

System and Evolution in Corporate Governance

Law Working Paper N°.150/2010

April 2010

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ECGI Working Paper Series in Law

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Abstract

We explore the relevance of systems theory for an understanding of legal evolution, with specific reference to the law and practice of corporate governance. The legal system can be understood as a cognitive resource which, by stabilising normative expectations, reduces transaction costs and enhances contractual cooperation. However, the cognitive capacity of the legal system is not simply a function of its adaptability to external economic conditions. Because of the need to ensure legal continuity and certainty, there is a trade-off between innovation and stabilisation in the production of legal rules. Legal change is discontinuous, asynchronous, and imperfectly matched with developments in the economy. We discuss the relevance of this model for understanding and evaluating corporate governance default rules.

Keywords: Corporate governance, legal evolution, systems theory, autopoiesis, memetics, default rules, fiduciary duties

JEL Classifications: G38, K22

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1. Introduction

The aim of this paper is to explore the scope for synthesis between systems theory and new institutionalist approaches within economics. Such a project has the potential to offer, among other things, a more fully rounded view of legal evolution. At first sight it may seem that the methodological assumptions of economics are too far removed from those of systems theory for any kind of synthesis to be feasible. Economics describes itself as a behavioural science which studies the logic of choice under conditions of scarcity. Systems theory, on the other hand, focuses on the communicative processes through which social order is reproduced over time. In most contexts the two disciplines address different questions and use mutually incompatible techniques. However, as economics becomes increasingly concerned with the role institutions play in coordinating the behaviour of economic agents, it encounters a set of issues which are also central to systems theory. The nature of the link between legal change and economic development is one of these issues, and the interdisciplinary field of 'law and economics' now provides the terrain on which rival conceptions of the evolutionary process are being advanced.

We begin our analysis by attempting to unpack the ontological assumptions made about law and the legal system within different strands of the law and economics literature, and to draw out their implications for both normative and positive analysis. We use examples taken from the economics of company law and corporate governance to illustrate our argument. We suggest that mainstream law and economics approaches treat legal rules as surrogate prices, and contrast this with a conception of law as a cognitive resource upon which agents draw when engaging in production and exchange. The focus then shifts to systems theory, which offers an account of the creation and reproduction of norms viewed from within the legal system itself. In explaining the function of the legal system in terms of the reduction and organisation of complexity, systems theory provides a further dimension to the notion of law as a cognitive resource. We then examine in more detail how a systems approach can aid understanding of the evolution of legal norms. Where the standard law and economics analysis sees legal evolution as occurring through a linear process of adjustment to the external environment, systems theory stresses the notion of coevolution of law and the economy. In doing so it directs attention to the discontinuous and asynchronic quality of legal change. This offers an alternative normative perspective to the dominant contractualist and deregulatory tradition in law and economics, as well as a more complete positive theory of legal evolution.

2. Alternative perspectives within law and economics: company law as contract, default rule, and reflexive regulation

We begin by looking at divergent approaches to the conceptualisation of law within the law and economics literature. The law and economics approach claims to offer a method for analyzing the impact of law and regulation on behaviour. The economic impact of law is modelled as a particular illustration of a wider case. This is the one made familiar

by neoclassical economics, which tells us how agents respond to price information in such a way as to maximise general welfare while simultaneously pursuing their individual well being. On this basis, different types of law and regulation can be understood as inducing particular behavioural responses of agents. These lead to contractual outcomes which have a range of implications for allocative efficiency. Legal rules can enhance allocative efficiency by reducing transaction costs in various ways. But these cases aside, laws which interfere with the bargaining process prevent the achievement of equilibrium states in which allocative efficiency is maximised. As a result, there is a strong policy preference on the part of corporate law and economics scholars for 'default rules' of varying kinds which can be avoided or modified through contracting, and scepticism towards 'mandatory' rules which leave no such scope for bargaining (Easterbrook and Fischel, 1991; Cheffins, 1997). Mandatory rules often have the aim of redistributing resources from one group to another; but if they succeed in doing so, this can only be at the expense of aggregate well-being, thereby illustrating the inevitability of the 'big trade off' between equality and efficiency (Okun, 1975).

The 'contractarian' model of Easterbrook and Fischel (1991) goes furthest in questioning the role of external regulation of corporate transactions. Here, the rules of company law approximate to the 'hypothetical bargain' which the parties would have made in a zero transaction cost environment. The rules operate as defaults which the parties can always modify or avoid through contract if they choose to. Alternative approaches see an extended role for defaults of various kinds – 'penalty' and 'strong' defaults – which do not necessarily represent the term which the parties 'would have wanted'. The role of penalty defaults is to induce information sharing and cooperation by penalizing parties who opportunistically exploit asymmetries of information, while strong defaults, which cannot easily be contracted out of, provide disincentives for the creation of negative externalities (Ayres and Gertner, 1989).

Company law is replete with examples of default rules. Two particularly well known examples are the model corporate constitutions which, under legislation, apply in the absence of contrary agreement by the members of the company (in the UK context, the model articles set out in delegated legislation currently derived from the Companies Act 2006), and the rules governing self-dealing and conflicts of interest on the part of directors, many of which can be avoided through mechanisms of disclosure to and/or approval by various organs of the company (Law Commission, 1999).

Whatever their differences, both the economic models just referred to make the same ontological move: they occupy the common theoretical ground of thinking about the rules of company law as *surrogate prices* (see Deakin and Hughes, 1999). Law is thought of as a surrogate for prices in the sense that the agent's choice of behaviour is seen as a direct cause and consequence of rules – much in the same way that choices function in relation to prices in a market setting. The legal system (judges, legislators) 'supplies' a certain term through a default rule. Alternative terms simply set differential costs to contracting around the supplied default (Ayres and Gertner, 1989). Agents will chose to behave either as the default term indicates (paying the lower price) or as the more expensive tailored term suggests (paying the higher price). Behaviour that is not consonant with the

default is more costly, thus 'demand' will tend to concentrate on the default choice. But as the use of the more costly behaviour becomes widespread (hence in greater 'demand'), the equilibrium tends to shift the default to this kind of term, so that it becomes cheaper to use. The 'contractarian' view adopted by Easterbrook and Fischel (1991) relies on such dynamics to suggest that rule-making activity in company law should not interfere with the equilibrium. Ayres and Gertner's (1989) penalty default mechanism sees control of the default provision as a 'tool' through which the law induces certain kinds of behaviour, in much the same way as the control of prices induces consumer choices.

