How Networks of Professionals Regulate Themselves

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ABSTRACT

This paper reconsiders in the context of the professions the set of behaviors known collectively (and rather loosely) as *self-regulation*. Building on earlier work (Savage 1993, 1994), it argues that professions are not neoclassical firms, and that it is therefore not useful to apply traditional theory-of-the-firm tools uncritically to the problem of understanding and evaluating professional production. The dangers of misapplying economic theory are especially acute at the policy level, where misunderstandings about the nature of professional activities often lead to misguided policy recommendations.

The plan of the paper is as follows. First, I differentiate among three types of economic institutions that are central to the organization of production and exchange: markets, firms and networks. Next, I argue that it makes sense to think of professions as instances of the network form of organization. Finally, I turn to the issue of self regulation. I maintain that no single central institution serves as the focus for production and exchange within professional networks. Instead, a variety of *subinstitutions* align the processes and incentive structures that underlie professional capabilities. It is only by understanding the relationship among professionals and subinstitutions in the network that we can begin to understand the nature and extent of professional self-regulation.

Introduction.

This paper reconsiders in the context of the professions the set of behaviors known collectively (and rather loosely) as *self-regulation*. Building on earlier work (Savage 1993, 1994), it argues that professions are not neoclassical firms, and that it is therefore not useful to apply traditional theory-of-the-firm tools uncritically to the problem of understanding and evaluating professional production. The dangers of misapplying economic theory are especially acute at the policy level, where misunderstandings about the nature of professional activities often lead to misguided policy recommendations.

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The traditional account.

Most economists who study professions make the understandable, though I believe mistaken, assumption that professions are ordinary, if perhaps objectionable, neoclassical firms whose performance we can assess using the same standards that we apply to the roller-blade industry. That is, "[t]he policy-maker's problem … reduces to whether professions should… be allowed to retain monopolistic powers" (Shaked and Sutton 1981, p. 217). The implication is that the professional form of production somehow depends on the government (the grantor of such monpoly powers) for its legitimacy and perhaps even its ability to produce. This is simply not true, as is well known to students of the history of the professions: the professional form of organization antedates government regulation.[1] The "monopoly" view does follow logically, however, from the assumption that professionals are firms. And it leads to the conclusion that the sole purposes of licensing and standards are to act as barriers to entry; that professional associations are cartels; and perhaps that some sort of employer-employee relationship within a traditional firm would be superior to the professional mode of organization. I will argue that the issue involved are far more subtle and complicated.

In one sense, scholars have certainly recognized that there is something unique about the professions. There is a generally, though not universally,

[1] See Savage (1993) for a review of the literature.

accepted body of thought that argues that there is something fundamentally different about the *goods and services* professionals provide.[2] There are several reasons, though, why the "the product is different" approach is insufficient to explain the existence and certainly the organizational structure of professions. First and foremost, the principal-agent relationship that underlies this approach is not unique to the professional-client relationship. For example, economists have shown that principal-agent problems are pervasive in exchange relationships within and between firms, resulting in, among other things, vertical integration. They are neither worse nor more common in a professional setting. Consumers do face a variety of demand problems when they purchase certain goods and services; but the literature shows that a combination of contracting, monitoring, and legal constraints evolve to solve them without the need to dismantle the professions (Dranove and White 1987).

Although still focusing on consumers, Darby and Karni (1973) do touch on what I believe to be the right issues. In discussing the problems of "credence goods" — goods the qualities of which the purchaser cannot evaluate in normal use — they suggest in passing that producers might build extra monitoring into the production process itself, so that the firm sells "output requiring less monitoring" (p. 86). This casual observation hints that the problem of monitoring in professional production is intimately linked to the production process itself,

[2] But see Pauly (1978) for a dissenting view.

and is not really a matter of the professional-client relationship alone. Another way to see the point is to recognize that the only truly different goods are those for which *even the producer* lacks information. For example, a physician may not know the probabilities associated with outcomes for a given illness under alternative treatments, or even know which doctors will subsequently treat a patient. This irreducible uncertainty, which may be quite common, is not compatible with principal-agent solutions (Minkler 1993), even those common-sensical ones proposed by Dranove and White.

