

“Tough Love”: Unpacking the dynamics of Turner’s stage 6 (cultural readjustment)

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ABSTRACT: This study examines the perceptions and attitudes of RAF personnel following the 2006 fatal loss of Nimrod XV230 and subsequent Public Inquiry. The main focus was “cultural readjustment” and organisational learning. Phase 1 was carried out in 2010-2011 (18-month aftermath following the Haddon-Cave report) and Phase 2 in 2016 using follow up interviews, focus groups, observations and document analysis. The results point to a number of *barriers* to change in the early days post-inquiry, including fear of litigation and risk aversion, a military culture of ‘can-do’, normalized rule-breaking and insufficient safety expertise. *Facilitators* include leadership and followership, publicity and training and an enhanced regulatory framework. Ongoing *disrupting factors* were identified that may make the organisation vulnerable e.g. churn of critical personnel. The study suggests that organisations settle into a new quasi-stationary equilibrium following disaster, which may provide the ‘illusion’ of safety through increased safety bureaucracy.

1 INTRODUCTION

Arguably one of the most seminal pieces work carried out in the field of safety science over the last 30 years is Barry Turner’s (1978) book ‘Man-Made Disasters’. As the title of the book suggests Turner proposed that organizational disasters should not be viewed as cataclysmic ‘Acts of God’ but as a ‘type’ of disaster which comes about as the result of ever complex processes and everyday interactions within socio-technical systems (Pidgeon & O’Leary 2000).

As well as the concept that industrial disasters can be ‘man-made’, the book also introduced the notion of ‘*Failure of Foresight*’, that is that large-scale organizational accidents can have long incubation periods, during which early warning signs are either ignored or misunderstood. Crucially his research suggested that man-made disasters had preconditions, which were common to all disasters. Disasters are not caused by people or technical issues in isolation, but rather they arise by interactions between humans and elements of complex systems. As Macrae (2014) states “disasters are essentially organised events. To occur, they typically require the systematic and prolonged neglect of warning signs and signals of danger”. As a result, ‘organisational ignorance’ (Smithson 1989), ‘organisational silence’ (Morrison and Milliken 2000) and ‘organisational blindness’ (Hopkins 2005) can prevent an organisation from heeding valuable early warning signs that could prevent disaster.

Turner believed that it is the ‘social distribution of knowledge’ i.e. “shared beliefs, collective assumptions, cultural norms and patterns of communication across organisations” (Macrae 2014) that can define how safe an organisation they are. The ‘sloppy management’ (Turner 1994) of information and knowledge, that is failure to collect and interpret safety data across complex organisations, is often identified as a contributory factor to disaster. Despite the best efforts of those involved within safety-critical industries, he believed that the safe operation of technological systems can be subverted by the ‘normal processes of organisational life’.

Turner’s (1978) work became the catalyst for extensive research into the nature of system safety and accident causation e.g. Reason (1990/7), Vaughn (1996) Turner and Pidgeon (1997) Weick and Sutcliffe (2007) etc. Turner (1978) developed a stage model to describe the ‘lifecycle’ of organisational disasters. He carried out a study of 84 accidents in 1960s and 1970s and concluded that all accidents progress through the 6 stages outlined below:

- 1 Culturally accepted beliefs about the world; norms set out in Laws, SOPS, regulations.
- 2 Incubation period: accumulation of unnoticed events (Latent Failures) which are at odds with the accepted beliefs about hazards and the norms for avoiding them.
- 3 Precipitating event: degree of recognition of some Latent Failures; transformation of the general perceptions of Stage 2.

- 4 Onset: disaster, accident occurs; cultural collapse.
- 5 Rescue and salvage following accident; first stage adjustment – recognition of immediate post-collapse situation allows rescue/salvage to take place.
- 6 Cultural re-adjustment: following inquiry, beliefs and norms are adjusted to fit the newly gained understanding of the world.

As Rosenthal (1996) states in the foreword to the 2nd addition of Turner's book: "the strength of the model is in its clear-cut, firm statement of the factors which, in conjunction, make for the incubation of disaster and crisis: perceptual rigidities, information ambiguities, the disregard of rules and instructions, and, eventually, overconfidence and organizational arrogance...it is as simple as it is powerful".