Conventional law and economics looks at the form of a legal rule – mandatory or default – and works out its likely economic consequences from there. However, this point of view is necessarily qualified if a 'procedural' or 'reflexive' conception of company law is adopted. The starting point now is the observation the impossibility of complete, *ex ante* contracting over the terms upon which the different stakeholders (employees, shareholders, creditors) combine their inputs in the context of the firm. The adoption of an incomplete contracting framework represents an ontological move towards the notion of law as a 'cognitive resource'. In a world where private ordering is incomplete, the role of the law is provide a resource in the form of information about solutions to bargaining problems. The law assists the parties to achieve contractual cooperation through a process of collective or social learning. This move is important because it bring into the analysis a dimension lacking in the conventional law and economics account but which is essential to understanding the nature of law as a social practice, namely that of *interpretation*.

Contractual incompleteness *ex ante* gives rise to *ex post* bargaining among participants in the firm over the quasi-rents generated by cooperation between them. 'Corporate governance' is the term used to describe the architecture that shapes *ex post* bargaining processes (Zingales, 1998). This is composed of rules agreed upon by the parties *ex ante* (such as the corporate constitution), and rules that are set out by the legal system to supply fill-in defaults which *ex ante* provisions fail to cover. Scattered across the system are mandatory rules in those situations where justifications such as those of paternalism, or externalities, have been deemed by the legal system to justify restraints on private ordering. So far this does not look unlike the standard law and economics approach. The difference made by the shift of perspective becomes clear when we ask the question: how do company participants interact with the governance system? While those who adopt the view of law as surrogate prices would probably answer 'they act *according* to it', the theory of reflexive law says 'they act *within* it'.

The theory of reflexive law lays two fundamental new assumptions which have knock-on effects on the way of thinking of not only the law-behaviour relationship, but also the behaviour-efficiency analysis. The first fundamental assumption-change relates to the expansion of the concept of efficiency as the object of the economic analysis of company law. Much of the conventional economic analysis of law focuses on *allocative* efficiency, whereby a given combination or allocation of resources is measured against alternative states in order to ascertain whether there has been an increase in the welfare or well-being of particular individuals or of society as a whole. Reflexive theory brings into the

analysis of company law the concepts of *technical* efficiency and *dynamic* efficiency. The former comprises the assessment of economic gains not generated by the reallocation of resources but by improved use in its existing allocation, while the latter refers to the capacity of a given system (a company or, at a higher level, a sector or industry) to innovate and survive in a changing and uncertain environment. In other words, dynamic efficiency is concerned with the capacity of the system to maintain itself over time in a changing environment.

By analysing law beyond allocative efficiency, the economic function of company law ceases to consist in ‘perfecting’ the market through its influence on the price mechanism (through surrogate prices) to correct market imperfections. Efficiency now acquires a temporal dimension and is seen as a ‘process’. Attempting to ‘perfect’ allocation by hypothetically imagining what such a state would be and designing rules to work the price mechanism towards that particular set-up, misses the point that it is only through certain imperfections that opportunities exist for competitive advantage to be achieved. Law then departs from a role of promoting allocative efficiency by correcting imperfections, to a more broadly considered task of fostering conditions under which risk and uncertainty can be effectively managed.

The theory of reflexive law also reconsiders the notion of economic agents’ rationality. In place of the *substantive rationality* approach of mainstream law and economics, the theory of reflexive approach to company law assumes *procedural rationality*. Viewing law as surrogate prices relating to behaviour through the working of the price mechanism requires us to assume that agents possess the calculative and computational power needed to internalise and act upon the signals they receive from the contractual environment, so the laws, like prices, are to that extent self-enforcing. The theory of reflexive regulation drops such an assumption in favour of one of procedural rationality, whereby economic agents aim to bargain towards cooperative outcomes but cannot, *ex ante*, predict the results of the bargaining process (Deakin and Hughes, 1999). Tackling head-on the consequences of limited information, procedural rationality brings to the theoretical agenda the understanding of behaviour as ‘materialised intention’, that is to say, as a product of individual (or group-shared) cognition based on available information, as opposed to seeing behaviour as a mechanical response to legal or contractual provisions.

From this point of view, legal rules are part of a wider set of *social norms*. Social norms are rules of conduct derived from conventions that emerge from repeated interaction between members of a certain community, through a process of social learning. Over time, the adoption of certain conduct by individuals in certain types of situation proves to be more beneficial to those involved in the interactions. That is, in repeated situations with a prisoner’s dilemma type of game dynamic, through observation of each other’s behaviour, and cooperation on the basis of such observation, conventions emerge as ‘tacit agreements’ between the interacting agents. From this may be derived the understanding that through a process of ‘social learning’, social norms emerge from conventions (Sugden, 1998a).

If we take the view that legal rules interact with social norms in guiding agents' conduct, the reception and implementation of legal rules is not a straightforward process. The analysis no longer takes for granted that agents fully understand the meaning (and objectives) of legal rules as a precondition of acting upon them. Instead, the influence of a set of constraints based on existing conventions will permeate the process of the reception and implementation of legal rules. The way in which legal rules are received and interpreted by the parties therefore needs to be understood at the level of the processes and procedures through which commercial relationships are sustained. Reception and implementation of legal rules will, indeed, be subject to 'second order' effects caused by the interaction of the new rule with an existing body of social conventions (whether socially or legally produced). There is, at the level of a group of agents, a 'collectively shared capital' which will serve as the basis for the reception of the positive legal rule, but also potentially undermine its implementation.

Viewing the economic analysis of law with regard to axioms of procedural rationality and to these extended definitions of efficiency invites a normative argument for the production of a certain type of legal rule – *reflexive law* – which is not based simply 'command and control', but which acts in conjunction with self-regulating mechanisms present within the 'community of experience' of the system being regulated, whether this is the industrial sector, the company, or the board of directors. Understanding the operation of the existing set of constraints on the system or object of the regulation will provide the law-maker with the capacity to estimate the 'second order' effects and use such dynamics to 'steer' behaviour. At the level of company law, an understanding of self-regulatory mechanisms, in the form of social norms, which operate to shape the conduct of company participants, is therefore crucial to any consideration of economic efficiency to be generated by the introduction of a new legal rule of corporate governance, or any change in an existing one.

