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**Working Paper**

## The behaviour of corporate actors: a survey of the empirical literature

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**Preprints of the  
Max Planck Institute for  
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The Behaviour of  
Corporate Actors  
A Survey of the Empirical  
Literature

Christoph Engel



MAX PLANCK SOCIETY



# **The Behaviour of Corporate Actors A Survey of the Empirical Literature**

Christoph Engel

May 2008

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## I. Research Question

Industrialised societies are populated by organisations: firms and associations, universities and churches, municipalities and states, non-governmental organisations and international organisations. Colloquially, it is commonplace to speak of organisations' "actions". They are treated as actors, much the same way as individuals. Of course, the corporate will is generated in ways radically different from the generation of the individual will. Yet both from the outside and from within, they are perceived in a way that makes the analogy to the individual meaningful. In first approximation, individual and corporate actors differ in the way how they take decisions, but they do not differ in their being actors.

Of course, not everybody is happy with this approach. In particular, economists in the "corporate governance" tradition tend to be critical (for a survey see Becht, Bolton et al. 2007). Their research program is analysing individual, utility maximising behaviour at the interior of organizations. Quite a bit of this literature is empirical. One of the ways of measuring the effect of changes in corporate governance is testing their effect on corporate performance (Becht, Bolton et al. 2007:section 7 provides an overview). This work is an interesting complement to the studies presented here, in that it helps better understand one of the causes of corporate behaviour. But, as the evidence summarized here will make patent, it makes sense to change the level of observation, and to ask for the behaviour of the aggregate, rather than (exclusively) the behaviour of those interacting at its interior.

While hardnosed individualists dislike the approach because it is too collectivist, hardnosed organization scientists dislike it because it is too individualistic. The papers reported here go one step beyond the individual in that they consider the behaviour of corporations, and of organizations more generally. But they treat them as actors, understood as higher level individuals. Sociological neoinstitutionalism would not subscribe to this (DiMaggio and Powell 1983; Walgenbach and Meyer 2008). This research tradition claims that actors should not be conceived of as isolates, but as beings that constitute themselves in interaction with their environment. Again this perspective is a helpful complement to the one adopted here. But it does not make it meaningless to ask for regularities in the way how corporate actors deal with their environment, and to interpret these regularities as expressions of what the actors want to achieve.

At any rate, this question is highly relevant for those founding corporate actors, joining them, acting at their interior, interacting with them, or regulating them. Does the difference in machinery imply that the behaviour of corporate actors systematically differs from the behaviour of individuals? Specifically, do the many deviations from the assumptions of rational choice models that have been uncovered in individuals (for surveys see Conlisk 1996; Kahneman and Tversky 2000) carry over to corporate action? Do corporate actors exhibit other deviations from these assumptions, not characteristic for the behaviour of individuals?

This paper surveys the existing empirical literature on this question, with a focus on studies that compare individuals with higher aggregate actors. The direct evidence on the behaviour of cor-

porate actors is at best scattered (II). There is some evidence on how acting on behalf of a corporate actor changes the behaviour of individuals (III). The subtopic that is best understood is the behaviour of small groups, or collective actors (IV). There is much less data on the psychological effects of structure on behaviour (V). Yet horizontal or vertical, formal or informal structure is what distinguishes corporate from mere collective actors.

## **II. Direct Evidence on the Behaviour of Corporate Actors**

### **1. Economics**

Depending on how one defines the question, there is a universe of empirical findings on the behaviour of corporate actors in economics. In a way, much of econometrics is concerned with corporate actors in that it looks at firms. In most industries, firms are not manager-owned. However, this work is not behavioural in the sense of this paper. It is interested in establishing how firms react to changes in restrictions, not to find systematic deviations from the predictions of the rational choice model.

But there are exceptions. Empirical work has shown early on that firms are often satisficers, not utility maximisers (Gordon 1948; Margolis 1958). While theory would expect returns to be highest if risk is most elevated, in reality in many industries the opposite is true (Bowman 1980; Nunez Nickel and Rodriguez 2002). Firms are liable to anchoring in their forecasts (Bromiley 1987).

Most pertinent are the scattered experiments that have created "firms" in the lab. In the first such experiment, groups of three students were given the task to be firms in an oligopolistic market with a homogeneous good. Subjects were not allowed to talk across firm boundaries. There was little tacit collusion. Over time, results came closer to the Nash equilibrium. Initially, "firms" were mainly following routines. Although the setting was relatively simple, it took considerable time until firms figured out that they could calculate best responses. Once they had found this technology, firms tended to stick to it. There were, however, motives beyond profit maximisation. For instance, rivalistic action played a role, as did attempts at testing the grounds, or at minimising average cost (Selten and Saueremann 1959).

A later experiment had a similar setting, but allowed for process innovation. Again collusion played no role. A single "firm" made such a move. But the other firms did not trust its cooperative intentions. Outcomes progressively converged to the Nash equilibrium. But the underlying process was not an attempt at calculating the equilibrium. Rather firms extrapolated the trend, and they assumed that their competitors would behave in pretty much the same way as they themselves (Selten 1967b).

In a third experiment, firms were again composed of three students. The product was homogeneous. Firms could change prices and invest in capacity. Information about the behaviour of competitors was costly. Again there was very little collusion. However, results deviated from the

Nash equilibrium, somewhat to the advantage of firms. The dominant motive was not maximising profit; this motive only accounted for about 10 per cent of the decisions. It was by far dominated by the intention to sell more, and to stabilise market shares. This motive accounted for more than two thirds of the decisions (Selten 1967a).

## **2. Psychology**

Psychology defines itself as the science of individual behaviour. This explains why there is at best some work related to psychology on the behaviour of corporate actors. Closest are attempts at finding the cause for Bowman's paradox (Bowman 1980). Using the industry's median return on equity as the reference point, an econometric study shows that the correlation between the exposure to risk and returns is negative only if the firm is below the reference point for the industry. The paper interprets this as evidence for loss aversion in corporate actors (Fiegenbaum and Thomas 1988). A later econometric study adds two more factors to the picture: firms do also take higher risks if their industry performs poorly, compared to other industries. And firms become riskier if there is little room for slack (Bromiley 1991).

