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SIX STAGES TO THE NEW VIEW OF HUMAN ERROR

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Abstract: We had the opportunity to study four different organizations over a period of two years in their efforts to improve their learning from failure. While we were able to distinguish six stages in an organization's growth to embracing the "new view" of human error and system safety, it was more difficult to assess why some of the organizations studied were less successful than others, probably because of the very complex picture underlying an organization's willingness to learn and improve.

Keywords: organizational learning, incidents, new view, human error, system safety

INTRODUCTION

As organizations struggle with a "human error problem", they sometimes become willing to embrace a new, more productive understanding of safety, collectively called the "new look" or "new view" (Woods *et al*., 1994; Reason, 1997; Cook, 1998; AMA, 1998; Woods & Cook, 2002; Dekker, 2005). The new view sees "human error" not as a satisfactory conclusion to an investigation, or as a cause of trouble, but rather as the starting point; as a consequence of problems deeper inside the organization. Rather than saying what people should have done to not suffer the mishap, the new view tries to understand why what people did made sense to them at the time, as it may make sense to other practitioners too. It is thought that the new view is more productive since it leads stakeholders away from the illusion of quick fixes (rooting out isolated "causes" of failure) and towards more systemic changes that will allow the organization to learn and improve.

An organizational embrace of the new view, however, is never unproblematic or simple. Cook (1998), reporting on the struggle of healthcare providers to "learn how to learn", observes how embracing the new view is a difficult organizational and political process. It may open up existing rifts in how stakeholders see the sources of risk, safety and organizational success. Transitions to new forms of dealing with failure are accompanied by a degree of acrimony, conflict, resistance. Also, growth toward the new view is not even or regular. Not all parts of the organization learn how to learn at the same pace, and total learning does not happen at a constant speed. Some parts may lead while others lag behind. This can in turn amplify rifts between the perspectives and interests of various stakeholder groups.

In this paper, we try to convene on a typical journey that organizations may go through in their struggle to adopt a new understanding of risk and safety. Over the past two years, we were able to closely study four types of organizations in three countries (an airline, an air navigation service provider, a national airforce and a regional hospital) to document their transformation in the struggle with "human error". All these organizations were somehow (if haltingly, imperfectly and often tentatively) trying to learn how to learn from failure. Each of the four organizations had in its own way become confronted with the limitations of the older interpretations of safety and risk. Trapped in what Reason (1997) called "the blame cycle" (assuming free will to err, considering error as causes), and not seeing the incident count go down, these organizations—each in their own way and often

reluctantly—expressed the need to move beyond individual accounts of failure as explanation and blame as typical response.

Our main data sources consisted of interviews with key stakeholders across the various organizational hierarchies (chief pilot, squadron commanders, caregivers involved in the aftermath of a "medical error", air traffic controllers, safety staff, executive vice president, flight attendants) as well as broad access to documentary material, particularly that associated with incidents and the organizational responses to them. The organizations—though vastly different in size, mandate and character—appeared to share features in their maturation toward the new view in a way that could allow us to capture them as possibly generic stages of growth. Identifying these stages (while realizing that they may be ideal-types at best and entertaining no illusions about their universality) could perhaps allow other stakeholders, practitioners and researchers to recognize the constraints and possibilities of any given time in the life of an organization.

SIX STAGES OF GROWTH TOWARD THE "NEW VIEW"

Stage 1: Crisis — Paralysis of the Old View.

All four organizations we studied seemed confronted by a kind of desperation. In two of them, icidents kept occurring (even the same sorts of incidents), and traditional measures (finding "human errors"; dealing with them with reprimands, tighter procedures, more technology) did not appear to work. We found that this could be quite maddening for some of the managerial people involved. They literally were at their wits' end when it came to finding innovative ways to deal with their "human error problem". The creeping realization that their human error problem was really an organizational problem was consistently as welcome as it was unwelcome. It meant a new avenue forward, for sure, but also more work, more effort, more uncomfortable probing with possible political implications, and the likelihood of greater costs for improving working conditions or other aspects of the organizational context.

In the two other organizations, a major accident similarly opened a window of opportunity. These accidents created such a tension between how people thought the organization worked versus how it turned out to actually work, that they were forced to abandon old beliefs about what made things safe or risky. The accident made them to see that risk is not the result of "human errors", and that maintaining safety would not be a matter of containing such errors through ever more procedures, oversight or technology.

Crises in the management of safety can also be forced through factors as diverse as economic strain and cutbacks, internal organizational strife, an increase in efficiency demands or production pressures, or the adoption of new technology that brings unexpected side effects. These factors can all open up rifts in how different people think they should manage the organization, what they should emphasize or prioritize or expect (e.g. efficiency gains without any consequences for safety).