Working within procedural, or 'reflexive', regulation – that is, dismissing the assumption of a linear, causal relationship between legal rule and agent's conduct, and designing regulation aiming at 'second order effects' – also changes the way in which the default/mandatory rule distinction is analysed from a predictive or positive point of view. Mandatory or default rules only take effect as such after interaction with the other social norms which interface with the law at the level of 'steering' agents' behaviour. Therefore, default rules may acquire a near-mandatory character if underlying social norms deter 'contracting-out', while mandatory rules may be constantly defied by structures that attempt to avoid its effects, provided that social norms and conventions ratify such behaviour.

To sum up the argument so far: understanding legal rules as a cognitive resource available to bargaining parties invites a step back in the analysis of economics of company law to accommodate a change of focus. Within standard approaches to law and economics, the core of the analysis has been on the behavioural responses of economic agents to the law. The law is treated as a given, exogenous variable. This assumes that agents can rapidly and unproblematically process information concerning the legal rule. It is not simply the case that the contracting parties are endowed with 'substantive

rationality' of the kind which orthodox neoclassical theory imputes to economic agents; in addition, the legal rules themselves are assumed to be clear and unequivocal in their application. When the notions of procedural rationality and law as a cognitive resource are introduced, a much closer focus on the precise ways in which the legal system operates to produce and convey information is required. This perspective leads to a consideration of the insights provided by systems theory.

3. Autopoiesis: law as system

Law and economics analyses, even those which take a sophisticated view of the operation of law alongside social norms, focus on the behavioural effects of law. Systems theory radically inverts this perspective. Now, legal norms are viewed from within the legal process itself as linked elements of a systemic order (Luhmann, 1995, 2004; Teubner, 1993). The form in which a legal norm is expressed is a consequence of its place within that order. The overriding measure of the effectiveness or 'efficiency' of a particular norm is its contribution towards the continuity of the system, that is, its capacity to reproduce itself over time. This in turn depends on how far the system has the means to 'process' information which it receives from external environment in such a way as to make it internally meaningful.

The same goes for the capacity of the economic system to respond to the information which it receives from the law. Each system, the legal and the economic, forms the environment of the other; each one, through its own internal dynamic of self-reproduction, constructs an image both of itself and of the systems external to it. But a unity of viewpoints is impossible so long as systems remain autopoietically closed: '[t]he systems in a system's environment are oriented to their own environments. No system can completely determine the system/environment relations of another system, save by destroying them' (Luhmann, 1995: 18). Thus the notion that economic agents respond to signals from the legal system *in the same way* as they do to movements in prices cannot be sustained.

This is of course not the same thing as saying that economic agents do not respond *at all* to changes in legal rules. Systems theory does not seek to deny the existence of causal inter-relationships between law and the economy. The 'autopoietic closure' of systems implies simply that their constituent elements reproduce themselves without *direct* input from the external environment. These are systems which 'use their own output as input'. However, the form which these systems take over time is subject to external influence, through a process of environmental selection. Thus 'autopoietic closure does not mean that the system is independent of its environment' (Teubner, 1993: 61). It does imply that the relationship of 'coevolution' between the two is likely be 'asynchronic', in the sense that 'a complex system, seen temporally, cannot rely on point-for-point correspondencies with the environment' (Luhmann, 1995: 43).

From a law and economics perspective, this type of separation implies inefficiency: to the extent that law and the economy are out of synch with one another, legal rules will not be matched to the preferences and endowments of agents. But from a systems theory

perspective, we can see that it would be not just pointless, but positively counterproductive, to think in terms of dissolving the system-environment boundary. This is because it is only through the emergence of systems that the ‘unorganised complexity’ of the world is capable of being organized:

‘The concept of a self-referentially closed system does not contradict the system’s openness to the environment. Instead, in the self-referential mode of operations, closure is a form of broadening possible environmental contacts; closure increases, by constituting elements more capable of being determined, the complexity of the system that is possible for the environment. This thesis contradicts... the classical opposition of open and closed systems...’ (Luhmann, 1995: 37)

It is in this sense that system boundaries are ‘an evolutionary achievement par excellence’ (Luhmann, 1995: 29).

The specific role of social systems, such as law, economy, politics and religion, is to contribute to the emergence of forms of *meaning* through which the complexity of the world can be understood. The evolution of ‘meaning’ marks ‘a new way of combining closure and openness in constructing systems’ (Luhmann, 1995: 38) based on the aggregation and integration of information over time. Social systems are more or less effective according to the degree to which they can simultaneously increase the flow of information from the external environment, and their internal capacity to absorb and process that information. Thus ‘[t]he theory is not concerned, like classical theories of equilibrium, with returning to a stable state of rest after absorption of disturbances, but with securing the constant renewal of system elements – or, more briefly, not with static but with dynamic stability’ (Luhmann, 1995: 49).

To say, then, that the legal system functions as a *cognitive resource* means that it operates in a cycle of interaction with its external environment. The legal system receives information from the external environment, processes it in forms which are specific to the creation of legal or juridical meaning, and returns this information to the environment in the form of legal communications. The capacity of economic system, in its turn, to receive this information, depends on the existence of institutions capable of receiving and processing legal information. The idea that laws are like prices is *half* right, since prices embody highly complex information about supply and demand in ‘coded’ form which facilitates decision making by agents who may be distant in time and place from the initial market movements (Sugden, 1998a). But just as the economy possesses its own particular mechanisms for the creation of information in the form of prices, so the legal system possesses its own internal logic, which is not that of the market. This requires us to consider more closely the internal logic of legal ordering.

