APPENDIX B

TABLE OF RULES VECTORS FOR EXCHANGE SYSTEMS

DEMAND RULES

d_1 Who may demand a good or service?

Subsistence	Members of consumption/production group
Prestige	Individuals of comparable status
Intimate	Members of transitive networks
Associational	Members of extended networks
Peasant Marketplace	Anyone with money or goods to exchange
Perfect Competition	Large numbers of buyers
Imperfect Competition	Large numbers of buyers
Oligopoly	Large numbers of buyers
Unregulated Monopoly	Large numbers of buyers

d_2 How is consumption to be shared?

Subsistence	Fixed allocation in production/consumption group
Prestige	At discretion of demander among supporters
Intimate	According to positive reciprocity in network
Associational	Generally not shared
Peasant Marketplace	At discretion of buyer within extended family
Perfect Competition	Not shared
Imperfect Competition	Not shared
Oligopoly	Not shared
Monopoly	Not shared

d_3 Is the good or service divisible or indivisible?

Subsistence	Divisible
Prestige	Lumpy
Intimate	Depends on good or service
Associational	Depends on good or service
Peasant Marketplace	Divisible
Perfect Competition	Divisible
Imperfect Competition	Divisible
Oligopoly	Divisible
Monopoly	Divisible

d_4 Is demand for survival or status?

Subsistence	Survival
Prestige	Status
Intimate	May be either or both
Associational	Usually Status
Peasant Marketplace	Usually survival
Perfect Competition	Not distinguished
Imperfect Competition	Not distinguished
Oligopoly	Not distinguished
Unregulated Monopoly	Not distinguished

SUPPLY RULES

s_1 Who may supply a good or service?

Subsistence	Members of production/consumption group. Also constrained by kinship category and sexual division of labor
Prestige	Individuals of comparable status
Intimate	Members of transitive networks

Associational	Network members with access to goods or services
Peasant Marketplace	Anyone with money or goods to trade.
Perfect Competition	Free entry and exit. No positive return to coalition formation
Imperfect Competition	Number of buyers and sellers sufficient to preclude dominant market power
Oligopoly	A few large suppliers dominate total supply
Unregulated Monopoly	Single controller of good or service

s_2 **Where does supply occur?**

Subsistence	Within the production/consumption group
Prestige	Supporters supply leaders and leaders supply each other
Intimate	Within transitive networks
Associational	Goods from formal sector enter extended networks for internal exchange
Peasant Marketplace	Production on peasant smallholdings
Perfect Competition	Anywhere because of perfect resource mobility
Imperfect Competition	Almost anywhere because high resource mobility
Oligopoly	Depends on good or service
Unregulated Monopoly	Depends on good or service

s_3 **When does supply occur?**

Subsistence	When resources are available, often seasonally
Prestige	When sufficient surplus is available to pay creditor and increase scale of debt
Intimate	Goods depend on availability/Services continuous
Associational	Goods depend on availability/Services continuous
Peasant Marketplace	When resources are available, often seasonally

Perfect Competition	When the opportunity exists for normal profits
Imperfect Competition	Supply likely to depend on input availability
Oligopoly	Supply likely to depend on input availability
Unregulated Monopoly	Supply likely to depend on input availability supplemented by storage

s_4 Is supply storable?

Subsistence	Very limited, such as dried, salted, or smoked products or on the hoof
Prestige	As durable items or livestock
Intimate	Services stored in skills of members, goods stored centrally but seldom
Associational	Storage unlikely due to high opportunity costs
Peasant Marketplace	Very limited, such as dried, salted, or smoked products or on the hoof
Perfect Competition	Absence of uncertainties or constraints on access make storage irrational
Imperfect Competition	Limited to a level that just covers cost
Oligopoly	Depends on technology and future profit expectations
Unregulated Monopoly	Depends on technology and future profit expectations

s_5 Are there technical, institutional (other than the institutional rules of the vector), or natural constraints on supply?

