Enhancing Practice in Safety Management

A 35-Year Personal and Professional Journey

A context statement submitted to Middlesex University in partial fulfilment of the requirements for the degree of DProf by Public Works

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Abstract

This context statement provides critical evaluation and positioning of fifteen public works arising from empirical research and real-world projects undertaken by Stephen Asbury between 1984 and 2018. It sets these works within the continuity of other occupational health and safety (OH&S) improvements, assimilating knowledge and learning from multiple disciplinary approaches (Choi and Pak, 2006) into practice and, through this, providing unique contributions which have advanced OH&S practice and encouraged others to advance. The findings from these fieldworks are embedded in these works and have provoked updating of the systematic review of the efficacy of OH&S management systems by its original authors (Robson *et al.*, 2007). The unique contributions provided by this research and the resulting public works divide into three themes:

1. Applying management theories to OH&S
2. Professionalising OH&S practice
3. Clarifying 'dynamic' in the context of risk assessment

Theme 1

The context statement and public works explain how recognised management systems emerged up to and beyond the UK regulator's guidance for OH&S management published in 1991 as *hsg65*. They show the evolution to reflect the advice to adopt the Plan-Do-Check-Act (PDCA) improvement cycle proposed by Deming (1982), taking the-then newly developed concept of PDCA and implementing this in a new field (OH&S).

The research published in the works provides simplified materials (Asbury, 2002; 2006-16; 2014) which can be handled by professionals in practice. This is demonstrated through an OH&S-MS app, an andragogic (Knowles, 1970, 1984a; b) learning case study *Petros Barola* and in case studies presented within the works including *Pearson plc* and the Saudi Arabian Oil Company *Saudi Aramco*.

These works have had a considerable impact upon practice including their contribution (Asbury, 2016a) to the-then new international standard for OH&S management systems, *ISO 45001* (ISO, 2018a). *The Audit Adventure* auditing method presented in Asbury (2013a; 2018) is aligned to ISO 19011 (ISO, 2018b) which was revised in 2018 to reflect the risk-based approach described in the works since 2005.

<u>Theme 2</u>

The second theme explains the emergence of professional bodies operating in the OH&S field from 1916, and how membership of such bodies has grown – in the case of the Institution of Occupational Safety and Health from 58 people in 1945 to over 47,000 today (IOSH, 2020a). The public works (Asbury, 1994a; 2001; 2010a; 2013b; 2013c) provided considerable impact upon the growth, reputation and competency of IOSH and its members from their key role in the grant to IOSH of a Royal Charter in 2003, and permission for it to confer an individual Charter (CMIOSH/CFIOSH) upon individual members from 2005.

The works (Asbury and Ball, 2009; 2016) provided IOSH's position in the OH&S-related competency of corporate social responsibility (CSR), and later, IOSH's continuing professional development (CPD) training course on CSR.

<u>Theme 3</u>

This theme and the public works explore the emergence of 'risk assessment' and its adoption for OH&S. Whilst the risk assessment discipline has been trivialised as 'form-filling' (Tombs and Whyte, 2012) in the review of the development of the concept of 'responsive regulation' following the *Hampton Review* (2005); and criticised for taking a too-low-level view of business risks, the works (Asbury, 2002; Asbury and Jacobs, 2014) show how organizations can benefit from developing a better understanding of '*big rocks*' – the most significant risks to their objectives. A unique risk assessment software programme (Asbury, 2002) encouraged others to advance. In 2007, it was filmed for BBC *Dragons' Den*.

For the first time outside of the fire services and emergency sector, the public works (Asbury and Jacobs, 2014) connected strategic risk assessment (SRA), with predictive risk assessment (PRA) and dynamic risk assessment (DRA) in the *3-Level Risk Management Model*.

In the UK, the number of workplace fatalities has reduced by 86% since 1974 (HSE, 2020). In the same period, there has been a 77% reduction in reported non-fatal injuries (HSE, *ibid.*). OH&S remains punctuated by occasional tragedies, but on the whole, workplaces are becoming safer. The evolution of OH&S professional practice, risk-based OH&S-MS and MS auditing as mechanisms to embed and improve health and safety management have been advanced by these works and are anticipated to contribute further on the global stage now that ISO 45001:2018 has been adopted and published.

Glossary

ACoP	Approved Code of Practice (and see CoP)
ACVE	Adult, Career and Vocational Education
AFWP	Audit Finding Working Paper
AI	Artificial Intelligence
ALARA/ALARP	As Low As Reasonably Achievable/Practicable
ASSE/ASSP	American Society of Safety Engineers (now …Professionals)
BBC	British Broadcasting Corporation
BBS	Behaviour-Based Safety
BCE/BC	Before the Common Era (or Before Christ)
BDOHSG	Burton and District Occupational Health and Safety Group (a RoSPA-affiliated OH&S Group)
BSE	Bovine Spongiform Encephalopathy
BSi	British Standards Institution
BTR	formerly *British Tyre and Rubber*
CA	Curriculum Adviser
CDM	Construction (Design and Management) Regulations; or Classic Decision Making – to context
CE/CEO	Chief Executive Officer
CEnv	Chartered Environmentalist
CFIOSH	Chartered Fellow of the Institution of Occupational Safety and Health
CHaRM	Centre for Hazard and Risk Management
CIMAH	Control of Industrial Major Accident Hazards (Regulations)
CJD	Creutzfeld-Jakob Disease
CMIOSH	Chartered Member of the Institution of Occupational Safety and Health
CoLP	City of London Police
COMAH	Control of Major Accident Hazards (Regulations)
CoP	Code of Practice (and see ACoP)
COSHH	Control of Substances Hazardous to Health (Regulations)
CPD	Continuing Professional Development
CPDSC	CPD Sub-Committee (a sub-committee of IOSH Professional Committee)
CRS	Corporate Risk Systems (Limited)
CSB	Chemical Safety and Hazard Investigation Board (US)
CSR	Corporate Social Responsibility
CSR-MS	CSR Management System
DIS	Draft International Standard
DMU	De Montford University
DOT-H	Department, Operation, Task, Hazard (from Asbury, 2002)
DRA	Dynamic Risk Assessment (part of the 3-Level Risk Management Model)
DSE	Display Screen Equipment
DSEAR	Dangerous Substances and Explosive Atmospheres Regulations
DTRT	Do The Right Thing (from Asbury and Ball 2009; 2016)
DWP	Department for Work and Pensions
EBSCO	Elton B. Stephens Company
EEC	see EU
EL	Employer's Liability (insurance)
EMS	Environmental Management System
ENETOSH	European Network Education and Training in Occupational Safety and Health
ENSHPO	European Network of Safety and Health Practitioner Organizations
EPA	Environmental Protection Agency (US)
EQF	European Qualifications Framework
ERIC	Educational Resources Information Centre
E-SEAP	Eliminate, Substitute, Engineering control, Administrative control, Personal protective equipment control (hierarchy of controls from ISO 45001:2018)
ETA	Event Tree Analysis

EU	European Union (formerly EEC)
FAR	Fatal Accident Rate (a measure of performance)
FFI	Fee for intervention (HSE's cost recovery scheme)
FIEMA	Fellow of the Institute of Environmental Management and Assessment
FIFA	Federation Internationale de Football Association
FIIRSM	Fellow of the International Institute of Risk and Safety Management
FIOSH	Fellow of the Institution of Occupational Safety and Health (now CFIOSH)
FMEA	Failure Mode and Effects Analysis
FOD	Field Operations Directorate (part of regulator HSE)
FTA	Fault Tree Analysis
FWTD	Feeling, Watching, Thinking, Doing (aka the *Kolb Learning Cycle)*
GKN	formerly *Guest, Keen and Nettlefolds*
GradIOSH	Graduate Member of the Institution of Occupational Safety and Health
HASAWA	Health and Safety at Work etc. Act 1974
HAZAN	Hazard Analysis
HAZID	Hazard Identification
HAZOP	Hazard and Operability Study
HE	Higher Education
HLS	High-Level Standard (from ISO Annex SL)
HMFI	His/Her Majesty's Factory Inspectorate
HSE	Health and Safety Executive (UK OH&S Regulator); or Health, Safety and Environment when used in the context as below 'HSEQ'
HSEQ	Health, safety, environment, quality (a collective term, one of many, for wider OH&S roles / disciplines; also HSE, SHEQ, EHS, etc.)
I2P2	Injury and Illness Prevention Program
ICRS	Integrity, Competence, Respect, Service (from the IOSH Code of Conduct)
IEMA	Institute of Environmental Management and Assessment
IIM	Institute of Industrial Managers (later IM, Institute of Management)
ILEX	Institute of Legal Executives (now CILEx)
ILO	International Labour Organization
INSHPO	International Network of Safety and Health Practitioner Organizations
IOD	Institute of Directors
IOGP	International Association of Oil and Gas Producers
IOSH	Institution of Occupational Safety and Health
IPD	Initial Professional Development
IRIDM	Integrity Risk-Informed Decision Making
ISN	Injunctive Safety Norm
ISO	International Organization for Standardization
ISO/TC 283	ISO Technical Committee for OH&S-MS
LWDC	Lost Work Day Case (a measure of performance)
MBA	Master of Business Administration
MHSWR	Management of Health and Safety at Work Regulations
MIOSH	Member of the Institution of Occupational Safety and Health (now CMIOSH)
MoJ	Ministry of Justice
MS	Management System
MSDS	Material Safety Data Sheet (more-recently 'SDS')
MSS	Management System Standard(s)
MTOI	Man, Technology, Organisational, Information Systems
NADOR	Notification of Accidents and Dangerous Occurrences Regulations
NDM	Naturalistic Decision Making
NEBOSH	National Examination Board in Occupational Safety and Health
NGO	Non-Governmental Organisation
NHS	National Health Service
NLP	Neuro Linguistic Programming
NSB	National Standards Body
NVQ	National Vocational Qualification
OCR	Oxford, Cambridge and RSA (an awarding body)

ODA	Olympic Delivery Authority
OECD	Organization for Economic Co-operation and Development
OFSTED	Office for Standards in Education
OGP	see IOGP
OH&S	Occupational Health and Safety
OH&S-MS	Occupational Health and Safety Management System
ORM	Operational Risk Management
OSHA	Occupational Safety and Health Administration / Act of 1970 (USA)
OSHCR	Occupational Safety and Health Consultants Register
P&L	Profit and Loss
PAR	Participatory Action Research
PARN	Professional Associations Research Network
PAS	Publicly Available Specification
PC	Professional Committee (IOSH standing committee – aka PEC)
PDCA	Plan, Do, Check (or Study), Act (aka *The Deming Cycle / Wheel*)
PEC	Professional Ethics Committee (IOSH standing committee, and see PC)
PEST	Political, Economic, Socio-cultural, Technological
plc	Public Limited Company
PPE	Personal Protective Equipment (and see RPE)
PRA	Predictive Risk Assessment (part of the 3-Level Risk Management Model)
PUWER	Provision and Use of Work Equipment Regulations
QRA	Quantitative Risk Assessment
R&SA	formerly *Royal and Sun Alliance* (now trading as RSA Insurance Group)
RA	Risk Assessment
RCBA	Risk Cost-Benefit Analysis
RGEE	RasGas Elements of Excellence
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
RoSPA	Royal Society for the Prevention of Accidents
RPDM	Recognised Primed Decision Making
RPE	Respiratory Protective Equipment (and see PPE)
RSP	Registered Safety Practitioner (used by IOSH until 2005 to designate competent OH&S practitioners)
SARF	Social Amplification of Risk Framework
SDP	Skills Development Portfolio (an IOSH requirement from its route 1 and route 3 IPD)
SFRP	So Far As Is Reasonably Practicable (from HASAWA)
SIA	Shell Internal Audit (a department within Royal Dutch Shell plc)
SME	Subject Matter Expert or Small-to-Medium-sized Enterprise – to context
SRA	Strategic Risk Assessment (part of the 3-Level Risk Management Model)
TBTO	Tributyltin Oxide
TCDD	Tetrachlorodibenzonioxin
TOR	Terms of Reference (for an audit)
TRIR	Total Recordable Incident Rate (a measure of performance)
UKAS	United Kingdom Accreditation Service
VP	Vice President
VPF	Value of Preventing a Fatality (and see WTP)
WHO	World Health Organization
WTP	Willing To Pay (a VPF-related methodology)

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Looking back, I have been blessed. It seems too-unlikely that my mangers, clients, mentors, co-authors, professional contacts, family and friends who helped to develop and shape the career which informed my works could have found me (or I could have found them) purely by chance. Every one of the 15,000-or-so participants who attended one or more of my training classes held in over 70 countries around the world, asked a question and demanded an answer, shaped my thinking and helped me to become the man and the contributor I have become at fifty-five years of age.

You'll find sincere thank yous here, but there are bound to be people I missed. Over (at least) the last 30 years, I have tried to maintain a habit of saying 'thank you' at the time. If you ever heard those words from me, or received one of my little postcards, you'll know how much I appreciated your advice, help or contribution.

For all sorts of reasons, I'd like to set on record my thanks to (alphabetically) Fred Alderson, Peter Ashwell, Richard Ball, J. Ford Brett, Debbie Clements, Jeff Coleman, Dr Andrew Cope, John Element, Dr Dominic Elliott, Michael G. Farmer, Mike Hann, Hazel Harvey, Guy Hemington, Joe Henderson, Edmund Jacobs, Steve Kay, Kate Loades, Dr Shaun Lundy, Bill Luttman, Craig Lydiate, Jim Marshall, Steve Martin, Neil McClure, Johann Meeke, Dr David Pelton, Dr Arthur Rothwell and Andrew Ure.

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My thanks to my Middlesex University London doctoral supervisors, Dr Alan Page and Dr Hemda Garelick for helping me to achieve my life-long doctoral ambition.

I've learned to enjoy writing on my own in more-recent years, but my earlier collaborations with Peter, Richard and Edmund (above) gave me the confidence to publish my own works, as well as sharing the research and writing-load at the time.

I'm so proud of my daughter Kimberley – for her academic, professional and personal achievements. My wife Susan is a tower of strength – "behind every successful businessman is an exhausted woman" is her favourite quotation. She is my rock, and my soft landing.

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1. LEARNING FROM PRACTICE, IMPACT ON PRACTICE

Most of what we do, think, feel and believe is learnt.
-    Brockbank and McGill (2006)

1.1 Introduction

Much has changed since 1984 when I started my practice in the field of occupational health and safety (OH&S). Despite a much larger workforce today, many fewer workers are killed and seriously injured in the UK now, compared to then (HSE, 2015; 2020). The UK consistently has one of the lowest standardised rates of fatal injury across the EU, lower than other large economies, and the EU average. UK rates of work-related ill-health are also lower than most other EU countries (HSE, 2020:10).

Why has this occurred? There are many reasons. As Rae and Provan (2019) advise, it is necessary for organisations to make sense of health and safety in an uncertain world. If they did not perform safe work, they would be unable to convince stakeholders including their customers and supply chains that they were doing enough which could in turn prevent them from pursuing their core business. Over the same period, the expectations from society for safe, healthy workplaces have increased (Benn, Edwards and Williams, 2014). The *Context* (ISO, 2018a – and see page 21) and the rules have changed. Structured approaches to management and auditing of safety and health risks have emerged from 'nothing' to become regulators', ISO and others' standards (HSE, 2013; ISO, 2018a: b; my public works Asbury, 2018). The world's largest health and safety organisation, and its growing number of competent practitioners, have been granted Royal Charters (IOSH, 2020b).

Alongside these changes, Matthews *et al*. (2019) share perspectives of those most directly affected, bereaved families. Their findings highlight the importance of investigative and prosecutorial processes to bereaved families who seek justice, some assurance that culpable behaviours are not condoned, and the implementation of measures to prevent recurrence.

This context statement provides critical evaluation and positioning of fifteen of my public works, each of which arose from my empirical research and real-world projects between 1984 and 2018. Gray (2009: 3) describes the *real world* as comprising:

> *"… businesses, companies, hospitals, schools, colleges and other organisations… [and] can also include communities where people live… community groups, educationalists, professional associations, management associations…, virtual communities… any setting where human beings come together for communication, relationships or discourse."*

Robson (2011); supported by Robson and McCartan (2016) and Quinlan *et al.*, (2019) explain real world research as concerning projects which are typically small in scale and modest in scope, saying that they tend to be related to change and/or policy. My own position concurs.

In the simplest of terms, much of my research was from speaking to professionals in practice. As I will describe, these works have led to developments and new OH&S practices for this new *Context* (ISO, 2018a) throughout this period, as well as providing inputs to knowledge in this field. My submitted public works are listed together in Appendix 1, where I have also ranked each work in terms of its significance and longevity of impact – high, medium or supportive.

This introduction summarises my learning with an evaluation of my experiences and signposts to major landmarks in my journey. I explain how I have taken these to develop a unique 'signature' to the way I conduct my professional practice in OH&S, and how my public works have influenced the practice of others in the UK and internationally. In the sections and chapters which follow, I will identify the origins of, and the reasons for, my real-world research which led to the development of six books and over 50 other public works published between 1994 and 2018 (from which fifteen have been selected for this submission). The research published in these public works equates to level 8 criteria in my field of expertise. My doctoral studies thus culminate from these outputs and my leadership in the field.

My 'signature' has been learned and become part of my *habitus* (Bourdieu, 1990) – the sum of my life experiences which produce the ways of being and doing (as well as the knowing) with which I inhabit my practice. This set of dispositions constitute my unique worldview or *ontology* – how I perceive the world and my actions within it (Chia, 2002). I will uncover this level of learning and how it has informed my perspectives, capabilities and expertise brought to my works through exploration, generation and development of new practices.