4. The internal logic of the legal order

Consideration of the systemic properties of the legal system sheds light on the ‘backstage’ of a process of creation and conveyance of the cognitive resource of law, which has its own particularities and properties. Perhaps the most crucial notion contributed by systems theory to the economic analysis of company law is the idea that *only law produces law* (Teubner, 1993), and that it does so through established processes. The legal system is *not independent* from its environment, but it is *operationally autonomous*. It ‘sees’ and ‘understands’ the environment through its own cognitive processes. Law is therefore to be understood as a product of a systemic order of thought, which draws from the interaction of agents a ‘view’ of the environment and uses this ‘feedback’ according to its own processes, which, in their turn, are constantly evolving on the basis of similar observational processes. The question to be asked in law and economics is not merely what does law do to behaviour, but what does behaviour do to law, and vice-versa. The process is a cycle of inter-systemic interaction, a dynamic of *coevolution* between law and the economy.

Thus the essential characteristic of the order of the legal system as a system of communication is the importance of its *internal congruence*. It is on this basis that the legal system can be said to ‘reproduce itself’ over time. This figure of speech is another way of saying that the agents who participate in the making of legal communications do so on the basis of a set of shared understandings about the nature of the legal system. Most fundamentally, they operate on the basis of shared assumptions about ‘boundary conditions’ which demarcate the legal order from other forms of communication: what counts as a legal rule, and what does not. In addition, it is a feature of legal orders that the meaning which they create refers to a shared perception that individual legal communications are linked together to form a coherent body of norms. In other words, for the agents who operate within and by reference to it, an understanding of the legal system cannot be obtained from an analysis of isolated elements, but derives from the process of self-observation of the system as a ‘whole’.¹ The ‘logical harmony’ between the several informational components directly influences the ability of agents to understand the system. Internal congruence among the elements of the legal system is thus a critical factor for its operational performance.

Thus the process of ‘self-understanding’ (as a unit of self-observation and self-description), which instructs self-reproduction, is a vital step in the systemic efficiency of law. As the system produces an infinite variety of legal communications, varying levels of understanding of the system as a whole will be necessary to instruct the production of each of them. Legal communications take place in day-to-day lives of individuals as well as in the day-to-day operations of a corporation. They are produced on the basis of recursive social interactions. Legal communications are to be found in legislatures and courts, but also in regulatory bodies, government departments, and in the interactions

¹ More precisely, since the legal system has an order, and the patterns of the order make the acquaintance of a ‘spatial or temporal part’ of the system a source of reliable expectations about the functioning of the rest of the system (Hayek, 1973), self-observation can be seen to be a process that covers ‘partially’ and not, literally, the ‘whole’ of the legal system.

between legal practitioners and those they advise. These different types of legal communications demand different levels of self-understanding to instruct self-production. Legal communications produced in diverse situations differ in terms of relevance as far as the overall congruence of the systemic order is concerned. For instance, complete incongruence of the legal communications created during a transaction for purchase of a loaf of bread, is clearly less costly to the system than incongruence of legal communications generated in the meeting of a board of directors, within court proceedings, or during debates in the legislature. The degree of 'relevance' is determined by the systemic order's dependence on the 'congruence quality' of the legal communications being produced, that is, the level at which the overall order will be affected by any incongruent legal communications it produces.

To preserve and improve its order, the legal system has developed processes that act to provide the various actions of self-reproduction with a systemic informational background. Thus the existence of the law concerning the director's duty of care will 'instruct' the company's directors to consult with lawyers before undertaking amendments to the company's constitution. Parliamentary debates, a bicameral parliamentary system, judicial review, hierarchically ordered courts, the doctrine of precedent, and so on, will also act to improve congruence levels of legal communications. Arguably, all these processes can be seen to have been produced by the legal system to serve as mechanisms to ensure that systemically-relevant legal communications (company constitutions, laws, statutory instruments, precedents) are produced in an internally congruent manner.

Internal congruence, in turn, is linked to the capacity of the system to provide *legal certainty*. Enhancing *legal certainty* can be thought of in terms of decreasing asymmetries of understanding of the legal instructions between agents. As such, it has a directly positive impact on the role of law as a cognitive resource. This is clear if we look at an ontological sub-level, where both the company and company law can be seen as social subsystems. The legal rules of corporate governance act as 'known variables' to be factored-in as part of the pay-offs of a network of cooperation games played among company participants. By applying their knowledge of legal rules, parties are able to rely on what other players within the games are more likely to do instead of having to rely on probable moves as a function of a pay-off matrix which is largely unpredictable. In the terms used by evolutionary game theory and information-theoretic economics, the result is that information asymmetry is reduced, risk is manageable, and moves can be taken towards the achievement of welfare-enhancing equilibria. Thus the more successful the legal system is in processing the complexity of its external environment, the more effective it will be, in its turn, in shaping cooperative outcomes in that environment.

Thus we might say that the congruent self-production, based on comprehensive self-observation and self-description, of the legal system, contributes to economic efficiency. It does so in the general sense of enabling the legal system to provide cognitive resources which, in their turn, facilitate economic transactions. Yet the legal system can only perform this role if it is separated from the economic system, and if distinctiveness of its internal processes of self-reproduction is maintained. The legal system cannot be

subjected to the logic of economic exchange, if it is to retain its autonomy as a social sub-system. As Luhmann (2004: 391) puts it:

‘A differentiated money economy makes high but (and this is crucial!) unpayable demands on the law. In order to make the economy possible in the form of its own autopoiesis, law has to fulfill its own function, not that of the economy, effectively. Law must not belong to the type of goods or services that can be bought in the economic system.’

This leads us on to a consideration of the role played by legal concepts in the evolution of the law.

5. The evolutionary functions of legal concepts

Law and economics approaches to legal evolution focuses on the issue of selection, and sees adjudication and litigation as the selective mechanisms by which efficient rules emerge from the self-interested behaviour of actors. According to the model advanced by Rubin (1977) and Priest (1977), in a system of judge-made law, inefficient rules are more likely to be selected against than efficient ones because private parties have greater incentives to challenge them through litigation. In Priest’s approach, it is not necessary to assume that judges will produce efficient rules most of the time. Even if, in a given population, rules were distributed entirely randomly with regard to their efficiency, selection through litigation would work to cull the less efficient ones. In other models, which focus on the supply side, efficiency could be improved if courts were to compete with one another, as they do in cases of multi-tiered or overlapping jurisdictions, and this model can be extended to legislatures operating in federal systems which allow for regulatory competition (Romano, 1990).