Another paper relates an observation from American football and baseball to the endowment effect. Property rights theory would expect that the initial allocation of property rights does only have an effect on distribution, not on efficiency. If there are gains from trade, the initial holder of the property right will sell it to the user with the highest willingness to pay (Coase 1960). This would imply that, giving football or baseball players the right to sign up with whichever team they please, salaries should go up, but many of them should stay with their team of origin. Otherwise one would have to claim that, originally, most team managers have made poor choices. This is, however, what never happens in practice. If they become "free agents", players change teams. The hypothesised explanation goes like this: when a player is declared a free agent, the fans no longer see him as part of their endowment. Regaining the player comes at a substantial out of pocket expense, which the club is not happy to invest (Thaler 1980:46 f.). An alternative explanation would be motivational. Paying a substantially higher salary to a player, only because threat points have changed, is regarded as unfair by the original employer. For alternative employers, this is a new game, not impeded by fairness considerations. Fairness is also the key explanation for wage rigidity in a recession (Bewley 1999).

## **3. Organisation Science**

There is a rich literature on the behaviour of organisations in organisation science, and in management science, on which this survey can only touch (Cyert and March 1992; Scott 2003; Berger and Bernhard-Mehlich 2006). This literature covers organisational cognition (Lant 2002) and shows that it may well go wrong. Organisations are likely to focus on what has worked in the past ("exploitation"), and to neglect the need to prepare for the future ("exploration") (March 1991). Competitor strength may go unnoticed (Zajac and Bazerman 1991). For instance, a re-

gression on data from railroad accidents shows that railroad companies basically only learn from their own experience as long as their performance is close to aspiration levels. They become sensitive to others' experiences only if they are far enough away from the aspiration level (Baum and Dahlin 2007). Outdated schemas may live on in times of stress, as multiple case studies show (Nystrom and Starbuck 1984).

Organisations exhibit a functional equivalent to loss aversion (Kahneman and Tversky 1979). This could be shown with data from the US radio broadcasting industry. Firms regularly receive data on their audience, in a format that facilitates comparisons over time, and comparisons with competitors. If one uses this data to construct an aspiration level, firms are much more likely to engage in risky change if they are at or below the aspiration level (Greve 1998). Organisations are demonstrated to engage in "problemistic search". Their search is motivated, often simple-minded and biased (Cyert and March 1992:169). Organizational learning follows complex patterns (Schulz 2002). The main result of such learning is the establishment of routines (Cohen and Bacdayan 1994).

There are many stories about the maintenance of poor strategies over an extended period of time. For instance the older the firm, the more likely it is to stick to its original location (Brouwer 2004). It took Intel many years to understand that its position in the market for Dynamic Random Access Memory DRAM was no longer viable, and that it had a new business opportunity in transforming itself into a microcomputer company (Burgelman 1994).

Two case studies illustrate the potentially pernicious effects of internal organisation on firm performance. Texas Instruments was unable to enter the PC market since three divisions fought over competing projects: an elaborate video game, a minor PC, a high end PC. Eventually, the product had features of all of these, and was not marketable (Shrivastava, Mitroff et al. 1987). Even more impressive is the total failure of the Nut Island wastewater treatment plant. The plant had been constructed to prevent Boston Harbour from being contaminated by wastewater discharges. A highly efficient team of zealots ran the plant successfully for an extended period of time, although employees earned little, frequently had to work overtime without remuneration, and were remarkably creative in doing their job although they did not get the funds for proper maintenance. However, their very ability became counterproductive in the end. When any less enthusiastic team would long have surrendered, and forced the municipality to build a better plant, they kept the appearance of viability until the catastrophic end (Levy 2001).

#### **4. Law**

The empirical law movement is still nascent. Potentially, legal scholars might, however, be in a good position to generate empirical knowledge on the behaviour of corporate actors. Not only is corporate law a rich field. More importantly even, regulation frequently targets firms. Since it is much easier to govern a small number of professionals, regulation often targets firms as their proximate goal, even if the social problem originates in individual behaviour. A good illustration



is car exhausts. Instead of trying to change driving habits, environmental law obliges car manufacturers to endow automobiles with catalytic converters.

Getting the behaviour of corporate actors right is therefore often a precondition for effective governance by law. Moreover, regulators and courts have institutionalised access to information about the behaviour of corporate actors. In order to decide their cases, they need this information, and at least one of the parties is happy to make it available. Of course, in the adversarial system, there is always doubt whether the stated information is true. Moreover, the sample of cases actually treated by the judicial system will often be biased. The legal system is therefore well advised to check any findings back with the rigorous methods of empirical social science. But legal practice nonetheless is a valuable additional source of information on the behaviour of corporate actors.

In this spirit, it has been shown that corporations are often not deterred by legal sanctions in the way expected utility models predict (Braithwaite and Makkai 1991; Axelrad and Kagan 2000). Instead, the fundamental insight by Jeremy Bentham extends to corporate behaviour. The main effect of sanctions is on bystanders. Sanctions mainly work by keeping those faithful to the law who might otherwise be tempted to transgress it (Bentham 1830). This also holds for bystanding firms (Thornton, Gunningham et al. 2005). Another study has compared compliance motivations in farmers, homebuilders and marine facilities. The latter typically are corporate actors. While in the two former groups, the sense of civic duty is above 80%, in boatyards it still is above 60% (May 2005:330). A logistic regression shows, however, that this sense of civic duty is driven by different forces. In farmers, reputation plays practically no role. In homebuilders, reputation is mildly important. In boatyards it is crucial (May 2005:334). Another study finds that, in corporate actors, legal sanctions provide the most important motivation for complying with the law. But education, social pressures, and internalised commitment also matter (Gunningham and Kagan 2005).

