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Postscriptum: Analyzing Property Rights in the Age of Digital Transactions

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Abstract: In 1978, I reported on the remarkable resonance which Coase's article *The Problem of Social Cost* had gained among Chicago-connected economists and legal scholars. Since then, a staggering multitude of contributions to economic theory and beyond has employed the "twin concepts" *property rights* and *transaction cost*. The essay uses the works of a few selected authors to outline different strands of research. This research has improved knowledge on how to reveal, construct and claim rights to valued property, and on how to consider information that is sent and received before, during, after and around transactions. It is argued that the success of the twin concepts was promoted by the contemporary changes toward a global economy where predominantly digital goods – creative and commercial - are produced and delivered in digital information networks.

Keywords: property rights, transaction costs, digitization, copyright.

1. Instead of an introduction

In 1978, when I presented the early contributions to property rights and transaction cost theory, only economists within the intellectual network of the University of Chicago's Economics department had taken notice of the new development. By 1996, *The Problem of Social Cost* had become one of the most cited articles in economics journals, and by far most the cited

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article in law journals (Shapiro 1996). In 1991, Ronald Coase was awarded the Alfred Nobel Memorial Prize of the Swedish Central Bank. Since then, the count of citations has decreased, but only for a reason predicted by Coase: "…at the stage when the influence of my article may be said to be most profound, the study of citations will cease to reveal it" (Coase 1996: 812).

As I argued in 1978, the Coasean argument frames transactions as "problems of a reciprocal nature" (Coase 1960: 2), where actors behave "like players in a game without a referee" (Hutter 1978: 63). By trading, the parties modify the existing wealth distribution "not of physical entities but rights to perform certain actions" (Coase 1996: 810). The cost involved in trading such rights are positive, and often prohibitive. This argument had been narrowed to the "Coase Theorem" by George Stigler: If the cost of transaction is zero, market participants will "organize" their transactions efficiently (Medema 2011). But already within the early Chicago School tradition, Demsetz and Alchian had insisted on the relevance of positive transaction cost. The role of transaction cost found an even wider interpretation in the legal discourse, where it "reshaped forever the landscape of legal theory" (Posner and Parisi 2013: ix). It has been employed as a defense for the "robustness of markets" (Posner 1993), and as a basis for making the "cheapest transaction cost avoider" a standard figure of legal reasoning (Calabresi 1970).

Since the count of citations per year does not reveal the contemporary impact anymore, I will try to detect at least segments of that influence in recent discourses. In short vignettes, based on the work of a few selected authors, I will try to outline that influence. The vignettes can only serve as spotlights for the much broader discourses. I have grouped them into two sections. Those in the first section deal with major attempts to detect or define relevant *property rights*; those in the second section deal with major consequences of taking *transaction cost* seriously. Of course, the distinction is only a difference in emphasis, since property rights and transaction cost are two sides of the same methodological coin – they are a *Begriffspaar*, "twin concepts" (Hutter 1989:18).

I find it noteworthy that these theoretical contributions were written at the time and in the context of a major techno-social development: the introduction and diffusion of digital communication and information networks, the subsequent ruptures in the industrial organization of the information and communication sector and the accompanying shifts in consumer behavior. Coase's initial case, from which the entire argument sprang, involved the allocation of rights to broadcasting frequencies through the FCC in the 1950's. More recent cases involve software programs (Benkler 2002) or crowdfunding pledges (Strausz 2017). I will keep the digital dimension of property rights and transaction cost in focus.