Subsistence	Low level of technology, simple division of labor and problems of coordination, internal distributive rules, seasonal variation in supply, weather, and soil quality
Prestige	Availability of goods, obligations to other partners and specific nature of goods, scarcity of goods and, in long-distance exchanges, weather
Intimate	Depends on network size, ability to obtain resources, and competence of network members

Associational	Depends on policing of formal markets, pricing relative to formal markets, and formal occupation of supplier
Peasant Marketplace	Low level of technology, reliance on human labor power, land-tenure patterns, low-level division of labor, coordination problems, seasonal variation, weather, soil quality, availability of raw materials for craft activities
Perfect Competition	No differential constraints on supply. Constraints arise from competitive behavior and profit maximization
Imperfect Competition	None on whole industry, but individual suppliers are not truly identical
Oligopoly	Economies of scale or mergers generate small number of suppliers
Unregulated Monopoly	Barrier to entry depends on control over resources

s_6 What are the major uncertainties facing suppliers?

Subsistence	Seasonal fluctuations in availability and predatory raiding by other groups or animals
Prestige	Coordinating assembly of goods at appropriate time and ability of recipient to reciprocate
Intimate	Resource availability and maintenance of skill inventories
Associational	State of formal economy and levels of its policing affect availability
Peasant Marketplace	Seasonal/weather conditions and public-health effects on labor power
Perfect Competition	None, suppliers have full information
Imperfect Competition	Ability to retain small market shares
Oligopoly	Reactions of rivals to price and output changes
Unregulated Monopoly	Control and duration of market power

s_7 Is the product or service homogeneous or differentiated?

Subsistence	Largely homogeneous
Prestige	Where individual items may be homogeneous, prestige depends on the size of the package of those goods, hence the products are effectively differentiated
Intimate	Goods tend to be differentiated, services tend to be homogeneous
Associational	Goods and services are differentiated
Peasant Marketplace	Agricultural goods tend to be homogeneous craft goods may be differentiated
Perfect Competition	Goods and services are homogeneous
Imperfect Competition	Slight differentiation for competitive edge
Oligopoly	Both homogeneous and differentiated
Unregulated Monopoly	Completely differentiated because unique product

TRANSACTION RULES

t_1 Who holds the title to property as it is recognized within the exchange structure?

Subsistence	Major productive resources likely to be open-access or common property
Prestige	Demander/suppliers heading kin or local groups
Intimate	Individual members of transitive networks
Associational	Trading agents in extended networks
Peasant Marketplace	Supplier holds title to produce, but often not to land
Perfect Competition	Individual owners or corporate entities
Imperfect Competition	Individual owners or corporate entities
Oligopoly	Individual owners or corporate entities
Unregulated Monopoly	Individual owners or corporate entities

t_2 Who holds entitlement to use and manage property?

Subsistence	All members of household group whose leader is recognized as legitimate manager
Prestige	Use is at the discretion of demander/suppliers heading kin or local groups
Intimate	Management by transitive network, temporary use granted to any member
Associational	Any trading agent
Peasant Marketplace	Head of producer household except as limited by t1
Perfect Competition	All owners
Imperfect Competition	All owners
Oligopoly	Small number of suppliers can use market power to limit subsequent use
Unregulated Monopoly	Sole supplier can use market power to limit subsequent use

t_3 Does the condition of exclusivity apply?

Subsistence	Seldom applies to nominal owner because constrained by obligations to household production/consumption group
Prestige	No, because of conspicuous consumption rules
Intimate	Not to title holder, but to extended network
Associational	Only in absence of externalities in use
Peasant Marketplace	So far as goods and services are treated as private property
Perfect Competition	Yes, in production and consumption
Imperfect Competition	Yes, but some excess-capacity externalities
Oligopoly	Not necessarily, market power may permit avoidance of some costs
Unregulated Monopoly	Market power likely to encourage avoidance of some costs

t_4 Does the condition of transferability of all rights apply?

Subsistence	Seldom, because high level of interdependence requires group consensus
Prestige	Varies according to nature of goods
Intimate	Applies to titleholder
Associational	Applies to titleholder
Peasant Marketplace	Except for land and obligatory labor
Perfect Competition	Applies to titleholder
Imperfect Competition	Applies to titleholder
Oligopoly	Applies to titleholder
Unregulated Monopoly	Applies to titleholder

t_5 Does the condition of enforceability apply?

