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Zero Vision: enlightenment and new religion

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ABSTRACT

This paper traces Zero Vision as a product both of Enlightenment thinking (particularly in its aim to perfect humanity and society through measurement, science and rationality) and a continuation of traditionally religious promises that deliverance from suffering is achievable and morally desirable. It then explores how a Zero Vision might look in the twenty-first century, focusing on a limitation on top-down, rule-driven, centrally governed control over safety outcomes in the pursuit of zero; a switch to looking for and understanding our successes, rather than our shrinking number of failures; and a suggestion that secular organizations can commit to an alleviation of suffering as a morally acceptable and practically doable substitute for its eradication.

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Introduction

In 2013, Zwetsloot et al. called for more research into the origins and effects of zero accident vision, or Zero Vision. The years since have shown that presenting empirical evidence for and against the efficacy of Zero Vision is problematic. The main issue is that of confounds. Results at a New Zealand aluminium smelter, for instance, showed a reduction in injuries since a zero accident vision was introduced in 1990 (Young, 2014). But, as Zwetsloot et al. (2017) found in this case, ‘Automation, thereby eliminating hazardous work, was probably the most important successful intervention strategy over the years. Hazards were mostly ameliorated by long-term persistence following the principle of hierarchy of controls for injury prevention. The second most important factor was transformational leadership ...’ (p. 262). This makes it difficult to attribute any success to an implementation of Zero Vision per se. Sheratt (2017) found the introduction of zero as a vision to be accompanied by ‘disenchantment,’ ‘incoherence and inconsistency’ (p. 737), where many ‘remain derisive of its achievement within current working contexts’ (p. 747). No studies reported in Zwetsloot et al. (2017) or elsewhere have been able to single out the presence of absence of Zero Vision a separate variable on a comparative basis as to determine its effect on safety outcomes. This paper does not add to the debate about Zero Vision on empirical grounds. Rather, it takes a brief ‘big history’ approach to locate our current fascination with the concept in the Enlightenment and secularization. The purpose of this is to explore both the outlines and the limits of a Zero Vision for the twenty-first century.

Enlightenment and Zero Vision

The European Enlightenment, a series of social, intellectual and political movements during the late seventeenth and eighteenth centuries, emphasized human reason, a willingness to question authority, and

promoted a ‘utopian’ vision. We were not condemned to live in a Hobbesian nightmare; society could be made perfect. In 1782, French Enlightenment thinker Marquis de Condorcet celebrated the idea which he called ‘so sweet.’ People could be improved and society perfected with the help of ‘those sciences, the object of which is man himself’ (Hacking, 1990, p. 38). Measurement, mapping and quantification were key. A truly ‘perfect’ society was one where interventions by the state and other authorities could bring harm and suffering down to zero. Both the utopian aspiration and the focus on measurement of the Enlightenment show up in Zero Vision. This is particularly the case where the Zero Vision has become a target – or, to be more nuanced, where the broad vision is reduced to a single lagging indicator (Zwetsloot et al., 2017), such as Lost-Time Injury (LTI) figures posted next to site entrances or advertised in annual reports (Sharman, 2014). When placed in a business environment driven by bureaucratic organization and competitive profit, the originally noble commitment can undergo precisely this sort of transformation (Merton, 1938). Confusion and cynicism among the workforce can be the result. Says Sheratt (2014) on the basis of a series of ethnographic studies into the application of Zero Vision in the UK construction industry (p. 747):

The emergence of Zero Target safety programmes arguably reflects a wider societal desire to quantify and measure human life ... The corporate voice of Zero Target speaks of an achievable tangible goal, positioned as future reality, which can be counted and measured through a plethora of targets. Yet this is challenged and derided by the workforce who position zero as an unachievable target, preferring instead an iconoclastic vision of zero ... It is the desire for measurement that brings zero into an ugly reality, blueprint utopian thinking does not seek to challenge and change current practice; rather it aims to operate within the same hostile environment, seeking engagement of the workforce without addressing problems of practice. Furthermore, associations with measurement have arguably encouraged a focus on the numbers and continuous improvement, rather than the practices and the people behind them.

