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The Praxis of Stupidity: An Explanation to Understand the Barriers Mitigating Rework in Construction

Abstract

The practice of ‘functional stupidity’ forms the essence of Alvesson and Spicer’s ‘Stupidity-based theory of organisations’. Functional stupidity is an incapacity and/or disinclination on the part of organisational members to exercise critical reflection about what they are doing, to understand why they are doing it, and determine what the consequences of their activities are beyond the immediate task at hand. Drawing on the authors’ empirical research with regard to the nature of rework causation, we have observed that there is a proclivity for functional stupidity to reside in everyday practice in construction. We noticed that functional stupidity was a recurring organisational issue explicitly linked to ‘power and politics’ that was played out in numerous construction projects. In these projects managers attempted to discourage critical reflection that called into question prevailing organisational norms and values that had been sanctioned under the auspices of a ‘zero-vision’. In some instances, this, in turn, led to reinforcing ‘stupidity self-management’ behaviour whereby employees intentionally limited their own critical reflection creating a vicious zone of *zemblanity* that kept being played out in projects. The corollary in this instance being an inability to learn, engender innovation, and improve organisational and project performance.

Keywords: Communicative action, construction, critical thinking, functional stupidity, rework

Introduction

“Life is tough, but it is tougher when you are stupid” (John Wayne)

Denial and concealment of rework have been the weapon of first choice for many managers with the second providing excuses for its occurrence (Love *et al.*, 2016a). But, denial and excuses bring managers no closer to solving the rework problem. As we have previously observed, rework is a *zemblanity* (i.e. an unpleasant unsurprise) for managers and their organisations in construction (Love *et al.*, 2018a).

Rework that materialises during construction is often a result of competing demands, which are innate features of managerial practice (Love *et al.*, 2018a). Competing demands occur when management, depending on the use of limited resources or attention, requires more to be done than the resources that are readily available (Jarzabkowski *et al.*, 2013; Giam *et al.*, 2018). For a construction organisation that has a portfolio of projects to deliver, these competing demands can lead to tensions being created over resource allocation and their prioritisation (Cameron, 1986; Cameron and Quinn, 1988; DeFillippi *et al.*, 2007). According to Putnam *et al.* (2014) “how much time, energy, and effort go into one demand versus the other” (p.416) will influence how they are considered by managers and decision-makers. Attending to demands simultaneously does not necessarily involve engaging with them equally. This is a choice that managers need to make while being cognisant of the need to strike a balance between their *exploration* and *exploitation* (March, 1991; Oshri *et al.*, 2006).

An organisation, for example, that seeks to gain entry into a new market such as the construction of on-shore Liquefied Natural Gas (LNG) plants, will experience significant losses in profit, if it fails to manage the exploitation of what it already knows well in the pursuit of this new venture. We have seen this to be the case for several energy organisations and contractors in Australia, who had no prior experience of constructing on-shore LNG plants. As energy companies have sought to diversify their energy mix, natural gas has become an increasingly important source of power, particularly as it is a low carbon alternative to coal and petroleum.

High natural gas prices in the 2000s juxtaposed with demand from countries such as China, Japan and South Korea prompted major investment in the LNG sector. The corollary, amongst a multitude of other problems that arose during the construction of the LNG mega-projects

aside, was that all, with the exception of ConocoPhillips' \$US3.3 billion Darwin plant, experienced significant cost and schedule overruns (Chalmers and Kitney, 2011; Ernst & Young, 2014; Milne, 2017; Smyth, 2017). A major factor contributing to the cost blow-outs that were incurred during the construction of the LNG projects was rework. Perhaps the most significant rework event that has been identified in the popular press occurred during the construction of Woodside's Pluto LNG project where a below-par flare tower needed to be dismantled and rebuilt. Put simply, it did not conform to required specifications (Chalmers and Kitney, 2011). The alarming cost and schedule overruns that have been incurred by energy companies have led them to place a moratorium on constructing new on-shore LNG plants in the short-to-medium term in Australia.

In stark contrast to exploration (in terms of developing new markets), those construction organisations that seek to create value through exploitation may exhaust their stocks of knowledge and become "outflanked by more exploratory rivals" (Gaim *et al.*, 2018). Being able to strike a balance between the poles of exploration and exploitation has been identified as being a managerial ideal and is central to ambidextrous designs that enable organisations to accommodate competing demands that can be used to sustain improvements in performance and productivity (Gibson and Birkinshaw, 2004; O'Reilly and Tushman, 2013).

Obtaining this balance possesses challenges for construction organisations. Competing demands naturally arise and cause tensions for managers and decision-makers who have opposing conceptualisations and perceptions about their interactions and meaning (Chen, 2017; Törner *et al.*, 2017). Tensions between competing demands can become exacerbated and the need for trade-offs made explicit by senior managers for different projects at varying points in time due to the margin that has been established at the award of a contract. But, a project manager's willingness to enact corporate values and 'play them out' during construction invariably depends on their style of leadership and ability to reflect upon, justify and take responsibility for their decisions and actions (Lavine, 2014; Love *et al.*, 2018a;b). Leaders, through their actions and personal influence, bring about change (Dubrin, 2001).

Our previous research has shown that the managerial decisions and actions enacted at a corporate level and implemented by project managers charged with delivering projects can provide the conditions for rework to manifest (Love *et al.*, 2018a;b). This finding aligns with previous studies that have examined the issues that contribute to errors at the organisational,

team and individual level, specifically within the context of safety (e.g. Sasou and Reason, 1999; Goodman *et al.*, 2011; Frese and Keith, 2015). The upshot of our research, however, was to provide an ameliorated understanding of rework causation and determine its precursors. This then led us to propose that a culture of *error management* (i.e. errors happen) rather than *error prevention* (i.e. errors can be prevented) should be engendered by construction organisations throughout their portfolio of projects in order to combat rework (Love *et al.*, 2018a;b).

Building on our previous work, we delve deeper in this paper by providing an explanation of barriers that exist to mitigate rework in construction projects. In doing so, we engage Alvesson and Spicer's (2012) 'stupidity-based theory of organisations' to help us better understand and describe 'why' rework emerges and continues to be an innate feature of practice in construction. The rationale for the development of Alvesson and Spicer's (2012) theory was to find out why supposedly intelligent organisations and their employees did 'stupid things'. This provided us with the motivation to examine why construction organisations that operate in intensive information-centric and competitive settings would not acknowledge that rework was a fundamental issue impacting their productivity and performance. We would like to make it explicit that the intention of this paper is not to test or contribute to the 'stupidity theory of organisations'. Rather, our aim is to determine if its key concepts can provide a contextual backdrop to further sow the seeds for the development of a theory of rework causation, which has yet to be developed (Love *et al.*, 2016a).

