Towards a rule-based theory of the firm – hierarchy as a by-product.

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Aidan Walsh

EY

Aidan.walsh@ie.ey.com

Abstract: Rule-following is central to decision-making (Kahneman, 2011; Gigerenzer & Gaissmaier, 2011) and coordination (Heiner, 1983; Hayek, 1973). However, the firm as an order created wholly by rule-following seems inconsistent with the most visible feature of the firm: hierarchy (Coase, 1988; Williamson, 2009). The purpose of this paper is to propose that hierarchy is not inconsistent with an order organised solely by rule-following.

The firm becomes an order created by individuals voluntarily coming together to follow common rules; hierarchy naturally flows from an individual's commitment to learn the rules from a more experienced or knowledgeable person in the firm or to follow the rules of a person more likely to know the rules applicable to the situation.

An entirely rules based theory of the firm would allow us to solve many elements of the business firm that are persistent puzzles to the conventional theories – such as 'Barnard's paradox' on the ineffectiveness of 'orders' (Barnard, 1938, p. 162) but yet the coordinated actions of individuals working with their unique knowledge as events unfold in ways that are unforeseen by their superiors within the firm. The paper uses a number of examples from business to illustrate its points.

Towards a rule-based theory of the firm – hierarchy as a by-product.

In his Nobel Prize Lecture, Oliver Williamson (Williamson, 2009) set out the core of his understanding of the firm; he made a key distinction between the market and the internal workings of the firm:

> '*Adaptations*. Both the organization theorist Chester Barnard and the economist Friedrich Hayek took adaptation to be the main purpose of economic organization, but with differences. Finding little in the social sciences that informed the study of internal organization (hierarchy) as he had experienced it, Barnard undertook to craft the relevant concepts himself in his path breaking book, *The Functions of the Executive* (1938), where he focused on *coordinated adaptation* as accomplished in a "conscious, deliberate, purposeful" way through the use of administration (Barnard, 1938, chap.1). Hayek, by contrast, celebrated the "marvel of the market" (Hayek, 1945, p. 527) where *autonomous adaptations* are implemented spontaneously in response to changes in relative prices.
>
> The challenge for the economics of governance was to recognize that adaptations of both kinds are important and to make selective provision for each. Rather, therefore, than be trapped in the old ideological divide between markets *or* hierarchies, transaction cost economics treats the two as alternative modes of governance, markets *and* hierarchies, both of which have distinctive roles to play in a well-working economy. The heretofore maligned mode of hierarchy is now awarded co-equal status with the marvel of the market, the object being to deploy each appropriately' (Williamson, 2009).

The purpose of this paper is to pick apart this understanding of the firm and to try to demonstrate that this distinction between markets and firms is not so clear-cut and, in particular, that hierarchy even though it is such a visible feature of every firm is not its defining characteristic but merely a by-product.

Rules as a micro-foundation for organization structure.

Rules have long been recognised as a mechanism for coordinating human action[1]. Hume vividly describes the use of simple rules to coordinate behaviour on the streets of eighteenth century Britain. He wrote, 'We may only learn from the necessity of rules, wherever men have intercourse with each other' (Hume, 1751, p. 38):

> That the lighter machine yield to the heavier, and, in machines of the same kind, that the empty yield to the loaded; this rule is founded on convenience. That those who are going to the capital take place of those who are coming from it; this seems to be founded on some idea of dignity of the great city, and of the preference of the future to the past. From like reasons, among foot-walkers, the right-hand entitles a man to the wall, and prevents jostling, which peaceable people find very disagreeable and inconvenient. (See modern confirmations of Hume's insight: (Moussaid, Helbing, & Theraulaz, 2011; Kretz, Grunebohm, Kaufman, Mazur, & Schreckenberg, 2006))

Rules are also not a new concept in organization theory. In the early days of the field, rules were introduced as an organizational mainstay in Weber's theory of bureaucracy (Weber, 1968, p. 956). Rules are central to the later writings of Hayek (Hayek F. A., 1973; Heiner, 1983), modern work on

[1] Becker (Becker, 2004) suggests a generic format for a rule: if {condition X}, then {do A}. This can be reduced to: if X, do A; or, in the negative sense: if X, B is forbidden. This rule construct contains two distinct parts: a judgement (if X) and an action (do A). The first part of the rule requires the decision maker to assess the situation: that the situation is indeed represented by X_0 and not X_1, X_2 etc. This sets the correct context for the decision. The second part of the rule requires the decision maker to do something, given that specific context.

decision-making (Gigerenzer & Gaissmaier, 2011; Gigerenzer, 2007), Follett's (Follett, 1941) and other's descriptions of intra-firm decision-making and coordination have also relied on rule articulation and rule-following (Ioannides, 2003b; Langlois, 1995; Kline & Martin, 1958; Zhou, 1997; Schlicht, 2008; Barnard, 1938, p. 276) and (Bingham & Eisenhardt, 2011; Ioannides, 2003a; Eisenhardt & Sull, 2001).

