The imperative to specifically, intentionally and systematically include the thinking and learning from Major Accidents in the Terms of Reference

Piper Alpha 6 July 1988,
167 Deaths

Grenfell Tower 14 July 2017,
80+ Dead or Missing

Submission for consideration in the consultation regarding the
Terms of Reference for the
Public Inquiry into the Grenfell Tower Tragedy

This submission is in honour of those that lost their lives in the Grenfell Disaster

Gill Kernick
Local Resident and ex-resident of Grenfell Tower, gillkernick@msn.com

Executive Summary

I believe there is both a practical and moral imperative to include the learning and thinking of Major Accidents in high hazard industries in both the Terms of Reference and the Public Inquiry.

Primarily I am arguing for two things:

That the **scope** of the investigation covers both the fire itself and the response. And that it covers

- an event based investigation;
- a systemic investigation, and
- a process to ensure that recommendations are successfully implemented.

That the thinking of, and learning from **Major Accidents** is specifically, intentionally and systematically included in the Public Inquiry.

I further recommend the inclusion of the following **experts**:

- Jim Wetherbee, author of Controlling Risk in an Unsafe World and retired NASA astronaut and commander of five spaceflight missions. Jim has worked on implementing the corrective actions following the two space shuttle disasters, the Texas City Refinery explosion and the Deepwater Horizon (Gulf of Mexico) disasters.
- Sydney Dekker, professor and author of numerous books on of safety and human performance. His books include The Field Guide to Understanding Human Error and Just Culture.
- James Reason, professor and author of numerous books with a research focus on human error and the way people and organizational processes contribute to the breakdown of complex systems. His books include The Human Contribution; and Human Error.

Gill Kernick, gillkernick@msn.com

Table of Contents

Gill Kernick, gillkernick@msn.com

1 Introduction and Background

I am arguing for the inclusion of the learning and thinking of Major Accidents (Low probability, High consequence events) to be specifically, intentionally and systemically included in the Inquiry.

I work in high hazard industries partnering organisations to develop leadership capability and cultures that prevent major accidents. My clients include the most senior executives in some of the UK and world's largest organisations. I was a member of the global faculty for BP delivering a programme on safety, culture and leadership in the aftermath of the Texas City (15 deaths), and Macondo / Deepwater Horizon (11 deaths) disasters.

I lived on the 22nd floor (then the 18th) of Grenfell Tower from 2011 to 2014.
On the 14th June 2017, I sat on my bed and watched Grenfell burn.
I vowed to do what it takes to create lasting systemic change.

I live, and am a leaseholder, in Trellick Tower. My husband is the chair of the Residents Association. I have participated in the Tenant Management Organisation's (TMO's) consultation process both regarding the major works at Grenfell and Trellick Tower. David Collins, ex-chair of the Grenfell Residents Association, is a friend who took over our apartment in Grenfell.

All views expressed in this document are my own. Whilst this is a professional view, I am writing this as a local resident who used to live in Grenfell. I would, however, like to acknowledge the contribution Capt. Jim Wetherbee, author of 'Controlling Risk in a dangerous world'[1] who has contributed enormously by talking through the events and my thinking.

Jim is an American former naval officer and aviator, test pilot, aerospace engineer, and NASA astronaut. He is a veteran of six Space Shuttle missions and is the only American to have commanded five spaceflight missions. He has worked to implement the corrective actions developed after four major accidents in the last 25 years – the Space Shuttle disasters, Challenger (1986, 7 deaths) and Columbia (2003, 7 deaths); and in the oil and gas industry, the Texas City Refinery explosion (2005, 15 deaths) and the Deepwater Horizon disaster (2010, 11 deaths, the industry's largest marine oil spill).

Viewed through a professional lens, I believe there are key lessons to be learned from the thinking of major accidents (Low probability / High consequence events). Traditional views of safety and incident investigations will not provide the learning needed to prevent a tragedy of this nature happening again.

Viewed through a human lens, I believe there is a moral imperative to do so. It is the right thing to do to honour those that died in the Grenfell Tragedy. It is also the right thing to do to honour those that died in the disasters on which the learning is founded. They died, at least to some degree, having knowingly put themselves at risk by working in high hazard industries. In Grenfell, people died in their homes.

[1] Wetherbee, Jim; 2017; Controlling Risk in a Dangerous World.

On June 17th, I was interviewed by Matthew Price on the Today programme. Key points are transcribed by Martin Stanley[2] on his website Understanding Regulation. This document outlines my thinking and argues for the need to build the thinking and learning from Major Accidents into the Terms of Reference for the Public Inquiry.

I present two main themes:
The **Imperative to Learn from Major Accidents**, drawing attention to some of the lessons learned in high hazard industries that would be useful to apply to Grenfell. I explore Blindness to Major Risk; Prior Indicators of Tragedies; Failure to Learn; A note on policies and procedures; Reward and Management Structures; Leadership and Culture and some concluding remarks.

I then offer some **practical suggestions** as to how these lessons could be intentionally and systemically incorporated into the Terms of Reference of the Public Inquiry. I explore Laying the foundations, how to conduct the Systemic Investigation; who should be involved; what should the inquiry deal with in its interim report; is there any type of evidence I think is essential for the inquiry to obtain and being kept informed of the work of the Inquiry.

Appendices present reflections on some conversations with Jim Wetherbee: Creating Lasting Systemic Change; transcript of my interview on the Today programme in an extract from the regulations website (Martin Stanley); some initial writings in the days after the disaster and a Selected Bibliography.

[2] Stanley, Martin; 2017; http://www.regulation.org.uk/risk-grenfell_tower.html (See Appendix A for a transcript)

2 The imperative to learn from Major Accidents

In this section I present some views from the world of Major Accidents that, with the available information, would appear to have some application to Grenfell. I'm arguing for the inclusion of this kind of thinking in the Inquiry. I'm **not** attempting a dissertation of all the thinking that High Consequence, Low Probability events offer. I've attempted to demonstrate the practical and moral imperative for including this thinking in the Terms of Reference and the Inquiry itself.

2.1 The 'depressing sameness' of Major Accidents

On 6th July 1988, almost 29 years to the day of the Grenfell Tragedy, the world's largest oil rig disaster killed 167 people in the North Sea. Here are just a few of the seemingly striking similarities to the Grenfell Tragedy.

- The fire on Piper Alpha took 22 minutes to engulf the platform. The Public Inquiry into the disaster by Lord Cullen judged that the operator had used inadequate maintenance and safety procedures. Major works had been conducted which removed protection. Cost cutting and pressure to produce were in play.
- Of the 61 survivors, many violated procedure by jumping into the Sea. Advise was that doing this would lead to certain death. In Grenfell advise was to stay in flats which under normal circumstances made sense, in the face of unprecedented circumstances, regular procedures may not keep us safe.
- Cullen was scathing about the lack of a system or process for coping with a major accident. The same must be said in Grenfell as we look at the absolute failure to take care of victims in the days following the disaster.