In section 1.2, I will summarise my start before journeying through my 35-year (1984-2018) professional career where I assimilated knowledge and learning from inter- and multi-disciplinary approaches (Choi and Pak, 2006) into my practice. In section 1.3, I will show my emergence as a thought leader in my field with examples of my influences on wider professional practice. In section 1.4, I will reflect on my learning and my journey before summarising my study in section 1.5. I will summarise the OH&S field showing the improvements we have seen since 1974, prior to summarising my public works, explaining how I have divided these into three themes, in section 1.8.

I concur with de Bakker *et al.* (2019) who say that current societal problems require more such [inter- and multi-disciplinary] work to be conducted and published. Interdisciplinary research is hard, they say, but the results can be worth it for those committed enough to see it through. Stefansson (1928) pleads for a mind-set that accepts as knowledge only that which can be proven, and which cannot be logically contradicted. I noticed through my career that safety is a discipline in which myths have become standardized and deeply embedded, and I took care not to perpetuate these.

I have endeavoured to build my public works around the evidence base, building on the existing works, whilst seeking also to cascade this in a simple form to the practitioner base. I have also sought to partner with others, and in this vein, I have spoken with Lynda Robson, lead author of the systematic review of the efficacy of OH&S management systems (Robson *et al.*, 2007, covering the literature published between 1887-2004) and securing a preliminary understanding to work with her to update it now that sixteen years have passed.

I have seen OH&S change, and I have changed too. I have seen it through. My personal experiences, and my life and career-long learning, gave me the confidence to write. My publications have driven the impacts on practice that I will describe, influencing others through my works.

On reflection, it is apparent that I employed a constructivist epistemology throughout the majority of my fieldwork based on a premise that current and past knowledge, of both myself and my clients, play an important part in the construction of perspectives of new concepts (Bruner, 1966). As a constructivist, meaning is constructed not discovered, and as Crotty (1998) suggests, there is an interrelationship between the theoretical stance I adopted and the methods I used while retaining my 'being' ontology. For example, my sequence of books on management systems and auditing (Asbury and Ashwell, 2007; Asbury, 2013a; Asbury 2018) arose and were built upon my constructed experiences from employment and consultancy assignments from 1984. I adopted a two-way learning

process – having to learn about my client's position and lens through which they view occupational safety, in order to construct joint understanding and assimilation of ideas and solutions that could work within the client company.

Throughout my career, and thereby throughout my public works, I have addressed and solved real-world issues (Gray, 2009; Robson, 2011)) by taking an inductive approach towards discovering generalizations and theories but taking care not to jump to early conclusions by instead taking multiple case studies to establish patterns and meanings. I was careful not to transfer a concept into a field in which it was inapplicable (Pirie, 1952). As Pirie says, I noted that the more useful the concept in its own field, the greater the danger. A more deductive approach was taken when testing ideas gained through my professional practice. Throughout, it has been important for me to understand the position and lens through which CEOs and other stakeholders look at OH&S. Without this lens, it would be difficult to provide the answers that align with their positions.

I had to see the issues from my clients' and readers' perspectives, and this required me to utilize a range of positions. Reid *et al*. (2006) describe with examples of integrating epistemologies through scenarios. Raymond *et al*. (2010) argue that there is no single optimum approach for integrating local and scientific knowledge. They encourage a shift from the development of knowledge integration products to the development of problem-focussed knowledge integration processes. These processes, they say, need to be systematic, reflexive and cyclic so that multiple views and multiple methods may be considered in relation to a management problem. Whilst I have come to this literature after the creation of my works, this statement aligns closely with my output, in which the use of scenarios and problem-based approaches has been central; and in which the learning I have taken from my practice is reflected upon as further learning for others. I will describe this approach in the development of key works for the Institution of Occupational Safety and Health (IOSH) and for Pearson plc.

There will be both chronological and thematic elements which demonstrate my learning over the last 35 years whilst working in OH&S practice as an employee, as a company owner, and as a statutory director (and in other roles) at IOSH – which since 2011 has been the world's largest OH&S organisation. I will focus upon the aspects that are of the greatest relevance to my chosen areas of research within my public works:

- Application of management theories to OH&S management systems and auditing
- Professionalising the OH&S profession
- Clarifying dynamic in the context of risk assessment

1.2 My background and development

1.2.1 Formative years and pre-school

In 1965, I was the first-born child into a middle-income family. My father worked and my mother looked after the home and one then two sons. I had a 'textbook' comfortable upbringing from devoted parents which on reflection was probably atypical. As a younger man, my father had served in the British Royal Air Force and as a result, he had great interest in *the space race*. My earliest recollection is of watching the moon landing with him on television in July 1969. My father's words that 'anything is possible with vision and persistence' continue to resonate today, consistent with Marsiglio and Cohan (2000) who comment on the features of a sociological perspective as it relates to a father's involvement with, and influence on, his children.

Those words *anything is possible* have been core to the development of my works; in gaining traction with publishers, and in my advocacy to what was then a small professional body in guiding its development, its growth and the development of its global voice.

1.2.2 Early career

Having gained my first appointment, I was promoted several times between 1982-8, probably because I told the director that I could offer more. Noting my *anything is possible* perspective, I reflect that it was in me to seek to do so. In turn, my director recognized something in me, rewarding me by sponsoring Institution of Industrial Management (IIM) classes at Certificate then Diploma levels. This provided early exposure to management theory through my attendance at evening college. It was here that I first started to learn about management theories including from Drucker (1970), Peters and Waterman (1982), Peters (1988; 1992), Goldratt (1988) and Deming (1982; and later 1993). These, particularly from Deming (who had built on the perception of Shewhart, 1939), were foundational learning experiences for me which I would subsequently research, translate and apply in my discipline and write about for over thirty years. In my sixth book (Asbury, 2018: 54-77), I summarize and review the evolution of business control from management thinking, integrating these leading thought leaders and others into my works.

From 1984, a principal contribution to practice has been transposition and adaption of management theory to the field of OH&S. This submission will show that this approach was novel at the commencement of my public works but has subsequently become embedded into both theoretical debate and practice since. Having charted the evolution of management theories, I provide argued reasons for adopting Deming's *Plan-Do-Check (or Study)-Act* cycle (PDCA) (Deming, 1982: 88) for managing OH&S and as a reflective framework for risk-based management system (MS) auditing. Figure 1 shows the

evolution of the use of the term 'PDCA' in all fields, which evidences my early adoption and leadership in the use of this management approach into the OH&S field.
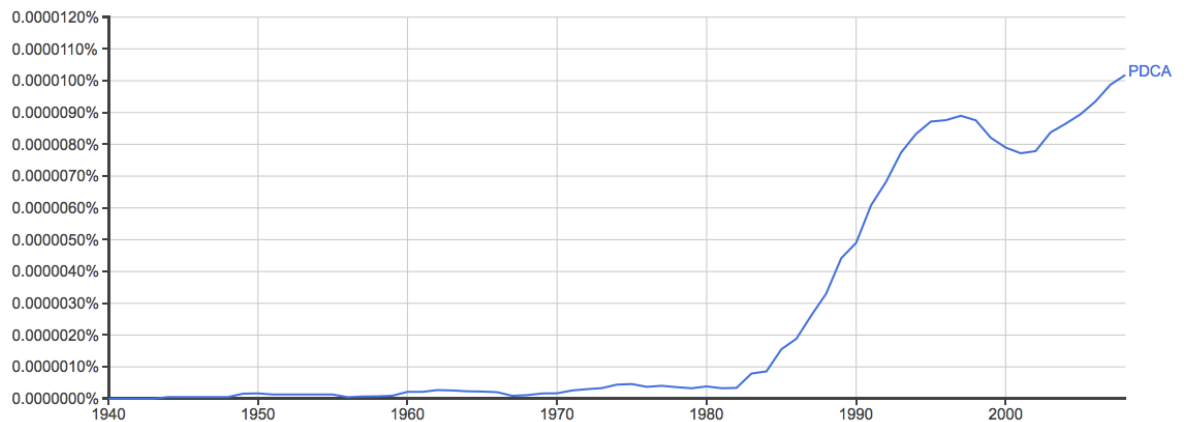
Figure 1 The evolution in use of the term 'PDCA' in all fields 1940-date, indicating my status as 'an early adopter' (Source: Google Ngram)

I started to use PDCA in my practice in 1984. From 1994, my public works focussed on OH&S management systems and allied auditing using PDCA. Whilst this is not my own model, it is central to the position of the works. Whilst now common practice, it was not something recognised in the OH&S field until much later. It is therefore interesting to note that some 35 years after I engaged with this and publishing this as an approach for managing OH&S, that BSI, HSE, IOD, ILO and ISO have all now followed this same approach. I cannot show that these organisations followed my works, but they have each arrived at the same conclusion some years later.

The same is true for the ISO standard for management system auditing, where ISO 19011 (ISO, 2018b) was revised and republished in July 2018 to include for the first time a *risk-based* approach – an approach recommended within my public works since 2007 (Asbury and Ashwell, 2007).

1.2.3 Inter-personal relationships

In 1984, I developed a relationship with the Group HR Director at Rugby Group plc. She helped me to understand – perhaps for the first time – the importance of inter-personal relationships in dispensing my practice, instead of just 'knowing and telling' the rules. Others helped me along the way, but this was the origin of that learning. She was instrumental in my appointment to my first OH&S role. It is quite possible that without this relationship and the subsequent appointment it led to, I may not have found OH&S as my field. This then returns to the constructivistic position of my public works, in that who your meet, and the experiences that these relationships and roles foster, influence profoundly one's personal world-view - in my case my worldview of OH&S.

This inter-personal perspective led me to found the Burton and District Occupational Health and Safety Group (BDOHSG). Starting from nothing, I contacted major employers in and around my hometown to create a space in which practitioners and leaders could debate safety themes. This group-think approach enabled me to expand my understanding of practice through garnering perspectives from differing occupational sectors; the way in which others approached practice and communicated their ideas to company leadership; and to recognise and capture barriers to OH&S implementation and in so doing enhance my personal understanding of professional practice.

On reflection, this provided me with a wider lens to explore OH&S; it would have been all too easy to explore just within my employing company, taking an insular view of what worked and what didn't work for us. Capture of scenarios from different sectors is a key perspective of my public works; being able to talk to influencers in organizations from their position is core to my practice and later influencing roles.

Meanwhile, I stayed in college in self-funded part-time evenings to study and graduate ILEX professional law and the NEBOSH National General Certificate in OH&S in 1990 and 1991 respectively. I knew that OH&S required qualifications, and I joined IOSH as an Affiliate Member in 1989, re-grading to an Associate upon completion of my Certificate. Joining IOSH at that time would plant the seeds and provide the opportunity to research and publish the public works in my theme 2 (Asbury, 1994a; 2001; 2010a; 2013b).

<u>1.2.4 Career and learning from practice</u>

I had decided to advance my career by applying for roles with increasing scope and challenge and held three consecutive OH&S manager appointments between 1984-95. These three roles provided me with opportunities to learn the practical application of OH&S theories, to engage with managers and workers, to research solutions, and to investigate accidents. These, and other experiences, stay with me.

For example, in 1992-3, GKN plc engaged an international consulting group to audit environmental management systems (EMS) at over 100 of its operations around the world. I participated in several of those audits under the supervision of their external lead auditor. Each audit was based on a yes/no checklist of 200+ questions – did the site have this, did it have that? At the end of each five-day audit, the lead auditor would present to site management the 200+ findings. Each closing meeting took around two hours. Questions were discouraged as there was so much to cover. It was horrific to witness – and I'm sure, to be on the receiving end of. My experiences from these assignments taught me that seeing the world through the eyes of senior and line managers and applying an engaging inter-personal style might produce better audits.

Thinking back, those early influences, both at college with respect to management theory, my learning of the critical nature of interpersonal relationships, my learning in law and the engagement in debate with others in relation to OH&S practice, coupled with my *anything is possible* worldview made me question the status quo and the accepted monodisciplinary approaches. My learning from this example (GKN) influenced me to think carefully about alternative approaches to planning, conducting and reporting audits. I became increasingly determined to identify a better approach and to share this with others.

1.2.5 Learning to lead practice

In 1995, there was a sea-change in my career. Up to this point, I had operated inside single companies. Whilst I was gaining a wider perspective of OH&S through talking with other professionals in practice at BDOHSG and IOSH, my own experiences were limited to internal improvement programmes. In that year, I won a RoSPA award based on five years' of OH&S benchmarking, developing safety culture, implementation and sharing of PDCA/OH&S-MS practices within one international company, GKN plc (1995: 37).

Shortly afterwards, I was interviewed, recruited and employed by the London insurance market sponsor of that award within their consultancy company. As reported by Stemn *et al*. (2019), creating a mature safety culture is regarded as an important means of ensuring good safety performance, particularly in reducing accidents. I'm certain that the practices and results from my work at GKN, revealed by the subsequent award, is what brought me to the attention of my new employer.

As I reflect on this part of my career now, it provided perfect progression for me, providing opportunities to recommend and lead the application of OH&S-MS across a wider range of insured organisations including international food and beverage corporations, British central government departments, and High Street retailers. In line with my ethos, this provided me with platforms to learn varied methods to implement effective OH&S-MS.

Between 1995 and 2018, I worked on projects in over 70 countries on six continents opening my eyes to differing cultural perspectives and positions that influenced OH&S practice. It is from those experiences that my public works and the scenarios on which they are based began (and continue) to be founded.

1.3 Emerging as a thought leader

Using Cox's model for structured reflection (2005), I provide three examples of my emergence as a leader in the OH&S field:

1. As highlighted, my experiences through college and subsequent MBA had introduced me to a range of thought leaders on management theory. I was able to interpret and integrate the work of Deming (1982) on *Plan Do Check Act* into my practice, into the wider world of OH&S-MS and auditing through my personal practice; and influencing practitioners and company leaders in major sectors through my public works.

    This early adoption of PDCA (see Figure 1 on page 6), long before its universal adoption into OH&S practice, highlights the cutting-edge translocation of accepted theory from another field into my own.

2. As Chair of IOSH Professional Committee (PC), I was trying to lead and work effectively with my committee colleagues to have the OH&S profession adopt high standards for membership, and for development of practitioner competencies. It was a matter of interpreting the literature and other organisation's frameworks to develop these for the OH&S profession. At that time, looking beyond one's own professional boundaries was limited. Many professional bodies were siloed or in direct competition for members thus limiting cross-communication and learning. My advocacy of looking beyond the IOSH professional walls and further exploration of the literature of the time positioned me as thought leader within the profession. I was awarded the IOSH President's Distinguished Service Certificate in 2010.

    Between 1998 and 2013, I led PC, communicating, gaining and maintaining the support of the elected IOSH Council (evidenced by events and by my three-times re-appointment as PC Chair). In that role, I felt motivated and supported throughout the development and publication of the frameworks which led IOSH to its Royal Charter in 2003, individual Chartered status for its members in 2005, and completion of its governance framework in 2013.

    During that time, my works for IOSH included the development of the CPD policy and arrangements (Asbury, 1994a), the competency and membership frameworks (Asbury, 2001), the IPD policy and standards (Asbury, 2010a) and the Code of Conduct, etc. (Asbury, 2013b). I led and worked with others, and this is explained. My personal contribution to IOSH is verified by the Chief Executive on page 230 of this context statement.

As I will show in chapter 3, section 3.12.1, ENSHPO (the European Network of Safety and Health Practitioner Organisations) and later INSHPO (the International Network of Safety and Health Practitioner Organisations) later adopted IOSH's membership and governance frameworks from my public works for their own transnational membership organisations.

3. As I will describe, Royal Dutch Shell plc ('Shell') called for my book (Asbury and Ashwell, 2007), and subsequently embraced it into their global internal auditor training programme, known within Shell as *EP-04* from 2007.

In 2001, Shell and BP plc had co-founded the *PetroSkills* training alliance. By 2018, this alliance had grown to around 30 member companies together comprising 2/3rds of global oil and gas production.

In 2006, Shell recommended me to that alliance as an instructor, and I joined it in later that year. My objective was to incorporate OH&S/HSE as a standard curriculum discipline. I used my learning from earlier OH&S programmes to inform my proposal, which was well received by its members. Major OH&S education programmes (examples) were subsequently agreed with Chevron and Repsol (worldwide), Saudi Aramco (in Saudi Arabia) and RasGas (in Qatar). Over 10,000 participants from the *PetroSkills* alliance have attended sessions based on my public works (Asbury, 2006-16; Asbury and Ashwell, 2007; Asbury, 2013a, 2018). The adoption of my 2006 work is explained in *Adult Learning* on pages 58-61 and *Petros Barola* on pages 69-71.

Likewise, authoring my first book in 2007 which advocated better practice, gained through my experiences, as a practitioner, consultant and trainer, made me realise that I had something to say and that it was being heard. This led to my determination to write more widely, including a further five books on corporate social responsibility (Asbury and Ball, 2009; 2016), dynamic risk assessment (Asbury and Jacobs, 2014) and two further editions of the first book (Asbury, 2013a; 2018).

In 2012, I was promoted to become the *PetroSkills* HSE Discipline Manager, leading a team of about 20 instructors. At the 2014 instructor conference in Houston, I was awarded the 'Top of Class' award by the *PetroSkills*' Chief Executive Officer. The award citation said that I was the unanimous choice of the alliance's member judges as the best and most-inspiring instructor from amongst 300 others from its many subject disciplines. That was possibly the highest point to date of my professional career. I cannot remember smiling more.

