PART II

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6 Judicial system and property rights

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Introduction

Property rights (PRs) constitute a system that defines relative rights with respect to the utilization of scarce resources, that is to say somebody's rights in relation to the rights of anybody else. As law is inefficient without law enforcement it cannot work without a judicial system. The judicial system enforces PRs by monopolizing the power of constraint that obliges everyone to accept the PR distribution and its consequences. But the judicial system plays other roles in the application of property rights. In particular, it specifies the conditions of use of property rights when there are different interpretations and when opposite claims are advanced. Hence the judicial system is a system of legitimate interpretation and distribution of the concrete effects of PRs in a social context. The judicial system has two main effects on PRs: efficiency and distribution – hence, equity. This applies to the three functions concerning the judicial system: (i) PR enforcement, (ii) PR interpretation and (iii) PR specification.

First, we shall see that the judicial enforcement of PRs is an efficient way to strengthen the incentives to cooperate and therefore to increase social welfare, especially when competition becomes tighter and when opportunism undermines the substitutes for a judiciary such as ethics or customs. Therefore judicial enforcement is a public and a club good; but as it allows the distribution of effective rights, powers and wealth to be modified, judicial enforcement does not represent a standard public good. An important consequence is that the partial and unequal character of enforcement is not only related to its judicial cost when goods are sets of characteristics. According to the distributional effects some individuals or groups may win with a strong enforcement of PRs and some others with a weak enforcement; hence, individuals, groups and organizations can develop strategies regarding each kind of PR to be enforced.

Second, PR interpretation is related to the fact that the law cannot be a perfect and complete system including a perfect property rights system, but only an imperfect property rights system. It cannot specify all the legal rights and duties in any concrete situation. The judicial interpretation is an important means for transaction cost minimization and for the formulation of rules in an open society. Moreover, we are mainly interested in an institutionalist perspective, whereby the judicial system is a producer of just decisions in front of competing interests.

Third, we study the role of the judge when specifying the concrete forms of PRs as relative rights and relative powers. Thus, the judge introduces a new process of allocation and evaluation, before and alongside the market process. The judicial decision is the last means of cutting the conflict between PR holders and those who dispute their rights. The judge organizes a system of relative concrete PRs, a configuration of relative capacities to act, that is to say a system of mutual coercion, which is similar (but preliminary) to the other system of mutual coercion, the market. In most situations, efficiency obviously plays a role, but together with equity criteria. Justice has a particular function that makes it the main connection between the various areas of society, its various dimensions, its different norms and value systems: economic, political, social, cultural, ethical and so on.

PR enforcement – an efficiency perspective

The need for an enforcement apparatus

A PR system is an efficient way to regulate the use of scarce resources because it diminishes the conflicts about uses and allows social cooperation instead of economic war. But a PR system without enforcement is no more efficient than a system without PRs. If the PR system is efficient, judicial enforcement is also efficient. The point is easy to understand in a game-theoretic presentation.

We use an evolutionary game approach because our problem is not only a problem of static equilibrium, but also of strategic choices in a context of evolving conventions. This approach makes two interesting innovations in game theory. It requires players to merely have a weak rationality. They observe the gains from the different strategies and choose the most profitable one; whereas in classical games they must conceive their strategic planning for the whole game. It introduces the possibility of random strategy moves, for instance mutations; and of strategies which become winning because of imitation. It is assumed that the players gradually prefer winning strategies. A replication mechanism associates variations in the proportion of players using one strategy and the gap between the earnings of this strategy and the average gain of the other strategies.

Let us suppose that two persons or two groups are facing PR effects (for instance, when renting a flat). The contract gives each of them some rights and some obligations. If PRs are not monitored and enforced, they tend to renege on their obligations, as is typical in free-rider problems. If we use an evolutionary game, with pure or mixed strategies (belonging to an axis from absolutely no respect (NR) to strict respect (R) of PR organization), the payoffs are ordered so that $G(nr, R) > G(r, R) > G(nr, NR) > G(r, NR)$: $\gamma > \alpha$

> $\delta > \beta$; r and nr are the strategies of player (1) and R and NR those of player (2). G(nr, R) (γ) represents the temptation to cheat because the opportunistic behaviour gives the greatest payoff when the other player observes the law. And G(r, R) > G(nr, NR): $\alpha > \delta$ because observance of law leads to cooperation, the result of which is better than a non-cooperative outcome. G(r, NR) (β) is the worst payoff, since the player is the dupe. In all cases we have the following game matrix (on the left the game and on the right the normalized game):[1]

Game [A]

		(2) R	(2) NR
(1)	r	α, α	β, γ
	nr	γ, β	δ, δ

		(2) R	(2) NR
(1)	r	$\alpha - \gamma = a_1$	0
	nr	0	$\delta - \beta = a_2$

In the normalized game, the condition $\gamma > \alpha > \delta > \beta$ becomes $a_1 < 0$ and $a_2 > 0$. The unique evolutionary stable equilibrium is a prisoner's dilemma equilibrium, nr – NR, suboptimal. No mutant strategy can invade the game, the nr strategy being a dominant strategy (a standard replicator, with nr the proportion of players using nr, gives $dnr/dt = nr.[a_2 (1 - nr).nr - a_1(1 - nr)^2]$, always > 0).

A judicial system can be seen as a means to rule the nr strategy (no respect) out of the strategy space, so to impose a strategy of respect for the law and the associated high equilibrium r, R with the optimal outcome α, α. From an economic point of view, as Becker points out, the choice of players between r and nr strategies is rational, based on costs and benefits (including non-monetary ones, such as time or ethics). Justice cannot get rid of nr strategies (or mix strategies including nr actions), but can make them expensive. To enforce PR justice is not a purely coercive machine (all criminals are not arrested and punished, crime is not eradicated), but merely an incentive mechanism.

A partial and unequal enforcement

If players are reasonable individuals who take into account costs and benefits, enforcement of property rights needs efficient sanctions. In the general game:

Game [B]				Game [B]			
		(2)				(2)	
		R	NR			R	NR
(1)	r	α', α'	β', γ'	(1)	r	$\alpha' - \gamma' = a'_1$	0
	nr	γ', β'	δ', δ'		nr	0	$\delta' - \beta' = a'_2$

We can see that the law is only enforced in the outcome (r, R). To be the unique equilibrium of the game that implies $a'_1 > 0$, $a'_2 < 0$, so $\alpha' > \gamma'$ and $\delta' > \beta'$. Strict enforcement implies that this condition is true for all the players and under all circumstances. Observation of reality shows that this is not the case, for utility functions sometimes include a very high estimation for not respecting the law (if I am starving, stealing a piece of bread has a very high value).

