius had not required a money price in sale. They argued, quoting Homer, that an exchange corresponded to *emptio venditio* (sale) as long as one could distinguish buyer from seller.⁵⁸ The Proculians, with Paul in agreement, refused to distinguish between buyer and seller except on the basis of what they were willing to exchange.⁵⁹ Since both parties to *permutatio* were trading goods, this distinction could not be drawn.⁶⁰ Therefore, *permutatio* could not fit into the format of *emptio venditio*:

[T]he price must consist in a specific amount of money. The question whether the price could consist in other things, e.g. whether a slave, land or the toga of another could be the price of a thing, was certainly debated. Sabinus and Cassius were of the opinion that another thing could be the price; hence it was that it was quite widely said that sale is contracted by the exchange of things and that this species of sale is of the utmost antiquity: by way of argument they adduced the Greek poet, Homer, who says, in one place, that the army of the Greeks bought wine for itself in exchange for goods; the lines are: (There the long-haired Achaeons bought wine, some with bronze, others with shining iron, others again with ox-hides or oxen themselves and others with slaves.) But the authors of the other school thought differently and held exchange to be one thing and sale another: for, in an exchange of things, it would not be possible to resolve the issue which was to be the thing sold and which that given by way of price: yet reason will not tolerate the idea that both are bought and given as the price of each other. The view of Proculus, holding that exchange is a form of contract in its own

56. Watson, *The Roman System of Contracts*, *supra* note 18, at 17. It is possible that this problem was made less severe through the use of *datio in solutum*. See *supra* note 47.

57. Paul, or Julius Paulus, was one of the principal jurists, or legal writers. See *supra* note 24.

58. HOMER, *ILIAD* bk. 7, line 472ff. See Daube, *The Three Quotations from Homer in Digest 18.1.1.1*, 10 CAMBRIDGE L.J. 213 (1949).

59. They also cited HOMER, *ILIAD* bk. 6, line 234f.

60. See Daube, *Money and Justiciability*, *supra* note 38, at 8.

right and distinct from sale, rightly prevailed; for it also can call in aid other lines of Homer⁶¹

Legal Culture

The conclusion that *permutatio* was not the legal equivalent of *emptio venditio* does not, however, explain why *permutatio* was unenforceable as an executory agreement. It only explains why *permutatio* was not enforceable as sale.⁶² Some have attempted to resolve this by reference to the legal culture of Rome. In Rome, it is suggested, the legal institutions were blinded by tradition. The unenforceable status of executory barter shows that the enforceability of contractual obligations arose, not from surrounding economic or social circumstances, but from the exposition and development, by experts, of technical legal issues.⁶³

Traditions change slowly, it is argued, and useful adaptations often come late, if at all. Thus, the legal culture may oppose changes in a dynamic economic or social culture:

[T]he Sabinians, who were conscious of the economic realities, were bound by the rules of the legal game and could not come out and argue for more desirable rules for barter: the most they could do was argue that barter was included within the concept of sale. At no point, moreover, could they argue for legal change on social or economic grounds. The Proculians, who may or may not have been blind to the economic realities, also produced arguments of a purely legal nature for their successful position. Law is being treated as if it were an end in itself. This indicates the existence of legal blindness.⁶⁴

This approach, which may be correct, answers one question while raising another: why would a new contract of sale emerge while executory barter remained unenforceable? Why did the intransigent legal culture accept one change, the enforceability of executory contracts of sale, and not the other, the enforceability of executory barter? If enforceable executory sale represented a real innovation in Roman contract law, and if the impetus for its development arose from outside the formal legal culture,⁶⁵ then the legal culture was not static and resistant to change from outside. In order to

61. *Institutes* bk. 3, tit. 23, § 2, in J. THOMAS, *supra* note 15, at 229. See also *Digest* bk. 19, tit. 4, § 1, in 5 S. SCOTT, *supra* note 24, at 104-06; *Digest* bk. 21, tit. 1, § 19, ¶ 5, in 5 S. SCOTT, *supra* note 24, at 164; W. BUCKLAND, *supra* note 32, at 485.

62. See Daube, *Money and Justiciability*, *supra* note 38, at 8.

63. See W. BUCKLAND & A. MCNAIR, *supra* note 12, at 154-55 ("An agreement is not a contract unless the law, for some reason, erects it into one.").

64. A. WATSON, *EVOLUTION*, *supra* note 3, at 24 (footnote omitted). On the other hand, even today many jurists argue from precedent, and turn to explicit policy arguments only as a last resort. See generally O.W. HOLMES, *THE COMMON LAW* (1881); cf. Delgado, *The Imperial Scholar: Reflections on a Review of Civil Rights Literature*, 132 U. PA. L. REV. 561, 572-73 (1984) (legal scholars often overlook the realities of a situation).

65. See G. DIÒSDI, *supra* note 31, at 44; see also A. WATSON, *EVOLUTION*, *supra* note 3, at 13 (sale arose in part because of the inadequacy of *stipulatio*).

distinguish *permutatio* from *emptio venditio* in the terms of this legal-culture argument, one must be able to identify a cultural difference between the two forms of transaction. Since contemporary western culture regards the difference between barter and sale as trivial, the difference may seem elusive to modern observers. The legal-culture school, therefore, seeks to persuade moderns that the nature of barter as a cultural, as distinct from economic, institution militated against its enforceability.

*Gift-Exchange and the Legal Culture*⁶⁶

In a small community that does not use money, the work force is likely to work in common. Since no one is entirely self-sufficient and since no money is available with which to purchase labor services, each man's work product is likely to be the result of joint effort:

The fisherman on his return will want and expect his neighbours to help him pull his boat on to the shore; the farmer will need friends to help, both with labour and implements, in getting the harvest in before the weather turns bad; roofs of huts are much more easily put on with the labour of several men. Help is freely given, because few can be self-sufficient. Times when help is needed come frequently: often with regularity, but also often irregularly and unforeseen.⁶⁷

Under such conditions of communal endeavor, it is unremarkable to observe the development of rules to govern the participation of individual community members in the joint effort:

Although rules may be invoked, they are often "open-ended," allowing considerable flexibility in reaching an agreement on the rights and wrongs of the case and on the compensation to be paid. In societies where there are no courts, it is generally not possible for disputes to be determined through the strict application of a rule Dealings between people are marked by a constant exchange of various types of property. Often, the particular relationship of the parties determines the sort of property to be given and the occasions on which it should be given. The point is that obligations would be conceived in highly specific and concrete ways connected with the transfer of property. What in modern law would be called the consensual contract, in which an obligation to deliver property arises from an agreement concluded between individuals, is unknown. The relationship between the parties derived from kinship or marriage imposes obligations to make gifts. Where there is no such bond between the parties, a relationship may be initiated through the making of a gift.