We commence our paper by introducing the 'stupidity-based theory of organisations'. Then, we draw on observations from our previous studies to illustrate stupidity in practice within the context of rework (e.g., Love *et al.*, 2016b; Love *et al.*, 2018a;b). Emerging from our observations are a number of managerial actions for consideration that can be used to identify and mitigate the adverse consequences of rework. Our methodological underpinning used to acquire meaning and interpretation was grounded in sense-making, which we have described in our previous works (e.g., Love *et al.* 2018a). The additional framing to explain the barriers to rework mitigation will allow us to digest the functional stupidity and managerial tensions that reside in organisations and projects that trigger its occurrence.

Stupidity Theory of Organisations

The ‘stupidity-based theory of organisations’ proposed by Alvesson and Spicer published in the *Journal of Management Studies* in 2012 presents a thesis that contemporary organisations rely on the mobilisation of cognitive capacities. The underlying motivation to develop this theory was derived from a desire to challenge the orthodoxy of management thought that attributes the success of organisations to “the intelligent mobilisation of cognitive capacities” (i.e. emotional, psychological, and moral orientations) (Alvesson and Spicer, 2012: p.1195). The stupidity-based theory of organisations’ theory has received widespread coverage throughout the business community and has been further popularised by their book entitled *The Stupidity Paradox: The Power and Pitfalls of Functional Stupidity at Work* (Alvesson and Spicer, 2016). Alvesson and Spicer (2012) suggest that severe restrictions on these capacities in the form of what they call functional stupidity are an under-recognised part of organisational life.

The contemporary business literature has persistently espoused the need for organisations to mobilise their intelligent cognitive capacities to remain competitive in a knowledge-intensive and technology-focused environment. Furthermore, knowledge has been identified as an organisation’s most strategically important dynamic capability (Teece *et al.*, 1996; Davenport *et al.*, 1998; Easterby-Smith and Prieto, 2008). For Alvesson and Spicer (2012), the claim about the need for ‘smartness’ backed by a drive for economies to become increasingly knowledge-intensive should be nuanced and qualified (p.1213). We commonly speak about knowledge-intensive firms, but a closer look by Alvesson and Spicer (2012) reveals them to be ‘stupidity-intensive’ (p.1213). Towards this end, Alvesson and Spicer (2012), propose the concept of functional stupidity to ‘shake up dominant assumptions about the significance of knowledge, intelligence, creativity, learning, and the general use of cognitive resources’ (p.1214).

Functional Stupidity

Stupidity refers to lacking intelligence, understanding or reasoning. We see intelligent people seemingly make stupid decisions and then enact them regularly in our workplaces. For example, managers often react to inappropriate behaviour committed by an employee by initiating and implementing a series of new rules and procedures that all must adhere to, rather than solely address, the individual’s motivation and actions. This managerial response may not

only frustrate the bigger body of employees but can create inefficiencies, and losses in productivity.

It has been argued that most managerial practices that are adopted by organisations tend to be based on prevailing fads and gimmicks, faulty reasoning, *group-think* or accepted norms and wisdom and often a lack of evidence (Pfeffer and Sutton, 2006). An example that comes to the fore was the call for the adoption of lean construction practices (e.g., Egan, 1998), which were heralded as being able to significantly contribute to improving project performance, particularly reducing rework, even though no substantive body of empirical evidence was ever provided to justify their adoption. Some 20 years on, poor performance, waste and rework remain as prevalent as ever in construction projects.

When stupidity occurs, we are often left wondering whether it was just a one-off case. However, Alvesson and Spicer (2012) confirm what many of us may know already but have been reluctant to formalise and vocalise in our workplace. For instance, asking questions may be seen as being offensive or frowned upon thereby allowing stupidity to grow unchecked and pervading organisational life. It, therefore, warrants serious attention. Alvesson and Spicer (2012) consider stupidity to be “systematic in organisations” (p.1199). Bearing this mind, stupidity should not be associated with “dysfunctional thinking or irrationality”, which can disrupt the flow of work but rather it is supported by the organisation to produce “functional outcomes” (p.1199). In recognising this situation, Alvesson and Spicer (2016) ask the following question if organisations create so much stupidity, what does that mean for people who run them?

In addressing this question, Alvesson and Spicer (2016) observed instances where managers tried to actively ensure that ‘smart’ people did not apply their intellect to their work. This observation led Alvesson and Spicer (2016) to conclude that smart organisations encourage the practice of stupidity, which may pay-off in the short-term but can create problems in the long-term. Hence the emergence of a paradox of *functional stupidity*. Functional stupidity is characterised by “an unwillingness or inability to mobilise three aspects of cognitive capacity: (1) reflexivity; (2) justification; and (3) substantive reasoning” (Alvesson and Spicer, 2012: p.1199).

Reflexivity

A lack of *reflexivity* is an incapacity and/or disinclination on the part of organisational members to exercise critical reflection about what they are doing. In this instance, employees accept and adhere to the established organisational rules, routines, and norms as they consider them in a positive mindset. This then can result in employees not “considering or questioning organisational (im)morality” (Alvesson and Spicer, 2012: p.119) as there is an innate belief that managers perform their work in accordance with what the organisation wants them to do and that they should also follow suit.

Conformity of this nature suppresses employees “capacities to use reason, scrutinise and criticise aspects of an organisation” (Alvesson and Spicer, 2012: p.119). In the face of shared and taken-for-granted understandings of what constitutes legitimate or rational behaviour, employees will largely conform as it will not occur to them to do otherwise. Rules and norms established at the corporate level of a construction organisation and disseminated in their projects, for example, may also “infect” other organizations through imitation and a “contagion of legitimacy” (Zucker, 1987: p.446). Galaskiewicz and Wasserman’s (1989) study of mimetic isomorphism, for example, has illustrated how organizational decision makers, through imitation, “will try what others have done and have found to work” (p.476).

Within construction, there is a general absence of critical reflexivity which has hindered organisations ability to learn and innovate (Kokkonen and Alin, 2015). The construction industry is characterised by the boom-bust of the economic growth cycle, and thus for many organisations, their strategic planning horizon often takes a short-term perspective, which has resulted in ‘lip-service’ being paid to self-reflexion (Hartman and Dorée, 2015). Once projects are completed, lessons learned to initiate reflection may be undertaken, but seldom are changes to practice and processes initiated as a result of conducting this exercise (Williams, 2008; Hartman and Dorée, 2015; Davies *et al.*, 2017).

A construction organisation’s immediate focus, however, is on securing the next project where the same rules and norms and expectations are transferred and enacted by managers (Love *et al.*, 2016b). Most construction organisations mimic each other’s practices so that no competitor has an overwhelming strategic advantage in their respective marketplaces. The downside here is that established rules and norms of the organisation-project dyad are, rarely if at all

questioned and changed (Love *et al.*, 2018a). There is a general mantra within construction organisations that ‘if it ain’t broke don’t fix it’. But it is this failure to question and challenge the status-quo that has stymied the ability of organisations to improve their performance and productivity. Consequently, inefficiencies have accumulated manifesting as ‘waste’ becoming leitmotifs within contemporary management practices and processes that are used to deliver projects.

