Networks, law, and the paradox of cooperation

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Networks, Anarcho-Capitalism, and
the Paradox of Cooperation

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Abstract:
There is a tension between libertarians' optimism about private supply of public goods and their skeptical of the viability of voluntary collusion. (Cowen 1992; Cowen and Sutter 1999) Playing off this asymmetry, Cowen (1992) advances the novel argument that the "free market in defense services" favored by anarcho-capitalists is a *network* industry where collusion is especially feasible. The current article dissolves Cowen's asymmetry, showing that he fails to distinguish between self-enforcing and non-self-enforcing interaction. Case study evidence on network behavior before and after antitrust supports our analysis. Furthermore, libertarians' joint beliefs on public goods and collusion are more theoretically defensible than Cowen and Sutter (1999) indicate.

1. Introduction

Cowen and Sutter (1999) argue that libertarian doubt about the viability of collusion is inconsistent. How, they ask, can free-market economists be simultaneously optimistic about the private production of public goods, but skeptical about collusion? Collusion is, after all, a public good vis-a-vis competing firms. This may be dubbed the Paradox of Cooperation: Laissez-faire can cope with either the monopoly or the public good problem, but not both.[1] At a general level, then, libertarians who dismiss concerns about collusion are at best over-confident. Cowen (1992) goes further by making the more specific claim that for so-called *network industries*, libertarians are not just over-confident, but wrong: Laissez-faire leads to monopoly, not competition, at least in the absence of government regulation. Although this network industry argument poses a challenge for more moderate libertarians as well, Cowen primarily uses it to expose what he sees as the fundamental weakness of the radical anarcho-capitalist position (Rothbard, 1973; Friedman, 1973): An excellent example of a network industry is the very free market in defense services that anarcho-capitalists favor. In consequence, anarcho-capitalists are sorely mistaken about the consequences of their ideas if tried.

We maintain that these critiques are thought-provoking but wrong. The dilemmas that Cowen (1992) and Cowen and Sutter (1999) put forward are artificial. Cowen's (1992) network industry argument neglects the deep contrast between prisoners' dilemmas and coordination games; voluntary solutions are self-enforcing for the latter but not the former. Cowen and Sutter's (1999) Paradox of Cooperation likewise glosses over major dissimilarities between collusion and more traditional public goods. Empirically,

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[1] Note that Cowen and Sutter (1999) find similar inconsistencies in several other political visions as well; their paradox poses a challenge for an array of popular viewpoints.

moreover, there is little evidence that modern network industries have the collusive powers Cowen ascribes to them. Even before antitrust laws could have deterred collusive behavior, voluntary efforts to restrict competition in network industries were not noticeably more successful than in other areas of the economy.

The paper has the following structure: Section two explains Cowen's (1992) network industry argument in greater depth and discusses responses that take his challenge at face value. Section three deconstructs Cowen's paradox at length: There are in fact fundamental strategic forces that make it much easier to orchestrate socially beneficial procedural standardization, as opposed to socially harmful collusion. Section four provides supporting empirical evidence from industry case studies before and after the introduction of modern antitrust enforcement. Section five deconstructs Cowen and Sutter's (1999) Paradox of Cooperation, arguing that libertarians' beliefs about monopoly and public goods can be grounded in sound economic analysis, not just wishful thinking. Section six concludes.

2. Network Industries and Collusion

a. Cowen's Argument

The underpinning of Cowen's (1992) critique of anarcho-capitalism is the notion of *network industries*. "Formally, networks are composed of links that connect nodes" (Economides, 1996, p.673) but networks need not be physical. A common characteristic of network industries is the value of the good increases as the number of users increases. (Katz and Shapiro, 1985) ATM cards, telephones, and software are standard examples. (Liebowitz and Margolis, 1994; Katz and Shapiro, 1994) The more widespread ATM cards are, the more ATM machines will exist; the more ATM machines exist, the more

useful an ATM card. The whole point of owning a phone, similarly, is to call other phone-owners and talk to them. Software file formats are less attractive if no one else can open them.

In a network industry, decentralized provision runs two risks. The first is the proliferation of a wide variety of mutually incompatible products; the second is product convergence that locks in a sub-optimal standard. One way around these problems is monopoly. But if the industry contains more than one firm, an alternative exists: set up an industry "club" or network. Competing firms can then work together, not only to make their products mutually compatible, but to overcome lock-in problems as they arise. It would be a serious concern if a phone produced by one firm could not interface with a competitor's phone, to take a mundane example. Similarly, in an anarcho-capitalist defense services industry, it would be disastrous if each firms' products were "incompatible" with each other; that is, if competing firms shared no procedures for resolving disputes between their respective clients. As Cowen puts it, "The food that I buy from one supermarket is just as valuable to me regardless of whether this supermarket has friendly relations with its competitors; this independence does not hold with private protection agencies." (1992, p.260)

In both cases, forming a network looks like an attractive way for rival suppliers to deal with the problem. Phone companies would agree to interconnect their systems; competing defense firms would agree to peacefully arbitrate disputes according to mutually acceptable rules. Indeed, proponents of anarcho-capitalist have almost invariably forcefully maintained that any sensible businessman would do precisely this. (Rothbard 1973; Friedman, 1973; Benson, 1990) But following e.g. Bernheim and

Whinston (1985), Cowen emphasizes that networks have a serious downside in terms of allocative efficiency: The same networks that prod their members towards product compatibility are, as a corollary, well structured to promote price collusion in their industry. Voluntary cartels may be notoriously ineffective due to cheating and entry, but networks have a special ability to short-circuit the usual market checks.

