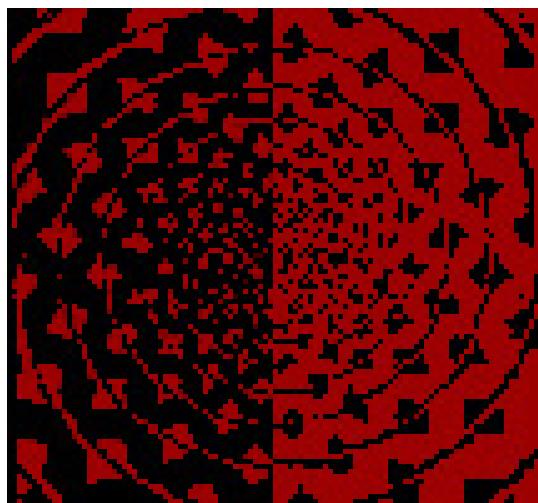




Les Carnets du Centre de Philosophie du Droit



Titre: **No-Starts and Dead Ends : Sequentiality Matters
in Law and Economics**

Auteurs: **Tanguy Isaac (IRES) and Bernard Swartzenbroekx (CPDR)**

N° **142**

Année : **2009**

© CPDR, Louvain-la-Neuve, 2009

This paper may be cited as: Tanguy Isaac and Bernard Swartzenbroekx, "No-Starts and Dead Ends : Sequentiality Matters in Law and Economics", in Les Carnets du Centre de Philosophie du Droit, n°142, 2009.

No-Starts and Dead Ends : Sequentiality Matters in Law and Economics

by Tanguy Isaac (IRES) and Bernard Swartzenbroekx (CPDR)

Abstract

The toolkit of Welfare Economics has increasingly been applied to the design of legal rules. However, problems are likely to arise when the definition of efficient rules is done sequentially. There are then serious threats of the rules being locked in suboptimal equilibria. This affects in turn the strength of the case for the economic analysis of law with respect to alternative methods of legal reasoning. In this article, we build two formal examples in the area of torts that display two related but slightly different manifestations of the problem, dubbed the No Start and the Dead End cases. We then discuss some of its implications.

1 Introduction

Legal scholarship in general and tort doctrine in particular have often appeared to many outsiders, and quite a few insiders as well, as an incoherent field of uneasy generalizations and ad hoc formulations¹. It is a regrettable impression as the main tasks of jurisprudence are precisely to make sense of existing legal rules and to provide guidelines about how to decide new cases properly.

Economists have counted among the most prominent critics of the lack of rigour and consistency of traditional legal scholarship. They denounce its relentless habit of playing with fuzzy meanings and inchoate principles, which they trace back to the absence of a clear and coherent method of adjudication that would be carefully learnt in law schools and uniformly applied by the courts. The rise of the economic approach to law is largely due to the conviction that welfare economics provide the method that is so cruelly lacking in the legal field. A large and growing number of scholars have thus been working hard during the last thirty years to fill in this gap and tackle most of the legal policy controversies through these lenses.

Not surprisingly, such attempts have caused scepticism and faced resistance within the legal academia although it can also be argued that the basic precepts of law and economics had been anticipated by some prominent legal figures, especially in the area of torts². However, most criticisms have focused either on

¹ As it is well-known, Oliver Wendell Holmes Jr, in many ways the founding figure of modern American jurisprudence, developed an engrained scepticism about the quest for certainty in law and the internal consistency of legal reasoning. We do not resist the pleasure of quoting a famous passage:

«The language of judicial decisions is mainly the language of logic. And the logical method and form flatter that longing for certainty and for repose which is in every human mind. But certainty generally is illusion, and repose is not the destiny of man. Behind the logical form lies a judgment as to the relative worth and importance of competing legislative grounds, often an inarticulate and unconscious judgment, it is true, and yet the very root and nerve of the whole proceeding. You can give any conclusion a logical form. You can always imply a condition in a contract. But why do you imply it? It is because of some belief as to the practice of the community or of a class, or because of some opinion as to policy, or, in short, because of some attitude of yours upon a matter not capable of exact quantitative measurement, and therefore not capable of founding exact logical conclusions.» Oliver Wendell Holmes Jr, *The Path of the Law*, *Harvard Law Review*, vol. 10, p. 471.