The second category of problems that commonly affect consumers are the various kinds of externalities associated with professional production. For example, professionals often have responsibilities, both tacit and contractual, with parties whose interests may conflict with those of consumers. Physicians consider their obligations to hospitals, to third-party payers, and to public health in general when making decisions; accountants weigh the needs of both stockholders and creditors; and lawyers understand their role in managing the resources of the larger legal system. In order to correct for these externality effects, economists have suggested direct payment of a subsidy to influence the incentives of producers. But as Mark Pauly has complained, all of this is really a demand-side or consumer approach, emanating from Arrow (1963); it goes only part way in explaining the institutions of professions. "What is obviously necessary," he argues, "and has not been developed, by Arrow and anyone else,

is a theory which shows why and how welfare increasing restrictions would be expected to emerge from the interaction of self-interested providers and consumers" (Pauly 1978, p. 19).

My response to Pauly's challenge is to propose augmenting the economist's already good understanding of the demand side of markets with a fuller understanding of the supply side of professional production. The problem of irreducible uncertainty, to the extent that it drives any story about professions, falls mainly on the supplier. After all, if the product or service cannot be produced in the first place, then the consumer has no problem. Conversely, if production can be organized within the right institutional framework, the demand problem is largely solved. In the absence of the right institutional location, no amount of legislation is likely to be effective at protecting consumers.

An alternative approach.

The successful solution of production and exchange problems depends on an economic organization's ability to manage knowledge. One way to differentiate among economic institutions is to identify the kinds of production-determining knowledge problems each solves particularly well, and to study its strengths and weaknesses in structuring production and exchange. The transaction-costs theory of economic organization (Coase 1937) provided us with the insight that, under many common conditions, internal organization will be superior to

market exchange. This was originally meant as a synonym for the firm. As it turns out, the firm is not the only alternative to the market.

As Jensen and Meckling (1992, p. 251) point out, economic organization must solve two different kinds of problems: "the rights assignment problem (determining who should exercise a decision right), and the control or agency problem (how to ensure that self-interested decision agents exercise their rights in a way that contributes to the organizational objective." These two problems arise because of the need for decentralization implied by the specialization of knowledge in a complex production process. Efficiency demands that the appropriate knowledge find its way into the hands of those making decisions. There are basically two ways to ensure such a "colocation" of knowledge and decision-making: "One is by moving the knowledge to those with the decision rights; the other is by moving the decision rights to those with the knowledge" (Jensen and Meckling 1992, p. 253).

Markets (in the widest sense of the term) take the latter approach. The Coase theorem suggests that, so long as rights are well defined and alienable, decision rights will tend to end up in the possession of those whose specialized knowledge can make the most of them. This also solves the agency problem, since the alienability of the right means that market prices can measure the value of the right, which in turn creates an incentive for the owner to maximize value by using the right appropriately. But there are also potential costs to such

extreme decentralization, costs that arise in the interactions among the decentralized holders of rights. These might include the familiar sorts of transaction costs arising from moral hazard and asset specificity (Alchian and Woodward 1988). More interestingly, however, they may arise from the need to bring otherwise decentralized knowledge together and to coordinate it (Milgrom and Roberts 1992, chapter 4; Kogut and Zander 1992), especially in circumstances involving learning and the generation of new productive knowledge (Langlois 1992).

One alternative is to organize production under common ownership in order to gain the benefits of synergies and the integration of knowledge, albeit at the cost of imperfect colocation of knowledge and decision-making. Firms are particularly good at production in which complex management teams oversee large-scale production and distribution processes. These operations are typically characterized by repeated, consistent replication of known routines.[3] Such routines tend to be measurable at various stages of production, and so lend themselves especially well to formal monitoring schemes, including documentation, accounting trails, and supervision of employees (Barzel 1982, 1987).

But hierarchical governance organizations (firms) face their own knowledge-management problems. First, because firms don't customarily use

[3] On the idea of routines see Nelson and Winter (1982).

prices internally, they lose not only their knowledge-communicating abilities, but also the information and incentives that price-systems provide (Williamson 1985, chapter 6). Aligning the incentives of individuals within the firm with various goals may be difficult as well (Milgrom and Roberts 1990).