Why? As Cowen argues, a network can punish non-colluders by expelling them from the club, and exclude new entrants by refusing to admit them. In both cases, outsiders will be unable to under-cut the network by selling the "same" product for less, because *services provided outside the network cease to be the same.* A phone company with which other companies refuse to connect, or a defense services firm with which that other firms refuse to arbitrate disputes, is simply unable to deliver the product consumers want. As Cowen elaborates: "[M]embership in the common arbitration network is one of the most important services an agency can offer its members. Network membership implies that interagency disputes are settled without risk of force or radical uncertainty about the final outcome."[2] (1992, pp.259-61) Firms may remain *de jure* "independently owned and operated," but for practical purposes there is but one: "In the network the number of *truly independent* sources of power is likely to be small." (Cowen 1994, p.331; emphasis added)

It is possible, of course, that the transactions costs of enforcing collusion will be prohibitively high. But if so, Cowen notes, this hardly means that laissez-faire will work well. If the costs of collusive transactions preclude collusion, then transaction costs will

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[2] Nozick actually made a very similarly point in *Anarchy, State, and Utopia*: "[S]ince the worth of the less than maximal product declines disproportionately with the number who purchase the maximal product, customers will not settle for the lesser good, and competing companies are caught in a declining spiral." (1974, p.17)

rule out simple standardization as well.   After all, why should transactions costs be greater for the former than the latter?   The alternative to the orderly cartel is cacophonous competition.   Thus, Cowen's argument amounts to a virtual impossibility theorem for the efficiency of network industries under laissez-faire.

This impossibility theorem looks particularly menacing when applied to an anarcho-capitalist defense industry.   Low transaction costs lead to much worse than garden-variety monopoly.   Since the defense industry, taken as a whole, has a near-monopoly on force, the entire society would be in danger should the various firms in the industry succeed in colluding.   "Pay the monopoly price or live unprotected" would be a softball threat; a defense cartel could easily up the ante to "Pay the monopoly price or be reduced to slavery."   Anarchy would turn into a state of the worst sort.   High transaction costs, similarly, lead not merely to consumer frustration, but interminable violent conflict between competing suppliers.   Applied to the defense industry, Cowen's impossibility theorem states that anarcho-capitalism must decay into either Hobbes' despotic Leviathan or Hobbes' brutish anarchy.

b. Competition for the Network and Competition Between Networks

Before turning to the deeper flaws in Cowen's analysis of network industries, it is worth considering two less fundamental replies.   The first is to appeal to the notion of contestability.   Just because a network is the only visible seller does not mean it will *act* monopolistically.   It may be fully constrained by fear of *potential* competition from a new network of firms.

It is conceivable that for most network industries, Cowen would be willing to grant this point: Normally, perhaps networks do unambiguously enhance consumer

welfare.   But he would surely draw the line at the defense industry.   Once a group of

firms attain a near-monopoly on force, they can credibly threaten would-be replacements

with violence.[3]   Firms would only enter if the expected costs of an initial period of full-

fledged warfare exceeded their expected monopoly profits, leaving ample room for the

current network to impose a Hobbesian despotism.

A second reply to Cowen is that he overlooks the possibility of *competing*

networks.   Just because consumers put *some* value mutual compatibility does not mean

the market will deliver *full* compatibility.   Consumers may value diversity as well as

uniformity.   Moreover, as Liebowitz and Margolis point out, sufficient diseconomies of

scale can outweigh the pressure for a single network:

> [M]odels in this area ignore production costs and thus with any assumption of positive network
> effects are unavoidably construed as instances of natural monopoly. But notice that if production
> costs exhibit decreasing returns, and if these decreasing returns overwhelm the network effects,
> then natural monopoly is not implied, and competing incompatible networks (standards) will be
> possible. (1998, p.672)

The Windows and Macintosh operating systems co-exist.   So do multiple

languages.   Why not multiple anarcho-capitalist defense networks?   Cowen specifically

mentions the case of McDonald's restaurants, observing that "Different franchises of

McDonald's, for instance, enter into common relations through the parent company and

agree not to compete with each other." (1992, p.261)   But his example immediately

suggests a simple rebuttal: McDonald's is only one fast-food franchise out of hundreds!

Even if chain restaurants controlled 100% of the market, the chains would still have to

compete with each other.

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[3] Sutter (1995) makes a stronger version of this claim; in his model of the "Protection Racket Game," firms
can credibly threaten violence even when there are no network externalities and the market for defense
services is highly decentralized. While we doubt that the bad equilibria in Sutter's model would be focal,
developing this argument must be left for future research.