Tort doctrine was by the way the first and privileged domain in which the doubts of the great lawyer about both the common law method and abstract system-building enterprises. See in particular Oliver Wendell Holmes Jr, *Privilege, Malice and Intent*, *Harvard Law Review*, vol. 8, p. 1.

² See the famous decisions of Judge Learned Hand advocating that the duty of reasonable care should be breached when the burden of precautions is smaller than the harm that could have been prevented, duly weighted by its probability of occurrence, whoever ends up supporting the harm and the burden of the precautions, but focusing only on the inducement of the socially desirable level of care. *United States v. Carroll Towing Co.* 159 F.2d 169 (2d cir. 1947).

the normative inadequacy of efficiency considerations to judicial rulings³ or on the lack of plausibility of behavioural assumptions used by economists⁴. In this heated debate, little attention has been attached by proponents and critics of normative law and economics alike to the problems caused by the adoption of a sequential approach to adjudication⁵.

This paper presents an illustration of the risks sequentiality engenders for the practice of law and economics at a high level of generality. If not appropriately recognised and addressed, this neglect of sequentiality problems puts the whole edifice patiently built up by law and economics scholars at risk of facing the same criticisms of vagueness and inconsistency they have addressed to their opponents.

2 The Strength of Normative Economics as Applied to Law

In a didactic book, *Fairness Versus Welfare*, two of the most distinguished scholars in the field, Professors Louis Kaplow and Steven Shavell from Harvard Law School, have offered a renewed defence of the superiority of welfare economics on other normative approaches of adjudication. We take it as a representative description of the current practice of normative law and economics. In their view, «*welfare-based normative approaches should be exclusively employed in evaluating legal rules*»⁶. Considerations of «fairness» that take into account elements that do not affect individual well-being should definitely be excluded from the analysis. It should be given no weight at all in the process of adjudication. In other words, the ruling on a case should be solely determined on the basis of the effects a rule has on future behaviours, which is an empirical matter, and the consequences such behaviours will have on the

³ With regard to efficiency understood as wealth maximization, see the classical paper of Ronald Dworkin, *Is Wealth a Value*, *Journal of Legal Issues*, vol. 9, p. 191. With regard to broader approaches of efficiency, see Jules Coleman, *The Grounds of Welfare*, *The Yale Law Journal*, vol. 112, p. 1511.

⁴ The most famous example is the well-documented fact that most people value something they have, a bottle of wine as well as a fundamental right, more than if they had to pay for it, complicating the comparison between distinct legal arrangements. See for instance Mark Kelman, Consumption Theory, Production Theory and Ideology in the Coase Theorem, *South-California Law Review*, vol. 52, p. 669 and all the developments in the behavioural law and economics literature.

⁵ However, problems of sequentiality have been alluded to in the literature on the merits and weaknesses of law and economics. First, it has been noticed that Kaldor-Hicks understandings of efficiency are not immune against problems of circularity based on the remarks of Tibor de Scitovszky, A Note on Welfare Propositions in Economics, *Review of Economic Studies*, vol. 9, p. 77. Second, it has been argued that cumulative changes of legal entitlements induce wealth effects and alterations in relative prices so as to render a market-based evaluation of legal entitlements dependent on the particular sequence of decisions. See Duncan Kennedy, Cost-Benefit Analysis of Entitlements: A Critique, *Stanford Law Review*, vol. 33, p. 387 and Mario J. Rizzo, The Mirage of Efficiency, *Hofstra Law Review*, vol. 8, p. 641.

⁶ Louis Kaplow and Steven Shavell, *Fairness versus Welfare*, Harvard University Press, Cambridge, Mass., 2002, p. 4.

social welfare of the society as a whole, all things considered. They then go on and apply this analysis to a large variety of legal issues in different branches of the law, picking up one policy problem after the other and defining the conditions of an efficient ruling in each case⁷.