<u>1.3.1 Impacts on my public works from running a company</u>

Established in 1999, my company *Corporate Risk Systems Limited* (CRS) grew from three consultants to 36 by 2014. Its annual revenue developed from 'nothing' to almost £1.5m. Running a company provided opportunities for my public works to include the results from researched assignments (with permission, and as applicable where the retention of ownership of the intellectual property had been agreed). Accordingly, these assignments provide problem-solution based approaches built around real-world scenarios to enable my readers to envision the context in which my approaches were employed. Examples that show that my public works are evidence based include my research for Formula 1 presented in my work (Asbury, 2007; Asbury and Jacobs, 2014; also please see page 166 of this context statement), for McDonald's presented in my work (Asbury, 1997), and for Pearson plc presented in my work (Asbury and Ball, 2016: 75-9). Assignments completed by my company for clients Coca-Cola and Loughborough University were used in case studies within my works (Asbury and Ball, 2009: 61-2 / Test your thinking exercise #11 and later Asbury and Ball, 2016: 120-3). In all cases, I was sensitive to the ethical issues and the influence of our and others' values. Ethical considerations were maintained throughout as detailed herein.

CRS was sold to a major insurance broker in June 2014. I learned much from running this company, and numerous other researched case studies arising from this learning are featured in my public works. Looking back, the timing of the sale was perfect for my wife and I. Shortly afterwards, market conditions related to our *PetroSkills* business deteriorated as the world price of crude oil fell from $125/bbl. to $40/bbl. It seems that training is often the first thing to be deferred by organisations facing falling revenues. Had we left the sale later, the settlement price would likely have been lower. It reminded me of my earlier works (Asbury and Ashwell, 2007) which had discussed 'business environment' and how external factors are often way beyond the control of an organisation. This understanding features prominently in my book (Asbury, 2018) as *Context* (ISO Annex SL:2012, clause 4) where it is presented with extensive researched case studies and practical examples.

1.4 Reflections on my learning and personal development

My doctoral studies have provided the opportunity to reflect upon my personal development using the structured model provided by Cox (2005) and informed by Schon's Reflective Practitioner Model (1983), Kolb's Experiential Combined Learning Cycle (1984; 2014) and Gibbs' Reflective Cycle (2015). Much of the literature on adult learning references Kolb (*ibid*.) who focussed on cyclical experiential learning taken up in the constructivist learning community. His model for Feeling, Watching, Thinking and Doing (FWTD), shown in Figure 11 on page 60 of this context statement, aligns quite-closely to my advocated cyclical *PDCA* approach to OH&S-MS.

I have looked deeply into 'why I did what I did', describing major events, turning points and the roles of key people, reflecting on my actions and the influencing factors to extract the learning derived. I had not done this before I embarked on this doctoral study. Put simply, I agree with Kolb (*ibid.*) that '...there is one incontrovertible reality: people learn best through experience'. Like Brockbank and McGill (2006), I agree that most of what we do, think, feel and believe is learnt.

My career, particularly over the last 20 years, has often been of moving from project to project, usually to meet clients' requirements. The reflective approach taken to reviewing my work through this lens has provided opportunities to reframe the steps I will advocate in the future to guide OH&S professionals, regulators, business owners and managers to reduce workplace deaths and injuries. This practice has also influenced my public works in the way they are constructed, with the inclusion of real-world case studies, and using my own evidence-based practice.

In section 1.5, I will set out how I investigated, distilled and incorporated this approach into my works.

1.5 Forms of my study

The research questions and methods of work for each of my themes are set out in turn in chapters 2-4 and related appendices of this statement. The results are included in my works as case studies and professional documents, also summarised in each chapter.

In order to provide bona fides advice to CEOs and senior managers, it was and remains imperative that any output is evidence-based. As such, systematic approaches were employed to inform the works, posing clear questions to answer by employing validated and repeatable methodologies involving mixed methods (Creswell, 2003; Gray, 2009; Robson, 2011) through the integration of quantitative data with deeper enquiry through a range of qualitative techniques, and through employing action research designs to collect and analyse data.

The forms of my study included descriptive, exploratory, explanatory and interpretive as classified by Maxwell (1996; supported by Robson, 2011) which will be found throughout the public works and case studies. My earliest research experiences were on (then) relatively new and unexplored OH&S themes. As described by Maxwell (1996) and Punch (2000), they were predominantly descriptive in nature. As my research confidence developed, and my field itself became better-researched, the approaches taken became more exploratory, explanatory and interpretive. In each of my themes, research epistemology, strategy, methods and question construction are presented as retrospective reflections on my research approaches and research questions for a sample of the works. Each show the development of the research project and evolution of research question(s), the research methods (data capture), data analysis and the development and reporting of concepts, models and theories (inductive approach) and deductive experiments.

The underlying assumption of qualitative research (Silverman, 2000; Freebody, 2003; Robson, 2011; Palinkas, Mendon and Hamilton, 2019) is that reality and truth are constructed and shaped through the interaction between people and their environment. According to Denzin and Lincoln (2000: 3): "...qualitative researchers study things in their natural settings, attempting to make sense of, or to interpret, phenomena in terms of the meaning people bring to them". As Palinkas *et al*. (2019) advise, research that draws on both qualitative and quantitative methods in varying configurations is well suited to address the increasing complexity of … problems and their solutions.

Some of my research was from personal narrative, of researching "...into an experience..." (Clandinin and Connelly, 2000: 50) to connect life and research. These personal constructs (Gray, 2009; Robson, 2011) provided rich data which allowed me to draw upon my own

experiences to understand phenomena as described by Pavlenko (2002; 2007).

In constructing this context statement, I have adopted a self-reflective auto-ethnographic approach, thinking about the context that led to and impacted on my experiences and how in turn these led me to my public works and to the inclusion of many of my own experiences within them.

According to Ellis and Bouchner (2000), autoethnography emerged at about the same time as the commencement of my journey (mid-1980s). They say that this emergence was due to "the calls to place greater emphasis on the ways in which the ethnographer interacts with the culture being researched" (Holt, 2003: 18). Some (Wolcott, 1994; Bamberg, 2020) feel that researchers need to be storytellers. Others (Ellis, 2000) say that autoethnography should be able to capture readers' hearts and minds. It seems, according to Denzin (1989; Connelly and Clannadin, 1999; Nekvapil, 2003) that there are no formal regulations regarding the writing of an autoethnographic account since it is the meaning that is important, not the production of a highly academic text. I took account of Walford (2004) and Mendes (2013) on the limits of the approach, by considering additional data as advised by Ngunjiri, Hernandez and Chang (2010). After learning from practice for 35 years, I find myself in agreement with the recent hypothesis on disaster research by Moezzi and Peek (2019) which proposes that the stories that researchers and practitioners tell each other advance interdisciplinary research and foster a new mode of collaborative learning and discovery. Such stories provide naturalistic descriptions of context, complexity and dynamic relationships in ways that formal theories, static data or interpretations of findings can miss. They often do so memorably and engagingly. This makes them beneficial to researchers across disciplines and allows them to be integrated into their own work.

The fieldwork employed and the public works presented are philosophically and epistemologically aligned to Gray (2009) and Robson (2011) as *real-world research* where *enquiry is king*. For each element of my research, specific methods were employed. These will be described as they arise. An explanation of the approaches taken to research ethics in each case is shown in Appendix 6; these were generally based upon informed consent and other ethical principles as set out by Gray (*ibid*.).

Examining my own experiences has allowed me to reflect on my OH&S-MS learning history and to empathise with the experiences from my sector, from leadership conversations, as well as from my readers, my students and their reactions.

Prior to setting out my public works and my themes, in section 1.6 I will summarise a broad overview of the OH&S field in which all of my works are set.

1.6 Overview of the OH&S field

1.6.1 Fatal and non-fatal injuries in the UK since 1974

In the UK, occupational health and safety outcomes have altered markedly over the 45 or so years since the *Health and Safety at Work etc. Act 1974* (HASAWA). To illustrate a headline measure of the changes, there were 651 fatal injuries to employees in 1974. When comparable data is examined for 2015 (i.e. adjusted to mirror the reporting approach of 1974*), this showed 92 fatal injuries to employees (HSE, 2015).

* The way in which data has been reported has changed over the years. At the introduction of HASAWA, the reporting legislation covered accidents only to employees (i.e. not those to the self-employed), and those employed in factories, construction, manufacturing, agriculture and docks. It also excluded 'office-based' services activities such as public administration, education, and health and social work.

Shown in Figure 2, the rate of fatal injuries has generally showed a long-term downward trend but broadly flatter in recent years. On 3 November 2020, HSE announced its accident data for April 2019-March 2020 showing the lowest ever number (111 covering all sectors, including the self-employed) of workplace fatalities (HSE, 2020). I will discuss some of the reasons for this improvement in section 1.6.2.

Overall, these improvements represent a decrease in fatalities of 86% from comparative figures in 1974. With the same adjustment made to today's employment levels, the rate of fatal injury has decreased from 2.9 per 100,000 employees in 1974 to 0.48 now.

Figure 2 – Number and rate of fatal injuries to workers 1974, 1981, 1986/7, and 1996/7 to 2014/15 (HSE 2015, used with permission HSE 2016a)

Likewise, there has been a 77% reduction in reported non-fatal injuries over this period (HSE, 2015; 2020), shown in Figure 3.
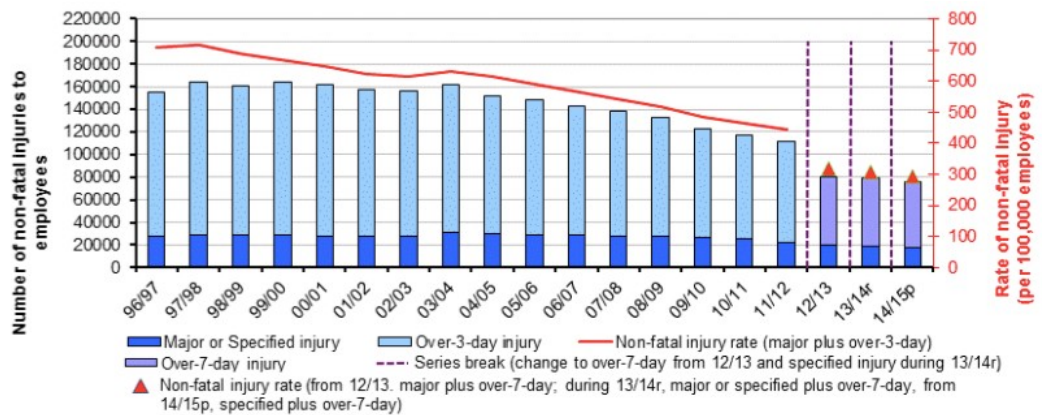
Figure 3 – Number and rate of reported non-fatal injuries to employees 1996/7 to 2014/5 (HSE, 2015; used with permission HSE, 2016a)

1.6.2 Why has the improvement occurred?

Workplaces and working practices have changed. Between 1978 and 2015, the number of workers engaged in the manufacturing, mining and quarrying sectors fell from 26.4% to 8.1%, while those in the services sector rose from 63.2% to 83.1% (Office for National Statistics, 2016). These figures, however, need to be understood in context. During the period 1974 to 2020 working population growth has increased from around 20 million people to 32.93 million now (Office for National Statistics, 2020) – over 50% more people are exposed to workplace hazards every day.

Hazards have become subject to greater regulation starting with the first factory law in 1802[1] (Parliament, 2020), through a succession of Acts up to *HASAWA* in 1974. Health and safety risk assessment (Royal Society, 1983; 1992) and control became a broader legal requirement from 1993 (*Management of Health and Safety at Work Regulations 1992*). There has also been growth in the number, variety and availability of approaches to control them including occupational health and safety management systems (OH&S-MS) as well as a succession of other approaches mostly dating to the start of the 20th century. I have summarised the evolution of these approaches in Table 1 on page 18.

In chapter 2, I will show (Figure 8, page 34) how my public works on OH&S-MS and auditing position into this continuum for improved control, and how much of what follows is based upon the *PDCA* structure which I transposed and adapted from management theory into the field of OH&S.

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[1] Health and Morals of Apprentices Act

Table 1 – Origins of the major schools of safety thinking (Dekker, 2019; Steemson, 2020)

Time	Major school	Summary
1900s and beyond	Moral responsibility	Theories inspired by engineering, physical sciences, epidemiology, sociology, psychology and anthropology led to a belief of moral responsibility to engineer or organise preventive measures (which I discuss in my work Asbury and Ball, 2009; 2016).
1910s and beyond	Taylorism and procedures	Scientific management and the relationship between work and rules (which I discuss in my work Asbury, 2018: 18-9). An imprint that workers need to be told what to do, and the need for them to be supervised.
1920s and beyond	Accident proneness	Use of psychology and eugenics to explain patterns in industrial safety data; that human performance is variable in ways that could explain accidents (Sass and Crook, 1981).
1930s and beyond	Heinrich and behaviour-based safety	Heinrich (1931), reviewed by Manuele (2011), promoted the idea that accidents and injuries were preventable, using a row of dominos to explain how distant causes can lead to injuries and how the sequence could be broken by removing the causative factor in the sequence. Krause (1990) built on Heinrich's thinking using observations to eliminate workers' unsafe acts.
1940s and beyond	Human factors and cognitive systems engineering	Human factors emerged from engineering psychology to represent an important 'hinge' between human, systems and safety (Reason, 1990; 2013).
1950s-60s and beyond	System safety	The earliest commitments that safety should be built into the system to map and resolve conflicts between safety and other factors.
1970s and beyond	Man-made disasters	Safety taken from the engineering space by high visibility disasters (see examples in Table 2, page 20). Disasters with socio-technical systems bring accidents centre-stage, setting the agenda for conversations still being conducted today.
1980s and beyond	High-reliability organizations	Approaches (Carter, 1986) that emerged, predominantly in the US, from societal preoccupation with preventing disasters – "is there a limit to the complexity we can handle?" and "were there things we should not build or do at all?".
1990s and beyond	Safety management systems	Deming (1982) provides a framework for quality management (also see my work Asbury, 2018). The Swiss Cheese model (Reason, 1990) became an important icon for systematic "barriers" or a "defences-in-depth" approach.
2000s and beyond	Safety culture, process safety, lean safety	Encouragement to develop a safety culture (Cooper, 1998) to focus on things that can be found and fixed before they contribute to an accident. Understanding human error (Reason, 2013). Process safety becomes mainstream post-BP Texas City (CSB, 2007; Hopkins, 2009). Lean safety (Hafey, 2009)
2010s and beyond	Resilience engineering, behavioural economics, safety differently, safety-II, safety anarchy, adaptive safety	Identifying and enhancing the positive capabilities of people that allow them to adapt / understand and enhance how people build adaptive capacity to function with imperfect knowledge. Behavioural economics or nudge theory (Marsh, 2013). Safety differently (Dekker, 2014; Knutt 2016). Safety-II (Hollnagel, 2014). Safety anarchy (Dekker, 2017a). Adaptive safety (Rae and Provan, 2019; Mindfulness, behaviours (Kao *et al*., 2019)

There has also been a progressive change to the industrial and business architecture (Worthington and Britton, 2000; Eves and Gummer, 2005; Young, 2010; 2015), and this altered the hazards and consequent potential for harm that workers may encounter in their employment. As I indicated on page 17, between 1978 and 2015, there was an 18.3% decline in employment in manufacturing, mining and quarrying, while the service sector grew by 19.9% (Office for National Statistics, 2016). Offices generally present fewer hazards and are thus less-dangerous places to work (Toone, 2004; Eves and Gummer, 2005). Perhaps, this changing architecture explains the improvements in OH&S – to eliminate the more-dangerous work. Yet some large, complex and hazardous projects have been completed with zero fatalities and low injury rates such as the one exampled:

Between 2005 and 2012, London Olympic Delivery Authority (ODA) completed thirteen major construction projects (stadiums, athletes' accommodation and transport infrastructure) in east London with zero fatalities and world-class lost-time-injury performance (Hutter, 2011; Finneran *et al.*, 2012; HSE, 2012). By comparison, other cities delivering construction projects on approximately this scale (e.g. Sydney, Athens and Beijing for Olympic Games; and the FIFA football World Cup cities in Brazil, Russia and Qatar) have produced poorer – in some cases far-poorer – OH&S performance (discussed in my public work Asbury and Ball, 2016: 244-6).

1.6.3 An international perspective

Internationally, work and trade has become more globalised, with many UK-based companies now sourcing, producing or trading across wide international boundaries. With this in mind, according to the International Labour Organization (ILO, 2016), every 15 seconds, somewhere in the world, one worker dies and 153 have a work-related accident.

In the past, some of these occurrences were in well-known incidents, such as those exampled in Table 2, while most hardly feature even in local news – particularly where 'only' a few casualties have resulted. Naturally, from the mid-1980s, I reflected upon each of these incidents.

Table 2 – Examples of major OH&S incidents in the UK and the World

Period	UK	World
-1984	Hulton Bank explosion (1910) Gresford collapse (1934) Windscale fire (1957) Aberfan land slide (1966) Flixborough explosion (1974)	Seveso TCDD release (1976) Lapua explosion (1976) Three Mile Island meltdown (1979) Bhopal MCI release (1984) San Juanico explosions (1984)
1985-94	Valley Parade fire Kings Cross fire Piper Alpha explosion BD92 aircraft crash Hillsborough Stadium crush	Chernobyl explosion Herald of Free Enterprise sinking Nakhon Pathom (Kader) fire
1995-2004	Ladbroke Grove rail crash Morecambe Bay drowning	Eschede derailment Longford gas explosion Kursk asphyxias, Barents Sea
2005-20	Buncefield explosion	Texas City explosion Fukushima Daiichi radiation leaks Sanyano-Shushenskaya dam failure Gulf of Mexico / Macondo explosion Rana Plaza building collapse Soma mine explosion Myanmar jade mine landslide

Together, these events and others highlight that significant deaths and injuries can and will occur if safety is not adhered to. For all of our past endeavours to legislate, regulate and manage UK workplaces:

- 2-3 workers are killed at work every week;
- 3 from the 8 people who die on the roads every day were engaged in work at the time (Adminaite, Stipdonk and Ward, 2017);
- 1500 per week will sustain a non-fatal reportable injury; and
- there are 1.4 million working people suffering from a work-related illness (HSE, 2020).