Secondly, hierarchical governance forms have inherently rigid knowledge flows.[4] As a result, even though replication of routines within and interaction with markets outside the firm both lead to improving old and acquiring new information, it may never reach the ears of those who could use it to best advantage. There are several reasons why certain kinds of information moves so poorly within hierarchical structures. First, even if vertical channels for passing on information exist, news likely to discomfit higher-ups may be suppressed, particularly if employees perceive a threat to their own future with the company, or if the information might adversely affect the resources allocated to their department. Second, employees may not know enough about what goes on above them to evaluate the usefulness of information; this is a particular problem if the information is tacit in nature. Third, hierarchical structures rarely have channels for transmitting information horizontally: information that would be useful to other departments would have to travel up and then down again to reach the right ears. The rigidity of hierarchies also affects the way that information is used. A firm's strategy is to *control* information flows. In this

[4] For a survey of the literature on hierarchies as information structures, see Radner (1992).

structure, managers are likely to interpret new information in old ways; as a result, they may not be able to translate new ideas into new capabilities (Garud *et al*. 1997).

But firms and markets are not the only alternatives. There is a growing literature on *hybrid* forms of organization, forms that offer distinctive solutions to the problems of rights assignment and agency. Professional networks are one such alternative.

Professional networks.

A *network* is an alternative economic organization with its own knowledge-management strengths and weaknesses.[5] From an economic point of view, networks are more than a way to reduce transaction costs (and may in fact raise them). They are powerful examples of sustainable, strategic collective action (Olson, 1965), whose.*raison d'être* is to generate knowledge and coordinate its transfer without integrating ownership.

Through specific formal and informal arrangements, professionals share rent-earning competences without ceding autonomy to a central hierarchy. When professionals locate together in a network, they do not take a joint equity position, or even sign a contract. While remaining legally independent, they make a long-term commitment of their substantial human capital to a "hubless"

[5] Although there is a growing interdisciplinary literature on this topic, there is no generally accepted theory or definition of networks (Jarillo 1988). The most rigorous review of the problems of understanding networks probably comes from Powell (1990).

network organization. Because networks do not integrate ownership, they have a horizontal rather than hierarchical coordinating structure. Without the exchange of cash payments, members exchange information and technology, and collaborate in production — that is, share routines — without authoritarian supervision, and without integrating external management functions into their day-to-day operations. In fact, network members remain competitors across many dimensions.

Why would individuals be willing to do this? Common sense suggests that they prefer this arrangement to being either employees or managers, and that the rents generated by the arrangement are sufficient to offset the higher transaction costs needed to create and sustain other aspects of the network. If this is so, then self regulation can be reinterpreted as the solution to certain kinds of problems associated with professional production

The nature of professional knowledge is central to any story about professions, but probably also a subject unto itself. The crucial point is that one of the qualities of professional capabilities is that they take the form of human capital based on tacit knowledge.[6] Many of the advantages of networks lie in their ability to manage transactions when it is virtually impossible even for those with vital interests in production to specify in explicit terms what it is that practitioners know and how they should use that knowledge. Because these

kinds of assets are both intangible and highly mobile, the best that can be hoped for is a transaction-sustaining relationship among all interested parties (Nelson 1991).

Networks are able to transform tacit knowledge into much more valuable capabilities than any individual practitioner could have acquired alone. Where no contract could have succeeded in appropriating the skills of professionals, the network provides incentives to share those skills. Practitioners recognize that they are dependent on the distinctive competences of other practitioners, and that it will be in their individual best interests to share these competences. In other words, the knowledge, routines, and capabilities that give economic value to professional production lie in the interface between individual practitioners and the system. In the terminology of sociologists, professionals have complex relational roles (Barley 1990). In economic terms, only the least valuable professional routines are executed independently.

Networks coordinate shared competence without resorting to management hierarchies, replacing day-to-day ties with long-term reliance on membership in the network. The explanation for this lies in the way that professionals integrate knowledge and routines into rent-earning capabilities.

To begin with, professional knowledge is fungible to a variety of tasks. The exact routine employed by a professional is unique to each case: non-

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[6] The concept of tacit knowledge is from Polanyi (1958). On its application to economic

routine routines, if you will. As Arthur Stinchcombe (1990, chapter 2) so nicely puts it, professionals are information-processing systems who must wield and apply a wide repertoire of routines to fit widely varying concrete circumstances.