Stage 2: Disassembling Old View interpretations

The ideal result of a crisis from stage 1 is the realization that a human error problem is an organizational problem. This begins the process of distributing the responsibility for doing something about the problem. When people in our four organizations began to realize that human error could be seen as the effect of problems deeper inside their systems, this started to guide them to the sources of those problems (e.g. goal conflicts, resource constraints, priorities, management commitment) and how these systematically and predictably produced outcomes that, in an earlier era, got attributed to "human error". What stakeholders typically found is that operational work is surrounded and defined by hazards, complexities, trade-offs, and dilemma's. These problems get imported from many different corners of organizational life.

The challenge here was to help stakeholders resist simply finding "human errors" deeper inside the organization, or higher up the corporate ladder. This would, after all, take them back to before Stage 1. They had to be reminded that finding where responsibility for doing something about the problem can meaningfully lie, is forward-looking and oriented towards progress. It is not about placing blame. In fact, stakeholders at this stage began to see that "human error" is not an explanation of failure, but simply an attribution, the result of social process (of which they were part) (see Woods *et al.*, 1994). They began to see that labeling human error as cause of trouble said nothing about the trouble itself, but about the people who do the labeling—about their beliefs in what exposes the system to risk. Embracing the new view is in large part about the ability to change these beliefs, so seeing how they are expressed in the first place is critical.

Stage 3: Freezing Old View countermeasures

An organization that has realized the uselessness of pursuing "human errors", does not necessarily know what to do next. In fact, we observed how the first stages of paralysis and growth often created a sense of profound unease and managerial discomfort. People could no longer turn to traditionally satisfying ways of dealing with failure, as they now began to understand how counterproductive or paradoxical these are. Yet other people inside the organization, who had interpreted the crises differently, or had other stakes, may not agree. They could continue to exert pressure on managers or others "to do something" about the error problem. Stakeholders in key organizational positions (e.g. middle managers, operational supervisors) routinely expressed their concern about this to us: the pressure from above (but sometimes also from below or from outside the organization!) to respond with quick-fix, old-view countermeasures (reprimands, demotion, exile) could be enormous and difficult to withstand.

A fruitful strategy, adopted by two of the organizations we studied, was to put a freeze on all old-view countermeasures. Without precisely knowing what to do next, these organizations actually stopped reprimanding people, resisted an immediate turn to more procedures to solve the latest discovered gap in system operations, and defied pressures for "just a little more technology" that would supposedly deal with the human error problem forever. We were able to have these two organizations embrace the freeze as a kind of experiment that would generate empirical data. We had to agree on a timeframe (typically a year). The freezes generated surprising results. Those who had favored traditional knee-jerk responses to the latest errors realized that witholding such reactions had no negative effect on the number or severity of incidents during the time that the "experiment" ran. In fact, in some cases it was possible to a reverse could see the reverse (Of course, in very safe systems the statistical baseline of serious incidents (let alone accidents) is so low, that numerical claims of learning (by counting fewer serious events) are problematic (see Amalberti, 2003).

Stage 4: Understanding that people create safety through practice

A conversion to the New View turns on the insight that risk is not caused by people in otherwise safe systems. Systems are not basically safe, they are made safe through people's practice, at all levels in the organization. The third stage can show how a freeze on traditional countermeasures (which presume that it is all about erratic people in otherwise safe systems) does not lead to increased risk. In our case, it helped two of the organizations open up for a key insight: Safety is not inherent in systems, only to be threatened by erratic operators. People actually create safety through practice.

Getting to this insight was the major accomplishment that marks the fourth stage. Organizations began to see that people's practice has evolved to cope with the many hazards, complexities, trade-offs and dilemma's of their work. They began to see how operational people have found ways to reconcile multiple conflicting goals to create safety in actual settings. While old view stories of failure will almost always end with some individual, in their head, their motivation, their (lack of) awareness or understanding, new view stories about the same stories tended to end up in the world, in the system in which people worked, systems which people made work in the first place.

We assessed that some of the organizations we studied had entered the fourth stage when they stopped talking about failures in terms of the widely known and rehearsed first stories (about how people committed "errors"). Instead, the responses to incidents started to discuss multiple contributing factors, competing demands on operators and people throughout the organizational hierarchy, goal conflicts, the complexity of the processes people manage, and how they have adapted to usually succeed at this. These were the ingredients of the second stories about failure (AMA, 1998), they embody the notion of safety creation as an active product of efforts at every level of the organization. This transition into the fourth stage was accompanied by a shift in the language (not just the kind of stories) to describe failure: from a language of individual people, who "could have" or "should have" done something different than what they did; from a language of supposed psychological afflictions (complacency, inattention, loss of situation awareness, loss of effective crew resource management), to a language of situations, systems, and structures; to a language that captured the context in which people work, including the constraints on, and opportunities, for individual action.

