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A complexity view of organisational reputation

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Abstract

This paper looks at the concept of reputation from four angles: costbenefit, semiotics, quality and complexity. The complexity outlook may include all the other approaches in certain conditions but is in comparison wider, deeper, evolutionary and more fickle. It can embrace apparently contradictory states that evolve through interaction. The focus is on ambiguity, one of the less-known principles of complexity and is argued that it can act as a stem cell to build sustainable reputation. Two cases from industry are reviewed.

Keywords

ambiguity; complexity; quality; reputation; semiotics.

1 Introduction

Companies are facing a difficult situation. On the one hand they promulgate learning, responsiveness, adaptability and interdependence, on the other, despite meaning well, leave a trace of bad reputation by creating redundancies and breaking implicit contracts. They promote voluntary labour but reward those who bring success by whatever Machiavellian means. We have seen the disappearance of well-known firms like UBS, BZW, NatWest Markets, WorldCom, and ENRON leaving the stakeholders in limbo. Similarly the drive to core competence clashes with customer loyalty. In 1997 Standard Chartered Bank ended relations with 550 corporate clients because they no longer provided an appropriate return on capital through foreign exchange trading and lending activities (Financial Times, April 7th 1997). Meeting the short-term exigencies of profitability and establishing good reputation is hard to achieve. If achieved it would make living in complexity easier. What is reputation? It is the totality of information purveyed to the stakeholders of a company. The information can be used as a weapon against the company, an artificial image to fool the customers, or as a gift in the hands of a satisfied customer imparting trust and reliability in a chaotic world. According to Fombrun and Rindova (1996), corporate

reputation is a collective representation of a firm's past actions and results that describes the firm's ability to deliver valued outcomes to multiple stakeholders. It gauges a firm's relative standing both internally with employees and externally with its shareholders, in both its competitive and institutional environment. So reputation is path-dependent and acts as an agent of stability. Stability, however, is difficult to conceive in a complex world. Reputation is both stable and unstable. There is intrinsic instability particularly in the realm of positive feedbacks that requires broader outlook and continuous vigilance. This makes reputation a subject of complexity.

In what follows we consider four approaches to reputation:

- 1 Cost-Benefit approach.
- 2 Semiotic approach.
- 3 Reputation for quality.
- 4 complexity approach with emphasis on feedbacks and ambiguity.

2 The cost-benefit approach

The efforts that many proponents of reputation are making to sell it as an asset has a cost-benefit connotation. You spend money to build a reputation to get benefit from more customers over a long time. All you need is to work out the present value of the future benefits to compare with the past investments. This approach is associated with but not confined to game theory. Game theories are linked to information about the product, the firm, and the behaviour of players in repeated, sequential or evolutionary games.

To illustrate reputation in game theory a banking example is provided: Investment Banks' reputation in selling IPOs (Initial Public Offerings) has a variety of aspects one of which is clearly a matter of cost-benefit analysis common in game theories: Simply put, if the firm hires a reputable bank (at a higher cost) to underwrite its IPOs, the IPOs will sell at higher price than if they were underwritten by a less reputable bank, which obviously leads to higher profit (Jain, 1994). The Bank, on the other hand, could underprice a firm's stocks for short-term benefit but at the expense of losing reputational capital. The case is especially interesting when the firm rejects the Bank's first offer. The immediate acceptance benefits the bank but the repeated game benefits the firm (see Mclaughlin, 1996). The cost-benefit slant is quite clear. Although repetition is likely to happen here this is not a typically repeated game (For

examples of repeated games with cost-benefit orientation see Cripps and Thomas, 1995; Aoyagi, 1996. For cases of Sequential Games see Hopenhayn and Werner, 1996; Guth et al., 1997) Evolutionary games are often used in biological and educational context and are less common in economics (see Dawid, 1997 for a case with minimal information).

The contradictory position of reputation posed at the beginning of this section is clear. Bounded rationality on the part of decision-makers is an important element in the argument. There is a reputation to protect that enhances potential benefits from interdependence, but its value may not exceed the short run gains from sullyng it, through strategies that treat employees, and perhaps other stakeholders as expendable. The firm can shift the costs and risks of competition. The dilemma is best portrayed when a company tries to adopt ethical technology. Despite consumer preference to ethical technology, and even in the face of Pareto-optimality of such technology, 'reputation' of competitors and the lack of information on the part of the customers, can at least in the short-run hinder the technology (Noe and Rebello, 1995).