1.7 Business environments (aka *Context*)

Every region/country has its own unique business environment, and the world of work is a place of ambiguities (Colyer *et al*., 2005). There are clearly many external forces in play – some contribute for the for the better and some for the worse.

In the UK, a multitude of external and internal factors may have had an impact upon the reductions in OH&S incidents we have seen. We cannot hold all the variables constant while we test. OH&S may not be scientific enough to say, "Do a, b, c and the performance will improve by x%", and arguments over good/better/best approaches remain (Haslam *et al*., 2016; Ludwig, 2018). But taken together, the results of the combination has been overall positive (HSE, 2015; 2016b; 2020).

As a student and practitioner of business management for 35 years, I was informed by the literature herein and in my public works. My work (Asbury, 2018: 8-51), presents a summary of the business environment relevant to the UK at the time of its publication. Since then, events such as Brexit and the COVID-19 pandemic must also be considered.

Assimilating business knowledge and learning on business environments from multidisciplinary approaches (Choi and Pak, 2006) into my practice, and from 2007 into my public works (Asbury and Ashwell, 2007), I called for analysis of the business environment prior to establishing or auditing an OH&S/HSEQ management system.

In 2012, ISO published its new Annex SL (ISO, 2012a) which established a new high-level framework for all management system standards owned by ISO. This included in its clause 4 the mandatory requirement for analysis and understanding the *Context* of any business environment in using a management system. In turn, this was incorporated into ISO 9001, ISO 14001, ISO 45001 and other ISO management system standards.

1.8 Summary of my public works (three themes)

Evolving from 1984, and published from 1994, I present for peer review fifteen of my public works which I have divided into three broad themes. There are inevitably some areas of overlap between the themes as shown in Figure 4. These overlaps are summarised and consolidated in chapter 5.

These works were created from a starting point of inheriting systems for eliminating and controlling hazards that were simply not working and, as a result, from witnessing and investigating too many workplace injuries and cases of work-related ill-health. In this context statement, I provide a review of the evolution of each theme, explaining how each was, how it developed, and how my works have contributed to the advancement of practice (and as applicable, of knowledge).
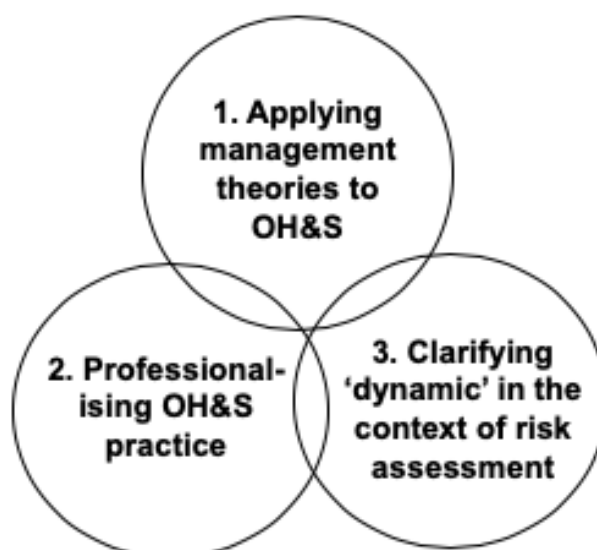
Figure 4 – Stephen Asbury's Public Works, highlighting three themes

The public works to which this DProf context statement refers throughout can be characterised by the breadth of their contribution. The literature reviews in each theme through each reference period provide theoretical arguments behind the content of the works and serve as the mechanism to show doctoral analysis of each theme and work in their production.

My three themes are shown in Figure 4. They are summarised on pages 23-30 prior to detailed explanation, in turn, in chapters 2-4. Singularly and collectively, these public works present the results of my research since 1984 which is presented within the works 1994-2018 which in turn represent my contributions to the advancement of OH&S practice.

1.8.1 Theme 1: Applying management theories to OH&S

1.8.1.1 Application to OH&S Management Systems and Auditing

Over the period covered by my public works, organisations and safety practitioners started with a general absence of structured control in OH&S management. This was followed by three successive editions of guidance document *HSG65* published by regulator Health and Safety Executive (HSE, 1991; 1997; 2013), by other management standards including BS 8800 (British Standards Institution, 1996; 2004), BS OHSAS 18001 (British Standards Institution 1999; 2007), as well as possibly their company and/or sectoral standards. On 15 March 2018, the first international OH&S-MS standard ISO 45001:2018 (ISO, 2018a) was published. It had been developed by the ISO Technical Committee for OH&S-MS, known as *ISO/TC 283* (ISO, 2021), through six drafts between June 2013 and November 2017, and subject to two ballots of National Standards Bodies (NSB). It was approved in January 2018 by an 93% "for" vote.

Auditing - the *reflection* (see page 47, and Figure 10) - of the control of significant risks is now a recognised OH&S process and practice. It is a mandatory requirement within ISO and other standards (ISO Annex SL clause 9; ISO 45001 clause 9.2). Post-publication, my publisher arranged for my works on risk-based auditing (Asbury, 2013a) to be academically reviewed. That review said that it *ought to be the standard work in HSEQ auditing* (this review by Dr Rankine is reproduced in Appendix 4). There is no competing title. ISO 19011:2018 (2018b), now in its third revision, added a seventh auditing principle *risk-based* which I had first proposed for OH&S in my public works from 2005 (in Asbury, 2005; Asbury and Ashwell, 2007).

1.8.1.2 Application to Adult Learners on OH&S Management Systems

It is recognised that learning should be embedded in the context of the learner and the world of work. As a result, I developed the *Petros Barola* learning system (Asbury, 2006-16). Adult learners learn best through experience (Gaer, 1998, supported by Caudron, 2000; Callaghan *et al.*, 2001; Salmon, 2002). Merriam and Baumgartner,

(2007; 2020) point out the importance of getting this right as there are now more adult learners than ever before with a population that will continue to age.

Driscoll (2002) suggests that one of the best mechanisms is to utilise problem solving exercises or simulations to provide a context to explore and apply principles to "real world" situations. Zigmont, Kappus and Sudikoff (2011), in their review of healthcare education, say that simulation is a powerful tool to help facilitate learning for clinicians and change their practice to improve patient outcomes and safety. They say that to promote effective life-long learning through simulation, the educator needs to consider individuals, their experiences, and their environments.

The *Petros Barola* learning system (Asbury, 2016-16; please refer to the summary in Appendix 2 and Figure 28 on page 223) provides engagement, debate and discussion to foster a deeper-learning approach and one that can be continued as it concentrates on process as opposed to fixedly focusing upon content (McLoughlin and Luca, 2002; supported by Lewis, 2006). Since 2007, it has been used widely and extensively around the world to teach practitioners, managers and others how to successfully implement and audit OH&S-MS.

In the final years of the period covered by this context statement, an OH&S-MS 'app' was added to my works (Asbury, 2014). This connected my learning and real-world research about structure in control to a readily accessible (and free) tool for benchmarking current MS performance and action planning. It also included a *legislation finder* function to connect the user directly to OH&S laws and guidance.

The development and contribution of the six public works I present in theme 1 is explored in chapter 2 of this context statement. They comprise the following:

Asbury, S.W. (2018), *Health and Safety, Environment and Quality Audits,* 3rd edition, Abingdon and New York: Routledge Taylor & Francis [shown in Figure 5, left].
NB The 1st edition (Asbury and Ashwell, 2007) and the 2nd edition (Asbury, 2013a) of this book are not submitted for examination as the current edition present the results of its evolution. They are however available for review if required from the OneDrive link provided.

Asbury, S.W. (2016a), advice to, and feedback from, IOSH and ISO/TC 283 on DIS/ISO 45001:2016.

Asbury, S.W. (2014), *SafetyCheck by CRS* (a mobile application software app for Android and iOS, available from the Apple *App Store* and *Google Play*), Derby: Corporate Risk Systems Limited [shown in Figure 5, right].

Asbury, S.W. (2007), Racing Certainty (a study of safety improvements in motor sport since 1895), in *SHP* October 2007. London: CMP Information.

Asbury, S.W. (2006-16), *The Petros Barola Case Study* (andragogic learning system and implementation case study for HSE-MS and auditing classes), Derby: Corporate Risk Systems Limited.

Asbury, S.W. (1997), *Safety Project – Vision for the Future,* restaurant H&S guide (over 34,000 copies printed and distributed), Oakbrook IL: McDonald's Corporation [shown in Figure 5, centre].

Figure 5 – Images related to Stephen Asbury's Public Works, theme 1

1.8.2 Theme 2: Professionalising OH&S practice

1.8.2.1 Professional bodies in OH&S

In 1916, the Royal Society for the Prevention of Accidents (RoSPA) was formed. It is still the only Royal Society watching over health and safety. In 1945, a part of RoSPA (which is now called *IOSH* - the Institution of Occupational Safety and Health) commenced its journey to become the world's largest organisation for OH&S. At its first meeting in 1945, 58 people were present. Over the last 30 years, it has grown from 5,000 members to almost 50,000 members (IOSH, 2020a). Figure 15 on page 97 provides an overview of the evolution of the OH&S profession from 1916 to date.

My works in this theme guided the health and safety profession through a period of greater external scrutiny. In 1994, IOSH was one of the earliest adopters in any field of a continuing professional development (CPD) policy (PARN, 2015). This confirms the innovative status of my earliest public work presented in this context statement (Asbury, 1994a), and consequently its contribution to the development of the UK and later the global OH&S profession (Sansom *et al.*, 2011; Hale and Harvey, 2012). Seven years later in 2001, further research of UK professional associations by the Professional Associations Research Network at the University of Bristol (in Friedman and Phillips, 2001) found that of 162 respondents, 62% had developed CPD policies. This suggested that other professional bodies had followed a similar path to IOSH.

In 2002, advice was collected from Privy Council on the requirements for the grant of a Royal Charter and subsequently used to make an application. Two of my works (Asbury, 1994a - on IOSH CPD policy), and the IOSH Membership structure (Asbury, 2001) - created while I was Chair of IOSH's CPD sub-committee and later its Professional Committee (PC) between 1994-98 and 1998-2013 respectively - were fundamental submissions that led to IOSH's award by Privy Council of Royal Charter in 2003. I still advise IOSH on its membership structure, most recently on 28 February 2020 when I participated in its *Membership Grades Focus Group*. In 2005, recognition and use of those same two works allowed IOSH to confer Chartered status upon individual members.

Next, my work (Asbury, 2010a) created the IOSH framework for Initial Professional Development (IPD), which remains in use today for Graduates (GradIOSH) seeking to progress to Chartered membership (CMIOSH).

In 2011, IOSH became officially the world's largest organization for OH&S practitioners (IOSH, 2020a). Its membership and competency structures which were created from my works were in turn adopted internationally by ENSHPO and INSHPO (Hale and Harvey, 2012).

My public work (Asbury, 2013d) developed on its' predecessor editions to provide IOSH's current Code of Conduct, Guidance and Disciplinary Procedures. This has since been used 26 times following complaints about members, each heard and resolved (IOSH, 2017c).

My books (Asbury and Ball, 2009; 2016) provide CPD opportunities (including self-reflective study, reading and a CSR training course) for IOSH members and others to cross-skill in a related competency area requested and required by the OH&S profession. The first book (*ibid*.) was commissioned by IOSH and adopted for use in its two-day CSR CPD training class.

The development and contribution of seven of my public works presented in theme 2 is explored in chapter 3 of this context statement. They comprise the following:

Asbury, S.W. and Ball, R. (2016), *The Practical Guide to Corporate Social Responsibility,* Abingdon and New York: Routledge Taylor & Francis [shown in Figure 6, right].

Asbury, S.W. (2013b), *Code of Conduct, Guidance and Disciplinary Procedure,* Leicester: Institution of Occupational Safety and Health (IOSH).

Asbury, S.W. (2013c), Peak Practice – An examination of the remodelled IOSH Code of Conduct, in *SHP* (Safety and Health Practitioner) June 2013, London: UBM Information.

Asbury, S.W. (2010a), *Guide to the Skills Development Portfolio and requirements for Initial Professional Development (IPD)*, Leicester: IOSH.

Asbury, S.W. and Ball, R. (2009), *Do the Right Thing – The Practical, Jargon-free Guide to Corporate Social Responsibility,* Abingdon and New York: Routledge Taylor & Francis [shown in Figure 6, left].

Asbury, S.W. (2001), IOSH membership categories and structure (which led IOSH to its Royal Charter in 2003, and the grant of permission to confer Chartered status on individuals in 2005), Leicester: IOSH.

Asbury, S.W. (1994a), *Continuing Professional Development for Safety and Health Practitioners* and *How to maintain a successful CPD record* (CPD scheme and recording documents) Leicester: IOSH.

Figure 6 – Images related to Stephen Asbury's Public Works, theme 2

1.8.3 Theme 3: Clarifying 'dynamic' in the context of risk assessment

1.8.3.1 Risk Assessment

The *Health and Safety at Work etc. Act 1974* implied a legal requirement for risk assessment. From 1993, the 'six pack' provided a clarification of the legal imperative for this. In the 28 years since the *Management of Health and Safety at Work Regulations 1992* (MHSHR; now 1999), risk assessment has become a better-understood imperative (HSE, 2011; 2015). That said, there are considerable differences in the quality of this assessment between organizations (Young, 2010) and "…a large proportion of risk assessments are not very good" (Bartley, *pers comm.* 2016d).

Risk assessment can be a simple (such as from using the methodology provided within *HSG65* or *indg163*) (HSE, 1999-2014) or a more-complex process, such as the HAZOP risk management study developed in the Heavy Organic Chemicals Division of ICI from 1963, originally known as 'Critical Examination' (Kletz, 1983). Either way, it concerns making decisions about safety.

Done correctly, risk assessment and subsequent mitigation actions should focus on risks assessed as *significant* arising from exposures to routine hazards as well as those from reasonably foreseeable novel and emergency situations. Findings of risk assessments with action plans as necessary should be written down and reviewed from time-to-time (MHSWR, 1999; HSE, 1999-2014).

In the best-performing organisations, the risk assessment approach is applied to predict and prevent losses. I present a case study based on my on-site research of Formula 1 in-race refuelling, which led to changes to the regulations of the sport from 2010, in section 4.13.3 of this context statement. Following the success of that work, I was given access to a Formula 1 team with whom to discuss short time decision making. The results of this interview research are published within my work (Asbury and Jacobs, 2016: 42-6).

Between 2002 and 2014, my public works in this theme provided risk assessment methodology and functionality as software (Asbury, 2002) and a book with many case study examples connecting for the first time outside of the emergency services the three

levels of decision-making (strategic, predictive, dynamic) in the *3-Level Risk Management Model* (Asbury and Jacobs, 2014: 64-86).

The development and contribution of two of my public works in theme 3 is explored in chapter 4 of this context statement. They comprise the following:

Asbury, S.W. and Jacobs, E. (2014), *Dynamic Risk Assessment – The Practical Guide to Making Risk-based Decisions with the 3-Level Risk Management Model,* Abingdon and New York: Routledge Taylor & Francis [shown in Figure 7, left].

Asbury, S.W. (2002), *CRS Risk© – Risk Assessment Toolkit* (computer software programme), Derby: Corporate Risk Systems Limited [shown in Figure 7, right].

Figure 7 – Images related to Stephen Asbury's Public Works, theme 3

All of the exhibited works in my three themes are presented together in academic references in Appendix 1. Around forty of my other public works (i.e. those not forming part of this submission for DProf by Public Works) are shown for information in Appendix 3.

1.9 Works with others

My public works referred to throughout this context statement include three books with co-authors, and four professional documents written whilst leading a team of IOSH volunteers. They also include a document prepared for a large multi-national company (McDonald's Corporation). My personal contribution to each of these eight works requires explanation.

The (then) Chief Executive of IOSH, the (then) Director, Insurance and Safety of McDonalds Corporation, and my co-authors have provided statements confirming my personal contribution in Appendix 5.

1.10 Structure of my context statement

Chapter 1 of this context statement summarised my background and development. It introduces OH&S since the introduction of the *Health and Safety at Work etc. Act 1974* highlighting the development of approaches for controlling hazards, and changes to the *Context* of the business environment over the period. Finally, it summarises my learning, education and experiences that allowed me to report upon my research in fifteen public works which have impacted practice in three themes.

Chapters 2-4 address each theme in turn. Each has been written in the context of a series of periods of practice and my developing thoughts, starting with experiments to use *PDCA* (Deming, 1982) in the mid-1980s, with academic positioning against new contemporary arguments which have developed. Each period involved the synthesis of learning, practice and frustrations; and explain what was done in each theme; why; and in the form that was produced at the time. I will summarise where the world was and what it did, and how these works have provided contributions to practice as well as to knowledge as new approaches, adopted practices and other developments in the field of OH&S.

Chapter 5 uses ISO 45001:2018 as a reporting framework to present clause-by-clause where and how my public works have individually and collectively contributed to OH&S practices. I critique my methodology to provide reflective considerations on the limitations of the research submitted. Finally, it illustrates my *habitus* (Bourdieu, 1990).