The optimal sanction is also relevant (Polinsky and Shavell 2000). Infringement of PRs must be condemned not only on moral grounds, but also from an economic point of view, once the incentives created by a system of sanctions are taken into account. If infringements have unequal effects, they have to be unequally sanctioned. Thus reasonable people choose a minor infringement over a major one (when I park my car, I prefer to attack the rights of the deliveryman rather than those of handicapped people, not only for ethical reasons, but also for monetary reasons).

A third point is the cost of judicial property rights enforcement. Let us suppose that each player pays a tax T in order to finance law enforcement. We introduce this cost by substituting α'', β'', γ'', δ'' for α', β', γ', δ' (with $\alpha'' = \alpha' - T$, and so on). Then the new cooperative outcome in game [C] may be, for the individual and the collective, inferior to the old non-cooperative outcome of game [A]. It is the case if $\alpha'' < \delta$.

Game [A]				Game [C]			
		(2)				(2)	
		R	NR			R	NR
(1)	r	α, α	β, γ	(1)	r	α'', α''	β'', γ''
	nr	γ, β	γ, γ		nr	γ'', β''	δ'', δ''

Enforcement of property rights is only partial, and this is related to the judicial cost of enforcement. Enforcement is a costly operation and is all the more true as the goods are sets of characteristics. To specify and protect all PRs would require the definition and the protection of each characteristic. PR monitoring and enforcement costs are a peculiar type of transaction costs:

> Transaction costs are the costs of all resources required for transferring property rights from one economic agent to another. Transaction costs include the cost of making an exchange (i.e. discovering exchange opportunities, negotiating exchange, monitoring exchange, and enforcing it) and the cost of maintaining and protecting the institutional structure (i.e. the judiciary, police, and armed forces). (Pejovich 2001, p. xvii)

In turn, costs include three components.

The first is the choice of the social level of enforcement. If PR enforcement has a social cost, arbitration is necessary between the benefit and the cost of protection. That explains why protection is never total. Some property rights will be enforced and some will not. And the extent of enforcement changes with the cost of and the benefit from following the law.

The second relates to the configuration of the instruments. For instance the enforcement of software or music files PRs can be achieved through public procedures (courts sanction the violations of rights) or private procedures (producers introduce technical instruments as tools to protect their PRs effectively). The question is how to mix public enforcement (especially judicial enforcement) and private enforcement.

The last point is that the judicial enforcement costs are not only of a direct nature (for example, judges' salaries). To sue someone in court is costly. It implies monetary expenses and transaction costs (time, psychological costs and so on). Optimal enforcement policies have to include this problem.

Substitutes

Justice changes the earnings of r and nr strategies and, thus, increases PR observance. Some substitute means also have to be considered as producers of norms: ideology, ethics, deontology, religion, customs, culture, social conventions and so on. They can induce conventions of PR respect in place of PR violation. Similarly to when game [B] replaced game [A], they work by increasing the earnings of the r strategy in relation to the nr strategy (to exclude someone from the group for rule infraction, to reward someone for loyalty, to reprove immoral actions and so on).

These sets of norms may emerge from repeated interaction and are reinforced by it. Repetition, under different hypotheses on rational behaviours,

allows the emergence of cooperation through reciprocity or reputation building (see Hardin 1982; Fudenberg and Maskin, 1990; Kreps, 1990). These self-organized processes were formulated in repeated games terms (Axelrod 1984) and in evolutionary games terms (Bicchieri et al. 1997).

Following Axelrod we can imagine that cooperative strategies emerge with the repetition of the game. Nevertheless their ability to enforce property rights is doubtful. Repeated game theory has shown that strong and numerous conditions are necessary to support cooperation. Property rights will be 'spontaneously' respected in small communities (as in a family or a bureau), with identified players, frequent plays and the possibility of retaliation. It is not true when players are numerous, changing, unknown, characterized by different ideologies and ethics. Moreover, in an evolutionary perspective, the unique evolutionary stable equilibrium is the dominant non-respect strategy. If any other strategy becomes the general one (for example, the respect strategy), a player that chooses a non-respect strategy has a greater payoff and is then imitated by the others. Many examples of progressive degradation of PR structures can be recalled. Historical perspective shows that old societies based on tradition develop cooperative behaviours (for example, through gifts), depending on whether they are small, closed, stable societies, with ideological enforcement (for example, the taboo system). Whereas large, open, unstable modern societies, with many fluctuating interactions, evolving norms, refined and complex PR systems, need more explicit enforcement. In the same way the development of PR systems is accompanied by a development of judicial enforcement.

Enforcement as a public good and a club good

When enforcing PRs the judge produces a public good. Even if the sentence of a court is particular and limited, it contributes to reinforcing the weight of the PR system. It creates an incentive system that leads to cooperation and wealth. In addition to its static effect, enforcement has a dynamic effect. It increases the stability, predictability and credibility of PRs, and also provides a stable framework for expectations and investment. PR enforcement is an important means of reducing transaction costs.

The supply of public goods is characterized by free riding whenever the cost of PR enforcement is higher than individual profit and lower than collective profit. According to the dispersion of individual utilities of enforcement for some types of PRs (if I am a smoker, I am not much worried about the enforcement of anti-tobacco regulations), enforcement may vary. It becomes a club good and many clubs can coexist. History documents many types of club rules, be they local or communitarian (fishermen), or temporary (as during fairs in the Middle Ages). Today many private legal systems work and

enforce some types of PRs (for example to manage PRs on credit cards). Evolution affects the efficient configuration of these clubs, their number, types and sizes.

PRs function as a system, so that enforcement requires coherence; and the power of sanctioning deviating behaviours must be founded on legal and public legitimacy. That is why enforcement must ultimately be public.