Justification

People may often go about their work activities without demanding reasons to justify why they are doing things in a particular way. In making reference to Habermas’s (1984) *Theory of Communicative Action* underpinned by its validity claims, Alvesson and Spicer (2012) explain that when the work environment provides supportive conditions for people to exercise their right to freedom of speech they will consider statements in terms of truthfulness and rightness, and thus will naturally be inclined to provide justification when empowered to do so. An internal climate where people feel able to speak the truth is essential for organisations to be able to adapt and respond swiftly to changing market conditions (Ruch and Welch, 2012). Senior managers within construction organisations often lose touch with those employees operating at the coalface in projects (i.e. on-site) as they are physically separated by distance and space (Love *et al.*, 2010). Unless employees are empowered to be candid about the reality of how their organisation operates (e.g. its processes, policies and procedures) and the projects that they are involved with delivering on a day-to-day basis, it may be difficult to initiate the changes required to improve performance. If change is to be successful, it needs to commence with transparency and honesty.

Habermas’s (1984) validity claims of truth (cognitive use), rightness (interactive use), and truthfulness (expressive use) are three distinct functions of speech. Here Habermas (1984) asserts that “a speech act may be called acceptable if it ‘satisfies’ the conditions that are necessary for the hearer be allowed to take a ‘yes’ position on the claim of the speaker” (p.289). Furthermore, Habermas (1984) expresses this as “the options open to the hearers to adopt rationally motivated ‘yes’ or ‘no’ positions on the utterances of the speakers” (p.306).

The contesting of the *truth* claim, for example, may take the following form by a project manager who is requested by their construction manager to attend a meeting at the head office

regarding staffing levels on their project with the utterance being: “No. I am unable to attend as we have a concrete pour at which I must be present”. Here Habermas (1984) would say “what is contested...the truth of propositions the [construction manager] has to presuppose in the given circumstances” (pp.306). Moreover, Habermas (1994) would translate the “rejection of truth [in this instance] as a denial that certain presuppositions obtain” (p.306). In essence, Habermas (1984) considers a rejection of the truth claim such as we have identified as questioning its existence. The action of not attending the meeting is possible, but its consequences are inappropriate since they interfere with the desire to attend the concrete pour instead.

In the case of normative *rightness*, the utterance response to a project manager who requests an employee to do something that they do not feel comfortable undertaking, may be ‘no, you can’t ask me to do this’. A rejection for the claim of *truthfulness* would take the following form where a project manager declines a request by their construction manager to not formally report all non-conformances (NCR) over \$100,000 that may arise through the following utterance: “No. You really only want to put me in a bad light in front of senior management as I will not be adhering to our [the company’s] standard procedures”. In relation to this example, what is contested is that the construction manager means what they say and as the aim is to “achieve a certain perlocutionary effect¹” (Habermas, 1984: p.307).

When people do not seek justification, they then may become unwilling to engage and discuss their concerns or views about their work or its *raison d'être*. Accordingly, not requiring justifications allows practices to be accepted without any form of critical inquiry or reason for their adoption. This leads Alvesson and Spicer (2012) to assert that “refraining from asking for justification beyond managerial edict, tradition, or fashion is a key aspect of functional stupidity” (Alvesson and Spicer 2012: p.1200). It is the absence of an ‘employee’s voice’ that allows stupidity to thrive within organisations.

The harnessing of human potential and capturing the ‘employee’s voice’ have been identified as key determinants for a successful organisation (Perlow and Williams, 2003). So, when confronted with dissatisfaction in the workplace, for example, employees should be able to

¹ A perlocutionary effect is a speech act, as viewed at the level of its consequences, such as persuading, convincing, scaring, enlightening, inspiring, or otherwise affecting the listener.

voice their concerns openly and honestly, and if not, there is a danger they could leave the organisation. Similarly, when employees feel unable to speak out, negative emotions such as resentment and anger may manifest, which can stymie creativity and dissipate motivation, productivity and performance (Perlow and Williams, 2003). This may be driven by feelings of inauthenticity, which can be psychologically damaging. If this happens within projects, for example, morale can be adversely affected which can also jeopardise project performance and contribute to employee attrition (Chapman, 1999). Putting in place mechanisms to engender justification and enabling the ‘employee voice’ protects against a host of challenges that stem from the psychological demands of being asked or compelled to be silent (Johnston and Ackers, 2015).

Substantive Reasoning

For Alvesson and Spicer (2012) substantive reasoning occurs when “cognitive resources are concentrated around a small set of concerns that are defined by a specific organisational, professional or work logic”. In this instance, it involves the “myopic application of instrumental rationality” whereby people focus on achieving a specific outcome as efficiently as possible without understanding and knowing what the result actually means within a wider context (Alvesson and Spicer, 2012: p.1200). That is, people have an incapacity and/or disinclination to determine what the consequences of their activities are beyond the immediate task at hand. A project, for example, may place an over-emphasis on recording and reporting safety statistics, overlooking their real context and moral implications and while ignoring the importance of other core functions. This is a form of stupidity, as it can prevent a project manager from examining other issues that are intricately linked to a project’s outcomes. (e.g., quality)

Alvesson and Spicer (2012) draw our attention to “organisations as generators of functional stupidity” that take a narrow-minded position. This is not to say all organisations take this stance as “most organisations prescribe certain degree of reflexivity, justification and substantive reasoning”, but they are not accepted as being an integral part of organisational-life (Alvesson and Spicer, 2012: p.1201). This duplicity may encourage people to refrain from asking questions and remain silent, but also play along with prevailing and governing norms. No one wants to bear the acrimony given to whistleblowers.

Dynamics of Functional Stupidity

For Alvesson and Spicer (2012) functional stupidity “is an inability and/or unwillingness to use cognitive and reflective capacities in anything other than a narrow and circumspect way” (p.1201). We have described the three constructs of functional stupidity, which are interrelated with cognition, emotion and motivation and have received widespread attention throughout the psychology and management literature. Alvesson and Spicer (2012) argue that functional stupidity is a product of organisational processes rather than people’s cognition. An understanding of the social and organisational dynamics that can contribute to its emergence is needed. We briefly describe the dynamics that have been put forward by Alvesson and Spicer (2012) hereinafter.

Economy of Persuasion and Symbolic Manipulation

A view held by Alvesson and Spicer (2012) is that functional stupidity occurs when the *economy of persuasion* emphasises “symbolic rather than substantive aspects of organisational life” (p.1202). In this instance, organisations use a significant amount of their resources to promote their services and products using political and social persuasion *via* image building, lobbying, branding, and marketing. While important to construction organisations, they do not have an obsession with promoting their identity, image and reputation through *symbolic manipulation* to their clients and stakeholders as their focus is on the production of artefacts (buildings). But symbolic manipulation can be directed internally to employees using a number of mechanisms such the promotion of safety behaviour and practices, work-life balance, health and well-being, corporate social responsibility (e.g., indigenous reconciliation), sustainability and workplace culture (Loosemore *et al.*, 2003; Murray and Dainty, 2009; Loosemore and Phua, 2011). These are efforts to “persuade and seduce employees into believing in something that improves the image of their organisation, work and themselves” (Alvesson and Spicer, 2012: p.1203).