Summarising these writings, Kurt Dopfer wrote: 'Tool production, tool usage, language creation, language use and related activities of homo sampiens have a common denominator in that they rely on rules. Homo sapiens can thus be viewed more generally as a rule-making and rule-using animal' (Dopfer, 2004). Dopfer, looking at the market-level, argued that 'organizational rules refer to the coordination of market behaviours.' But that rules also applied within the firm and 'in this perspective, the firm is a complex nexus of organizational rules, which vary in their ability to coordinate the behaviour of its agents and to allocate its resources' (Dopfer, 2004).

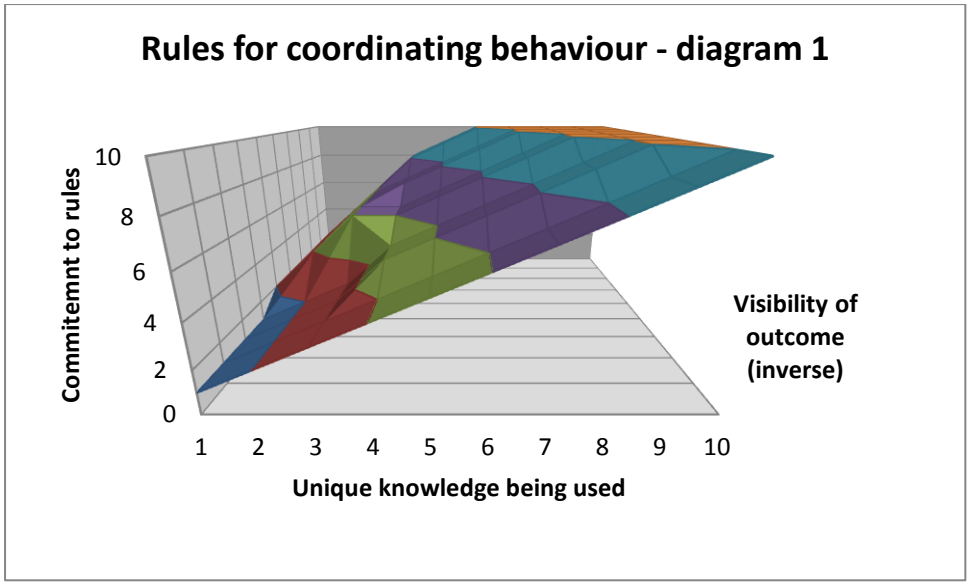
Coordination and Decision-making in an uncertain environment – the range of possible decisions.

As Witt has argued, business unfolds in an unknown future solving problems one at a time: '[The entrepreneur has no] formal blueprint for financing, investing, hiring, assigning tasks, producing, purchasing and marketing as it is in business strategies and formal planning discussed in the management literature….[A]llowing for, and relying on, decentralized problem-solving capabilities of the firm members in a potentially growing firm organization, a business conception must be sufficiently general and unspecific… It must be able to codevelop with the unfolding business venture in order to cope with its uncertainties and the initial lack of experience. The outcome of learning and

the discovery of unforeseen problems and their solutions can, and often do, mean rearrangement or even entire reconceptualization of the underlying notions…' (Witt, 2000, 740)

We can map this process with a three dimensional diagram. The first of the three dimensions is the unique knowledge of the individual carrying on the action. The more the individual has unique knowledge of his or her specialism, of circumstances or people, the more that decisions have to be left to that person. The second dimension is the degree of commitment of the person to coordinating their behaviour with others and 'doing the right thing' (we will return to this phrase further below). The third dimension is foreseeability or visibility of the outcome. Many events, as we will see in the examples below, are foreseeable but in many cases it is not clear how events will unfold (as Witt points out above) and so the final outcome is not predictable.

We can represent the three dimensions as follows (diagram 1) (representing the visibility of outcome inversely – that is, the more visible the outcome the more to the left of the diagram) using notional scales of 10:

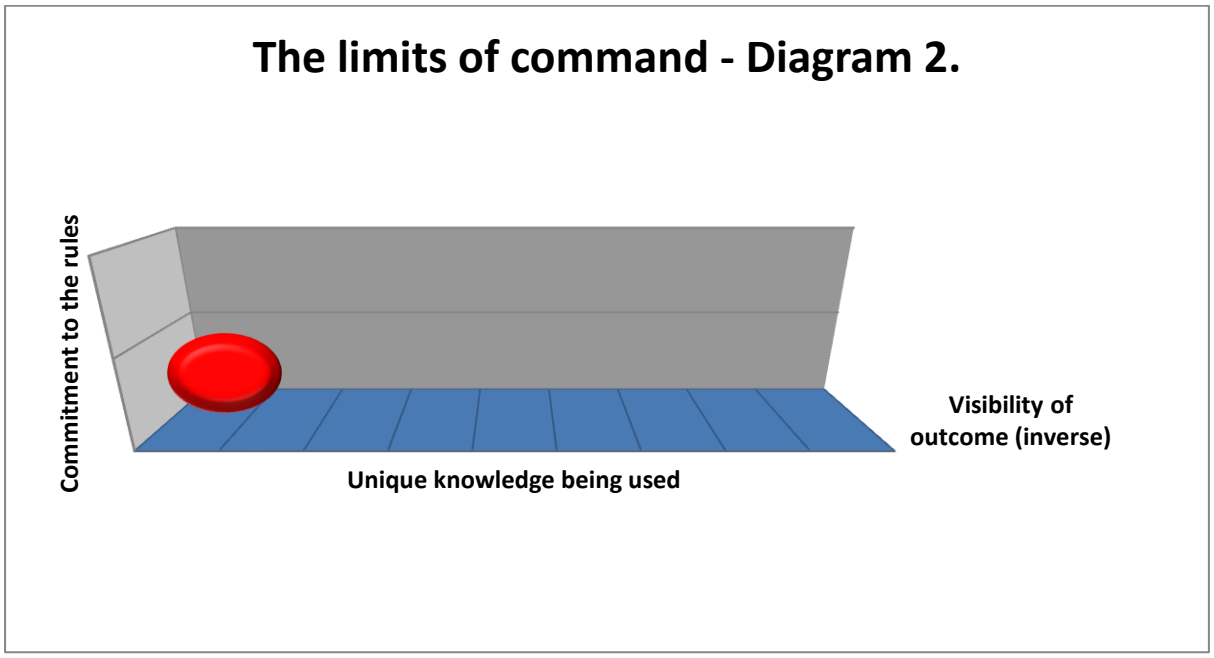


The scale here is 1 to 10 but in fact coordination through rule-following allows for coordination in an infinite number of unforeseen events with individuals using a potential infinite amount of information.

If we accept Witt's analysis we can see the fundamental challenge for traditional views of hierarchical decision-making with the firm. Hayek contrasts a command with a rule: 'a rule refers to an unknown number of persons, and merely states certain attributes which any such action ought to possess' (Hayek F. , 1976, p. 14). According to Hayek a command 'aims at a particular result or particular foreseen results, and together with the particular circumstances known to him who issues or receives the command will determine a particular action' (Hayek F. , 1976, p. 14); a command must not be in accordance with the rules, otherwise the 'command' is merely rule articulation.

With a command, the range of possible actions is smaller. On this diagram (diagram 2, below) we show a large blob of potential actions, as the reality is never clear-cut and individuals will always act and be expected to act with some degree of autonomy and be allowed some degree of drift in the outcome. But in fact, if we thought about it strictly, we would realise that a command aiming at a particular foreseen result would require no use of the personal knowledge of the commanded and no

commitment on their part to use their own discretion would be a single point on an infinite sized space of potential actions.



Turning hierarchy on its head – the importance of commitment.

Chester Barnard also dealt with rules, including unwritten rules; this is reflected in his emphasis on consistency (Barnard, 1938, p. 276). This may also be reflected in what we can call Barnard's paradox: 'It is surprising how much that in theory is authoritative, in the best of organizations lacks authority – or, in plain language, how generally orders are disobeyed' (Barnard, 1938, pp. 162, 163). How can there be coordination when orders are disobeyed, when '…obvious disobedience [is] carefully disregarded' (p. 162)?

If this is the case, what power do managers in a hierarchy have?

The Australian social psychologist, John Turner argued that the conventional theory of power may not be correct; that power, instead, can be understood as quite different processes that are often confused and 'confounded' (Turner, 2005). Turner divided power into three different processes: persuasion, authority and coercion. 'Authority' Turner argued is the power to control 'ingroup members because they are persuaded that it is right for a certain person to control them in certain matters…. a person, role or group has the right to prescribe appropriate beliefs, attitudes or behaviour in certain areas… Authority is not direct persuasion but groups confer authority to in order to get things done right. This acceptance of leader authority carries a presumption the leader is likely to be right about the matter in hand and can lead to validation and internalization of the leader's view under certain conditions.' In other words, you do it not because you were told to do it but because of your commitment to do the right thing and this other person knows the right thing to do.

Turner contrasted this with 'persuasion' which he defined as 'a collective attempt by a group to develop a consensual response to some stimulus situation… Thus a judgement is assumed to be informational, to provide evidence about reality, precisely to the degree that it has ingroup consensual support… the power to get people to believe that certain things are correct.' Finally, he dealt with coercion; it is according to Turner 'authority in a dark mirror …. Coercion is the power one uses when one does not have power…. Coercion is the weakest and least effective process of power…'

As with Mary Parker Follett, Turner's focus is not on the 'leader' but on the subordinate and the subordinate's commitment to doing things right. In Follett's phrase, 'The leader gets an order followed first, because men do really want to do things in the right way and he can show them that way, and secondly, because he too is obeying ['the law of the situation'; i.e. the rules]' (Follett, 1941, p. 276). This turns hierarchy on its head:

- ‘I may say to an employee, “Do so and so,” but I should say it only because we have both agreed, openly or tacitly, that that which I am ordering done is the best thing to be done. The order is then a symbol’ (Follett, 1941, p. 65).
- ‘The dispatch clerk can give “orders” even to the superintendent’ (Follett, 1941, p. 277).