Extension of competition

When competition intensifies, spontaneous observance of PRs becomes less likely. Let us suppose we take a symmetric game, with two equal firms; and that by following PRs a collective surplus of 10 is generated. If the two players choose the cooperative strategy (outcome r, R), each of them gains 5 (a fair share of the surplus). No respect of PRs increases the payoff (the cheater takes the whole surplus minus a cost of 2 – say, loss of reputation, cost of cheating). Thus, outcome (nr, NR) means that each player obtains a weaker result, 3 (5 – 2). If one is aggressive and the other is not (outcomes nr, R and r, NR), the cheater escapes his/her obligations and gains 8 (10 – 2), while the dupe gains none.

Game [D]

		(2)	
		R	NR
(1)	r	5, 5	0, 8
	nr	8, 0	3, 3

The unique equilibrium, with dominant strategies, is strong but clearly sub-optimal. If the firms meet regularly, the repetition of the game pushes them to cooperate, that is, to spontaneously respect PRs. So, if the repeated game can lead to the repeated Nash equilibrium (nr_T, NR_T) with (3, 3), it can also lead to the optimal repeated outcome (5, 5) with the cooperative strategies (r_T, R_T). The probability of the last one depends on the weight of the incentive to cheat: cheating immediately brings back 8 and 3 in each coming round; to go on cooperating gives 5 in each round. With ∂ as a discount parameter (the present value of a unit of utility available in the following round, which can also represent or include the probability of the end of the game in the next period), there is cheating if $3 > 2 (\partial + \partial^2 + \partial^3 + \ldots + \partial^N + \ldots)$, so for N large

enough only when $\partial < 3/5$. Rational players can therefore organize 'spontaneous' cooperation by respecting PRs, without any judicial or any other external enforcement.

In Axelrod-type situations, spontaneous respect of PRs is likely[2] because, even if their interests are not necessarily parallel, individuals are only interested in their individual payoff, and not in that of the others. They are not 'jealous'. Obviously player (1) prefers outcome (5, 3) to outcome (3, 3), but is indifferent between outcome (5, 3) and outcome (5, 5). The profit of his/her partner is strictly immaterial to him/her. This assumption is appropriate in a smooth and peaceful competition, but irrelevant in a world of tight competition in unstable markets. To gain more than my competitors can be decisive in forthcoming battles. Therefore I may prefer an outcome (2, 0) to an outcome (3, 3). However the solutions of the game are very sensitive to the levels of the payoffs.

To study this point we propose three repeated games, with the same monetary payoffs (profits) but different utility functions, corresponding to three different behavioural models, the 'egocentric alternative', the 'competitive alternative' and the 'hyper-competitive alternative'. Let us suppose that profits are monetary (3, 5, 8 billion euros) and that a level of competition expressed by the utility function U characterizes the models (.).

The first alternative, the egocentric one, is the repeated game [D] with the utility function $U_i = \pi_i$. The second one, the competitive alternative, is the repeated game [E] with the utility function $U_i = \pi_i + (\pi_i - \pi_{-i})$:

Game [E]

		(2)	
		R	NR
(1)	r	5, 5	–8, 16
	nr	16, –8	3, 3

The probability of having a cooperative outcome falls. In the game [D] it occurs with $\partial > 3/5$, now $\partial > 11/13$ is required. The hyper-competitive alternative is featured by the repeated game [F], with the utility function

$$U_i = \pi_i + (\pi_i - \pi_{-i})2 \text{ for } \pi_i \quad \pi_{-i},\ \pi_i - (\pi_i - \pi_{-i})2 \text{ for } \pi_i \quad \pi_{-i}:$$

Game [F]			
		(2)	
		R	NR
(1)	r	5, 5	–64, 72
	nr	72, –64	3, 3

The probability of the cooperative outcome is reduced significantly, and this equilibrium can only exist when $\partial > 67/69$. In addition, the more competitive the game, the more the discount parameter decreases, because any immediate profit is a competitive weapon that may push the competitor out of the game. Similarly, the more competitive the game, the greater the probability of reaching the end of the game, because of instability. The two elements tend to decrease the value of ∂, whereas the condition of cooperation becomes stronger.

Tight competition increases the risk incurred by cooperative players, and then increases the use of opportunistic strategies with regard to PR observance. Players fear to find themselves in the disastrous situations (r, NR) and (nr, R) and prefer the safer but suboptimal repeated outcome (nr_T, NR_T). The repetition of the game reinforces this tendency, because the 'repetition' is not in fact an identical repetition: the economic and competitive power of each player evolves, according to the results of the previous rounds. The dynamics of the game widens the differences between the profits, which are used as additional weapons in competition, and may cause the elimination of some players. The introduction of additional players would make this threat even more poignant. The use of tit-for-tat or carrot-and-stick strategies is hardly likely. In short, the extension of competition needs a more explicit and powerful PR enforcement system, which explains the growing power of judicial systems.

An evolutionary games model appears more appropriate to our purpose. Market globalization generates fewer matches between stable, well-identified pairs of players, but more between changing, unknown partners, pertaining to different cultures, characterized by unpredictable behaviours. When globalization is mature, new forms of spontaneous compliance may emerge, with a revival of cooperative behaviours. For the time being this is not the case.

This model allows us to consider a population of similar players brought to meet randomly, two by two (contrary to the previous repeated play, in which

two players and two only, played indefinitely the same game). It consolidates our former conclusions on the weak probability of spontaneous cooperative outcomes. When game [D] becomes evolutionary, the unique evolutionary stable strategy is NR. Let us suppose an invasion. A part of the group now simultaneously plays R. If they meet often enough, their surpluses in (r, R) – they obtain 5 whereas the other players obtain only 3 in (nr, NR) – can compensate their relative losses in (r, NR), where they obtain 0 against 3 with nr. Nevertheless, this never leads to an evolutionary stable equilibrium. In a configuration where every player chooses R, any deviation towards NR is winning; and the replication mechanism aligns everyone on the unique evolutionary stable strategy NR according to the dynamics:[3] $dq_{NR}/dt = 3q_{NR}(1 - q_{NR})$, where q_{NR} is the proportion of players playing the pure strategy NR. The games [E] and [F] lead to a faster alignment on the evolutionary stable strategy of PR non-observance, since the mechanism of replication becomes $dq_{NR}/dt = 11q_{NR}(1 - q_{NR})$ in the second alternative, and $dq_{NR}/dt = 67q_{NR}(1 - q_{NR})$ in the third.