Following Turner other models have followed e.g. Shrivastava *et al* (1988) *Industrial Crises Model*, Toft and Reynolds (1997) *Systems Failure and Cultural Readjustment Model*, Ibrahim *et al*'s (2002) *Pre-condition Phase Model* and Aini and Razi's (2006) model based on ten phases, all of which show that disasters follow a sequential stage/phase development process. Hughes *et al* (2010) analysed disasters in six different industries (space, shipping, aviation, mining, rail and nuclear) to produce a *Generic Disaster Pathway* model. The model maps the pathway of a disaster through four phases in relation to severity. Despite more recent work on stage models e.g. Elliot (2009), Turner's original 6-stage model still stands out because of its simplicity.

Turner (1978) provided a great deal of detail regarding disaster incubation and onset but had less to say about cultural readjustment. Pidgeon accepts this in the updated version of Turner's book stating "implicit in the original model then, is the assumption that such readjustment can and will take place typically as some form of organisational learning" (Turner & Pidgeon 1997). Organisational learning may be defined as "a cumulative, reflective and saturating process through which all personnel within organisations learn to understand and continually re-interpret the world in which they work by means of the organisational experiences to which they are exposed" (Toft and Reynolds 1997).

Elliott and Smith (2006) challenge Turner's (1978) implicit assumption that cultural readjustment automatically follows a crisis by examining the UK football industry's response to four crises that affected it between 1946 and 1989. They concluded that despite the high profile mass casualties, public inquiries and legislative reform, little cultural readjustment had taken place. This was in part due to what Wicks (2001) described as a 'mindset of invulnerability'. What is clear is that the increasing complexity of socio-technical systems has resulted in an expansive safety research tradition. Despite this, the pre-disaster, disaster and post-disaster literature is

unbalanced with less emphasis placed on the post-disaster phases.

1.1 Aims and objectives

The first objective was to examine a recent disaster, the 2006 Nimrod Crash and interpret it through the lens of Turner's model focusing on Stage 6, cultural readjustment. The second objective was to reflect on the model in light of the data gathered and consider the implications for future work.

1.2 Nimrod Crash and Haddon-Cave Inquiry

On 2 September 2006, RAF Nimrod XV230 was on a routine mission over Helmand Province in Southern Afghanistan in support of NATO and Afghani ground forces, when she suffered a catastrophic mid-air fire, which led to the total loss of the aircraft and the death of all 14 personnel on board. The subsequent Public Inquiry carried out by Charles Haddon-Cave, QC was released after a 20-month investigation. The scale of the investigation was unprecedented in British military history. Haddon-Cave (2009) concluded that: "Financial pressures...drove a cascade of multifarious organisational changes...which led to a dilution of the airworthiness regime within the MOD and distraction from safety and airworthiness issues".

The Nimrod Review represented one of the biggest triggers for change within the RAF since the end of the Cold War. It set in motion a host organizational changes, which took place in the context of busy operational activity in Afghanistan and Libya at a time of defence cuts. The RAF continues to be busy operationally in the Middle East today. This study aims to examine the perceptions and attitudes of RAF personnel following the fatal loss of the Nimrod and the subsequent Public Inquiry. The main focus of the research will be surrounding the "cultural re-adjustment" of the organisation in light of previous research e.g. Turner (1978); Birkland (2009) barriers and facilitators; Dekker (2007) just culture and Elliott (2009) organizational memory and learning.

Haddon-Cave's subtitle to the 'Nimrod Review' was "A FAILURE OF LEADERSHIP, CULTURE AND PRIORITIES" which gives an insight into the report's candid assessment of the MOD's failings. The wide ranging inquiry outlined many similarities between the loss of the Nimrod and other catastrophic accidents such as the *Zebrugge Disaster* (1987), *King's Cross Fire* (1987), *The Marchioness* (1989), and *BP Texas City* (2005). The report highlighted the MOD's shortcomings including a failure to adhere to basic principles; a military airworthiness system that was not fit for purpose; a safety case regime that was ineffective and wasteful; an inadequate appreciation of the needs of aged aircraft; a se-

ries of weaknesses in the area of personnel; an unsatisfactory relationship between the MOD and industry; an unacceptable procurement process leading to serial delays and cost-overruns and a safety culture that allowed business to eclipse airworthiness. There were 84 recommendations the most striking of which was for a new military airworthiness regime under the control of an independent Military Airworthiness Authority (MAA), “which is effective, relevant and understood, which properly addresses Risk to Life, and which drives new attitudes, behaviours, and a new Safety Culture” (Haddon-Cave 2009). The report made recommendations for a Safety Culture comprising of a *Reporting Culture*, a *Just Culture*, a *Flexible Culture*, a *Learning Culture*, and a *Questioning Culture*.