This commitment point is underweighted in our understanding of firms as we tend to think of superiors in the firm holding resources that provide them with power over subordinates. In fact, as Turner says: ‘causality works in the exact opposite direction [to the conventional view]… it is power which enables people to gain and control resources’ (Turner, 2005). In other words, individuals are leaders within an organisation because they know the rules and subordinates defer to them for that reason, and not merely because they have control over resources (like, for example, pay, perks and bonuses etc).

Why is time not the critical factor?

It will have been noted that time has not been made a factor or a dimension in this three dimensional representation. Time is a factor in every human action, but when deciding to choose between using rules or other coordination mechanisms time should not be a factor. That is interesting because it is often taken that time and rule –following play against each other; where there is near-simultaneity between conception and performance, it is almost considered axiomatic that ‘command’ and tight control are most appropriate. For example, Foss and Klein write: ‘Authority also makes sense when there is a need for urgent coordination... for example, when it is important to make some urgent choice (possibly highly inefficient) because doing nothing is worse. In such case, it may be better to have someone pick a strategy and make everybody play this strategy... Moreover the decentralized solution performs poorly if urgency is important... consistent with the observed tendency to rely on centralized authority in the cases of emergencies’ (Foss & Klein, 2012, pp. 216, 217).

This is an important point as it is usually taken to be the case even where there is a sophisticated understanding of the division of knowledge within firms and the use of rules as a solution. So Anna Grandori writes that 'Listening to others is imperative, but residual authority to integrate all inputs and 'close' the process is granted to one responsible actor, if velocity is vital… a rational social heuristic...' (Grandori, 2015 (forthcoming)) .

We realise how wrong this common perception is when we think of a fire alarm. In our buildings we practice what to do when the fire alarm goes so that every individual knows what rules to follow in an emergency once a single piece of information is given ('If the fire alarm goes, then quickly make way towards exit ….'). A fire drill never consists of trying to discover the one responsible actor to integrate all inputs and then to close on a decision. But there can also be a hierarchy, we will defer to a fire-warden in our building or a fireman if they tell us to do something that contradicts the normal rules (like, 'take the lift'). But we do this not because we are the passive recipient of a command but because we understand that there is some piece of information that we do not know that means an exception to the general rule is now being applied.

What Foss, Klein and Grandori say so conventional that we hesitate to criticise it - but it is, as we will see, contradicted in theory and in practice.

The Power of Rules in action

We will now deal with a number of examples that should assist us in understanding these points.

Example 1: Towel exchange – the importance of understanding what the rules are.

This example takes as its starting point the towel exchange situation described in (Bapuji, Hora, & Saeed, 2012). This was a case study where a hotel, for cost and environmental reasons, wanted to encourage guests to reuse towels.

The problem:

The authors suggested that the towel exchange routine in this hotel, and indeed in many hotels, was not working well with most towels being exchanged and only a few towels reused. The authors theorised that one reason for the poor outcome was that the 'signal' for reuse was ambiguous.

The articulated rules designed to create a coordinated solution:

The authors set up an experiment whereby they altered the process that hotel guests used to signal they wished to reuse a towel; they installed two new artefacts – a wicker basket and a hook – in the hotel room along with a revised instruction card. Guests were asked to place towels they wished to be exchanged in the basket and towels they wished to reuse on the hook in the bathroom. The authors found that towel reuse increased by 30% and attributed this to the reduction in ambiguity due to the new signalling mechanism.

There were three parties that had to be coordinated: the guest, the housekeeping staff and the management of the hotel. All three had different motivations and different objectives. In particular the hotel guest had no extrinsic motivation to follow the rules – there was no direct benefit to him or her in putting a towel in one place or another. In fact, looking at it coldly from a perfectly rational basis, it made no sense for the guest to anything other than to drop to towel on the ground wherever they were when they were finished with it. But this underestimates the willingness of individuals to do what is right despite the lack of obvious incentives (Warren & Smith-Crowe, 2008); their inner commitment to following the rules.

While the authors in their paper laid emphasis on the role of new artefacts – the basket and the hook – as intermediaries between the housekeepers and the guests, it can be argued that this example was really about rule articulation; the artefacts can be seen as merely physical clues as to which rule to follow.