PR enforcement: an equality perspective

Judicial enforcement does not represent a standard public good, since the distribution of rights affects powers and wealth. Some individuals or groups may win with a strong enforcement of PRs (the owners); and some other groups may benefit from weak enforcement (the robbers). Instead of the previous symmetrical game with parallel interests, let us now consider game [G], characterized by non-symmetrical distributions in the symmetric outcomes: the cost of the loss of reputation is always 2. In the r, R outcome, player (2) is favoured when sharing the total surplus, while in the nr, NR outcome player (1) is favoured. For instance (1) performs better in illegal conditions, and (2) in legal ones.

Game [G]

		(2)	
		R	NR
(1)	r	3, 7	0, 8
	nr	8, 0	**5, 1**

The equilibrium in dominant strategies is (nr, NR; 5, 1). Judicial enforcement reverses the result, when one player does not respect PRs, while the other respects them. That leads to game [H]:

Game [H]			
		(2)	
		R	NR
(1)	r	**3, 7**	8, 0
	nr	0, 8	5, 1

Equilibrium becomes (r, R; 3, 7). The collective surplus is increased; but while player (2) is in a better situation, player (1) is worse off. In this case, enforcement is not a common wish and needs an authority decision. Posner questions this conclusion, and argues that individuals are ready to accept a common law based on wealth maximization; in the long run they are most likely to profit from it, even if the particular application of the rule penalizes them at a given time. But of course, there can always be a permanent separation between a group with an interest in law enforcement and one against it. If so, public enforcement power becomes necessary (see the Mafia problem).

Another way to combine the distribution effects and the acceptance of regulatory control can be used within an exchange framework. In order to increase social wealth player (2) can propose player (1) to enforce PRs while modifying the shares. The non-cooperative outcome of game [G] works as a threat value (5, 1). So, every solution (r, R) with a redistribution of the type (5 + a, 1 + 2 – a) with $0 < a < 2$ is acceptable and efficient. For example, one can interpret the institutionalization of the feudal chore in these terms.

Understandably, individuals want a strong enforcement of their PRs and a weak enforcement of their obligations (opportunism). As a driver I prefer a weak enforcement of the highway code, but as a pedestrian I want strong controls. If individuals change their position within the PR system, sometimes as drivers and sometimes as pedestrians, there are minimal consequences. On the other hand, if the roles in the division of labour and the roles in the social organization are permanent and rigid, the consequences are more significant. Judicial strategies emerge and compete with one another. Being in a world of scarcity, justice can only use limited resources. The enforcement of PRs is never perfect. Justice has to decide about priorities: enforce ownership, monitor compliance with fiscal duties, enforce anti-sexism laws; weakly enforce the highway code, fiscal evasion, prohibition of prostitution, or financial delinquency.

One can also witness substitutions between modifying the law and modifying law enforcement. For instance, ‘society’ may prefer not to sanction personal

consumption of marijuana without amending the law. In some areas of newly-defined PRs (for example, tobacco regulation, sexist or racist practices, rights of handicapped people, prisoners' rights) the debate in favour of legal intervention is just beginning. The second round involves fighting to enforce these regulations. Indeed, it is not by chance that the highway code is enforced to very different degrees across countries, even in those with a similar level of development.

Judicial interpretation

PR systems not only need enforcement, but also interpretation. Justice appears as a referee among different players claiming entitlements to do something and disputing other players' rights to do the same.

The judge must connect the PR system with the facts related to a particular case. His or her first task is to draw up an assessment of the facts. The judge is a 'neutral' and 'independent' referee. He/she has to establish the 'truth', to produce the legitimate reading of the facts, whereas the parties propose different versions according to their interests.

Divergences are also related to cognitive reasons. Let us substitute the idea of limited or procedural rationality for that of substantive rationality. Individuals will then seek an average and approximative level of results, rather than the strict maximization of objective functions; they would look for 'justice' (reasonable compensation), rather than ask for maximum compensation. They will use procedures, often of an organizational nature (the individual has to decide as a member of an organization, a company, a family and so on), conventions, references to norms, thinking frameworks, 'points of view'. As a consequence, different people may build different versions of the same reality. Contemporary sociology shows that the social context influences the behaviours and leads to 'habitus', that is forms of behaviour related to the social status of the individuals. Professional litigants – say a lawyer or an insurance company – will not have the same type of behaviour as an occasional litigant. Rationalities become socio-historically situated rationalities.

At the same time the referee does not generally limit him- or herself to an 'objective' observation of facts (which corresponds more to the logic of the expert). On the contrary he/she provides a specific interpretation of them, and defines responsibilities and torts: is the damage and the PR violation intentional or not?

Hence, judges are real and active producers of interpretations. They base their findings on a specific mode of reading reality; they give more or less importance to such or such type of consideration, to social logic, psychological logic, or economic logic. Spatial comparisons show that, in the same legal area of jurisprudence, the same attacks against PRs are judged and sanctioned

in different ways. Moreover, the judge is not always a public judge. In some cases conflicting parties agree about a specific referee in order to have a specific reading of the facts. For instance firms will ask a private referee to intervene, because they expect from him/her a decision based on economic criteria, whereas they fear that a public judge would minimize them.

The law cannot be a perfect and complete system. It cannot specify all the legal rights and duties in every situation. Within the PR legal system, some PRs are very precise (shareholders' PRs), but some are vague (for example, 'human rights', privacy PRs (1985)). Williamson distinguishes three types of law, corresponding to his three general categories of economic institutions:

- the 'classical law' for the market; the law strictly specifies and records the conditions of an instantaneous market transaction. Thus, it is simple and indisputable;
- the 'neo-classical law' for the contract, a hybrid form between market and hierarchy; it organizes a longer relation than the market one does (see the industrial cooperation contract or the franchising commercial contract). It is no more than a partial framework, because nobody can anticipate all the future states of nature; and
- the 'evolutionary law' for the hierarchy; it organizes a framework to manage changes (such as labour legislation, which under some conditions allows for changes in the workers' obligations or earnings).

From an economic point of view, it appears that the legal system enforces and implements a broad spectrum of property rights. At one extreme we have precise PRs, the implementation of which has been envisaged by the parties (for instance, they signed a contract); therefore the role of the legal institution is to make them respect the contract. At the other end of the spectrum there are general rights, the concrete consequences of which are not well specified; for example civil liability specifies only general duties (to behave like a good father), without saying precisely what it implies in any circumstance. The law does not usually take into account all the specific cases but rather establishes principles, general rules. In many cases judges must interpret general principles, and then draw a solution for a particular case. The degree of interpretation is variable, larger when the application of a general PR is concerned, weaker but nevertheless not nil, when interpreting a precise PR (for example, when the contract does not envisage everything; or when it is necessary to appreciate the good will of the parties).