2 METHODS OF STUDY

A longitudinal study was carried out using a number of different research methods including participant observation, documentation analysis and participant interview. The interview phase of the study was carried out between May 2010 and Mar 2011 (Phase 1) and follow up interviews carried out Apr/May 2016 (Phase 2) at RAF Waddington, a frontline base in Lincolnshire.

2.1 Participants

Participants were all volunteers and were selected by the researcher from across the organisation. Purposive sampling was used to ensure that sufficient representation was provided across the range of trades and rank structure. The majority of the interviews were with personnel of Sergeant or higher rank where the impact of the Nimrod Report was thought most likely to be felt and with those personnel with a direct safety role. These therefore represent lower/middle management and above. For Phase 2, the precise definition of some of the participant roles had changed since 2011 however the majority of the interviewees were employed in very similar roles to the original interviewees. Four of the participants who were interviewed in 2011 had taken part in 2016.

2.2 Phase 1

During this time the researcher was employed in the RAF and worked at RAF Waddington. Having spent 24 years as an engineer working on a number of different aircraft types, the researcher was uniquely placed as a participant-observer to carry out an observational study of RAF Waddington’s personnel. A total of 30 semi-structured interviews were carried out during Jan-Mar 2011. The researcher also observed reactions to the Haddon-Cave Inquiry at a

large number of Aviation Safety Meetings and International Symposiums at a variety of locations both inside and outside RAF Waddington over the period Oct 2009 – Mar 2013. The researcher had access to a wide variety of (published and unpublished) documents that give insight into the safety culture both at RAF Waddington and in the wider RAF before, during and after publication of the Haddon-Cave (2009) Report. These included:

- Error Management Diagnostic (EMD) - 828 questionnaires completed by Engineering and Logistics personnel.
- Safety Culture Assessment (2010) - cultural study based on the Health and Safety Executive’s Climate Tool.
- Maintenance Error Management System (MEMS) End of Year Report (2010) - end of year summary of MEMS across 12 RAF Stations.
- Aviation Safety Management Plan
- No1 Group, No. 2 Group, RAF Kinloss, RAF Waddington draft Safety Manuals.
- Command Continuous Improvement Maturity assessment.

2.3 Phase 2

A further 21 interviews were carried out Mar-May 2016. By 2016 safety management documentation had become clearer and more formalised:

- RAF Safety Management Plan (AP8000)
 - No1 Group Functional Safety and Environmental Management Plan
 - No 1 Group Air Safety Management Plan
 - RAF Waddington Total Safety Management Plan
- In addition to follow up interviews and document analysis the researcher took part as observer-participant in a three day, contractor-led Defence Aviation Error Management System (DAEMS) Post Technical Support visit to RAF Cranwell. A number of focus groups, master classes and interviews were held with over 100 personnel from across all ranks, as well as civilian support contractors.

2.4 Data Analysis

Interviews were recorded and subsequently transcribed. The data was manually analysed to identify themes. A set of *a priori* codes were produced based on the interview schedule headings and sub headings. An iterative approach was taken to analysing and re-analysing the data set to further develop these codes as new themes and sub-themes emerged following the process outlined by Miles and Huberman (1994).

3 RESULTS

Participant responses were organized around the following broad categories:

- Nimrod Crash: Awareness / Views of the incident
- Nimrod Review: Awareness / Understanding of report recommendations
- Personal Impact: Of event / Of subsequent changes
- Organisational Impact: Risk / Likelihood of recurrence / Safety Campaigns / New Structure & New Roles / Fear of litigation
- Culture: Military / Learning / Questioning / Just / Reporting
- Barriers to change
- Facilitators of change

3.1 After Nimrod – Awareness and Impact

All participants had some knowledge of the Nimrod crash and Inquiry to a greater or lesser extent and all could identify structural changes that had occurred. Most perceived that Nimrod had been the catalyst for change in a positive way although by the latter stages some thought that complacency was starting to creep in. In the immediate aftermath many thought that the organisation was vulnerable to another event. By 2016 most thought that the management of Airworthiness and Air Safety had “enough momentum now to endure”.