66. This section draws heavily upon Daube, *Money and Justiciability*, *supra* note 38, and A. Watson, *The Prehistory of Contracts with Especial Reference to Roman Law* (unpublished manuscript) [hereinafter cited as A. Watson, *The Prehistory of Contracts*] (on file with the *Indiana Law Journal*).

67. A. Watson, *The Prehistory of Contracts*, *supra* note 66, at 2.

Receipt of the property imposes an obligation to make an appropriate return at some time in the future⁶⁸

As a result, the survival of this structure depends on good faith. Thus, the members of this community have no interest in exacting a precise equivalent for a rendered service; imprecision permits the flexibility necessary to respond to future needs. Community members desire to create in one another a generalized feeling of obligation, so that when the fisherman needs help, he can expect assistance from the farmer whom he had aided at the last harvest:

It is the very width of choice of expectation and return that makes contract undesirable. When you ask me for a service, what I may want in return need not be a similar service. At the time of my performance in fact it will often not be known what I may expect from you. And I will not be expecting a calculated equivalent: I may in time be looking for more or less. Each service, indeed, will not be seen as a unit, separate from all other services. What I am looking for in return is often just your generalised willingness to be of help to others including me.⁶⁹

Not only is a contract arguably undesirable in this situation, it is also impossible. The parties do not know what help they will need in the future, so they do not know what terms to create. In the place of explicit contracts, status in the community is the mechanism that ensures that the members of the community act with due regard for these generalized expectations. "[O]ne who habitually gives more than others will rise in status; those who do not pull their weight will lose respect."⁷⁰ Moreover, there are other reasons why members of a small community would not "cheat"; everyone knows that someday he will need help from his neighbors:⁷¹

Most people carry out their agreements because they carry out their agreements, not because awful things will happen to them if they don't. But equally important, even within an imaginary society which had . . .

68. MacCormack, *Anthropology and Early Roman Law*, 14 IRISH JURIST (n.s.) 173, 175-76 (1979).

69. A. Watson, *The Prehistory of Contracts*, *supra* note 66, at 3. Cf. ARISTOTLE, NICOMACHEAN ETHICS 1162, 1163a, 1164a, 1164b. See also Arrow, *Gifts and Exchanges*, 1 PHIL. & PUB. AFF. 343, 349 (1972):

Perhaps one gives good things. . . in exchange for a generalized obligation on the part of fellow men to help in other circumstances if needed. . . Actual behavior, as reflected in decisions of democratic governments, shows that individuals are in fact willing to sacrifice present satisfactions for future generations, as in the case of public investments, or even for others living in the present, as evidenced by willingness on the part of middle-class citizens to vote for county hospitals while they in fact use voluntary hospitals.

70. A. Watson, *The Prehistory of Contracts*, *supra* note 66, at 3. See also MacCormack, *supra* note 68, at 174 (early relations governed by status, not contracts); ARISTOTLE, NICOMACHEAN ETHICS 1163b.

71. Thus, Posner can fairly characterize gift-exchange as self-insurance. R. POSNER, *supra* note 14, at 150-63.

no legal enforcement, there would still be a powerful source of non-ethical, rational impetus toward repayment. Assuming that trades involving temporal performance differentials are functional in the society, the power to take part in such transactions has value. It follows that exclusion from that system, or a disproportionately high entrance cost, both of which would follow from a reputation for default, is a species of rational economic coercion.⁷²

Professor Watson suggests that in some instances the parties would desire to create a binding contract.⁷³ In these cases, Roman law would enable them to do so by *stipulatio*. Likewise, if one desired to recover goods that had been lent, *mutuum* or *commodatum* would provide sufficient remedies. "These, however, are the exceptional cases."⁷⁴ It is at least arguable that the communal nature of barter influenced the legal culture, and prevented *permutatio* from becoming enforceable without the solemnity and formality of a *stipulatio*.

Watson observes that, except for the contract of partnership (*societas*),

every recognised Roman contract either demands that the counter-pretation be in money as in sale or hire, or be gratuitous or unilateral as in *stipulatio*, loan for consumption (*mutuum*), deposit and loan for use (*commodatum*). Moreover, money is the touchstone which determines which contract is involved; mandate deposit and *commodatum* all become hire if a money reward is demanded; sale ceases to be a contract and becomes the legally ineffective arrangement of barter (*permutatio*) if the price is not to be in coined money.⁷⁵

Thus, existing parallel to the system of money-denominated contracts is a group of contracts concerned with gratuitous and friendly actions. This disparate treatment of money-denominated and "friendly" agreements supports the thesis that gift-exchange principles influenced the legal status of *permutatio*.⁷⁶

72. Leff, *Injury, Ignorance and Spite—The Dynamics of Coercive Collection*, 80 YALE L.J. 1, 27 (1970) (footnotes omitted). See also Arrow, *supra* note 69, at 354 (ethical behavior operates to fill in the gap where the market fails to convey information).

73. A. Watson, *The Prehistory of Contracts*, *supra* note 66, at 4.

74. *Id.*

75. *Id.* at 4-5; see also Daube, *Money and Justiciability*, *supra* note 38, at 10-11; Watson, *The Roman System of Contracts*, *supra* note 18, at 3.