However, the heterogeneity in the responsiveness to regulatory intervention is pronounced (Gunningham, Kagan et al. 2003). This heterogeneity is a major concern for the rule of law. An instance has already plagued the courts. Firms should be sanctioned much more severely if they have engaged in fraud, not just committed mistakes. But are the courts able to tell the one from the other if, whenever they intervene, they know that bad things have happened? Psychology demonstrates that, in this assessment, they are liable to the hindsight bias. Knowing the outcome, courts are likely not be neutral in their inferences about the forces that have driven the firm to bring this outcome about (Gulati, Rachlinski et al. 2004).

### **III. Individuals Acting on Behalf of a Corporate Actor**

Not so rarely, a single individual is able to determine the behaviour of a corporate actor (Hambrick and Mason 1984). In that event, in principle the rich empirical knowledge on the behaviour of individuals can be used to explain or predict the behaviour of the corporate actor

(Payne 1997:357; Shapira 1997:4; Gibbons 2003:16). The only question one has to answer is whether the corporate setting modulates the effect established by experimental economics or psychology. There is some evidence on this question in three different settings: the corporate actor consists of just one individual (section 1). Managers are competent to decide in isolation (section 2). Other agents have the right to represent the corporation (section 3).

## **1. Manager-Owned Firms**

A study tested Dutch hog farmers, who were all running their own businesses. Their trading behaviour was precisely predicted by prospect theory. They were risk averse in the domain of gains, and risk prone in the domain of losses. The reference point narrowly coincided with production cost. However, in their long-term choice between two production systems, there was heterogeneity. About two thirds of them had a utility function in exponential form. Two thirds of these farmers used the closed production system, i.e. they reared their piglets themselves. The remaining third of farmers had a utility function in S shaped form. 80% of these farmers had opted for the open production system, i.e. they bought piglets and feeds on the market as they needed them (Pennings and Smidts 2003).

## **2. Managerial Behaviour**

If individual managers have power to act for the corporation, the rich body of knowledge on the behaviour of experimental (student) subjects is a good first approximation (Kiesler and Sproull 1982; Schwenk 1984; Horide 2003; Bazerman 2006). Ideally one would, however, want to check explicitly whether the respective general effect also affects decisions taken in this particular setting. Not only do managers decide in a business context. They also act on behalf of a legal person. In so doing, they engage foreign money. Their decisions change their employees' lives. The decisions are taken as signals on the labour market for managers. Boards, and ultimately shareholders, can later hold them liable; the latter aspect will be taken up again when considering the effect of vertical structure on behaviour.

The effect that is best studied in managers is overoptimism (Moore 1977; Langevoort 1997b). Many managers believe that their companies, and they themselves, are better than average (Larwood and Whittaker 1977). A third of them says that their probability of failure is just zero. More than 80% say that this probability is between 0 and 30% (Cooper, Woo et al. 1988). Managers systematically underestimate the strength of their competitors (Zajac and Bazerman 1991). Overoptimism is stronger if there are no clear benchmarks (Alicke, Klotz et al. 1995); this effect is much stronger in managers than in ordinary subjects (Palich and Bagby 1995). Overoptimism leads to too much investment from internal funds, and to too little outside financing (Malmendier and Tate 2005). It also makes bidders overly aggressive in corporate takeovers (Roll 1986; Hayward and Hambrick 1997). Interestingly, managers seem to distinguish between corporate and

personal risk. On average, they are not willing to invest more of their own money in their firm when they are directing the firm into major acquisitions (Boehmer and Netter 1997).

Managers exhibit loss aversion (Wehrung 1989). Managers do not price real options according to their expected value. A study showed the following effects: buyers and sellers price options below their expected values. Buyers' prices are consistently below sellers' prices. Irrelevant outcomes decrease option values. Discount rates vary with the option time horizon. Changes in option values do not fully reflect increases in exercise prices (Miller and Shapira 2004).

Managers are prone to self-serving reinterpretations of reality (Cox and Munsinger 1985:88; Langevoort 1997a:638). They take credit for good outcomes and lay blame on the environment for bad outcomes (Clapham and Schwenk 1991). They tend to pay selective attention to regulatory concerns, like safety (Mendeloff and Gray 2005), and to perceive reality in a filtered way (Starbuck and Milliken 1988b). They even misperceive objective facts that are key to assessing their position in the market, like last year's sales, or the percentage change in their industry's sales in the previous year (Mezias and Starbuck 2003). Managers are in principle sensitive to the magnitude of social harm they might cause (Flannery and May 2000). But such ethical attitudes are modulated by the perceived legitimacy of the regulatory concern (Gunningham, Thornton et al. 2005). Managers act more strategically than non-managers in a game that models the interaction with regulators, the ratchet effect game (Cooper, Kagel et al. 1999). Interestingly, the endowment effect goes away when subjects do not have to decide on their own property, but are assigned the role of agents (Arlen, Spitzer et al. 2002).

### **3. Behaviour of Representatives**

There is a solid body of evidence on behaviour within organisations (for an overview see Greenberg 2003). But most of this research is concerned with internal viability. It only indirectly touches upon the question how organisations behave in their dealings with the outer world. Yet a number of studies directly address the behaviour of representatives. Fund managers in Japanese institutional investors exhibit short-termism, herding, and self-marketing to improve the appearance of portfolio performance (Suto and Toshino 2004). Marketing personnel exhibits overconfidence (Mahajan 1992). The behaviour of those in charge of environmental obligations of the firm is predominantly driven by their personal attitude towards the environment. Their subjective norm for environmental regulation still has a smaller positive effect, while the effect of perceived behavioural control is negative (Cordano and Frieze 2000). Professional accountants are overly influenced by recent experiences, although they have rich experience in taking accounting decisions (Arnold, Collier et al. 2000).