Moreover, routines are largely shared, in the sense that the abilities and choices of an individual practitioners are shaped by the abilities of those with similar or complementary skills — the network and its attending institutions. While each practitioner produces independently, all practitioners execute their routines in the same meta-environment. For example, a lawyer is constrained by the cumulative precedents of previous cases, most of which were decided long before the current generation entered the profession. At the same time, the creative application of existing law generates new opportunities for future practitioners. This is true, too, for physicians, whose day-to-day decisions are affected by the previous treatments administered to patients by other physicians. Engineers also rely on shared knowledge when reconstructing the processes and results of previous decision (Feynman and Leighton 1988).

Clearly, then, one way to coordinate shared routines is to use standardized terminology and procedures. Knowledge of the procedures used by other practitioners largely determines the decision-making behavior of all members of the network. Standards can thus be thought of as one kind of coordinating institution. From the professional perspective, standards are

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production, see Nelson and Winter (1982).

shared routines built into education and apprenticeship. Another coordinating institution is the system of reciprocal behaviors that create indebtedness. Professionals often borrow the routines of others for both exchange and production. For example, von Hippel (1989) has shown that engineers routinely share technical information with rivals in other firms. Such sharing is most likely to occur when a professional is attempting to solve a new or difficult problem. The resulting mutual interdependence has the added benefit of building trust, which is an important institution for solving contracting problems (Landa 1994).

A professional receives training, a stock of expert knowledge, and membership from the network. Since the network is "hubless," it extracts payment in the form of long-term mutual reliance among members. An individual practitioner is free to develop new routines, to work hard, and to run an independent practice. The *caveat* is that there is little or no ownership of information. This is, of course, because tacit information cannot be easily traded and monitored, so the network coordinates is use and attempts to increase its value to the group as a whole. Further, within professional networks, solutions are more likely to emerge from "voice" rather than "exit" (Hirschman 1970). Professionals who leave the network give up their access to shared routines and assets, significantly reducing the market value of their knowledge

Indebtedness plays out as frequent episodes of sharing distinctive competences and of free movement of information within the profession.

Repayment is not in money terms, but in contributions to the effort to the network. Professionals know that they will see each other again, which provides structure to the exchange relationship. By itself, the institution of indebtedness serves as an internal monitoring mechanism.

The ability to restrict exchange to parties that one has directly or indirectly dealt with before is a characteristic of networks, and it explains why they are so good at transferring information that can't be proxied by price. "Such qualitative matters as know-how, technological capability, a particular approach or style of production, a spirit of innovation or experimentation, or a philosophy of zero defects are very hard to place a price tag on" (Powell 1990, p. 304). The advantage of the network form of organization is that price tags are unnecessary. Self regulation is one of the special sub-institutions of professional networks that exploit interdependence in order to provide incentives, establish and maintain knowledge flows, and encourage innovation without internal organization and markets.

Using this framework we can explore, and perhaps "operationalize," the concepts called *authority* and *autonomy*. By autonomy, I mean that no one except another professional, the network's "representative," can challenge the day-to-day decisions of a professional. Individual practitioners choose their essential routines from among a set of shared competences, but they adapt and apply them independently. Operationally, they define their own daily work routines,

deciding what to do and how to do it. Networks prepare individuals to participate in sharing routines, and autonomy represents formal recognition of individual responsibility to do so.

It is within this context that we can reinterpret self-regulation. Networks incorporate mechanisms designed to select potential entrants, and to convey to them the theory and practice of shared routines and competences. These mechanisms provide incentives for individual self-restraint, in order to ensure that both members and nonmembers perceive professional authority as legitimate. Others provide incentives and resources for innovative uses of routines, developing new routines, and sharing information about both strengths and weaknesses of existing and emerging capabilities . Entering members have been taught the right knowledge base for the routines that represent the core of the profession's strategy. Through these mechanisms, networks encourage knowledge transfer and facilitate competence sharing, processes that maintain the network's competence-building capabilities

By authority, I mean to emphasize that professionals possess command capabilities not available to economic agents outside the professions. Authority enables production; it does not mean that professionals have the ability to force individuals (like clients and patients) into specific actions based on their opinion or advice. An example of authority is the common characteristic of command over resources that the profession neither owns nor makes payments for. For

instance, attorneys use the legal system's resources, like court time, without paying for them; and physicians commonly command use of hospital assets, also without payment.