Though we now have the highest number ever of workers reporting for work in the UK each day (Office for National Statistics, 2020), fewer are killed and injured (HSE, 2020). But for OH&S practitioners, our work is not done yet. As I said on page 19, every 15 seconds, somewhere in the world, one worker dies and 153 have a work-related accident (ILO, 2016). Our work to improve safety must continue, in particular to identify and speak to those who have not benefitted from the learning so far. Given the context of the time and mistakes I observed being repeated by organizations, it was necessary to write books and provide other materials that were accessible, easily understood, and usable by my audience: OH&S/HSE practitioners, their employers and business owners/managers.

CHAPTER TWO

2. APPLYING MANAGEMENT THEORIES TO OH&S

Management concerns the control of variation.

- Peter Drucker (1970). In 1984, this was the first book I read on 'management'

An auditor is not bound to be a detective, or as was said, to approach his work with suspicion or with a forgone conclusion that there is something wrong. He is a watchdog, not a bloodhound. He is justified in believing tried servants of the company in whom confidence is placed by the company. He is entitled to assume that they are honest and rely upon their representations, provided he takes reasonable care.

- Lord Justice Lopez in *Kingston Cotton Mill Company No.2* (Law Times, 1896)

2.1 Preamble

There are two parts within this first theme which I will address in turn. In sections 2.2-2.5, I will position and contextualise my books (Asbury and Ashwell, 2007; Asbury, 2013a, 2018) and other public works related to occupational health and safety management systems (OH&S-MS) and management system (MS) auditing. In section 2.6, I will review the literature related to adult learning. This latter is relevant, as my public works presented herein include an andragogic case study (see Asbury, 2006-16) which has been used by over 15,000 adult participants for learning about for OH&S-MS and auditing. I describe my retrospective research approaches in section 2.7, and explore these in section 2.8. Finally, I present my contributions and impacts related to this theme in section 2.9 with an impact summary in section 2.10.

Chapter 1 explains the centrality of my praxis of using management theory in the context of OH&S. The integration and translation of learning from my management training programmes (certificate, diploma, MBA) into wider OH&S-MS and MS auditing positions me as an early adopter of PDCA, an approach which is now firmly embedded into professional practice. I explained how a particular relationship was instrumental in finding OH&S as my field. Without this, my career could have been different. It is likely I would be a management systems thinker advocating structured control / PDCA (Deming, 1982), but learning from and contributing to another field instead.

This chapter will explore the literature prior to explaining the other influencers and influences that motivated my works on OH&S management systems (OH&S-MS) and risk-based MS auditing. I mentioned on page 23 of this context statement the academic review of my work on risk-based auditing (Asbury, 2013a; now in its third edition, Asbury and Ashwell, 2007; Asbury, 2013a; 2018; which commented that it *ought to be the standard work in HSEQ auditing*) and note that it was actually adopted by the *PetroSkills* oil and gas sector training alliance as its standard text for OH&S-MS auditor training courses in 2007.

I have explained my background and development. For twelve years, I worked as an OH&S Manager in three large organizations (Rugby Group plc, BTR plc, GKN plc), prior to joining the London insurance market in 1995. I left that employment in 2000 to establish and subsequently lead an OH&S/risk consulting company for over sixteen years. I will show through an autoethnographic lens how my learning from the field influenced my outputs. I will explain through this lens the sequence of events that led to my first book (on MS auditing):

An early client of my company was *KML* which provided auditor training services to Royal Dutch Shell plc (Shell). I was originally appointed as a trainer as part of a team of four for each delivery and progressed to *Course Director* status by 2001. This meant that I was responsible for the conduct of the work at the client's premises. This access allowed me to position this auditing approach alongside other approaches I had seen and used. Working ever-more-closely with the principal of *KML*, I encouraged him to adopt risk-based thinking into the course materials with structured control architecture / PDCA (Deming, 1982). Our client (KML) and the client's client (Shell) liked this, and programme and session feedback strengthened.

The course materials we were using pre-dated ISO and other recognised auditing approaches. Disaster struck in a critical meeting with Shell in 2005. There had been leadership changes, who in turn had questioned the legitimacy of the methodology we were delivering to their internal auditors and global asset managers. At the time, there were emerging sectoral and ISO (and other) standards, but little in the literature to validate or even question any approach.

The resulting outputs (see my works Asbury, 2005; Asbury and Ashwell, 2007) on risk based HSEQ management system auditing, triggered by the needs of Shell, plugged this literature gap. My first book was informed by practice and published by Elsevier Butterworth-Heinemann. In turn, it was incorporated into Shell auditor training materials used worldwide by the company, and later by the wider on- and off-shore oil and gas industry.

2.2 The evolution of control

There have been a large number of general management system thinkers (individuals and corporations). Figure 2.2 in my public work (Asbury, 2018: 56) identifies some of these, with examples of their contributions. Table 1 on page 18 of this context statement summarises the evolution of health and safety controls from the 1900s to today. Alongside this review of the developing academic debate, Figure 8 shows where my public works position along that timeline.
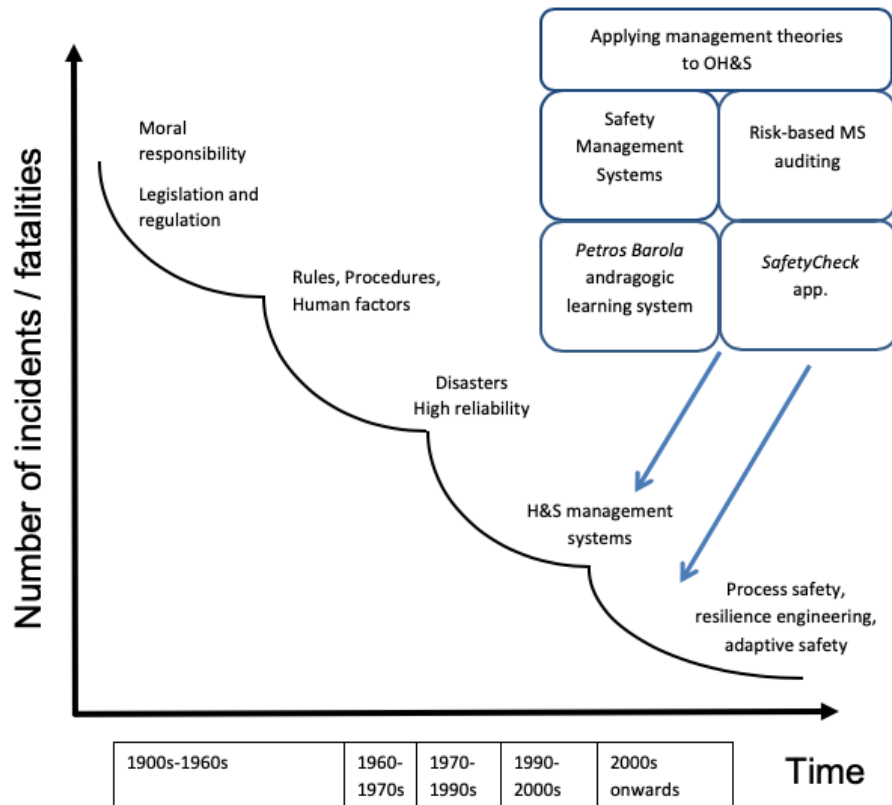
Figure 8 – Summary of OH&S performance steps 1900s-date (adapted from OGP, 1994; developed by Asbury, Page and Garelick. Also see Table 1 on page 18)

From 35 years' practice, I learned that the human (reduced deaths and injuries to workers), economic (costs to employers and others of accidents) and legal (compliance) benefits of using OH&S-MS and risk-based audits were potentially great indeed. In my work, and in dealing with insurance claims, I had seen often first-hand the shortfalls in practice of disorganised, unstructured approaches to protecting workers. As I said on page 9 of this statement, the results over five years (1991-5) of applying a PDCA/OH&S-MS approach at GKN led to reduced incidents (and zero fatalities) and reduced insurance costs which was noticed by GKN's insurers. It was those insurers that in 1995 nominated me for my *RoSPA Safety Practitioner of the Year* award. Further examples are presented as case studies within my public works. As I explain, implementing and auditing an OH&S-MS is not the only approach to improving safety performance, but in my experience, it does appear to have merit.

Concurring with my position with regard to the utility of effective management systems, British Accreditation Bureau (BAB, 2015) reported that 67% of their certified clients had won new business, and others (Heras, Dick and Casadesus, 2002; Corbett, Montes-Sanco and Kirsch, 2005) showed that certified organisations achieved superior return on assets. Santos *et al*. (2013) reported that the benefits of OH&S certifications have been improved working conditions, ensuring compliance with legislation, and better internal communication about risks and hazards. Mohammadfam *et al*. (2017) show that the incident performance of certified companies with respect to occupational health and safety management practices is significantly better than that of non-certified companies. Morgado, Silva and Fonseca (2019: 2) report that "98% of these companies are aware of the benefits that OHSMS provides or could provide".

Meanwhile, many organizations quietly progress their OH&S objectives below the radar of publicity or research. They periodically emerge, such as in Forbes and Walker (2016: 4-5) who reported on a UK-based oilfield services company which integrated its management systems. Oil and gas examples are interesting, as this was a sector that had become a principal audience for my works from 2007.

> *"The company, which has had long-standing, robust management systems for quality, HSE, and sustainable development, integrated these subjects into one management system instead of considering each subject within its own individual system. The initiative involved designing the process and procedures, implementing the system into operational planning, and developing certain key features such as customized dashboards for line managers to track outcomes.*
>
> *After a year of implementation, the integrated management system has provided significant benefits in strategic risk-based planning as well as continuous improvement. Metrics are monitored … to provide management with an immediate overview of performance, which not only raises awareness but also increases focus on key indicators in decision making and planning. The integration process has also resulted in a significant streamlining of the management system structure and documentation".*

Within the OH&S case studies within my public works, evolutionary steps led to a step-change OH&S performance improvement. Notwithstanding this, I understand that this is a contested area, and I shall examine the literature informed in particular by Robson *et al*. (2007) and da Silva and Amaral (2019). I shall also consider the recent position in these matters presented by Provan *et al*. (2020).

2.2.1 What is an OH&S-MS?

There is no universal consensus on precisely what an OH&S management system actually is, and its scope can be wide. Nielsen (2000: 17) identifies this problem of demarcating the scope for an OH&S-MS, saying "OHSM systems are not … a well-defined set of management systems". The International Labour Organization (ILO, 2001) defines an OH&S-MS as a set of interrelated or interacting elements to establish OSH policy and objectives, and to achieve those objectives.

My work with OH&S-MS using PDCA (Deming, 1982; see page 37 and 51) learned in my studies started in 1984, and my first paper based on PDCA was for HSE and The Ergonomics Society in 1994 (Asbury, 1994c). Aside from any company or sector systems, OH&S management systems emerged externally from the UK H&S regulator as 'Successful Health and Safety Management' (HSE, 1991), commonly known as *HSG65* and memorable to some (and forgettable to others) for its pneumonic *POPIMAR*, where the 'A' represented 'Audit'. Briefly, while an audit is an integral feature of an OH&S-MS, its conduct is carried out independently (Asbury and Ashwell, 2007; ISO, 2018a) to provide assurance, a reflection of implementation, which I shall explain in section 2.4.

Redinger and Levine (1998) reviewed thirteen publicly available OH&S-MS to construct a 'universal model' containing 16 primary elements / 27 total elements including management commitment, operational elements and management review/continual improvement, but excluded auditing. Explained on page 37, the *PDCA* structure which I had been advocating in my practice is implicitly (but not explicitly) present in their model. It will not emerge explicitly in the safety literature until much later including my works (Asbury, 2005; Asbury and Ashwell, 2007). From 2012, Annex SL (ISO, 2012a) will adopt PDCA to create the definitive high-level structure for all of its MS standards including for OH&S, including requirement for an (independent) audit. The following year, HSE (2013) and IOD (2013) will follow the same approach.

As shown in my Table 1 on page 18, since the early 2010's, the literature on safety management has broadened to describe two distinct modes through which safety improvements might be achieved. According to Provan *et al.* (2020), these can be described as safety management through centralized control, or safety management through guided adaptability. Safety management through centralized control, labelled by Hollnagel (2014) as 'Safety-I', aims to align and control the organization and its people through the central determination of what is safe. This generally accords with the regulator's, ISO and others' positions. Safety management through guided adaptability, or 'Safety-II' (Hollnagel, *ibid.*), aims to enable the organization and its people to safely adapt to emergent situations and conditions. Safety-II is presented by its authors as a paradigm shift in safety theory, but it has created practical difficulties for safety professional practice (Provan *et al.*, 2020). In my experience, these two modes are not mutually exclusive - my position takes the structure of Safety-I (PDCA discussed in this chapter) linked to decision making at the appropriate level discussed in chapter 4.

After reviewing the literature on OH&S-MS and MS auditing (sections 2.3-5) and adult learning (section 2.6), I will describe and explore my retrospective research approach in sections 2.7-8. I will address two areas of opportunity requiring attention:

- 2.7.1 The usability of OH&S management systems and how to implement them; and
- 2.7.2 Ineffective internal and external auditing.

Table 5 on page 238 summarises my research in theme 1 between 1984 and 2018.

2.3 OH&S Management Systems

The focused learning gained from my successes in the IIM and NEBOSH Diplomas and Master's in Business Administration (MBA) significantly influenced my professional practice experience and in so doing the output of the academic works. The transfer of the work of Drucker (1970), Deming (1982) and others on the use of structure, feedback and improvement in control elsewhere to reduce variations in outputs into OH&S is seminal to my practice, practical influence and outputs. Using management theory within OH&S is a key theme of the public works and from Figure 1 on page 6, it is noted that this was thought-leading.

The major influencer to my works in this theme is the work of Deming (1982; Asbury, 2018: 56-61) and the Plan, Do, Check, Act (PDCA) cycle. Briefly, Deming said (*ibid*.: 88) that the perception of his cycle came from Shewhart (1939), and though he called it the *Shewhart Cycle* from 1950, it went into immediate use in Japan as the *Deming Cycle*, and it has been called that ever since.

Whilst PDCA is now embedded into HSG65 (HSE, 2013) and ISO 45001 (ISO, 2018a), this is a relatively new position taken by HSE and ISO. As will be described and argued, from the mid-1980s, I was using, modifying, adapting and refining this approach at the innovation horizon, taking something that was known and applying it beyond its normal field to make it operate in this new domain. The results of this informed my first work for Health and Safety Executive and the Ergonomics Society (Asbury,1994c), which was a paper presented at their joint conference on a PDCA implementation of the *Health and Safety (Display Screen Equipment) Regulations 1992.*

Alongside this, Figure 9 provides the interpretation from my works (Asbury, 2018: xxvi) of how some (Alsop and LeCouter, 1999; Frick and Wren, 2000; Baird, 2005; Atherton and Gil, 2008; Bates, *pers comm*. 2017) have implemented, and then audited, OH&S-MS. Put simply, these researchers (and I) have researched and reported upon organisations who have implemented training (or audit the training records), or prepared risk assessments (or audit the risk assessments), or conducted checks (or audited the checking processes), etc. in a 'silo-type' (vertical) approach, rather than using management systems 'through' the (horizontal) continuity of planning, doing, checking and acting (Deming, 1982).

Deming's advice was refined for OH&S application in my practice since 1984, and in my works since 1994 (and adopted later by others including BSi, HSE, IOD, ILO and ISO). This theme has subsequently been researched and developed for my other works since then; my works adapt PDCA to a holistic appraisal looking at strategic decision-making rather than the operating silos described.
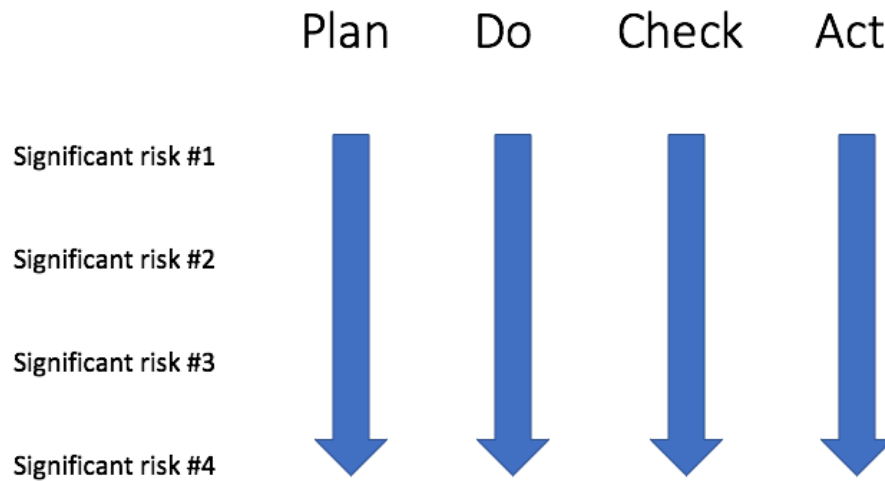
Figure 9 – How management systems are sometimes implemented and audited
From my book Asbury, 2018: xxvi

2.3.1 The effectiveness of OH&S-MS

The value and effectiveness of OH&S-MS is a contested field. I will summarise the literature prior to and after my outputs, prior to providing a pointer for the future.

Some research suggests that OH&S-MS "will fail routinely", though it is not always clear what is what is meant by 'fail'. Gardner (2000) reports the failure rate of quality management systems as "67-93%", and Robson *et al.* (2007) suggest that the failure rate of OH&S-MS "would be at least as high". This has not been my experience, though as a consultant in the field, I suspect that I have tended to work with more-committed clients – but I acknowledge the hypothesis.