A related study presented general and environmental managers in the US metal-finishing industry with the following scenario: they had just been appointed and found out that, in the past, the firm had discharged contaminated waste water into the publicly owned treatment works. This had happened to save the substantial cost of treatment. Subjects were asked about their hypo-

thetical decision, and about motives. Not surprisingly, almost all of them said it was very likely that they would stop the discharge. They would be strongly influenced by their attitude, and by personal moral obligation. They would feel fully competent to take the decision. The only non-obvious figure is a mean of 3.68 on a scale of 1 to 7 for the relevance of cost for the firm. Subjects thus report to be torn by the grave consequences for their employer (Flannery and May 2000). And, most importantly, participants faced no real life consequences for their statements, which very likely biased the results in favour of the environment.

## **IV. Group Behaviour**

There is a rich literature on group behaviour in social psychology (for overviews see Davis 1992; Baron and Kerr 2003; Brown 2005) and, more recently, in behavioural economics. Most relevant for this survey is research that directly compares individuals and groups on the same task (for surveys see Doise 1978; Heath, Larrick et al. 1998). It is supplemented by key findings from the literature on group behaviour in isolation. The difference matters for cognition (1), and for performance (2). Special emphasis is on the effects for risk taking (3) and cooperation (4). All of these are individualistic approaches. An alternative view interprets group decisionmaking as a political process (5).

### **1. Cognition**

A whole industry has tested individual subjects against the rational choice model, taken as a norm for good behaviour. Long lists of biases have been found (see only Conlisk 1996; Kahneman and Tversky 2000). Are groups prone to the same cognitive effects? There is at least some comparative evidence (for an overview see Kerr, MacCoun et al. 1996).

Groups are sensitive to framing. In some studies, no characteristic differences between groups and individuals could be found (Tindale 1993). But the loss aversion of one member of the three-person group could be overridden by a non-loss majority (Kameda and Davis 1990), and the bias could be attenuated by shifting the choice to the group (Neale, Bazerman et al. 1986; Sutter 2007). However, group discussion amplified loss aversion, i.e. the dependence of risk preference on the reference point (McGuire, Kiesler et al. 1987), and led to escalating commitments (Whyte 1993). Yet this effect can be mediated by social and cultural norms, and also by the salience of the new information in group discussions (Paese, Bieser et al. 1993).

Individuals and groups violate expected utility theory in pretty much the same way when comparing two lotteries that both have the same expected value: a riskier one with a higher gain in the event of success, and a less risky one that, however, also yields a smaller amount of money if the subject wins. If the probability of winning on the safer bet is high, individuals and groups prefer this one. They prefer the riskier one otherwise. Group interaction does not make individuals more consistent with expected utility theory (Bone, Hey et al. 1999).

Like individuals, groups tend to reverse preferences in risky tasks. They tended to choose to play more conservative (low variance) gambles, but to set higher selling prices for riskier (high variance) gambles, despite the bets having equal expected values. Their choices depended on how the task was presented to them. This effect was more pronounced in groups (Mowen and Gentry 1980). However, in a later study, group discussion weakened the effect. The moderation was due to the fact that some choices were easier to justify (Irwin and Davis 1995).

Groups are not spared from the hindsight bias. They do slightly better in that it is more likely that at least one of the group members recalls the initial assessment correctly and influences the group. The advantage goes away, however, if one controls for decision time (Stahlberg, Eller et al. 1995). Groups also exhibit overoptimism (Jourden and Heath 1996). Being a member of a group buffers individuals from later deception (Heath and Jourden 1997). Also "groupthink" (Janis 1972) matters. Pessimism is interpreted as disloyalty. Those who show pessimism risk being shunned (Kahneman and Lovallo 1993).

An initial study showed that groups privilege individuating over base rate information even more strongly than individuals (Argote and Seabright 1986). However, in a later study, the effect was shown to be moderated by the degree of typicality in individuating information. Groups amplified base rate neglect only with patently typical information (Argote, Devadas et al. 1990).

In Western societies, individuals have a strong tendency to attribute behaviour to personality, rather than to situational factors (Nisbett, Peng et al. 2001). This tendency is attenuated if judgement is shifted to groups (Wright and Wells 1985; Wittenbaum and Stasser 1995).

Groups are not immune, but less liable than individuals to overconfidence (Sniezek and Henry 1989; Plous 1995). In defining an aspiration level, groups do not significantly differ from individuals. In one study, the goal was defined with respect to the perceived probability of success, and with respect to its attractiveness. A more difficult goal was more attractive than an easier one. The group raised the aspiration level if it had been successful, and it lowered it after failure. Goals tended to be slightly above the previous level of performance (Zander and Medow 1963).

## **2. Performance**

For a long time, social psychologists have been comparing individuals and groups on a multiplicity of tasks (for surveys, see Lorge, Fox et al. 1958; Davis 1969a; Hackman and Morris 1975; Hill 1982; McGrath 1984; Parks and Sanna 1999). This literature is so rich that, in this survey, only the dimensions along which experimenters have varied the research question can be listed.

A first line of research compared individuals to differently composed groups (Schoner, Rose et al. 1974; Kanekar and Neelakantan 1976; Hill 1982), including differences of group members in initial ability (Goldman 1965; Laughlin and Johnson 1966; Laughlin, Branch et al. 1969; Laughlin and Branch 1972; Laughlin and Bitz 1975).

A second line of research varied the opportunity structure, giving individuals and groups more or less time (Fox and Lorge 1962), or incentivising them with rewards or fines (Sampson 1963).

Most research, however, varied the character of the task. This work is often based on the taxonomy developed by Steiner (Steiner 1972). He distinguishes tasks along three dimensions: are they divisible or unitary, maximising or optimising, and how are individual resources linked to group productivity? In a disjunctive task, the group must select the contribution by a single member (Laughlin and Bitz 1975). In a conjunctive task, the group is only as good as the least capable member. In an additive task, contributions add up. In a complementary task, labour must be divided appropriately (Laughlin and Johnson 1966; Laughlin, Branch et al. 1969). Finally in discretionary tasks, the group enjoys some liberty in how to combine individual contributions.