Prior to the experiment two rules existed for the guests: if you would like the towel exchanged, then place it in the bath; if you would like to reuse the towel, then place it on the towel rack. Two rules also existed for the housekeepers: if a towel is in the bath, then exchange it for a fresh towel; if a towel is on the towel rack, then leave it there for reuse by the guest. It is clear from the case that further rules existed for the housekeepers, for example: if the guest has checked out, then exchange all towels. Interestingly, the housekeepers themselves created a rule: if in doubt, exchange the towel. This last rule was adopted by the housekeepers for their own protection. Guests often left towels in places about the room other than the bath and towel rack. As a result housekeepers were often unclear as to whether or not the guests wished to reuse a towel. Leaving a towel for reuse when the guest wished for a fresh towel could lead to a complaint from the guest and a reprimand for the housekeeper. Therefore the default rule for the housekeeper was to exchange the towel rather than leave it for reuse.

The new rules for the guest were: if you would like to reuse the towel, then place it on the hook on the back of the bathroom door; if you would like the towel exchanged, then place it in the wicker basket. The new rules for the housekeeper were: if a towel is on the hook, then fold it and place it on the towel rack; if a towel was anywhere else replace it.

The outcome:

Using these more clearly articulated rules, coordination between guests, housekeepers and management was transformed.

The guests, even though they had no extrinsic motivation to do so, will follow the rules and coordinate their behaviour with others, merely through the mechanism of making rules clear and giving them the opportunity to voluntarily follow the rules. There is no role for hierarchy here. The housekeepers and hotel management had no hierarchical role over hotel guests – and yet hotel guests will follow the rules and coordinate their behaviour with the hotel staff. At the same time, the hierarchical role of management over the housekeepers was very limited; the hierarchical incentive for housekeepers was to replace towels. That is the result least likely to result in a rebuke from management. Management have very little information as to what goes on in the hotel bathroom but yet they could rely on the housekeeper to apply the new rules and the application of the new rules was borne out by the improved towel re-use; every participant voluntarily committed to the new rules, there was no power in external 'commands' or 'orders'.

Example 2: Jack Welch and GE in the 'Neutron Jack' years – the effort in rule articulation.

We have seen in the first example the importance of rule articulation. In this example we deal with a much more complicated situation. However, the starting point for a huge range of decisions and effort over a long period of time was the clear articulation of a number of rules.

The problem:

When Jack Welch took over General Electric it was a sprawling conglomerate; he quickly set about restructuring GE's portfolio of businesses. The company was undertaking a huge range of activities but many of these businesses were not profitable or did not add the required profitability for resources employed. However, such a vast organisation involved in a huge range of businesses was, necessarily, beyond Welch's ability to understand and control: 'The people closest to the work know

the work best' (Welch & Byrne, 2001, p. 97). So how could Welch put in place a process to improve profitability and return on resources employed despite his lack of knowledge of individual businesses?

Further, Welch did not know what the long-term future held for GE. In fact, he publicly said he thought the 1980s would be slow growth and marked by high-inflation (Welch & Byrne, 2001, p. 448). However, after an early recession, the reverse was the case. Nevertheless, Welch had to be able to articulate a strategy that would work howsoever events unfolded.

The articulated rules designed to create a coordinated solution:

In Welch's first speech as CEO in 1981 (a speech he felt important enough to include in full in his autobiography) he changed to an approach that relied less on specific objectives and more on rules. Welch said: 'The winners … insist upon being number 1 or number 2 in every business they are in... We believe this central idea – being number one or number two – *more than an objective – a requirement* – will give us a set of businesses which will be unique in the world business equation … Around this intangible central idea we will wrap these intangible central values – unifying dominant themes that, because of GE's common culture, will become second nature in the organization...' (Welch & Byrne, 2001, p. 447) [emphasis added].

In other words, he used a simple rule to determine which business units needed examination: if not number one or two in the industry, then fix, sell or close.

But these were new rules for GE, the previous rule was, effectively, just to grow revenues (including buying coal mines and so on). Therefore, Welch needed to communicate these rules and obtain the

commitment of his teams to these new rules. This was a considerable effort: 'Like every other goal and initiative I've ever launched, I repeated the No. 1 or No. 2 message over the over again until I nearly gagged on the words. I tried to sell both the intellectual and emotional cases for doing it' (Welch & Byrne, 2001, p. 109 and see also p. 393). How can we explain what Welch was doing, other than to say that he was trying to secure commitment? If it was just a matter of giving an order he need only have said it once. Rule following provides an explanation as to why strategy making and particularly strategy implementation are so time consuming. Thousands of rules exist in an organization and are invoked by the tens, hundreds, thousands and even millions of people who work there. To ensure that such a wide range of people understand the rules in the first place is a major task. Strategic change involves changing a subset of these rules and these new or changed rules must be articulated and disseminated across the organization. This can take a great deal of time and effort and it is no surprise that it progresses slowly (Hayek F. A., 1952, p. 71; Hayek F. A., 1978, p. 30).