76. Although Watson advances this theory as a possible explanation for the unenforceability of *permutatio*, he recognizes the difficulties involved with relying upon it as a sufficient explanation:

First, intimate contracts not involving money prestations, such as deposit and loan for use, were recognized, provided always that they were gratuitous. Secondly, barter between merchants would be much less intimate than the modern examples Daube suggests, especially in the days before coined money. For the absence of these transactions from the list of contracts one must add to the fact of no prestation in money the legal tradition that recognized only the *stipulatio* as a contract except when sufficient pressure arose in a very specific type of situation for the acceptance of a derogation from the *stipulatio*. Except when money was

This cultural explanation is, however, inadequate to explain the peculiar status of *permutatio*. Several initial observations about the relationship between gift-trade and money may be made. First, there is no reason why money transactions should lie outside the realm of gift-exchange. Presumably one could treat a loan of money as equivalent to a "gift-exchange loan" of fish if there exists a large money-denominated market for fish. Repayment of the fish loan would not necessarily involve future delivery of the identical number of fish, but could take the form of assistance in the repair of the fisherman's nets. The repayment of the money loan could take the same form. This would be nothing more than an exchange of labor for a wage. Also, the gift-exchange thesis does not explain why *permutatio* allows for an action for restitution of the objects tendered. Seemingly that remedy also should be barred as not part of the realm of gift-exchange.

Second, just as the existence of money is not necessarily an obstacle to the giving of gifts, it does not necessarily destroy the relationships created through the giving of gifts. The fact that one party to a transaction has been paid in money or in kind for services rendered to the other party does not bar the first from seeking the assistance of the other some time in the future.⁷⁷

Third, the nexus between traditions surrounding gift-trade and the law regarding *permutatio* is not obvious. By hypothesis, gift trade is neither an instantaneous nor a wholly executory exchange. Rather, gift trade occurs when one party performs a service for, or gives some object to, another. As has been seen, the legal culture was willing to intervene in this circumstance to compel the party receiving the item either to return it or to perform his side of the bargain. Thus, the form of agreement that resembles gift-exchange more closely than does executory barter was enforceable in early Rome. It is therefore difficult to argue that the essentially intimate nature of gift-exchange necessarily prevented executory barter from becoming enforceable.

Fourth, the legal-culture thesis does not explain why the ancients would be unable to distinguish between gift-exchange and commercial transactions. Watson has argued that the Romans would employ *stipulatio* when they

involved, that pressure was greater where the obligation was seen to be obviously friendly, involving trust, hence gratuitous.

A. WATSON, *EVOLUTION*, *supra* note 3, at 25 (italics added).

Some have suggested that barter was a mechanism enforcing the social norm of gift exchange. The Romans, it is said, chose this inefficient mechanism to bring about the greatest possible social welfare. This is to say that the Romans maximized social welfare by choosing a Pareto inefficient market equilibrium. Unfortunately, this thesis cannot be accepted because a Pareto inefficient equilibrium cannot be socially optimal. *See infra* note 97; *see also* R. POSNER, *supra* note 14, at 157-62.

77. *But see* A. Watson, *The Prehistory of Contracts*, *supra* note 66, at 8.

desired to enforce an otherwise unenforceable arrangement. Presumably they also could have distinguished between gift-trade and *permutatio*.⁷⁸

Gift-exchange was probably not performed self-consciously. "The more fundamental an institution—fundamental in the sense of embedded in the fabric of society—the more apt it is to be accepted without ado and to remain unformulated."⁷⁹ Rather, it was considered a manifestation of *communitas*—community or sense of fellowship. To say that the members of a community do not consciously engage in gift-exchange with the object of creating reciprocal obligations does not imply that they are unable to detect an overtly commercial transaction. Neighbors often borrow among themselves, but if one decides to charge interest on his loans, the other will surely notice. They might continue to trade back and forth, but would almost certainly recognize that a commercial element had been introduced into their friendly arrangement, and would probably adapt to account for it.

Those who would understand the unenforceability of executory *permutatio* principally as an inefficient or counterintuitive effect of the force of the Roman legal culture face other problems as well. One can, for example, argue that it was prohibitively difficult for the Romans to permit anything more than restitution damages for breach of *permutatio*.⁸⁰ It has already been observed that the Romans would not enforce a contract for generic goods.⁸¹ Rather, a sales contract, to be effective, had to be for particular casks of wine, or for particular bushels of grain.

Suppose that, before money became available, Servius promised three casks of wine to Marcus, but instead delivered them to Varrus for a silver goblet. If Marcus has given Servius nothing, he has suffered no injury that restitution damages would recompense. He has, however, incurred harm to his expectation and perhaps to his reliance interest since he failed to get the wine. Yet, since the agreement was for those three casks of wine, and not for generic wine, he can only be compensated by taking the wine back from Varrus. Except for his having dealt with Servius later than did Marcus, Varrus "deserves" the wine as much as Marcus. He may even deserve it more, since he actually paid the price for it while Marcus gave only his word. In this situation it is unclear that Marcus should be preferred to Varrus. The difficulties are compounded if Varrus has drunk all the wine.

Arguably, most commercial agreements that fail to take place founder because one party either has negotiated a better deal, or because something

78. Posner recognizes that, to be effective, gift-exchange as a form of insurance must be limited to "a group whose members know and continually interact with one another and have broadly similar abilities, propensities, character, and prospects." R. POSNER, *supra* note 14, at 154. Accordingly, there would be no dynamic reason to apply principles of gift-exchange to a purely commercial transaction.

79. Daube, *The Self-Understood in Legal History*, 18 JURID. REV. 126, 132 (1973).

80. See *supra* text accompanying notes 50-53.

81. See *supra* note 49 and accompanying text.

else has made him unable to perform. In either instance the goods are probably unavailable. Since without money no money damages are possible, and since generic goods were not an appropriate part of a sale contract, the Romans may have found it impractical to protect a party's reliance and expectation interests in a wholly executory barter agreement.

IV. THREE ECONOMIC EXPLANATIONS FOR THE UNENFORCEABILITY OF *PERMUTATIO*

If the role of the legal culture is not a satisfactory explanation for the unenforceability of barter, then what explanation is satisfactory? Why would the Romans, who had achieved a great innovation by enforcing the executory contract of sale, not enforce an executory barter contract? The equivalence, after all, of two unilateral contracts of sale and one bilateral barter contract must have been as apparent to the Romans as it is to us. The legal-culture school has explained this anomaly by reference to the force of legal tradition:⁸² the history of barter is related to that of gift-exchange⁸³ and the unenforceability of gift-exchange was a norm too deeply embedded in the legal culture to be altered. Although we have raised certain criticisms of this claim,⁸⁴ we do not dispute that, if true, the legal-culture thesis sufficiently explains the unenforceability of executory barter contracts.