Law and economics approaches see the legal system as open to external pressures which, over time, will ensure its alignment with the economy. This alignment might be prevented or delayed in given contexts where, for example, competition between courts is restricted, or litigation is unduly costly; however, these limitations can in principle be removed by appropriate institutional reforms. From a systems-theoretical perspective which sees law as operatively closed to its environment, the issue of legal evolution cannot be so straightforwardly resolved: ‘if one has to start from the assumption that systems are closed and their structures are [internally] determined, it is far more difficult to understand (1) how structures can be changed at all, and (2) why it is possible at times... to detect the direction of those changes, for instance in the diversification of species or in the increased complexity of societies’ (Luhmann, 2004: 231).

The answer given by Luhmann in *Law as a Social System* is to make use of the Darwinian ‘schema’ or ‘algorithm’ of variation-selection-stabilisation as a basis for understanding systemic evolution. From this point of view, the law and economics approach offers at best a partial analysis, which focuses on only one mechanism, selection, to the exclusion of the other two. To talk of a legal or institutional equivalent of ‘natural selection’ only makes sense, Luhmann suggests, if we first define exactly

what is being 'exposed to selection by the environment' (Luhmann, 2004: 232). A critical assumption made in law and economic approaches is that the legal system can produce the rules that the economy needs, leaving environmental selection to do its job. By contrast, a systemic view maintains that the capacity of the legal system for variation is channeled and, consequently, constrained by the need to ensure internal congruence as the condition of the system's self-reproduction or stabilization. Selection can only operate on that finite set of legal rules which the system, in the light of its historical development, has the capacity to produce. This is not to say that innovation, and hence variation, in legal rules does not occur, but to shift the focus of analysis on to those processes, internal to the legal system, which allow information from the environment to be assimilated and integrated in such a way as to make variation possible.

To organise the mass of legal information in a manner which can be efficiently processed, the legal system makes use of working variables in the form of *legal concepts*. Concepts are at the core of legal dogmatics, or systematic doctrinal thought, through which the elements of the legal order are stabilized; 'dogmatics guarantees that the legal system approves itself in its change as a *system*' (Luhmann, 2004: 257). Concepts provide the means by which substantive rules are linked together to form the coherent whole of the legal order, and, in turn, the mechanism by which continuity, and hence system congruence through time, are maintained when one rule succeeds another. Concepts thereby perform the evolutionary function of inheritance or stabilization in a manner equivalent to that of genes in relation to living, biological systems (Teubner, 1993: 51).

Concepts can be understood as memetic 'replicators' which are the institutional equivalent of genes, and substantive legal rules or norms as the 'interactors' in which they are embedded (Deakin, 2002; see Figure 1). The value of using the genetic model in this context, as Luhmann suggests, is not simply to invoke a potentially useful analogy, but to act 'as a pointer to a general evolutionary theory, which can have many different applications' (Luhmann, 2004: 231). It need not be assumed that there is a precise match between biological and social (or legal) mechanisms, and the use of the model in the legal context should take into account what we know of the nature of the legal processes. In particular, whatever the value of a gene-centred view might be in the context of biological theory, the use of the idea of the 'meme' in the legal context should not be taken to imply that legal evolution is 'meme-centred' or 'memic' in the sense of being driven entirely by dogmatic structures. Concepts do not *dictate* legal outcomes: 'they make precise what is problematic in the *quaesito iuris* but do not establish an automatic device that leads to a decision' (Luhmann, 2004: 342). They may *influence* the content of rules, but they are also influenced by that content and, at a further remove, by the environment in which the rules operate.

A systemic understanding of the Darwinian algorithm sees it in *cyclical* terms: it is through the *interaction* of variation, selection and stabilization that information flows between the system and its environment. In the context of legal evolution, information about the environment enters the legal system as rules are contested through the processes of litigation and legislation, among other things. By 'encoding' that

information in a ‘compressed’ or ‘compounded’ form, concepts allow for its retention within the legal system. Concepts can be thought of as ‘instructing’ the production of rules in the same sense (loosely) that genes instruct the building of proteins and hence of organisms, but just as genes can be turned on and off by environmental triggers, so the operation of concepts cannot be isolated from the social and economic context within which legal rules are applied, contested and enforced. As particular rules are selected and deselected through environmental pressures of various kinds, so the content of concepts will alter over time. Concepts cannot exist independently of the rules in which they are contained, any more than genes have an existence separate from their own interactors; thus changes in the population of rules will lead, although more gradually, to changes in conceptual structures.

	<i>Replicator</i>	<i>Interactor</i>	<i>Environment</i>
<i>Biological evolution</i>	Gene	Organism	Natural world
<i>Social evolution</i>	Meme (corporate culture)	Institution (enterprise)	Social world
<i>Legal evolution</i>	Concept (fiduciary duty)	Rule (No-conflicts rule)	Normative world

Figure 1: units of biological, social and legal evolution (adapted from Deakin, 2002).

The key to understanding the way in which legal concepts operate as evolutionary mechanisms is the idea of abstraction as a particular form of ‘coding’. The difference between a concept and a rule, in this context, is the difference between an abstract idea such as the concept of ‘fiduciary duty’ and a specific rule such as the requirement that a company director must not put herself in a position where her interests conflict with those of the company (the ‘no-conflicts rule’). The notion of a ‘fiduciary’ is not itself a normative command, and can only be mobilized as such if it is embodied in a more specific norm such as the no-conflicts rule. It *informs* a family of linked rules on the duties of company directors and others in analogous positions, and is called on as an aid to interpretation at the point when, through adjudication or statutory drafting, the emergence of a new rule is in issue.

The analysis of doctrinal concepts in legal systems, in both the common law and the civil law, shows that concepts vary in levels of abstraction (as a counterbalance to levels of fact-specificity). This is illustrated in Figure 2. Legal concepts such as ‘property’ and ‘legal personality’ are highly abstract, while ‘fiduciary duty’ and ‘conflict of interest’ are specific to certain facts of the economic environment which are related to the emergence of the business enterprise as an organisational form. These concepts also display interdependence. The use of the legal concept ‘fiduciary duty’ as it operates in the company law context (in the sense of ‘director’s duty’) is attached to the use of the legal concepts of ‘property’ and ‘legal personality’ among many others at similar, superior, and inferior abstraction ‘levels’. Patterns of interdependence tend to show greater dependence of abstract-inferior concepts on abstract-superior legal concepts than vice-versa. Thus a

pattern of abstract-superiority and abstract-inferiority is revealed. Because the legal system works to convey legal instruction in the form of rules and because it has to be ‘cognition-friendly’ for procedurally rational agents, the information contained in legal concepts must be related to certain fact situations. Abstraction – *encoding* – makes legal concepts fact-neutral (Markesinis, 1997), whereas interpretation – *decoding* – makes them fact-specific.