There may be some employees that resist an organisation’s symbolic manipulation through overt or covert disparagement, while others may be of two minds (Fleming and Spicer, 2003). Conversely, employees that ‘buy in’ to symbolic manipulation may accept and embrace its corporate values (Alvesson, 1995; Casey, 1995). In doing so, employees may adhere to work in an environment where value and reward conformity outweigh “autonomy and independent thinking” (Alvesson and Spicer 2012: p.1204). The upshot here is that people feeling positive

and supportive of this environment will display positive qualities about their organisation and present an optimistic climate for performing their work. This may vary at the project-level and will be dependent on the qualities of the leadership and management charged with their delivery. For example, project managers that are authentic leaders will invariably create an environment of *psychological safety* whereby critical thinking and situated learning are encouraged and supported (Edmondson, 1999; Lloyd-Walker and Walker, 2011). Providing people with the support to openly share, report and attend to errors when they arise in organisations forms the cornerstone of error management (Frese and Keith, 2015). Within construction, however, error management has yet to become a mainstay for redressing rework problems within organisations, though evidence of its presence is beginning to emerge (Love and Smith, 2016; Love *et al.* 2016b).

Stupidity Self-Management

Managers, under the auspices of their corporate culture, may aim to shape the cognitive capacities and mindsets of their employees using symbolic manipulation to “create conformity and to limit critical thinking” (Alvesson and Spicer, 2012: p.1204; Fleming, 2013). The corollary being in this instance is that employees limit internal reflexivity by curtailing discourse. For management, this provides them with a means to sideline potential criticism and scepticism and ensure employees are focused on positively pursuing and engaging with the organisation's values and goals. As a consequence, a sense of certainty that produces functionality for the organisation and its employees emerges (Alvesson and Spicer, 2012). But this positive outcome “can have self-reinforcing effects by further encouraging stupidity management and self-stupidity management” (Alvesson and Spicer, 2012: p.1202). As one would expect, tensions between individuals and the organisation's dominant norms and routines may surface at some point in time as viewpoints can change with differing contexts (e.g., projects). When such tensions are acknowledged to clearly exist, then reflexivity may well be encouraged. This can subsequently undermine self-imposed limits of internal reflexivity and socially imposed blocks on communicative action (Alvesson and Spicer, 2012).

The mere essence of Alvesson and Spicer's (2012) ‘stupidity-based theory’ is underpinned by blocking communicative action. It can be blocked by thwarting any discourse that challenges validity claims and overlooks good reasons to accept the facts that confront organisations and their managers. As we have noted above, this can be achieved through advocacy of the

organisation's beliefs and practices while at the same time suppressing critical thinking that may bring them into question. The exercising of power, which can take numerous guises (Clegg and Haugaard, 2009), is core to suppressing communicative action. In line with Alvesson and Spicer (2012: p.1205) we draw on Fleming and Spicer (2007) who suggest that power can be exercised in four ways: (1) direct suppression; (2) setting the agenda; (3) shaping ideological settings; and (4) production of subject settings. We provide hypothetical examples of these types of power that may be enacted in construction organisations and their projects in Table 1.

Direct suppression arises due to direct warnings and interventions by managers, which can result in employees being asked to subtly and “deliberately cultivate their stupidity” (Alvesson and Spicer, 2012: p.1205). The example presented in Table 1 is akin to the scenario we painted above when describing Habermas's (1984) validity claim for normative *rightness*. Contrastingly, stupidity management can occur without direct intervention whereby managers manipulate an agenda to suit their own underlying goals and ambitions.

Senior management may, for example, arbitrarily issue a mandate that quality managers will no longer be allocated to a specific project and be housed on-site. It is expected that employees responsible for safety management on-site are also charged with managing quality. Project managers may view this as a cost-cutting exercise and suggest that both quality and safety will be compromised because of this decision by senior management. But, rather than listening and respecting these views, senior management request constructive cost-effective proposals to better deal with managing quality and safety issues in their projects.

The use of ideological frameworks can be used to block communicative action through the management of an organisation's ideals and views. An ideal that many construction organisations aspire to promote is that of a zero-accident vision (Table 1). However, a zero-accident vision taken figuratively is paradoxical; that is, sanctioning of workers involved in accidents and the hiding of incidents (Dekker *et al.*, 2016).

Table 1. Exercising power: Examples of blocking communicative action

Exercising of Power	Context of Stupidity Management
<i>Direct suppression</i> (Warnings and intervention)	<ul style="list-style-type: none"> • A project manager requests that the contract administrator ensure that no NCR over a value of \$100,000 is reported at the end of each monthly valuation of works. The project manager argued that if the truth were known by senior management then they would be formally cautioned and may lose their jobs. • A contract administrator who raises ethical issues over the appointment of subcontractor known to have a personal relationship with the project manager may be deemed to be at odds with them and thus considered to be unreliable. • Graduate engineers who are openly negative about their long working hours, work pressure, and understaffing on a project may be considered to be ‘show-stoppers’ (Kärreman and Alvesson, 2009).
<i>Setting the agenda</i> (Manipulating an agenda)	<ul style="list-style-type: none"> • Repeated calls by project managers to senior management for a discussion about continued understaffing during the mobilisation of their projects was resulting in works being inadequately supervised and rework being required in areas such as piling. In this case, calls are met with the response that criticisms are only allowable if accompanied by constructive proposals for how to deal with the issue at hand.
<i>Shaping ideological settings</i> (Intentional)	<ul style="list-style-type: none"> • A ‘zero vision’ (i.e. defects and accidents) is an ideological framework that is often expressed through a construction organisation’s cultural management. Employees are asked to follow a cliché predicated on <i>bureaucratic entrepreneurialism</i> (Dekker, 2013: p.31). Here construction organisations can claim that significant accomplishments in their work have been attained, but more is required as zero is not achieved, despite knowing subconsciously that it never will (Love and Smith, 2016). • A construction organisation initiates new safety, environmental and quality policies. In doing so, management suppresses reflexivity and does not consider the initiatives consequences, but rather favours to demonstrate the benefits of the change being implemented. This behaviour can arise as managers try to push through the ‘change initiative’ to establish their reputation and make a name for themselves within their organisation.
<i>Production of subject settings</i> (Sponsored identities)	<ul style="list-style-type: none"> • A construction organisation may introduce a new managerial position into their structure to lead research and development initiatives. The appointed person may adopt the identity of ‘leader of innovation’ as it provides them with a “sense of self-esteem” (Alvesson and Sveningsson, 2003: p.984). When too much emphasis is placed on leadership then there is a likelihood for employees’ cognitive capacities to be suppressed, as they are required to passively accept what is presented and required of them. In doing so, employees become followers and subordinates and critical reflection may be side-lined.