Although sufficient, the legal tradition thesis is not necessary to explain this difference. The unenforceability of barter can also be understood as the result of certain economic principles working in Roman society. The validity of the economic analysis does not depend on the Romans' ability to understand modern economic theory.⁸⁵ In fact, it would be remarkable if the Romans used the language of modern economics in discussing barter. However, two claims can be made. First, if the economic concepts implicit in the economic explanations are self-evident to modern observers, who do not participate in a barter economy,⁸⁶ then, a fortiori, they would have been known by Roman observers, who actually dealt with the practical and theoretical problems of barter. Second, there is some evidence that the economic

82. See generally, A. Watson, *The Prehistory of Contracts*, *supra* note 66.

83. See generally Daube, *Money and Justiciability*, *supra* note 38.

84. See *supra* notes 78-81 and accompanying text. One additional criticism which will arise from our analysis relates to Watson's interpretation of the debate between the Sabinians and the Proculians. See *supra* notes 56-61 and accompanying text. Watson concludes that the Sabinians did not leave the realm of legal nicety because they were tethered to the status quo by the formalistic legal culture of Rome. A. WATSON, *EVOLUTION*, *supra* note 3, at 21-22. We would argue that they did not look outside the legal structure itself precisely because to do so would be to concede the issue to the Proculians: the "economic realities" of barter, as will be seen, weigh in on the Proculian side.

85. Similarly, the anthropological explanation of cultural behavior does not depend upon the subjects' understanding of anthropological analysis.

86. A. Watson, *The Prehistory of Contracts*, *supra* note 66, at 6-8.

concepts underlying these three explanations were known, albeit by different names, by observers of the barter economy of antiquity.⁸⁷

We thus introduce three economic explanations for the unenforceability of *permutatio*: bounded rationality, asymmetric transaction costs, and the coin-miller's profit. All three economic theses originate outside the legal culture of Rome and are, instead, inherent in the economic nature of a barter economy.

Bounded Rationality

Human imperfection is well known.⁸⁸ Among the many constraints within which humanity must operate is a limitation on the ability to process information. This limitation can be characterized in "neurophysiological" terms: "The physical limits take the form of rate and storage limits on the powers of individuals to receive, store, retrieve and process information without error."⁸⁹ This limitation accounts, in part, for the ability of rational human actors to behave in ways which seem, in retrospect, irrational. The concept of bounded rationality refers to decisionmaking which is "intendedly rational, but only limitedly so."⁹⁰ Bounded rationality is a condition different from the failure to obtain correct information. Bounded rationality is the failure to accurately evaluate whatever correct information is available.

For those who have experienced the complexity of the world and have made errors in trying to master it, the concept of bounded rationality is not a startling one. For example, if rationality were unbounded, no one would

87. It is arguable Aristotle was aware that the introduction of money alleviated the problem of bounded rationality. See ARISTOTLE, NICOMACHEAN ETHICS 1133a ("All goods must therefore be measured by some one thing . . . this [thing] is in truth demand, which holds all things together . . . but money has become by convention a sort of representative of demand. . ."). It may also be the case that Paul was aware of the problem of transaction costs, which he indirectly addressed in this remark on money as a store of value:

The origin of purchase and sale is derived from exchanges, for formerly money was not known, and there was no name for merchandise or of the price of anything, but every one, in accordance with the requirements of the time and circumstances exchanged articles which were useless to him for other things which he needed; for it often happens that what one has a superabundance of, another lacks. But, for the reason that it did not always or readily happen that when you had what I wanted, or, on the other hand that I had what you were willing to take, a substance was selected whose public and perpetual value, by its uniformity as a medium of exchange, overcame the difficulties arising from barter, and this substance, having been coined by public authority, represented use and ownership, not so much on account of the material itself as by its value, and both articles were no longer designated merchandise, but one of them was called the price of the other.

Paul, *Digest* bk. 18, tit. 1, § 1, in 5 S. SCOTT, *supra* note 24, at 3.

88. "Lord, what fools these mortals be." Shakespeare, *A Midsummer Night's Dream*, act III, sc. 2, line 115.

89. O. WILLIAMSON, MARKETS AND HIERARCHIES 21 (1975).

90. *Id.* (quoting H. SIMON, ADMINISTRATIVE BEHAVIOR xxiv (1961) (emphasis deleted)).

play chess; the game would be trivial.⁹¹ In the absence of information processing constraints, each player would be able to identify the game's extensive form; that is, each could specify a complete map of the game's moves and countermoves. Because each player would know the game's outcome for each sequence of moves, the game would be no more interesting than tic-tac-toe. The latter game is so simple that its extensive form can be easily mastered by both players; the result is stalemate. Rationality with tic-tac-toe is unbounded; the game is not interesting, and only children play it. But chess is an interesting game, enjoyed by cerebral adults. The reason for this difference is that no human can master a game tree as massive as that required to specify the game of chess.⁹²

Chess and barter share the problem of bounded rationality. Just as the players of chess face a bewildering complex of possible moves, barter traders must consider an enormous array of exchange ratios. Imagine a small hypothetical economy of only ten goods. Even under such simplified circumstances, the number of exchange ratios that each trader must know is prohibitively large.⁹³ The number of ratios increases as the square of the

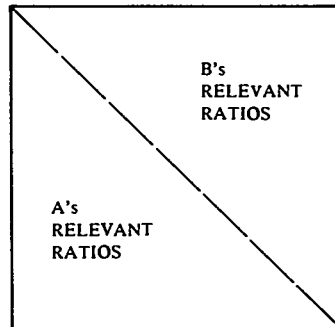
91. J. VON NEUMANN & D. MORGENSTERN, *THEORY OF GAMES AND ECONOMIC BEHAVIOR* 125 (1953).

92. Each pairing of move and countermove, assuming 30 alternatives, involves 1,000 possibilities. If full consideration of even one move is thus improbable, exhaustive examination of the complete game tree is impossible: for a 40-move game, 10^{120} possibilities would have to be considered. J. SIMON, *supra* note 77, at 166.

93. The number is 45. In general, the number of ratios in an N-goods economy is $(N)(N-1)(1/2)$. For $N = 10$, $(N)(N-1)(1/2) = 45$. The second term involves the subtraction of the number one because, for any vector of exchange ratios, one good is always *numeraire*; that is, the exchange ratio of a good for itself is one. The third term involves division by two because a complete array of exchange ratios is redundant. If one knows the corn-to-wheat ratio, one need not also know the wheat-to-corn ratio.