There was some early evidence that people believed the organisation had become *risk averse*, partly in response to a perception of a greater chance of litigation. The narrative shifted over time and many people stated, “we are not a risk-averse organisation”. Some however, felt that the pendulum had swung back and statements such as this could be used as ‘cover’ for not digging too deeply into safety concerns; and by implication allowing managers to ‘push on’: “I think initially safety comes first but then when the pressure comes...safety maybe isn't the full priority”. Risk management (RM) is an area that appears misunderstood by much of the organisation and when mitigations and barriers are documented as reducing risks to an acceptable level, their efficacy is not routinely tested. Post Haddon-Cave RM is largely still narrowly focused on Air Safety (Risk to Life). Functional risks appear less well understood.

Prior to Haddon-Cave, Waddington had a very disparate approach to aviation safety where different types of safety were managed by different parts of the organization. Some upheaval and apparent discomfort was felt when existing roles and responsibilities were ‘challenged’ by the new procedures and processes after Haddon-Cave. Over time there has been an attempt to align the disparate areas under one Total Safety (TS) construct. Although this was seen to be a step in the right direction, it was perceived to be having a limited effect due to a lack of real integration of safety expertise and assurance ac-

tivity. There is considerable overlap in some areas and apparent gaps in others. There was evidence of spending more time carrying out assurance-building schemas and processes than investigating issues. “I think we may have gone a little bit too far right of arc with regard to the amount of assurance that we are doing; to the point that we are doing so much assurance with limited manpower...that we are spending more time pushing paperwork than digging into the nitty gritty and actually finding out what could be going wrong”. Additionally, safety management leadership was felt to be evolving ‘bottom-up’ not centrally driven.

Some that safety has become a ‘cottage industry’ ‘sucking’ life away from the frontline: “There is more governance; the big joke now is that you have more people assuring than turning spanners...” Audit fatigue and SMS processes were seen as a burden although most people agreed that the new assurance processes were necessary. Increased engineering oversight in particular was largely seen as a good thing. The reporting culture was perceived to be good and improving all the time although it was seen by some as a way to ‘protect’ individuals when something had gone wrong. Some saw this as a way of ‘passing the buck’ or getting top-cover for risky behaviours. The myriad of different reporting systems had caused confusion in the user community and led some to worry that significant safety issues might be falling through the cracks. Reporting systems matured to some extent over time and participants seemed happier that people knew how to report. Local workarounds were helping to overcome the wider systemic problem of a lack of integration. Despite some middle management disquiet about: “airing our dirty linen in public” the majority recognized the benefits of learning from other people’s mistakes.

3.2 Barriers and Facilitators

The British military are often described as having a ‘can-do’ mentality but some participants felt that ‘getting the job done’ often meant cutting corners, coming up with ‘workarounds’; not following the written procedures. A reluctance to be seen as someone who does not ‘get the job done’, was seen to be due to an *organisational culture* of ‘achieving’ and ‘problem solving’, but also because of fear of detrimental impact on careers. There were examples of situations where individuals had decided to say, “stop” but these were perceived to be isolated incidents where things had got so bad that to continue would have been foolhardy. The normalization and transfer of risk-taking from war-fighting theatres back to peacetime operations in the UK was also seen as a potential barrier to safety. The majority felt that operational needs would always come before safety.

Perceived pressure from above was felt by many of the more junior managers but was in contradiction of the stated intent of the senior managers to put safety first. A widely held belief is that *resource-to-task* is inadequate. "I am worried that we are being asked to do more and more with less and less; something's got to give". Most people believed that there was "no fat left" and often they are 'double or triple hatted' i.e. doing several roles. There also appears to be 'gapped' posts in some key safety areas. Reservists are increasingly being used to overcome the disruption caused by 'churn' and to give stability to key safety roles and to overcome the loss of corporate memory, which is exacerbated by *immature databases* and almost non-existent *data analysis / exploitation*. Manpower for safety and airworthiness was being resourced at the expense of, or putting pressure on front line activity. Some pointed out the difficulties of competing demands of EITHER getting the job done OR being safe. The major reason that people were perceived to be using workarounds was because they didn't believe that they had enough people to do the job properly. Most still saw *safety activity as a burden* that could get in the way of output but a 'necessary-evil'.

Lack of understanding and *resistance to change* were seen as significant barriers to cultural adjustment. Over time there seems to be less concern that individual 'blockers' were trying to undermine the system however a recurring theme was that progress COULD be and HAD been hampered when a manager is posted in that does not whole heartedly commit to the new paradigm. Politics and career progression were often perceived to be management's main drivers rather than system performance.