This is probably why studies of Zero Vision are of necessity confounded with a host of other interventions (see Zwetsloot et al., 2017). Just adopting a ‘Zero Vision’ and doing absolutely nothing else (so as not to introduce any confounds), as Sheratt surmized, is likely to generate cynicism and disengagement, and not do much good for safety outcomes (Amalberti, 2013). It will likely lead to efforts to manage and push a number as low as possible, as some Zero Vision adoptions have devolved into (Long, 2012), which then becomes the empty ‘art of managing nothing’ (Lofquist, 2010). The deleterious and dehumanizing effects of numbers games, of hiding and manipulating injury figures (whether driven by a Zero Vision or supported by safety bonuses or not) have been well documented elsewhere (Dekker, 2014a, 2015; Frederick & Lessin, 2000; GAO, 2012; Hopkins, 2015; Wowak, Mannor, & Wowak, 2015). As predicted by Weber over a century ago, this can produce effects that run directly counter to original intentions – in this case *more* suffering, rather than less. And the problematic and often inverse relationship between low numbers of injuries and an increased potential for catastrophic accidents has too – in industries ranging from construction (Salminen, Saari, Saarela, & Rasanen, 1992; Saloniemi & Oksanen, 1998), railways (Wright & van der Schaaf, 2004), oil and gas (Elkind, Whitford, & Burke, 2011; Hopkins, 2010), aviation (Barnett & Wang, 2000), to shipping (Storkersen, Antonsen, & Kongsvik, 2016).

The studies into Zero Vision so far seem to suggest that for Zero Vision to be successful, it cannot go it alone. It needs to be accompanied, as Zwetsloot et al. amply demonstrate, by lots of other things: automation and other technology changes, transformational leadership, adoption of better investigative techniques, change management, introduction of a just culture reporting system, and more. These same accoutrements needed for the success of Zero Vision, however, eradicate the empirical evidence of its efficacy – and even its necessity. Zwetsloot et al. (2017) invoke the example of a global steel company which demonstrably improved its safety record by safety systems and processes, employee ownership and safety leadership (Koivupalo, Sulasalmi, Rodrigo, & Väyrynen, 2015). There is no mention of a Zero Vision: one wonders whether it would have made any difference either way. Focus on operations, defer to expertise, becomes a transformational leader, learns from successes and failures alike, reduces unnecessary complexity and couplings, rethinks accountability relationships, empower the worker, takes more risk and develop risk competency rather than risk averseness – these things all have broad support in the safety literature

without as much as a wink at some concept of zero (Amalberti, 2013; Dekker, 2015, 2016; Hollnagel, 2014a; Perrow, 1984; Rasmussen, 1997; Reason, 1997; Vaughan, 1999; Weick & Sutcliffe, 2007; Westrum, 1993; Wildavsky, 1988; Woods, 1990).

Yet, of course, and this was true during the Enlightenment, people need a poetic cause to be stirred into caring and acting. For how can a bureaucratic process of leadership change ever rally people behind itself? How can increased measurement or paperwork or compliance itself ever inspire people to trust and respect the moral authority it intends to impose? This is where Zero Vision might still be indispensable. But it reduces it to a banner, a slogan. As Sheratt (2014) reminds us: the real work goes on underneath.

Secularization and Zero Vision

If Zero Vision is in part a descendant of the Enlightenment (and thus of modernization and measurement), it may also be a continuation of certain aspects of religiosity, as Dekker, Wybo, and Long (2016) argued recently. Mary Douglas, social anthropologist, was an early critic of the idea that modernization necessarily leads to secularization (Furseth & Repstad, 2006). Rather, secularization is a process of messy and ever incomplete replacement, substitution, borrowing, renewal (cf. Taylor, 2007). The past decades have seen an explosive growth in safety regulations (Townsend, 2013) and vast increases in spending on formal, government-sponsored accident investigations (Dekker, 2014c; Roed-Larsen, Stoop, & Funnemark, 2005). Maybe science and secular institutions picked up what religion could no longer credibly muster: the explanation of, and mastery over, human misfortune. We now take for granted how incidents, accidents and disasters in traffic, at work and elsewhere are not ‘acts of god’ but man-made (Turner, 1978); they are failures of risk management, resulting from the vicissitudes and vagaries of human intention and action (Green, 1997). They need a secular answer (Loimer & Guarnieri, 1996). This trend – of swapping sources of ontological security away from religious institutions to secular ones – was noticed early on (Clark, 2012):

The industrialization and resulting bureaucratization of American culture, organizational historians have described, eroded the authority of communities and their churches. In the 1890s railroads killed six to seven thousand persons each year. Worshippers recognized that they faced wrongdoers beyond their control. Churches could hardly admonish corporations effectively (Stearns, 1990, p. 536).