A graphical representation of the fact that the number of exchange ratios in an N-goods economy is $(N)(N-1)$ is found below. Each of the empty cells in the two-person, 10-goods array represents one exchange ratio. Note that the number $90 = (N)(N-1)$ for $N = 10$. Each trader needs to know only half of these ratios (since he's not trading with himself), so each trader's relevant ratios number $45 = (N)(N-1)(1/2)$.

	Person A's Goods									
Person B's Goods	1	2	3	4	5	6	7	8	9	10
1	■									
2		■								
3			■							
4				■						
5					■					
6						■				
7							■			
8								■		
9									■	
10										■



number of goods. Thus, to double the number of goods is to roughly quadruple the number of ratios.⁹⁴ And to increase the number of ratios is to increase the probability of error.

The introduction of money into such an economy has an unambiguously simplifying effect. The one-to-many relationship between the number of goods and exchange ratios is replaced by a one-to-one relationship. For a ten-goods economy, the number of money prices is only ten. As the number of goods increases, the number of prices increases in a one-to-one fashion; with twenty goods, there are twenty prices. Thus, relative to pure barter exchange, money exchange decreases, as the square root of the number of goods, the amount of information traders must know in order to trade. With these decreases in the number of ratios comes a decrease in the probability of error.

Thus, intuitive economics tells us that money simplifies market exchanges, loosening the bounds on rationality. This is important because bounded rationality prevents two barter traders from achieving a Pareto efficient⁹⁵ trade; that is, a third party, whose rationality is not bounded, could step in and adjust the barter trade in such a way that the adjustment leaves one trader indifferent and the other measurably better off.⁹⁶ In the absence of

When money is introduced into the economy represented above, the number of ratios is reduced to 10. The array "shrinks" to the two column vectors below.

PERSON A	S	PERSON B	S
1		1	
2		2	
3		3	
4		4	
5		5	
6		6	
7		7	
8		8	
9		9	
10		10	

94. For $N = 20$, $(N)(N-1)(1/2) = 190 = (4)(45) + 10$.

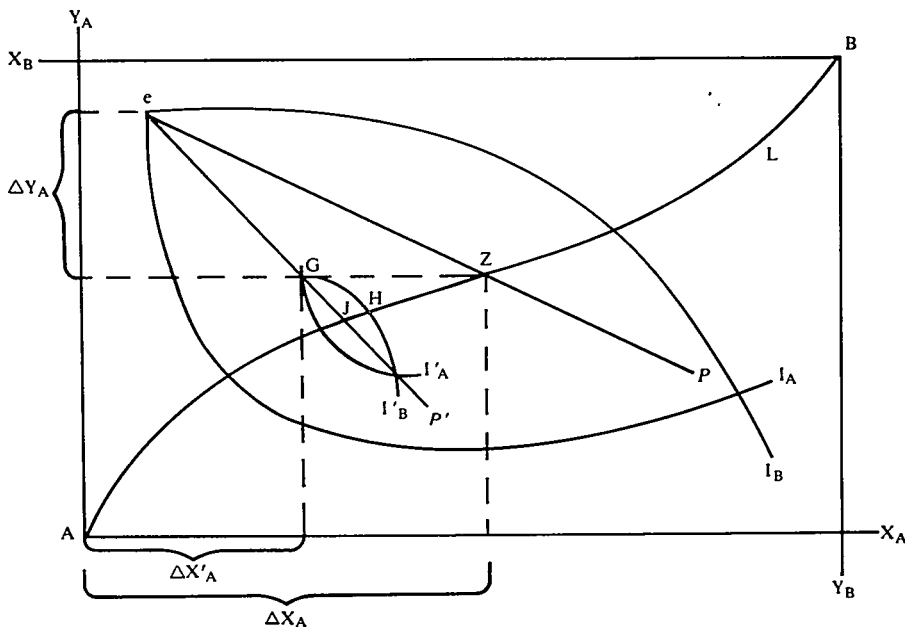
95. Pareto efficiency can be defined as the state where "[t]here is no feasible allocation where everyone is at least as well off and at least one agent is strictly better off." H. VARIAN, *supra* note 7, at 145. See generally V. PARETO, *MANUEL D'ECONOMIE POLITIQUE* (1909).

96. In the diagram below, two parties, *A* and *B*, with indifference curves, I_A and I_B , respectively, start at endowment *e*. *A* maximizes his utility by moving "northeast." *B* maximizes his utility by moving "southwest." During a previous year, *A* and *B* had achieved a Pareto efficient exchange of goods *X* and *Y* at point *Z*, where the exchange ratio is represented by vector *P*. During the current year, *A*, erroneously and to his disadvantage, picks the exchange ratio represented by vector *P'*. He gives up the amount ΔY_A , he gave up in the previous year, but gets back less (X_A' instead of X_A). The current equilibrium is found at *G*. By inspection it is clear that this equilibrium is not an element of the Pareto set represented by locus *L*.

bounded rationality, and barring other sources of market failure, the two traders would achieve a Pareto efficient trade without the help of the third party. It would then be impossible for the third party to step in and improve the position of one of the traders without hurting the other. The trade consummated by the two traders would therefore be the best trade available, given the initial endowments of the traders.⁹⁷ As a matter of public policy, Pareto efficient trades are desirable because Pareto efficiency is a necessary, though not a sufficient, condition for the optimization of social welfare.⁹⁸

This is easy to see by considering a two-person society. If it is possible to make one person better off without making the other person worse off, then the social welfare of the society is suboptimal. This is true regardless of the norms of the society and the distribution of resources within the

That G is Pareto inferior is made clear by the fact that a third party could intervene and enforce the transaction at H, where A is better off and B is just as well off. A and B will not renegotiate to achieve the Pareto efficient equilibrium J because, by the nature of bounded rationality, A does not know that he can improve his allocation.



97. The efficiency of markets is not being proposed as a normative standard. The Pareto efficiency criterion, *see supra* note 95, defines as optimal an allocation of resources such that no central authority could disturb the allocation without making at least one party to the allocation worse off. This definition says nothing about the initial resource distribution; barring market failure, Pareto efficiency can be achieved again after any redistribution of resources. For the purposes of simplicity, we assume that the Romans did not use the legal system to redistribute resources. We, therefore, restrict our inquiry to the question of whether, with respect to barter, the legal system sought a Pareto efficient result *given* an initial distribution of resources.