Experimenters have looked at how groups process information (Thorndike 1938; Chalos and Pickard 1985; Stasser and Titus 1985; Stasser, Taylor et al. 1989; Parks 1996; Hinsz, Tindale et al. 1997), how they search (Moore and Anderson 1954), how they learn (Wegner 1956; Lorge, Fox et al. 1958:348-352; Laughlin and Jaccard 1975; Laughlin and Adamopoulos 1980; Maciejovsky and Budescu 2007) and how they memorize (Lorge, Fox et al. 1958:357 f.; Hoppe 1962; Vollrath, Sheppard et al. 1989; Pemberton, Insko et al. 1996).

This has led to a host of findings that compare individual and group accuracy (for a summary see Hastie 1986; Sniezek and Henry 1989): starting from learning nonsense syllables (Ryack 1965), free-recall verbal learning (Lorge and Solomon 1962), and matching letters to numbers (Laughlin, Bonner et al. 2002), to more complex tasks like the Wason selection task (Maciejovsky and Budescu 2007), solving mathematical problems (Laughlin and Ellis 1986), intellectual puzzles (Shaw 1932) and telling truth from error (Laughlin, VanderStoep et al. 1991).

A very old line of research compares individuals and groups on judgement tasks (for a summary of early work see Lorge, Fox et al. 1958:343-348; Barnlund 1959; Kogan and Wallach 1966; Howell, Gettys et al. 1970; Gustafson, Shukla et al. 1973; Einhorn, Hogarth et al. 1977), including the attainment of concepts (Laughlin, McGlynn et al. 1968). Further studies explicitly ask individuals and groups to make choices (Miner 1984; Lombardelli, Talbot et al. 2002; Blinder and Morgan 2005). When given a choice, subjects prefer to decide in groups. If they do, they are more successful, and more content (Kocher, Strauss et al. 2006).

In problem solving, the task goes beyond selecting between predefined alternatives. Subjects have to go through the entire decision cycle. They in particular have to construct the task. They must operationalise goals, and they must define solutions, rather than just pick one (Engel and Weber 2006). Again, there is a fairly rich literature that compares individuals and groups on such tasks, with mixed results (for a summary of the old literature see Lorge, Fox et al. 1958:353-357; Faust 1959; Fox and Lorge 1962; Restle and Davis 1962; Campbell 1968; Davis 1969b; Rotter and Portugal 1969; Maier 1970; Laughlin and Sweeney 1977; Smith 1989; Prather and Middleton 2002).

Initially, researchers had high hopes in the brainstorming power of groups (Osborn 1953). Experimental tests were, however, largely disappointing. In most experiments, brainstorming groups produced fewer ideas than their members if each of them tried to solve the problem on its own (for reviews see Lamm and Trommsdorff 1973; Diehl and Stroebe 1987). This is due to production blocking: only one member can have an influence on group outcome at a time (Nijstad 2000); fear for losing face (Comacho and Paulus 1995); the emergence of social norms (Paulus and Dzindolet 1993) and free-riding on other's mental effort (Paulus and Dzindolet 1993). Nonetheless, groups are not necessarily less creative than individuals (for reviews see Paulus and Nijstad 2003; Brophy 2006). They outperform individuals if the task requires collaborative mental effort (Mumford, Feldman et al. 2001).

### **3. Risk Preferences**

Initially, comparisons between individuals and groups seemed to show that groups are consistently more risk prone (for a review see Vinokur 1971b; Zaleska 1976). However, at closer sight, instead of a "risky shift", experimenters sometimes found a "cautious shift" (for a review see Cartwright 1971; Fraser, Gouge et al. 1971). Recently, experimental economists have also become interested. They have found that individuals holding constant absolute risk aversion become risk neutral maximisers of expected utility if deciding collectively (Bone 1998). Another study does not find a shift towards expected utility. But when deciding collectively, subjects make more profit since they come closer to the norms of portfolio selection theory (Rockenbach, Sadrieh et al. 2007). A study on clubs betting on ice break-ups in Alaska supports this view. It finds that group decisions moderate individual behaviour, make it more consistent, and more sensitive to historical data (Adams and Ferreira 2003). However, investment clubs have been shown to perform less well than individual investors (Barber and Odean 2000).

The underlying mechanism is complicated (Clark 1971). It is not due to leadership of particularly risk prone members (Hoyt and Stoner 1968). The aggregation of information within the group matters (Vinokur 1971a), as does group homogeneity (Crott, Zuber et al. 1986), the impact on members' affects (Vinokur 1971b), group norms (Brown 1965), framing (Paese, Bieser et al. 1993), reference points (McGuire, Kiesler et al. 1987), the tendency to perceive a "false consensus" (Ross, Greene et al. 1977), and the way how interaction within the group is organised: is there open discussion (Zaleska 1974)? Is there an (informal) leader (Brown 1965)? Is individual responsibility for group outcomes clearly established (Wallach, Kogan et al. 1964)?

Most importantly, in the generation of the group's risk attitude, polarisation takes place (Doise 1969; Moscovici and Zavalloni 1969; Myers and Lamm 1976; Isenberg 1986). The group is more radical than the aggregation of individual attitudes supports. Recently, economists (Cason and Mui 1997; Luhan, Kocher et al. 2007) and lawyers have also become interested in the phenomenon (Sunstein 2002). For the explanation of the phenomenon, two hypotheses compete. In order to preserve self-esteem and influence within the group, group members compare their behaviour to the behaviour of other group members (Brown 1965). Alternatively, group discussion

asymmetrically exposes members to persuasive arguments in favour of either caution or risk taking (Burnstein and Vinokur 1973).