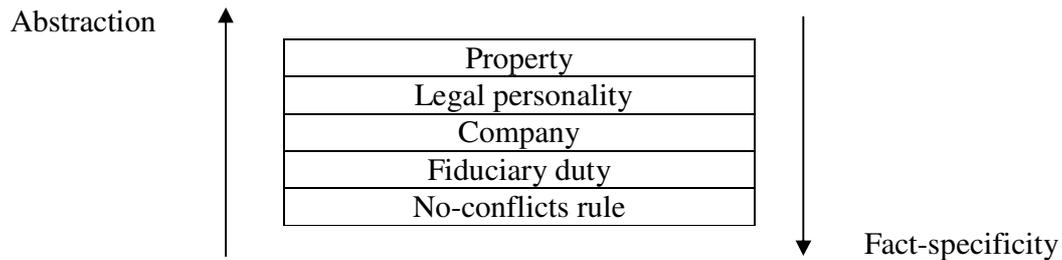


Figure 2: Degrees of abstraction and fact-specificity in company law concepts

In principle, the more abstract a particular concept is, the less susceptible it is to change through evolutionary pressure. This is because legal concepts which are more fact-specific are thereby more ‘exposed’ to environmental selection. Although this suggestion may explain different patterns in ‘mutation’ rates, does it explain why is there a pattern of ‘substantive dependence’ of abstract-inferior to abstract-superior concepts? In part, yes. This is because the environmental ‘selection’ of legal rules will most strongly impact on self-reproductive ‘mutation’ at the level of fact-specific legal concepts, simply because environmental ‘pressure’ for change will most often arise at the point where there is ‘legal rule-environmental fact’ interaction. Because more fact-specific legal concepts are ‘mutated’ more often, abstract-superior concepts ‘replicate’ themselves over a longer period. Since the legal system undertakes successive self-referential analyses as a precondition of its self-reproduction, highly abstract concepts tend to accumulate more influence within the system’s self-reproduction processes, diffusing their information throughout the system.

The importance of this observation lies in helping us to see that those concepts with the highest fact content (which are the ones that clearly indicate how the agent should proceed when faced with a certain set of facts) are a product of successive levels of ‘coupling’ of conceptual abstractions with social facts. High-level forms are brought down to ‘ground level’ application by matching concepts with facts. At some point, the information provided to agents derives from legal concepts that have enough fact-specificity to allow homogeneous interpretation. However, any legal concept with high fact-specificity is built up through a process of construction which means that it ‘encapsulates’ a whole ‘chain’ of abstract superior concepts, all the way ‘up’ to the most high-level principles. This coupling process enables information contained in a large number of legal rules to be ‘condensed’, as Luhmann puts in (2004: 341), in conceptual form:

‘... the meaning of [legal] concepts is enriched in the process of repeat-use – among other things by a great number of rules that are formulated with the help of these concepts, or by legal problems which arise through the use of the concept and which are then solved in a particular way, which then co-characterises the concept... Decisions and rules then become components of the concept... In this sense concepts store experiences and keep them on call, even though the concept does not formulate these experiences (otherwise it would become a text) but only re-actualises them in a given instance.’

The idea of abstraction also helps further to clarify the difference between legal concepts as the equivalent of the ‘genotype’ or replicator, and legal ‘rules’ operating as the phenotype or interactor. If highly abstract concepts provide the core of the system, it is the more highly fact-specific concepts (which effectively instruct their application to the facts of the environment) which agents receive as *legal rules*. *Legal rules*, in this sense, are not to be understood strictly or exclusively as written law (‘script-coded’ information). The *legal rule* is the information conveyed by the legal system, and comprises not just the relevant ‘script-coded’ information, but also the ‘chain’ of abstract-superior legal concepts which inform its interpretation. The key point here is that the expression ‘*legal rules*’ is not applied simply as a synonym for highly fact-specific ‘ground-application’ concepts, but also for the way in which these are viewed from ‘outside’ the legal system. The difference between them, used for purposes of this analysis, is that concepts are the working variables *within* the legal system and legal rules are the ‘message’ conveyed to the environment. The same informational unit can be viewed at the same time as a highly specific legal concept, from within the system, *and* as a legal rule with intended social or economic effects, from the side of the environment.

This dual aspect of legal concepts helps to clarify, in turn, their role as devices for achieving ‘structural coupling’ between the legal system and its environment. Although the legal and economic systems are ‘operatively closed’ in the sense of being reproduced through their own distinctive operations, without direct mutual reference, they are nevertheless ‘cognitively open’ in the sense of each being exposed to information, and thereby to environmental pressure, from each other. The presence within the legal system of concepts of varying levels of abstraction means that the legal system has not only ‘a highly sensitive reception and transmission system for economic news’ but also mechanisms for ensuring that ‘a high level of mutual irritations in both systems can be absorbed’ (Luhmann, 2004: 390). Legal concepts combine what Luhmann refers to as ‘redundancy of information’, or those elements of conceptual form which, through repetition, serve to maintain the continuity of legal ideas over time and hence ensure the stabilization of the system, with the capacity to introduce new information through ‘variety’ and thereby permit variation to occur. Variety can only be given conceptual expression when combined with redundancy, and there is a trade-off between them which put a limit on how much new information a given conceptual structure can absorb without losing its value as source of legal reliability and certainty. Thus it is through the

relationship between redundancy (or continuity) and variety that the (limited) adaptation of the legal system to its environment is expressed (Luhmann, 2004: 322).