98. *See* H. VARIAN, *supra* note 7, at 152-54.

society. So, whatever its goals, any society would hope to achieve a state of Pareto efficiency.

In order to understand the effect of bounded rationality on a Roman trader, imagine that the trader lives in a tiny twenty-goods economy and holds nine goods that he is willing to trade. Presumably this trader is willing to trade these nine goods only for some or all of the eleven goods that he does not hold. The trader's goal is to determine the composition of a package that is equivalent in market value to the nine-goods package he holds. Otherwise, he will be unable to tell whether or not his trade is the best available.

In order to determine this equivalency, the trader must know ninety-nine exchange ratios, eleven for each of the nine goods he holds. Even if both the ratios and the eleven desired goods were easily obtained, the trader would have to perform ninety-nine calculations in order to exchange his package of nine goods for a package of the other eleven goods in the economy. The performance of ninety-nine calculations is not mind-boggling. It is, nevertheless, sufficiently difficult that error is possible. If a trader holding 100 goods lived in a 1,000-goods economy, 90,000 calculations would have to be performed and error would be almost inevitable. As the number of ratios increases, so does the probability of error.

A trade resulting from this sort of error would be Pareto inefficient. For example, imagine the following scenario. During a previous year, two traders consummated an exchange of commodities in quantities reflecting the market exchange ratio. Between that year and the year of the current trade, remarkably, none of the factors affecting the first exchange ratio changed. But, one trader misremembers the exchange ratio of the previous year. The other party to the trade therefore enjoys an unanticipated windfall at the expense of the party-in-error. This trade is Pareto inefficient because an omniscient third party could preserve the windfall, in terms of utility, of the lucky party while improving the position of the party-in-error.⁹⁹

Assuming only that a goal of Roman law was social-welfare maximization, the undesirability of enforceable executory barter agreements is clear. Since the socially adverse effects of bounded rationality are reduced as the number of exchange ratios is reduced, a social-welfare-maximizing legal system would take whatever steps it could to reduce the number of exchange ratios. One such step in Rome was the move from the cumbersome formal requirements of *stipulatio* to the more streamlined *emptio venditio*. One would not expect the momentum from this great innovation to carry the Roman legal system toward the enforceability of *permutatio* in its executory form because the enforcement of executory *permutatio* would offset the positive social-welfare effects of *emptio venditio*. In stark contrast to that of *emptio venditio*, the enforceability of *permutatio* in executory form would have been Pareto inefficient.

99. See *supra* note 96.

Transaction Costs

Transaction costs are the costs associated with bargaining, whether or not denominated in money. These costs could derive from such sources as the time value of bargaining, transportation costs, or the costs associated with strategic behavior.¹⁰⁰ Kenneth J. Arrow has shown that transaction costs lead to inefficiencies only when asymmetrically allocated.¹⁰¹ If both parties to a transaction incur equal transaction costs, their position relative to one another is unaffected; but if transaction costs are unequal, relative position is affected.

According to the Coase Theorem,¹⁰² when transaction costs are positive and asymmetric, not every legal rule will yield a Pareto efficient equilibrium.¹⁰³ A central authority choosing legal rules and hoping to maximize social welfare will, therefore, inevitably tend to choose the legal rule that minimizes the effect of asymmetric transaction costs. The ultimate example of this would be the choice of a legal rule which eliminates asymmetric transaction costs. As will be seen, the refusal to enforce *permutatio* is such a choice.

If the cost of acquiring information, for example, is imposed asymmetrically, an otherwise efficient market becomes Pareto inefficient. Because money represents stored value,¹⁰⁴ the buyer of one good who wishes to sell

100. Arrow, *The Organization of Economic Activity: Issues Pertinent to the Choice of Market Versus Nonmarket Allocation*, U.S. CONG. SUBCOMM. ON ECONOMY IN GOV'T, JOINT ECONOMIC COMM., 91ST CONG., 1ST SESS., THE ANALYSIS AND EVALUATION OF PUBLIC EXPENDITURES: THE PPB SYSTEM 47, 48 (Joint Comm. Print 1969).

101. *Id.* at 51.

102. See generally Coase, *The Problem of Social Cost*, 3 J.L. & ECON. 1 (1960).

103. See A. POLINSKY, AN INTRODUCTION TO LAW AND ECONOMICS 11-13 (1983):

[The Coase Theorem] is most easily explained by an example. Consider a factory whose smoke causes damage to the laundry hung outdoors by five nearby residents. In the absence of any corrective action each resident would suffer \$75 in damages, a total of \$375. The smoke damage can be eliminated in either of two ways: A smokescreen can be installed on the factory's chimney, at a cost of \$150, or each resident can be provided an electric dryer, at a cost of \$50 per resident. The efficient solution is clearly to install the smokescreen since it eliminates total damages of \$375 for an outlay of only \$150, and it is cheaper than purchasing five dryers for \$250.

....

.... If there are zero transaction costs, the efficient outcome will occur regardless of the choice of legal rule.

.... [But suppose] it costs each resident \$60 to get together with the others
 If the residents have a right to clean air ... [t]he factory would again purchase the smokescreen, the efficient solution. If the factory has a right to pollute, each resident now has to decide whether to bear the losses of \$75, buy a dryer for \$50, or get together with the other residents for \$60 to collectively buy a smokescreen for \$150. Clearly, each resident will choose to purchase a dryer, an inefficient outcome.

See also R. POSNER, ECONOMIC ANALYSIS OF LAW 35 (1977).

104. See A. Watson, *The Prehistory of Contracts*, *supra* note 66, at 7-8; R. DORNBUSCH & S. FISCHER, *MACROECONOMICS* 218-19 (2d ed. 1981).

a second good need not buy the first good from the person to whom he sells the second. This buyer is able to buy from a seller who has no interest in buying whatever good the buyer holds. The seller, in turn, is able to sell to a buyer who cannot or will not sell the good which the seller wishes to buy. The transaction cost of acquiring information is positive but symmetric in this money-denominated market. Thus, absent another sort of market failure, the transactions are Pareto efficient.