Cullen conducted the Inquiry into the Ladbroke Rail Disaster (1999, 31 deaths). The driver had gone through a red signal. The issue of poor visibility had long been raised, and ignored. So too, it appears, had the residents in Grenfell.

In an interview 25 years after Piper Alpha[3], Cullen spoke of the need to look beyond just the technical aspects of the accident to investigate the quality of the management of safety. It is in this second aspect that I believe the Grenfell Public Inquiry would be negligent in its duties if it did not include the thinking from and heed the learnings about how to investigate and prevent major accidents in high hazard industries.

Andrew Hopkins in his book 'Failure to Learn'[4] about the Texas City Refinery Disaster (2005, 15 deaths) refers to the '*depressing sameness'* of major accidents. 'Failure to Learn' is a masterpiece in understanding the complex, systemic contributors to a major accident. Eva Rowe lost both her parents in the disaster, as part of her settlement, BP released documents and depositions which would not normally have been made public.

[3] Cullen interview on 25th anniversary of Piper Alpha: http://www.bbc.co.uk/news/uk-scotland-north-east-orkney-shetland-22863286
[4] Hopkins, Andrew; 2009, Failure to Learn: The BP Texas City Refinery Disaster, p 4.

This provided a unique insight. I would strongly recommend it is read by those involved in the Grenfell Tragedy Public Inquiry.

To restate, the key difference between high hazard industry major accidents and the Grenfell Tragedy is that people died in their homes, not on an oil rig or refinery. To extrapolate the learnings will entail expanding the scope beyond the organisations immediately involved to include broader political and social issues.

There is an opportunity to build on what has been learned in one industry and bring this to bear in a different context. To my mind this would honour the lives of those lost both in Grenfell and in other major disasters and it is our moral imperative.

In the coming pages, I explore some of these issues in more detail.

2.2 Blindness to Major Risk

One of the key learnings from major accidents is the need to view major risk distinctly. A major accident is a low probability, high consequence event (sometimes referred to as a Black Swan event). The leadership and management required for the prevention of major accidents is different to that required for preventing higher probability, lower consequence events (often referred to as personal safety or 'slips, trips and falls').

This is not to say that the management of personal safety is not important. Many people die from personal safety accidents. What is needed is the management of both personal safety and major accidents.

A major accident is not the result of a single event, it is a systemic outcome resulting from several latent (pre-existing and often hidden) conditions, often triggered by an active failure (current failure e.g. human error or an ignition source) aligning at a moment in time that leads to horrific consequences.

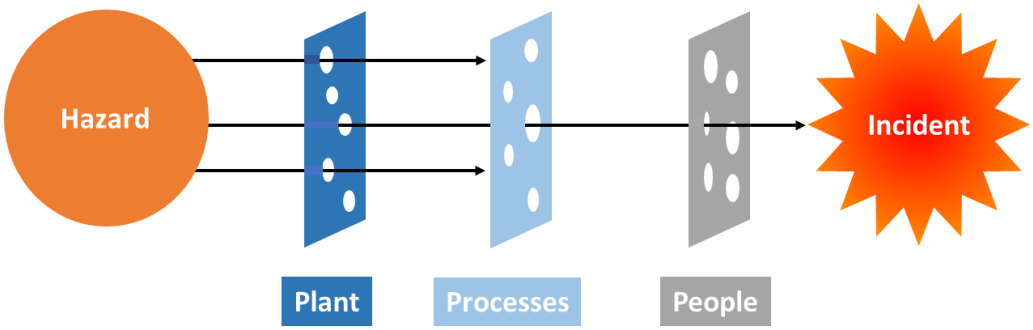
This is illustrated through what is called the 'barrier' or 'swiss cheese' model[5].

Simply stated, the model proposes that there are barriers in place to protect us from major accidents. These are often categorised into those to do with the asset or plant; policies/ procedures and people. In each of these barriers, there are 'latent conditions' or holes, which are either known or unknown. In a major accident, these holes line up and a hazard, finds its way through all the barriers ending in catastrophic results.

In Grenfell, it would be valuable to look at the unfolding of the tragedy through this lens. Initial indications point to many latent conditions in the plant (one fire exit, exposed gas pipes, window fitting, cladding etc.), in the processes (stay put policy, processes for safety risk assessment etc.) and in people (TMO and Council relationship with residents, failure to listen). Many of the latent conditions in the building itself it appears, are a result of the Major Works. Given the breadth of this inquiry there may well be other categories to consider e.g. did the 2005 fire reform act add some latent

[5] For a detailed exploration of the swiss cheese model and its application see Reason, James; The Human Contribution: Unsafe Acts, Accidents and Heroic Recoveries; 2008.

conditions? Has cost cutting led to latent conditions in terms of the ability of emergency services to respond?



The Swiss Cheese (or Barrier) Model – An illustration[6]

Overall, since the tragedy, I have seen little to indicate that the tragedy is being viewed through the lens of major risks. This is not a normal safety incident and viewing it from traditional 'slips, trips and falls' and root cause analysis perspective will not lead to the learning needed.

The failure is systemic, I suspect that no-body in authority was systematically considering the major accident risk. People were not engaged in discovering the latent conditions or considering any unintended consequences of the decisions and actions they were taking.

One of the biggest mitigations against major accidents is what is often referred to as mindful leadership or chronic unease. Looking from the perspective of the worst thing that could go wrong.

But, it was foreseen: … in November 2016, the Grenfell Action Group published a 'frighteningly prescient post titled Playing With Fire: "T*he Grenfell Action Group firmly believe that only a catastrophic event will expose the ineptitude and incompetence of our landlord, the KCTMO, and bring to an end the dangerous living conditions and neglect of health and safety legislation that they inflict upon their tenants and leaseholders… It is our conviction that a serious fire in a tower block… is the most likely reason those who wield power at the KCTMO will be found out and brought to justice*".'[7]

Did those accountable consider the major accident risk? What was in place for them to so?

[6] James Reason, The Human Contribution
[7] The independent: http://www.independent.co.uk/voices/grenfell-tower-fire-kensington-london-residents-kctmo-council-contract-ignored-poor-a7789276.html

2.3 Managing for Prior Indicators of Accidents

Distinguishing between 'personal safety' – slips, trips and falls and 'major accidents or process safety', has led to a paradigm shift in how safety is viewed in high hazard industries.

In both Texas City and on the Deepwater Horizon personal safety records were outstanding. A key learning from high hazard industries is the need to think about personal safety distinctly from major accidents.

Hopkins [8] distinguishes the need for (and lack of) what he calls '2 triangle thinking' in the Texas City Refinery explosion. He speaks of managers and executives who did not see the need to manage distinctly for the prevention of personal safety incidents and major accidents.

An assumption that personal injury statistics (number of near misses, minor injuries, serious injuries, single deaths) are an indication of how well major risk is being managed is common. This assumption can blind us into a false sense of security about the major risks we face.