#### **4. Cooperation**

The most prominent contribution of experimental economics to group research has been testing groups on standard games. In the dictator game, in one study groups were more selfish than individuals (Luhan, Kocher et al. 2007). However, in another study, the most other-regarding member of the group won the day (Cason and Mui 1997). In the ultimatum game, groups offered less than individuals (Robert and Carnevale 1997). But they were also willing to accept less than individuals (Bornstein and Yaniv 1998). This held irrespective of the internal rules for making decisions (Messick, Moore et al. 1997). Also in signalling games, groups played more strategically than individuals. They were more successful, and they learned more effectively (Cooper and Kagel 2005). Likewise in a gift exchange game. The rationalising effect of group decision was robust to changes in the internal procedure for making decisions (Kocher and Sutter 2007). In a trust game, groups were less trusting than individuals, but just as trustworthy (Bornstein, Sutter et al. 2007) (also see on the relationship between interpersonal and interorganisational trust Zaheer, McEvily et al. 1998). However, an earlier study on the trust game had found little difference between individuals and groups (Cox 2002) (see also Insko and Schopler 1998). In a power to take game, groups took and destroyed about the same as individuals (Bosman, Hennig-Schmidt et al. 2006).

When playing a one shot prisoner's dilemma, groups were less cooperative than individuals (for a summary of the evidence see Schopler and Insko 1992; Lodewijckx, Wildschut et al. 1999; Schopler and Insko 1999; Bornstein 2003). If given a choice, groups were more likely to use threats, rather than promises, to bring cooperation of their competitors about (Lindskold, McElwain et al. 1977). The effect even remained stable if a dilemma game alternated with a bargaining game (Morgan and Tindale 2002), where groups were more effective than individuals (Polzer 1996). Likewise, in a common pool dilemma, although groups were less myopic than individuals, they were more competitive and therefore less efficient (Gillet, Schram et al. 2007).

However, if higher group contribution meant higher group payoff, groups were fairly good at bringing this level of intergroup cooperation about, even if this meant that individual group members had to make costly contributions (Bornstein 1992). When internal coordination was a precondition for success in intergroup competition, groups were very effective in bringing this about (Bornstein, Gneezy et al. 2002). Intergroup competition improved intragroup cooperation (Bornstein, Erev et al. 1990; Bornstein and Erev 1994). The effect was particularly strong if groups were allowed to communicate internally before acting (Bornstein and Rapoport 1988). This also worked with large groups. If two groups of unequal size competed, the effect was stronger on the larger group (Rapoport and Bornstein 1989).



Group cooperation remained stable in repeated interaction if communication was permitted (Bornstein, Erev et al. 1994); cooperation eroded otherwise (Bornstein, Winter et al. 1996). In repeated interaction, in one study groups cooperated more effectively than individuals (Pylyshyn, Agnew et al. 1966). Individual group members contributed significantly more if they could have defected individually, but if this would have reduced group success in an intergroup prisoner's dilemma game (Erev, Bornstein et al. 1993; Bornstein and Ben-Yossef 1994). The dilemma was overcome by reciprocity (Goren 2001).

However, in a centipede game, groups exited significantly earlier than individuals (Bornstein, Kugler et al. 2004). And groups were less effective in bringing tacit collusion about in a repeated Bertrand game (Bornstein, Budescu et al. 2007). They converged faster to the competitive solution than individuals (Bornstein and Gneezy 2002). However, in a repeated Cournot game, i.e. when teams compete in quantity, there is no difference between individuals and groups (Morrison and Kamarei 1990; Raab and Schipper 2004) (which is not so surprising since, in Cournot games, the Nash equilibrium is a good predictor for individuals as well, (Engel 2007)).

In a chicken game, groups were more aggressive than individuals (Bornstein, Budescu et al. 1997). However, in a game of assurance, they reached the effective result. Groups were thus able to overcome the urge to compete for fear, but not for greed (Bornstein and Gilula 2003). In a beauty contest game, teams were more effective than individuals since they learned faster (Kocher and Sutter 2005). Specifically, teams of four outperformed not only individuals, but also teams of two (Sutter 2005). In common value auctions, groups suffered from the winner's curse at least as much as individuals. They did even worse if they had access to a lot of information about the auctioned item (Cox and Hayne 2006). Likewise, in an ascending sealed-bid English auction, groups stayed longer and paid significantly higher prices than individuals (Sutter, Kocher et al. 2005).

The greater competitiveness of groups rests on a combination of fear and greed (Insko, Schopler et al. 1990; Schopler, Insko et al. 1993; Wildschut, Pinter et al. 2003). Fear results from the fact that there is greater distrust in intergroup relations, compared to interpersonal relations (Insko, Kirchner et al. 2005). Greed results from the fact that there is more social support in groups (Wildschut, Insko et al. 2002), and that individual contributions to group decisions are not identifiable by members of the outside group (Schopler, Insko et al. 1995).

## **5. Group Decisionmaking As a Political Process**

All of the previous has looked at group behaviour from an individualistic perspective. This perspective can be supplemented by acknowledging that group decisionmaking is a political process (March 1962; Shapira 1993:92; Miller 1998). In this process, communication matters (Simon 1997:208-249). It increases risk taking (Wallach and Kogan 1965), competitiveness (Wildschut, Pinter et al. 2003) and makes groups more aggressive in a prisoner's dilemma (Goren and Bornstein 2000). While the mere reading of alternative arguments has hardly any influence on indi-

vidual decision making, group discussion has (Bishop and Myers 1974). Persuasive argumentation increases polarisation (Burnstein and Vinokur 1977; Fitzpatrick 1989). In buying stocks, compared to individuals, investment clubs are much more influenced by what sounds like a good reason, although such stocks do not, on average, perform better (Barber, Heath et al. 2003). The reported performance of other group members becomes a benchmark and makes group members more risk prone (Payne, Laughhunn et al. 1981). Interestingly, however, if an outsider listens to a group discussion, this produces pretty much the same risky shift as in group members (Lamm 1967).

In the sociological literature on organisations, the claim is centre stage that reality is constructed (Daft and Weick 1984; Meindl, Stubbart et al. 1994; Lant and Shapira 2001; March 2001), and that organisations are institutions for making sense out of an overly complex, uncertain and ambiguous environment (Weick 1995; Meindl and Stubbart 1996). This leads to progressive uniformity (Sutcliffe and Huber 1998), "organisational languages" (Wernerfelt 2004), causal maps that change over time (Barr, Stimpert et al. 1992; Barr 1998). Ultimately, organizations risk becoming tools that look out for problems, not the other way round (Cohen, March et al. 1972).