The outcome:

However, while GE's success under Welch is well-known, the immediate effect of these new rules that he articulated within the organisation have been less-focused on. In particular, as Hayek predicted, these rules allowed both for guidance on the appropriate response to select in different situations and also increased knowledge to Welch as these responses became visible to him. For example, Welch, as part of this strategy, was unsuccesfully seeking to sell Utah International: 'Fortunately, my vice chairman John Burlingame had a better idea… [BHP , the eventual buyer]' (Welch & Byrne, 2001, p. 116). And later, in the sale of their small applicance business: 'Black & Decker had apparently heard of our view of housewares…' (Welch & Byrne, 2001, p. 118). Again, this means that a subordinate of Welch's had communicated Welch's strategy and its implications to Black & Decker without Welch knowing but wholly aligned to Welch's strategy and performing a

task that would have taken longer and been done differently (including, possibly less successfully) with Welch's involvement.

There must have been thousands and thousands of other decisions made within GE based on Welch's rules that are not his book as he was not then, and perhaps never subsequently became, aware of them. But, if those decisions were within the rules that Welch articulated, Welch, if he was aware of the situation, would have made the same decision and those decisions were entirely coordinated with Welch's strategy.

Example3. Wal-Mart and Katrina – the importance of rules where centralisation is impossible.

In this final example we focus on time. We seek to show that rules are essential where there are time constraints on decision-making. This is important as it is exactly the opposite of the conventional wisdom.

The problem:

In late August 2005 it was obvious that a major hurricane, Katrina, was going to make landfall on the Gulf Coast of the United States. As the storm approached, the giant US retailer, Wal-Mart put into place its disaster management processes. What it does in these situations is carefully thought through and planned for in advance; an emergency operations centre is established and manned, trucks, equipment and goods are placed on standby at the edge of the expected disaster area, satellite cell-phones are distributed and so on. As the storm was about to land, Wal-Mart must have thought that it was well-prepared and, in a well-organised developed country like the US, any disruption and destruction would be limited and quickly dealt with. No one had any idea of the death-toll and levels

of destruction that would follow. But Wal-Mart's people were prepared, even though they did not know what was about to unfold.

The articulated rules designed to create a coordinated solution:

Wal-Mart was prepared because it had rules in place to deal with all eventualities. These rules were the rules that it regularly used to distribute goods and produce to its stores country-wide and which kicked into place immediately after the storm passed, there were its disaster management rules that assisted in dealing with the less-damaged areas. But there was a further set of rules that were also put into play that were clearly articulated by its CEO, Lee Scott before the storm hit. He issued a message that was passed all the way down to individual store managers: 'A lot of you are going to have to make decisions above your level. Make the best decisions that you can with the information that's available to you at the time, and, above all, do the right thing' (Horowitz, 2009).

The outcome:

With all of its careful planning Wal-Mart could have asked all store managers to refer back to the operations centre before making any decisions, in full confidence that only a day, or even just hours, might elapse between the requirement for a decision and the actual decision being made; the gap between conception and action would only be expected to be a matter of hours? However, Wal-Mart did not take that approach – instead, at some level, they must have recognised that time was not the decisive factor here, instead it is the gulf between the leaders' expectations and the reality as it unfolds on the ground. And instead, what they sought to harness was the commitment of the employees on the ground to follow the Wal-Mart rules while using their unique local knowledge. Speed of coordinated decision-making within the rule-environment is the *consequence* of the three dimensions – unforeseen events, local knowledge as to potential solutions, local commitment to act within the rules. And that is what happened:

> In several cases, store managers allowed either emergency personnel or local residents to take store supplies as needed. A Kenner, Louisiana, employee used a forklift to knock open a warehouse door to get water for a local retirement home. In Marrero, Louisiana, employees allowed local police officers to use the store as a headquarters and a sleeping place because many had lost their homes. The employees did not feel the need to get approval from supervisors before taking these actions, and supervisors later praised them for their good on-the-spot decision making. Wind and flooding severely damaged the Wal-Mart in Waveland, Mississippi. Assistant manager Jessica Lewis, who was unable to reach her superiors to get permission, decided to run a bulldozer through the ruins of her store to scoop up basics that were not water damaged, which she then plowed into a pile in the parking lot and gave away to residents. Lewis also broke into the store's locked pharmacy to supply critical drugs to a local hospital. Wal-Mart's Jason Jackson praised both of her actions: "What Jessica did is a good example of autonomy" (Horowitz, 2009).

