

PROPERTY RIGHTS AND THE KNOWLEDGE ECONOMY

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Abstract

This paper outlines several important changes in our economic model brought about by the emergence of the knowledge economy. Until now, property rights have acquired a solid track record for being the most reliable and efficient societal device for coping with economic uncertainty. In the industrial age, property rights have made the separation between ownership and control tenable and have generated the now ubiquitous archetype of economic organization represented by the public corporation. In the knowledge economy, the most important factor of production is human capital, meaning that the importance of property rights is greatly diminished, as one cannot separate ownership from control without interfering with the right of self-ownership.

Keywords: *Human capital, property rights, public goods, positive sum games, economic surplus*

Introduction

The pinnacle of microeconomic organization is the public corporation; it provides a superior mechanism for handling risk by limiting the scope of moral hazards and compensating the lack of social bonds with formal contracts [Novaes and Zingales (2004)]. It also provides a mechanism for reducing the transaction costs of allocating resources, by replacing relative market prices with administrative fiat [Williamson (1975)].

For more than four centuries capitalism has thrived because property rights have proven apt at coping with economic and social risk better than anything else devised by man. As a tool for allocating residual cash flow and control, they allow for the internalization of the economic surplus. This frames the corporation as a positive sum game, engendering cooperation among economic agents. Yet, the history of capitalism so far is that of the industrial revolution: the industrial model of production has been made largely possible by the nature of firm-specific assets and that of the output. Capital has been historically invested in tangible assets and output has been dominated by goods that are rival and exclusive. These two characteristics have made the separation between ownership and control tenable and have fostered the managerial revolution and the now-familiar centralized, hierarchical governance model. As we move from an industrial model to a production model dominated by knowledge, the role of property rights is about to change. The current paper is attempting to sketch and discuss the important changes that a new economic paradigm is about to usher into our world.

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1. Property Rights and Human Capital

It is widely acknowledged that property rights are a precondition for a dynamic and efficient economy [Hart and Moore (1990)], but this statement needs to be qualified; strong property rights and fair regulation sometimes merely mirror social practices engendered by a vibrant moral community, while other times are badly needed to offset moral deviance and opportunism [La Porta et al (1998)].

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The traditional economic model links financing to the provision of capital. This view is nevertheless incomplete. All organizations need some mix of financial, social, and human capital in order to function [Schultz (1961), Becker (1964)]. The link between finance and growth, however, is a well documented empirical issues [Guiso et al (2008)]; it is easier to quantify financial capital, as opposed to less observable, and morally-laden concepts like talent, trust, and cooperation.

The provision of capital is a risky economic endeavor. The entrepreneur sinks one's capital into a specialized, firm-specific project. The assets generates economic value only when used in connection with a given project: an airplane can only be used to fly passengers and cargo. One cannot use it to drill for oil, to grow corn, or to bake bread. Given its very specialized use, the equipment has a limited market, and its liquidation would occur at a substantial cost to the owner. If the project is thriving, the entrepreneur is fully rewarded, if it falters, the entrepreneur is stuck with an asset that is costly to redeploy. This is why the entrepreneur is entitled to reaping the rewards of his venture.

Understandably, as organizational complexity increases, one should expect a division of labor to occur: some individuals will specialize in the provision of capital and risk-bearing, while others will specialize in making managerial decisions. Since specialization gives rise to agency problems, the modern corporation represents a trade-off between risk and internal economic performance [Jensen and Meckling (1976), Fama (1980), Schleifer and Vishny (1997)]. Moreover, arm's length contracting bolsters volatile social capital with the help of enforceable contracts in order to achieve collective action. Finally, the corporation rationalizes transaction costs by engendering resource allocation based on fiat instead of relative market prices.

The specialization between risk-taking and decision-making is tantamount to the separation between ownership and control [Berle and Means (1932), Demsetz(1983), Demsetz and Lehn (1985)]. In the smokestack era of the industrial revolution, most capital was represented by industrial equipment that was easily managed top-down in hierarchical organizations owned by absentees capitalists. A great portion of labor was relatively unskilled and, as illustrated by Henry Ford's assembly line, largely interchangeable. For centuries, workers were ultimately handled not much differently than workhorses. This is the context in which Karl Marx decried the alienation of the proletariat from the product of its own labor. He saw it as a situation in which the worker was denied the right of self-ownership; capitalism was thus the moral equivalent of modern slavery.