3 Semiotic approach

There is a tradition stretching from Veblen (1958) to the Post-modern view that rejects the idea that primary needs govern human activities. It spurns at the concept of some irreducible reality, and stresses instead, matters such as over-consumption and communicating images of products and organisations. It questions whether what we are buying consists of symbols and images or real utilities. Are they produced less to satisfy needs, than to signify status? Lack of customer information renders this hyper-reality possible.

A clear example is selling 'lemons' disguised by the 'economics of concealment'. Sellers use resources to interfere with quality signals. This allows a class of products, which can only sell when the customer cannot gauge the quality (Kerton and Bodell, 1995). Though not as fictitious, the new concept of 'renting Reputation' too falls into this category of selling the air. Borrowing one's retailers' reputation is well explained by Chu and Chu (1994). Credit rating agencies (The case of Moody) have been known to create unsolicited reputation as a means of 'crude blackmail' (The Economist, 1996). Fortune, an important reputation-generating agency in recent years, admits that their Survey is "a Mixture of art and science, perception and reality" (Fortune, 1995). Chajet (1997), comparing products such as Pepsi and Coke,

Christler and Ford, or financial institutions such as Merrill Lynch and Smith Barney argues that they are all increasingly reliant on the same technologies making imagery the only means of distinguishing them. It is clear that when there are no obvious differences in price, quality, design and features, the purchase decision may increasingly be influenced by a positive reputation of the brand and of the manufacturer (Christensen and Askegaard, 2001). These authors, conclude that corporate image, identity and reputation is not solely based on reality or semiotics but on a mixture: We should think of corporate identity and corporate image as social-historical simulations of organisational realities – simulations whose quality cannot simply be judged on the basis of their ‘fit’ with reality (although such judgements are made all the time) but also on the basis of their rhetorical power, that is, their credibility and persuasiveness in a world saturated with signs.

4 Reputation for quality

The literature on reputation often leans on quality. Reputation is for imparting quality and providing improvements based on customer feedback. The first two out of eight components of Fortune’s criteria for reputation consist of “management of quality and quality of products and services”. The first volume of Corporate Reputation Review had many articles with a quality dimension e.g. Karen de Segundo’s (1997) contribution. Like De Segundo, many of the contributors in this volume also emphasised consistent quality as against financial performance. Of the electronic databases Econlit focused on reputation in the game-theoretic sense, whereas ASAP and ABI/Inform show reputation more or less in a quality context. Reputation for quality is a dynamic asset for an organisation. It removes many unknown variables for the stakeholder. Reputation for quality is often established through relationship with the stakeholders but there are also several national, European, and international *standards* to formalise reputation for quality. Such a reputation is regarded as a main source of higher productivity and global competitiveness (Greenbaum, 1993; Roehm et al., 1995).

4.1 The supplier

Quality systems promote long-term supplier relationship in each input field. This relationship flourishes by developing loyalty and trust, training suppliers and subcontractors, choosing supplier on quality not price alone, developing communications, and encouraging visits by suppliers to improve cooperation. Corporate reputation for quality can give the supplier certainty and confidence to plan its production and delivery, gain technical assistance with training etc. In return, the

supplier is obliged to produce in response to certain specifications, and be constantly prepared to have its procedures audited. However, if both organisations have the same quality systems the feedback loops will be shorter and more efficient. Nonetheless, single sourcing does not easily appeal to 'common sense'. Many find multiple sourcing more profitable (Richardson and Roumasset, 1995). Defenders of single supplier system of course argue for the long-term benefits.

4.2 The customer

Quality organisations have reputation for staying close to the customer, ensuring customer satisfaction, relying on customer feedback, improving company image, carrying out research for marketing innovation and establishing good communication. Reputable organisations have a customer focus both in producing and marketing their goods. Working out customer needs and expectations is a difficult subject in marketing, but quality organisations attempt to exceed these expectations and by doing so establish a competitive edge (Jeffords and Thibadoux, 1993). On-time delivery is also a great source of reputation for quality and benefits from parallel movements such as Just-In-Time and so on. Delivery is often outsourced; there are companies with reputation for on-time delivery such as ADL who take up the task. It is believed that ADL's reputation is tied with quality, in particular with people empowerment (Hamer Group, 2001).