The management of pre-cursors to major accidents in the oil and gas industry considers things such as the number of gas releases; maintenance backlogs, degradation of norms and processes and ignition sources. To link personal safety with major accidents in terms of pre-cursors would be like saying that a baggage handler putting his back out had a bearing on whether a plane blew up.

There may be overlaps in pre-cursors such as the safety culture and management of change processes, however, to fail to distinguish between and manage distinctly for the pre-cursors of personal safety and major accidents is poor management of safety.

How were those in authority tending toward the prevention or elimination of the pre-conditions of major accidents? Were the surges in electrical power reported by the residents seen as a potential pre-condition to a high consequence event? [9] Or simply through the lens of a low consequence event? This question needs to be asked in relationship to both the design, construction and ongoing operation/maintenance of the building.

A cursory view of the Council's website does not show anything that would lead me to think they were looking at pre-cursors to major accidents distinctly from personal safety.

This is important from two perspectives. Firstly, it would indicate that there is something lacking in the quality of the management of safety that, if in place, could have prevented the tragedy. Secondly, it dispels any myth that there is little those in authority and power can do to prevent seemingly unprecedented events occurring.

[8] Hopkins, Failure to Learn, Chapter 6

[9] The independent: http://www.independent.co.uk/voices/grenfell-tower-fire-kensington-london-residents-kctmo-council-contract-ignored-poor-a7789276.html

Jim Wetherbee[10] in his book 'Controlling Risks' lists 10 adverse conditions that exist in organisations before they experienced any accident or major disasters.

Technical/Systems/Managerial Side	Social/Human/Leadership Side
• Emphasised Organisational results rather than the quality of individual activities (focus on results not quality of action) • Stopped searching for vulnerabilities – didn't think a disaster would occur • Didn't create or use an effective assurance process • Allowed violation of rules, policies and procedures • Some leaders and operators were not sufficiently competent	• Leaders didn't fulfil the (Transformational) purpose of leadership. • Leaders didn't create accountability (nor commitment) before the incident • Leaders didn't sufficiently listen to, engage with or care for their people • Some leaders and operators placed self-interests above the organisation • Leaders and operators didn't possess error wisdom. (didn't understand patterns of errors and biases in decision making in themselves or their teams)

There would be value in the Inquiry investigating how many of these conditions were present in both the Council and the TMO.

Were both personal and process (major accident) safety manged for distinctly? What were the leading indicators that were being measured to manage for preventing a Major Accident? How were these measured and responded to?

2.4 Failure to Learn

The reaction to major accidents is often that they couldn't have been foreseen, that the nature of 'low probability' events somehow means we can't prevent them.

However, when you study these kinds of events, there is a shocking failure to learn. For example, in the Texas City disaster 'almost every aspect of what went wrong had gone wrong before, either at Texas City or elsewhere'[11] Hopkins concludes that they suffered from a learning disability, and says this is not unique – it could equally be applied to NASA and the space shuttle accidents.[12]

There appears to be a similar learning disability around Grenfell: How is it that the learning in high hazard industries of the criticality of listening to the concerns of front line workers is not transferred to the context of social housing and listening to residents? How is it that it appears as if there we high rise buildings in France, the UAE and Australia that had similar cladding had all been hit by fires that spread[13]?

[10] Wetherbee, Jim; 2017, Controlling Risk, Chapter 1
[11] Hopkins, 'Failure to Learn', page 4
[12] Hopkins, 'Failure to Learn', page 72
[13] http://www.bbc.co.uk/news/uk-40283980

Investigations tend to focus only on what went wrong in the specific incident. We need to understand why the lessons that were available prior to the event didn't get learned. This failure to learn is likely systemic in nature, concerning leadership, culture and organisation issues. Understanding the systemic causes of the failure to learn is critical if we're serious about how to prevent events like this happening again.

As Jim Wetherbee said in a conversation with me, 'The Goal is to turn Hindsight into Foresight'. If we don't understand and correct the failure to learn we will never turn the lessons from Grenfell into an opportunity to prevent something. We are both in the period after a major accident, AND in the period before a major accident. What are we doing to prevent the next one happening?

What was in place in the management of safety to ensure lessons were learned from other events? What was the process for learning? What did it cause in terms of real change in thinking and behaviour?

2.5 A note on policies, procedures, human error and blame

Initial indications are that some building regulations and other policies and procedures may have been violated in Grenfell. We will need to await the findings of both the Inquiry and the Investigation to understand what happened regarding adherence to policies and procedures.

I do want to highlight that learnings in major accidents indicate that understanding the relationship between human behaviour and policies and procedures is complex. The view that policies and procedures keep us safe and that the problem is that people don't follow them is outdated.

We will not solve the issues Grenfell raises by focussing only on regulation and policies and procedure. This is important but will not be sufficient to enable the kind of change that is needed.

In my experience, there is always a gap between what is practiced and what the procedure says. In mature organisations, this is recognised and the culture and leadership actively work to close this gap. This requires a safe environment where operators can speak about where they don't follow procedures and work in partnership with the technical authorities to either change procedures or give the operators what they need to follow the procedures.

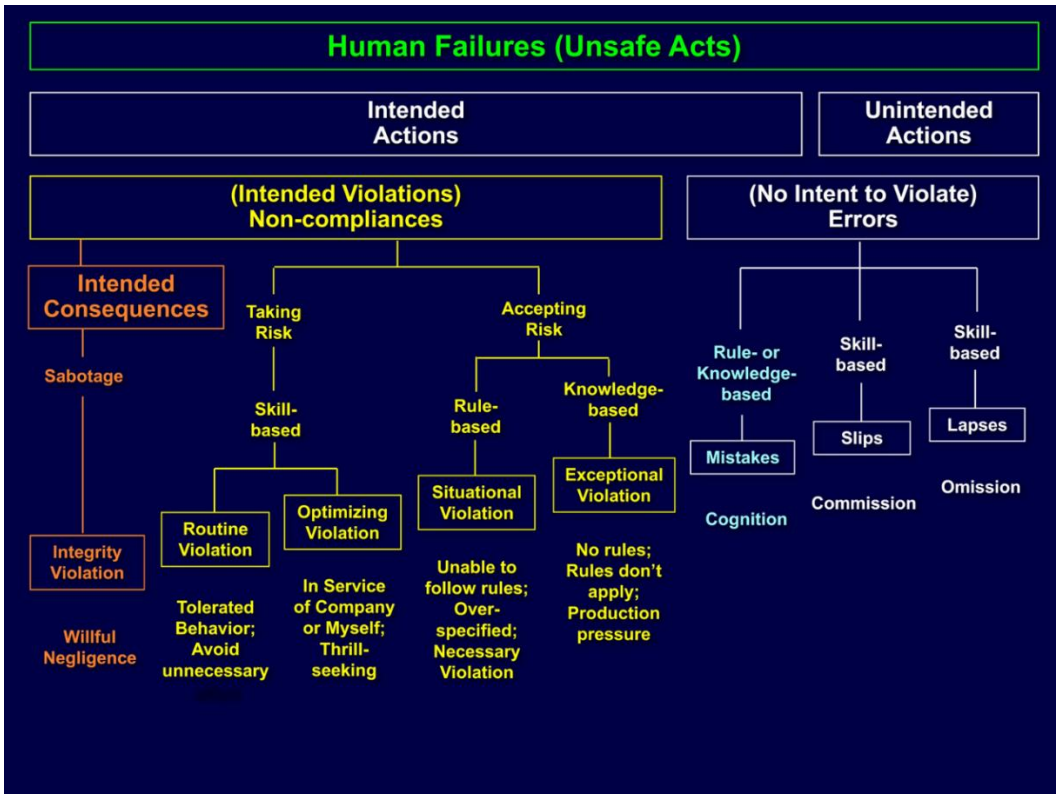
In many instances policies and procedures are outdated, inaccurate and contradictory. Holding the view that 'policies and procedures' keep us safe, and the problem is the person or operator that didn't follow them, is far too simplistic and will not lead to understanding deeper systemic issues.