6. Evolution and efficiency in company law

We are now in a position to analyse more closely the process of evolution within company law. We have suggested that at any given time the legal system has its conceptual structures organised in a hierarchical pattern, the most abstract concepts at the 'top' and the most fact-specific (corresponding to legal rules) at the 'bottom'. In between, there is a whole range of legal concepts of varying levels of abstraction, exhibiting a more or less high degree of interdependence one with another as the precondition for system congruence.

The Darwinian theory of evolution, when applied to the social sphere, is often misunderstood to imply that those features of institutions which survive a competitive process of selection and deselection are necessarily optimal. As noted above, the argument that competition leads to the emergence of optimal norms is a mainstay of standard law and economics analyses of corporate governance; first applied in the context of interjurisdictional competition to attract incorporations in the USA (the 'Delaware effect': Romano, 1990), it has more recently been invoked to support the prediction of global convergence around the 'standard shareholder model' of company law (Hansmann and Kraakman, 2001). Even those law and economics writers who identify a prominent role for 'path dependent' effects in company law do not believe that these will lead to persistent suboptimal outcomes (Roe, 1996; Bebchuk and Roe, 1999).

Institutional forms may be functional and adaptive in the strictly qualified sense that features which are subject to selective pressures are well suited to the particular environmental contexts *in which they originally arose*. The process of natural selection in biology does not imply the inevitable discarding of those parts of the genetic code which hinder survival and the retention of those which assist it. Because selection occurs on the basis of *inherited* traits, the information encoded in the genotype is functional for *past* environments. Moreover, there is no means of ensuring that *only* those instructions which have current value endure; traits which have no useful function may persist as long as they do not actively impede survival to the point of being deselected. If the same were true of legal evolution, we would expect to find the persistence of doctrinal structures long after the point when the purposes for which they had first been invented had passed, a phenomenon for which there is indeed abundant evidence (Deakin, 2002).

A consequence of the need for the legal system to maintain its internal order or system-congruence is that it is only through internal conceptual mutations that a 'new rule' can be generated in response to evolutionary pressures. Thus the process of 'adaptation' to the environment is neither automatic, nor optimal. The transformation must involve the *least* disturbance possible to the legal system's own internal congruence. The mutation process may cause the splitting, merger, recombination and/or dissolution of legal concepts. Mutation occurs by 'rearranging' the available components and coupling them with the 'new' informational components that represent the 'new facts' that caused the

pressure for mutation. The resulting transformation is suboptimal in two aspects. Firstly, it is suboptimal in the sense that it ceases at the point where environmental pressure is overcome by internal transaction costs of legal change, and not at the point of the complete 'dissolution' of external pressure. Secondly, suboptimality occurs because the change will carry informational material from 'old' conceptual structures into 'new' ones, making use of components which are already there within existing conceptual 'units'.

The emergence of company law from the general body of contract and property law can be used as an illustration of this mechanism. The process can be reconstructed in functional terms as follows. As the evolution of the economic system brings about the emergence of firms as organisational forms for networked cooperation, the legal system is subject to pressures to adapt legal rules to the new economic dynamics that arise. Minor adaptations can be carried out by coupling the new facts to the existing concepts which instructed the legal rules of contract and property law. These conceptual changes are first manifested to the environment through changes in the relevant script-coded legal information (that is, new case law altering precedents and statutory changes) and through changes in the interpretation of script-coded legal information (that is, legal doctrine and case law).

As the firm as an organisational form matures, contractual relations among participants in the firm's cooperation network acquire particularities that create a distinction between intra-firm transactions and decentralised 'arms-length' exchanges. This growing distinction between the facts involved in 'intra-firm' commercial relations and those arising from decentralised exchange exerts corresponding pressure at the level of the legal system, 'demanding' legal rules that are able to cope with these distinctions. The legal system, after a certain amount of pressure, reaches a limit as to how far it can mutate concepts to the extent needed while working with the building blocks of property and contract. When this point is reached, in order to preserve internal congruence while also responding to environmental shifts, concepts of contract and property mutate, 'splitting' them into subconceptual forms. The result is the combination of ideas derived from 'property', 'legal personality', 'association' and 'contract' which come together to form the highly abstract concept of 'company'.

This mutation has knock-on effects on abstract-inferior concepts. The new notion of 'company' is now the abstract-superior concept that instructs successively abstract-inferior concepts of company law (such as the company limited by share capital, the company limited by guarantee, partnerships, and so on) all the way down to the most fact-specific 'company' concepts, which are the many and varied rules of company law. The contractual genealogy of company law is visible today in the way in which core concepts retain informational components that are present in the conceptual structures of general contract law. Thus section 33 of the (UK) Companies Act 2006 establishes that the company's memorandum and articles of association, when registered, 'bind the company and its members' as a contract that is 'signed and sealed' by all of them. Section 172 of the 2006 Act provides that directors shall have regard in the performance of their functions to the interests of a range of stakeholders including employees. While section 33 is generally recognized to be the most explicit recognition of company law's

dependence on certain general contract law concepts, section 172 and its (partial) predecessor, section 309 of the 1985 Act, are often thought to be an anomalous, politically-inspired insertions into the body of modern company law. But section 172 also has contractual roots. If company law emerged more effectively to regulate contractual relations between the different owners of inputs to the process of production, then in addition to provisions which protect shareholders from expropriation by managers, it is not surprising to find that rules aimed at protecting other company participants (including employees) take a form derived from core company law principles. Thus in addition to the origins of section 172 within the political system as a response to concerns, firstly at the end of the 1970s and early 1980s for some acknowledgement to be made of the role of employees within the corporate structure (see Wedderburn, 2004 for discussion), and more recently as part of the stakeholder debate initiated by the Company Law Review in the late 1990s and early 2000s (Company Law Review Steering Committee, 2000), this provision can also be understood as a manifestation of certain foundational principles of fiduciary law, adapted to the task of expressing the multi-stakeholder conception of the modern enterprise.

This perspective also helps us to understand the distinction between mandatory and default rules as distinct processes for the self-reproduction of law. 'Immutable' or mandatory rules can only be varied if the legal system undertakes self-production through 'formal' processes which are permeated by checks and balances aimed at preserving internal and constitutional congruence. Default rules, however, can be varied by the contracting parties themselves. Agents 'interpret' the legal rules ('reading' the background conceptual structure of the rule) and decide upon variations which would better suit their particular transactions.