2. Revealing, constructing and claiming rights

2.1 Revealing rights

In order to recognize the rules that determine the kinds of rights that are eventually traded, a theoretical structure is needed that reveals their existence. The work of Douglass North was fundamental in building such a structure. North was trained at the Chicago School, but his research in economic history led to a wider perspective that included politics, religion and society as a whole. He demonstrated the effect of cultural institutions in a study that offered them as explanation for the "rise of the Western world" (North and Thomas 1973), and he expanded the argument into a general theory by 1990 (North 1990). In 1993, he was (co-) awarded the Alfred Nobel Memorial Prize of the Swedish Central Bank. In his acceptance speed, he condensed essential steps of his argument: "Efficient markets are created in the real world when competition is strong enough via arbitrage and efficient information feedback to approximate the Coase zero transaction cost conditions (p. 360) … most societies throughout history got "stuck" in an institutional matrix that did not evolve into the impersonal exchange essential to capturing the productivity gains that came from the specialization and division of labor (p. 364) … It is adaptive rather than allocative efficiency which is the key to long-run growth. Successful political/economic systems have evolved flexible institutional structures that can survive the shocks and changes that are a part of successful evolution. But these systems have been a product of long gestation. We do not know how to create adaptive efficiency in the short run" (North 1994: 367).

2.2 Constructing rights

20 years later, Gary Libecap looked back at a large number of attempts to construct "adaptive efficiency in the short run." Conflicting property rights are a standard feature in exploiting natural resources, like water, fish, pollution or crude oil. The "transaction cost approach," as it was called by then, has been employed to assign property rights to the competing parties. Such constructions often involve several countries: "Property rights are supplied by international agreements that specify resource access and use, assign costs and benefits including outlining the size and duration of compensating transfer payments, and determining who will pay and who will receive them" (Libecap 2014: 424). In his survey article, Libecap discusses factors that impede efficient assignments, like scientific uncertainty or asymmetric information. He does not, however, include the

new practice of "gaming:" once the rules of constructing artificial markets for property rights are known, the parties have an incentive to distort information and to influence decision-makers, particularly in their assignment of initial rights. Such activities have led to the failure of emission rights markets, because the volume of assigned rights was so large that trading became superfluous (Dietz et al. 2003: 1909).

A theory that authorizes actual interventions into the real economic process encounters a wicked epistemological problem: the rules for private negotiation are derived from rational evaluation, and are therefore considered superior to political policy tools like taxes or prohibitions. But it remains unexplored how the rule changes are carried out. I have tried to reconstruct historical cases of the intricate process through which pharmaceutical companies were able to change the logic of assigning patent rights to inventions in their favor (Hutter 1986, 1989). The results show a complex network of commercial, political and juridical "players" who were able to operate with two or even three diverse logical codes, and who were capable of talking the relevant court and its judges into "retelling the story with a new emphasis" (Hutter 1986:122).

An alternative logical code is also addressed in a recent re-appraisal of Coase's original argument concerning FCC broadcasting licenses (Moss and Fein 2003). At the time of debate, lawmakers were not primarily interested in efficiency goals, but in keeping the most potent instrument of public information outside of concentrated control. Restrictions of tradability, as they were written into the Radio Act of 1927 and its subsequent modifications, were justifiable in this political logic. Concerns about the monopolized access to channels of public opinion have grown since the days when radio broadcast waves were the only technology to modulate the electromagnetic field. Today, there are innumerable digital communication channels, and all of them depend on political action and juridical decision (Pohle et al. 2016).

2.3 Claiming rights

Digital communication has not only multiplied and transformed information channels. It has also multiplied and transformed the production of creative content. Legal forms of protection for rights to the use of an invention, or a work of fiction have been developed for centuries. The earliest claims were those of print-makers to the sale of their works. In the course of the 19th century, the moral rights of authors to reproductions of their works gained institutional form in continental Europe, while fully tradable copyrights were instituted in Anglo-American Law. Today, a range of legal constructs protect rights to the reproduction of artistic creations. Copyrights are intended to encourage the creator to go on

creating new works. They grant temporary monopoly, because the value of private incentives is weighed against the public good properties of using and enjoying intellectual works. The length of the term, however, is subject to sustained struggle among interested players. "Intellectual property" is the term that has been chosen to suggest a similarity to territorial property rights. But works that consist only of signs do not have the material uniqueness that characterizes land, objects or even service relations. Signworks consist of messages, and they can be copied endlessly, without material restrictions. Moreover, signs can be used as resources for later signworks, as in the culture of "sampling" the soundtracks of inspiring artists. Works are continued in fragments and modifications, and they are transformed into other media of representation. Single authorship for digital works is therefore even harder to claim than it was for analog works.