Gill Kernick, gillkernick@msn.com

James Reason has done extraordinary work in furthering our understanding of this complex world. His interest was piqued with the Chernobyl disaster (April 1986) which was largely due to human actions. [14]

If, for example, there is a policy or procedure that is routinely violated, simply blaming the operator will not lead to learning. Given the number of high-rises that appear to have failed the fire safety tests after the Grenfell Tragedy, it would indicate that there may have been systemic or routine violations of regulations which may have resulted from a degradation of norms. The issue of human error, violations and policies and procedures will be important to explore in its complexity.

The diagram below illustrates a spectrum of unsafe acts and human error.[15] Many 'active failure' or triggers in Major Accidents result from unsafe acts.



Unsafe Acts: Errors and Violations

To fully learn the lessons from Grenfell we need to go beyond who is to blame. This would be the easy route. '*A culture of blame can develop because it is often easier, cheaper, and more emotionally satisfying to hold an individual responsible for an accident than to acknowledge more fundamental problems in an organization. These may be more problematic, requiring resources, and more work, taking time away from other tasks. A culture of blame prevents the identification of other underlying causes*.'[16]

[14] Reason, James; 2008, 'The Human Contribution: unsafe acts, accidents, and heroic recoveries', page 49.
[15] Jim Wetherbee, PDF presentation on Human Failure, building on the work of Reason, Reason, Rasmussen and others.
[16] James Reason, Human Error, 1990

To avoid any misunderstanding, I am not proposing that we not bring to justice any organisation or individual that is found liable for their actions around Grenfell. I am saying we need to do that AND if we don't go beyond this, we will not learn the lessons we need to or cause the systemic change that is needed, to prevent another tragedy.

To illustrate my point. In 1998 there was a catastrophic accident at the Esso Longford gas plant. Two workers were killed and eight injured. Gas supplies to the state of Victoria were affected for 2 weeks. The company blamed one of the workers who was on duty on the day of the explosion. A subsequent Royal Commission cleared the worker of any negligence or wrong doing and found Esso fully responsible for the accident. After being cleared, this is what he had to say:

'I am thankful that I escaped the fate of several others, thrown through the air like rag dolls. I'm glad … because my bones weren't shattered, my skin scaled by freezing cold liquid and then flames so hot they cooked flesh to the bone …

Yeah, I'm lucky. Very, very lucky. My wife and children didn't have to endure the torture of eulogies, of burials, of unsaid goodbyes. I'm lucky because they didn't have to wonder if I was going to live through the night. They didn't have to see me comatose, only awake to a new world of pain and scarring, both physical and mental …

While I'm not facing a lifetime of corrective surgery to mitigate disfigurement, I can't work in a place where I once thought I would spend the next 27 years of my life. I cannot doff my hardhat to a company that blamed me for the deaths of two of my workmates, the burning of five others, the destruction of half a billion dollars of gas plant, and wish them well. I cannot respect a company that would gladly have me face the tearful, bewildered stare of a workmate's bereaved family, while the directors of that company seek refuge in the judicial cocoon of their legal advice'.[17]

We need to make sure that responsibility for the events leading to Grenfell lie in the place they belong and not 'buy ourselves' off by blaming individuals (who are often further down organisational hierarchies) rather than getting to the underlying causes.

Were procedures violated? What was the quality of the procedures? Were people trained in them? Did they understand them? Was there a culture of lack of compliance (routine violation)? What was the view of human error? Did individuals get blamed or did they use 'just culture' (a way of examining human error to apportion accountability and consequences appropriately).

2.6 Reward and Measurement Structures

Edgar Schein[18] identifies five primary embedding mechanisms that reinforce and influence an organization's culture. They include: What leaders pay attention to, measure, and control; Criteria for allocation of rewards and status and the criteria for recruitment, selection, promotion, retirement, and exiting of staff.

To understand the underlying drivers of behaviour it's important to investigate the reward and measurement structures (both formal and practiced) in place. In Texas City,

[17] Andrew Hopkins, Lessons from Longford.
[18] Edgar Schein, 1985, Organizational Culture and Leadership

incentives were focussed around financial performance with some incentive around personal safety metrics. Attention to process safety or the prevention of major accidents was not encouraged through organisational reward and measurement structures.[19]

The complexity of reward and measurement structures needs to be understood.

Hopkins says it's important to recognise that the moment there are consequences attached to performance with respect to an indicator, there is an incentive to manage the indicator itself rather than the phenomenon of which it is supposed to provide an indication[20]

As an example of this, I was working in Algeria and was told a story by some operators. The indicator being measured was Lost Time Injury (LTI). The intent was to reduce the number of people injured. The story goes that on this site, the guard stopped a van leaving the site, suspecting something was wrong. He found a person in the back with a broken leg. They had been wanting to get him off site without reporting the incident, they could then lie and said he broken his leg at home. Their annual bonuses were linked to the LTI rate. It was just before the bonus cut off. The measure itself ended up encouraging the type of behaviour it intended to stop.

We need to understand the potential unintended consequences of the metrics we use in reward and measurement structures. In Grenfell exploring this will require understanding how the council, the TMO's and other contractors' performance was measured. A cursory look at the Tenant Management Organisations website would indicate that they were performing well.

What was measured in the TMO and Council? What were they being rewarded for? What behaviours was this driving? What were the unintended consequences of this?

2.7 Leadership, culture and capability

Typically, major accidents occur where the following are present: a culture of blame, fear of speaking up and a divide between the top and bottom of the organisation. Culture change requires changes in the organisational practices not simply a change in how people think.[21]

I will let the above pages speak for themselves in terms of the criticality and complexity of providing Leadership and developing a culture in which major accidents don't happen.