Consider, by contrast, the barter economy. The holder of wheat, for example, must find a party who not only desires wheat but also holds corn, the good desired by the holder of wheat. If these two parties find each other on the first try,¹⁰⁵ the transaction cost of acquiring information, though positive, is symmetric. The relative transaction cost is zero, so, by the Coase Theorem, the legal rule does not affect the Pareto efficiency of the trade. But suppose the holder of corn does not desire wheat and is not as anxious¹⁰⁶ to trade his corn as the holder of wheat is to trade his wheat. This might happen for the simple reason that the holder of corn prefers, as a matter of taste, other commodities to wheat. In such a situation, the holder of wheat would be more likely than the holder of corn to incur the cost of finding an exchange commodity. The holder of corn might, for example, have indicated his desire for fish. The holder of wheat would then be induced to seek a holder of fish who desires wheat. Even if the very first holder of fish discovered by the holder of wheat agreed to the trade, the holder of wheat would have incurred an information gathering cost not incurred by the holder of corn. The transaction costs are thus asymmetric.

This asymmetry provides the holder of wheat with a loss, in the form of a transaction cost, which does not correspond to a gain to the corn holder. The loss is simply waste with respect to this corn-wheat trade. This barter trade is Pareto inferior to that of the money-denominated market; the trade can be improved by an omniscient third party.¹⁰⁷

It is important to realize that the barter equilibrium is not necessarily inferior to the money equilibrium in terms of fairness; the same Pareto efficiency arguments would be made if the disadvantaged trader was, for example, a

105. How does each know the other trader holds the desired good? It does not matter; each obtains this information in the same way and at the same cost as the money-denominated trader.

106. Such anxiousness might be reflected in the exchange ratio, as it would be in the price in a money economy, but this effect does not include the impact of transaction cost asymmetries.

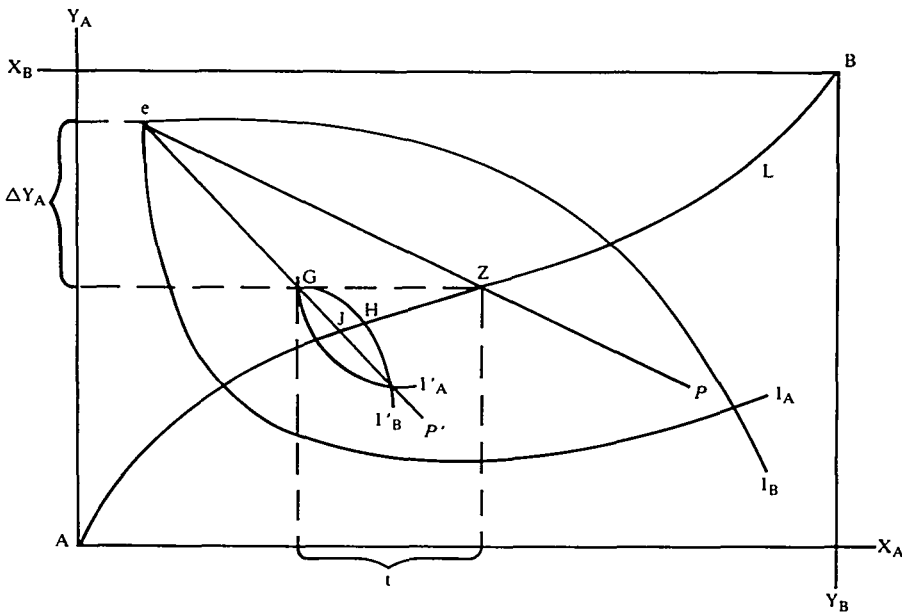
107. In the figure below, the holder of wheat, *A*, and the holder of corn, *B*, with indifference curves I_A and I_B respectively, start at endowment *e*. Cf. *supra* note 96. The holder of fish is not directly represented in this flat, two-dimensional diagram. Instead, a lump-sum tax, *t*, imposed on *A* serves as a proxy for the role of the fish holder. So $P' = t + P$. The tax, *t*, is not reallocated to *B*, but is removed from this two-person economy altogether; the tax is, therefore, wasted. The physical quantities traded are represented by the Pareto efficient point *Z*. But since *A* has lost *t*, the value of his trade is only *G*, which is Pareto inferior. *A* and *B* cannot renegotiate to a Pareto efficient point, such as *H* or *J*, because *t* has been entirely removed from the economy.

holder of contraband or a holder of enormous wealth. To address either of the latter two situations, a social-welfare-optimizing central authority would not choose a Pareto inferior equilibrium but a different Pareto efficient equilibrium.

As in the case of bounded rationality, one must only assume the existence of a social-welfare-maximizing central authority at Rome to understand the public policy implications of asymmetric, positive transaction costs. In refusing to enforce *permutatio* in its executory form after the recognition of *emptio venditio*, the Roman legal system resisted the Pareto inferior effects of the former while embracing the Pareto efficiency of the latter. The refusal to enforce barter encouraged the use of money and thereby facilitated the attainment of Pareto efficient trades.

The Coin-Miller's Profit

Two complementary reasons for the introduction of money into the barter economy have been presented: the Pareto inefficiencies of bounded rationality and transaction costs. There is a third reason independent of the first two: a government which issues money enjoys an interest-free loan.¹⁰⁸



108. A government need not be the party to issue money. Since a unit of money is merely a note payable to the bearer, any party may effectively issue money, if such issuance is not

A modern government raises money for public expenditure by two means: taxation and borrowing. One modern method of borrowing is to issue a bond and to pay interest to the bondholder. By this method the government pays for the use of bondholders' assets. A second modern method of borrowing is to increase the currency stock. The essence of this method is captured by the image of the government milling coinage to spend on public projects. The government, by virtue of its special position as the producer of currency, apparently enjoys an enormous advantage over its citizens. What is the nature of this advantage? Surely it is not the case that the government, as coin-miller, enjoys costless consumption. Were this the case, currency would become so abundant as to be valueless; the currency system would be abandoned.¹⁰⁹ The government's consumption would not, therefore

unlawful. Bank notes served as money in the United States even during the nineteenth century. See M. FRIEDMAN & A.J. SCHWARTZ, *A MONETARY HISTORY OF THE UNITED STATES 1867-1960* (1963); Stevens, *Composition of the Money Stock Prior to the Civil War*, 3 J. MONEY, CREDIT & BANKING 84 (1971). Governments, as this section of the text illustrates, can enjoy interest-free consumption by issuing money and thus are induced to forbid other parties from doing so. Furthermore, government-backed money is less risky, absent the threat of invasion or civil war, than private money. Risk-averse holders of notes may, therefore, seek to induce their governments to issue money, even though money bears no interest. See Tobin, *Liquidity Preference as Behavior Towards Risk*, 25 R. ECON. STUD. 65 (1958). There are, of course, other reasons for holding money, including the need for a medium of payment for routine services. See Baumol, *The Transactions Demand for Cash: An Inventory Theoretic Approach*, 66 Q.J. ECON. 545 (1952); Tobin, *The Interest-Elasticity of Transactions Demand for Cash*, 38 R. ECON. & STATISTICS 241 (1956).