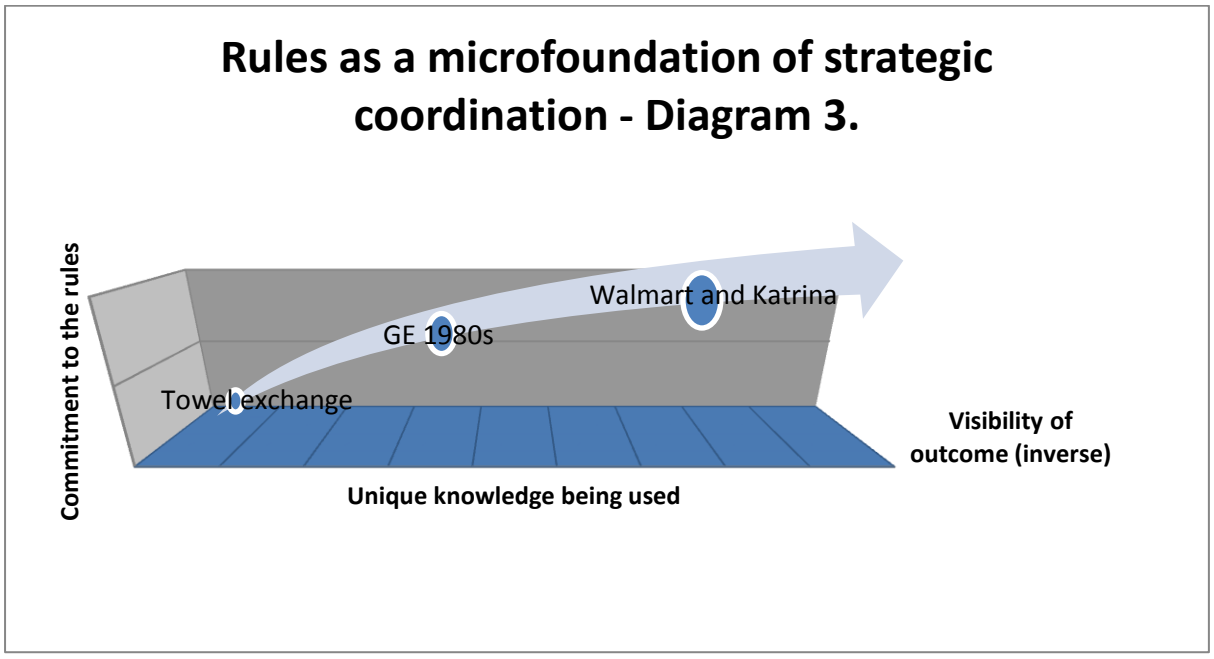
It should also be noted, contrary to Foss and Klein's assumption about the importance of central coordination in an emergency, the results for FEMA, the federal authority especially created to 'coordinate' the activities of other agencies, were quite different. Obviously timely decision-making is key to such coordination but as people were dying in New Orleans FEMA's agents had to refer back to their superiors. If they thought that centralised command allowed for faster decision making and better coordination they were, literally fatally, mistaken. The consequences were inevitable, as Horowitz noted: 'Many of the stories of FEMA's failures involved its managers' inability to "think on their feet" and to trust lower-level bureaucrats decision making' (Horowitz, 2009).

This was compounded by the fact that FEMA's leadership team were missing one crucial type of information – the actions of their teams on the ground. Instead they had to rely on the articulated and articulable information provided by the their teams for the leadership to absorb and make a decision –

a decision delayed in time among fast unfolding events and missing all of the information that could not be communicated by the people on the ground or absorbed by the people in decision centres. It seems that the leadership in Wal-Mart, but not the leadership in FEMA, had learnt one of Hayek's lessons. As Hayek noted: 'the commander of any army (or the head of any other hierarchical organization) who knows that his subordinates will respond to events in a particular manner and who will recognize the character of what has happened as much from the response of his subordinates as from direct observation … [T]he captain of a battleship may sometimes recognize the nature of an observed object less form his direct perception of it than from the response of [the crew] of his ship…. The order given by the highest centre to a particular situation may thus be of a kind which we have called a general 'directive' for action of a certain class, and it may only be at lower levels that the appropriate response is selected from the class of behaviour patterns which different situations may produce the correct results' (Hayek F. A., 1952, pp. 91, 94).

The Wal-Mart example also demonstrated the importance of commitment to following the rules and the ineffectiveness of other sources of authority. The US had suffered one of its worst ever storms and one of its greatest natural disasters, no one would have criticised any Wal-Mart employee for not turning up for work. Any 'command' or specific instruction to turn up for work could have been easily ignored, even if it could have been transmitted or received. What could possibly have motivated the employees of Wal-Mart to turn up to their stores and deal with events in accordance with the rules of the organisation other than their own personal commitment that this was the 'right thing to do' – and the greater that commitment the more willing they were to take the rules of the firm to their logical conclusion. Decision, action and coordination in the most extreme circumstances were only possible because of this commitment.