Organizational inflexibility and the *hierarchical structure* of the MOD were perceived to be holding back progress: "When you look at a safety culture; the whole idea of it being flexible, learning, reporting and just and all that stuff. Okay we may be getting there on some of that stuff but flexible organization? I don't think we are as the military; a learning organization? Well I don't think that either. I don't think we are flat enough to learn properly. So the things that we learn at the grassroots don't actually get to high-level, to a high enough level to get into policy. So as an organization we don't particularly learn well".

The main facilitator for change identified by the participants was '*Leadership*' both by the Station Commander and the MAA. Whilst no one questioned the Station Commander's commitment, few felt that the MAA as a relatively new organisation was entirely capable yet of providing the direction and guidance required. Many felt that Waddington was influencing Command Policy 'bottom-up' and few people understood what the RAF Safety Centre was for. Most were reasonably happy with local leadership however also some scepticism about the

RAF's higher echelons being really committed to safety: "It is about safety leadership. You read the stuff in AP 8000, statement of commitment or whatever and it is strong & signed off at the right level. I am not sure it is actually understood at that level. You sign off what is presented before you but you don't necessarily understand what you are signing for; you agree with it but you don't necessarily understand it in depth"

There was a sense that despite difficulties, the organisation had a sufficiently *motivated workforce* that could quickly adapt to the new safety regime. Evidence to support this can be seen by the fact that over 1000 Aviation Error Management System (AEMS) reports were submitted across the RAF in the 12-month period after Haddon-Cave, compared to 10 reports submitted in 2008 under the previous reporting system, a hundred-fold increase. The reporting rates continued to grow throughout this study at a rate of about 10% increase year-on-year. As well as underpinning an improved learning and safety culture, personnel commented that *open reporting* overcame individual 'blockers' in the system as there was now: "No place to hide..."

Although a burden, many personnel felt that the mandatory *Safety and Human Factors Awareness training* would facilitate the implementation of the Haddon-Cave recommendations and fostering of a Safety Culture. Other factors identified as facilitating culture change include *System Confidence* and *Demonstrable Success*.

3.3 Safety Culture

Participants were all aware of at least two of the structural changes that had come about as a result of Haddon-Cave (2009). The findings of the EMD contrast with the findings of Phase 1 of this research some 18 months later by which time 150+ AEMS forms had been submitted and 27 Occurrence Safety Investigations (OSIs) carried out at Waddington; representing a *willingness to report* individual as well as system errors.

A key concept now established is the notion of *SQEP* (Suitably Qualified and Experienced Personnel) for those personnel with important safety and risk management roles. This represents a significant challenge to the established way that personnel are managed throughout the organisation. Although the Station Commander is now legally accountable as the Duty Holder for the aviation risks on station they have little or no control over the personnel that work in key safety roles. Most SQEP were not formally selected for their safety expertise prior to coming into post and most had to qualify after starting the job. There appears to be no over-arching strategy for 'growing' SQEP. It was also noted that key safety people tend to be "the sick and the lame" i.e. those who cannot be deployed due to medical or other per-

sonal reasons. Many of the participants thought that individuals throughout the organisation were now more *questioning* of themselves and others; “Consciously I probably look at the things I do when I get into an aircraft...slightly more than I did before”.

Despite assertions from senior management such as about commitment to a *Just Culture*, the quote below accurately paraphrases a common view voiced during the first part of this study. “I think there is still the culture of headhunting; when something goes wrong we still try to find someone to blame”. Personnel appear sceptical until exposed to specific examples or until they are personally involved in an incident and subsequently find that blame is not, inappropriately attributed. Some thought that individuals would be able ‘hide’ behind the policy and therefore ‘get away with’ behaviour that should be punished. One high profile incident had set progress back significantly in Phase 2.

There was a general feeling that the RAF used to have a safety culture in place but that they had taken their ‘eye off the ball’ “I think the priority was shifted, the focus was on saving money” Some felt though that there were signs of improvement, particularly with the management and understanding of risk however, there was a sense that in other ways the organisation was still “carrying on as before” particularly on operations and that hierarchical structures and historical trade boundaries stand in the way of the organisation becoming a *flexible, learning* organisation. There has been no fundamental shift in the way that the organisation is structured and trying to meet the aims of Haddon-Cave without properly resourcing it had, some felt, built in more, unnecessary complexity. “In terms of trying to deliver in the short-term, maybe just modifying what you already got is the simplest and cheapest option, and also in terms of delivering change anything bigger may have been met with increased opposition. So it might be a case of trying to do what you can rather than what you need to do” There was evidence of *perceived pressure* from above however many thought that self-induced pressure was probably more of a concern. “We don’t like to fail”. It seems that Can-do persists for many and that short cuts and workarounds are still used to achieve output when the ‘heat’ is on.