Based on the evidence I present throughout my works and now advanced by this context statement, I believed then (early-1990s) as I believe now (early-2020s) that effective and consistent adoption of a risk-based MSS leads to better and more consistent business performance. As I said, we shall review the evidence. But in the field of OH&S, supportive (or confutative) research appears limited. Reviewing the literature published between 1887 and 2004, Robson *et al.* (*ibid.*) identified just 23 sources meeting their relevance criteria (and of these, only 13 meet quality criteria). The overarching relevance and quality criteria of this paper is where the contestation I have mentioned is based. Later, da Silva and Amaral (2019) identified a further 21 sources between 2007 and 2018. Both are reviewed in greater detail on pages 41-2 of this statement.

There is research correlating low injury rates to elements of OH&S-MS, including Cohen (1977). Like Cohen (*ibid.*), Mearns, Whittaker and Flin (2003) also show that a more-developed OH&S-MS is correlated with lower injury rates. From the start of my practice in 1984, seeing and dealing with fewer injured workers from planned interventions has motivated my practice, and later writing my works to share this learning with others.

Works that followed mine, such as Bottani, Monica and Vignali (2009), motivated me to continue the trajectory of my practice. They (*ibid.*) studied 116 companies, encompassing OH&S-MS adopters and non-adopters, to assess whether adopters experience significantly higher performance against four criteria i) definition of safety and security goals and their communication to employees; ii) risk data updating and risk analysis; iii) identification of risks and definition of corrective actions; and iv) employee training. They reported results that show that companies adopting OH&S-MS exhibit higher performance against all criteria. These four criteria represent parts of Redinger and Levine's (1998) 'universal model' and will later correlate with parts of ISO 45001 (ISO, 2018a).

Likewise motivating to me at the time I was writing the third edition of my work (Asbury, 2018), Suan (2017) reported on a survey from construction, saying that results show in mandatory and voluntary OH&S-MS in organizations, that the outcomes of safety performance and productivity is positive. This is an example of newer knowledge that was supportive of my earlier outputs.

I completed master's research (Asbury, 1995) as a part of my MBA 1992-5 on safety management practices at small and medium-sized enterprises (SME), Following my research, Tiwari and Shukla (2018) introduced an index to objectively quantify the effective implementation of an OH&S-MS in SMEs. Their results broadly align with mine. They say that applying their index determines the effective implementation of the OH&S-MS, and that this "helps to reduce the accident rate and incident rate".

There is some research on (so called) world-class companies (Collins, 2001; Morton, 2016). When OH&S professionals talk about world class, they generally mean best of the best; best in the class; best in the world as identified by Saujani (2016). Similarly, Hansell (2012) identifies five key qualities found among world-class companies:

1. visible senior management leadership and commitment
2. employee involvement and ownership
3. systemic integration of OSH and business functions
4. data-based decision making and system-based root-cause analysis; and
5. going beyond compliance.

Ansari and Modarress (1997) reported on Boeing, saying that a "…safety programme is as critical to achieving world-class business status as quality, cost and time". On DuPont, Stewart and Stewart (2002) identify that in the world's safest companies, "…safety has unquestioned priority and meticulous attention is given to using the best safety practices". Lorriman and Kenjo (1994) in their study of Japanese implant organizations in the UK are starker, saying the alternative to becoming world class is "to ... go out of business".

Personal empirical research also supports this position, though it is recognised that my results could, as I said, could be skewed by my engagements with more-committed organisations. My work (Asbury, 1994c – not submitted) examples the benefits of applying structure in implementing OH&S-MS in the context of implementing the *Health and Safety (Display Screen Equipment) Regulations 1992*. This work as written was generally supported by Kolluru *et al*. (1996) who, along with Dalton (1998), described similar systematic approaches and commended the benefits including reduced incident rates and increased worker morale.

Of course, there must be some relationship between a system and its implementation. Unless it is effectively led and culturally normative, its potential may remain unfulfilled as exampled by Baird (2005). Likewise, reports on the 2005 *BP Texas City* explosion (such as CSB, 2007; CCPS, 2007; Atherton and Gil, 2008) describe a focus on lower risk personal safety over higher risk process safety which was ultimately catastrophic.

Gallagher, Underhill and Rimmer (2003) report a "false sense of security" arising from the presence of an OH&S-MS. This position can be contested, as what is unclear is the sense of definition of the scope of the OH&S-MS when they say that "the definitional requirements for an OH&S-MS have been watered down making it more likely that organisations can claim to have a system, but less likely that it will be effective". I would argue that this cannot be so if an independent audit, which is now a mandatory part of common OH&S-MS including ISO 45001:2018, is competently led, methodologically correct, and followed up by committed leadership. I will discuss this in section 2.4. Of course, I acknowledge that organisations can still 'say anything' if they choose to - unless the audit report is published internally and/or externally and held to scrutiny. The public works (Asbury, 2018) consider this point, where I highlight early in the development of the OH&S field the necessity of a holistic approach to management and independent auditing.

On page 7 of this context statement, I explained my founding of Burton and District Occupational Health and Safety Group. Heuristic enquiry between 1989-94 (ad-hoc but with clear voice) was that member firms benefitted from their active involvement in the group. This clear voice was entirely consistent with the findings of my master's research that concluded that the majority of a sample of SME engineering firms in the Midlands benefitted from reduced incidents when they engaged with OH&S. These findings between 1989 and 1995 supported my praxis of applying management theory in the context of occupational health and safety.

Karapetrovic and Willborn (1998) endorse my position explaining that the (then) current trends in management point towards comprehensive management systems that, they said, provide for competitive performance. This aligns with my position that independently led OH&S-MS audits can be used to confirm compliance with the planned arrangements.

Gallagher, Underhill and Rimmer (2003), supported by Bennett and Foster (2007), report that "OH&S management systems can live up to their promise" and that an OH&S management system "has the potential to provide a useful contribution to health and safety". Nair and Tauseef (2018: 4) explain the potential of this opportunity, advising that:

> *…results indicate that the company with a formal management system is highly committed to focusing on measuring the inputs into the system by using leading indicators thereby lowering their losses and injury rates. Whereas management system deficient organization focus more on failures to correct and improve.*

There are, however, other voices including Baird (2005) who did not report a positive outcome in utilising OH&S management systems, explaining that senior management was not sufficiently engaged. The company reported by Baird (*ibid.*) did not seem to understand 'audit' either; the approach described appears to be of periodic inspections of workers' behaviours instead of independent and systematic verification of the efficacy of the OH&S-MS.

Darabont *et al.* (2017) warn that "failure of OHS management system can have serious consequences on the quality management system and also the environmental management system". As Baird (2005) advises, this too would suggest a lack of senior engagement.

In 2007, Robson *et al.* published the results of the first systematic literature review which considered the effects of OH&S-MS interventions as reported in eight international, bibliographic databases from their inception (from as early as 1887) until July 2004. Using a search strategy (Robson *et al.*, 2005) and deleting duplicates, 4837 sources were identified for review. Of these, just 23 (0.47%) met the study's relevance criteria – in this case, a minimalist operational definition requiring a management element and at least one other element from the Redinger and Levine (1998) universal OH&S-MS framework. Nine of these sources related to legally mandated OH&S-MS and fourteen were voluntary. Thirteen of these (0.26%; from a total of five countries – Australia, Canada, Norway, UK and USA) were reported as meeting quality criteria, with only one judged to be high methodological quality.

In one of the thirteen studies identified by Robson *et al*. (2007), Edkins (1998) reported particularly significant positive changes in the intervention group than the comparison group, although they question whether this was due to the OH&S-MS or instead to the personal qualities of the new safety manager. In another, Bunn *et al.* (2001) reported a 24% decrease in injury frequency rates and a 34% decrease in lost time over three years. Yasi (1998) reported a 25% reduction in insurance workers' compensation costs, and Alsop and LeCouter (1999) reporter a 52% reduction in same. The study's results were generally positive, however the review (Robson *et al.*, 2007) concluded that the body of evidence was insufficient to make recommendations either in favour or against OH&S-MSs.

Nine years later, in their review of global occupational safety and health practice and accidents severity, Jilcha and Kitaw (2016) conclude that 'Even though, there are quit [sic] increasing research trends in the workplace safety and health control, they lack integrated and universal management system studies".

Picking up (roughly) where Robson *et al*. (2007) left off, da Silva and Amaral (2019) published the results of their systematic literature review 2007-2018. It was based upon systematic review of literature using the protocol of Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). After a search in the databases Scopus, Science Direct and Web of Science, applying inclusion and exclusion criteria, 21 articles in English language remained for analysis.

Their results identified the methodologies, tools and indicators used by organizations in OH&S management, highlighting weakness in the use of epidemiological indicators in the proactive management of OH&S; and the predominance of focus on occupational safety led to detriment of focus on occupational health.

There are no other high-quality, systematic reviews of the effectiveness of OH&S-MS, although there are some narrative reviews, including Frick and Wren (2000), Gallagher, Underhill and Rimmer (2003) and Saksvik and Quinlan (2003).

Despite my personal enthusiasm for OH&S-MS, and positive results reported by others, the systematic review by Robson *et al*. (2007) provides strong argument that at that time, there was insufficient proof of effectiveness as the majority of limited previous studies had flaws. The further reviews by Jilcha and Kitaw (2016) and da Silva and Amaral (2019) add little weight to that conclusion, as the high-quality literature base remains apparently so narrow.

Accordingly, over sixteen years on from that first literature review by Robson (*ibid.*) from 1887 up to 2004, a further systematic enquiry may be timely and desirable. As well as the peer-reviewed evidence, it should additionally contain field evidence.

I have discussed this with Dr Lynda Robson (*pers comm.* 2017), and we have a preliminary agreement to progress.

2.4 Management system auditing

In *The Audit Explosion*, Power (1994) confirms that my public works (Asbury and Ashwell, 2007; Asbury, 2013a; 2018) correctly identify the origins of independent auditing in financial assurance. The 'explosion' of auditing to other disciplines since, including auditing of management systems, is reported by Power (1994), supported by Humphrey (1997). As I said on page 36, a requirement for auditing of OH&S-MS originated within *POPIMAR* / HSG65 (HSE, 1991). I explain, using an image of a mirror, my representation of audit as providing a reflection of performance in my work (Asbury, 2018: 94; and see Figure 10), summarised herein on page 47.

The value-add from integration of discipline or theme audits is discussed by Karapetrovic and Willborn (1998). The growth in auditing has led some (Power, 1994) to suggest that we are living in an 'Audit Society'; Power's terms 'audit society' and 'audit explosion' have gained wide currency within the social sciences (Maltby, 2007).

The role and function of audit has changed over the last 120 years. In 1896, in respect of the notable case of *Kingston Cotton Mills*, Lord Justice Lopez said that the auditor "...is a watchdog, not a bloodhound" (Law Times, 1896) – the implication being that a watchdog barks when it sees something suspicious, whereas a bloodhound actually searches for something suspicious.

Subsequent case law has extended the auditor's duty such that it is not sufficient for an auditor to rest upon the honesty and accuracy of others. Auditors must go further and satisfy themselves that evidence upon which they have relied has been taken based on sound auditing principles. In Fomento (Sterling Area) Ltd. v Selsdon Fountain Pen Co. Ltd. [1958, 1 All ER 11], Lord Denning put it this way:

> *To perform his task properly he must come to it with an enquiring mind - not suspicious of dishonesty - but suspecting that someone may have made a mistake somewhere and that a check must be made to ensure that there has been none.*

Amendments to the UK *Banking Act 2009* raised the standard further - from the duty of having an "enquiring mind" to that of having a "suspicious mind". The role of the modern auditor of banks and financial institutions was thereby effectively transformed from that of "watchdog" to "bloodhound" 113 years after *Kingston Cotton Mills*.

The development of certifiable management systems from 1979 (BS 5750) and 1987 (ISO 9001) led to a requirement for competent management system auditors. This was later reflected in 2002 by the first publication by ISO of *Guidelines for auditing management systems* (ISO, 2002; first revision 2011; second revision 2018b).

According to Broberg (2013: 102), the traditional role of audit is to provide "a sort of assurance for the owners and stakeholders of a company who need to be assured that the information presented about the company is true and fair". Her work reviews this role and provides an updated view of auditing and the function of auditors. These reported movements in the role of an auditor and the audit function are reflected in changes to the auditor's duty of care. This is fully recognized within *The Audit Adventure* in my works (Asbury, 2018: chapter 5, 157-68). In the spread of auditing to other disciplines reported by Power (1994; Humphrey, 1997; Karapetrovic and Willborn, 1998; and my works Asbury 2018), it is right that I examine 'independence' in the context of this auditor's duty of care which influenced and were incorporated into my works.

In some early professional auditing literature, use of the term 'independence' is reported as ambiguous (Antle, 1981). Antle contrasts 'independence' (any situation which alters incentives to ignore, conceal or misrepresent his [sic] findings) with 'conflict of interests' (trade-off between benefits and costs of truthful auditing). Simunic (1984) advises that "any situation which increases the probability that an auditor will not truthfully report the results of his [sic] audit investigation can be viewed as a threat to independence", identifying simultaneous supply of management advisory services as an example of this.

ISO 19011 (ISO, 2002; 2011; 2018b) advises auditors on the importance of *independence* as one of six valued principles for MS auditing. The latest version of this standard is ISO 19011:2018 (ISO, *ibid.*), which added a seventh principle *risk-based* – an approach which was recommended by my public works since 2005 (Asbury, 2005; repeated in Asbury and Ashwell, 2007).

Salehi, Mansoury and Azary (2009: 10) concur with the literature pointing out that "an independent auditor is essential because of the separation of ownership from the management". They point out, in my view rightly, that independence depend on the profession's strength and stature, and is fundamental to the reliability of audit reports. Like Simunic (1984), they identify economic dependence of the auditor on the client amongst the possible causes for reducing independence (e.g. from the provision of non-audit services), and thus not producing a fair and truthful report. They claim that if auditors act independently, this can reduce the expectation gap (which I discuss in section 2.4.1).

There are other reasons that auditors may misrepresent the facts. Bhattacharjee and Moreno (2013) advise that auditors may experience emotional reactions during the audit process. These may include, they say, moods, anxiety about the task, and like or dislike of the auditee's personnel. Their research suggests that these emotions can influence their decision-making and audit opinion(s). This characteristic is recognised, and the works (Asbury, 2018) advise MS auditors how to overcome this.

There is a body of literature surrounding audit value and quality including Taylor (2004); Robson *et al.* (2012); Knechel *et al.* (2013); and Brivot, Roussy and Mayer (2018). Taylor reported that we do not know the optimal level of audit quality and therefore whether we have 'too little' or 'too much' auditing, concurring with Simunic (1984) and Salehi *et al.* (2009) that audit quality will always be somewhat suspect if other services are provided which may compromise the auditor's objectivity.

Robson *et al.* (2012) reported the results of a study of seventeen auditing methodologies used in the public sector in Canada, focusing on aspects related to reliability and validity. As I have also seen, the study reported wide variations in auditing methods, as well as discrepancies between actual auditing practices and ISO standards for MS auditing. It recommended research to determine the impacts of these variations.

Knechel *et al.* (2013) reviewed definitions of audit quality and the available frameworks [methods] for establishing same. They summarise the research on quality indicators, including inputs, processes and outcomes.

Brivot, Roussy and Mayer (2018) provides two contrasting norms of audit quality. The first, which most-commonly arises in *Big 4* firms, is called 'the model audit', which says that audit quality arises from a technically flawless audit in which professional judgement is highly formalised and documented in a perfectly-document audit file which passes regulatory inspections. The second, which arises in firms of all sizes, is called the 'value-added audit' which considers that audit quality results from tailoring the audit to meet the client's unique needs. As a result, professional judgement can be unrestrained, and audit quality is attested by the client. Unsurprisingly, the authors report tension between these two norms, which I recognize.

The reported inconsistencies in process and the quality of audit outputs are troubling. I allowed the literature to inform my position. My works (Asbury, 2018) advises that an effective OH&S auditor must be both a watchdog *and* a bloodhound - they must have an enquiring as well as a suspicious mind (but must control this latter when preparing their audit opinion!). An influential and well-known CEO I worked with between 1991-5 clearly understood this changing role and function for audit. I recall that his view the weight ratio of 'enquiring: suspicious' should be about 90:10.

The selection of an independently selected *risk-based* sample (of significant OH&S risks and *Black Swans*) from the *Context* scope is the essential start-point to my '*Audit Adventure*'. Getting to the '*Gemba*' and adopting a '*Nemawashi*' approach are also critical. These concepts introduced within my works are unique contributions to auditing practice presented within my work (Asbury, *ibid*.: 5, 210, 269).

2.4.1 Expectation gap

My works (Asbury and Ashwell, 2007; Asbury, 2013a; 2018) explain why auditors must understand, and then manage, the '*expectation gap*' - the possible difference between the layman's perception of the type and extent of work that goes into an audit, and the actual work which is done. The approach commended in my public works builds upon the literature.

In 1974, Liggio (in Higson, 2002) was the first to define the expectation gap as the difference between the actual and the expected performance. There has been movement in the debate. The Liggio definition was extended in 1978 by the *Commission on Auditors' Responsibilities* (AICPA, 1978) where the expectation gap was represented by the gap between the public expectations and needs, and the expected accomplishment of the auditors.

Monroe and Woodliff (1993), supported by Humphrey (1997), define the expectation gap as 'the difference between the beliefs of auditors and those of the public concerning the auditors' responsibilities and duties', while Jennings, Kneer and Reckers (1993) argue that the expectation gap represents the difference between the public expectations about the responsibilities and duties of the auditing profession and what the auditing profession actually provides.