The limits of autonomy and authority define the boundaries of individual professional practice. Since individual effort is a large part of earning income even from shared routines, individual practitioners would be particularly sensitive to any appropriation of their individual rents. But ownership is a subtle matter in a network context. In a sense, the autonomy and authority that the network grants to professionals are the analogue to ownership in a market: it is a kind of quasi-ownership. The professional, who possesses the relevant localized knowledge, does get to exercise decision-making; but the right to do so is not alienable, and the exercise of decision-making is always circumscribed by the constraints of network participation.[7] One result of this is that professionals will defend authority and autonomy tenaciously, even in situations in which the threatened diminution in authority and autonomy seem small. To practitioners, even a small threat represents the top of a slippery slope, since authority and autonomy underlie all of the basic routines that give value to individual tacit knowledge.

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[7] Of course, ownership always involves a "bundle" of rights, some of which may be alienable. Thus doctors and lawyers in private practice may have conventional ownership rights over some assets like computers, office buildings, smaller pieces of equipment, and even, as Grossman and Hart (1986) suggest in a relevant context, a list of clients. Moreover, professionals own their own human capital. But the value of the owned human and physical

Authority and autonomy confer benefits at a system-wide level, not merely at the individual level.. First, individual autonomy contributes to the ability of the network to handle uncertainty; in a sense, it saves the network from having to put all of its eggs in one basket. Second, it takes advantage of the individual strengths of each practitioner, and minimizes the global effects of errors in strategy and execution of routines. Each practitioner produces independently by choosing where and when to apply routines, committing substantial personal resources to the effort. For example, lawyers choose to specialize in specific areas of the law, and are in a better position than any imaginary central planner to recognize new opportunities. Thus, the profession is able to specialize and diversify simultaneously, a feat not quite so easy for a traditional firm. As a result, networks are particularly flexible in adapting old routines to new uses and developing new ones. The primary role of authority is to organize production by assigning tasks and routines to individuals in the organization. Networks assign authority and autonomy on an incremental basis, reducing the amount of resources the organization devotes to decision-making and monitoring. Professionals sort themselves out according to their own understanding of shared routines, and delegate production responsibilities accordingly.

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capital is highly sensitive to participation in the network; and the right to such participation is not alienable and reflects an ongoing reciprocal relationship.

Networks are complex mechanisms that put differences among practitioners to their best us. The delegation of autonomy and authority lays down the ground rules for horizontal governance of repeated and continual transactions; for negotiations about how the networks joint assets will be allocated and improved; and for determining group policies. First, preparation for entrance into the network sets up a level playing field of capabilities. Next, discretionary differences, normal entry and exit from the profession, changes in demand, and changes in the institutional environment soon lead to disequilibrium among practitioners: some know more than others, each has accumulated different experiences, some work harder, some are smarter, some luckier, some have better management capabilities. This disequilibrium creates incentives for trading and sharing routines and competences. Finally, interaction among professionals completes the feedback loop. Information about competence-building and competence-destroying activities (Tushman and Anderson, 1986) filters throughout the network. Each professional interacts with a large but distinct set of the network's capabilities. This enables the individual practitioner to see parts of the big picture as well as the small It helps the network acquire information about demand in a market with many varied requirements, and to generate new routines and products. All members of the network are expected to be part of the feedback process. There is a *quid pro quo*: the network endows the individual with shared competences, autonomy, and authority, and the individual's career is spent paying the network back. The

side-effect of feedback is that new knowledge and innovative routines enhance the individual's own competence.

Viewed from this perspective, it might begin to seem clearer that professions compete with alternative organizational forms and with other professions, and professionals compete among themselves. Notice that there is no monopoly over knowledge or information. The problem (if it is one) is that knowledge in this context is embedded in the organizational form, and is inseparable from the processes and routines which allow it to produce..

Because practitioners often use assets that they don't own, there is typically a competition between practitioners and *subinstitutions.* By subinstitutions I mean both the organizations (like hospitals, courts, or trade associations) with which professionals interact and the more abstract institutions (like coded of ethics and systems of practice) on which they rely.[8] Individual practitioners earn their livings independently, and their strategies and structures may not align well with those of the subinstitution. For example, in medicine, state boards control through certificate-of-need legislation the kinds of technologies that individual physicians can own in their own practices. Physicians see this as an infringement on their right to define their own work.