Modern, secular institutions (e.g. the industrial, bureaucratic ones referred to by Stearns) are webbed with the sorts of social relations that also drive the creation and congealing of ‘religious’ beliefs, principles, myths and rituals. Expressions change, but they do not disappear with modernization (Douglas, 1992). Such beliefs, principles, moral instructions, myths and rituals have been noted in Health and Safety (see Besnard & Hollnagel, 2014, for an empirical demonstration). As Nietzsche predicted in 1882, religiosity continues to act in corporate and social life (Wood, 2015). In these ways, and others, ‘the structures of modern industrial society, despite great modifications in different areas and national cultures, produce remarkably similar situations for religious traditions and the institutions that embody these’ (Berger, 1967, p. 113). Zero Vision can take pride of place in this. The alleviation and redemption of suffering has always been central to religiosity, as Max Weber argued. In fact, the whole point of religion – psychologically, socially – was that it supplied rationally constructed systems that help humanity deal with suffering; suffering is the driving force behind all religious evolution (Weber, 1905/1950). *Alleviating* suffering is at the same time an expressed hope and a call to action, as done in charity and social justice movements, for example. *Redemption* of suffering is concerned with making suffering somehow meaningful, which religious traditions have done in many different ways – suffering as a test of faith and strength, as sanction for rule infractions, as a demonstration in humility, as a tutorial for embracing the important things in life, and a lot more (Dekker, 2007; Ehrman, 2008). But Zero Vision is bolder in its aspiration still: it embraces the idea of an ultimate *deliverance* from suffering. It holds up that ‘zero’ harm is possible, or at least an ideal that workers and management alike can be made to strive for. Many religious traditions

have similarly held that a world entirely without suffering (even if beyond the current life) is ultimately achievable and that venturing for it is morally right (Dekker, 2017; Dekker et al., 2016).

Zero Vision for the twenty-first century

So what prescriptions might we follow for developing a Zero Vision for the twenty-first century? The first makes us question the limits of top-down, rule-driven, centrally governed control over safety outcomes in the pursuit of zero. The second suggests that we stop looking for a complete deletion of negative events in our pursuit of zero, and instead focus on an enhancement of the positive capacities that make things go right. And the last is that even secular institutions can explicitly commit to an alleviation of suffering as a morally acceptable and practically doable substitute for its total eradication (Dekker et al., 2016).

Stop managing safety to get closer to zero

It is perhaps not unexpected that the increasing systematization of safety management would organize itself around a prevention of unsafe work. Safety management, as a part of enterprise governance and risk control, has adopted the canon of total quality management. It regards non-compliance and variation from standards as the enemy of quality and process reliability (this, of course, has a pedigree stretching back at least to Taylor (1911)). It has been accompanied by a bureaucratization of safety management, driven by hierarchical organization, specialization into various sub-fields and fixed formalized rules for administering and enforcing safety policies (Dekker, 2014a). This both requires and generates the kind of bureaucratic infrastructure that many safety professionals would recognize: one that upholds administrative rationality through planning, standardized processes, fixed rules, record keeping and auditing. Effective bureaucratization requires surveillance of the quality of work—and injury counts (or similar counts of negative events) have become a most important currency.