4.3 The employees

The chain from suppliers to customers passes through the organisation itself. A better relationship within the organisation especially between managers and the employee is the most important source of reputation. One of the main vehicles of generating good relationship and short feedbacks is the quality circle. Groups of people especially at lower levels form around what is called the micro-processes to sort out problems locally. Usually a member of the circle is represented in cross-departmental duties to provide feedback on the complex issue of multifunctional work to the council of strategic management (Bovet, 1994). For such complex tasks to succeed people empowerment (prominent in European Quality Award) must precede work on processes (Townsend and Gebhardt, 1994).

In order for the quality chain to work there are many principles at work that emphasise continuous improvement, organisational learning, interdependence, sense of belonging, measurement of performance, breaking down barriers, driving out fears and so on. On the face of it, establishing reputation for quality, with all the

high sounding principles that it involves, could help increase customer certainty and satisfaction, productivity and competitive advantage, and above all humanise the work environment and, for that matter, the environment in general. However, doubts are beginning to appear as to the authenticity of all these claims. Wilkinson and Willmott (1995) provide a rare critical view of quality management where the internal customer concept is represented as *commoditisation* of work force, and empowerment is nothing but making an individual perform several duties. More experience and more scholarly works of this nature are needed to see whether there is any reality behind the image.

5 Introducing complexity

These approaches are not reconcilable in the sense that one may be reduced to the other, but they can be encompassed within a framework of complexity. Organisations are treated here as complex systems that embrace apparently contradictory possibilities of order and disorder, co-operation and non-co-operation, trust and suspicion, rational and irrational behaviour. In such systems, the distinction between the real and the imaginary is not nearly as clear-cut as in a deterministic regime. Complexity is a way of thinking about the collective behaviour of interacting elements; atoms, molecules, neurons, bits within a computer (Kauffman, 1993).

As with other complex systems, organisations are macroscopic collections of activities that are capable of evolution through time. Through integration, synergy or complementarity between activities, the whole is different from the sum of the parts. Their current capabilities are partly determined by their history (path-dependence), which is irreversible. They express non-linearities in the sense that at times small changes at one level can cause big changes in others. The first approach leads naturally to an interpretation of reputation as a source of competitive advantage that can be manipulated. Reputation triggers anticipations of costs and benefits, which in turn become levers on behaviour. If, as envisaged in the second approach, organisations resemble theme parks, encountered by a multiplicity of stakeholders ranging from customers, to employees, rivals, stockholders and partners, reputation may be constructed as an image, a perception, part of a many layered reality, in which costs and benefits too are part of an interface between the imaginary and the real. Here the concept even of the bounded rational actor dissolves. Success itself becomes multi faceted, competitive advantage an impression that can be constructed. The quality approach is more realistic but does not allow for uncertainty and ambiguity. The view taken in the paper is that neither approach can be held to

the exclusion of the others, and that an appropriate position allows for ambiguity, and is inclusive.

Consider the dilemma in financial services. The environment has been transformed. Since the 1980's first second and third order derivatives have emerged, alongside new mathematical tools that give greater understanding of the nature of risk and the way it is priced, together with advances in electronic trading. Derivatives have stretched from currency and interest instruments, to contingency products offering returns on markets other than those on which the trade was originally made. Corporations show sensitivity to individual behaviour and interpretation; a rogue trader can tip them into bankruptcy; a different measure of risk may transform profit into loss (See Slack 2006 on Nick Leeson as a rouge trader who falsified the accounts).

The complexity and size of the global financial market has increased, and there are a myriad of niches, segments and areas in which to compete; the global bank hypermarket, the specialist boutique, investment and trading activities, the provision of information, transactions and regulatory infrastructure. The search for competitive advantage necessarily involves a break with the past, putting at risk, reputation, which is the root of the firms capabilities; intellectual assets, information sharing, understanding of needs, cross-selling, innovation. Adding a further dimension of complexity is the question of whether foundations are set firmly in intrinsic values calculated by analysis of present conditions and future prospects, or if instead, mobs of traders and investors weave their hopes, fears, and fantasies into castles in the air.