Professional subinstitutions also battle among themselves for jurisdiction of members, decision-making rights, and assets. A typical problem is the

distribution of power between national and local professional associations and accreditation. In some countries, entry standards are controlled by educational institutions, and in others by government agencies or licensing boards. Often, multiple professional associations coexist for a while, until one establishes dominance. In the 1880s, membership in the American Bar Association was low, and it represented mostly elite lawyers. The National Bar Association emerged as a grassroots response. The ABA, perceiving the threat, quickly changed its membership strategy and goals, and snuffed out the upstart organization.

Self-regulation.

Self-regulation is a somewhat loaded catchall term used to describe a broad spectrum of behaviors in "restraint of trade," including entry restrictions, fee-setting, prevention of the free flow of information, inflated prices, control over competitors' output, and limitations on access to clients (Shaked and Sutton 1981; Benham and Benham 1975; Matthews 1991). It is difficult, but important, to see that self regulation looks very different from the inside than from the outside. In the context of the alternative approach that I've described, self-regulation is best understood as a routine or set of routines within the context of the entire problem of professional production. To put it another way, self-regulation in the professional setting means coordination of economic activity

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[8] Elsewhere (Savage and Robertson 1997), a coauthor and I refer to the first, more concrete, kind of subinstitutions as *cospecialized ancillary institutions* or *coinstitutions*.

through voluntary association in an interdependent network, without interference from the government, and without resort to hierarchy.

Historically, professionals have operated in a variety of institutional settings in which self-regulation appeared in a variety of different forms. For example, in France, professionals have traditionally been part of the civil service. Also, the institutions of self-regulation differ across time, place, and professional setting. In the United States, the post-revolutionary period saw the rise of issues that pitted federal against local autonomy and the abilities of individuals were weighed against those of government. Acquiescing to expert opinion and self-regulation was a defensible middle ground. This position was strengthened by the political scandals of the last quarter of 19th century, which were followed by an even more widespread appeal to the authority of non-governmental experts (Hatch 1988). After the Civil War, the Surgeon-General's office, with many supporters, advocated a centralized system for credentialing and for exercising authority over the medical profession. However, neither the small medical networks nor the public expressed much enthusiasm for the idea (Haber 1991).

The second point is that self-regulation is only one of many routines that professional networks might come up with as a solution to certain kinds of production and exchange problems. Over time, a routine like self-regulation becomes embedded in the culture of the organization and becomes part of its strategic-response capabilities. By itself, self-regulation has no meaning; it takes

on meaning only in the context of the external and internal institutions that are created to implement it.

This brings us to the third and fundamental point: what is self-regulation, aside from the nebulous ability to run one's own affairs? Where does it fit in with what we know about regulation in general? Self-regulation is an unfortunate name, partly because it suffers from guilt-by-association with government regulation. Economic regulation usually refers to government intervention in private-sector economic affairs, justified by observed or suspected market failures, externalities, imperfect information, or monopoly. The reigning theory of economic regulation began with Stigler's (1971) paper, later extended and formalized by Peltzman (1976). The economic theory of regulation demonstrates the existence of a complicated market for regulation, inefficient redistributions of wealth, and severe, unintended consequences for efficiency. These results, which are intended to, and indeed do, tell a compelling story about government intervention in the private sector, have given all regulation a bad name. Worse, they have done so without really explaining what regulation is, and is not.

Viewed from the perspective I have taken here, regulation is nothing more nor less than the coordination of production, exchange and consumption activities by a variety of market and non-market, internal and external, mechanisms. Regardless of who is doing it, regulation always consists of

routines designed to choose quality levels, control production, and administer interactions with other organizations. Clearly, then, self-regulation is something of a misnomer, since *all economic institutions self-regulate***.** Markets, for example, regulate economic activity, mainly through the information and incentives of the price system. Markets, as we have seen, are generally good at coordinating certain kinds of production and exchange activities, and less useful for others. Earlier, I identified the purchase and sale of tacit knowledge as a particularly difficult one for markets. Markets are not the location of choice for transactions that require enforcement or monitoring as part of the process, particularly since they rely on civil liability which only operates *ex post*.