The problem, however, is that progress on safety, as measured by the number of negatives, has flatlined well short of zero in almost all industries and safety-critical activities, including road traffic safety in many developed countries (Dekker & Pitzer, 2016). A stubborn residue of injuries, incidents and fatalities refuses to yield under the application of ever more of the same safety management (Amalberti, 2001; Saines et al., 2014). It likely takes a radical revision of policy or a disruptive innovation to break out of it. The ‘shared space’ movement in traffic safety might be an example (Hamilton-Baillie, 2008). In one traffic square, in Drachten, the Netherlands (known as one of the cradles of the idea), safety improved from the nine accidents per year at which the ‘black spot’ square had stabilized, to about one per year (at constant traffic throughput) after top-down, rule-driven traffic control was removed in 2003 and nothing but uniform brick paving was left (Kuipers, 2006, 21 April). Safety, then, might be improved beyond its asymptotic stall by ceasing to manage it. The safety that emerges then comes from self-organization, collaborative problem-solving and the inescapable participation of the people involved (you cannot enter that square and *not* be engaged in your own safety). As Wildavsky (1988) concluded: we may well need to take more risk in order to create a safer society. ‘Safety differently’ can be carefully tested in other industries on small-scale safe-to-fail ‘micro experiments.’ These might take out duplicate paperwork, reduce immediate supervision, or offer more worker autonomy to decide on task choreography and tool use (Dekker, 2015). Zero in such cases becomes achievable (or at least comes closer) not through more bureaucratic safety management, but by offering people autonomy over how they do their work; by not seeing them as the problem to control, but as essential contributors to the solution that should be harnessed. Of course, there are limits to this model – how does it deal with weaker or less well-equipped participants, for instance; how can it ensure social justice? We do not know, today, though some might have their hunches. These are the kinds of questions that can be added to Zwetsloot’s call for more research into Zero Vision.

Stop counting negatives

In a Zero Vision, outcome measure and policy dictate become easily conflated: to reach zero, we need to prevent (i.e. have zero) incidents or injuries. It does not need to be that way (and as shown above, this easily leads to counterproductive effects). In order to move toward zero, a managerial and organizational commitment can be to identify and enhance the positive capacities that ensure that things go right (Hollnagel, 2014a). This is a recurring theme in what is known as resilience engineering (Hollnagel, Woods, & Leveson, 2006). As Zwetsloot et al. (2017, p. 263) have discovered among the literature they reviewed: ‘positive goals and targets are much more effective than avoidance goals such as zero accidents.’ This is the premise of Safety II (Hollnagel, Nemeth, & Dekker, 2009) and Safety Differently (Dekker, 2015). The presence of positive capacities can help assure a system’s continued functioning even under varying circumstances, so that the number of intended outcomes is maximized (Hollnagel, 2014a, 2014b). For instance:

- the ability to say ‘no’ in the face of acute production pressures (Woods, 2006b);
- the willingness of superiors to hear bad news (Dekker, 2014b)
- the acceptance and encouragement of dissenting views (Weick & Sutcliffe, 2007);
- the commitment to learning and the restoration of trust and relationships if vulnerabilities and problems have been identified (Dekker, 2016).

Counting negatives, or using incidents as predictors of larger calamities, becomes less important under such a regime. If we want to move toward zero losses (and particularly zero fatalities and life-changing injuries), then we should not be obsessed with the ‘holes’ (or minor injuries) that show up in safety management systems. Instead, we should study success. We need to form a deep understanding of how things actually go right, and then enhance the system’s capacity to make even more things go right (Hollnagel, 2014b; Woods, 2006a).

Alleviating suffering after all

If a world without suffering is not achievable, if suffering is both inevitable and universal, then what is left for a Zero Vision? Secular institutions and organizations have embraced traditionally religious rituals to alleviate the suffering that remains even after all best efforts to prevent it (Berlinger, 2005). What was once known as confession, repentance and forgiveness can now be recognized under the secular labels of reporting, disclosure and restoration, for instance. Rituals that encourage social rapprochement and that move participants from hurting to healing, even in secularized terms, make sense here (e.g. alternative dispute resolution or restorative justice). Secularized forms can promote the alleviation of suffering by acknowledging its reality and by sharing the load – in other words, by offering compassion (or literally ‘suffering with’). Calls to compassion thus open up a different or complementary avenue for Zero Vision implementation (Dekker et al., 2016). Programs for critical incident and stress management, for example, try to do exactly that by offering repertoires of psychological first aid, debriefings, and follow-ups (Leonhardt & Vogt, 2006). Policies and protocols for this are well tested and developed (e.g. Eurocontrol, 2008). A Zero Vision, as a commitment to reducing *and* alleviating suffering, may find its expression in embracing an inevitable residue of harm and suffering beyond our best intentions and abilities to prevent it, and then turning to compassion, humanity and social justice to soothe its remaining effects.