They take the usual precautions with regard to the merits and weaknesses of a welfarist point of view. It is acknowledged that the form of the social welfare function inescapably includes political preferences through the weight that is given by the analyst to the well-being of each individual. But the politics of distribution, it is claimed, do not prevent the economic analysis from providing determinate and efficient results⁸. On the contrary, principles such as retributive or corrective justice are, so they claim, chronically indeterminate. Those concepts and their fields of application are left unclear by their proponents and are largely open to manipulation. What's worse, such considerations of fairness systematically lead to suboptimal decisions in the sense that another ruling could

⁷ A more comprehensive and formalized account of the approach is presented in A. Mitchell Polinsky and Steven Shavell (Eds), *Handbook of Law and Economics*, Amsterdam, Elsevier, 2007.

⁸ The precise definition of efficiency used in law and economics is not always very clear, including in the restatement proposed by Shavell and Kaplow. It oscillates at a theoretical level between a Pareto and a Kaldor-Hicks understanding of efficiency while they end up using a wealth-maximisation criterion based on market prices in their examples. To fill in the gap, the authors assert that distributional considerations can often be addressed, and in a way less wasteful in resources, through direct tax-and-transfers so that such considerations could be neglected at the stage of the definition of the rule. They subsequently affirm that wealth-maximisation offers a not-so-bad approximation of the aggregate social welfare in most practical contexts.

Those assertions seem to be highly problematic as they simply evacuate in a rhetoric gesture many deep problems of the utilitarian framework. As it is well-known and as the authors themselves acknowledge, wealth does not say much about how money actually contributes to the well-being of individuals and overlook all non-monetary aspects of well-being. Likewise, distributional concerns cannot be dealt with exclusively at a (often hypothetical) secondary step, once «efficient» rules are determined. Indeed, if one adopts a substantial definition of efficiency such as a cardinal social welfare function or a wealth maximization criterion, one has explicitly or implicitly attributed a weight to the well-being of each individual. If one opts instead for a procedural definition of efficiency, such as the allowance of Pareto or Kaldor-Hicks improvements, what is deemed efficient will depend on the initial distribution of rights and prerogatives. In both cases, picking up different weights or another initial distribution of rights would lead to different «efficient» results as much as to different distributions of well-being.

In addition, the second theorem of welfare stating that all Pareto-efficient allocations can be achieved through appropriate lump-sum transfers does not apply as soon as market imperfections exist. But the inescapable character of such «imperfections» of various kinds justifies the whole business of law and economics. As Ronald Coase has demonstrated long ago, the very possibility of efficiency improvements by modifying the definition and distribution of legal entitlements crucially depends on the existence of «transaction costs» of all kinds. It then seems difficult to assume those “imperfections” away while their very presence justifies that law and economics can make a difference and is helpful to choose between various allocations of rights. Ronald Coase, *The Problem of Social Cost*, *The Journal of Law and Economics*, vol. 3, p. 1.

Fortunately, our argument does not crucially depend on those debated points and can be made even if one adopts a very general definition of efficiency that leaves aside what should count in it and how distributional concerns should affect it.

have made everyone better off⁹. As a result, fairness-based decisions breach the (relatively) weak criterion of (potential) Pareto efficiency. If welfare economics allows for some political indeterminacy according to distributional preferences, other methodologies suffer from a much more radical indeterminacy that is of a conceptual nature. It explains the sense of chaos often felt by those who encounter legal professionals. More deeply, it prevents the adoption of better decisions (in the utilitarian sense of the term) by imposing a social cost for which, so they claim, no appropriate defence is provided by “principled” legal scholars.

In practice, law and economics scholars widely apply the same two-steps methodology to determine an efficient legal rule, even if some economists may feel uneasy with the grand endeavour of Kaplow and Shavell to settle once and for all the debate between deontologists and welfarists:

1. Sequential ruling

A law and economics scholar, no less than a judge, decides one legal issue at a time. Other rights and legal entitlements are fixed and taken as given during the process of determining which rule is efficient and, thereby, presumably desirable. For instance, to take a typical textbook example, one has to decide whether a person who has caused an injury by provoking an accident should be made legally responsible for it, that is should pay for the damage she has caused to the injured. The stake of the decision consists in determining the regime of liability for (this kind of) accidents to the exclusion of other considerations. It is decided against a backdrop of given property and contract rights, the general framework of tort law, procedural requirements about litigation, and so on.