It is misleading, however, to compile a list of activities that the market is "generally" good or bad at, because it misses the point that the capabilities of markets change over time and space. It is nowadays possible to negotiate some kinds of transactions through the market that could only be procured internally before. Similarly, some activities that could be undertaken in the market previously are now more commonly accomplished internally. In broad terms, there is little difference between theories of economic organization and theories of regulation of economic organization, except where the government is involved. *De facto* self-regulation is how firms produce goods that require less monitoring, as Darby and Karni (1973) correctly observed.

By extension, self-regulation means simply that in networks regulation is accomplished through non-governmental institutions. It is only the jargon of regulation theory, and perhaps a vision of organization too narrowly focused on hierarchies and statics, that causes us to view self-regulation by any economic institution, including markets, with suspicion rather than respect. It is possible to interpret contract-based explanations of organizations as arguments for the view that all activities undertaken under the auspices of contracts, whether spot, explicit, self-enforcing or cultural, are, by definition, "sheltered from market forces" (Goldberg 1980, p. 338). That, after all, is the point of internal organization. Shelter from the market is not the same as shelter from competition. Competition is in part the process of choosing an organizational form. Markets, firms, networks and perhaps the government all *a priori* contenders.

There is also continuing competition among economic institutions to establish the boundaries of the organization. Internally, there is competition to determine the terms of the contract, the role and location of authority, the monitoring mechanisms, the incentives and the sanctions. Over time, individuals in the organization adapt to the terms of the contracts, learning to use them to their own best advantage. Opportunities abound for opportunistic behavior, which includes all types of non-adherence to contract terms. This, too,

is competition. There is also competition, especially within professional networks, to influence strategy.

For example, at one time it was common for self-regulating professional networks to ban advertising by individual practitioners. The production and exchange purpose of bans on advertising was to avoid degeneration to the "lemons" problem. Advertising creates market-like conditions in which individuals are tempted to promise more than they can deliver, to give outright false information, and to provide lower-quality, cheaper service. Unfortunately, the side effects of bans on advertising are restricted information flow to consumers, leading to higher prices and reduced access to professional goods and services (Benham 1972). However, over time, other institutional constraints have appeared which, to different degrees in different professions, increase the probability of detection of low-quality production, provide better monitoring, increase the severity of external sanctions for providing false information, and reduce the returns to deterioration of quality.

The importance of these innovations became apparent to individual practitioners first. Not surprisingly, these autonomous units, integral parts of the dynamic capabilities of networks, took the lead in testing the limits of the advertising ban. Increasingly, professionals from a variety of professional settings advertised in different ways. They met with both support and opposition from other network members and institutions. However the

competition had turned out, the network would have benefited from low-risk, low-cost testing of an innovation and its supporting mechanisms. Had it not worked out, they could have elected to enforce existing sanctions more rigorously. The reputations of the individuals would have suffered, leaving the network's capabilities intact. Instead, consensus emerged that advertising could be done in a way that was advantageous, not harmful, to the network. Advertising is clearly an example of opportunistic behavior on the part of professionals who entered the network knowing the rules, but knowing also that networks are dynamic and non-hierarchical. It is also an example of internal competition offsetting internal organization's "shelter from market forces."

Taking these factors into account, the issue of self-regulation, and indeed all non-governmental regulation, appears more benign. Do we, after all, want to argue that all production, exchange and consumption activities not coordinated (regulated) by markets are inferior across all dimensions? Yet it does matter who regulates economic activity. It matters first because different institutions will choose different aspects of the problem to regulate; for instance, the literature differentiates between the implications of regulating inputs versus regulating outputs or the process versus the product (Shaked and Sutton 1981). It is naive to think that either the product or the process will look the same produced in a different type of economic organization. Second, they will develop different regulatory mechanisms. Finally, regulation has an impact

outside of the organization, beyond its abilities to solve production and exchange problems for the regulated organization.