Cowen would however probably respond that competing networks face the same dilemma as individual firms without a network. Inevitably, their clients will have disputes with each other. If transactions costs are low, the rival networks will reach mutually acceptable procedures for resolution. But once again, there is no reason for the rival networks to stop there; why not go further and strike deals to suppress price competition? In contrast, if transaction costs are high, Cowen would once again point out that this means chaos, not ordered anarchy. Thus, competing networks, if viable, run once again into Cowen's impossibility theorem.

c. Friedman's Reply

In his reply to Cowen, David Friedman (1994) makes a simple but critical point. Suppose there are N firms in an industry. Even a complete set of $N(N-1)/2$ bilateral contracts between competitors is *not* equivalent to one N-firm multilateral contract. Each bilateral contract maximizes the joint profits of the two signatories, *ignoring the interests of the other (N-2) firms.* The signatories have a mutual interest in avoiding conflict with each other, so we should expect their contracts to handle dispute resolution. But there have almost no reason to agree to raise prices, because virtually all of the benefits of such a bargain spill over onto the other (N-2) firms. As Friedman explains:

> Nothing in this situation requires or implies a single firm controlling the whole, nor anything analogous to one. The network as I have described it has no decision-making body. Its "decisions," the set of legal codes it enforces, are the outcome of independent profit making decisions by the individual firms and bargaining between *pairs of firms.* Nothing in the logic of the market for protection and arbitration implies that the outcome will maximize the summed profits of the firms, as Cowen seems to assert. (1994, p.323)

Judging from Cowen's reply, it seems fair to conclude that both sides overstate their case. Friedman undercuts any claim Cowen might have to an impossibility theorem.

But Cowen could retreat to the more moderate position that the transaction costs of a single N-firm multilateral contract would *probably* be less than those for N(N-1)/2 bilateral contracts. One centralized clearinghouse may well be cheaper than N(N-1)/2 bilateral bank clearing contracts, and one centralized arbitration network may well cheaper than N(N-1)/2 arbitration contracts. If so, an unregulated market will deliver one N-firm contract and, as per Cowen's argument, endogenously move to the collusive outcome. The next section tries to meet this claim head-on by arguing that even if the market delivers one N-firm contract, the resulting network would probably focus on standardization, not collusion.

3. The Limits of Networks: Self-Enforcing Agreements and Beyond

Cowen's (1992, p.259) argument comes down to a pair of syllogisms: "If the network can implement successful sanctions against outlaws, however, the network can also implement successful sanctions against potential competitors... If punishing potential competitors is too costly, punishing outlaws is also too costly." The key underlying assumption, apparently, is that punishment is equally costly to impose, regardless of whether it is directed against outlaws or potential competitors. Initially, this assumption looks highly plausible. Suppose for example that the relevant punishment is a boycott, a sanction that both Cowen and anarcho-capitalists frequently invoke. (Rothbard, 1973; Benson, 1990) Can the nature of the boycott's *target* affect the costliness of making the boycott work?

Absolutely. Let us distinguish two kinds of boycotts: self-enforcing and non-self-enforcing. (Telser, 1980) A good example of the former is a boycott against a dishonest businessman. To maintain a boycott against such a character, publicity alone is likely to

suffice. (Veitch, 1986; Greif, 1993; Benson, 1993; Greif, Milgrom, and Weingast 1994) Once everyone knows that someone habitually breaks his contracts, no one wants to continue dealing with him.[4] Note further that to enforce such a boycott, there is no need for the business community to carefully monitor its members. The cheater's former victims think, in effect, "Fool me once, shame on you; fool me twice; shame on me"; but those with no prior dealings with the cheater similarly reason, "Fool *him* once, shame on you; fool *me* once, shame on me."[5] By breaking the rules, cheaters ipso facto reduce the profitability of trading with them; in consequence, the business community punishes them not out of sympathy with the victim, but from their proverbial regard to their own self-interest.

A good example of a non-self-enforcing boycott, in contrast, would be a refusal to deal with redheads. As long as "being a redhead" is uncorrelated with "being a bad business risk," it will be more profitable for an individual merchant to break the boycott than keep it. Not only is hatred of redheads likely to be heterogeneously distributed; more fundamentally, even if anti-redhead preferences were shared identically by all, maintaining a boycott against them would be a public good. Mere publicity about the existence of redheads will consequently fall on deaf ears. More drastic measures would be required to sustain the boycott: mutual monitoring to detect profit-driven violations of the boycott, "courts" to weigh evidence, and secondary boycotts to punish those "found guilty."

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[4] The boycott victim could naturally offer, instead, to compensate prospective business partners for the extra risk of trading with a known cheat. But the incentives on both sides remain essentially the same: mere publicity induces the business community to make cheaters worse off.

[5] Greif, Milgrom, and Weingast (1994, p.752) refer to this as a "multilateral reputation mechanism."

So the nature of a boycott's target does indeed matter. It is cheap to orchestrate self-enforcing boycotts of the dishonest, but expensive to orchestrate non-self-enforcing boycotts of redheads. In fact, incentives almost exactly parallel those for statistical versus taste-based discrimination. (Coate and Loury, 1993) Extending Cowen's line of reasoning to discrimination could easily lead us to conclude that: "If the market can sustain discrimination against contract-breakers, however, the market can also sustain discrimination against redheads. If discriminating against redheads is too costly, discriminating against contract-breakers is too costly." But this overlooks the *interaction* between the nature of the target and the costliness of discrimination. Competitive pressure reinforces statistical discrimination based on real group differences - for example, that people who broke contracts in the past are more likely to break them in the future. But at the same time competitive pressure dissolves taste-based discrimination against, say, redheads. (Sowell, 1994) Unregulated markets will be neither generically "discriminatory" nor "non-discriminatory"; some forms thrive while others wither.