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The author reports no conflicts of interest. The author alone is responsible for the content and writing of this article.

References

- Amalberti, R. (2001). The paradoxes of almost totally safe transportation systems. *Safety Science*, 37(2–3), 109–126. [http://dx.doi.org/10.1016/S0925-7535\(00\)00045-X](http://dx.doi.org/10.1016/S0925-7535(00)00045-X)
- Amalberti, R. (2013). *Navigating safety: Necessary compromises and trade-offs – theory and practice*. Heidelberg: Springer.
- Barnett, A., & Wang, A. (2000). Passenger mortality risk estimates provide perspectives about flight safety. *Flight Safety Digest*, 19(4), 1–12.
- Berger, P. L. (1967). *The social reality of religion*. London: Faber.
- Berlinger, N. (2005). *After harm: Medical error and the ethics of forgiveness*. Baltimore, MD: Johns Hopkins University Press.
- Besnard, D., & Hollnagel, E. (2014). I want to believe: Some myths about the management of industrial safety. *Cognition, Technology and Work*, 16(1), 13–23. <http://dx.doi.org/10.1007/s10111-012-0237-4>
- Clark, J.C.D. (2012). Secularization and modernization: The failure of a 'grand narrative'. *The Historical Journal*, 55(1), 161–194. <http://dx.doi.org/10.1017/S0018246X11000586>
- Dekker, S.W.A. (2007). Eve and the serpent: A rational choice to err. *Journal of Religion & Health*, 46(1), 571–579. <http://dx.doi.org/10.1007/s10943-007-9118-1>
- Dekker, S.W.A. (2014a). The bureaucratization of safety. *Safety Science*, 70, 348–357. <http://doi.org/10.1016/j.ssci.2014.07.015>
- Dekker, S.W.A. (2014b). *The field guide to understanding 'human error'*. Farnham, UK: Ashgate Publishing Co.
- Dekker, S.W.A. (2014c). The psychology of accident investigation: Epistemological, preventive, moral and existential meaning-making. *Theoretical Issues in Ergonomics Science*, 16(3), 202–213. <http://dx.doi.org/10.1080/1463922X.2014.955554>
- Dekker, S.W.A. (2015). *Safety differently: Human factors for a new era*. Boca Raton, FL: CRC Press/Taylor and Francis.
- Dekker, S.W.A. (2016). *Just culture: Restoring trust and accountability in your organization*. Boca Raton (FL): CRC Press.
- Dekker, S.W.A. (2017). *The end of heaven: Disaster and suffering in a scientific age*. London: Routledge.
- Dekker, S.W.A., Long, R., & Wybo, J.L. (2016). Zero vision and a Western salvation narrative. *Safety Science*, 88, 219–223. <http://dx.doi.org/10.1016/j.ssci.2015.11.016>
- Dekker, S.W.A., & Pitzer, C. (2016). Examining the asymptote in safety progress: A literature review. *International Journal of Occupational Safety and Ergonomics*, 22(1), 57–65. <http://dx.doi.org/10.1080/10803548.2015.1112104>
- Douglas, M. (1992). *Risk and blame: Essays in cultural theory*. London: Routledge.