2. Maximization of the aggregate surplus

The law and economics scholar, and potentially the judge gained to the virtues of welfare economics, then calculates through an appropriate model the effects all possible rulings will have on the well-being of potential injurers, potential injured and any other affected people. He picks up the rule that maximizes the social surplus, in which all affected people are counted. This

⁹ The authors acknowledge the tautological character of the argument as soon as «fairness» implies in their understanding of the term to give weight to elements that do not affect the well-being of individuals. Kaplow and Shavell, op. cit., p. 58. As Coleman has noticed, the reciprocal argument can then be made with the exact same conceptual apparatus. If there is a (possibly high) «price» in welfare by giving a positive weight to «fairness», there is reciprocally a (possibly high) «price» in «fairness» by giving a positive weight to «welfare», once both terms are defined in terms of mutually exclusive domains. Jules Coleman, op. cit., p. 1524.

surplus is measured with the appropriate metrics: ideally utilities. But in practice market prices¹⁰ are often used.

In our textbook example, the question will be whether the decision to make the injurer responsible will induce him to take a protection that is socially less costly than the value of the damage it allows to avoid, once the costs of legal administration and other transaction costs are deduced. If it is, one should make her legally responsible. If it is not, one should leave the victim bear the cost of the accident.

So practised, this is simply a flawed methodology. It does not provide any assurance that it will lead to an optimal outcome. Moreover the structure of rights that is achieved in this way is likely to crucially depend on the order in which decisions have been made, with serious problems of lock-in in suboptimal legal arrangements. The order in which legal issues present themselves to the analyst or the judge is likely to affect what is deemed the efficient rule without any warranty that it actually is. We illustrate both points with a simple model in the next section.

3 Two Very Simple Situations

Let's imagine a highly simplified and idealized story. We have a world in which two kinds of accidents can occur, a work accident and a leisure accident that is likely to take place in a gym the worker goes to before or after work. We have three agents: a worker, an employer and a gym owner. The probabilities of occurrence of both accidents are independent from each other. The probability of the work accident (respectively the leisure accident) can be somewhat reduced if the employer (respectively the gym owner) takes a protection. Protections are costly and are only taken if two conditions are met: the firm is legally required to pay a compensation to the worker in case of accident and the protection reduces in a sufficient proportion the probability of occurrence of such accidents to outweigh its cost. Neither of these liability issues has been previously decided. They are decided by a court in the order they come to the fore, but never together.

For the sake of the argument, we assume that there is no case of contributory negligence, no problems to determine the causality, no insurance available and no possibility to contract to waive one's responsibility. There are no litigation costs either. This is a very simple world in which one just has to decide whether it is a good thing to make the injurer compensate the victim or not, using a

¹⁰ The use of market prices poses difficult questions about which prices are to be used. This is true when markets exist as it is well-known that there are often differences between asking and demanding prices according to whom gets the entitlement in the first place. The problem is even deeper when no market exists and hypothetical prices have to be inferred, which is often the case as one of the self-conscious goal of the economic approach to law is «to mimic» the market process in its absence.

standard law and economics approach. Similarly, we assume that there are no complicate issues in determining the utility functions of the worker, which is exclusively dependent on monetary revenues.

The worker

In the absence of accident, the worker earns V . In case of accident, she gets a compensation VdE from the employer if it is a work accident or a compensation VdG from the gym owner if it is a leisure accident. If she is a victim of both accidents, then it is considered that the first accident takes place at the gym in half of the cases and at the workplace in the other half so that the worker is potentially compensated by the gym owner in the first case and the employer in the second.

The utility of the worker is represented by a Von Neuman-Morgenstein function with $u(x)$ a function of the gains.

The utility of the worker is therefore:

$$U = (1-q)(1-p)u(V) + q(1-p)u(VdE) + \dots \\ \dots + (1-q)p u(VdG) + qp \frac{1}{2}[u(VdE) + u(VdG)] \quad (1)$$

q and p are respectively the probabilities of occurrence of the work and gym accidents.

The employer

We focus on the employer's decision to invest in a protection if she is declared legally responsible. If she is deemed liable, she has to pay a compensation $VdE = V$ in order to fully restore the well-being of the worker. If she is not deemed responsible, $VdE = 0$. It is assumed for the sake of simplicity that the worker loses all utility in case of accident and that there is no intermediate degree of compensation.