The same point holds for networks; it is easy to reach some forms of cooperation, while others remain prohibitively costly. Consider the classic contrast between coordination games and prisoners' dilemmas. As Cowen and Sutter (1999) observe, *every* industry faces a prisoners' dilemma: Firms within an industry could all earn higher profits if they colluded to raise their prices, but individual firms earn more if they continue to compete. Coordination problems, on the other hand, are less ubiquitous. They become an issue when consumers want mutually compatible products: DVDs that play in their DVD players, ATM cards that work in unfamiliar ATM machines, or a

defense firm that shares with its competitors a common body of procedures for dispute resolution.

Why would some of these problems be easier to solve than others? Once again, it hinges on self-enforcement. In coordination games, it is relatively easy to reach the cooperative outcome: If all of the other banks issue ATM cards of a certain size, an oddball bank that refuses to conform is only hurting itself. But in prisoners' dilemmas, widespread expectations of cooperative play actually sweeten the temptation to defect. If all of the other banks collude to charge exorbitant fees, the profits of the deviant bank that under-cuts them rise. Though it is conceivable that the banking network might surmount this with extensive monitoring and punishment, there can be no doubt that solving coordination problems is far less challenging.

It is worth pursuing this point at length because Cowen maintains that networks' ability to standardize products is ipso facto evidence of their ability to collude:

> The ability to collude is inherent in the nature of the network. The network can internalize the externalities problem behind peaceful adjudication only be suspending quality competition - that is, by offering a uniform set of laws or higher-order adjudication procedures. The ability to engage successfully in quality collusion, however, implies that other kinds of collusion are possible also. (1992, p.259)

But this treatment conflates two radically different kinds of business cooperation under the generic heading of "collusion." Standardizing products and fixing prices bear little resemblance to each other: It is the difference between a coordination game and a prisoners' dilemma. As long as consumers want a uniform product, adhering to industry standards is self-enforcing. As long as consumers prefer low prices to high prices, price-fixing is not. Ability to reach the cooperative outcome in the former in no way "implies" ability to reach the cooperative outcome in the latter. Cowen makes the strong claim that believing in one but not the other is simply inconsistent: "But if collusion, one public

good among agencies, cannot be provided, neither can the punishment of renegades be provided, another public good among agencies. We cannot have it both ways." (1994, p.331) But this inconsistency is illusory: When firms peacefully resolve disputes, this it selfishly optimal behavior in a coordination game, not the civic-minded production of a public good.

Cowen conflates standardization and collusion in a second way. By labeling product uniformity "quality *collusion*" he at least appears to suggest that standardization makes consumers worse off. It is far more plausible, however, to interpret uniformity as an *aspect* of quality. Indeed, the fact that consumers prefer a standardized product is the driving rationale behind any network's initial formation. (Liebowitz and Margolis, 1995) Bank customers benefit from a uniform worldwide ATM network. Similarly, consumers in the defense services industry would want procedural uniformity in order to settle disputes in a peaceful and orderly way.

On reflection, Cowen would probably acknowledge the benefits of uniformity, but retreat to the position that network formation remains a "Faustian bargain": Centralization raises product quality by sacrificing the familiar benefits of competitive supply. But this Faustian bargain is virtually a worst-case scenario: Coordination problems are much easier to solve than prisoners' dilemmas, so any network strong enough to enforce collusion will at *least* be strong enough to realize the benefits of uniformity. But the reverse is not true: Ability to standardize problems - to overcome mere coordination problems - hardly indicates an ability to suppress price competition or cope with other forms of the prisoners' dilemma.

At the most general level, and in the spirit of Cowen and Sutter (1999), we can imagine graphing the feasible extent of cooperation as a function of the costs of cooperation. Cowen apparently wants to partition this graph into only two regions. (Figure 1) If the costs of cooperation are high, as in Region 1, mutually beneficial interaction becomes impossible and there is a collapse into chaos. If the costs of cooperation are low, as in Region 3, mutually beneficial bargains of all sorts flourish - including agreements with large negative externalities.

But the contrast between coordination games and prisoners' dilemmas - more generally, between self-enforcing and non-self-enforcing interaction - reveals a better way to conceive the relationship between the extent of cooperation and its cost. Imagine splitting the graph into three regions rather than two. (Figure 2) In Region 1, the costs of cooperation are extremely low. It is cheap to reach and enforce agreements - even, as Cowen suggests, collusive agreements involving large numbers of actors. In Region 3, the costs of cooperation are extremely high; so high, in fact, that there is no way to arrive at a common language, conventions for measurement, or other basic forms of coordination. There is a collapse into chaos. But Cowen (1992) and Cowen and Sutter (1999) entirely neglect Region 2, where the costs of cooperation are intermediate. In this case, is fairly easy to solve coordination problems, since agreements to do so are self-enforcing. More involved contracts involving small numbers of actors are likewise feasible. But large-scale collusive agreements are not. The remainder of the paper argues that this intermediate case is not only logically possible but empirically plausible.

4. Evidence from Network Industries

Cowen's evidence is predominantly theoretical. He maintains that the usual historical evidence on collusion under laissez-faire cannot be credibly extended to network industries: "Although private cartels usually collapse of their own accord, most historical examples of cartel instability do not involve the benefits of joining a common network." (1992, p.260) But Cowen does not provide much in the way of empirical counter-examples to support his belief that networks industries are different.