We find for the most part that people get promoted for their technical expertise or knowledge, and little attention is paid to their capability as leaders. Jim Wetherbee[22]

[19] Hopkins, Failure to Learn, page 162
[20] Hopkins, Failure to Learn, page 85
[21] Hopkins, Failure to Learn, p. 166
[22] Wetherbee, Controlling Risk, 2017, chapter 1

says that prior to accidents leaders mostly understand the purpose of leadership from a transactional sense. Developing vision, strategy, schedules and other 'one-way' transactions. There is a failure to understand the transformational purpose of leadership. He says '*The essence of transformational leadership is enabling, motivating and inspiring a group of people to perform better individually and accomplish more collectively with a higher quality, in service of a mission or pursuit of a goad, than they would have without the leaders' influence'*.

Lack of transformational leadership is one of the ten adverse conditions Wetherbee identifies as present in organisations prior to accidents.

We must consider the leadership and culture and how it impacted the tragedy. Indications from residents both prior to and in the response to the incident is of a transactional, one-way leadership style that did not welcome or listen to the views or concerns of residents.

We must also consider how leaders' capability was developed. How were they developed? How were they selected, rewarded etc.?

In my experience, lip service is often paid to development. People identify needs and then create some training programme and manage attendance as a tick box exercise. Attending a training does not lead to the development of a demonstrated capability. Capability development requires far reaching personal and organisational development, and in my view, is critical to creating lasting cultural change.

An example that has struck me regarding Grenfell is the narrative around listening. The cries from residents about not having been listened to both before and in the aftermath of the tragedy. I have watched those in authority attempt to 'listen' and, at least in the experience of the residents, fail. Listening is far more than not speaking. We need to understand that relationships of trust are founded and grounded in genuine care, respect and authenticity. If I hold the view that you have nothing important to tell me, or the view that I will do what I want no matter what you say – this will translate into how I listen. If I hold the view that your views matter to me, that I want to learn from you and discover something new in our conversation – this will translate. Developing the capability to listen and engage is, based on my experience, a critical and key skill that many people in very senior positions have not developed.

Edgar Schein[23] says: '*In an increasingly complex, interdependent and culturally diverse world, we cannot hope to understand and work with people from different occupational, professional, and national cultures if we do not know how to ask questions and build relationships that are based on mutual respect and the recognition that others know things that we may need to know in order to get the job done'*.

[23] Schein, Edgar H, 2013; Humble Inquiry: The gentle art of asking instead of telling; p2

Reliance on often siloed thinking experts alone and an over-reliance on procedures and processes to keep us safe fail to consider the complex world we live in, and, in my view, limits our ability to learn.

We need to understand what was present in the culture and leadership that allowed the Grenfell disaster to happen and then engage in authentic capability development, not simply tick box training. Although that is likely to be part of the solution, true capability development is, in my experience, an act of personal courage. A willingness to look at oneself in the mirror and do what is needed in service of a deep caring for those we serve.
What was the leadership model or framework used by the TMO and Council? How were leadership capabilities assessed and developed? How was culture measured and impacted? What did they aspire to create in the culture and how did they manage this? What was their relationship to residents? How did they view them? What did they think their role was with residents?

2.8 In conclusion …

High Hazard industries have, in the past years, developed a new view of safety, it's leadership and management and how to investigate major accidents in a way that leads to learning. I have attempted to argue for the inclusion of this learning and thinking in the Inquiry to the Grenfell Tragedy.

I believe we would be failing in our moral duty to not bring this thinking and learning to the Public Inquiry into the Grenfell disaster.

The similarities and opportunities for learning are overwhelming. The people who lost their lives in incidents like Piper Alpha, the Ladbroke Grove Rail disaster, Grangemouth, Texas City and Deep Water Horizon, deserve the opportunity to contribute to us. Make their lives count as we make those who lost their lives in Grenfell count.

In the following (shorter) section I offer some practical suggestions for how we could specifically, intentionally and systematically include the thinking and learning from Major Accidents in the Public Inquiry.

Gill Kernick, gillkernick@msn.com

3 Some practical recommendations and suggestions

3.1 Overview

Drawing on the previous section, I offer some practical suggestions about how we could incorporate the thinking and learning from Major Accidents in the Public Inquiry. I should state at the outset that I am not a lawyer and have no discernment or distinction about the detailed working of the Inquiry.

My recommendations and suggestions are principled based. I would rely on the expertise of others to work out the legal frameworks for what I'm suggested. I'm offering some contextual shifts in thinking and principled ways of incorporating this into the Inquiry.

I cover, laying the foundations; what the inquiry should cover; how to conduct the systemic investigation' who should be involved; what the interim report should cover and a note on evidence to be collected.

3.2 Laying the foundations – some principles.

The Cullen Report into Piper Alpha led to lasting systemic change. All the 106 recommendations made were accepted. He said: "*The industry suffered an enormous shock with this inquiry, it was the worst possible, imaginable thing. Each company was looking for itself to see whether this could happen to them, what they could do about it. This all contributed to a will to see that something better for the future could be evolved.*"[24]

It would be a mistake to assume that there is a will from all parties to see something better for the future. Whilst the tragedy is seared on the conscience of the nation, there are many parties protecting their own interests and driving their own agendas. To give the Inquiry a chance of enabling change through the acceptance and adoption of its recommendations, taking heed to lay the foundations for this at the outset would be smart.

Some principles to think from could be:

- Ensure a **process for the voice of the victims**, survivors and affected residents exists, is accessible and is used. A test is 'will those immediately affected be able to ask, and get answers to, all the questions they have?'

- How can you ensure that the Inquiry has both **real and perceived credibility and independence**? Some tests could be: 'Where will you feel pressure to either not report or fully investigate something? What can you do in the set-up of the inquiry to ensure you will not back down (both from a leadership/personal and process

[24] http://www.bbc.co.uk/news/uk-scotland-north-east-orkney-shetland-22863286

perspective). 'Where are the public (and particularly the survivors) likely to lose faith and trust in what you are doing? What can we do in the set-up to mitigate against this? Where will Councils/Tenant Management Organisations likely discount your recommendations and not implement change? How could you mitigate against that?

- How can you **create the environment for the truth** to be told? To understand the complexities of the systemic aspects of the tragedy will require holding, at least certain aspects of the Inquest, in a manner that is devoid of fear and enables people to honestly speak about the decisions they took and the pressures they experienced. A test would be: 'Can people tell us the truth without fear? Will we get to the things they feel they can't say?

These three principles will often be in conflict and, I would suggest that until you have these in place, you will not have the foundations or Terms of Referenced in place to conduct the Inquiry in a way that will lead to lasting change.

3.3 What the inquiry should cover?

The overall scope of the Inquiry should include both the Fire and the Response to the fire.

The inquiry should cover an event-based investigation, a systemic investigation and plan for the successful implementation of the recommendations.