For instance, managers follow fads and fashion (Abrahamson 1996; Kieser 1997). That way "exciting" industries get more and better loans from banks (McNamara and Bromiley 1997). If, in this discourse, a socially relevant risk is coded as an opportunity for learning, organisational decision-makers are much less cautious than if it is constructed as a threat. Past bad experiences have a stronger effect on future organisational decisions if, in organisational memory, risky hazards are stored as graphic narratives (Tamuz 2001). The disaster of the space shuttle Challenger provides an illustration of the effects. NASA had successfully managed so many space missions, it had proven so many internal and external sceptics to be wrong, that the faulty belief could emerge some of the safety precautions would no longer be necessary (Starbuck and Milliken 1988a).

In an organisation, members and subdivisions do not necessarily have the same or complementary interests (Jehn and Bendersky 2005). The ensuing conflict may be productive, for instance by making the group more creative (Nemeth and Nemeth-Brown 2003). However, it may also result in outcomes that are pernicious for the group as a whole. Again, the challenger disaster provides an illustration. Managers expected engineers to be overly cautious. Engineers expected managers to trim costs and to push capacity to limit. Initially they responded by making safety factors even larger. Eventually, managers lost any feeling for the real dimension of risk (Starbuck and Milliken 1988a).

Within organisations, members fight for power, and they exercise their power over other members (Pfeffer 1981). In a study on bank lending practice, organisational pressure to generate loan volume and thus to meet profit goals was by far the strongest explanatory factor. Specifically it was much stronger than the risky shift, resulting from group cognition, that has been reported above (McNamara and Bromiley 1997). The choice of punishing technologies has been shown to be critical for bringing group cooperation about. It is highest if at least two other members must

agree before a member is punished for shirking (Casari and Luini 2005). Apparently, group members care about perceived procedural justice (cf. Tyler 1990).

## **V. Adding Structure**

Corporate actors differ from mere collective actors in that they have structure. Often, structure also makes them more long-lived. In the simple most case, this structure is exclusively horizontal (1). More complex corporate actors usually also have elements of vertical structure (2). Through their permanence, corporate actors have a chance to impact on how members define their identity (3).

### **1. Horizontal Structure**

Corporate actors have explicit rules for accepting new members. They can exploit these rules to select members with desired personality traits. For instance the life insurer Met Life made a point out of hiring people for their sales force that had an optimistic bias (Seligman 1990). Likewise, corporate actors fail if they do not succeed in selecting out group members with inappropriate traits (Felps, Mitchell et al. 2006). Conversely, the threat of expulsion is a powerful technology for bringing internal cooperation about (Cinyabuguma, Page et al. 2005). High group performance does not necessarily result from homogeneity. In a garment plant, workers were given an opportunity to shift from individual to group payment. Voluntarily formed, heterogeneous groups were most successful (Hamilton, Nickerson et al. 2003).

Corporate actors have explicit rules for aggregating their members' views and wishes into collective choice. Different rules produce different group choices (for a review see Kerr, MacCoun et al. 1996). If the group strives for consensus, this aggravates the individual biases in risk assessment resulting from representativeness (Argote, Devadas et al. 1990). If members exchange information on evidence, a majority rule improves accuracy more than if members exchange hypotheses (Laughlin 1988). If group members are presented with easily interpretable, symmetrically informative signals, the majority rule works as a tool for debiasing. The majority rule loses its advantage for accuracy, however, if members receive asymmetrically informative signals (Bottom, Ladha et al. 2002). If pre-decision deliberation is not permitted, both with majority and with unanimity, there is more strategic voting, meaning that group members do not correctly reveal signals they have received in private. If the group is larger, there are less false group decisions in the treatment without deliberation. If deliberation is permitted, this increases the amount of strategic voting under the majority rule (Guarnaschelli, McKelvey et al. 2000).

Straw polls may bias group decisions. This for instance happened in a jury like situation when early on the provisional overall assessment was asked for. When a considerable number of members had consistently voted for one verdict, later voters were likely to swing. The effect was

stronger if the initial row of voters had pleaded non-guilty. This reflected the fact that convicting an innocent is seen as the much graver mistake (Davis, Stasson et al. 1988).

In cognitive tasks, groups are more effective if, internally, they are not allowed to interact freely. One superior technique is "nominal group technique". In the first phase, members independently and silently generate their ideas in writing. Subsequently, each member presents exactly one idea to the group, one speaking after the other. Eventually, members independently rank the ideas. Another superior technique is the Delphi method. All interaction is in writing. In the first phase, members independently respond to a questionnaire. From these responses, a feedback report is generated. Members independently react to this report in writing (van den Ven and Delbecq 1974; Surowiecki 2004).

If the aggregation rule is not exogenously given, in a power to take game, both the take authorities and the responders tend to settle down on simple majority. Take authorities alternatively average take rates proposed by group members. In deciding how to act, groups consistently perceive the opponent group as a single actor. They thus ignore the internal process of taking a decision in their opponent (Bosman, Hennig-Schmidt et al. 2006). If the group has to muster a sufficient amount of contributions from its members to successfully act externally, the likelihood of this happening significantly increases if irrevocable individual contributions are made sequentially, rather than simultaneously (Goren, Kurzban et al. 2003).

In any group of more than two, there is room for the formation of subgroups and coalitions (for a review see Goodman, Ravlin et al. 1987). In a cognitive task, the predetermined majority and minority influenced each other by the exchange of evidence; there was no influence by the exchange of hypotheses; the majority had more influence on the minority than the other way round (Laughlin 1988). In another cognitive task, being exposed to alternative minority views improved accuracy (Nemeth and Kwan 1987). However, intragroup competition for funds increases overconfidence in corporate actors. For internally only projects can win that are believed to be highly likely to be successful (Kahneman and Lovallo 1993). There is also the danger of "corporate socialism". Capital is allocated evenly to divisions, rather than according to the expected contribution to group success (Scharfstein and Stein 2000). In direct analogy to governmental politics, there are social movements within corporate actors, engaging in coup d'état, insurgency and mass movements (Zald and Berger 1978).