By interpreting the rights and the duties coming from the contracts and the PR system, justice decides on individual situations. Therefore individuals accept a self-limitation of their personal freedom in order to benefit from a public, general, and legitimate enforcement. Moreover, giving the legal appa-

ratus the capacity of interpreting the law, they accept a more important abandonment of freedom. Why?

Three kinds of answer are offered by economic analysis. According to the rational choice approach, judicial interpretation derives from a rational attempt to minimize transaction costs. The second case originates from the institutional approach, where individuals are subject to a public power because they are members of a collective system – society. And society has some specific interests, which go beyond private interests. In the third case, the Austrian approach, interpretation by the judge is an organizational effect of self-evolving processes that characterize interindividual relations in an open society.

Transaction cost minimization

Transaction costs make it impossible to have a system of *complete* contracts. Therefore, the judicial system is efficient when it succeeds in reducing the social costs of a transaction through a legitimate interpretation. The specialization of the judge and the economies of scale in shaping a corps of specialized interpreters go in the same direction as the reduction in transaction costs. The extent of this reduction depends on whether they are precise or general PRs. Similarly to Williamson, Cooter and Ulen (1988) oppose the legal theory of contract, which refers to an area where transaction costs are weak, and the legal theory of liability, which covers an area where transaction costs are high. Whereas in the first case the interpretative role of justice is limited (it has to interpret the contractual wishes and agreements of the contractors), in the second case the interpretative role is much more significant. This approach also explains the absence of monopoly of the judicial system as an interpreter of the law. In the case of litigation, parties can agree on a compromise (the lawyers of the two firms reach a private agreement), or call upon a third person (a mediator). The choice of the procedures will follow the comparison of transaction costs.

Rules in an open society

In the Hayekian approach, rules are conceived as incomplete (the states of nature are not all anticipated) and imperfect (the conditions of their application can contradict one another). No rule or condition fits the infinite number of possible situations; their adaptation to a particular situation is not immediate. Friedrich von Hayek rejects any standard solution denying the specificity of the cases and the need to appreciate comparative responsibilities. So the judge is in an eminent position to interpret the PR system.

Judicial functioning results from a spontaneous self-organized process, with trials and errors, and a progressive selection. It does not consciously maximize welfare, but manages ignorance. Individuals are ignorant for three reasons:

- the future is always unknown, at least in part;
- some individuals may not know that some types of information exist; and
- some pieces of information are only partially transferable, or not transferable at all.

In this context, the judicial system allows a spontaneous disorder to become a self-organized order. Therefore, the emergence of rules, through a spontaneous self-organized process, and their judicial confirmation by the judge, allows uncertainty to be managed and reduced. Individuals can rest upon rules, which carry information and generate routines. Cooperation is enhanced by these rules, although they do not result from calculation or maximization. This guarantees their social efficiency and enables them to act as general and stable references for individual action.

The judge operates by formulating the social implicit rules on property. In other words, the main role of the judge is to make the implicit rules explicit, to clarify them, so that everyone can know them and profit from them. Consequently the judge transfers information similarly to the Walrasian 'auctioneer'.

However, the role of the judge as an interpreter is limited; being themselves under the law, judges have to comply with it. They must not set their mind on producing a new or a finalized rule, that is, an arbitrary rule. By interpreting PRs, judges reinforce their stability and make the future courts' decisions more predictable, which avoids excessive recourse to the courts.

The judicial interpretation of PR problems has a second important effect: it allows rules to evolve. The judge is confronted with problems that cannot always be solved by the existing legal systems. Pressures to modify the existing rule in the context of other laws handed down by tradition lead to changes in the rule while preserving the coherence of the legal order.

Collective organization

Three main ideas are put forward in the institutionalist perspective as regards the judicial interpretation of Prs:

- The first starts with the multiplicity of social logics in our societies. In the economic field there is a market logic and a non-market logic (hierarchical allocation of resources, cooperative systems and networks, for instance). In other fields there are other logics: communitarian or domestic (family) logics, political logics and so on. And, occasionally, these logics influence economic areas. Moreover, especially since the American and French revolutions, modern societies have been republican political societies. They define individuals as citizens and give

them political rights, independent of their market rights – for instance rights to enjoy privacy, to think, to manifest, to vote, to move (Barrère 2001).[4] The logic of these PRs is different from the logic of economic PRs. Some personal PRs are inalienable (I cannot sell my organs or my freedom or my public role). Therefore the republican logic introduces political and ethical principles, which distinguish political freedom from freedom to contract. The judge has to control the application of the principle of autonomous decision making, and prohibits 'contracts' or 'exchanges' such as 'slave–slave trader', or prostitute–upholder, minor–paedophile. In other words, the judge has to interpret the facts and the law by taking into account different principles, and has to combine individual interests and collective interest concerns.[5]

- The second point regards the abstract character of the modern legal rule. The law is based on general principles (for example, 'legal principles', 'constitutional principles') and has to be specified and interpreted in order to be applied to each particular case. The judge not only has to point out the law or the existing distribution of PRs or to apply a whole range of sanctions (for example, robbery is worth the amputation of the hand). He/she also has to produce an original solution by paying attention to individual personalities and circumstances, according to general principles.
- The third point is that the legal system, and especially the PR system, is one of *relative rights* (who has which rights, but also, whose rights prevail), of *relative capacities to act* (who can force what and up to what point), of *relative powers*, of *relative responsibilities* (what party inflicted the damage, what party should receive compensation). Hence, justice is mainly concerned with dispute resolution. It has to decide between competing interests (Mercuro and Medema 1997, p. 115). As in the Hayekian framework, the legal rules, and especially the PR system constitute together with the market the two main institutions backing relations among individuals. But the institutionalist view highlights the diversity among individuals' interests, representations and projects. If the market expresses competition, it includes a selection mechanism by the willingness to pay, although the law uses another mechanism, according to political logic and ethical criteria. Thus, a rule is not only a coordination mechanism, it is also a social compromise, an organization of relative rights and powers.