6 Reputation and complexity

The concept of feedbacks in complexity is essential to this section. There are two types of feedbacks: negative (self-balancing) and positive (self-reinforcing or amplifying). Negative feedback leads to stability of any system, and steady state in open systems. Positive feedback reinforces or amplifies a trend or behaviour in the same direction leading to instability and bifurcation to new states of existence (Capra, 1997). In systems view, both negative and positive feedback is important.

The search for competitive advantage or rent is presented in this paper as a naïve negative feedback system. The business environment contains opportunities and constraints that together with organisational capabilities in terms of assets,

architecture, reputation, and innovation determine the firm's capacity to earn rent. Creation of competitive advantage triggers negative feedback, attracting rivals, as rent earning firms are compelled to protect existing sources of competitive advantage, or search for new ones. Capabilities are also affected by tradeoffs between stakeholder interests decided on by the firm since they affect for example incentives to staff, attractiveness to customers, and scope for entry by rivals. The image of the firm is affected by its advertising, promotion, and selling costs that differentiate it from rivals.

There are more complex feedbacks. Reputation is essentially path dependent. It is formed historically from a procession of events. Game theory models stress the importance of reputation in repeated games with limited information (Kreps and Wilson, 1982; Fudenberg and Tirole, 1993). Reputation features in a number of feedbacks. They include: responses to expectations about the business environment; customer responses to the distribution of payoffs by the firm which is expressed by the price and quality of products and services; co-operative decision making which determines realisation of payoffs and willingness to share information and learn; the reputation of reactions to the entry of rivals into the firms markets.

Put in another way, reputation reflects sequence in which choices are made and so it determines solution or course of action taken by stakeholders. Systems temporarily in equilibrium may be unstable. Small events and changes in behaviour can determine outcomes. So the state of the system at any one point in time determines not the next sequence of actions, but their probability. The presence of increasing returns and *lock-in* effects complicates our ability to describe a firm's search for competitive advantage. Increasing returns or non-convexity can imply a multiplicity of equilibria, or instability in the sense that deviations from a particular state lead to positive feedbacks and amplifications of a particular state. A particular technology may become dominant through *lock-in* effects whether it is the most efficient or not; in the case of VHS and Betamax, the lead gained by the former, enhanced its competitive position, and so further increased its market share. In contrast to the smooth negative feedbacks, disequilibrium, instability, and inefficiency may be the result of the processes mentioned above. Attractors rather than equilibria are appropriate terms. A point attractor corresponds to a single configuration, or vector of prices and quantities associated with the activities of the organisation: Intersection of supply and demand at equilibrium. A periodic attractor corresponds to regular or irregular variations around an average value. The firm is faced with continuous

competition and have to renew competitive advantage by defining new strategies with respect to its activities, very much like supermarkets jostling for position; or the average may converge to, or vary around, some negative rental in the long run, meaning that organisations are transient (For more complex attractors see Stacy, 1995). The formation of reputation is an outcome of the complex interactive processes. They include the history of the environment, decisions in response to competition for rents, the landscape of potential payoffs in an organisation, its capacity to learn, the impact of the distribution of payoffs between stakeholders and its resultant image, real or imaginary.

6.1 Reputation feedbacks

Cost benefit approaches to reputation are reflected in game theory and other models in industrial organisation. Where customers are able to acquire information about a product at not too high a cost, it is asserted that reputation is unlikely to be a source of competitive advantage. Attributes of some products, especially the professional services of doctors, lawyers and financial advisers, can only be evaluated imperfectly even after repeated purchasing (Douglas, 1987). These are credence products that rely on reputation.

The influence of reputation goes beyond customer demand and product reliability. For example, in the chain store game (Milgrom and Roberts, 1982), it is extended to the entry of competitors through the firm's record of reactions to would be competitors through limit, or predatory pricing. In a prisoner's dilemma game played infinitely, co-operative equilibrium can be founded on a reputation for behaving co-operatively and punishing deviations. In a finite prisoner's dilemma games, Co-operation may happen because players attach a small probability to collaboration by others, based on perceptions of altruism, learning, or bounded rationality (Kreps and Wilson, 1982; see also Kreps, 1990, regarding reputation for non-exploitation).

Supply chain feedbacks occur both within the firm and between the firm and its partners (Reyniers and Tapiero, 1995). The supplier establishes reputation for quality and the producer forgoes the inspection stipulated in the design contract. Customer feedbacks are usually distinguished from other feedbacks in the value chain since they relate specifically to demand. Bournico, et al. (1996) consider the increasing complexity of computer systems where customer feedback through system service support helps with quantifying the trade-off between cost and quality. Feedbacks from rivals reflect reputation based on past responses to entrants by rivals.