Such shared production requires legal constraints of a type that is more flexible than traditional exclusive property rights. Again, the Coasean argument has been used as a logical foundation: As a recent survey article states, it "has set the agenda for economists to discuss copyright in terms of a property rights approach that sets the establishment of property rights as the ideal and, as its flip side, the minimisation of transaction costs. ... Although copyright is a form of state intervention, its merit is that having established property rights where they otherwise would not exist, the market can be left to work" (Towse et al. 2008: 5-6). The literature is extensive, yet the authors observe: "Equity matters, which would include the distribution of royalties and of the costs of what we can call the copyright system – who pays for the costs of administration and of monitoring and protection (including court proceedings, tribunals and suchlike) – also the sharing of royalties and other revenues, such as remuneration schemes between authors, publishers performers and other claimants, have been largely ignored" (Towse et al., 2008: 2015).

3. Transactions and their 'cost'—before, during, after and around

Transactions are shared events, with at least two players. The players make efforts to make these events happen. Given some value scale, these efforts can be counted as a "cost." The effort can be material, as in the cost of transportation. But Coase's discovery, already proclaimed in his 1937 article on *The Nature of the Firm,* concerns the information cost connected to the transfer of rights. Based on the work of numerous authors, these information costs were commonly distinguished along the three phases of transaction: search cost, in order to find future transaction partners; negotiation cost, during the process of mutually agreeing to an exchange contract; control cost, in order to monitor or "police" the execution after

the transaction. Out of each of these categories, a multitude of theoretical developments in economic research has grown, supported by empirical results that are increasingly gained from markets for digital goods.

3.1 Search cost

When buyers have incomplete information about available options, they will spend money and effort on gaining additional knowledge. Digital technology has revolutionized the access to relevant information. Search engines provide complex algorithms to find information about availability, qualities, and prices. Market platforms make it easy to identify sellers, and to enter into exchange or service contracts with them. As a consequence, search behavior among consumers has changed drastically. At the same time, sellers of goods and services have an interest in gathering information about their audience. Digital data-mining makes it possible to generate meta-data of past transactions, which are then used to predict future consumer behavior. In addition, sellers want to provide information, particularly if their products are new and therefore unknown to prospective buyers. Consequently, sellers invest in advertising activities. Advertising channels have expanded their reach from outdoor posters to television and to smartphone screens, their payments are today the major source of income for free-access platforms of social media communication.

"Incompleteness" of information about future states seems to be the central cause of the search cost incurred. The parties, sellers as well as buyers, seek and signal information. At this point, transaction cost theory connects with the literature on "asymmetric information" – a way of saying that everyone knows something different. When types of qualities ("adverse selection") or future situations ("moral hazard") are unobservable, it pays for sellers to invest in signals of reputation, trust and fitness. The strand of economic theory which introduced the keywords just quoted deals with the endlessness of information by defining specific deviations from the standard assumption of commonly shared knowledge. Specific deviations are assigned a specific symbol and set of properties. Thus, they can be integrated into formal partial-equilibrium models (Stiglitz 2000).

3.2 Negotiation cost

Negotiation amongst transaction parties is a costly process, for all of the participants. It is a process with a rather clear beginning and a very clear end. During this period, the terms of the contract are specified, contested and agreed upon: type and grade of commodity, length of validity, rights to

access, price etc. One part of the literature deals with changes in transaction cost that lead to improvements for negotiation on markets.