- Ehrman, B. (2008). *God's problem: How the Bible fails to answer our most important question: Why we suffer*. New York: Harper Collins.
- Elkind, P., Whitford, D., & Burke, D. (2011, January 24). BP: 'An accident waiting to happen'. *Fortune*, 85, 1–14.
- Frederick, J., & Lessin, N. (2000). The rise of behavioural-based safety programmes. *Multinational Monitor*, 21, 11–17.
- Furseth, I., & Repstad, P. (2006). *An introduction to the sociology of religion: Classical and contemporary perspectives*. Farnham, UK: Ashgate Publishing Co.
- GAO. (2012). *Workplace safety and health: Better OSHA guidance needed on safety incentive programs (Report to Congressional Requesters, GAO-12-329)* (GAO-12-329). Retrieved from Washington, DC: Government Accountability Office:
- Green, J. (1997). *Risk and misfortune: The social construction of accidents*. London: Routledge.
- Hacking, I. (1990). *The taming of chance*. Cambridge, UK: Cambridge University Press.
- Hamilton-Baillie, B. (2008). Towards shared space. *Urban Design International*, 13(2), 130–138. <http://dx.doi.org/10.1057/udi.2008.13>
- Hollnagel, E. (2014a). *Safety I and Safety II: The past and future of safety management*. Farnham, UK: Ashgate Publishing Co.
- Hollnagel, E. (2014b). *Safety-I and Safety-II: The past and future of safety management*. Farnham, UK: Ashgate Publishing Co.
- Hollnagel, E., Nemeth, C.P., & Dekker, S.W.A. (2009). *Resilience engineering: Preparation and restoration*. Aldershot, UK: Ashgate Publishing Co.
- Hollnagel, E., Woods, D.D., & Leveson, N.G. (2006). *Resilience engineering: Concepts and precepts*. Aldershot, UK: Ashgate Publishing Co.
- Hopkins, A. (2010). *Failure to learn: The BP Texas City refinery disaster*. Sydney: CCH Australia Limited.
- Hopkins, A. (2015). *Risky rewards: How company bonuses affect safety*. Farnham, UK: Ashgate Publishing Co.
- Koivupalo, M., Sulasalmi, S., Rodrigo, P., & Väyrynen, S. (2015). Health and safety management in a changing organisation: Case study global steel company. *Safety Science*, 74, 128–139. <http://doi.org/10.1016/j.ssci.2014.12.009>
- Kuipers, C. (2006, April 21). *Gedeelde ruimte in en om Drachten: Beroemd, berucht en beter [Shared space in and around Drachten: Famous, infamous and better]*. Paper presented at the Shared Spacecongres, Haren, Groningen, The Netherlands.
- Leonhardt, J., Vogt, J. (2006). *Critical incident stress management in aviation*. Aldershot, UK: Ashgate Publishing Co.
- Lofquist, E.A. (2010). The art of measuring nothing: The paradox of measuring safety in a changing civil aviation industry using traditional safety metrics. *Safety Science*, 48, 1520–1529. <http://dx.doi.org/10.1016/j.ssci.2010.05.006>
- Loimer, H., & Guarnieri, M. (1996). Accidents and acts of God: A history of the terms. *American Journal of Public Health*, 86(1), 101–107. <http://dx.doi.org/10.2105/AJPH.86.1.101>