An **event based investigation**, looking at what happened and how. This should cover the unfolding of the tragedy, what happened and how did it lead to the event. Regarding the fire, enough has been said in the public domain of what needs to be covered. The cladding, the windows, the exposed pipes, the stay put policy etc. Regarding the response and the failure of the response to take care of victims or build trust. It should cover the government, the council, and the local community response. It should look at the role of the media and aid organisations.

A **systems-based investigation**, looking at why what happened did. A systems-based investigation requires a shift in mind-set from event based investigations. It requires moving beyond blame to understanding why the actions people took made sense to them. It needs to reveal the complex and competing tensions people faced that had them make the decisions they did. All of what is mentioned in Section 1 (and more) should be considered:

- The Blindness to the risk of major accident
- The attention (or lack of attention) paid to the management of pre-conditions or leading indicators of accidents and major accidents in particular. It is likely the Inquiry will reveal some currently unknown indicators given this was not in a high hazard industry.
- Failure to Learn, what is systemically the source of the failure to learn either from directly relevant fires in other high rises, but also about issues such as the importance of listening to safety concerns of the 'front line' (in this case the residents).

Gill Kernick, gillkernick@msn.com

- Policies, Procedures, Human Error and Blame. Understanding how these contributed to the tragedy with attention paid to the gap between procedures and operational practice and an understanding of human error.
- Reward and measurement structures, what and how were the council and TMO rewarded, what was measured, how did this contribute to decisions and behaviours.
- Leadership and culture – and particularly the capability of those in authority to provide the leadership and develop the culture that would prevent a major tragedy.

Implementation of recommendations. Predictably at best about half of the recommendations made by the Inquiry[25] will be turned into appropriate corrective actions that are implemented. In many cases the corrective actions will either not be taken or will not have the impact intended. To avoid this, the terms reference of the Inquiry should include setting up a process for the successful implementation of the recommendations to ensure lasting change. Jim Wetherbee recommends appointing a single person accountable for implementation of the recommendations and a process for doing so. Failure to take into account the implementation of recommendations during the Inquiry could severely limit its impact.

3.4 How to conduct the systemic investigation?

Systemic Investigations are often not well done. The level of complexity to navigate and the need to move beyond blame and look for opportunities to learn is difficult. Sydney Dekker[26] highlights 'old' and 'new' views of understanding human error which are outlined in the table below.

The Old View of human error on what goes wrong	**The New View of human error on what goes wrong**
Human error is a cause of trouble	Human error is symptomatic of trouble deeper inside the system
To explain failure, you must seek failures (errors, violations, incompetence, mistakes)	To explain failure, do not try to find where people went wrong
You must find people's inaccurate assessments wrong decisions, bad judgements	Instead, find how people's assessments and actions made sense at the time, given the circumstances that surrounded them.
The Old View of human error on how to make it right	**The New View of human error on how to make it right**
Complex systems are basically safe	Complex systems are not basically safe
Unreliable, erratic humans undermine defenses, rules and regulations	Complex systems are trade-offs between multiple irreconcilable goals (e.g. safety and efficiency)
To make systems safer, restrict the human contribution by tighter procedures, automation, supervision	People have to create safety through practice at all levels of an organization.

[25] See Appendix A: Conversations with Jim Wetherbee
[26] Sydney Dekker, 2006, The Field Guide to Understanding Human Error

To conduct a meaningful systemic inquiry will require operating from this new view of human error. It will mean shifting the questions beyond blame. Rather than ask what went wrong – which opens us to hindsight bias – ask 'what went right?' 'why did it make sense for people to act in the way they did'. These types of questions will lead to an understanding of the real systemic issues at play and provide an opportunity for meaningful learning.

'If you conclude 'human error' you may as well not have spent any money on the investigation' [27]

3.5 Who should be involved?

I am speaking only from the perspective of ensuring the learning from Major Accident.

I would argue strongly for the inclusion of people with experience of both conducting meaningful systemic investigations into Major Accidents and an understanding of what it will take to make meaningful change. Their expertise should cover: Major Accidents and experience of working with low probability, high consequence events; how to conduct systemic investigations of Major Accidents and how to make meaningful change based on the recommendations and finding (an understanding of how to learn).

I would personally recommend including the following people in the Inquiry: Jim Wetherbee; Sydney Dekker and James Reason. In particular, Wetherbee for his applied experience and expertise and passion for ensuring learning. Dekker for his expertise in understanding human error and Reason for his tenure and depth of insight into the world of major accidents.

I would involve them directly in the design and execution of both the systemic investigation and in creating recommendations for successful implementation.

3.6 What should the Inquiry deal with in its interim report?

The interim report should cover the event based investigation into the fire and the response and any easily identifiable and initial learnings around these. It should cover culpability and accountability as far as it can. It should include a process for the implementation of any recommendations in the interim report.

This will leave the ability to move beyond blame and conduct a full systemic investigation into the fire and the response. Once this is concluded it should be published with clear recommendations and a clear process in place for the implementation of the recommendations.

3.7 Is there any type of evidence that I think is essential for the inquiry to obtain?

In addition to the evidence needed for the event based investigation, I would ensure access to evidence that would allow you to answer the questions raised in Section 2:

[27] Sydney Dekker, Understanding Human Error, page 6

Area	Questions to answer – what evidence is needed?
Blindness to Risk	Did those accountable consider the major accident risk? What was in place for them to do so?
Managing for Prior Indicators of Accident	Were both personal and process (major accident) safety managed for distinctly? What were the leading indicators that were being measured to manage for preventing a Major Accident? How were these measured and responded to? How many of the adverse conditions Jim Wetherbee identifies as present before an accident were present?
Failure to Learn	What was in place in the management of safety to ensure lessons were learned from other events and industries? What was the process for learning? What did it cause in terms of real change in thinking and behaviour?
Policies, Procedures, Human error and blame	Were procedures violated? What was the quality of the procedures? Were people trained in them? Was there a culture of lack of compliance? What was the view of human error? Did individuals get blamed or did they use 'just culture'?
Reward and Management Structures	What was measured in the TMO and Council? What was measured with subcontractors? What were people and organisations rewarded for? What behaviours was this driving? What were the unintended consequences of this?
Leadership, culture and capability	How were leaders' capability developed? How were they selected and rewarded? What was the leadership model or framework in use? How was the culture measured and impacted? What did they aspire to create in the culture and how did they manage this? What was their relationship to residents? How did they view them? What did they think their role was with residents?

Some other useful evidence would include:

- Management of Change Processes
- Culture surveys
- Residents feedback / surveys
- Accident and safety reports
- Minutes of discussions about safety
- Structure for the management of safety – who was accountable for what
- Training and development programmes – what did they cover
- Measurement and Reward structures and systems
- Maintenance Backlogs
- Reviews and inspections of safety critical equipment

3.8 Would I like to be kept informed of the Inquiry's work? How would you like to be contacted?

Yes, I would like to be informed and updated and am available to contribute in any way that could make a difference and lead to learning. Email to gillkernick@msn.com.