This section takes a preliminary look at modern and historical network industries. It finds that while they definitely standardize products in beneficial ways, there is little evidence that they are more prone to collusion than non-network industries. Instances of attempted and temporarily successful collusion in networks do admittedly surface in the historical record, but collusive efforts in network industries appear neither more common nor more successful than in other sectors of the economy.[6] A comprehensive historical comparison of collusion in network and non-network industries is unfortunately beyond the scope of this paper. On Cowen's account, however, the contrast should be too large to miss.

a. Modern Networks: The Credit Card Industry

The credit card industry has all the defining characteristics of a network industry. (Carlton and Frankel, 1995; Economides, 1995; Evans and Schmalensee, 1995, 1999) There are links and nodes between consumers, merchants, and their banks, and there are significant network effects, as the value of a credit card increases with the network size. Evans and Schmalensee (1999, p.138) describe, "[P]ayment cards are provided through a network industry in which participants are linked economically in unusual ways. Payment

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[6] Comparing Dewing's (1914) descriptions of various industries with the accounts of Cannon (1910) and Sprague (1910).

cards are useless to consumers unless merchants accept them, but merchants have no reason to accept cards unless consumers carry them and want to use them." From the consumer's perspective a payment card is more valuable if widely accepted, so issuers will wish to be part of a large network. Carlton and Frankel (1995a, p.646) explain:

> [B]ank cards are general purpose credit cards issued by one of thousands of financial institutions that are connected to the networks operated by Visa or MasterCard, the 'bank card associations.' Bank cards differ from proprietary cards in that their networks do not link each merchant to a single issuer, but rather connect each merchant to its own financial institution (or its processing agent), which in turn is connected through the networks to each card-issuing member bank. The bank card associations allow customers of one financial institution to make purchases from merchants with bank accounts at different financial institutions. The associations' networks permit transaction authorization and clearinghouse settlement. The associations also engage in joint promotions, fraud control, and other collective actions.

Visa and MasterCard are not-for-profit membership corporations comprised of thousands of member firms and finance their services with membership fees. (Hausman et al, 1999) They provide infrastructure and a large network of users, which increase the value of individuals' cards.

As Cowen would expect, competing credit card issuers devote much of their energy to cooperation. But despite strong network features, they make little effort to restrict intra-network competition. (Rochet and Tirole 2000) Evans and Schmalensee (1995,p.889) write:

> Interesting economic questions flow from these operational problems. Given the inherent interdependency of transactions, how—if at all—should the costs, risk, and income from the 'two sides' of the business be shared? In theory, the problem could be addressed by having the organization (e.g., Visa) establish the terms (i.e., interest annual fee, special features) for all Visa cards issued by any member as well as the discount rate to be paid by the merchants. In that way the *system* could account for the interdependencies of the business as well as the allocation of cost and risk that is inherent in the members' decisions about such issues as risk of fraud or nonpayment. Such an approach, however, would be far more restrictive on competition at the intrasystem level than is desirable (or, perhaps, even legal). Therefore, neither Visa nor MasterCard regulates the amount charged to cardholders by its various issuers or the amount of discounts paid by merchants.

Although one might suppose that the network could create monolithic restrictions there actually is a large degree of autonomy of member firms. Visa founder Dee Hock (1999)

explains that Visa was deliberately designed to allow intra-network competition between members. Evans and Schmalensee (1995, pp.865-6) state:

> Competition for consumers takes place between issuers of Visa and MasterCard—most of whom issue both cards—and between Visa and MasterCard issuers and other payment card brands—American Express Green and Gold, American Express Optima, Diners Club, and Discover. Nationally, there are approximately 7,300 Visa issuers, each of which sets its own interest rates, fees, features, and marketing strategy for its cards. Although many payment cards are marketed locally, there are also nearly 100 national issuers, including all the largest Visa and MasterCard issuing members…Competition to enroll merchants to take a Visa or MasterCard brand and to service these merchants took place among approximately 250 acquirer organizations.

To the extent that there is cooperation it is welfare enhancing and is not used for collusion. In addition to the active competition between Visa members there is also competition from competing networks MasterCard, Discover, American Express, and even store specific credit cards.

Membership in the Visa network is hardly required for viability. With credit cards there are two types of networks: those owned by member banks, such as Visa and MasterCard, and proprietary ones owned by stockholders, such as American Express, Diners Club, and Discover. Even though it is a network industry, it is contestable, since there are various cases of new networks being formed. In the fifties Diners Club created the first charge card network among Manhattan restaurants (Evans and Schmalensee, 1999, p.62) and four decades later, amidst a handful of existing networks, Sears leveraged its store card creating the Discover Card. When networks are formed credit card companies had to offer good deals to sign up merchants and consumers. Discover offered more attractive rates and became as widely accepted as American Express shortly after its creation, becoming profitable after three years and a $300 million investment (Evans and Schmalensee, 1999, p.232).

Visa originated in 1966 when the Bank of America licensed its card nationally and shortly spun off its franchise system to create a nonstock membership corporation (Evans and Schmalensee, 1999, p.66). MasterCard has similar origins. It was a cooperative effort because they had to induce many banks, many merchants, and many consumers to use the card. Laffont and Tirole (2000, p.180) write:

> Consider the joint ventures Visa and MasterCard in the credit card industry. These associations are each owned by thousands of member banks, which compete for customers on one side of the market and for merchants on the other side. The merchant's bank, the 'acquirer,' and the customer's bank, the 'issuer,' must be bound by an interconnection agreement if the transaction between the customer and the merchant is to use a Visa or a MasterCard.

