

SAFETY, ERROR, AND RESILIENCE: A META-NARRATIVE REVIEW

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Abstract

This paper analyses the development of safety in healthcare in three meta-narratives, each held by a different community of thought. The dominant narrative in healthcare is that of scientific-bureaucratic medicine, focusing on ‘errors’ as an objectively measured bit of external reality, best prevented by barriers, education, and exhortation – positively Safety-I. The second narrative is found in the safety sciences, which allow for more nuanced views, and at least to some extent hold developing capabilities to be equally as important as preventing ‘errors’ – moving at least in part to Safety-II. The third and least dominant of the narratives is that of patients and the public – a narrative of suffering and marginalisation – which sadly has shown little change over time. Brief contact between the health services and safety science communities in the mid to late 1990s set off the patient safety movement in the US and other countries. However, that contact was not sustained, and healthcare took away only a superficial and instrumental understanding, leading to a lack of progress.

1 INTRODUCTION

The focus on safety in healthcare is a relatively recent development, compared to that in other high hazard industries. Accordingly, studying the recent history and evolution of healthcare safety – how and why it came to be enacted in the way it did can highlight tensions and paradoxes common to safety (and performance) endeavours in general, by highlighting issues that may have slipped below the surface in more mature industries. This paper will provide a meta-narrative review of the rise and fall of healthcare safety.

2 META-NARRATIVE REVIEW

Meta-narrative review is an emerging analytic, synthetic method designed for topics that have been differently conceived of and studied by different epistemic communities. It was developed by Greenhalgh *et al* (2004; 2005), based loosely on Kuhn’s notion of competition among scientific paradigms (Kuhn, 1970). Meta-narrative review focuses on how particular social concerns and research traditions related to an issue have unfolded over time, and how that evolution shapes the kinds of questions asked and the methods used to answer them. It also explores tensions and paradoxes among the various schools of thought, and in particular how those tensions are exploited in power struggles.

2.1 Data Sources

Both formal and informal data sources were used to examine the history and evolution of healthcare safety. We primarily drew on written materials, in both the professional healthcare literature, the social science literature about healthcare, and the public press regarding safety. We also interviewed key participants in this evolution, and examined changes in speakers and topics over time.

2.2 Streams of Thinking and Narrative Voices

We identified 3 separate streams of thinking about safety and human performance in healthcare: a health services research stream advanced by what has been called ‘scientific-bureaucratic medicine’; a narrative stream advanced by patients and families, largely in the public (*ie*, non-scientific) press; and a ‘safety science’ stream advanced by psychologists, engineers, and social scientists working on safety and performance in hazardous environments generally. We found Dekker’s concept of 4 narrative voices – epistemological,

preventive, moral, and existential – useful in illustrating how contradictions and paradoxes arise in these discourses (Sidney W. A. Dekker, 2014).

Health Service Research

Researchers in healthcare using typical epidemiological approaches had been studying adverse events since the 1950s (Barr, 1955). What is remarkable in this stream is that the ‘objective’ frequency of adverse events is roughly constant over the years – what changes however, is how that frequency was understood and interpreted (see Table 1). This could be explained in two, non-mutually-exclusive ways. First, it could be that the perception of countable adverse events is a property of the measurement system / observer rather than the underlying reality. Second, it could be that the failure rate is constant, but the social understanding and acceptance of failures is changing, from a more tolerant to a less tolerant stance. It is ironic to note that exactly the same comparison to road traffic accidents was made in Illich’s blistering critique (Illich, 1974) of healthcare published over 25 years earlier, for which he was roundly criticized for making an “ill-informed and irresponsible attack on the medical profession” (Bunker, 1997).

Table 1. Summary of the progressive evolution of safety thinking in healthcare

Source, datum	Interpretation	Appearances of ‘error’
Barr (1955)	“the price we pay for medical progress”	Term never appears
Schimmel (1964) 20% adverse events, ~2% deaths	“the dangers of new methods must be accepted, and are generally warranted”	‘error’ specifically excluded
Mills (1977) ~5% adverse events, 1% major	“benefits and risks are inseparable ... rates are remarkably low”	Term never appears
Steel (1981) 36% adverse events, 9% major, 2% deaths	Should seek to “reduce the number and severity”	Term never appears
Harvard Medical Practice Study (1991) 4% adverse events, ~1% deaths	“large and disturbing”	1 st appearance of ‘error’ in only 1 of 4 papers from this study
Colorado / Utah / Institute of Medicine (2000) ~3% adverse events	Deaths exceed those from road traffic accidents	58 appearances of ‘error’ in Executive Summary alone