The judicial specification of PRs

It might seem strange that the judicial system is considered as a place where PRs are specified. For many economists this seems dangerous, and they refuse this kind of intervention or seek to limit it to a minimum level.

Nevertheless, judicial systems contribute to clarifying the contents and boundaries of PRs. They do this by defining individual and social norms. Their intervention is, probably, more important in European countries, where there is an old public intervention tradition, than in the United States; more important in civil law countries than in common law countries; more important in some law areas (medical liability, intellectual property, anti-competitive practices) than in others.

The definition of justice

The judge produces lawful and 'just' sentences. He/she defines not only what is legal but also what is just. The judge is not a legal scholar, but rather a creative producer; for the 'just' sentence is not necessarily already written in the law. Sometimes the judge takes a decision by choosing among many. This is obvious in criminal law. The law envisages a range of sanctions. The judge or the jury decide among these possibilities. And they adjust penance to fault according to the conditions. Sometimes, this is also true in civil law, for instance when compensation is involved. There is no standard for sanctions; no objective and indisputable amount can exactly compensate the injured parties. The judge has to make his/her own evaluation; and different judges or courts may fix different amounts. No one can use indisputable norms or conventions, since explicit markets for such damages are missing. Moreover there lacks a clear *ex ante* delimitation of who is entitled to be considered a victim. Up to what amount will the disutility of oil wastes in the ocean be compensated? And will that take into account the contaminated birds? History shows that the logic of these decisions may alter; and not only according to the changes in market prices.

Judges evaluate rights and claims; they mediate between conflicting claims and opposed PRs; they delineate the perimeter of each PR; they assess what actions are authorized by the PR and to what extent; they balance damages and compensation. Hence, their intervention in the social fabric goes deeper than just enforcing and interpreting PRs.

In other words, the judge introduces a new process of allocation and evaluation, prior to and alongside with the market process. From a PR perspective this implies two judicial functions:

- The judge specifies the precise powers, rights and obligations given to the parties by their PRs when there are opposite claims. He/she establishes who has the right to do what and under which circumstances. Has the tenant the right to require the owner to maintain the building where the flat is located? In which cases? To what extent? The judge introduces a judicial allocation of precise rights.
- To evaluate and compare rights and duties, to determine implicit prices (How much is an aggression 'worth'? How much is a damage 'worth'?

> What are their implicit 'prices'?). By doing so the judge is a substitute for the market process. He/she introduces a process of legal evaluation in a world governed by market processes of evaluation.

The judge intervenes in the interindividual relations, but does not exercise any arbitrary power. First he or she acts within the legal PR framework, under legal and constitutional principles. Second, regulatory mechanisms such as the possibility of appeal to higher courts have emerged to avoid arbitrary decisions. Yet, the use of judicial PR allocation and valuation remains to be addressed.

Miller et al. v. Schoene *and Buchanan versus Samuels*

> *Miller et al. v. Schoene* is a case which involves red cedar and apple trees and their respective owners; and cedar rust, a plant disease whose first phase is spent while the fungus resides upon its host, the chiefly ornamental red cedar tree, which is not harmed by the cedar rust. The fungus does have a severely adverse effect upon the apple tree during a second phase, attacking its leaves and fruit. The legislature of the state of Virginia in 1914 passed a statute which empowered the state entomologist to investigate and, if necessary, condemn and destroy without compensation certain red cedar trees within a two-mile radius of an apple orchard. Miller et al., plaintiffs in error in the instant case, unsuccessfully brought suit in state courts, and sued to reverse the decision of the Supreme Court of Appeals in Virginia. The arguments for the plaintiffs in error were basically simple and direct, as well as of profound heuristic value. Their main contention was that the legislature was, unconstitutionally in their view, attempting to take or destroy their property to the advantage of the apple orchard owners. (Samuels, 1971, pp. 436–7; quoted by Buchanan [1972] 2001, p. 363)

Samuels's opinion According to Samuels, the court 'had to make a judgment as to which owner would be visited with injury and which protected' (Samuels, 1971, pp. 438–9; quoted by Buchanan [1972] 2001, p. 363). That is, it had to choose between two conflicting claimants. For that choice the market and the exchange system must be replaced by the judicial system.

Buchanan's reply Buchanan interprets the problem in terms of externalities and proposes a solution based on the internalization of these externalities by means of exchange. If PRs are not well specified, the courts have to 'lay down the precise limits of allowable actions by the parties in question', but 'the courts are locating the limits that exist in the law; they are not, and they must not be seen to be, defining new limits or changing the pre-existing ones' (Buchanan [1972] 2001, p. 365).

Once PRs have been well specified, mutual agreement may internalize the externality as in the standard Coasian framework. It is only in the presence of 'certain narrowly-defined conditions' (for instance some free-rider obstruc-

tion) that transaction costs might give an efficiency basis for resorting to collective or state action. But, Buchanan adds, 'there is no role for judiciary' (ibid., p. 370), only for the legislative process: 'The judicial role should have been limited strictly to a determination as to the constitutionality of legislative action, and this should not have included any attempt at making a judgment as to the economic efficiency or inefficiency or to the equity or inequity of the legislative choice actually made' (ibid., p. 373).

Narrow judicial intervention as a complement of market process

As discussed earlier, judicial intervention is necessary in some situations to make rights clear. The imprecision of PRs is related to transaction costs. Specifying PRs is an essential but costly precondition for the market to operate (Papandreou 1997). In a world without uncertainty individuals, under a veil of ignorance, could *ex ante* envisage all the possible bundles of PRs, the concrete situations in which to apply them and negotiate their implementation. But with uncertainty, the cost to obtain a perfect PR system and complete contracts would be enormous. In these cases the judge can be an efficient way to specify PRs.

This reason may explain the growing role of judicial systems. For Hayek, judicial intervention is inevitable in an uncertain world (when defining land PRs in the eighteenth century nobody could imagine oil extraction), but this intervention has to be limited by its inscription in tradition.

The limits to judicial intervention

For Buchanan, the judiciary must not 'inject its own standards of value measurement in determining the constitutionality of the legislation' ([1972] 2001, p. 374). The judiciary's activism has to be rejected in favour of the respect of previously existing rights:

> There is an explicit prejudice in favour of previously existing rights, not because this structure possesses some intrinsic ethical attributes, and not because change itself is undesirable, but for the much more elementary reason that only such a prejudice offers incentives for the emergence of voluntarily negotiated settlements among the parties themselves. (ibid., p. 375)

So, he adds: 'The object of never-ending research by loosely coordinated judges acting independently is to find the law, to locate and redefine the structure of individual right, not *ab initio*, but in existing social-institutional arrangements' (Buchanan 1975, pp. 46–7, quoted by Pejovich 2001, p. xxi). Hayek, as we saw, has a similar position.