Against all this vast array of possibilities which deny our ability to control, there are two stabilising factors. Self-organisation, the 'invisible hand' of complexity theories, churns out patterns that may direct us to successful outcomes. The second is the role of reputation in restricting the domain of outcomes.

6.2 Reputation as a control parameter

Firms may be irrational or short term. They may be boundedly rational, but discount rates may be so high that the benefits of short-term behaviour outweigh longer-term considerations. With full information, markets may impose cost and price reductions, so the liability of greater product and employment risk is shifted to customers and employees. Redundancy pay might compensate the employee for the severed contract in a Coasian bargaining scenario (Coase, 1937). If customers cannot gauge quality, a lemons market may emerge in which suppliers are induced to sell low quality rather than high quality products, which means lack of information and market failure (Akerlof, 1970). In others, the landscape in which firms operate may be so dynamic and unpredictable that all games are effectively *one-off*. Then reputation, or the possibility of long term gain counts for little, and any perceived advantages from non-co-operative behaviour in the form of breaking implicit or explicit contracts or even from outright exploitation are grasped.

Complexity introduces another dimension by recognising ambiguity. Firms may have mixed motives. Strategy is formed through the interaction of stakeholder groups and so is subject to oscillation as power between them shifts. Supply and demand are interdependent and failures occur in the attempts to balance cost reductions that increase or decrease profit through their interaction upon demand. Again what we may be observing is strategy based on more or less random configurations. The previous section focused upon the feedback aspects of reputation and this one sets out a foundation, for management's role in using reputation in limiting the number of potential outcomes. Organisations pass through only a limited number of the all states that are possible given the interacting variables affecting their behaviour. The path they follow through the universe of possibilities is restricted by tuning parameters that are akin to Holland's (1995) conception of *standard operating procedures*. Here the particular concern is reputation as a parameter determining co-operative variables. On-line business is particularly keen on fixing or standardisation of this variable to reduce uncertainty. Trust and reputation meet to create a satisfactory transaction. They don't meet at a point; they gravitate to a relatively

stable position. Grabner-Kraeuter (2002), views reputation and trust as coexisting mechanisms for reducing the uncertainty and complexity of transactions and relationships in electronic markets. In an agency-theoretical perspective reputation is the third instrument a business firm can use to encourage trustworthiness in transactions. Opportunistic actions within a certain market might yield short-term benefits, but there would be a long-term cost in the sense of a lack of trust that might inhibit future acquisitions of cost-reducing and/or quality-enhancing assets.

Reputation is the result of trustworthy behaviour and plays an important part in determining the willingness of others to enter into an exchange with a given actor (Hosmer, 1995). Reputation serves both to reduce uncertainty, guide the decision of whether to trust the other party, and also as a potential source of sanctions. The higher the reputation, the greater the loss in case of unfavourable behaviour and the more certain the *trustor* can be that the company will not act opportunistically. In electronic markets there are new challenges to managing reputation policies, mostly because of the ease of changing identities and the extremely low costs of collecting and distributing information online (Kollock, 1999). In e-business, where trust is most needed, reputation is actually being used as a control variable (Katkar and Lucking-Reiley, 2000).

7 Ambiguity

Uncertainty and ambiguity are part of complexity and cannot be eradicated but can be utilised often to good ends which can enhance reputation. Undesirable outcomes are also possible. Derrida stresses the in-eradicable equivocality in human communication. He argues that while human beings desire to reduce ambiguity, ambiguity and indeterminacy, as drivers of processes of organising, may never be completely removed (Cooper, 1989). Similar positions have been articulated by Alvesson (1993), and March and Olsen (1976), who have stressed the centrality of ambiguity in organisational analysis.