Porter (1993) defined the 'expectation-performance gap' as the gap between the expectations of society about auditors and the performance of auditors. Hian Chye Koh and E-Sah Woo (1998) reviewed the literature on this 'expectation gap', defining it similarly to Monroe and Woodliff (1993) and Porter (1993). They suggest ways to reduce 'the gap'. *The Audit Adventure* (in my book Asbury, 2018) takes account of this continuity in the literature and provides solutions within its definitive (ISO 19011-aligned) methodology.

Moiser (1997) reports the presumption of belief in human nature; that humans will seek the truth unless there is sufficient to be gained by being dishonest. As I said, there has been a debate for years concerning whether an auditor / audit team is a watchdog or a bloodhound (Law Times, The, 1896); a 'partner' or a 'policeman' (Marson, 1993; Siegel, 2002; Fadzil, Haron and Jantan, 2005), or as Morrin (2016) puts it, a 'guardian' or a 'watchdog'. The role of the audit team - having been appointed to be independent - is indeed to act exercising independence, applying correct methodology and with the courage to report the truth. It is then for the auditee's management to act in a timely manner upon that truth when reported.

Quick (2020) brings up to date the academic literature on 'expectation gap' from 1974 to date. He advises that the most frequently identified gaps refer to fraud detection, though other gaps also persist. Education and the expansion of the auditor report are two response strategies proposed.

My first book (Asbury and Ashwell, 2007) said that 'now' was the time for better management and better auditing. Despite its costs, Power (1994) reports that despite concerns about its costs, the

benefits of audit are assumed by its proponents rather than proven. This may be the case in some organisations. The case studies in my works provide definitive examples of where the benefits of audit are proven, although we must remain mindful of the facts in any individual case.

As I said, my work (Asbury, 2018: 94), explains the representation of audit as a 'mirror' of performance, asking "do we see it [the OH&S-MS] as it is, or as we want it to be". Republished in 2018 in its third edition, following the publication of ISO 45001, it presents Figure 10 reproduced here to illustrate this 'reflection'. An independent, risk-based MS audit must accurately report the facts, based on the evidence, to senior management.

Around the time of my first book, Parker (2006) presented a guide for trainee schoolteachers on how to meet OFSTED audit requirements in early years' settings. Cahill and Kane (2011) provided audit guidance for the US Board of EH&S Certification exams. Pain (2010) provided a book with 60 protocols and checklists. Dunlap (2011) provided a scored methodology, but which was not aligned to the ISO standard for MS auditing (ISO 19011). It was clear to me then that the second (and subsequent) editions must make clear the importance of methodology and competent practice.

Sikka (1997) provided an informative background to the history of regulating the auditing profession. My work (Asbury, 2018: 120-34) explains the routes to competence for OH&S auditors, and how they are recognised by their (many) personal certification bodies; some using ISO/IEC 17024 for certification method (ISO, no date) and some requiring continuing professional development (CPD).

Thirteen years after setting out my views publicly for the first time (in my book Asbury and Ashwell, 2007), I remain of the view (in Asbury, 2018: 126-34) that OH&S auditors should be formally educated and certified, regulated by a professional body and held to a code of conduct.

Figure 10 – Audit represented as a reflection of management system performance

2.4.2 Fear and the role of the auditor

My long-held view on 'fear' in respect to auditing is supported by Bernstein (1989), Moiser (1997), Siegel (2002), Fadzil, Haron and Jantan (2005) and Morrin (2016). Primary research from audits I have conducted at GKN sites and in consulting assignments around the world, and from secondary research examples relating to Enron and Shell (as below), suggests that 'fear' can invite 'improved' performance. Bearers of bad news often fare badly in all but the most generative organisations. And so, to keep their jobs, people present to their boss only good news; a committee appointed by the CEO of a company will tend to report what the CEO wishes to hear. Would they dare report otherwise?

In my public work (Asbury, 2018: 62), I present examples from well-known events involving Enron and Shell:

> *A eureka moment. It suddenly struck Mintz as so obvious. The executives entrusted with reviewing all of the LJM transactions … approached their duties casually, giving everything just the once-over. They seemed to figure that somebody else was doing the tough analysis. But no one was.*
> - From Eichenwald (2005), on the Enron Corporation

> *The company [Shell] had been engaged in accounting manoeuvres since 1997-98, including a flawed internal audit function; Shell had engaged [as group reserves auditor] a retired Shell petroleum engineer – who worked only part time and was provided with limited resources and no staff – to audit its vast worldwide operations.*
>
> - Retired Shell engineer played central role (FT, 2004)

I was engaged by Shell plc between 1999 and 2009 as an HSE auditor trainer. That company's adverse experiences (fined £17m and publicly humiliated by FSA in 2004 for over-stating its crude oil reserves; FT, *ibid.*) led it to ask for the HSE-MS auditing process we were teaching to be 'recognised'; I'm sure driven by 'fear'.

It was agreed that publication of a book would be an ideal approach and as I have shown, there was no competing title. These articulations to my chosen publisher led directly to the writing and publication of my first book (Asbury and Ashwell, 2007).

Evolution in OH&S management systems (ISO Annex SL) and auditing practices (ISO 19011) led to the second edition of my book (Asbury, 2013a) eight years later. I was engaged in consultations (see Asbury, 2016a) on the development and subsequent publication of ISO 45001:2018. As a result, and according to my editor, the third edition of this book (Asbury, 2018) was probably the first book on OH&S-MS published anywhere in the world following the international publication of that standard.

<u>2.4.3 Learning how to audit</u>

I learned how to audit in 1991 with international auditing group Arthur D. Little Inc. The approach taught was based on the approach from Greeno (1988) published by the company, which like Pain (2010) was based on checklists. Harrison (1984, revised 1995) was the only other HSE-focussed auditing text of this time. At 650 pages, it was hardly a handbook, and I found its methodology confusing and forgettable. By the time of my own auditing work twelve years later, little had replaced it, although IIA had issued its Code of Ethics (IIA, 2004). Along with my ethos ('anything is possible'), this gap in the body of literature was an attractive selling point to its (then) publishers Elsevier Reed.

The *Audit Process Roller-Coaster* (in my work Asbury and Ashwell, 2007) and later *The Audit Adventure* (in Asbury, 2013a; 2018) build 'on the shoulders of giants' from the literature including Drucker (1970), Deming (1982), Power (1994) and ISO (2018b; also 2002; 2011). These models within the works provide powerful and memorable methodology for OH&S and other MS auditing, whist remaining closely aligned to ISO 19011 (2018b). This alignment gives authority to my published methodology. To (apparently) align with my public works (Asbury and Ashwell, 2007; Asbury, 2013a), ISO 19011:2018 added *risk-based* as its seventh principle for MS auditing in its 2018 revision.

The risk-based auditing methodology presented in my works (Asbury, 2005; Asbury and Ashwell, 2007; Asbury, 2013a; 2018) builds upon the debates in the literature and case law about the role, purpose and process for an audit, audit team selection and auditors. The methodology is endorsed by Dr Andrew Rankine of Glasgow University (reproduced in Appendix 4 of this context statement). Awarding *5 Stars [out of 5],* IOSH Magazine (IOSH, 2018b: 23) says:

> *Asbury's book is well-researched and will be relevant to all HSEQ auditors and particularly managers not least because the new standards require senior management to understand and lead on management systems*.

Only Cahill (2015) has added substantially to the field in the timeframe covered by this statement with his 'Compendium of Thoughts and Trends', a companion to Cahill and Kane (2011).

2.4.4 Risk-based MS auditing

My research led to application in my practice, which in turn informed the outputs. My learning from practice produced my impact on practice. This two-way learning is picked up further in chapter 5.

Consistent with the requirements of the *Health and Safety at Work etc. Act 1974* (HASAWA) and the *Management of Health and Safety at Work Regulations 1992* (MHSWR), I learned to use 'risk' (discussed further in chapter 4 of this context statement) as a means of identifying and attending to significant issues (and de-prioritising those which did not). Risk-based MS auditing thus 'mirrors' (Figure 10) risk-based MS implementation. It means that the audit work plan will prioritise '*the big rocks*' (see my works Asbury, 2013a; 2018: xxix) that determine the outcomes of any organisations' performance and which are thus of importance to its stakeholders.

In practice, this differs from many others of those who just try to implement or audit 'any' controls, or to manage-out easier issues without necessarily realising what '*the big rocks*' to their organization might be.

> *If you're aiming for zero harm and you have to spread your resources and effort across the entire accident triangle [of serious accidents, minor incidents and near misses], then you can easily take your eye off the ball.*

- Knutt (2016: 2) on Laing O'Rourke's adoption of Dekker (2014).

As I have said, the approaches recommended in my works are generally qualitative (Miles and Huberman, 1994) and focus on *risk*, which may differ to many who try to measure and quantify safety by counting accidents and other lagging indicators. These approaches have resulted in publication of a sequence of public works which provide a holistic understanding of the factors involved in establishing, implementing and auditing a successful OH&S-MS and how key elements of control interrelate.

These works were made interesting for the audience by identifying the less obvious issues as well as those that grab attention as *A-Factors* (in my book Asbury, 2018: 309-19). In addition, there are Tips and Case studies presented liberally throughout the text.

2.5 Other influences on management systems and auditing

The two perspectives of an OH&S-MS – the implementation (section 2.3) and its independent auditing (section 2.4) – provide a clear picture and its reflection in the mirror of the quality of its implementation. Along with the literature, there were other influences from my journey upon my outputs in this theme. I joined the OH&S profession ten years after HASAWA. The *Context*, the influences and influencers from experimenting with literature, legal and engineering standards informed my research on OH&S-MS and later my public works on OH&S-MS auditing. My learning and determination of the gaps from practice arose from five main sources:

2.5.1 From my study

2.5.2 From my three employed roles 1984-1995

2.5.3 From consulting 1996-2018

2.5.4 From incidents

2.5.5 Regulation and progression towards self-regulation

2.5.1 From my study: How my studies influenced my public works

My first job was at a joinery manufacturing company. It had dozens of circular saws, spindle-moulders and fourcutters. It was acquired shortly afterwards by a larger construction company. I pushed, and my director agreed that I should study industrial management. This foundational study set me on a path to develop as the contributor to OH&S practice I have become.

Early in my IIM study, my course leader introduced me to a raft of management literature starting with Peter Drucker (1970). I became fascinated by the work of William Edwards Deming in post-WW2 Japan (Deming, 1982; 1993), and the quality revolution in the west of the 1980's.

The structure of the PDCA cycle (Deming, 1982) was critical learning, leading to reading and my appreciation of the works on business management and excellence of Tom Peters (and Waterman, 1982; and subsequent titles 1988; 1992; 1994a; b; 1997), Blanchard and Johnson (1983), Pascale and Athos (1986), Eliyahu Goldratt (1988, and subsequent title 1994), Rosabeth Moss-Kanter (1989) and later Charles Handy (1994; 1995a; b; 1997). Each explained in its own way, and in its time, a demand for structured control in managing organisations, but with a strong emphasis on 'leadership' and 'speculation, learning and change' as drivers for improvement. My public works on OH&S management systems and auditing build on this organisational management thinking from the 1980's. Specifically, I was an early-adopter in my own field of PDCA – please return to Figure 1 on page 6.

My studies, applied and validated through my occupation, revealed to me the value and utility of structure in management systems. This learning was to become central to my public works.

2.5.2 From my three employed roles 1984-1995

I liked part-time study and, after completing IIM classes, stayed in college part-time to study and qualify in professional law (ILEX). Qualified at law, I was set to work administering the settlement of a two-foot-high pile of employer's liability (EL) insurance claims – many from workers who had gotten too close to woodworking machinery. Handling this assignment, the opportunities and gaps I identified led me on an inexorable route to my public works. I noticed that incident investigations often concluded advising what could or should have been done or avoided to prevent the injury/loss now subject to claim. This provided a clear direction to my thinking, and subsequently the output writing. Along with PDCA, *predicting and preventing* is a common theme in my works. This is generally consistent with the aims of more recent thinking (*Safety-II,* Hollnagel, 2014; *AI and fuzzy sets,* Ayhan and Tokdemir, 2019).

Dealing with EL claims, I witnessed first-hand the types of injuries caused by work, heard the effects these incidents had upon workers' lives and their families, and saw the costs to business of a wholly reactive approach to health and safety. I suspected that the full costs of ineffective OH&S management would be far higher than the insurance costs alone - HSG96 (HSE, 1993; *the iceberg*) was still eight years away from being researched and published. This would later suggest an £8-£36 cost for each £1 of insured costs, and I had no doubt this was likely to be in the ballpark having been so close to it years earlier. This led to my thinking about the business case for OH&S, and I have published extensively around this theme (including Asbury, 2007 included in the public works presented with this statement; also my other works (examples) for The Ergonomics Society (1999; 2011b), for the foundry industry (2010b; 2011a and 2013d) and for British Safety Council (2012).

Ironically at around this time (mid-to-late 1980s), my employer had won both local and national awards for employing higher-than-average percentages of disabled people – little did the judges know that the company had disabled many of these people in the first place(!). I became more-and-more determined to do something about this – my interest in OH&S had peaked.

I considered a variety of approaches. I learned the value of behavioural safety from an early professional relationship with Dr Tom Krause and his team and followed my interest in *organizational culture* as an OH&S control through Reason (1990) and later Hopkins, 2009; I was in Houston on the day of the infamous explosion at BP (CSB, 2007). I have maintained an interest in emerging practices including the more-recent works of Dekker (2014; 2017a; 2017b), Hollnagel (2014) and Rae and Provan (2019). I found Fu *et al*. (2020: 47) interesting as amongst its findings it suggests that "Organisational factors will be replaced by more modern 'safety management systems…". Personally, I believe the former can be *incorporated* into the latter.

The use of discipline to enforce compliance (and back then, this was applied) has been challenged based on the neoliberal position from the 1970s where the worker is seen as a

partner (Hutter and Power, 2005; Rose and Miller, 2008). Hale, Heijer and Koornneef (2003), however suggest that internal sanctions were often utilised. My recollection of the use of discipline is balanced vs the neoliberal position by occasional stories circulating on the shop floor that *someone would have lost their eye but for their safety glasses*. Though this approach may have been somewhat less than motivating, some injuries were undoubtedly prevented by setting clear standards and trying to enforce them. These days, if it was it my role, I would look to Rogers (1990; 2004), Mearns and Thorne (1999), and Berne (2016) for guidance about person-centred counselling, and helping people discover their path to personal growth. Reason (1990, 2013) provides excellent insights on human error. Terry's interesting book (2010) connects behavioural safety to neuro-linguistic programming (NLP) for the first time.

By whichever means safety control is applied in workplaces (and in other places), I learned that – partly consistent with Fu *et al*. (2020) - its success may depend upon the simple architecture of the PDCA cycle with its feedback loop for delivering learning and improvement. And hence my focus upon this which I will explain.

The company formally appointed me its health and safety officer at the time that the *Control of Substances Hazardous to Health Regulations 1988* was noticed on the horizon. I was still dealing with its EL claims. I decided to engage with a 'safety group' to learn from others in the OH&S discipline. When I learned that such a group did not exist in our region, I founded one and became its Chair. That led to my first public OH&S presentations at the Burton and District Occupational Safety Group (Asbury, 1994; 1995 and 1996 – not submitted) and the first of my written public works - for the Health and Safety Executive (HSE) and The Ergonomics Society on PDCA and risk assessment (Asbury, 1994c – not submitted). These first public works example my earliest desires *to do something beyond my own workplace.*

Following a move to BTR plc in 1989, I completed a NEBOSH Certificate and Diploma. The role included the addition of environmental management responsibilities, and I took the opportunity to integrate those (management) requirements within the requirements of the OH&S-MS. There were numerous common requirements, such as training, control of documents, and internal audit. Integrating these saved us time and other resources, along the same lines discussed by Jørgensen, Remmen and Mellado (2006) and consistent with Dahlin and Isaksson (2017: 530), who report that "Most articles on IMS conclude that integration is beneficial regarding cost saving, operational benefits and improved customer satisfaction."

Integration has remained a common theme in my public works since 2007, which in turn is consistent with both the approach taken by ISO since 2012 (ISO, 2012a) and with the analysis of 123 publications published between 2005 and 2015 reported by Nunhes and Oliveira (2018) which characterise significant points about emerging research on integrated management systems.

I moved to GKN plc in 1991, where I remained for five years. While there, I completed an MBA achieving a *Distinction* grading at De Montfort University, Leicester between 1992-5. My final thesis was 'A study of safety management practices in SME engineering firms' (reported in Asbury, 1995 – not submitted). My research was supported by the HSE and IOSH. In hindsight, these engagements with the professional body and regulator were quite unusual. I suspect my proposal was simply new and thus of interest to both organisations.

2.5.3 From consulting 1999-2016

In 1995, after five years with GKN, I was nominated by its insurers Royal & Sun Alliance (R&SA) for the RoSPA *Safety Professional of the Year award*, which I subsequently won (GKN plc, 1995: 37). Within the year, I was recruited by R&SA to become a member of, and later the Head of, its liability consulting group.

Over three years (1995-1998), I progressed to work with many London-market insureds including Panama Canal Commission, the Ministry of Defence, Marks and Spencer plc and McDonalds Corporation. It was around this time that I started to publish more frequently, and my work for McDonald's (Asbury, 1997) was one of my earlier works. The best practices it contained were researched in semi-structured interviews at visits to over 50 restaurants in six countries over 29 days. It was written by me, type-set and published by McDonalds, and issued to 34,000 restaurants around the world. This work confirmed my position on providing structure (PDCA) for OH&S control and served to inform the works thereafter. It improved OH&S outcomes at McDonalds right away as measured by incident rates and insurance claims arising, and it is understood that it remains in use there today (please see Appendix 5 of this context statement for external validation of this work).