In a transaction in the Visa and MasterCard networks are four parties: the consumer, the merchant, and their two respective banks. Consumers are able to choose which credit card to carry, merchants able to choose which types of payments they accept, and their banks are able to choose whether to join the Visa and MasterCard networks. Each of these seemingly disparate parties is able to have dealings with each other without giving birth to a collusive mega-network. (Stringham, 1999)

The credit card industry thus provides little support for Cowen's doubts. But while evidence from modern examples can hardly be dismissed, antitrust is a troubling confounding variable. The checkered history of antitrust makes us doubt that the Department of Justice deserves credit for the accomplishments of the credit card industry. (McChesney and Shughart 1995) Still, perhaps Visa permits intra-network competition because it must.[7] It is therefore in many respects more probative to examine networks during the era prior to modern antitrust enforcement.

b. Networks Before Antitrust: Clearinghouses

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[7] In 1975 the US DOJ forced Visa and MasterCard to have duality [dual membership between the associations] and in 1998 the DOJ initiated a suit seeking to end duality. (Hausman et all 1999, 4-5)

Much like credit cards, nineteenth clearinghouses exhibit the features of a network industry. Competing banks had relationships with each other that enhanced the value of their product. As Timberlake (1984, 2-3) explains, "Instead of each bank establishing a transactional relationship with all other banks, every bank sends a representative to one place—the clearinghouse—where its debit items are cleared against its credit items." Gorton (1985), Gorton and Mullineaux (1987), and Calomiris (1990), emphasize another function: Since the leading reasons for bank failure were fraud and conflict of interest (Calomiris and Kahn 1991), banks needed a way to signal honesty. One good way to do this was to join a banking network that accepted liability for member obligations, conditional on their willingness to adhere to network rules. Or as Calomiris puts it, banks used "self-regulation, made credible by mutual liability." (1990, p.283)

And so, in the United States pre-antitrust banking industry, private networks known as clearinghouses arose to reduce the transactions costs of banks' interaction and improve members' reputations.[8] "An essential feature of the banking industry was the endogenous development of the clearinghouse, a governing association of banks to which individual banks voluntarily abrogated certain rights and powers normally held by firms." Gorton (1985, 277) The clearinghouse enhanced industry efficiency in many ways. One of their services was making sure that bank notes were redeemable, so they would monitor the members to ensure that banks were solvent. By having membership requirements the clearinghouse certified to the public and to other banks that its members were dependable. Gorton and Mullineaux (1987, 461) explain:

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[8] Selgin and White (1994, p.1732) acknowledge that some aspects of the clearinghouse might have been due to government regulations but regardless of the regulations the clearinghouse should be viewed as a private innovation.

The clearinghouse required, for example, that member institutions satisfy an admissions test (based on certification of adequate capital), pay an admissions fee, and submit to periodic exams (audits) by the clearinghouse. Members who failed to satisfy [commercial-bank clearinghouse] regulations were subject to disciplinary actions (fines) and, for extreme violations, could be expelled. Expulsion from the clearinghouse was a clear negative signal concerning the quality of the bank's liabilities.

Banks were free to apply for membership in a clearinghouse, but only those that met certain requirements and agreed to follow its rules were allowed to join. Dowd (1994, 294) writes, "The irony is that while banks might not like obeying clearinghouse regulations, those very regulations help make clearinghouse regulation attractive in the first place by increasing public confidence in member-banks." If any bank did not live up to the standards of the clearinghouse it would be expelled, and as Gorton (1985, 279) observes, "Threat of expulsion was a potent enforcement mechanism."

This created incentives for the banks to follow the rules of the clearinghouse. But did this lead to a blatant pattern of industry-wide collusion? Hardly; as Dowd (1994, 298) puts it "Nor is there any strong evidence, populist views about banking power notwithstanding, that banks were able to cartelize the market successfully." Banks that attempted to set rates found it difficult to punish cheating and sparked fierce competition. Dowd (1994, 298) adds, "That cartels were unsustainable is also suggested by the evidence that free-banking systems were highly competitive even when there was only a small number of big banks." Bankers may have wanted to form cartels but met with little success.

Consider the efforts of the New York Clearinghouse, which in 1873 declared the following rule, "No bank shall pay, or procure to be paid, interest upon deposits" (in Sprague 1910, 102). Professor O. M. W. Sprague (1910, 104) wrote:

The report of the clearinghouse committee seems to have been received with general approval, both by bankers and by the public, but it led to no immediate change in banking methods. It was considered at a meeting of the banks…and the adoption of its principal recommendation, that

interest on its deposits be prohibited, was favored by about three-fourths of the banks. It was felt, however, that a unanimous agreement was necessary to secure its effective adoption.

In 1884 American Exchange National Bank president, George Coe, complained, "This subject has upon several occasions in years past been under consideration, and its total abolition has been almost unanimously agreed to among banks by written contract. Yet by the refusal of one or more members it has failed to become a binding obligation" (in Sprague 1910, 375). Since not all banks would go along, rate-fixing banks would lose out to those offering competitive rates, making the collusion was unviable. Expelling them would have been legal, but apparently members saw it as imprudent: Far better to keep transactions costs low by making the network highly inclusive, and avoid diluting the network's reputation for financial probity by excluding financially impeccable members.