As it becomes more and more obvious that knowledge represents the main ingredient of economic, social and moral progress, the separation between ownership and control is blurring. Knowledge is a paramount trait of human capital, which is bound to eclipse financial capital in terms of economic significance. Since a free and democratic society rejects any form of slavery and servitude, a clear-cut separation between ownership and control could never be achieved. The manager has to devolve a great deal of authority to lower organizational echelons simply because the specialized knowledge of many workers makes them better at making decisions than the manager. The increasing complexity of modern economic life requires teamwork, because teams are better at monitoring their members and evaluating complex outcomes that are not readily measurable or observable by independent third parties [Baker et al (1988)]. The future of economic organization will arguably revolve around knowledge-based goods and services hard to quantify, and around complex production processes that cannot be prescribed ex-ante by conventional performance metrics [Drucker (1999)]. The post-industrial economic organization relies more on flat networks based on trust rather than traditional hierarchies based on autocratic rule [Rajan and Zingales (2000)]. The rise of economic networks is showcasing the role of human and social capital, but this does not spell the end of the hierarchy [Fukuyama (1996)]. Social capital is volatile and vulnerable to moral hazards, hence a modicum of bureaucracy will always

complement the strengths and compensate the weaknesses of economic networks. It is in this very sense that we should interpret Max Weber's (1947) claim that the essence of modernity is the bureaucratic organization.

2. Knowledge, Property Rights and Collective Action

The concept of post-industrial economy [Bell (1974), Ritzer (2007)] has come to be understood as a stage of social organization in which the bulk of economic output is represented by human knowledge, culture, and communication [Benkler (2008)]; the most significant production factor is represented by human and social capital; and the allocation of, and the bargaining over ownership and cash flow claims is increasingly achieved spontaneously, in a decentralized manner.

So, how is collective action, that is, social and economic collaboration, achieved in the post-industrial economy? At its heart, collective action relies on the same type of collaborative behavior found in any other paradigm of social interaction.

All forms of economic organization represent a network of individuals with conflicting economic interests who enter temporary contracts allowing them to cooperate in order to compete more effectively against other economic agents. Each organization is conceived as a nexus of contracts. Cooperation is aimed at extracting an economic surplus (rent); the existence of an economic surplus is what makes cooperation possible. Precisely because it is conditional on economic rents, the extent of the cooperation is limited.

Axelrod (1997), (2006) and Axelrod and Hamilton (1981) have used game theory simulation to inquire about the nature of Evolutionary Stable Strategies (ESS). The authors recognized that individuals are constantly engaged in Prisoner's Dilemma games. Axelrod noticed that, from a large group of game strategies, the emergence of a cooperative ESS was conditional on repeat interaction over a period of unknown duration. One of the most ubiquitous cooperative strategies is the tit-for-tat. The most effective cooperative strategies relies on reciprocal altruism [Trivers (1971)]. There is no question that our behavior is self-centered and we are hardwired for selfishness; however, individuals who embrace altruistic cooperation enjoy, under certain circumstances, an advantage over those who adopt purely opportunistic strategies. Reciprocal altruism is an ubiquitous occurrence simply because cooperation makes individuals more successful in the long-run [Smith (1982)].

There is one caveat, however. Individuals adopt cooperative strategies only when engaging in a positive sum game. Axelrod's "nice" strategies tend to break down in zero sum games. As far as economic organizations are concerned, there has to be an economic surplus to be generated, for genuine cooperation to occur. Any approach that fails to frame the process as a positive sum game will result in a deeply dysfunctional organization.

3. Knowledge and Public Goods

Because the economic surplus is contingent on internal cooperation, collective action becomes a public good as far as the economic organization is concerned. Public goods can be classified according to their degree of confinement¹. Highly confined public goods tend to be internalized entirely by the group incurring the cost of their production. An Intranet constitutes such an example. The confined public good - access to various resources on a computer network - is accruing only to the members of the organization that incurs the costs associated with providing

¹ Some authors classify public goods according to their degree of globalization, see [Stiglitz (1999)]

the service. From the perspective of outsiders, the intranet amounts to a private good. Please note, however, that access to the organization's world wide web site, unavoidably entails some transfer of internal resources and information to the public domain; but this is only due to the fact that there is no clear-cut delineation between private and public goods. Pure public goods, just like pure private goods are pure fiction.