4 Summary and Concluding Remarks

I set out to argue that there is a moral imperative for the inclusion of the learning and thinking of Major accidents to be specifically, intentionally and systemically included in the Public Inquiry. In Section 2 I lay out some of the thinking and distinctions that illustrate its relevance and in Section 3 offer some practical suggestions.

What I have presented is a fraction of an expansive world. I will inevitably have failed to do the opportunity justice and I trust I have provided enough of a case for the practical and moral imperative to speak for itself.

Primarily I am arguing for two things:

- The scope of the investigation: That both the fire itself and the response are investigated. That there is an event based investigation (covering what and how things happened) followed by a systems investigation (covering why things happened). That a process for ensuring the successful implementation of recommendations is included in the scope.
- That the thinking of Major Accidents is specifically, intentionally and systemically included in the Public Inquiry.

My recommendation is to include experts in this field on the Inquiry team and specifically I recommend Jim Wetherbee; Sydney Dekker and James Reason.

Jim Wetherbee, author of Controlling Risk in an Unsafe World and retired NASA astronaut and commander of five spaceflight missions. Jim has worked on implementing the corrective actions following the two space shuttle disasters, the Texas City Refinery explosion and the Deepwater Horizon (Gulf of Mexico) disasters.

Sydney Dekker, professor and author of numerous books on of safety and human performance. His books include The Field Guide to Understanding Human Error and Just Culture.

James Reason, professor and author of numerous books with a research focus on human error and the way people and organizational processes contribute to the breakdown of complex systems. His books include The Human Contribution; and Human Error.

Any input or advice you can get from Lord Cullen, would be invaluable.

In honour and memory of all those whose lives have been lost in the learning of these lessons.

Gill Kernick, gillkernick@msn.com

Appendix A: Grenfell Tragedy – What is needed to create lasting systemic change

13 July

I watched Grenfell burn and vowed I would do what it takes to help create lasting systemic change. As a profession, I partner with leaders in high-hazard industries in creating operating cultures that are necessary to prevent major accidents.

I've been heartened that the pull and demand for systemic change seems to be gaining traction in the public conversation.

Capt. Jim Wetherbee, US Navy (Ret.), and former astronaut, NASA, has worked to implement the corrective actions developed after four major accidents in the last 25 years – the Space Shuttle disasters, Challenger (1986, 7 deaths) and Columbia (2003, 7 deaths); and in the oil and gas industry, the Texas City Refinery explosion (2005, 15 deaths) and the Deepwater Horizon disaster (2010, 11 deaths, the industry's largest marine oil spill).

I have been speaking with Jim about his experiences and what it will take to conduct an inquiry that will result in creating appropriate recommendations, developing proper corrective actions, and implementing those actions in an effective way to create lasting positive change with permanent lessons learned. There are three key phases that are needed as distinct steps:

1. **Recovery**. Dealing with the aftermath of the disaster and dealing with it in a way that enhances trust and rebuilds relationships between stakeholders who in many instances have conflicting views and motivating drivers.

   As I look at Grenfell, there is a dismal failure to conduct this phase properly. Four weeks after the accident, survivors have still not been taken care of in a way I'd expect. Trust continues to be damaged and broken. The absolute top priority has to be ensuring the needs of survivors and residents are being tended to and met.

2. **Inquiry**. The formal inquiry and investigation must be conducted in a way that will enable lasting change. There are two distinct aspects required: The *event-based investigation* – understanding what happened when, and a *systemic-focused investigation* – understanding why and how people made decisions and took actions that resulted in the events. The systemic investigation will reveal the underlying cultural conditions and pressures people felt which influenced them to think their decisions and actions were appropriate before the tragedy.

   Typically, event-based investigations are comprehensive and lead to accurate assessments. When systemic investigations are attempted, they will be more complex and challenging, but much more valuable in creating and sustaining positive change.

Gill Kernick, gillkernick@msn.com

The success of the investigations will require a leader who has credibility and experience but most importantly someone who wants to do the right thing and ensure that the outcome will lead to learning and helping people make better decisions in the future.

The leader will need to assemble a credible team that has experience and technical expertise as well as an understanding of deeper systemic issues such as culture and leadership. The ability to move beyond blame, welcome diverse views, and overcome bias will be critical both to the team's success in creating a valuable report and the credibility with which its findings are viewed.

3. **Implementation of Recommendations.** The inquiry board will make recommendations. Typically, at best about half of these will be turned into appropriate corrective actions that are implemented. In many cases the corrective actions will either not be taken or will not have the impact intended.

   To ensure lasting change, we must appoint one person at the highest level who is accountable for overseeing the actions conducted after the investigations are completed. This official should assign one person responsible for assessing the appropriateness of the recommendations and developing corrective actions based on the recommendations that will result in lasting change. There should be a reporting process to evaluate and report the effectiveness of implementing the corrective actions and to close out each action developed from the report. Only after each item is evaluated and closed out should the implementation be viewed as complete. This process should be transparent and open.

Without tending to each of these three steps distinctly and completely, the change we want to see will not happen. We've already witnessed the impact of doing a dismal job on the **recovery**. Early indications are that the **inquiry** is not set up for success both in terms of its scope and the trust and perceived credibility of Sir Martin Moore-Bick. History is not on our side in terms of **implementation of recommendations** as evidence is emerging that ministers failed to act on previous recommendations by coroners and fire services regarding fitting sprinklers in tower blocks above a certain height.

We cannot let this continue if we truly want to learn the lessons and make changes, as we honour those who lost their lives and vow to prevent similar disasters resulting in terrible suffering as this tragedy has caused.

Gill Kernick, (gillkernick@msn.com), 07595218982

Appendix B: Extracts from Martin Stanley article and transcript of Gill Kernick Interview on Today Programme.

Article by Martin Stanley http://www.regulation.org.uk/risk-grenfell_tower.html

The Grenfell Tower fire began shortly before 0100 on Wednesday 14 June 2017, and killed around 80 people. It quickly became clear that the fire had (surprisingly and unusually) spread quickly from apartment to apartment via cladding on the outside of the building. Questions were therefore immediately asked about

- whether risks were taken in the procurement of the cladding - in particular to save money?
- whether there had been other unnecessary risks taken in the recent refurbishment of the building? and ...
- whether there had been regulatory failings - in drafting (or failing to revise) building regulations, or in materials testing, or in local authority etc. approvals and inspection?

It is as yet far too soon to begin to answer any of these questions but I do have four early thoughts, as follows:

Systemic, Cultural and Leadership Issues

One of the most sensible public comments was made less than 48 hours later by Gill Kernick, a professional involved in helping companies avoid devastating accidents in high risk industries. Gill had previously lived in Grenfell Tower and now lived in an adjacent tower block. A transcript of the second part of her interview is below, but her key messages, for our purposes, were these:

"I think there are two lessons that particularly stand out for me. Number one is in major accidents you typically find cultures where people do not feel free to speak up or are not heard and from what we're hearing there is a clear link to that. The residents were not listened to and were not responded to or taken seriously so I think that is one thing from a cultural perspective that's common in a lot of major accidents.