The Coasian analysis sees a conflict between claimants as a conflict about the use of a scarce resource related to an externality (often linked to technical progress, which gives more value to unexploited resources). With low trans-

action costs a precise entitlement allows an exchange of the PRs on the resource. Free exchange internalizes the externality and an efficient outcome is found. Once the PR entitlement has been well defined, the judicial system must withdraw in favour of the market. Only when transaction costs are high does the judge have to give a ruling on entitlement.

The intrusion of the judge in interindividual relations must then be limited in two ways: the market must be allowed to function (instead of setting standards of pollution, a market of pollution rights must be created); judicial evaluation must rest on the logic of free transactions, which reflect individual preferences.

Judicial intervention as an alternative to the market process

A PR specifies the limits to the use of a resource by the holder of the PR and defines all the uses prohibited to other people (I can smoke my cigarettes and my neighbour cannot steal them or cannot prevent me from smoking in my house). A perfectly specified PR would be a clear definition of all the uses that the holder is empowered to make in every state of nature. Formally, a PR system includes relations between:

- a set of title holders $\{H_i\}$, i = 1, …, n
- a set of resources $\{R_j\}$, j = 1, …, m
- a set of actions that identifies the particular uses of each resource $\{A_{jk}\}$, j = 1, …, m ; k = 1, …, z. For instance I use my car to go to work, to go on holiday, to carry luggage, to lend it to a friend, and so on.

A perfectly specified PR system implies that every action with all its consequences concerning every resource in every state of nature is unambiguously linked to the right of someone. It implies an injective application: $H_i \rightarrow A_{jk}$, $\forall_{i,j,k}$. Yet, existing PR systems are sets defined by an injective application $H_i \rightarrow R_j$, but they do not include a complete definition of the relations $R_j * A_{jk}$. No PR system can be perfect, not because of the imperfection of human nature or some kind of natural imperfection, but for economic reasons. The sets A_{jk} of all the possible uses of goods in any situation, are unknown. A perfect PR system can only exist in a world without uncertainty, in a world with complete contracts, without transaction or coordination costs. And a world without transaction costs is one with no free markets; as John Maynard Keynes said, a world without uncertainty is a cooperative economy, not a monetary and market economy. A perfect PR system also means a world where everyone has precise and undisputed powers on the resources.

In the real world, PRs are not relations between PR holders, but between holders and objects, goods, resources. In many cases the relation $R_j * A_{jk}$ is not

problematic. The application $H_i \rightarrow R_j$ is enough to define the application $H_i \rightarrow A_{jk}$ (there is no discussion whether I can lend my car to my sister instead of lending it to my brother, except if I know that she has no driving licence). This transfer from entitlement-to-goods to entitlement-to-actions is given by the law and/or conventions,[6] customs and so on. The legal principles of ownership, for instance, specify many authorized uses of an owned good, but not all of them. In some cases, there are changes in the set A_{jk} or in the effects of its elements. Then, $H_i \rightarrow R_j$ is not enough any more. The role of the law is to take into account these changes.

A judicial system has to say: 'according to your PR you are entitled to execute this action' or 'despite PRs, you are not entitled to execute it'. In many cases, A_{jk} has effects on several agents and can be related to different resources (R_j) or different holders (H_i). I am entitled to use my car in the street but if, on the same day, the New York marathon needs that route, there is a conflict. One resource, R_j (the street), is able to support opposite actions A_{jk}, marathon and car traffic. The action A_{jk} to smoke and so to pollute the air is related to different potential holders of PRs on clean air, H_i, H_j, … A PR is generally a relative power, in that it is a power for one agent and a constraint for another one. It is very difficult to organize a system of PRs, to combine everybody's rights,[7] to establish where the right of one person ends and where another's right begins. Surely, in order to respect the right to sleep one cannot make a noise at night; but what is the standard definition of 'noise'? Is it 60 decibels or 80? Is it the same in Las Vegas and in a village in Maine; in summer and in winter; on Saturdays and on other days? Attention towards children's rights is recent, but how does one combine children's and parents' rights? Combining all legal actions a priori is unimaginable, because of the transaction costs and because we are in an uncertain world.

The judge determines the boundaries for the sets of legal actions linked to PRs defined on R_j. He/she defines the relation $R_j{}^*A_{jk}$. For that judgment equity criteria have to be introduced, because in most countries – if not all of them – the judge has to dispense justice, that is to apply both efficiency and equity criteria. Whenever neither the law nor the market can solve the conflict, judicial intervention is necessary. As seen in the case of *Miller et al. v. Schoene*, the judge must necessarily choose between a priori legitimate PRs: 'decide which party would have what capacity to coerce another' (Samuels 1971, p. 439). As opposed to Buchanan's argument, the prevailing PR system is not that precise. Are the landowners really entitled to plant dangerous trees, a capacity that had not been envisaged by the lawmakers?

Let us consider another interesting and more recent case. In France, in March 2001 the Court of Marseilles authorized two hundred squatters to stay on for a year. Allegedly, they had suffered from 'collective deficiencies as regards to social housing', though the occupation of a building 'without right

or title' violates the right of the ownership and constitutes 'an obviously illicit disorder' (*Le Monde*, 20 March 2001). Is that a violation of individual preferences? It does not seem so because the court pronounced a decision in a 'legal vacuum': in this particular situation neither legal text nor jurisprudence gives the answer to the question on how to combine different and opposite claims, different and opposite PRs.

From an institutionalist point of view this function of the judge has to be accepted. The judicial decision is the last means of cutting the conflict between PR holders and those who dispute their rights. The judge is the only one entitled to that function by the law. Justice is the institution that makes PRs active. Instead of leaving them in a formal state it organizes a system of relative concrete PRs, a configuration of relative capacities to act, that is to say a system of mutual coercion, which is similar (but prior) to the other system of mutual coercion, the market.