Subsistence	Usually through pressure from kinship group
Prestige	Through repeated transactions and shaming
Intimate	By consent, not within transitive network
Associational	By exclusion from the network, threats of retribution, or appeals to the extra-market legal system
Peasant Marketplace	By repeat transaction and community legal system
Perfect Competition	Yes
Imperfect Competition	Yes
Oligopoly	Yes
Unregulated Monopoly	Yes

t_6 How are bids to buy made?

Subsistence	Internally are constantly signaled through the production/consumption group. Externally, bids to buy are initiated as offers to supply
Prestige	Through hints and complaints

Intimate	By direct expression of need
Associational	Through comparisons with goods and services in formal markets
Peasant Marketplace	Inquiry about asking price followed by haggling Likely preference for trade with established partner
Perfect Competition	Buyers are price takers at seller's retail outlets
Imperfect Competition	Buyers are price takers at seller's retail outlets
Oligopoly	Buyers are price takers at seller's retail outlets
Unregulated Monopoly	Buyers are price takers at seller's retail outlets

t_7 Where are bids to buy made?

Subsistence	Internally, within production/consumption unit Externally, at established places of exchange
Prestige	Between leaders and between leaders and followers
Intimate	In daily interaction of the transitive network
Associational	By agreement of buyer and seller
Peasant Marketplace	At a customary marketplace
Perfect Competition	Effectively anywhere, otherwise there would be differential access to the market
Imperfect Competition	Bids for generic product may be made anywhere. Bids for specific brands may be restricted to certain supply outlets
Oligopoly	At outlets determined by seller rivalry
Unregulated Monopoly	At outlets determined by seller's market power

t_8 When are bids to buy made?

Subsistence	According to availability
Prestige	When buyer knows seller has resources and appropriate time has elapsed since last exchange
Intimate	When buyers express need
Associational	At any time
Peasant Marketplace	At regular intervals established by custom
Perfect Competition	At any time
Imperfect Competition	At any time for generic product. Access to specific brands may be restricted at certain times
Oligopoly	At times determined by seller rivalry
Unregulated Monopoly	At times determined by seller's market power

t_9 How are offers to sell made?

Subsistence	Asymmetrical to t_6, without expectation of immediate return within group
Prestige	To most effectively pressing creditor
Intimate	Without expectation of direct return
Associational	With expectation of immediate return
Peasant Marketplace	By displaying goods
Perfect Competition	Sellers are price takers but control quantity
Imperfect Competition	Sellers have limited price-setting ability
Oligopoly	Sellers may collude, act as rivals, or use price leadership
Unregulated Monopoly	Sets price to maximize monopoly rents

t_{10} Where are offers to sell made?

Subsistence	Internally, within production/consumption unit Externally, at established places of exchange
Prestige	Between leaders and between leaders and followers
Intimate	In daily interaction of the transitive network
Associational	By agreement of buyer and seller
Peasant Marketplace	At a customary marketplace
Perfect Competition	Effectively everywhere, otherwise there would be differential access to the market
Imperfect Competition	May be made at retail outlets or signaled through advertising, sealed bids, or central auction
Oligopoly	May be made at retail outlets or signaled through advertising or sealed bids
Unregulated Monopoly	Determined by monopolist to maintain market control

t_{11} When are offers to sell made?

Subsistence	When resources are available
Prestige	When resources are available and pressures are applied by exchange partner. Also to regain status lost through independent humiliation
Intimate	When resources are available, a buyer expresses need, and a running debt balance is maintained
Associational	When goods and services are available from formal market
Peasant Marketplace	When marketplaces are open
Perfect Competition	In short run, when price covers variable costs In long run, when price covers average costs
Imperfect Competition	In short run, when price covers variable costs In long run, when price covers average costs
Oligopoly	At times determined by seller rivalry or resource availability

Unregulated Monopoly	When seller determines that the difference between marginal revenue and marginal costs is maximized

t_{12} What is the medium of exchange? How are goods and services priced?