Unconfined public goods are externalized by the group that internalizes the cost of their provision. Organizations that produce and distribute open source software are good such examples. Linux, OpenOffice, and Mozilla Firefox are products that can be used freely by virtually anyone on the planet with a computer and internet connection, yet all development and distribution costs are incurred by a small group of computer-savvy enthusiasts. How is it possible that an informal network of little known individuals produces software comparable to that developed by multi-billion corporations? This feat owes to a sophisticated philosophy that bonds together the open source community into a sectarian-like network with a deep and unwavering commitment to a unique set of moral values.

The default public good depicted by standard neoclassical economic theory is somewhere in between highly confined and unconfined public goods. Traditional examples used to illustrate the concept include lighthouses, socialized healthcare, education, national defense, and many others. These public goods usually circumscribe and delineate a specific cultural, social, and economic space. Most often than not, economic theory tends to ignore public goods below and above this level.

Following the argumentation presented here, the most general type of confined public good is obviously represented by collective action as it takes place in any economic organization. Trust is paramount to the functioning of any community because it lowers the cost of collective action. Trust is thus a public good. As noted by Mancur Olson (1971), as collectivities grow larger, there is a greater probability of free-riding among their members. Since public goods are non-rival and non-exclusive, there is a strong incentive to consume their benefits while avoiding to pay a fair share of their cost. Financial economists use the free-riding argument to explain the existence of agency costs associated with large, publicly owned corporations. When the ownership of firms is dispersed, individual shareholders have little incentive to monitor the manager simply because the monitoring costs are prohibitively high [Jensen and Meckling (1976), Fama (1980), Schleifer and Vishny (1997)]. Each shareholder is better off waiting for someone else to take the manager to task. In the end, it makes more sense to passively shoulder the loss caused by managerial expropriation, rather than incur alone a cost that is much higher than the share of benefits accruing to each individual shareholder.

In general, economic agents require a fair mechanism to deal with the distribution of the economic surplus under conditions of uncertainty. Corporate governance – the crux of microeconomic organization – needs to specify a system for measuring the economic surplus, and to identify a group of agents with residual rights over the surplus [Rajan and Zingales (1998)]. Corporate governance is thus a reminder that individuals have conflicting claims and contracts are incomplete [(Hart and Moore (1988)]; it ultimately represents an exercise in minimizing the cost of collective action.

4. An Emerging Paradigm

How is then the cost of collective action minimized when the output of knowledge economy is hardly measurable? How is trust built? How can one create the perception of, and give the assurance for an economic surplus?

Benkler (2006) considers that the advent of personal computing and the internet have

placed productive capital and knowledge distribution channels in the hands of regular individuals. A similar type of redistribution of capital had occurred several centuries earlier, when Gutenberg unleashed the printed word, which spread across Europe the gospel of Protestantism, capitalism, and eventually, democracy. Benkler notes that:

"The networked information economy improves the practical capacities of individuals along three dimensions: (1) it improves their capacity to do more for and by themselves; (2) it enhances their capacity to do more in loose commonality with others, without being constrained to organize their relationship through a price system or in traditional hierarchical models of social and economic organization; and (3) it improves the capacity of individuals to do more in formal organizations that operate outside the market sphere." p20

Ever since humans migrated from the savannas of Africa and began their social ascent, human endeavor has always been about wealth, power, and individual survival. How these ultimate goals have been achieved has been just a question of social technology. In some instances social technology was dominated by intrusive morality and ideology; in other instances, it was mediated by money, property rights, and free markets.

At the heart of the classical industrial model of production lamented by Marx, reformed by Keynes, and exulted by Stiglitz, Samuelson, Friedman and other neo-classical economists is the nature of the product. Its output is circumscribed by two goods: collective action - the public good; and tangible goods and services - quasi private goods. As discussed earlier, the public good is necessary for the production of private goods, and collective action cannot be achieved without private property rights.