The employer will take a protection costing $a_i C$ ¹¹ only if it sufficiently reduces the probability of an accident to q' from q . She is risk-neutral. In mathematical terms:

$$-a_i C - [\tilde{q}(1-p) + \frac{\tilde{q}p}{2}]VdE > -[q(1-p) + \frac{qp}{2}]VdE \quad (2)$$

¹¹ As explained below, the cost of protection may depend on the number of agents who take the protection. $a_1 C$ is the cost of protection if only one agent signs up for the protection. The cost is $a_2 C$ when protection is chosen by both agents.

The profit of the employer is exclusively constituted of the protection costs and the expected value of the compensation VdE

$$PE_{\text{withprotection}} = -a_i C - [\tilde{q}(1-p) + \frac{\tilde{q}p}{2}]VdE \quad (3)$$

$$PE_{\text{withoutprotection}} = -[q(1-p) + \frac{qp}{2}]VdE \quad (4)$$

The gym owner

Likewise, we consider the gym owner's decision to invest in a protection if she is declared legally responsible. If she is deemed liable, she has to pay a compensation $VdG = V$, assuming by convenience that the sole cause of the loss of well-being is the work incapacity that results from the accident. If she is not deemed responsible, $VdG = 0$.

The gym owner will take a protection costing $a_i C$ only if it sufficiently reduces the probability of a gym accident to p' from p . She is risk-neutral. In mathematical terms:

$$-a_i C - [(1-q)\tilde{p} + \frac{q\tilde{p}}{2}]VdG > -[(1-q)p + \frac{qp}{2}]VdG \quad (5)$$

The expression for the profit of the gym owner is then:

$$PG_{\text{withprotection}} = -a_i C - [(1-q)\tilde{p} + \frac{q\tilde{p}}{2}]VdG \quad (6)$$

$$PG_{\text{withoutprotection}} = -[(1-q)p + \frac{qp}{2}]VdG \quad (7)$$

Costs of protection

We assume a market for protections without strategic behaviour. Let's think for instance to the services of a safety firm for which both the employer and the gym owner compete. The price for the protection is unique. Three cases may be distinguished according to the market structure and the weight of each actor on the market. In the first case, $a_1 = a_2$ because of the negligible impact on the market of the choice made by the firms. In the second case, the price goes up ($a_2 > a_1$) when both firms take the protections. Both firms are indeed big enough to move the demand for protection services upward, causing the price to rise. In the third case, the price goes down ($a_2 < a_1$) when the demand is higher, for

instance because the production function of protection is characterized by increasing scale returns¹².

Social goal

We simply maximize the sum of the utilities and expected profits.

$$\max U + PE + PG \quad (8)$$

We have four legal regimes: no liability for both firms *NN*, liability for the employer in case of work accident *YN*, liability for the gym owner in case of gym accidents *NY* and liability for both firms *YY*.

In this simple model, the change of legal regime has only a few, well-identified possible effects on the social welfare. The passage from a regime of non-responsibility to a regime of responsibility:

- increases the gain expectation of the worker
- reduces the risk borne by the worker. If she is risk-adverse, this reinforces the gain of the worker
- diminishes the profit expectation of the firm. We have assumed that the firms were risk-neutral
 - If the firm decides to take the protection, this reduces its profit loss. By construction, it does not affect the worker's utility as she is entirely compensated for this kind of accident.

The effect of a liability regime is therefore ambiguous and should be determined empirically. Recalling the sequential procedure of adjudication, different decisions paths are possible. We start from the situation in which none of the firms is responsible for the injuries they cause. If it has been judged desirable to go from *NN* to either *YN* or *NY*, then we examine in a second step the desirability to go to *YY*. It is therefore not possible to jump directly from *NN* to *YY*. It is not possible either to get from *YN* to *NY* - or the reverse - without an intermediary step.

Numerical illustrations

¹² It is of course possible that the change of prices that might be induced by the decision of the second firm to buy the protection leads the first to modify its decision. For the sake of simplicity, we have excluded this type of situation from the examples we have picked up as we do not need this induced effect to make our point. However, this reinforces the potential problems of a sequential definition of legal rules.

We assume $u(0)=0$. For the sake of simplicity, we take values of the parameters so that the legal decision to render the gym owner or the employer responsible leads them to take the protection.