Markets are based on different mechanisms to arrive at the sales price. In consumer markets, preset prices have become the rule. The mechanism of arriving at a price through auctions, although quite popular in earlier centuries, was limited in its extended application due to the requirement of bidders being present. Today, auctions have emerged as a favorite for markets where goods are thinly distributed, time-dependent, or singular in their composition (Karpik 2010; Smith 2007).

It has proved difficult for the sellers of digital goods to establish the kind of exclusivity of possession that gives commercial transactions their value. Institutions like patent and copyright laws provide a limited degree of protection for digital creations, but it remains unclear what is to be priced. Since copies do not have material value, there is no compelling reason to charge buyers for single product copies. Sellers have therefore introduced prices for bundles of services. Flat fees for access to files and networks for a stated time period are more adequate. Volume-related fees are also common: the shift of the point of sale from physical cashier to mobile smartphone enables micro-payments for the services received.

Since digital markets have to be designed and organized by specific providers, they can be designed in ways that make previously unattainable contracts possible. For example, Roland Strausz analyzed the role of crowdfunding platforms in enabling successful funding campaigns, despite the risk of fraudulent entrepreneurs: "Crowdfunding provides innovation in that, prior to the product's development, an entrepreneur contracts with consumers. Under aggregate demand uncertainty, this enables entrepreneurs to use crowdfunding as a tool to screen for valuable projects and thereby improve investment decisions" (Strausz 2017: 1462). The platform "coordinates the communication between participants and enforces the rules the mechanism specifies for the game" (p. 1445). By withholding information about the total amount of pledges to the entrepreneur, the mediating platform can lower the risk of fraud.

A second strand of literature, actually a sub-discipline in itself, deals with alternatives, or rather complements, to market contracts. Market processes consist of a flow of private contracts, but service and labor contracts are negotiated transactions as well. That has consequences for our understanding of organizations. Commercial enterprises, in particular, consist of a nexus of private contracts. These contracts contain an agreement about a hierarchy in decision-making for the period of the paid relationship. Why and when are internal firm contracts preferable to external market contracts? Oliver Williamson (another Nobel Memorial Prize winner) developed the Coasean argument into a theory of the firm, and other forms of governance (Williamson 2000). Williamson was first in

rediscovering transactions as elementary units of economic analysis – after they had been "discovered" by the older institutionalist writers, especially John R. Commons. Transaction cost was the concept that gave Williamson a means to compare transactions on markets with transactions in firms. Wage contracts have lower transaction costs than purchases of labor services when particular "asset-specific" skills are needed, and when "opportunism" endangers long-term stability. In these cases, hierarchy is the cheaper, more effective way of organizing production and distribution (Williamson 1975). In most enterprises, "asset-specificity" refers to a particular set of shared knowledge and routines, and "opportunism" results from hidden action – a common cause of asymmetric information.

Williamson did not stop with the rules and constraints that make up organizations. By 1985, he had expanded his theory to all institutions in economic history (Williamson 1985). By the year 2000, he presented a full-scale theory to explain the emergence of all social institutions. Following North, he concentrates on "formal rules (constitutions, laws, property rights)". They are partly the result of unintended evolution, and partly the result of intentional design. Design instruments "include the executive, legislative, judicial, and bureaucratic functions of government." (Williamson, 2000, p. 598). In his theory, the state, the "legal system" and any other form of governance do not step aside after having set the property rules of the game, but continuously operate the "play of the game (contract)" (Williamson 2000: 599).

The interpretation of transactions as incomplete long-term contracts proved to be applicable to a range of contractual practices beyond the domain of organization and governance. Incompleteness is an inevitable outcome for contracts when the products or services delivered are only vaguely known at the point in time when the contract was sealed. Contingencies of all kinds might influence the results. In consequence, the parties find stipulations that attribute future risks and determine the extent of their liability. The film industry, as many other creative industries, is exemplary for their use of incomplete contracts between producers, investors, directors and actors (Caves 2000).