I think another thing is we have to get beyond the blame to the systemic and cultural and leadership issues that actually led to decisions being made. So if we just end up going, oh well, it's because of the cladding or it's because of this, and yes we need to hold people culpable for what they've done but there's broader systemic issues that need to be addressed. ... we need to begin to understand what kind of competing tensions people are facing. ... why did they choose the cheaper cladding not the more expensive cladding? What do you need to do to create a culture and a system that is founded on true care? How do we take care of our people? Not how do we follow rules or save money."

Prosecution?

There were immediate and understandable calls for those responsible for the building to be prosecuted, including on manslaughter charges. But prosecution would not reduce the chances of future similar disasters. (It might also seriously impede other inquiries, including the judge-led public inquiry, as those threatened with prosecution will be very reluctant to speak freely or at all.)

The truth is that no-one seriously thinks about the risk of prosecution when making construction or regulatory decisions, so prosecution cannot act as an effective deterrent to poor decision making. As Gill Kernick pointed out (above), the cultural issues and the competing tensions and very complex and can only be addressed via better regulation and enforcement.

The **'prevent or punish?'** question is important in many regulatory areas and a longer discussion is here.

Gill Kernick's Interview, 'Today' Radio 4, 16 June 2017

Matthew Price (Interviewer): You were in some of those Residents Associations meetings of the Grenfell Tower. We know that people were expressing their concerns. How do you feel now about the way in which the residents conducted themselves in those meetings? Do you think they did everything they could to get their concerns across?

Gill Kernick ... there was one particular meeting I went to which was just where they were talking about the refurbishments. And the residents were very angry. I was a resident at that point, very angry, and in my experience the TMO was really not listening to their concerns. It was a very aggressive meeting. And one of my big regrets is at the time I thought this is not right. And in subsequent interactions with the TMO, because I now live in Trellick (**MP** in the nearby tower block) I've thought 'I need to do something, because this is not right'. The relationship between the management and the residents is not right.

MP: The TMO is the tenancy management organisation which says it is aware of concerns and that at the moment is focused on the immediate needs of people here and will be looking at the long term implications. Your work, you work, you know about large scale disasters, you work in high hazard industries like oil and gas to try and make sure accidents don't happen. Are there lessons that can be drawn from your work with those oil and gas industries that you think might make sure that an accident like this can't happen again? What needs to be done?

GK: Yes, I think first, ... it's been quite difficult looking at this from a professional perspective as I think there is a lot of lessons that could have been learned that weren't. I think there's two that particularly stand out for me. Number one is in major accidents you typically find cultures where people do not feel free to speak up or are not heard and from what we're hearing there is a clear link to that. The residents were not listened to and were not responded to or taken seriously so I think that is one thing from a cultural perspective that's common in a lot of major accidents. I think another thing is we have to get beyond the blame to the systemic and cultural and leadership issues that actually led to decisions being made. So if we just end up going, oh well, it's because of the cladding or it's because of this, and yes we need to hold people culpable for what they've done but there's broader systemic issues that need to be addressed.

MP: Meaning that there needs to be greater communication and channels of communication?

GK: Greater communications, channels of communication, we need to begin to understand what kind of competing tensions people are facing. You know, why did they choose the cheaper cladding not the more expensive cladding? What do you need to do to create a culture and a system that is founded on true care? How do we take care of our people? Not how do we follow rules or save money.

Gill Kernick, gillkernick@msn.com

Appendix C: Some initial writings immediately after the Tragedy

15th June

I work in high hazard industries partnering companies to create cultures where major accidents don't happen. I have heard the pain from operators who witnessed Piper Alpha and the Macondo incident in the Gulf of Mexico. I have cried with senior executives. I have witnessed the magic of people coming together to build something different.

I used to live on the 18th (now 22nd) floor of Grenfell Tower. At 2 am yesterday, I sat on the bed with my husband in our flat in Trellick Tower and watched it burn.

In Grenfell we were surrounded by families, the kids used to play outside the lifts, we'd leave the door open and they'd run in and out of our flat. The boys used to come and borrow our bicycle pump. We know that one family got out and are in hospital, we have no news of other families on our floor and fear the worst. Grenfell converted me to living in tower blocks, for 2 reasons – the views and the community.

As I listen to the news and the stories on the streets, the similarities between what happened at Grenfell and what typically happens in 'black swan' (low probability/high consequence) events are striking. Particularly heart breaking is hearing how residents raised issues and never experienced being heard.

What worries me is how we are responding to the event, which is why I'm writing this.

Obviously, there is anger and shock and we need to express that, conduct investigations and hold to account those that are at fault.

However, just doing that will, in my experience not make the difference that is needed. If there is one thing I have learned from my work in major accidents it's that there is a failure to learn from these events, we're hearing emerging stories about previous incidents around the world related to the cladding. I would imagine in those incidents investigations were held, and people were held to account – and here we are today …

To a certain extent finding the root cause gives us some relief – we've found someone/thing to blame and we can move on.

But that stops us from dealing with the more complex systemic issues for which there is no quick and easy fix. While there will be technical and procedural aspects to this fire – the issues of leadership and culture need to be addressed. And we won't address those from our existing paradigms. We need to learn new ways of thinking.

Predictably this event over time, will entrench feelings of them/us, blame, disenfranchisement and anger. What would it take to have this tragedy bring us all closer together in a real lasting way, for it to make real change, create this borough as the shining star of our common humanity. A new procedure or policy won't ensure that the TMO really hears the voice of its residents. A fundamental shift in culture and leadership will.

I don't have the answers, I do have the question – how can I honour those that died such that this tragedy leads to real, lasting change and unites us all in our common humanity.

Appendix D: Selected Bibliography

The following is a list of books that have impacted me greatly:

Dekker, Sydney; 2006; *The Field Guide to Understanding Human Error*

Duhigg, Charles; 2012; *The Power of Habit*

Hopkins, Andrew; 2000; *Lessons from Longford*

Hopkins, Andrew; 2009; *Failure to Learn: The BP Texas City Refinery Disaster*

Hopkins, Andrew; 2012; *Disastrous Decisions: The Human and Organisational Causes of the Gulf of Mexico Blow Out*

Marquet, David; 2014; *Turn the Ship Around*

Reason James; 1990; *Human Error*

Reason, James; 2008; *The Human Contribution; Unsafe Acts, Accidents and Heroic Recoveries*

Schein, Edgar; 1985; *Organizational Culture and Leadership*

Schein, Edgar; 2013; *Humble Inquiry: The gentle art of asking instead of telling*

Taleb, Nassim Nicholas; 2007; *The Black Swan: The Impact of the Highly Improbable*

Weick, Karl E and Sutcliffe K; 2007; *Managing the Unexpected*

Wetherbee, Jim Capt. USN Ret; 2017; *Controlling Risk in a dangerous world: 30 techniques for Operating Excellence*