Stupidity managers can exercise their power by using subject positions that are sponsored identities within the organisations (Alvesson and Spicer, 2012). Such positions may well be intended to be managerial in nature, but they can take on a life of their own, especially when managers place increasing emphasis on the role of leadership to promote their sense of worth (Kiazad *et al.*, 2010). As a result of this pride and self-esteem managers may forsake the need to bestow employees with direction, create a sense camaraderie amongst themselves, provide ideas and choreograph their personal growth (Alvesson and Sveningsson, 2003). By adopting authoritarian leadership style employees are expected to passively do as they told and at the same time discount personal critical reflection.

It holds that authoritarian leaders are likely to exercise control by initiating structure, issuing rules, promising rewards for compliance and threatening punishment for disobedience (Aryee *et al.*, 2007). Leaders of this ilk that possess *Machiavellian* traits tend to adopt emotionally detached and impersonal styles as they are unable to empathise with others and therefore are more task than person-oriented (Gies, 1978). This means that highly Machiavellian managers who are authoritarian leaders will be more likely to be abusive to their employees (Kiazad *et al.*, 2010). In turn, this is likely to result in several negative work-related-outcomes such as reduced employee performance or an increase in workplace deviance (Bordia *et al.*, 2008). For example, employees purposefully taking shortcuts or breaking rules to make work more efficient to meet established but unrealistic deadlines by performing inappropriate actions that can result in rework having to be undertaken (Love *et al.*, 2016a). Such short-cuts may occur employees may voice their concern that they do not possess capacity to achieve the required deadline, and a project manager still ignores their concerns as they pursue their own agenda. We consider this to be an act of functional stupidity.

Benefits of Functional Stupidity

We have provided a brief outline of the core concepts of functional stupidity but have only focused on its negative outcomes as our aim has been to identify issues that may hinder a construction organisation's ability to address its rework problem. We acknowledge that the one-sided view of Alvesson and Spicer's (2012) notion of functional stupidity has been presented here. Indeed, there are beneficial aspects to functional stupidity, which we will briefly address, though in our opinion they provide, at best, a limited impact on rework mitigation.

For Alvesson and Spicer (2012) functional stupidity is a ‘mixed blessing’ that has advantages and disadvantages (p.1201). On the positive side, functional stupidity provides “a sense of certainty that allows organisations to function smoothly”, which can “save the organisation and its members from the frictions provoked by doubt and reflection” (p.1196). At this juncture, Alvesson and Spicer (2012) assert that an excess of reflexivity, justification and substantive reasoning can be disruptive for both organisation and individual. For individuals, it has to be recognised that critical reflection may be detrimental as it can erode their sense of certainty about what they are doing and why they are doing it as well as distracting them from advancing their careers. Furthermore, Alvesson and Spicer (2012) suggest that bottom-line employees within an organisation need to avoid reflexivity, justification and substantive reasoning because:

“Questioning can be costly because it requires significant time and resources to engage in critical thinking. For instance, if organisations were called on frequently to justify their actions, they would need to devote significant resources to creating and articulating these justifications. In many cases the structures and actions of the organization would be difficult to justify, promoting doubt among organisational members. This could decrease legitimacy and dissolve commitment to uncertain courses of action”. (p.1210)

Project managers may seek to minimise inconvenient critical reflection of employees at the coalface who raise concerns about the use of imported products/materials (e.g., steel) as it could potentially be disruptive to a project and cause unnecessary reputational damage to the organisation. Here stupidity management can prevent these doubts and concerns in advance by curbing communicative action.

A salient issue here is that Alvesson and Spicer (2012) appear to endorse this lack of reflection even when a course of action would be ‘difficult to justify’, especially in this case, if the products/materials had been of an inferior quality or were not able to meet their specified performance or time constraints. It would appear that the supposed benefits of functional stupidity only make sense when they are viewed from the perspective of senior management; that is, those with an interest in “maintaining and strengthening organisational order” (Alvesson and Spicer, 2012; p.1196).

Observations of Stupidity in Practice: Barriers to Rework Mitigation

During our empirical inquiry into rework causation we found that error prevention was overtly governed and legitimised by construction organisations in the practice of their projects (Love *et al.*, 2016a;b; Love *et al.*, 2018a;b). Exceptions, however, do exist as we have seen from our field studies where error management was engaged, engendered, enacted and embedded within the practices of projects (Love *et al.*, 2018c). Our research revealed that safety incidents predominately occurred while rework was being undertaken (Love *et al.*, 2015; Love *et al.*, 2018b). A variety of examples where safety incidents occurred as a result of the need for rework are presented in Figure 1, which were derived from NCR reports.

Working at Heights	Unsafe Act
<p>While carrying out patching work on the upstream section of a Enlarged Cofferdam, a worker fell approximately 34 meters down the Left Hand Abutment of a overflow valve bench on its upstream side whilst attached to a rope fall arrest system (FAS). It was found that the FAS was not secured to an anchor point and subsequently gave way while the employee was descending down the rock face. After the employee presented to the site office for first aid, an ambulance was called and the employee was taken to hospital. Concrete was found to have been subject to honeycombing while work was being undertaken at the base of the dam. When the defect was identified a decision needed to be made to either to continue (e.g. concreting) and rectify at a later date or to immediately fix the problem. The project manager decided to rectify the defective work at a later stage or after handover so as not to risk finishing on time and disrupting the schedule.</p>	<p>Workers were tasked to investigate a reported leak as part of defect management. A worker wearing safety equipment, proceeded to access the roof via an extension ladder. He first ascended to an awning, 5.1m in height, with the extension ladder. He then secured a base plate (anchor) which he attached his safety harness and climbed onto the awning. He retrieved the ladder and placed it on the awning so as to access the roof, a further 5m in height. The worker did not utilise the ladder bracket/roof safety access system that was in place to access the roof as it was located at a height of 9.5m which was deemed to be unsafe.</p> <p>To re-align a pipeline, an excavation need to be re-excavated. The excavation was water logged due to heavy rainfall. A worker was observed stepping out of an excavator adjacent to the edge of a 1.85m deep excavation that was not properly benched or battered and showed evidence of wall collapse. The worker had exposed himself to a 1.85 metre fall from height risk working around an open excavation.</p>
Slips in Attention	Near Miss
<p>A pile needed to be re-drilled. A Bauer drill on a 280T crane was used. There was a restricted and limited work area aboard the barge. There were long lengths of hydraulic hoses attached from the drill head to power pack. Spoil skip bins were also stored on the deck. A work risk assessment to re-drill the piles barge 2 was undertaken and signed off. A rigger was attempting to guide the hydraulic hoses up past a spoil bin when the hoses swayed back towards it, trapping his left hand between the hoses and the underside edge of the spoil bin. The lift was stopped straight away, hooks lowered and the riggers hand was removed without any injury.</p> <p>A steel fixer was re-inserting 20mm starter bars to a grid wall using an adjustable wrench. The wrench slipped suddenly causing his forearm to hit against the sharp end of a 16mm reinforcement bar causing a laceration. First aid treatment was provided and worker returned to normal duties.</p>	<p>A post-tension tendon elongation was 2% below tolerance. In attending to this issue a worker used a drill to try and locate the misaligned post-tension tendon. The worker assumed that they were drilling at an angle. But instead drilled through the wall at the bottom of the segment (450mm thick). Large chunks of concrete spoil landed on a live roadway though damage to vehicles or injuries to people occurred.</p> <p>A reduced level was out of tolerance causing a gas pipe to clash with another utility service. To fix this, a 5 tonne excavator was used to dig a service trench in the footpath. The excavator bucket hit a 20mm polythene pipe gas service line causing a leakage. Work was ceased immediately. The damaged pipe was covered with spoil. The utility owner was contacted and technician attended site. An assessment was made by technician and repairs commenced.</p>