For digital products, Yochai Benkler has suggested a third type of organizing production, beyond market purchase and employment. He calls it "commons-based peer production." It applies in cases where "the object of production is information or culture, and where the physical capital necessary for that production – computers and communications capabilities – is widely distributed instead of concentrated." The advantage of peer production lies in its lower "information opportunity cost," and its ability to mine "large clusters of information resources" based on informal rules of collaboration etiquette: "Removing property and contract as the

organizing principles of collaboration substantially reduces transaction costs" (Benkler 2002: 2006). This applies to scientific publishing.

3.3 Control cost

Few transactions consist in a simple transfer of objects from seller to buyer, and a simultaneous transfer of money from buyer to seller. Rights are often granted for a limited period of time, for limited uses. Even if the transfer is quick, liability for eventual damage might hold for years. In Coase's original case, farmers had to find out whether ranchers did indeed keep their cattle from their farmland. Monitoring is a form of control, a practice of gathering information about the quality of contract execution. Monitoring cost have also been detected within organizations, they are at the heart of agency theory. But when Demsetz spoke of "police cost" in 1966, he captured the even larger magnitude of the item: the process of private contracting is accompanied by state agencies that not only monitor interactions and communications of persons on their territory, but are also given the power to enforce constitutional rights and private contracts through sanctions.

Control cost are, to a large degree, public expenditure. Both the information gathered and the level of security desired are public goods. They are therefore more effectively provided by collective organization. Observation shifts from the individual to the systemic level. On the systemic level, we do not only observe political and legal action, but also financial action. The monetary system has its own way of keeping the economy under control.

The term "transaction cost" does not originate with Coase, he did not use it before 1974. Much earlier, it had gained the meaning of "brokerage fee" in financial markets, and subsequently in general-equilibrium models that include money (Klaes 2000). The cost of running the monetary system is to be taken into account when taking stock of control cost, because only money scales provide effective ways to compare prices, and to compare all kinds of cost, from search cost to control cost. Brokering, as it is common in finance markets, differs from direct private negotiation. It creates some form of trust between the partners and thus shapes their expectations about the time after the negotiation. Without that trust, the transaction would not happen. Trust achieves objective shape in the forms of money. Coins were founded on a common belief in the value of gold, and the authority of totemic symbols embossed; today, the trust in money currencies is stabilized by two-tier banking networks that are, in turn, connected into a global financial markets (Hutter 1993, 1999).

The cost of running the global monetary system refers to a specific, "systemic way" of keeping transactions under control. It is a kind of cost

that is incurred in activities around transactions. A study of the system's evolution and design falls outside the scope of neoclassical price theory. But actors are confronted with this kind of communication, with a condition of fragmentary knowledge that has been ignored in older, simpler versions of theory. I have tried to gain an understanding of the subtle, often unconscious processes that make entire populations of traders gain confidence in symbols for abstract degrees of value. Allegories of protection and prosperity on British coins and notes, for example, have been maintained for more than three centuries, despite numerous stylistic alterations (Hutter 2007).

4. From survey to forecast

In 1989, I had predicted that the "twin concepts" – property rights and transaction cost – would survive the first phase, when their use violated established rules of theory-making in economics, and that there would be a second phase when the "use of terms undergoes a qualitative change, and the new concepts become the basic framework of theory" (Hutter, 1989:19). The new basic framework seems indeed to have formed. As the spotlights demonstrated, there is now an entire literature that treats economic goods as collections of use rights, defined and enforced by a third public party, and that finds ways to express differences in knowledge held by transaction partners. The new framework has an enlarged scope; it contains the old framework as the special case of goods that gain their value only from individual preferences, traded on markets with complete information and exclusive use rights. The future economy, well recognizable now already, is driven by digital communication goods, designed for play or for commercial ends. They are transacted under some kind of license regime, and delivered as electronic copies on information networks, using electronic kinds of value storage. Equipped with the new tools, economists and other social scientists might be able to capture crucial features of such processes in their models and accounts.

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