Stage 5: New View investments and countermeasures

Once we saw organizations starting to "put their money where their mouths" had gone, we marked this as the entry into stage 5. Here the organizations began to back up their new understanding—that safety is created by people in a thicket of multiple goals, divergent demands and complexity, and that failures are an inevitable by-product of the pursuit of success under those circumstances—by action, by investments. Such new view countermeasures are investments in the system. Managers stopped fighting symptoms. For example, some

explicitly acknowledged goal conflicts to help their people manage them better. Not with a new procedure, but by helping people consider the post-conditions of points along the trade-off between safety and efficiency concerns, and giving them the courage to decide against common interpretations of what is risky or acceptable. Two of the organizations also invested in a stronger, staff-based safety department to help themselves get better calibrated about how closely they were operating to the margins. Another introduced changes in the incentive structure under which its people worked (pay-per-hour versus pay-per-job) in order to avoid predictable end-of-day rushwork.

Stage 6: Learning how you are learning from failure

While the organizations studied here (or any organization) will never entirely complete their journeys toward the new view, we did become more confident that an organization can stay on the road towards progress if the it becomes interested itself in how it is learning from failure. In fact, consistent with emerging ideas of resilience (Hollnagel, Woods, & Leveson, 2006), we decided that an organization enters the stage in growth that "completes" the embrace of the new view when it is actively involved in finding out, and managing, how it learns from failure.

In other words, an organization at this stage is no longer just interested in revising the first-order activities (learning from failure by dispensing with old-view responses and replacing them with new-view ones). In addition, it shifts its focus to second-order activities. It continually monitors how it is learning from failure. It asks what it can learn about itself from the way it is currently learning from failure. This should not just be the activity of select individuals, a few side-line guardians of risk calibration and maturation (e.g. a safety staff). The extent to which an entire organization (i.e. all relevant stakeholders, up and down the line) actively considers how it is learning from failure—large and small, on a daily basis—probably says something about the organization's safety culture. Organizations with a strong safety culture continually try to understand how they learn about safety and respond to threats and opportunities at all levels of practice. Organizations with a strong safety culture possibly have as large a room to improve on safety as do weak ones. But what sets them apart is the commitment, the willingness to actively explore that room for improvement. Having a safety culture involves being able to calibrate which stage of growth the organization (or parts thereof) is in or going through. It means meta-monitoring, or meta-managing: monitoring how you monitor safety; managing how you manage safety. This could be the essence of maturation: realizing that there is no final destination, no terminal. Rather, an organization becomes capable of monitoring how it grows, where it is in its growth. It becomes able to identify, articulate and influence how its activities and responses are contributing to that growth.

CONCLUSION

While we were able to study four different organizations in their efforts to learn about their own learning from failure for a period of two years, we cannot claim equal "success" for each one. The airline and the air navigation service provider were willing and able to go the furthest in maturing their responses to failure and investments in safety. The airforce and particularly the hospital were less able to do so. The host of institutional, cultural, political and other factors that could help account for this difference is very difficult to map, but we can point to one factor that did not seem to make the difference: both the hospital and the air navigation service provider were recovering from the aftermath of a large, high-visibility accident, and both the airforce and the airline had been struggling with a string of nagging, repeated incidents.

It may also be that the ability of an organization to embrace the new view is influenced by the general climate and attitudes toward failure in the industry or country. Where retributive approaches to human error prevail, or laws bar confidential reporting, it may be difficult to get organizations to embrace new view practices. Protective posturing can then take precedence, as people and organizations invest first and foremost in protecting themselves and their own interests. This probably does not help learning or progress on safety—neither for the organization nor for anybody else in the industry or country. These cases call for higher-level discussions (industry-level, political) about how to respond to failure more meaningfully.

This confirms that an organizational transition to new-view interpretations of error, risk and safety stems not just from the need to do so (because of a large accident or irreducible incidents). Also, it is not just about a migration from one perspective to another, about an intellectual exercise in shifting worldviews. It is often about vested interests and dire stakes at the heart of any organization. Battles to learn about safety typically exposes existing organizational stress, and can amplify it. As Cook (1998) reminds us, virtually all components of the new view expose the underlying rifts, disagreements and mixed character of the organization itself. These conflicts, though unsettling, are crucial to learning about safety. They are the source of the opposing demands and resource limitations that determine and constrain practitioners' and managers' ability to create safety.

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