The problems of government regulation are well known to economists. From the standpoint of the regulated organization, “the best organized cartel will yield less to the membership if the government organizes it than if it were (could be) organized privately” (Peltzman 1976, p. 217.) There are many reasons for this. First, government regulation is not a free good. In a professional network, for example, the benefits and costs of monitoring are borne by “volunteers”; even if hierarchical monitoring were feasible in this setting, it would be at least partially redundant. For their own use, and as part of sharing routines and operating the network, peers would monitor each others' routines anyway. Network mechanisms reinforce self-policing because they encourage peer-monitoring as part of the professional's everyday routine

Second, governments have trouble setting up the kinds of personal incentives that the network does. Regulation by the state most often takes the form of prohibiting or requiring certain behaviors. These prohibitions are inexpensive proxies for monitoring, designed to get around the problem that the regulator knows little about which activities should be monitored.

From the government's perspective, all professionals are treated the same. However, the real-world diversity of practitioners in training, experience, practice location, and remuneration makes a sham of treating them all the same

through inflexible regulations. In contrast, for professions, self-regulation has many advantages. First, it is "stateless." In the United States, government regulation of specific economic organizations has traditionally been more effective and more popular at the state and local rather than federal level. Professional institutions of self-regulation mimic this arrangement by relying on state and local licensing, ethics, and policy boards. In fact, local professional boards have always been more powerful than the national ones (Heidenheimer 1989). Professional networks self-regulate in a decentralized manner, as they do everything else. They are decentralized geographically and also by profession and subspecialty. Professional networks rely on a variety of mechanisms and institutional settings in order target different aspects of regulation. Among these are codes of ethics, professional associations, and peer review. In contrast to the presuppositions of economists, licensing is not self-regulation but government regulation with cooperation from some network institutions. It is different from self-regulation because it relies on third-party enforcement.

In general, the law, when applied to professions, is "among the least efficient means of regulating conduct; a reasonably dull tool compared to a reasonably good conscience or the judgment of one's peers" (Davis 1987). In the absence of government intervention, self-regulation in professional networks is no more a competitive restriction than are the policies contained in a typical corporations employee handbook. Self-regulation represents the voluntary

association of shared routines and assets within an economic organization through the use of formal and informal contractual mechanisms. Self-regulation in professions revolves mainly around choosing standards for and maintaining and improving the quality of shared routines and network capabilities.

In professions that are tied to technology, the definition of quality may change quickly. For example, law depends mainly on precedents, so an attorney's stock of quality information is unlikely to deteriorate as quickly as a radiologist's or an engineer's. The quality of routines will depend both on the beginning competence of new members and on how individuals maintain their own competence over time. Institutional mechanisms have to balance maintaining current standards and leaving room for innovation. This is particularly complicated in professions like medicine and academics, where post-entry specialization implies that only a few other subspecialists will be able to judge the merits of one’s contributions.

We know a lot already about government regulation in general. There is also no reason to believe that self-regulation will work any more perfectly than regulations within a firm or market. Nor should we expect that the mechanisms in any economic organization will be constructed for the convenience of those outside the organization, excepting of course customers and suppliers. Clearly, self-regulation is not a perfect mechanism. Voluntary monitoring exacerbates the conflict between collective authority and individual autonomy. Network

mechanisms enable practitioners to collect information about each other automatically, but their designs do not force individuals into participating in "whistleblowing" or revealing negative information about others to monitoring institutions. In fact, there may be strong incentives not to reveal or release this kind of information to institutions over which individuals have little control, like state licensing boards or malpractice lawyers. The voluntary nature of professional institutions means that local boards and committees may attract individuals who are less competent at the technical aspects of the profession, or who may have some private agenda. This can happen, too at the national level of professional subinstitutions, where there may be substantial perks associated with holding office.

Self-regulation is not the solution to all of a profession's problems in any case. Networks have problems interacting with other forms of economic organizations, primarily because they lack a single voice with which to speak to hierarchical institutions like firms and governments. Physicians, for example, seem to lack direction in helping to solve the "health-care crisis"; this is in fact because they are coming from many directions. This is not a problem that self-regulation can solve

Self-regulation is likely to become more complicated and difficult as rapid changes in technology and external institutions challenge a network's capabilities. Internal controls most often develop when there are no external

supportive institutions, like third-party enforcement or legal standards. Often, the appearance of these "supportive" institutions undermines but does not completely replace the internal solution, leading to gaps in the ability of the professional network to direct production. Malpractice insurance, state licensing, capitation health care, and health insurance that defines the standard of care, all have had disequilibrating effects on physician networks, leading to confusion about just which institution they are responsible to. The introduction of government regulations can have similar effects.

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