Comments on Williamson (2009):



We can see clearly from this graphic that the factors at play in these examples are commitment, knowledge and predictability of outcome:

- In the towel exchange, the factual position was easy to predict; the guest would or would not want a towel reused. That was the only unknown factor for the hotel – but it was critical; if management knew it then a specific instruction could be given each day, but they did not know it. The level of commitment for the guest or the housekeeper could have been but did not have to be very high – but there had to be some level of commitment. The clearly articulated rules (not just in words but through the visible presence of hooks and towel bins) helped the guest and housekeeper coordinate their activities even though they might never meet, let alone talk.

- In GE, it is impossible to understand what Jack Welch was doing other than using the recourse to articulating rules and trying to secure commitment from his co-workers. If leading was just a matter of telling people what to do, then Welch need only say what he had to say once. But Welch did not have all the information and he did not know what the future

held (in fact, he thought the 1980s would be low-growth). So he had to articulate a strategy that would assist people to make decisions in a coordinated way into an uncertain future. He did this by articulating rules. There was in fact plenty of time, over a whole decade, for Welch to be involved in a huge number of decisions at a very detailed level, but instead he trusted in rule-articulation and local commitment to the rules (see for example (Welch & Byrne, 2001, pp. 184, 395)) – so even though he might have absolutely no involvement in a particular decision he could have confidence that it would be done the right way.

- Finally, when Katrina struck, Wal-Mart's senior executives did not know what was going to happen but they had provided their employees with the organisational and coordination tools necessary to act based on their local knowledge. They could not rely on hierarchy but they could rely on the commitment of their employees to 'do the right thing' within the rules of the organisation and the clearly articulated rules for a disaster situation.

If we look again at what Williamson wrote: 'Rather, therefore, than be trapped in the old ideological divide between markets *or* hierarchies, transaction cost economics treats the two *as alternative modes* [emphasis added] of governance, markets *and* hierarchies, both of which have distinctive roles to play in a well-working economy.' We can see that there is only one source of coordination – rule-following. There are just differences in the rules between the larger market order and the order within any individual firm.

Williamson focused on the idealised result of intra-firm coordination and not Barnard's realistic description of how that result is achieved. This becomes clearer when we look at what Barnard wrote about governance within the firm and the failure of 'orders' and 'commands': As Barnard points out, how successful a person is within their organisation depends on their own commitment and their ability to learn and follow the rules. Individuals may fail on both counts:

> ‘Perhaps often and certainly occasionally men cannot be promoted or selected, or even must be relieved, because they cannot function, because they ‘do not fit’, where there is no question of formal competence’ (Barnard, 1938, p. 224).
>
> ‘[T]he requisite ability without … a high sense of responsibility leads to the hopeless confusion of inconsistent expediencies so often described as “incompetence”’ (Barnard, 1938, p. 276).

The above discussion suggests a new paradigm for organization (see (Bungay, 2011, p. 70)). We can see hierarchy resulting from, a by-product of, differences in experience and knowledge of the rules of the firm and the outside larger market order. It is not a case of one person giving orders and another following; but rule articulation and commitment to following the rules (Follett, 1941; Turner, 2005). And so, logically, Chester Barnard compared executives in a firm to judges (an example of a hierarchy in the larger entirely spontaneous market order):

> ‘There is no escape from the judicial process in the exercise of executive functions. Conflicts in the codes in organizations are inevitable… The judicial process, from the executive point of view, is one of morally justifying a change or definition or new particularizing of purpose so that the sense of conformation to moral codes is secured. One final effect is the elaboration and refinement of morals – of codes of conduct’ (Barnard, 1938, p. 280).

This gap in what Williamson wrote is also clearer when we explore his contrast between the market price mechanism and what Hayek actually wrote about the market order. The price mechanism does not exist in the same way within the firm as it does in the larger market order - thus Williamson (following Coase) argued that it was replaced by hierarchy. But Hayek in his later writings remained focused on the knowledge-problem of central planning but less on the price mechanism and more on the rules of the larger market order of which the price mechanism was but a component part (Hayek F. A., 1973, pp. 42 and 47, for example). And so there is a shift from Hayek’s earlier writings (Hayek F. A., 1948) where he focused on the price-mechanism as the solution to the knowledge problem within the larger market order and his later writings that just focused on rules:

> ‘success of the individual … depends … on his ability to act according to rules, which he may be unable to express in words, but which we can only describe by formulating rules. All our skills, from the command of language, to the mastery of handicrafts or games … are instances of this… The rules … make all members of the group more effective because they give them an opportunity to act within a social order…’ (Hayek F. A., 1978, p. 7).

Conclusion:

Finally, the micro-foundations research initiative is designed to build up our understanding of organisations from the bottom-up. The initiative would hardly be worth undertaking if our existing biases were merely confirmed; instead we should hope for and endeavour to find unexpected insights. The purpose of this article with its emphasis on the rules, on commitment and on speed of decision-making has produced some unexpected results. It may be that is because the authors are mistaken or it may be because our common understanding of the firm is flawed – we have focused on the visible feature of hierarchy and not the invisible rules that actually coordinated behaviour.

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