Subsistence	No general medium of exchange or measure of value used. External exchange by direct barter
Prestige	Prices established by convention, paid in a limited range of customarily recognized goods
Intimate	Prices negotiable after transaction. Exchange is by direct barter with delayed reciprocity
Associational	Prices are established prior to consumption, valued in money, but need not be medium of exchange
Peasant Marketplace	Price fixed through haggling, paid in cash or barter for monetary equivalent
Perfect Competition	Costless medium of exchange required to value products, or a costless auctioneer to set relative prices
Imperfect Competition	Prices not negotiated, paid in money
Oligopoly	Prices not negotiated, paid in money
Unregulated Monopoly	Prices not negotiated, paid in money

t_{13} How are transactions legitimated?

Subsistence	By adherence to customary rules in the group and by repeat exchange outside
Prestige	Through feasting or other conspicuous consumption
Intimate	Through membership in network signaled by maintaining running debt balance
Associational	By consent of trading agents
Peasant Marketplace	By consent symbolized through customary signals
Perfect Competition	By consent of trading agents subject to extra-market legal and regulatory system

Imperfect Competition	By consent of trading agents subject to extra-market legal and regulatory system
Oligopoly	By consent of trading agents subject to extra-market legal and regulatory system
Unregulated Monopoly	By consent of trading agents subject to extra-market legal and regulatory system

t_{14} How are transactions enforced?

Subsistence	Through shame, ridicule and ostracism inside the group. Through repeat transaction outside
Prestige	Through shaming, ridicule, and exclusion from the exchange structure
Intimate	Moral pressure, verbal aggression, ridicule, expulsion
Associational	Repeat exchange or competition from formal sources
Peasant Marketplace	Repeat exchange, action of a market patron, or the extra-market legal system
Perfect Competition	Repeat exchange and competition from other buyers and sellers
Imperfect Competition	Repeat exchange and competition from other buyers and sellers
Oligopoly	On demand side by threat of withdrawing supply. On supply side by presence of rivals
Unregulated Monopoly	Threat to withdraw supply

t_{15} How is information distributed in the exchange structure?

Subsistence	Symmetrical and free in the group, restricted and costly outside
Prestige	Participants try to restrict information about resources to defer creditors, but information about comparative values is ubiquitous
Intimate	Symmetrical and free within transitive network

Associational	Asymmetrical because supply may be illicit and value of products to buyers is costly to collect
Peasant Marketplace	Information costs reduced by bringing buyers and sellers together
Perfect Competition	Perfectly symmetrical and free
Imperfect Competition	Limited asymmetry in information about the uniqueness of the product
Oligopoly	Asymmetrical between suppliers and demanders, as well as between rival producers
Unregulated Monopoly	Supply information very restricted

t_{16} How are adjustments made for externalities?

Subsistence	Externalities usually inherent, may motivate exchange to provide social cohesion
Prestige	Purpose is to generate externalities to promote social cohesion
Intimate	Corrected by running debt balance in the network
Associational	Externalities not adjusted within the network
Peasant Marketplace	Usually go unrecognized, but may be negotiated
Perfect Competition	Eliminated by costless negotiation
Imperfect Competition	Generally not adjusted internally, may be adjusted by regulation
Oligopoly	Generally not adjusted
Unregulated Monopoly	Absorbed by consumers due to low market power

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MARKETS, DISTRIBUTION, AND EXCHANGE AFTER SOCIETAL CATACLYSM

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November 1989 -167 Pages

by R. A. Cantor, S. Henry, S. Rayner
Oak Ridge National Laboratory, Oak Ridge, TN 37831
Interagency Agreement: FEMA EMW-84-E-1737

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Three kinds of literature were reviewed, (1) the economics literature on formal markets, (2) the sociological literature on informal markets, and (3) the economic anthropology literature on precapitalist and pre-industrial exchange. From this corpus a set of non-market and market exchange structures are derived and rendered as rules vectors describing their operation. Each of the four survival scenarios is expounded as a subset of the possible exchange structures that is logically compatible with the constraints defining that scenario.

This procedure yielded a range of tentative conclusions for all four scenarios. First, property rights in surviving resources are likely to be problematic in all but the best case and may place severe pressures on dispute resolution mechanisms and cival order.

Second, barter is not always less efficient than money, as is usually assumed. It may overcome trading difficulties where prices take time to adjust to changing supply and demand information. Attempts to restore currency where national institutions have been destroyed, will depend upon the credibility of the institution that emerges to underwrite it.

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