Then the objective functions take the following forms

$$NN = (1-q)(1-p)u(V) \quad (9)$$

$$YN = [(1-p) + \frac{\tilde{q}p}{2}]u(V) - a_1 C - [\tilde{q}(1-p) + \frac{\tilde{q}p}{2}]V \quad (10)$$

$$NY = [(1-q) + \frac{q\tilde{p}}{2}]u(V) - a_1 C - [(1-q)\tilde{p}] + \frac{q\tilde{p}}{2}V \quad (11)$$

$$YY = u(V) - 2a_2 C - [1 - (1-\tilde{q})(1-\tilde{p})]V \quad (12)$$

We fix the following values for the parameters

$$V = 4 \quad (13)$$

$$u(x) = \sqrt{x} \quad (14)$$

$$q = 0.25 \quad (15)$$

$$p = 0.25 \quad (16)$$

$$\tilde{q} = 0.099 \quad (17)$$

$$\tilde{p} = 0.1 \quad (18)$$

$$a_1 = 1 \quad (19)$$

We identify two sources of undesirable lock-in.

The «No Start Problem»: YY is better than NN but NN is better than both YN and NY so that we never get to it from our starting point. The social optimal is unreachable through a path of sequential decisions if the departure point happens to be wrong. This is the case when $c = 0.11$ and $a_2 = 0.5$.

The «Dead End Problem»: YN is better than NY . Both are better than NN and YY . In this situation, there is a chance we can get to the optimal situation. But we may as well get to NY if the first case to be decided turns out to be the second type of accident. Once we get there, we are stuck in this regime and can never shift to the more desirable YN . This is the case when $c = 0.04$ and $a_2 = 2$.

In the previous model, the problems caused by the sequential approach originate in the change in the market evaluation of protection costs. It is important as long as much of the economic analysis of law uses at a degree or another market prices to compute the gains and losses generated by a legal change. However, the problems caused by a sequential determination of legal rules may as well arise when we focus on subjective evaluations of alternative states. In other words, we assume $a_1 = a_2 = 1$.

Let's say that the worker is extremely risk-adverse, which does not seem absurd in the context of serious accidents. Her utility is now given by the minimum of the gains attached to the possible states of the world¹³.

$$U = \min(V, VdE, VdG) \quad (20)$$

Her utility is then 0 as long as both firms are not declared legally responsible and 4 as soon as they both are. It is then obvious that: $YY > NN > YN > NY$ (No-Start problem).

To illustrate the second type of problems, we have to somewhat modify our story. Let's imagine that the worker is negatively affected by the occurrence of the accident but nevertheless keeps enjoying a positive level of utility. Without accident, the payoff of the worker is $V = V_A + V_B$. There is a probability q of a work accident. If such an accident takes place in absence of liability of the employer, the worker gets V_B . In case of compensation, she receives in addition $VdE = V_A$. The probability of a gym accident is p and her remaining payoff without liability of the gym owner is V_A . Clearly, if the gym owner is liable, we have a compensation $VdG = V_B$. If both accidents take place during the same period, the worker loses everything V and gets only the eventual compensations, if any. Her utility is then:

$$\begin{aligned} & (1-q)(1-p)u(V) + (1-p)qu(V_B + VdE) + \dots \\ & \dots + (1-q)pu(V_A + VdG) + qpu(VdE + VdG) \end{aligned} \quad (21)$$

If we choose $V_A = V_B = 2$ and $c = 0,04$, we get: $YN > NY > NN > YY$ (Dead-End problem).

4 Discussion

The context of decisions is highly simplified in the above examples with respect to usual tort situations. The consequences of deciding sequentially should be further investigated when a larger amount of contextual parameters is introduced, such as the possibility of insurance, the presence of administration costs or the possibility for firms and individuals to adjust the level of risky activities they engage in. Similarly, it would be useful to consider a larger array of legal variables such as different degrees of legal responsibility or the possibility of contributory negligence to refer to the most basic terms of tort doctrine.

¹³ Alternatively, we may interpret the formulation in terms of representative agents. It then means that we adopt a maximin criterion for assessing the utility of the workers rather than an average utility criterion.