## **2. Vertical Structure**

Corporate actors with a purely horizontal structure are relatively rare. Small partnerships are the best illustration. Usually, some of the structure is vertical. There is some form of hierarchy. Employees depend on employers. Managers depend on boards and shareholders. Due to a contract, agents have to act on behalf of principals.

The psychology of principle-agent relations is still relatively tentative. It is being speculated that the main concern of agents is not being held liable (Shapira 1993); this might be backed by the general research on accountability (for overviews see Tetlock, Skitka et al. 1989; Lerner and Tetlock 1994; Lerner and Tetlock 1999). The effect might be aggravated by the fact that most organisational reward systems punish failure much more than they reward success (Shapira 1995). This might lead to increased loss aversion (Kahneman and Lovallo 1993), to a strategy of uncertainty avoidance (Cyert and March 1992:167), to narrow framing, such that managers can present success stories at every next reporting date (Kahneman and Lovallo 1993), and ultimately even to outright cheating (Harris and Bromiley 2007). The effect might even be strategically exploited by managers. They could first induce overconfidence, expecting that loss aversion would later induce agents to work hard so that they do not fall below their previous commitments (Kahneman and Lovallo 1993).

Cognitive mechanisms aiming at preserving self-esteem do also play a role. Managers take credit for good outcomes (Starbuck and Milliken 1988a) and lay blame on the environment for bad outcomes (Clapham and Schwenk 1991). In an attempt at reducing cognitive dissonance (Festinger 1957), they hold on to initial risky choices (Staw 1981), they resist the replacement of previous by superior accounting rules (Jermias 2001), and they reconstruct reality. That way, they tend to define away dangers for society (Tamuz 2001). They find excuses, rather than intervening to the detriment of employees they have hired, and for whose action they are responsible (Langevoort 2002a:87). Ultimately, this can lead to "ethical plasticity". "They convincingly appear as highly loyal team players because — via the magic of self deception — that is how they see themselves. But they find ready excuses to shift loyalties, without guilt, as the local competitive conditions change" (Langevoort 2002b:970).

The effects of team structure on performance depend on further variables. Hierarchical teams of one leader and three subordinates were better at generating new knowledge if they knew each other well, if team membership was stable, and if the team had time to gain experience (Hollenbeck, Ilgen et al. 1995). It crucially depends on team leaders whether the team makes appropriate use of information that is only held by single group members (Larson, Christensen et al. 1998).

There is also some data on the psychology of principals. When a principal has to generate a single estimate from conflicting evidence agents have reported, principals have a cautious bias. From the same list of numbers they tend to privilege the higher one if the task is predicting cost, and they tend to privilege the lower one if the task is predicting sales (Cyert and March 1992:80-85). If the principal is aware of a tendency, in different agents, to bias reports, she quickly learns to compensate for the bias, so that her ultimate assessment is unbiased (Cyert and March 1992:85-92). However, superiors overrate their ability to detect cheating agents (DePaulo, DePaulo et al. 1989; Ekman and O'Sullivan 1991). A powerful CEO is not a good recipe for corporate success. In such corporations, stock returns are more variable (Adams, Almeida et al. 2005).

### 3. Identity

If the narrow incentive view of principal-agent models were a true description of corporate reality, most corporations would be doomed to failure. There is a high premium for firms that are able to induce non-self-interested internal cooperation (Miller 1998). The most important tool to bring this about is the formation of corporate identity (Akerlof and Kranton 2005). A good illustration is Henry Ford's five dollar day. At a time when this was outrageously more than any worker earned in the car industry, Henry Ford created a long-term commitment to a system of political authority. For Ford workers, the labour market no longer mattered (Miller 1998:11).

In line with this, members of college fraternities have been more willing to cooperate with members of their fraternity in a prisoner's dilemma (Kollock 1998). If social identity was made salient, experimental subjects harvested less from a common pool resource (Kramer and Brewer 1984). However, making group identity salient was counterproductive if the good was framed as a public good, and if the group was large. Since group members felt that their own contribution was negligible anyhow, they became greedy (Brewer and Kramer 1986). Also, the effect is weaker the more attractive the outside options (Berninghaus, González et al. 2004). The willingness to engage in costly altruistic punishment is much higher if the victim is a member of the group that defines the identity of the punisher. The effect has been shown in tribal Papua New Guinea (Bernhard, Fehr et al. 2006) and in the Swiss army alike (Goette, Huffman et al. 2006). The causal arrow may even be reversed. Not only does a sense of identity induce members to cooperate more. If subjects are continuously exposed to a social dilemma, this also creates an identity (van Dijk, Sonnemans et al. 2002; Sonnemans, van Dijk et al. 2006).

Organisations do not only have formal structure. Over time, its members also assume roles, which adds informal structure to the organisation. Roles do not fully determine behaviour, but they influence how organisation members see the task at hand (Simon 1997:24 f.). For instance, when presented with the rich narrative of an artificial business case, executives had a strong tendency to see the central problem in their own area of expertise (Simon 1997:299 f.). With fixed roles, internal coordination is smoothed by tacit routines (Rick, Weber et al. 2006). In coordination-intense groups, leaders emerge, even without explicit institutional intervention, and even if group members are not allowed to talk (Guastello and Bond 2007). If leaders are highly typical for the in-group, they are strongly endorsed irrespective of their distributional fairness. Leaders who are less prototypical must compensate by stronger distributional fairness for being equally endorsed (Platow and van Knippenberg 2001).

## **VI. Conclusion**

Looking back to the picture this review has portrayed of the current knowledge on the behaviour of corporate actors, one is reminded of a pointillist painting. There are still many white patches. One needs imagination to interpret the existing information, and to put it into perspective. Yet from a sufficiently large distance, the overall shape is visible. Both theory and more empirical research will be needed to transform this into one of the works from hyperrealism that are so popular in today's art circles.

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