4 DISCUSSION

4.1 *Structural and Cultural Adjustment*

Whilst there have been some structural changes at RAF Waddington, it is not immediately obvious whether they have gone far enough in order to foster a really open and engaged safety culture. There are a number of positive cultural indicators that suggest improvement, however there are also some funda-

mental challenges that may be holding back progress, and may even be making things worse. There is a weary acceptance by many of Waddington’s staff that the structure of the organisation will forever be in a state of constant reorganisation to accommodate the lack of people, or to satisfy individual middle/senior management agendas. Major reorganisation (though not fundamental) has put strain on frontline capabilities because it was not resourced. This has been addressed to a lesser extent by employing reservists but this is a drop in the ocean compared to what may be required. The bureaucracy of safety management is clear to see and growing but whether this flurry of safety activity masks the true nature of Waddington’s risks is not obvious to an outside observer or even to those involved. Most participants agreed that the organisation was safer in the wake of Haddon-Cave but few thought that they were as safe as they should be.

It is clear that the participants do not yet think that the organisation has found the right balance when it comes to RM. Emergent hazards and risks do not appear to be hunted down as RM is narrowly focused after Haddon-Cave. There has been an attempt to widen the field of focus but this creates two problems: For some straying away from Haddon-Cave’s core principles dilutes efficacy. For others targeting too narrowly risks placing too much emphasis on one particular aspect of safety at the expense of the real issues that may be hurting the organisation. The *fear of reoccurrence* noted in Phase 1 hasn’t been lost...although this does not necessarily mean that disaster is inevitable since a heightened sense of unease may help to overcome *complacency* as in high reliability/resilient organisations. It may now mean that the organisation is more *risk-aware*. The danger of course could be that this ‘fear’ only resides within enlightened individuals who may be *insufficiently empowered* to make a difference.

So has full cultural readjustment taken place as suggested by Turner’s (1978) model? It is clear that some progress has been made but that the picture is a mixed one. This research may raise more questions than it answers about whether cultural readjustment is even possible, whether foresight can or will be generated, or whether disaster is inevitable in highly complex socio-technical organisations.

4.2 *Safety Culture*

As Haddon-Cave (2009) points out “There is much to be learned from the work of NASA and the US Joint Planning and Development Office who have adopted Professor James Reason’s four-part approach to creating an “Engaged” Safety Culture which includes four elements: *Reporting / Just / Flexible / Learning*. Haddon-Cave added a fifth culture to this list and this has been included in the RAF SMP (AP8000). He believed that a *Questioning Cul-*

ture was also fundamental. In the seven years since Haddon-Cave personnel at RAF Waddington have shown an increasing willingness to report accidents, incidents and near misses. This is mirrored across the wider MOD.

Once given the training, processes and mechanisms to report, personnel began to highlight problems to management that had been unknown to them under the previous command-chain and accident reporting systems. However there are issues: too many reporting systems, some underpinned by mandatory legislative requirements. Confusion has resulted in some mandatory reportable incidents being reported on the wrong system, or not reported at all; insufficient occurrence investigators available to carry out investigations; reporting systems seen as too unwieldy and difficult to use; differing perceptions as to what some reporting systems are for; perception that some of the reporting systems are more 'visible' to senior management, fostering the notion of too much outside interference; the view of "airing dirty linen" has waned over the years but still encountered; a belief from some that personnel may 'abuse' the system and report to 'offload' difficult management issues; quality of reports varies significantly regarding their value for hazard identification; belief that 'others' report to protect themselves when carrying out risky behaviours to protect themselves from accountability; embryonic data analysis and "doing what we can" within resource constraints.

There is wide spread recognition that Waddington is striving to be 'just' and fair when things go wrong (Dekker, 2007) but it is not yet fully embedded. The sentiment that Just Culture is 'hard-won but easily lost' was voiced time and again. Where formal safety investigations are carried out the belief is widely held that people will be treated fairly and appropriately. Outside of these investigations doubt still remains. The complexity of RAF Waddington and wider MOD as an organisation, makes being flexible extremely difficult. Constraints on finance, infrastructure, recruitment and manning, policy and materiel all act to narrow the options available. Although some involved in Waddington's SMS have a vision of what their organisation could look like, this does not seem to be mirrored at a strategic level in the MOD. No one interviewed could articulate or point to a high level vision or strategy for growing safety management expertise or fostering a safety culture.