Similarly, turn-of-the-century banker James Graham Cannon described other rate-fixing attempts by clearinghouses that met with failure. Cannon (1910, 13) wrote, "As early as 1881 rates of interest were agreed upon in Buffalo, and were observed practically without fraction or violation for some nine years thereafter. They were broken at last only because of their nonobservance by new banks, which refused to become members of the clearing-house organization." Although they managed to set common interest rates, in the long-run their rates had to be at competitive levels.

In another scheme the clearinghouse tried to fix rates of exchange. This too was unsuccessful:

> But the formation of new banks finally played havoc with the uniform-rate system. While it lasted, it was obligatory upon every [member] bank, but in 1891 the newly organized banks began to cut on rates. The clearing-house members endeavored to induce the new banks to join the association, but did not at first succeed. It was regarded as unjust to the member banks to hold them to the existing agreement when their competitors were free, and accordingly, in June, 1891, the schedule of rates was made no longer obligatory. (Cannon 1910, p.15)

Thus, clearinghouses were good at orchestrating many forms of cooperation, but bad at others. Due to outside competition it was not in the self-interest of bankers to follow rate-fixing schemes such as those described by Cannon.

A major check against collusion was banks' credible threat to withdraw from the network or refuse to join. Dowd (1994, 295) states "Member-banks that found clearinghouse rules too irksome could withdraw or set up or join a rival, and this threat of lost business would to some extent limit the degree to which the clearinghouse or clearinghouse officials could 'abuse' member banks." Since one of a clearinghouse's main selling point is the breadth of its membership, clearinghouses mostly stuck to issues where member banks could broadly agree.[9]

> A good example of banks 'voting with their feet' even when the market could only support one clearinghouse is provided by the demise of the Suffolk system. The Suffolk system was a club managed by the Suffolk Bank of Boston, but some members found the club rules too constraining and there were complaints about the Suffolk's high-handed attitude toward members. Discontent led to the founding of a rival, the Bank of Mutual Redemption (BMR), and when the latter opened in 1858 many of the Suffolk's clients defected to it. (Dowd 1994, 295)

In sum, despite the benefits of being part of the network, a dominant clearinghouse hardly had a stranglehold on uppity members. Expelling financially unstable firms makes the network *more* attractive for consumers, while expelling "up-and-coming" firms makes it *less* attractive. Conditioning membership on factors other than financial honesty dilutes the network's reputational benefits.

While clearinghouses took a soft-line on some issues, such as penalties for not fixing rates, on other issues they took a hard-line. A clearinghouse, for example, would have no reservation about ousting an insolvent bank. Calomiris (1990, p.288) writes, "The Indiana insurance system relied on bankers themselves to make and enforce laws

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[9] With identical firms, of course, strict collusive rules can enjoy unanimous support. But in the real world, the benefits of collusion are far from uniform; up-and-coming firms, for example, tend to lose out.

and regulations through a Board of Directors and, importantly, gave the board authority when to close a bank. Unlimited mutual liability provided bankers the incentive to regulate and enforce properly." Because consumers knew that unreliable banks would be penalized it raised, "the public's perception of the quality of the 'average' bank." (Gorton and Mullineaux, 1987, p.463).

In instances a banking panic there was a large degree of command over clearinghouse members, but these were impermanent phenomena. Gorton and Mullineaux (1987, 466) write:

> "Suppose that once the more hierarchical form of organization had been adopted during the panic, the [clearinghouse] did not revert back to its more limited form. Then individual banks, knowing that the loan certificates were available, would have an incentive to make riskier loans since each would believe that the risk could be spread over the other members through the loan certificate process. Clearly, this would not be viable…Only by reverting back to the more limited organizational form did individual banks have the incentives to monitor each other."

Although a clearinghouse had the ability to exert a large degree of control, this was only in when the industry was in distress, and in long run a clearinghouse could not overstep certain bounds. This system of banking was network industry and it functioned quite well. Gorton (1985, 283) writes "the existence of the clearinghouse suggests that private agents can creatively respond to market failure." At the same time, the historical evidence hardly confirms Cowen's belief that a new - and arguably worse - market failure accompanies each of the market's "solutions."

c. The Sports League Anomaly

There are numerous other examples of network industries that do not seem to facilitate collusion: ATM machines, computer software, computer hardware, fax machines, financial exchanges, the Internet, television, telecommunications and more. Geddes (2000) surveys utilities and network industries such as airlines, cable television,

railroads, telecommunications, and trucking and concludes that laissez-faire outperforms state control.[10]

Still the critic might warn, as Cowen (1992, p.260) does, of "the danger of making inferences about industry structure under anarchy from observed industry structure." In some industries, such as professional sports, organizations are very closely linked, so what if the defense network were more like a sports league? Leagues typically control competition and restrict outsiders from joining, which might lead some to believe that a cartel in network industry is viable. In the words of Knoll (1974, p.2) "A professional sports league is essentially a cartel, with the purpose of restricting competition and dividing markets among firms in the industry." While there is collaboration in this realm, it is not surprising nor is it a problem, and the economics of sports leagues carry over to the defense industry.