Figure 1. Safety incidents occurring during rework

Anecdotally, the relationship between rework and safety is acknowledged to exist by those operating at the coalface of construction. There are limited opportunities other than through informal means through a supervisor for subcontractors to provide direct feedback about rework unless a serious safety incident occurred. But then details about the rework event are watered down and its significance undermined as attention is paid to determining the actions that led to the specific safety incident (Figure 1). Limited attention to reflexivity, justification and substantive reasoning was afforded to the work.

To shed additional light on this observation, we analysed over 38,000 NCRs and 55,000 safety incidents that were provided to us by a couple of tier one construction organisations over a six-year period. Limited contextual information surrounding the description of NCRs were provided, particularly when a safety event occurred. In Table 2 we provide examples of the level of information and the format used to record when a safety incident occurred when rework was performed from a project we examined.

Table 2. Event description examples

Event Title	Event	Type	Incident Mechanism	Investigation Required	What Happened	Immediate Actions	Category	Consequence	Description
Working at Heights Hazard - Batch Plant	Hazard	Safety	<Left Blank >	<Left Blank >	Batch Plant silo/s had been incorrectly installed protected edges using ropes (needed to be re-installed into correct position)	Work was stopped immediately. ABC contacted. Work area rearranged and delineated preventing access across area exposed to fall hazard.	<Left Blank >	<Left Blank >	<Left Blank >
Foreign Body in Workers Eye	Incident	Safety	Powered & Non-Powered Hand Tools	Severity 5 - Incident Record Required	Whilst undertaking the task of segment repair a foreign body entered a workers eye. The worker was wearing double eye protection at the time of undertaking the task.	First Aid applied - saline wash out. Worker went to Doctor as a precautionary check.	Injury & Illness	FAI: First Aid Injury (3A)	Washed eye out using eye irrigator bottle.

An absence of organisation-and project-wide knowledge regarding rework has resulted in managers within construction organisations ‘burying their heads in the sand’ and avoiding difficult and searching questions about its causes and costs, even though it is known to be a function of practice. There needs to be a realisation that issues associated with rework are unable to be effectively resolved until fundamental changes to practice and culture are undertaken. Considering the adverse impact of rework, it was surprising to unveil that its costs are seldom, if at all, determined and formally accounted by construction organisations. We have revealed, for example, that rework resulted in a construction organisation experiencing a reduction in profit by 28% (Love *et al.*, 2018b). It could be argued here that organisations are ignorant as they do not possess knowledge, but they do know where it is and simply lack the willingness to acquire it. We consider this inaction to be a clear mark of stupidity.

Reflecting on our observations and conversations with people regarding the nuances of rework, it became apparent that the lens of functional stupidity could provide us with additional insights to identify barriers that have contributed to construction organisations not being able or willing to tackle this problem (Figure 2). If construction organisations are to make headway in addressing the rework that materialises in the projects that they manage and deliver, then we

believe that they need to overcome the functional stupidity that resides within them. As we have previously suggested a re-orientation is required by construction organisations in the way that they view and manage errors (Love *et al.*, 2018c). But as a first step construction organisations' need to acquire the confidence and aspiration to engage with and engender reflexivity, justification and substantial reasoning throughout all levels of their organisation and projects.

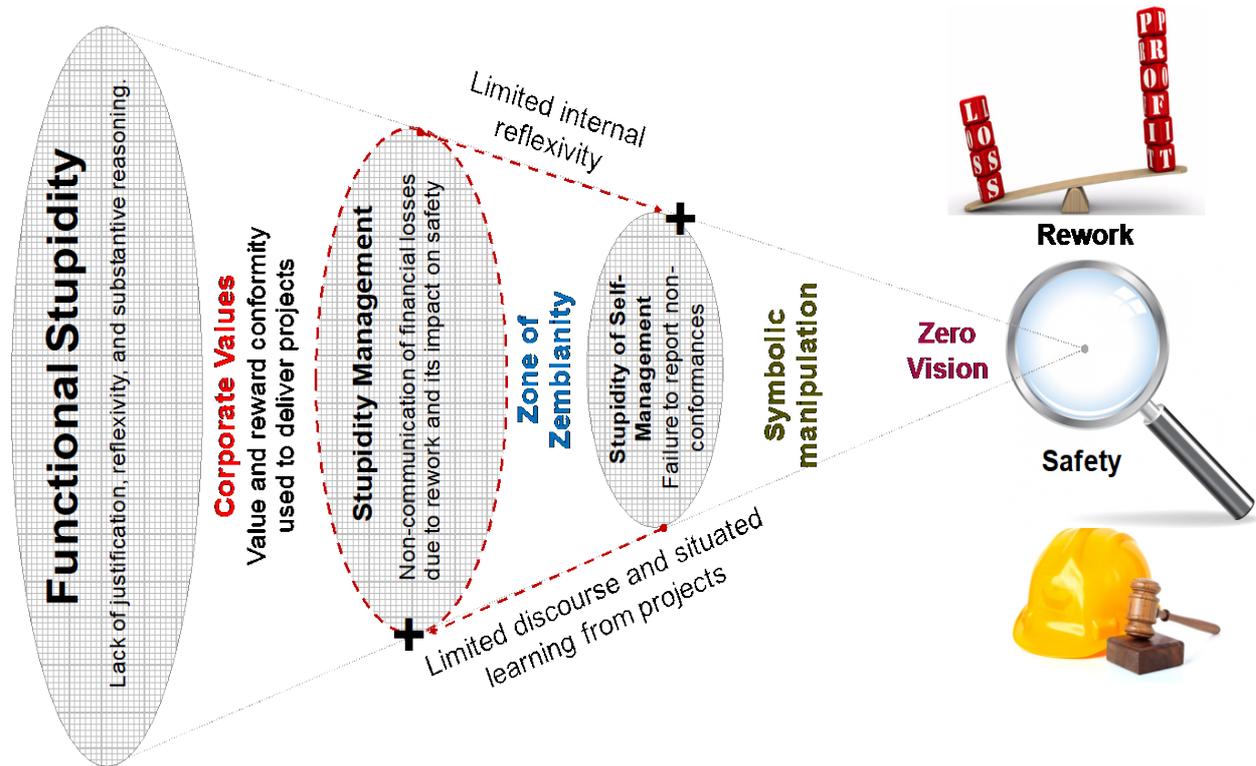


Figure 2. Barriers to rework mitigation

Zero-Vision

Entrenched within error prevention was a symbolic representation of a zero-vision juxtaposed with an additional emphasis being placed on safety slogans (see Figure 2). Examples of slogans that appeared on the various sites we visited included: (a) Safety is No Accident; (b) Safety is as Simple as ABC, Always Be Careful; (c) Zero Compromise Toward Safety; and (d) Work Smarter, Not Harder. Almost all employees we interviewed embraced the use of zero-vision and the use safety slogans by their organisations in the projects that they were involved in delivering. For example, site management and hired-labour at a pre-cast concrete yard were extremely devoted to the values that were espoused by 'See the Difference' as safety behaviour

was required to ensure established rules and norms within the project were adhered to (Love *et al.*, 2017).