In spite of the simplistic character of our example, it illustrates a very general mathematical property. Maximizing sequentially with respect to various variables can be a very bad way to approximate a process of simultaneous maximization¹⁴. It may occur that both procedures lead to the same result but it is an exception rather than the rule. Reasons to proceed this way should then be exposed before going further down this route by exposing the conditions under which a sequential approach comes reasonably close to a general equilibrium approach. In addition, a way to choose between different paths of decisions should also be developed as certain paths are likely to lead to substantially better outcomes than others. Beyond the textbook character of our examples, the law and economics literature remains silent on both issues.

Otherwise, there is no reason to believe that the departure from the optimum, however defined, is unimportant. The order in which we decide about the rules of the game in a market environment is potentially capital even if the links that join the different legal issues are *a priori* very tenuous, such as induced effects on loosely related markets or the situational character of preferences. These problems are likely to get even deeper if the number of legal variables left beyond the field of investigation at each step of the decision-making process increases.

With that regard, it may be useful to distinguish three sources of sequentiality in the adjudication process. The first relates to the application of the same rule to different contexts. Let's suppose that one has to apply a general standard of negligence rather than to decide from scratch the liability regime in each accident situation. One would still have to ascertain in each context the efficient level of care that is required by the general standard. If this determination is done on a case by case basis, the level of precaution to be prescribed is likely to vary with the order of the decisions as soon as interdependencies arise. In that sense, our illustration is less ad hoc as it may first appear.

The second source of sequentiality originates in the fact that any legal doctrine is constituted of many elements that inescapably intermesh. In our example, we have assumed away not only many refinements of the tort doctrine but also the classical problems of determining what constitutes a damage and how to ascertain causation. Each of these elements should be subjected to an economic analysis. It is then possible that the order in which we deal with the different elements of the legal regime will affect the final rulings, at least in certain cases.

¹⁴ The point may be seen as an illustration of path-dependency mechanisms as applied to law. With regard to the existing literature, we emphasize the normative rather than the descriptive aspects of path-dependency on the one hand and the very general character of the formal conditions likely to cause lock in problems. Mark J. Roe, Chaos and Evolution in Law and Economics, *Harvard Law Review*, vol. 109, p. 641.

The third source of sequentiality arises because of the background of legal entitlements and institutional arrangements upon which we examine a particular regime such as accident liability or, more broadly, torts. Indeed, the evaluation of costs and benefits of various liability regimes will include legal costs that crucially depend on civil and criminal procedural arrangements. Likewise, the estimation of damages to property will depend in part on what one is entitled to do or not to do with it. The protection afforded against torts will in turn affect the value of property and contract. We never decide any aspect of the legal system in a legal vacuum. Potentially applicable to any part of the legal system, the economic approach to law has the power to dissolve the borders between legal categories.

Two kinds of defences can be advanced. The first type of defence consists in emphasizing the practical character of the law and economics method rather than its theoretical consistency. The social optimum being close to unreachable, it would provide a sufficiently good «second-best» solution to normative problems. It would have the enormous advantage of its practicability. After all, what would be the point of arguing against a method if the standard to which it is compared is in practice impossible to implement by judges or other officials compelled to take decisions within constraints of time and knowledge?

To that objection may be responded that the self-conscious advantages of the welfarist attitude with respect to alternative methods of rationalization of the legal process then rapidly melts as snow under the sun. Indeed, without assurance that we get to an optimal result or anywhere close to it, it may well appear that a so-called «fairness-based» approach gets to a more efficient outcomes by utilitarian standards. This would be the case in our example of the «No Start Problem» if a «fault standard» had been chosen for whatever non-utilitarian reason in both accident contexts. It would indeed lead directly from a *NN* to a *YY* solution. As a general matter, it cannot be asserted that a sequential law and economics framework leads to a better situation than alternative methods by its own standards of what counts as an improvement. It should then be demonstrated that, on average, proceeding sequentially with proxies of the social welfare function leads to better outcomes than alternative methods of adjudication.

In a sense, sequential law and economics say both too little and too much with regard to the design of legal rules. On the one hand, it says too little because it does not offer any guidance to choose among various paths of decisions and says nothing about how to assess the possible further legal developments and the risks of lock-in contained in each trajectory. On the other hand, it is easily misused to affirm conclusions that the method cannot support. Focusing only on open incremental improvements - as such a valuable contribution -, it may lead to an undue endorsement of existing rules and

institutions in spite of the fact that they may turn out to be (massively) suboptimal once we open up the field of investigation.