Safety Science

This history is well known to members of the resilience engineering community. In brief, safety science began in the late 19th century when industrial accidents, particularly railway accidents injured not only workers but innocent bystanders. It progressed from the idea of accident prone-ness in the 1920s (Burnham, 2009), to Heinrich’s domino model in the 1930s. It began to be modified towards the end of World War II, when the concept of interaction between human and machine was added (Fitts & Jones, 1947). Major accidents such as Tenerife and Three Mile Island led to an efflorescence of activity in the 1990s (Woods, Dekker, Cook, Johannesen, & Sarter, 2010), since they were not satisfactorily explained by then prevailing notions. Much of the focus at this time was on figuring out exactly what was meant by ‘human error’ (Senders & Moray, 1991). It was at this point that health professionals made contact with the safety science community, and began to import at least some ideas (Lucian L. Leape, 1994). However, the safety world moved on from discussions of human error (at least in part) to more complex, emergent models of safety (Sidney W A Dekker, 2015; Hollnagel, 2014). Healthcare did not follow in this progression.

Patients and Public

The patient narrative is comprised of ‘first stories’ of suffering and loss. It generally uses the voices of boundary crossing, and existential suffering, and so frequently is at cross purposes with other discourses using epistemological or preventative voices. The litany of sufferers here is long, but celebrated cases include Libby Zion, Betsy Lehman, Willie King, Ben Kolb, Josie King, Jessica Santillan, Dennis Quaid, and Rory Staunton, to mention only a few. These stories have a disturbing sameness.

2.3 Mixing Streams and the Rise of Patient Safety

The fortuitous intermingling of these 3 streams in the mid 1990s set off the 'patient safety' movement in the US, UK, and other countries. In the US, legislation to reduce malpractice judgments were opposed by a litany of celebrated cases, and the effort was roundly defeated. Organized medicine needed to get on the right side of the safety issue, and so became a sponsor of the first Annenberg conference on healthcare safety in 1996. This brought the health service and patient narrative streams together. The health services and safety science streams met through the efforts of one of the authors of the Harvard study, who had framed the problem in terms of 'errors', and was guided to the burgeoning psychology, social science, and engineering literature on 'human error' that followed TMI and other catastrophes.

At the same time, a technocratic managerial class was arising in healthcare, part of its delayed industrialization. The rhetoric of 'error' rather than risk or harm worked synergistically to advance this party by delegitimizing the authority of the old authority of clinical expertise. Thus risk became 'error', and 'error' became a cause celebre, through a progressive reframing of risk that advanced the role of the new technobureaucratic managers, by employing a kind of 'folk psychology' of errors. Here we see how the tensions among the component narratives were exploited in contests for power and influence in the healthcare industry, and for control of the safety 'movement' in healthcare.

2.3 Separation and Fall of Patient Safety

Health professionals quickly grasped the relatively simple presentations of 'human error' published in their literature, and rapidly re-expressed them in medicalized language – not coincidentally keeping the new patient safety movement firmly under healthcare's control, and giving only lip service to partnership with the safety sciences.

3 DISCUSSION

Although resilience engineering does not wholly adopt the positivist approach common in many safety and quality circles, some users of the resilience language still often take concepts such as risk and safety as objective givens rather than as socially constructed, shared frames through which to view the world, at least as a first approximation. Although the paper will specifically focus on healthcare, this issues highlighted are increasingly relevant to other hazardous industries. In particular, there has been increasing interest in management circles in using healthcare as an exemplar for improving safety and human performance (Rousseau, 2006), as strange as that may seem, given that healthcare is a latecomer to the party. This seems more due to the psychological and organisational comfort afforded by the hubristic celebration of "evidence-based-ness" in medicine than to any real achievement in that field. Thus, lessons learned from the evolution of safety and performance understandings in healthcare may prove directly relevant to other domains, because those same desires for simple, certain answers that do not challenge those in power are common across all domains.

This analysis should advance our ability to create and sustain resilience by situating resilience thinking in a group of narratives that compete with it, helping to understand both opposition to resilience, and well-intentioned, instrumental misappropriation of it. In addition it will illustrate the role of power in creating a dominant narrative and the importance of plurality, and for maintaining a voice for neglected perspectives.

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