To instil the behaviours that were desired within the project, people were motivated by the need to ‘get safely home at the end of the day’. But, fixed mindsets abounded whereby there was an overwhelming shared belief by the hired-labour, which had been promoted daily by site management team, that ‘incidents can and need to be prevented’. We believe this communicative action may have hindered the hired-labour’s ability to engage in *counterfactual thinking*. For example, we observed during workshops that we attended on-site that when workers were provided with negative information about a rework/safety incident that had occurred and then offered positive counter-evidence they were less likely to revise their initial negative judgement (Love *et al.* 2017).

The notion of a zero-vision not only focused on safety but also was transferred to quality under the auspices of ‘zero-defects’. Ironically, however, this was simply observed to be a catchphrase etched on the walls of site-offices that we visited. Our conversations with managers and employees revealed that quality was consistently absent from the consciousness of the organisations and projects we studied, with the exception of the Barwon Water Alliance project (Love *et al.*, 2016b;c). Instead of giving simultaneous attention to quality and safety, these competing needs are perceived as being a dilemma for construction organisations and their projects. This can lead to an either-or-situation where one alternative over the other is preferred. Dilemmas of this nature tend to occur when it is hard to choose between two equally beneficial elements (Achtenhagen and Melin, 2003). Equally, being the operative word in this case when we refer to quality and safety.

For the construction organisations that we engaged in our study a trade-off between quality and safety was usually prevalent. When a trade-off arises, there is a gradual exchange in which having more of one element means less of the other. Safety was given preference, as it is bound by legislation with the consequences of not adhering to regulations and code of practice being potentially costly and threatening to their organisation’s competitive advantage and repute. Rather than viewing quality and safety as a trade-off, perhaps managers could consider these competing demands as paradoxes as tensions between them are sustained in practice. This is particularly the case for rework and safety, as attending to both demands will result in improvements to organisational and project performance. Bearing this in mind, we suggest

that if the competing demands between rework and safety are framed as having paradoxical tensions there would be constant pressure to address both issues. By viewing competing demands as paradoxes call for creative alternatives in which members of an organisation find ways to engage in both of them (Beech *et al.*, 2004; Smith, 2014).

Stupidity Self-Management

We learned from several construction organisations that NCRs were a sign that a project was performing poorly. Senior management blatantly discouraged them and in one particular organisation, it put in place a formal reporting mechanism for those valued in excess of \$100,000 to be reviewed and signed-off by them. We presented a similar scenario in Table 1 where power is exercised through direct suppression. The exercising of power in this way dissuades critical reflection and the ability to learn from situated practice.

We have previously referred to this is an issue (Love *et al.*, 2018b), but not in the context of a power-politics relationship. The exercising of power in this way cascaded from senior to project managers on-site who reinforced the non-reporting of NCRs. On one occasion we observed that a project manager deliberately did not make known to senior management a NCR valued at \$115,000. The project manager apportioned the required actions to conduct the rework and its cost by raising ten NCRs, which therefore precluded them from reporting the single event. Actions of this nature distort the emergence of dialogue that would allow senior managers to question the nature of the event and its consequential impact. Encouraging adherence to the belief that errors and the practice of reporting NCRs are ‘bad’ discourages employees from engaging in the critical thinking, which is required to contain and reduce rework. The positive reinforcement of not recognising the importance of NCRs hinders the creation of knowledge and hinders critical thinking. This is a clear case of stupidity management in practice.

The positioning of quality as a poor cousin to safety establishes an organisational mindfulness where employees engage in a process of self-stupidity management as they cast aside their reflexive concerns about rework and focus their energies on completing their required work unharmed and meeting the deliverables expected by management. This led us to reveal that the mere existence of rework was being marginalised and when it did occur was deemed to be a *zemblanitiy* (Love *et al.*, 2018a). Unsurprisingly, employees that were both office-based and

on-site tended not to enter into dialogue about their experiences with rework as it was not part of an organisation's vernacular. An absence of collective organisational processes in place to review rework was evident to us, which meant employees refrained from engaging in conversation. It would appear that the opportunity for *internal reflexivity* was being repressed. Consequently, we see rework being unnecessarily normalised in construction, which has created a vicious 'zone of zemblanity' that keeps being carried forward from one project to the next (Figure 2). Addressing this precarious situation, however, is a challenge that confronts construction organisations in their everyday practice.

Stupidity Management

An unwillingness to use or process knowledge is an act of stupidity. We witnessed such stupidity first hand during our study as a result of analysing the nature of a construction organisations NCRs and safety incidents that had accumulated over a ten-year period. This culminated in several detailed reports which were produced and presented to the organisation. Our analysis confirmed the relationship between rework and safety, which we had already established from a study with a previous construction organisation. In addition, we were able to present to the construction organisation an estimated monetary loss due to rework as well as its likely precursors. Drafts were submitted for comment to various quality managers in each state. We subsequently met with them and during our conversations, it was evident that they had been presented with 'uncomfortable knowledge'. A realisation that rework was a problem came to the fore. Armed with this new knowledge and internal support from rank and file, the national manager, however, was reluctant to present the findings to the organisation's executive despite repeated assurances that they would, but at the same time requesting additional information. The organisation's executive was not made aware of the negative impact that rework was having on the bottom-line. We can only assume that the national manager had their own agenda at play (Table 1).

Implications for Practice

The barriers of functional stupidity that hinder construction organisations from reducing and containing rework can be addressed by managers at all levels: (a) engaging in reflexivity and exercising critical reflection; (b) understanding why and how it occurs; and (c) determining what its consequences are beyond the immediate task at hand. To enact such practices and responsibilities requires construction organisations shifting their mindsets from focusing on

error prevention to error management as well giving equal attention to both quality and safety rather than trading-off these competing demands. From the empirical evidence that we have made available it can be inferred that if rework is reduced, then safety performance will improve (Love *et al.*, 2015; Love *et al.*, 2018a;b).