Sports are a form of entertainment and their purveyors must vie for viewers. A feature of the product is to create a spirited contest between balanced rivals. Neale (1964, pp.1-2) writes, "[c]onsider the position of the heavy-weight champion of the world. He wants to earn more money, to maximize his profits. What does he need in order to do so? Obviously, a contender, and the stronger contender the larger the profits to fighting him." A one sided match would be of little entertainment to most viewers so we would expect leagues to be set up evenly matched opponents.

To create close contests leagues form a "cartel" to make the game more interesting. Fort and Quirk (1995, pp.1265-1266) point out, "Leagues have developed a variety of devices that lead to the subsidization of weak-drawing teams, with the

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[10] See also Lal (1997). Gabel (1994) points to government regulation as a major reason that competing telephone networks ended in monopoly.

announced objective of promoting their survival and enhancing competitive balance." In industries such as sports we should not be worried if competitors "collude" since they are doing so to attract more business. A sports league, such as the NFL, competes with other pro football leagues, college football, other sports, and other diversions that are not sports related. In the defense industry cartelization would be something to worry about, since a strong network would be in a strong position to threaten violence to prevent entry, but the fact that sports leagues can successfully regulate intra-league competition does not mean that the defense industry would be able to restrict intra-network competition.

5. The Paradox of Cooperation Resolved

Cowen and Sutter pointedly inquire:

> Free market economists typically express confidence in the ability of markets to produce public goods... At the same time, free market economists tend to be pessimistic about the stability of cartels in an unregulated market. If markets successfully produce local public goods, however, why are stable cartels not more prevalent? (1999, p.168)

Our implicit reply is that it is indeed difficult for markets to produce public goods; but private provision of defense services functions well as long as free markets possess the humbler ability to solve coordination problems. Or in other words, the externalities of social order wind up being largely infra-marginal. If farmers grew no food, or if defense providers failed to develop procedures for dispute resolution, society might well collapse into chaos; but neither of these dire situations is likely to remain an issue at the laissez-faire level of output.

Yet this reply is still too pessimistic. There are some at least two key factors that distinguish voluntary collusion between competitors and voluntary provision of more

familiar public goods like clean air. The first is the effectiveness of partial participation, the second their ideological appeal.

First consider the effectiveness of partial participation. On reflection, it can be seen that this hinges on the *elasticity of outsiders' behavior*. Suppose that 50% of all firms in an industry join a cartel to restrict production. They will probably be unable to raise prices much because outsiders' supply curves will normally be elastic. Firms that refuse to join the cartel increase their production to take advantage of the situation. Indeed, if outsiders' supply is perfectly elastic, any departure from 100% participation leaves the cartel impotent. In contrast, if 50% of all people who benefit from clean air decide to "do their part" by buying low-pollution cars, they can make a significant dent in the problem. As long as the outsiders are already polluting to the selfishly optimal point, an improvement in the *level* of air quality has no effect on their marginal incentive to pollute; the elasticity of their response will be close to zero. In neither case do actors fully solve their public goods problems; the point is that voluntary pollution abatement is a *partial success*, whereas the voluntary cartel is a *full failure*.

Admittedly, outsiders' supply of a product will not always been highly elastic: A natural resource cartel may be moderately effective in spite of partial participation, at least in the short-term. Similarly, outsiders' response to charitable donations will not always be highly inelastic. Donations to relieve world hunger could elicit a Malthusian population response, leaving the level of starvation insensitive to charitable giving. We can also imagine a crowding out of altruism, so that if some people give more, others offset it by giving less. But normally, it seems reasonable to expect high outsider elasticity for products and low outsider elasticity for causes.

Of course, the effectiveness of partial participation is cause for optimism only if participation rises above the selfishly optimal level - none - in the first place. This is where ideological appeal makes it entrance. People are, to a minor extent, willing to make trade-offs between their narrow self-interest and their ideological beliefs. (Tullock 1981) This gives rise to the second source of asymmetry between cartels and more familiar public goods: While many people are willing to make sacrifices to help the environment, combat world hunger, or promote human liberty, few are willing to join a crusade to maximize their industry's total profits. Developing a general account of why some causes elicit charity and others do not is beyond the scope of this paper, but there can be little doubt that such differences are real.

Cowen and Sutter (1999) wonder how free market economists can be optimistic about voluntary public good provision, but skeptical about the prospects of voluntary cartels. A natural explanation is wishful thinking. We argue, in contrast, that both beliefs are reasonable. Cartels are unlikely to work with partial participation, and in any case enjoy little ideological loyalty. More familiar public goods, in contrast, cope better with partial participation, and for ideological reasons are also likely to get more voluntary support.

6. Conclusion: Public Opinion as a Public Good

Cowen and Sutter put forward a final, more challenging, paradox: "[L]ibertarians believe that voluntary institutions do not necessarily produce the public good of mobilizing public opinion against excess government intervention." (1999, p.169) This point must be granted. But it impinges only on the difficulty of *establishing* a libertarian

society. It does not show that it would be unstable once established.[11] It does not even show that the costs of transition outweigh the benefits. By itself, the paradox practically amounts to, "It is a good idea, but will never happen." Maybe so, but it is worth pointing out the endogeneity: If widely accepted, this paradox would seem to be self-defeating. Once enough people see something as a good idea, it generally happens.

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[11] See Rothbard (1973) and Hummel (1990) on the importance of public opinion for warding off the state.

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