According to some of the earliest definitions, ambiguity represents an inability to interpret or make sense of something (Machlup, 1980) either because a message does not activate a knowledge frame or the interpretive knowledge does not exist. Martin (1992) associates ambiguity with “lack of clarity, high complexity, or a paradox”. March (1994) takes a similar position regarding ambiguous situations, intentions, identities and outcomes. He says “ambiguity refers to a lack of clarity or

consistency in reality, causality, or intentionality". March does not see ambiguity as a problem to avoid. He sees it as a tool which can be utilised but not destroyed. It stays as part of complexity. March is well aware of the sustainability of ambiguity as a managerial tool: "It is common to keep or increase ambiguity to gain support from participants" "Policy ambiguity encourages administrative autonomy, which in turn encourage more policy ambiguity" (March, 1989). In contrast to the assumptions underlying uncertainty, regarding ambiguous situations or events are often neither clear nor understandable (McCaskey,1982). Alverson (1993) isolates uncertainty with clarity: With uncertainty we gather and share more information to achieve some certainty.

The focus on uncertainty and information sharing has led to *team theory*. Although it is a step nearer to ambiguity but in essence it remains a statistical decision theory dealing with teams rather than individual payoffs. Gibbons (2003), has distinguished team theory from ambiguity: Whereas in team theory and decentralised information processing, the available information is always well defined, and the individual objectives are always clear, in real organisations decision makers are frequently unsure both about what they don't know, and even what they are supposed to be doing. Dewatripont and Tirole (2005) have also distanced themselves from team theory. Dewatripont and Tirole (2005) highlight the problems of communications in a way that departs from information efficiency and approaches ambiguity especially when they contrast soft and hard information. In hard information we are dealing with efficiency but soft information involves the people behind the message, and more importantly their interest: Simply put, it takes two to communicate. This involves "the commonality of the two parties' background, language, or references". As an example of vested interest getting in the way of communication consider the Miners' strike in the UK narrated by De Burgundy (1995): The government thought they were talking economics and the miners talked about Mrs Thatcher's secret plan to wipe out deep coal mining. Miners also insisted on social responsibility which did not make economic sense for the other side. Such clashes also happen in management as the Intel case below shows.

With management in mind, Dewatripont and Tirole (2005) distinguish between executive and supervisory decision making. While the former concerns itself with effectiveness of communication the latter focuses on helping the receiver of information to "assess the merits of alternative choices". Interpretation of the message is widely promoted both as the ingredient of ambiguity and for resolving it.

For Zack (2004), resolving ambiguity includes imposed interpretation which seems to take the better of complexity, for others, such as Schank (1987) and Weick (1979), however, complexity stays and the focus is on autonomous interpretation. Weick and Sutcliffe (2001) goes as far as claiming that people make their own reality. Jonker and Cramer (2005) use Weick's 'sensemaking' to explain how companies they have studied in Holland can build corporate Social Responsibility from ambiguity: "According to Weick, a process of sense-making starts off through mutual interaction. People constantly react to each other and by doing so they play an active and defining role in the production of their own reality. As a result of interaction, people start to see their joint environment in a similar way. They are going to share their beliefs and consequently they collectivise meaning". This is how ambiguity creates a culture that can in turn contribute to reputation. We shall look at culture in more detail later. Meanwhile it is useful to examine two examples (abridged) from disaster recovery and innovation as these are the areas frequently visited by ambiguity.

"In 1997, the Toyota group suffered what seemed like a catastrophic failure in their production system, when a key factory burned to the ground overnight. On account of their much vaunted just-in-time inventory system, the company maintained only three days of stock, while a new factory would take six months to build. In the meantime Toyota's production of over 15,000 cars a day would grind to a halt. This was the kind of disaster with the potential to wreck not just the company itself, but the entire Japanese automotive industry. Clearly then, both Toyota, along with the more than 200 other companies that are members of the extended Toyota group, had ample incentives to find a solution. The real question was: How does one rapidly regenerate large quantities of a complex component, in several different varieties, without any specialised tools, gauges, and manufacturing lines with barely any relevant experience (the company that made them was highly specialised); with very little direction either from Toyota or Aisin Seiki (the factory owner); and without compromising any of their other production tasks? Nobody had a clear solution [ambiguity]. ... Nevertheless, they succeeded, but not in the way one might have expected. As documented by Toshihiro Nishiguchi and Alexander Beaudet, rather than relying on the guidance and coordination of an inspired leader, the response was a bewildering display of truly decentralised problem solving: more than 200 companies reorganised themselves and each other to develop at least six entirely different production processes, each using different tools, different engineering approaches, and different organisational arrangements. Virtually every aspect of the recovery effort had to be designed and executed on the fly, with engineers and