- Long, R. (2012). *For the love of zero: Human fallibility and risk*. Canberra: Human Dymensions.
- Merton, R.K. (1938). Social structure and anomie. *American Sociological Review*, 3(5), 672–682. <http://dx.doi.org/10.2307/2084686>
- Perrow, C. (1984). *Normal accidents: Living with high-risk technologies*. New York: Basic Books.
- Rasmussen, J. (1997). Risk management in a dynamic society: A modelling problem. *Safety Science*, 27(2–3), 183–213. [http://dx.doi.org/10.1016/S0925-7535\(97\)00052-0](http://dx.doi.org/10.1016/S0925-7535(97)00052-0)
- Reason, J.T. (1997). *Managing the risks of organizational accidents*. Aldershot, UK: Ashgate Publishing Co.
- Roed-Larsen, S., Stoop, J., & Funnemark, E. (2005). *ESReDA shaping public safety investigations of accidents in Europe*. Hovik, Norway: Det Norske Veritas.
- Saines, M., Strickland, M., Pieroni, M., Kolding, K., Meacock, J., Nur, N., & Gough, S. (2014). *Get out of your own way: Unleashing productivity*. Sydney, Australia: Deloitte Touche Tohmatsu.
- Salminen, S., Saari, J., Saarela, K.L., & Rasanen, T. (1992). Fatal and non-fatal occupational incidents: Identical versus differential causation. *Safety Science*, 15, 109–118. [http://dx.doi.org/10.1016/0925-7535\(92\)90011-N](http://dx.doi.org/10.1016/0925-7535(92)90011-N)
- Saloniemi, A., & Oksanen, H. (1998). Accidents and fatal accidents: Some paradoxes. *Safety Science*, 29, 59–66. [http://dx.doi.org/10.1016/S0925-7535\(98\)00016-2](http://dx.doi.org/10.1016/S0925-7535(98)00016-2)
- Sharman, A. (2014). *From accidents to zero: A practical guide to improving your workplace safety culture*. London: Maverick Eagle Press.
- Sheratt, F. (2014). Exploring ‘Zero Target’ safety programmes in the UK construction industry. *Construction Management and Economics*, 32(7–8), 737–748. <http://dx.doi.org/10.1080/01446193.2014.894248>
- Stearns, P.N. (1990). "So Much Sin": The decline of religious discipline and the "Tidal Wave of Crime". *Journal of Social History*, 23(3), 535–552. <http://dx.doi.org/10.1353/jsh/23.3.535>
- Storkersen, K., Antonsen, S., & Kongsvik, T. (2016). One size fits all? Safety management regulation of ship accidents and personal injuries. *Journal of Risk Research*, 20(7), 1–19. doi:<http://dx.doi.org/10.1080/13669877.2016.1147487>
- Taylor, C. (2007). *A secular age*. Cambridge, MA: Harvard University Press.
- Taylor, F.W. (1911). *The principles of scientific management*. New York: Harper & Brothers.
- Townsend, A.S. (2013). *Safety can't be measured*. Farnham, UK: Gower Publishing.
- Turner, B.A. (1978). *Man-made disasters*. London: Wykeham Publications.
- Vaughan, D. (1999). The dark side of organizations: Mistake, misconduct, and disaster. *Annual Review of Sociology*, 25, 271–305. <http://dx.doi.org/10.1146/annurev.soc.25.1.271>
- Weber, M. (1905/1950). *The protestant ethic and the spirit of capitalism*. New York: Scribner's.
- Weick, K.E., & Sutcliffe, K.M. (2007). *Managing the unexpected: Resilient performance in an age of uncertainty* (2nd ed.). San Francisco: Jossey-Bass.
- Westrum, R. (1993). Cultures with requisite imagination. In J.A. Wise, V.D. Hopkin & P. Stager (Eds.), *Verification and validation of complex systems: Human factors issues* (pp. 401–416). Berlin: Springer-Verlag.
- Wildavsky, A.B. (1988). *Searching for safety*. New Brunswick, USA: Transaction Books.
- Wood, M. (2015). Shadows in caves? A re-assessment of public religion and secularization in England today. *European Journal of Sociology*, 56(2), 241–270. <http://dx.doi.org/10.1017/S0003975615000120>
- Woods, D.D. (1990). Risk and human performance: Measuring the potential for disaster. *Reliability Engineering and System Safety*, 29(3), 387–405. [http://dx.doi.org/10.1016/0951-8320\(90\)90024-H](http://dx.doi.org/10.1016/0951-8320(90)90024-H)
- Woods, D.D. (2006a). Essential characteristics of resilience. In E. Hollnagel, D.D. Woods & N.G. Leveson (Eds.), *Resilience engineering: Concepts and precepts* (pp. 21–34). Aldershot: Ashgate Publishing Co.
- Woods, D.D. (2006b). How to design a safety organization: Test case for resilience engineering. In E. Hollnagel, D.D. Woods & N.G. Leveson (Eds.), *Resilience engineering: Concepts and precepts* (pp. 296–306). Aldershot, UK: Ashgate Publishing Co.
- Wowak, A.J., Mannor, M.J., & Wowak, K.D. (2015). Throwing caution to the wind: The effect of CEO stock option pay on the incidence of product safety problems. *Strategic Management Journal*, 36(7), 1082–1092. doi:10.1002/smj.2277<http://dx.doi.org/10.1002/smj.2277>
- Wright, L., & van der Schaaf, T. (2004). Accident versus near miss causation: A critical review of the literature, an empirical test in the UK railway domain, and their implications for other sectors. *J Hazard Mater*, 111(1–3), 105–110. <http://dx.doi.org/10.1016/j.jhazmat.2004.02.049>
- Young, S. (2014). From zero to hero: A case study of industrial injury reduction: New Zealand Aluminium Smelters Limited. *Safety Science*, 64, 99–108. <http://dx.doi.org/10.1016/j.ssci.2013.11.016>
- Zwetsloot, G.I.J.M., Kines, P., Wybo, J.L., Ruotsala, R., Drupsteen, L., & Bezemer, R.A. (2017). Zero Accident Vision based strategies in organizations: Innovative perspectives. *Safety Science*, 91, 260–268. <http://dx.doi.org/10.1016/j.ssci.2016.08.016>