Different PRs and different logics

Judges do not apply a blueprint mechanically. They evaluate how to apply a PR system in a global legal framework and a specific context, and they have to take into account all the efficiency and equity effects. Moreover, changes in the context may modify the consequences of the existing PRs. Therefore, judges have to:

- combine the precise application of different PRs, possibly partially contradictory, and arbitrate between PRs;
- apply PRs by taking into account the specific features of the situation, of the individuals' personalities;
- apply PRs with reference to efficiency and equity.

The institutional approach claims that the efficiency criterion is not sufficient for two reasons. The first is that all PR entitlements modify relative rights, relative capacities and relative wealth. Therefore they have economic consequences: prices, production, incomes and wealth distribution are affected. The second reason is that market values, standards and norms, cannot be used as normative references. To be a 'price-taker' is to be a 'rights-taker', as if its implication as regards fairness were acceptable. Indeed, equity itself is an element in the judicial process.

We can resort to a parabola in order to clarify the relation between entitlements and solutions with distribution effects. I called this the 'Titanic model'. A shipwreck may create a scarcity of lifeboats, if there are not enough to accommodate all passengers and crew. We are here in a typical situation with ill-defined property rights on a resource that is becoming tragically scarce. We have to specify entitlements. The efficiency criterion is inoperative: what-

ever the PR allocation, no more lifeboats are to be constructed. A wild conception of efficiency – give the seats to the rich – is questionable from an ethical point of view. A naive conception of efficiency – give the seats to those with the highest preferences – makes little sense. Surely, entitlements are a problem of equity. Many solutions can be envisaged (and different conventions can exist). Priority can be given to women and children, according to a lottery, age, gender, hair colour, political preferences, nationality, physical strength and so on. This shows the 'arbitrariness of the rights'. As in the critical philosophy and sociology of Pierre Bourdieu and Michel Foucault, every right is related to primary entitlements through free exchanges or power relations. These entitlements are not the legal translation of some pre-existing fairness, efficiency or equity, but a part of a specific system of PRs among many potential systems. In most situations efficiency has obviously to play a role but together with equity criteria. In the Coasian framework, when there are no (or few) transaction costs, entitlements are neutral for efficiency, so that the judge may favour equity criterion (in the standard example of air pollution, he/she assigns a right to clean air, which means that he/she decides who pays for the anti-pollution filter). When there are transaction costs and the law does not establish priorities, the question is how to combine different types of criteria that lead to different outcomes. In these cases, the judge has to evaluate case by case.

Judicial intervention is all the more necessary when the market is unlikely to produce equitable results.[8] Then, if the judge only defines PR assignments with reference to market prices and rights, it turns out that market data themselves derive from the system of pre-established rights,[9] which are disputable or even disputed. The market cannot constitute the fixed point since it requires another point of reference, the legal one. This is why some authors insist on the need for judicial transparency when fairness is at stake.

The growing role of the judiciary

The growing role of the judicial system is correlated to more complex PRs and more complex uses of economic resources, with fewer free goods or resources. It is related to increasingly sophisticate economic regulation. A second reason is the rise in the number of opportunistic strategies as a consequence of competition.[10] A third reason is that judicial decisions must follow different logical patterns. Justice has a particular function that makes it the main point of connection between the various areas of society, its various dimensions, its different norms and value systems: economic, political, social, cultural, ethical and so on. At the same time it is related to the refusal of absolute constructivism, which would lead to a perfect property rights system, with no inconsistencies, no vacuum and no contradictions. Rights are, in some proportion, necessarily incoherent. They often have dif-

ferent sources, origins; they are linked to different legal principles. Surely, they refer to different value systems, not necessarily of an economic nature, or exclusively generated by the market process.

Notes

1. The symmetric structure of the game is not a restrictive hypothesis. The payoffs are utility indices and may be chosen arbitrarily as being equal in the same outcomes for each player. The important point is that, for everyone, $\gamma > \alpha > \delta > \beta$.
2. Optimal cooperative equilibrium is possible, but the possible outcomes are infinite. Any system of identical strategies (to cooperate *n* times, not to cooperate *m* times, to cooperate *n* times …) constitutes a system of best responses and is a solution, according to the folk theorem, with the two extreme systems $n = 0$ (no-cooperation indefinitely repeated with 3, 3) and $m = 0$ (cooperation indefinitely repeated with 5, 5).
3. $dq_{NR} / dt = q_{NR} . [G(nr, S) – G(S, S)] = 3\ q_{NR} (1 – q_{NR})$, with q_{NR} the proportion of players using the pure strategy NR, S being every strategy in kind $[pS1, (1 – p)S2]$, $0 \quad p \quad 1$.
4. The idea of the autonomy of the political logic of law is sustained in the United States by the 'modern civic republican tradition school'; see Mercuro and Medema (1997, p. 97).
5. Posner himself notes 'the need for specifying an initial set of individual entitlements or rights as a necessary prerequisite for operationalizing wealth maximization' (Posner and Parisi 1997, p. xi), and writes that it is difficult to define the absolute and relative importance (according to other components of justice) of efficiency research in justice research. He therefore accepts the analysis by Calabresi, according to whom justice is not an objective or a criterion like efficiency or distribution, and cannot then be the object of a trade-off with them. Efficiency and modes of distribution are only elements, 'ingredients' of justice, which remains a goal of a different nature. Posner adds that efficiency is congruent with our moral intuitions because founded on assent. Efficiency based on exchange respects personal freedom; corresponds to our search for improvement (Posner 1983, p. 89, quoted by Mercuro and Medema 1997, p. 60).
6. Am I entitled to smoke in my neighbour's house if he hates smoke? There is a potential (even unimportant) conflict between my individual freedom to smoke and his individual freedom to breathe fresh air. The solution is conventional (to be polite …).
7. To enforce ownership is the same as prohibiting a hypothetical right to steal. Similarly, monopolistic rights imply exclusion (except for public goods). Prohibition is the other face of freedom.
8. Moreover, unequal positions in the market may have a cumulative effect. See the debates on free trade and protectionism in developing countries.
9. 'The economy is a system of power, of mutual coercion, of reciprocal capacity to receive income and/or to shift injury – whose pattern or structure and consequences are at least partially a function of law' (Samuels 1971, p. 440).
10. See the *Prestige* tanker shipwreck on November 2002 off the Spanish coast of Cape Finisterre, and its incredible maze of overlapping PRs, for an example of the opportunistic strategies and PR complexity.

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