The knowledge economy, on the other hand, is dominated by two public goods: Collective action - the same public good as before; and knowledge, culture, human meaning, and communication - which are quintessentially public goods as well. This has several arresting implications.

Because knowledge can be shared without being surrendered - that is, knowledge is non-rival and non-exclusive- the

mediating role of markets and property rights has become less important. Spontaneous, reciprocal sharing appears the better paradigm: not because it is gentler or kinder, or more ethical; rather because it is more efficient.

Incredibly, the vision once proposed by so-called utopians and anarchists has come to pass. The militant, tyrannical brand of socialism represented by Marxism has failed dismally, while the other models, dismissed so cavalierly from all quarters, had to wait for the internet revolution to become vindicated. Here, we are not speculating about the future; rather, we are merely taking note of what is unfolding before our very eyes. Scientists working at noncommercial research institutes funded by nonprofit educational institutions and government grants produce most of our basic science [Benkler(2006)]. Most of our information and culture is produced and spread through the internet by individuals creating independently and autonomously. Peer-to-peer production of non-proprietary culture and knowledge has started to permeate our society. Because knowledge is now produced and distributed in a decentralized manner and targets select groups of engaged individuals with similar interests, as opposed to the mass-media that targets everyone using the lowest common denominator, the possibility and scope of using money to manipulate the public opinion is diminished.

Form here comes the momentous conclusion that enforcing intellectual property rights can inflict more harm than good. In a letter written in 1676, addressed to Robert Hooke, Isaac Newton wrote:

"If I have seen a little further it is by standing on the shoulders of Giants."

Newton borrowed this aphorism from Bertrand de Chartres, who compared 12th century scholars to the ancient scholars of Greece and Rome [Southern (1961)]. Google Scholar has adopted it as a motto: "Stand on the shoulders of giants." This expression came to epitomize the paramount role played by accumulated knowledge in the creation of further knowledge. Without free access to what other scholars have produced along the centuries, any advancement would come at a prohibitive price. The mere fact that we can access an inordinate number of books articles, research papers, etc. at a click of a button frees us from the necessity of having to reinvent the wheel over and over again.

Economic efficiency and social democracy in the age of knowledge are quintessentially dependent on freedom of information and unfettered access to already existing knowledge. The production of public goods is becoming dominant and feeds on itself. This awesome truth is only starting to dawn on a handful of large corporation as they struggle for supremacy against other Goliaths bent on maintaining the hierarchical, centralized, industrial model of production. This clash of giants is pitching companies like IBM, Google, Canonical, and Sun Microsystems - all juggernauts of the information age who saw the future - against equally powerful competitors, such as Microsoft, Hollywood producers, and the music industry, who want to enforce draconian intellectual property laws aimed at protecting the incumbents of the industrial age. On the outcome of this strife depends how our economy will evolve over the next decade. So far, it seems that peer-to-peer production of non-proprietary knowledge continues to make advances, yet reversals are always a distinct possibility.

Conclusion

Private property rights have come to be equated with free markets and triumphant capitalism. This is so because in the industrial age, where a vast majority of goods and services are rival and exclusive, they play an important risk regulating function. Property rights allow for a corporate governance mechanism whereby output can be measured, most of benefits can be internalized, and some costs can be externalized. This allows for framing collective action as a positive sum game, making cooperation possible and desirable.

In an economy dominated by the creation of knowledge, culture, and human meaning, property rights are less important because the costs of creating public goods cannot be easily externalized, while its benefits cannot be easily internalized. The most efficient system in this case is one in which both externalization and internalization rely on reciprocal altruism, an instinct deeply ingrained in our human nature by millions of years of natural selection. Reciprocal altruism - as a foundation of our economy, not only of our morality - makes the mediation provided by money less significant. Moreover, since human capital is the most important production factor, any attempt to enforce draconian ownership rights, or to separate ownership from control amounts to nothing less than an interference with the right to self-ownership. The truth glaring before our eyes is that self-ownership, not private ownership is the most fundamental right on which both our freedoms and capitalist system ultimately depend.

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