managers sharing their successes and failures alike across departmental boundaries, and even between firms that in normal times would be direct competitors. Within three days, production of the critical valves was in full swing, and within a week, production levels had regained their pre-disaster levels. Had either Toyota or Aisin attempted to centralise the recovery effort, it seems clear that it could not have succeeded – even as it was, Aisin was completely overwhelmed. The key to the recovery was that both design and production could proceed simultaneously and in a highly coordinated manner across many firms, without any one manager or even any single firm having to do the coordinating. Yet the kind of distributed coordination this activity required had not been consciously designed, nor could it have been developed in the drastically short time frame required. The surprise was that the capability appeared to have been there all along, lying dormant in the network of informal relations that had been built up between the firms via years of cooperation and information sharing over routine problem solving tasks. No one could have predicted precisely how this network would come in handy for this particular problem, but they didn't need to - by giving individual workers fast access to information and resources as they discovered their need for them, the network did its job anyway” (Watts, 2006).

The case of Intel relates to ambiguity by allowing for autonomy. The following is gleaned from Burgelman's (2004) collection including one co-authored with the then CEO of Intel Andy Grove. Unlike many approaches to ambiguity that consider it as a case of misunderstanding Intel's shift from DRAM (memory business) to a leading microprocessor company is a case of the management issuing strategy guidelines but leaving a leeway for the people to deal with it in their own way. The ambiguity is clear from Les Vadasz's reminiscences of the times when he was a top manager in Intel: “we had a sense about the technology and the business which led to a series of correct decisions”. Not only were the top managers unclear about precise objectives the people at the shop level too were insufficiently ‘task-mature’: “Managers started gaming with the system. One key symptom was that the new ideas were often co-opted by groups and moulded to fit immediate needs rather than developed as originally planned”. This approach had almost become a culture: When the company chiefs began to issue more clear guidelines “some managers complained that their ‘sandbox’ was too well-defined”. In 1989 the Intel Chairman Gordon Moor argued for well-defined strategies aiming to ‘suppress’ the autonomy but he failed to do so. An initiative at lower level emerged to dominate Intel's business. Les Kohn an astute technologist who was employed in 1982 was determined to test the strategic

boundaries by pushing for RISC (Reduced Instruction Set Computing). He faced strong opposition from the establishment. He thought of doing it 'under the table' but it was too costly. Eventually he tried to disguise his project as a 'co-processor' meaning that it only complemented the current design. When he managed to convince the top managers that there was a market for the RISC chip the strategy was amended to incorporate the chip. This is what turned Intel to what it is now – a giant microprocessor business.

This case shows that as the process of innovation unfolds and more information becomes available, top management is able to evaluate the adaptive potential of the new activities for the organisation. CEO Andy Grove makes the case for ambiguity when he outlines the new strategy of moving from DRAM to RISC:

“...We had become a non-factor in DRAM.... The DRAM business just passed us by. Yet in 1985 many people were still holding to the self-evident truth that Intel was a memory company. One of the toughest challenges is to make people see that these selfevident truths are no longer true”.

After explaining the technicalities of the change Grove concludes that:

“You need to be able to be ambiguous in some circumstances. You dance around it a bit until a wider and wider group of people in the company become clear about it. That is why continued argument is important. Intel is a very open system. No one is ever told to shut up, but you are asked to come up with better ideas. People are allowed to be persistent”

(Burgelman, 2004).

Self-organised activities of this kind migrate into a culture especially when successful. Schein (1992) a prominent writer on culture says that culture is very helpful in understanding contradictions and ambiguity. Schein has influenced many who associate ambiguity with culture. Martin (1992) for instance, suggests a 'fragmentation' perspective that has a “focus on ambiguity as the essence of organisational culture.” Hendrikse (1993), claims that even environments with low goal incongruence and low performance ambiguity require a culture which coordinates the actions of boundedly rational agents. Culture plays a similar role at the firm level in Weick (1995). His analysis is built on the assumption that “the variety that exists in the system to be managed exceeds the variety in the people who must

regulate it”, i.e. the cognitive capabilities of employees are insufficient to grasp the complexity of the world (bounded rationality) and therefore they don't know the right decision for the organisation when faced with unforeseen contingencies. Culture might resolve this because it “creates a homogeneous set of assumptions and decision premises which, when they are invoked on a local and decentralised basis preserve coordination and centralisation”. Thus culture can render ambiguities meaningful but at the same time divest them of meaning by standardising them.