Institutionally, the importance of sequential problems pleads for the development of procedures that allow as much as possible to treat simultaneously various legal issues as soon as they present interdependencies at a level or another. Ironically, the common-law method of adjudication that is so often praised by prominent law and economics scholars for its flexibility does not exactly fit this recommendation as it stands *par excellence* for a sequential approach of legal problems. Legislative procedures may indeed score better with that regard. That would for instance be the case when thematic codes are designed to regulate some sectors of social life if they are drafted and adopted through a single process of decision in which different kinds of interdependencies can be taken into account. Indeed, the more we anticipate cross-effects resulting from the definition and distribution of various legal prerogatives on social welfare, the more we have a chance to effectuate an efficiency improvement.

From the perspective of research, taking sequentiality seriously also has several consequences. The more we deal with policymaking issues, the more realism and complexity should prevail on the analytical elegance and simplicity of the models. As soon as we cannot hope to come close to entirely satisfying models that take into account all relevant stakes in a legal decision, we should tackle explicitly the question of dynamics and institutional change. How should we value the fact of opening and closing roads of decisions? When is it appropriate to rule and when is it desirable to leave a question undecided? Those are important questions and challenges for researchers.

A second defensive strategy may be adopted that is opposite in character. It may be responded that, however difficult to implement, the economic approach to law is theoretically superior to its alternatives. In spite of current practical problems, this is still a serious advantage to rely on a sensible and consistent framework, if only because it encourages the development of new tools of policy-making that offer perspectives of improvements on the long term.

This is the most promising route if the learnings of economics are to be turned into good account in the development of legal doctrine. Let's however be aware of the obstacles that remain to be overcome on this path. Information problems become more and more serious as the need to adopt a more global approach is acknowledged.

Market prices are not to be deferred to any longer, even as a crude approximation of the social value of alternatives legal arrangements. The price formation mechanism indeed becomes entirely contingent to the legal structure that has to be decided upon¹⁵. One has then no other choice than to make

¹⁵ That point was recognized long ago in the legal literature as well, largely independently from the developments of general equilibrium economics. For instance, Felix Cohen noted the vicious circle

assumptions about the preferences of the agents, which have to be defined on all the sources of satisfaction that are achievable through all conceivable legal structures.

The problem becomes even more complex when one allows the possibility that the level of satisfaction of individuals depends, at least in part, on the structure of rights itself and not only on the patterns of consumption of goods and services it allows to achieve¹⁶. Fully developed, such approach faces therefore an important information burden: how to synthesize and aggregate information about all potential sources of (dis)satisfaction in all hypothetical legal environments? Incidentally, important psychological and normative questions reappear as well in the process. What is the content of preferences once we cannot infer them on the basis of choices effectively made in market environments? How are they revealed? Are there limits to what is allowed in the preferences function? Are these preferences allowed to change with the passage of time and the experience of interactions with other people? Those questions are no less (but not necessarily more) impressive than the problems deontologists and other opponents of the economic approach face when they develop their own method of evaluation of the legal order. They should be addressed as such rather than hidden away if law and economics is to strengthen its contribution to jurisprudence.

inherent in deciding property rights on the basis of the market value of the interests to be protected when such market value directly depends on the legal protection afforded. Felix Cohen, Transcendental Nonsense and the Functional Approach, *Columbia Law Review*, vol. 35, p. 814-817.

¹⁶ The evaluation of a legal structure remains consequentialist as long as the kind of prerogatives allotted to individuals have and the social process through which states of the world arise have an impact on how individuals rank various situations. A sphere of autonomy, the range of effective opportunities, and the practice of choice among alternatives are likely to be part of what individuals value, in addition to the final allocation of well-being which is ultimately achieved. Another complication arises when preferences become endogenous so that they take different patterns under different structures of rights, introducing a new sort of path-dependency problem, which, if anticipated, requires a new level at which meta-preferences should be defined. If one is consistent about the claim to base institutional design on what individuals value without any interference of the analyst with the content of these preference, it is difficult to see why those concerns would be unimportant. On these aspects and many others, see Amartya Sen, Opportunities and Freedoms, in *Rationality and Freedom*, Harvard University Press, Cambridge, Mass., 2002.