109. An analogous result would occur, for example, in a modern economy suffering hyperinflation. A recent example may be found in the experience of Germany during the hyperinflation of the 1920's. Between November, 1918 and September, 1923 the exchange rate of marks to dollars increased from 7.43 to 98,860,000, and ultimately reached 1 trillion. Dawson, *Effects of Inflation on Private Contracts: Germany 1914-1924*, 33 MICH. L. REV. 171, 174 (1934). The German legal system first turned to equitable doctrines of rescission, grounded upon a concept of economic impossibility. This enabled courts to *reset* the substantive terms of a contract, using a requirement of "good faith." *Id.* at 186. Rejecting legal tender rules, courts held that previous payments in depreciated marks did not discharge debts, even past debts. It was argued that in private contracts a qualitative equivalence was required between the parties' performances. This was deemed to be an essential attribute of bilateral contracts, and when it was impaired or destroyed by supervening events (including inflation), judicial intervention was required. *Id.* at 192-93. Courts tried to readjust the relationship between contracting parties based on "good faith." See A. NUSSBAUM, *MONEY IN THE LAW* 206-11 (rev. ed. 1950). In effect, the legal system became a roving agency empowered to distribute goods in accordance with the judiciary's particular point of view. See A. VON MEHREN & J. GORDLEY, *THE CIVIL LAW SYSTEM* 1094 (2d ed. 1977); see also *id.* at 1099 (quoting 1 K. LARENZ, *LEHRBUCH DES SCHULDRECHTS* § 2, pt. 11, at 265 (11th ed. 1976)):

[O]ne can speak of a legally recognizable disturbance of equilibrium when, as a consequence of an unforeseen change of circumstances in a two-sided contract, the reciprocal obligations have come into a "gross disproportion" so that the contract no longer fulfills its purpose . . . as an exchange. . . . [C]hanges in the value relationship between performance and counterperformance can first be taken into account when they rest on events that were not foreseen by the party affected, with which one normally does not have to reckon in commerce. . . .

However, courts recognized the problems inherent in this approach, and generally agreed that if a fair revision could not be adduced, the contract would be rescinded upon the purchaser's request. Dawson, *supra*, at 194.

be free; the government would eventually have to balance its accounts, and reduce the money supply, by taxation. But between its consumption and the balancing of its accounts, the government would enjoy an interest-free loan of the amount consumed. Currency can, therefore, be fairly characterized as a bond bearing zero percent interest. Alternatively, the issuance of money can be considered a form of taxation. Since the existence of currency enables the government to enjoy consumption free of interest expense, it enjoys a benefit exactly equal to a lump-sum tax in the amount of the interest expense it would incur if it issued bonds.¹¹⁰

The government is the beneficiary of such an interest-free bond issue. It will encourage the use of its currency in order to increase the currency's value. The more valuable the currency, the higher the level of interest-free consumption available to the government. This description of the coin-miller's profit does not depend on the existence of a public-spirited central authority at Rome. The Roman legal system can be assumed to be a mechanism for the perpetuation of the welfare of the Roman elite at the expense of all other classes. The main form of government consumption could be, for example, the purchase of wine and Bacchanalia for the use of the Roman elite. In such a case, the elite would favor interest-free consumption to the alternative, just as it would if the government spent its revenues on a system of roads for the use of farmers and tradesmen. By refusing to enforce the executory form of *permutatio*, Roman law induced parties to contracts to denominate their transactions in money. By effectively requiring the use of its money, the government enjoyed the ownership, via the process of milling, of a credible medium of exchange for its own transactions. Its consumption was thereby rendered interest free.

CONCLUSION

Even after recognizing the enforceability of executory contracts of sale, the Romans did not enforce an executory barter contract. Historians have looked both outside the Roman legal system and inside, to the legal culture, for an explanation for this seeming inconsistency. This article has attempted to show that the historical and anthropological approaches have not satis-

In essence, in Germany during the 1920's, money became useless as a medium of exchange. As a result, courts became unable to enforce executory contractual obligations because they had no principled way to value those obligations.

110. Assume a balanced budget where constant consumption (C) equals constant tax revenue (T): $C = T$. Suppose that the government issues a bond with revenue (R) and interest expense (b), so that the net bond revenue is $(R - b)$. Then, $C + R - b = T + R - b$. The government can increase net bond revenue by paying no interest ($b = 0$), so that $C + R = T + R$. The government can achieve exactly this result by holding net bond revenue $(R - b)$ constant and increasing tax revenue by (s), such that $(s = b)$. In this case, $C + R - b + s = T + R - b + s$. But since $(-b + s) = 0$, $C + R = T + R$, the result of not paying interest (b).

factorily solved the problem of the unenforceability of executory barter. In particular, the legal culture thesis, while a sufficient explanation in a strictly conceptual sense, raises as many questions as it answers. The insights provided by economic analysis, by contrast, do make it possible to understand why executory barter was not enforced.

The Roman system of law would not enforce executory barter contracts because they tended to be Pareto inefficient and because the Roman government enjoyed a profit on the milling of Roman coinage. Two sources of Pareto inefficiency resulting from the enforcement of executory barter have been identified: bounded rationality and asymmetric transaction costs. Each condition produces an equilibrium which could be improved by the intervention of a third party. It should again be emphasized that although Pareto efficiency is not a normative criterion, it is a desirable feature of a market equilibrium regardless of the normative standard adopted by a society.

It is unlikely that the Romans articulated these economic concerns using the language of modern economics. However, the Romans shared these concerns, which they called by different names. We have, therefore, introduced three characteristics of markets, each of which would provide a government with an incentive to encourage the use of money by discouraging the use of executory barter.