Crémer (1993) and Lazear (1995) also take lead from Schein. Crémer (1993) defines culture, following Schein (1985), as a stock of shared knowledge and argues that it improves the efficiency of information processing. Most of the paper discusses communication, but it also presents an interesting team-theoretic model that shows how shared information may improve coordination. There are three shortcomings: First, Crémer seems to focus on factual information that is relatively easy to share (at some fixed cost). Second, the model does not really deal with the genesis of culture, but focuses on its effects. Some of Crémer's comments suggest that the content of culture is a simple managerial choice. Third, except for the initial cost of sharing the information, more culture is always better in his model. As a consequence, the model has no natural explanation why culture might be dysfunctional or why firms in the same industry with similar history might end up having very different cultures.

Lazear (1995) also defines culture as “shared beliefs, values and technology” and considers a ‘genetic’ evolutionary model of corporate culture, built on the assumption that culture is contagious but that management can influence the reproduction rates of the different ‘genes.’ It provides an alternative perspective how culture might evolve. Like most works in the area it implicitly assumes that homogeneity is valuable. As a consequence the model has no natural explanation for dysfunctional cultures or for the fact that structurally similar firms might end up with very different cultures. Hence negative reputation.

Hermalin (2001) sees culture as a reputation for dealing in a specific way with unforeseen contingencies. Hermalin refer to ‘trust’ in a repeated game as the way to think about this, but then with the future stage-games being unforeseen. Reputation for dealing with the unforeseen may sound like a sand castle, but so is the reputation of financial institutions hedging for future. They use the path-dependency of the underlying stock to mitigate the risk. Maybe the path dependency of their own

performance in dealing with ambiguity of financial instruments and the behaviour of their 'traders' can create a culture and reputation for reliability.

8 Conclusions

Examining reputation from different perspectives, it was argued that a complexity view of reputation is more inclusive. We tried to establish that there are limitations to the other outlooks but did not exclude them as irrelevant. Cost-benefit analysis is often criticised for narrow-mindedness, but if it is sufficiently widened to embrace stakeholders it could be successfully included in complexity. Similarly, reputation for quality cannot be dismissed by complexity/ evolutionary outlook. Commonly, companies are known either for price or quality. For complexity view companies can be both. At the same time they can be neither; they can simply appear to be both. In an evolutionary process creatures do change colour not to fool but to attract. Semiotics based on reality may fall in the latter category. Buying into quality standards and wearing all those badges such as "investors in people" for mature companies can simply be a cheap imitation of the peacock's changing of colours in mating season. No harm in trying to attract: Such an imitation looks like semiotics married to quality. The danger is when they try to hold on to the puffed up feathers and temporary colours. It is only then that we find semiotics detached from the complexity/evolutionary framework. It is only then we encounter ENRONs and World.coms. There is a strong tradition in complexity thinking to appreciate semiotics as part of the rich pattern of life. Quality is also embraced in evolutionary complexity tradition. We recommend Sidney Winter's (1994) article on the meeting of quality and evolutionary outlook. In a complexity view reputation is regarded circumstantially. In a worldview that accepts interdependence, path-dependence (history), change, and ambiguity, one cannot afford to see reputation solely in a semi-religious fashion common to the shallow versions of quality outlook. Reputation depends on the negative, but also on the more dangerous positive feedbacks. It is fickle, it is subject to ambiguity. We focused on the 'nice' aspects of ambiguity in two case studies where ambiguity feeding on 'slack' allows lower ranking employees to indulge in innovation. It is also possible that things can go wrong. The Red Queen effect is always there in particular when innovation is accompanied by fierce individualistic competition rather than cooperation. We gave a particular weight to ambiguity in a complexity context to imply such possibilities. Using ambiguity as a stem cell to build reputation is a difficult craft but is more sustainable. Sustainable reputation requires 'mindful' management where failure is part of the rich pattern of life. We recommend

the five principles of mindfulness proposed by Weick and Sutcliffe (2001) that grants failure pride of the place: These are:

- 1 preoccupation with failure
- 2 reluctance to simplify interpretations
- 3 sensitivity to operations
- 4 commitment to resilience
- 5 deference to expertise.

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