The concepts of reflexivity, justification and substantive reasoning are ingrained within a ‘error management culture’ (Figure 3), which we have advocated and extensively discussed in our previous works (Love *et al.*, 2018a; Love *et al.*, 2018c). Central to transitioning from a position of error prevention to error management is communicative action enabled by authentic leadership and the establishment of an environment that supports psychological safety (Love *et al.*, 2018a). But because of using the lens of ‘stupidity-based theory of organisations’ to identify barriers to mitigating rework, we suggest that construction organisations prior to the commencement of their projects engage in the art of *requisite imagination* (Westrum and Adamski, 2003), which will assist them in their transition to error management.

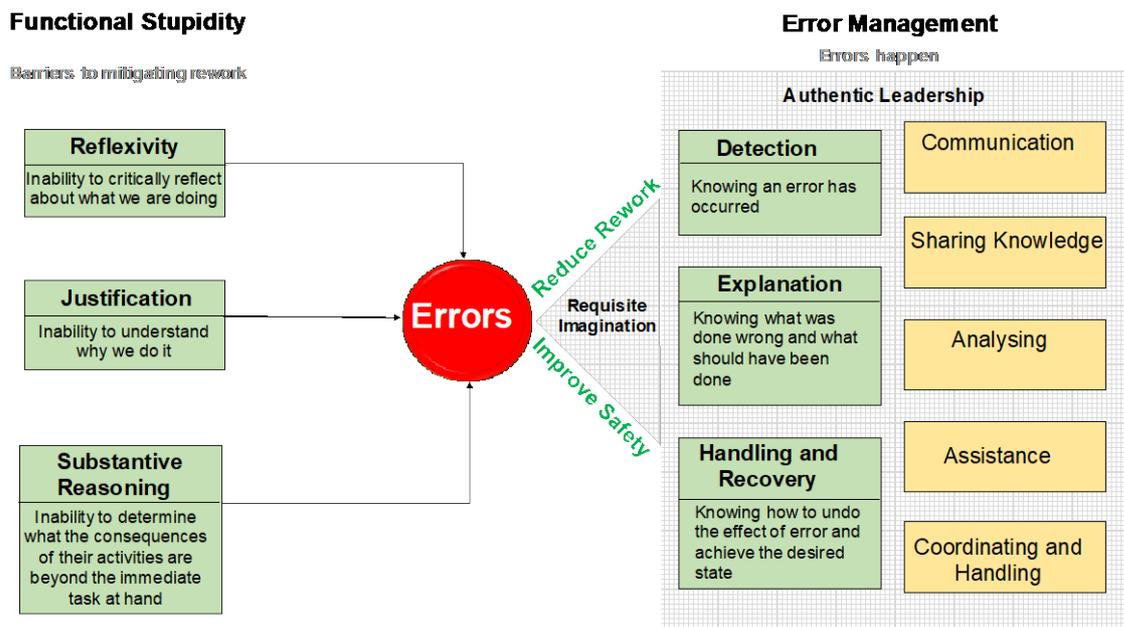


Figure 3. Addressing the barriers to rework mitigation with error management

Requisite imagination is the ability to imagine key aspects of the future we are planning (Westrum, 1991:p.195). Most importantly, it involves anticipating what might go wrong and how to check for problems that may reside in the design and planning of a project’s delivery. Requisite imagination often indicates the direction from which trouble is likely to arrive and

therefore can provide managers with the means to anticipate and explore those factors that can affect project outcomes in future contexts. However, the failure to use requisite imagination potentially opens the door to the threat of unanticipated outcomes. These adverse outcomes can manifest as rework, safety incidents, accidents, engineering failures or major catastrophes. To avert unwanted outcomes that may hide beneath the surface of a project's design, constructability and the managerial decisions that may be taken it is imperative that the cognitive capacities of managers and their employees are drawn upon to aid the process of requisite imagination as a means of counteracting functional stupidity.

Rework occurring as a result of flaws in design are recognisable when situations of a similar nature have been previously encountered. Unfortunately, with complex designs and new projects that may comprise different team members, it is more difficult to completely explore all error and rework scenarios. We suggest that construction organisations should encourage their managers and employees to have a “restless mind” and to be encouraged to ask questions (Adamski and Westrum, 2003: p.217). In aiding this process of inquisition, we suggest that there is a need for a *Maestro* within construction organisations who can lead, instigate and maintain a questioning attitude. In doing so, the Maestro would adopt a line of inquiry prior to a project's construction whereby matters such as ‘what situations have not been foreseen?’ ‘what has been forgotten?’, and ‘what could go wrong’ are addressed and communicated to create a collective mindfulness within the organisation that is attuned to requisite imagination.

Conclusions

Understanding the dynamics of rework causation and the barriers that mitigate its reduction and containment in construction are issues that have received limited attention. The research that has been undertaken, while warranted, has tended to take a superficial view of the rework problem as it has overlooked the managerial interactions and decision-making that exists between the organisation-project dyad. As result researchers have not been able to provide construction organisations with the knowledge needed for them to confidentially take action on.

An absence of research, however, is not to blame for constructions organisations not being able to effectively redress rework. Quite the contrary, the rework problem in construction was exposed over twenty-five years ago. But organisations have not been willing to openly

acknowledge they have a problem with rework, though they know it forms an innate part of practice. While safety should be a priority, it does not sit in isolation of other equally important issues. Placing safety as a priority over quality, however, has had the opposite of the desired effect; rework occurs, which results in safety incidents. We have not seen noticeable improvements in safety because rework remains a problem. Thus, we have suggested that these paradoxical competing demands need to be managed and treated alike.

Several barriers, however, have prevented construction organisations from moving forward and tackling rework. Drawing on Alvesson and Spicer's (2012) concept of functional stupidity we suggest that these barriers to rework mitigation have resided around organisational incapacity and/or disinclination on the part of organisational members to exercise critical reflection about what they are doing, to understand why they are doing it, and determine what the consequences of their activities are beyond the immediate task at hand.

We observed that functional stupidity was a recurring organisational issue explicitly linked to power and politics that was played out in several construction organisations and in their projects. Here managers attempted to discourage critical reflection that called into question prevailing organisational norms and values that had been sanctioned under the auspices of a zero-vision. In some instances, this, in turn, led to reinforcing stupidity self-management whereby employees intentionally limited their own critical reflection creating a vicious zone of zemblanity that kept being played out in projects.

To address issues surrounding functional stupidity, we consider that reflexivity, justification and substantive reasoning marry with the underlying premise of error management. Based upon our previous research and recommendations we believe that functional stupidity can be overcome by the adoption of error management. Additionally, however, we have suggested that the requisite imagination be embraced throughout all levels of construction organisations, with a particular emphasis on creating a dedicated role for a Maestro who would lead, instigate and maintain a questioning attitude in order to anticipate what might go wrong in projects. Rework is a known unknown and therefore by engaging in dialogue and learning from situated practice, issues that might go wrong in future projects can be better anticipated. Having in place such knowledge and utilising it to improve organisational performance and productivity are the hallmarks of an intelligent and not a stupid organisation.

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