However, the processes of interpretation which are available to the parties themselves in the context of privately ordered rule variation are different from the processes which order self-reproduction at the level of 'formal' legal change. Parties contract with the help of their advisers, while the 'formal' production process makes use of court system hierarchy, informed judges, litigation to determine the legality or constitutionality of certain processes, and so on. When parties alter the relevant rules in the context of a default term, they potentially affect the *internal* congruence of the legal rule and not simply its external application. Will the new rule reproduce, at the level of the parties' relationship, the foundational principles with which the legal system would have endowed such a rule had it been produced through the 'formal' process? Perhaps not. The scale of the potential disturbance to the internal legal order is a function of the foundational importance of the rule in question.

The effect does not end there. In the context of rapid and networked dissemination of information, 'private' variations of legal rules can rapidly become widely applied standards (Kahan and Klausner, 1997; Whincop, 2002). Ultimately, this process influences, through the means of repeated and recursive interactions of agents, the creation of social norms, setting in motion the evolutionary process which triggers change at the level of the legal system. In the same way that this mechanism can work positively, it can also work perversely.

We therefore have a new criterion for judging the efficiency of mandatory and default rules. Rather than focusing exclusively on the degree of contractual ‘freedom’ or ‘restraint’ which they seem to offer to agents, the importance of the distinction lies in the different processes for legal self-reproduction which they imply.

While analysing the economic efficiency of mandatory rules in company law or in general contract law, the law and economics literature generally concludes that they are almost always inefficient from a private cost perspective, and, only in certain cases, efficient from a social cost perspective. Put simply, when only private costs are considered, hardly any justification to the limitation of contractual freedom holds. Parties have incentives to know better. If they have found a better set-up, restraining it is inefficient. When a wider calculus of social costs is considered, the picture acquires more complexity (Ayres and Gertner, 1989). The efficiency of mandatory rules is then measured by comparing the gains in social cost from protecting one of the contractual parties or a third party, with the private costs of limiting contractual freedom. But the basic method of comparison is the same. The private cost of default rules is understood as the cost to the parties of contracting around them. They will only fail to produce an efficiency improvement if the gain from such improvement is inferior to the cost of contracting around the default. The theory of reflexive company law more realistically understands the process as subject to rationality limitations and ‘second-order’ effects (see Deakin and Hughes, 1999), but the general principle is maintained.

When, however, we view the same issue from the perspective of the operational workings of the legal system and their effects on economic efficiency, it is possible to argue that limitations on contractual freedom may well be economically efficient. Mandatory rules improve the efficiency of cooperation between corporate actors by sustaining their ability to deploy the cognitive resource of law. By supplying an ‘immutable’ framework, the law reduces the informational costs which are necessary to ‘reinterpret’ the legal system in order to ‘understand’ all the alterations in a context of legal congruence.

The use of default rules in company law (and contract law, generally) can therefore generate private costs that are greater than the ‘friction’ costs of contracting around them. These are the informational costs of maintaining legal congruence in the face of variations. When parties decide to contract around a given default and lay down a privately designed legal rule within the governance framework, all the systemic consequences of such an alteration must be assessed. Altering the default provision in the model articles of association which determines that ‘the directors are responsible for the management of the company’s business, for which purpose they may exercise all the powers of the company’,² may change the way in which directors’ duties are to be interpreted in relation to the company. This could involve a considerable informational cost. Reliance on default rules creates another kind of cost. This is the cost represented

² Formerly Article 70 of the old Table A, which was worded slightly differently, this is now Article 3 of the Model Articles for (respectively) private companies limited by share capital, private companies limited by guarantee, and public companies (see the Companies (Model Articles) Regulations 2008, SI 2008/3229).

by allowing parties to customise rules that may not carry into ‘application’ the foundational principles of the law to the same extent that a rule created through checks and balances of the ‘formal’ processes of self-production of the legal system would do. This cost is a function of the foundational relevance of a given default rule and the ‘equilibrium’ achieved with the environment to the extent that companies contract around, or not, such a default.

7. Conclusions

Evolutionary ideas play an important role in the contemporary corporate governance debate, being regularly deployed to support deregulatory initiatives and encourage belief in the likelihood of the global convergence of governance regimes. Close inspection suggests that many of these analyses are based on false analogies, drawn from misunderstandings of natural selection processes in the biological realm. They also suffer from a failure to address the issue of the social ontology of law. The key assumption in most law and economics analyses is that legal rules operate as surrogate prices. Given the importance of this step in law and economics reasoning, it is surprising that so little attention has been given to articulating and defending it. The effect, though, is severely to limit the value of the resulting analyses, by dissolving the distinction between the legal and economic systems.

Social systems theory offers an analysis which, while in some respects highly abstract, is more realistic than that of mainstream law and economics in the sense of being more faithful to the social practice and experience of law. At the same time, the focus of systems theory upon the role of *meaning* as the precursor to social interaction throws light on some of the questions addressed by new institutional economics. From the standpoint of a theory which accepts the bounded rationality of the individual economic agent, and which sees a role for norms and conventions in overcoming coordination problems, a new field of inquiry is opened up by an understanding of law as a complex, self-referential system of communication. From this point of view, the important methodological issue is not how to understand the law in the terms of the market, but to understand the distinctive and separate qualities of the legal and economic systems.

The most significant normative implication of a consideration of systems theory in this context is that the efficiency of the law cannot be measured solely in terms of the degree to which it ‘interferes’ with the autonomy of the contracting parties. Nor is it the role of the legal system to ‘adjust to’ changes in its external environment. Rather, the efficiency of the legal system is concerned with how successful it is in ordering the complexity of the external environment to which it relates. In order to undertake this task, the legal system must be able to maintain the principle of system congruence which is the precondition of its autonomy and self-reproduction. To that end, the legal system will maintain a set of ‘foundational’ concepts which are to a large extent free from immediate evolutionary pressures, and which tend to be manifested in the form of mandatory legal rules which leave little or no room for bargaining between the parties. In practice, there are many such rules, even in the common law systems which are said, above all others, to

comply with the contractualist model of corporate governance. By enabling us to understand these rules, systems theory offers the possibility of a more complete theory of company law than any offered to this point by the law and economics literature.

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