The basic organisational command structure and hierarchy still exists and the organisation still procures and operates in much the same way as it did before the Nimrod crash. The researcher had an opportunity to talk to Haddon-Cave after he gave a speech at the Royal Aeronautical Society in 2015 where he stated his belief that the MAA was on course to be a world class regulatory body. This view was not widely held by Waddington's personnel. The move towards even more contractor support

seems unstoppable regardless of what impact this may have on the RAF's skills base and corporate knowledge.

At the present time there is limited expertise throughout the organisation at interrogating and analysing safety data and few people have the time to even begin to look proactively at the increasing volume of data. The taxonomies used to categorise this data vary considerably and reside in different databases; therefore gaining situational awareness of the current risk picture appears to be more about intuition than empirical evidence. Studies of organizational memory have shown the link to organizational learning so the lack of a joined up approach to the management and exploitation of safety data, and the churn of personnel may negatively affect corporate memory and therefore the ability to learn. Differing emphases of investigative approach e.g. identifying 'causal factor' versus 'root cause' can lead to single rather than double loop learning.

Military personnel and officers in particular are trained to 'deal with' issues however this approach may only treat the symptom rather than the cause and reduces the opportunity for isomorphic learning to take place. Organisational learning and error prevention can only come about when we 'drain the swamps' (Reason, 1990). Middle management in particular appear to be vulnerable to this mind-set. The elephant in the room for the RAF to become a learning organisation appears to be its *military culture* of can-do and a hierarchical structure where issues are dealt with lower down so the real risk picture is potentially 'filtered out' before reaching those that can influence policy. Policy appears to be changing and 'bubbling up' from the bottom. The question remains whether the organisation is hamstrung by its structure, culture and external factors such that it can only progress so far; can perhaps only be so safe. Despite some obvious examples of individual resistance to change there appears to be a willingness on the part of the population to prevent another disaster. Nimrod remains in the psyche of many of the interviewees although it seems that the event itself is less significant to the younger workers. The lack of awareness in this cohort may not represent a vulnerability as they seem willing to report and the safety management system processes appear to be more 'daily business' than in the earlier part of the study.

5 REFLECTIONS ON TURNER'S MODEL

It is clear from this research that cultural readjustment is a many-layered, recursive process of change. It involves a complex mix of Contemplation, Preparation and Action (Prochaska et al 1992) at individual, team and organisational level. This is fraught with difficulty. Even when public inquiries are effec-

tive at identifying the causes of disaster, they still have to make appropriate recommendations that must be achievable and grounded in reality. Disasters are uncomfortable events to go through for any organization and so is the subsequent adjustment. This change needs to be managed to be effective. It can't just 'happen' by ticking off a list of recommendations post inquiry. When change does occur there will be many factors that work for and against and sometimes making structural changes are the easiest thing to do. These, along with the inevitable flurry of safety activity may give the illusion of safety through increased safety bureaucracy. Improved safety culture takes time to achieve and individuals and teams will go through the process of Contemplation, Preparation and Action at different times and at different paces. Individuals (whether as *heralds* or *blockers*) can have a profound influence on the efficacy of this process. When the dust settles the organisation may well find that a culture shift has occurred, however only time will tell whether the new norms and beliefs have made it safer. Even then there will be ongoing *disrupting factors* that mean that rather than an end-state of "cultural readjustment" organisations are more likely to settle into a new *quasi-stationary equilibrium* (Lewin 1947a). Turner's (1978) model does not easily account for the findings of this research. In fact no stage model can easily sum up the complexity or recursive nature of cultural readjustment therefore more work is required.

6 LIMITATIONS AND FUTURE WORK

Although this research took place over an extended period of time it was still limited in its sample size and scope therefore extrapolating to the wider organization or other industries may be difficult. Additionally the researcher was inevitably involved in the changes that took place in the wake of Haddon-Cave and therefore maybe too close to be entirely objective. Future work could involve revisiting the RAF to carry out a third phase and to carry out a similar case study in another safety critical industry e.g. Rail. The data from this study and future work will be used to develop a model that may better describe the process of cultural readjustment.

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