As a Director of Aon (1998-2000), my sole client was Coca Cola where I developed and later audited loss prevention standards (unpublished outside of the company) for 80 bottling plants in 27 countries in Eastern Europe and Africa. My works (Asbury and Ball 2009; 2016) include a *Coke* case study researched during that time and published with permission.

From 2006, I worked with the PetroSkills training alliance. Commencing shortly afterwards, I commenced development of my work the *Petros Barola* andragogic learning system (Asbury, 2006-16) adopted for use in its HSE (and other) training courses. I will review the literature related to adult learning in section 2.6 and explore my research approach related to this in section 2.8.2.

2.5.4 From incidents

Amongst my earliest reading on safety related to some well-known disasters of the late 20th Century, including the examples in Table 2 of this context statement. There is considerable literature addressing major incidents, including Reason (1990; 2013); Rasbash (1991); Lucas (1992); Cullen (1993); Flin (1996); Boyle (2002); Eves and Gummer (2005); CCPS (2007); Hopkins (2007; 2009); Atherton and Gil (2008); FBU (2008); Flin, O'Connor and Crichton (2008); Gardner (2009); Eves (2016); WSJ (2016a) and Darabont, Badea and Trifu (2020).

I analysed from secondary data two of the incidents mentioned in section 1.6.3, presenting these as case studies in my public works:

- Piper Alpha (Asbury and Jacobs, 2014; case study 6.3, on book pages 111-3)
- Rana Plaza (Asbury and Ball, 2016; case study 8.1, on book pages 171-5).

In their own way, such incidents can invariably raise public concerns about safety, and some lead to reactionary regulatory (and other) responses. Such disasters intruded into my home on TV news, and this only reinforced my determination to be heard. Often as a result of high-profile incidents (and as a consequence of UK membership of the EU), new regulations were consulted and adopted as summarized in Table 3 (and see section 2.5.5). Each has added to a rather fragmented suite of OH&S laws, which the works suggest benefit from a management systems approach in determining an effective implementation. Otherwise, they may be implemented in silos and generate lots of (un-necessary?) paperwork.

Table 3 – Summary of the main new OH&S-related regulations by decade

1980s	1990s	2000s	2010s
NADOR, RIDDOR First Aid CIMAH, COMAH Ionizing radiation Asbestos COSHH Electricity Head protection Noise	Offshore safety Stadium safety Six pack (MHSWR, Workplace, PUWER, PPE, Manual handling, DSE) Construction / CDM Railway safety	Pressure systems Work at height Vibration Fire safety Corporate manslaughter Offences (Act) Pesticides GasSafe	Tower cranes Fees for intervention (FFI) Sentencing guidelines

Of course, many more disasters would intrude during my career. The importance of this reading and learning was to reinforce my desire to improve the management of OH&S and to effect change in the implementation of health and safety. The public works therefore have sought to show how OH&S-MS and risk-based MS audits can improve outcomes when they meet particular conditions and characteristics for senior management commitment, effective workforce involvement, and the adoption of lessons learned from a PDCA management systems cycle.

2.5.5 Regulation and progression towards self-regulation

Throughout my career, HASAWA has been the primary law on OH&S at work in the UK. Its evolution is well documented as a product of the Robens Report (Robens, 1972; Woolf, 1973; Jones, 1984). It was "fulsomely embraced" by some and "scathingly rejected" by others (Lewis, 1975).

Robens argued (in Lewis, *ibid.*) that there existed "a cornucopia of legislation which was exceedingly complex, inflexible and to a considerable degree ineffective". He said that "a self-regulating system for provision of health and safety at work was desirable with greater use being made of voluntary standards and codes of practice to promote progressively better conditions". Less than a year after the publication of the Report, the Factory Inspectorate itself was disputing Robens' analysis of preventable accidents and breaches of the law (Lewis, *ibid.*).

Commenting on Robens, Woolf (1973) said that traditional methods of promoting health and safety had failed because nobody cared enough; "the most important single reason for accidents at work is apathy". However, Woolf proposed instead that the role of external regulation in preventing accidents could only be overcome by persuading everyone concerned to make a greater voluntary effort. His view was that the extent to which higher standards could be imposed by the law and its enforcement was limited and had probably already been exceeded. Jones (1984) agreed. He felt the Act "fostered apathy by encouraging employees to look to legislators, enforcement officers and the courts rather than to themselves for protection".

Robens (1972) identified nine main groups of statutes supported by nearly 500 subordinate statutory instruments containing detailed provisions of varying length and complexity. Reading this in the late 1980's as part of my NEBOSH studies, I thought then (as I do now) that firms informed by choice might not need this mass of regulation to *do the right thing* (my work Asbury and Ball, 2009), whilst intentionally or blindly uninformed firms wouldn't read it anyway!

HASAWA marked a departure from the prior framework of prescribed and detailed regulations which was in place at the time. It introduced a new system based on less-prescriptive and more goal-based regulations to balance the burden between cost/burden and benefit/risk-reduction, and both reflecting the reasonability of the actions proposed. The public works (especially Asbury, 2018: 88) are supportive of this 'reasonableness' test. Regulations were to be supported by codes of practice (ACoPs and CoPs) as a 'middle way' of reducing the volume of regulations, and a suite of guidance documents which were last reviewed for suitability and effectiveness by Young (2010).

The new inspectorates enforcing the laws would be brought together within the new authority. Protection would be extended to almost all people at work, even though the Report (1974, para 231) says "We do not feel called upon to make any specific recommendations at this time about

the size of the new inspectorate. We have framed our views in the context of the resources currently available…". Wadsworth and Walters (2014) provide a commentary on the time-to-time strength of HSE for inspections and enforcement. According to Tombs and Whyte (2010), there was a 16 per cent fall in HSE and local authority enforcement activity between 1999 and 2004, followed by a sharper decline between 2003 and 2006 of 38 per cent (Tombs and Whyte, *ibid.*). There have been further reductions since. It is obvious that with more people in work than ever before (as I noted in section 1.6.2) and with fewer OH&S inspectors/inspections since 1999, something has to give. The works provide approaches, techniques and tools for those who wish to adopt OH&S-MS proactively.

As discussed, the period since 1974 has generally presented a steady decline in workplace fatalities and injuries; plateauing more-recently; and punctuated by high-profile losses. Each has served to remind us that deaths and life-changing injuries can and will occur if safety is not managed. Woolf (1973) concluded that Robens was faced with a choice between unenforceable law, or law which as a matter of policy would not be enforced. It opted for the latter. A 'voluntary effort' called 'OH&S management' (in a variety of forms – please see Table 1 on page 18) has progressively emerged to take its place, particularly since 1991 (HSE, 1991; 1997; 2013). My public works contribute to the development and sharing of these new practices and new knowledge. Part of my contribution to new practice (see my work Asbury, 2016a) was to contribute to the creation of ISO 45001:2018 adopted internationally and published on 12 March 2018.

Practice and research experiences have had a central role in the evolution of my public works on OH&S management systems and auditing and informed them greatly – six works are submitted on this theme, published over a 22-year time window. These works include researched case studies which together provide empirical evidence of the (positive) results achieved when applying my advice.

Over 35 years working in OH&S whilst employed and engaged as a consultant helped me to identify two key areas of opportunity requiring attention. These were noted at the bottom of page 36 and restated here for ease of reference:

- The usability of OH&S management systems and how to implement them; and
- Ineffective internal and external auditing.

Each of these opportunities has been discussed on pages 37-57 of this context statement. As a result, two research approaches emerged. I will pick up on these again from page 62.

However, prior to presenting those approaches, I will continue my literature review by considering works related to adult learning in section 2.6.

2.6 Adult learning

Education is an intentional act of encouraging learning activities through discovery and acquisition of knowledge. *Pedagogy* (Watkins and Mortimore, 1999; Loughran, 2013; Livingstone *et al.*, 2017) is defined as the art or science of the teaching profession, or identify it as the dynamic relationship between learning, teaching and culture. Livingston *et al.* (*ibid.*) say that pedagogy fosters informed environments that promote respectful learning to provide hope for a successful future for <u>all</u> learners.

The process of adult learning has become a field of research in its own right, with repositories including the Educational Resources Information Centre (ERIC) on Adult, Career and Vocational Education (ACVE) (LOC, 2018), OECD's Online Education Databases (OECD, 2018) and the EBSCO educational databases (EBSCO, 2018). There are hundreds of discipline-specific educational databases, free and by subscription, provided by governments, universities, societies and commercial providers. Many provide content on adult learning, sometimes referred to distinctly in the literature as *andragogy* (or sometimes *andragogology*).

Popularized in the 1960s by American educator Malcolm Knowles, the term *andragogy* was first used in the 1800s by German educator Alexander Knapp (Knowles, 1984a; Knowles, Holton and Swanson, 2005) to refer to "methods or techniques used to teach adults". Andragogy is often compared to pedagogy, the term sometimes used to describe teaching techniques for children. Knowles (1970: 5) suggested that adults present a unique learner compared to traditional pedagogy, and that confusion on how adults learn has had impacts on their education:

> *"...somewhere in history, the 'children' part of the definition of pedagogy got lost. In many people's minds—and even in the dictionary "Pedagogy" is defined as the art and science of teaching. Period. Even in books on adult education you can find references to "the Pedagogy of adult education," without any apparent discomfort over the contradiction in terms. Indeed, in my estimation, the main reason why adult education has not achieved the impact of our civilizations of which it is capable is that most teachers of adults have only known how to teach adults as if they were children."*

From the ERIC database, Knox (1977) provides a comprehensive review of empirical knowledge on adult or *andragogic* learning developments providing guidance addressed to practitioners who help adults to adapt, learn and grow as influenced by the societal contexts of family, community and nation. Knox also provides helpful generalisations about age-related, physical condition and health trends pointing out changes in variables of adult personality – self-concept, adjustment and morale, including (a now rather dated) commentary on women's roles in family and work.

Cross (1981) updated Knox's (*ibid.*) literature review on andragogic learning, profiling and characterising of this group of learners. She examined the demographic, social and technological

trends that stimulate increased demand for learning opportunity and identified the dangers arising from new pressures upon adults to participate in organised learning. Three forms of adult learning (self-directed, organised instruction and degree-credit) are identified showing who participates in adult learning; their motivations and deterrents. Motivational theories are described providing insight into adult participation in learning activities.

Cross (*ibid.*) reviews four areas of research related to adult learning:

1. learning processes as a function of aging;
2. adult stages of development;
3. phases of the life cycle; and
4. preferences and practices of adult learners (issues as subject matter, teaching methods, and scheduling options).

These four areas illustrate the range of thought about lifelong learning and list agreements among scholars on the basic concepts underlying the ideal of lifelong learning.

Knowles, Holton and Swanson (2005) provided six 'crucial assumptions' to describe characteristics of adult learners:

1. The need to know: Adults need to know why they need to learn something before undertaking to learn it.
2. Self-concept: As a person matures his/her self-concept moves from one of being a dependent personality toward one of being a self-directed human being.
3. Experience: As a person matures s/he accumulates a growing reservoir of experience that becomes an increasing resource for learning.
4. Readiness to learn: As a person matures his/her readiness to learn becomes oriented increasingly to the developmental tasks of his social roles.
5. Orientation to learning: As a person matures his/her time perspective changes from one of postponed application of knowledge to immediacy of application, and accordingly his/her orientation toward learning shifts from one of subject-centeredness to one of problem centeredness.
6. Motivation to learn: As a person matures the motivation to learn is internal.

Much of the literature on adult learning references Kolb (1984; reprinted 2014) who focussed on cyclical experiential learning, taken up in the constructivist learning community. Kolb's learning cycle, FWTD, aligns quite-closely to my advocated, cyclical *PDCA* approach to OH&S-MS. Put simply, Kolb (*ibid*.: 297) says:

> "…there is one incontrovertible reality: people learn best through experience".

Figure 11 shows how learners travel through an individual four-stage learning cycle from concrete experience (feeling), through reflective observation (watching), through to abstract conceptualisation (thinking), to active experimentation (doing) – 'FWTD'.

This cycle may be non-linear, perhaps not even circular, for an individual learner.
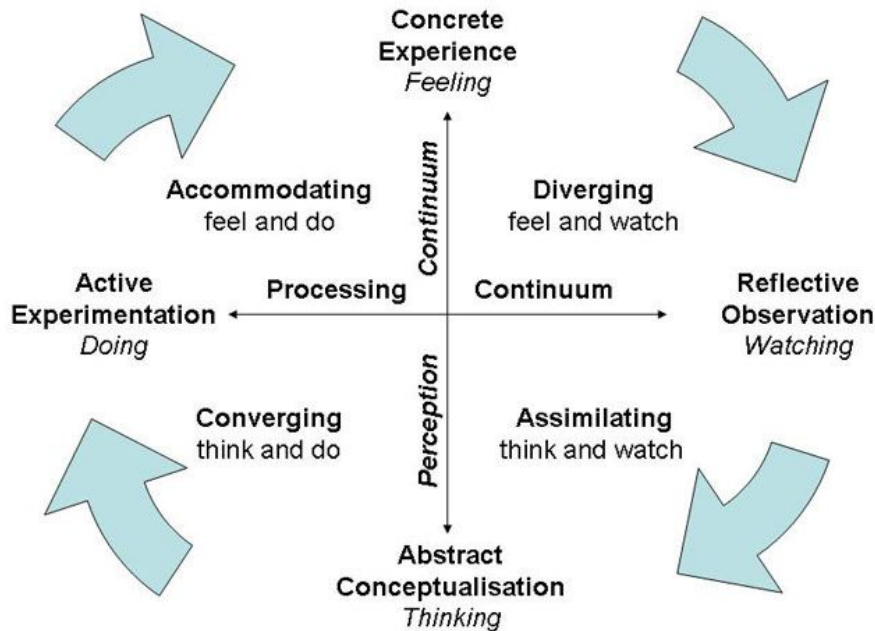
Figure 11 – Kolb's (1984; 2014) *Experiential Combined Learning Cycle*

The premise underpinning andragogy is that adult learners have moved beyond the formative stages of learning; the adult has already built-up skills to interpret more-complex information and brings to their learning a wealth of external experiences upon which to construct understanding. It has, however, faced considerable criticism (Davenport, 1987; Taylor and Kroth, 2009; Chiniara and Rivière, 2019); specifically, that Knowles' assumptions about adult learners are axiomatic and have not been subjected to rigorous testing. Not-withstanding this, I see practical focus for OH&S application - an adaptive (sometimes second) profession with skills being added to and validated all the time.

Aligning my own thoughts to Kolb (1984; 2014) and Knowles (1984a), four principles for adult learning emerge:

- participants should be involved in planning their study;
- experience provides learning;
- participants want actionable content and are most interested when learning has immediate relevance; and
- that the learning is problem-centred rather than content-oriented.

According to Merriam (2002), andragogy and self-directed learning continue to be important in present-day understanding of adult learning. In developing andragogic case study-based learning tools for the OH&S setting over three phases for adult learning from 1995 (see *Petros Barola,* pages 69-71, 75-6 and Appendix 2 on page 223 of this context statement), I am not sure that I can agree with the criticism of Davenport (1987), Taylor and Kroth (2009) and Chiniara and Rivière (2019). I have also seen and note the work of Loeng (2018) who says [on andragogy] "the concept is ambiguous" and Roessger, Roumell and Weese (2020) who report that "preferences varied across countries, decreased with age, and increased with educational level and occupational skill". They report that men had stronger preferences for andragogic learning than women, and that preferences for this were highest in Western countries, and among adults with similar demographics as Knowles.

Instead, I favour the views of Knowles (1984a), Merriam (2002) and also Huang (2002) as these are much more closely aligned to my experiences of planning and delivering public and client learning events with mixed age/sex/race, international audiences working in teams to solve problems at *Petros Barola Ltd*.

As its creator, the action research (Gray, 2009) which led to *Petros Barola* might specifically be categorised as *participatory action research* (PAR), as on many occasions I was also a member of the learning group. Like Lincoln (2001), I see strong links between this action research and my constructivist epistemology, as I discussed from the bottom of page 3 of this context statement.

Within constructivism, learners are active agents, intentionally seeking information and constructing knowledge within a meaningful context. In the case of the *Petros Barola* case study, learners engage with the materials from two-weeks ahead of class and then through the five-day learning experience, supporting each other and negotiating (Vygotsky, 1978) in their small teams before moving on to develop their own argument based upon their understanding. This is social constructivism (Bruner, 1966; 1990) in which each learner brings to the learning environment a range of perspectives and share their understanding to transform this engagement into new meanings.

The debate on the differences between the ways in which children and adults learn, the Kolb learning cycle, and the principles and assumptions from the literature for andragogic learning influenced my output and the way in which I presented it in the succession of my three learning case studies (*Fawlty*, *Atlantis Shell* and the *Petros Barola*) which are described in section 2.8.2 commencing on page 69.

2.7 Retrospective research approach

This section explores the premise behind the public works that relate to applying management theories to OH&S. In the main, this relates to investigating and answering the two primary questions I first posed at the bottom of page 36 of this context statement:

2.7.1 The usability of OH&S management systems and how to implement them
2.7.2 Ineffective internal and external auditing

In order to do this, I undertook to research both through the literature and through empirical research. Table 5 in Appendix 6 on page 238 presents a high-level summary of my research related to the application of management theories to OH&S between 1984 and 2018.

Chapter 5 *Limitations of the* research critics the methodology to provide reflective considerations of the research submitted.

2.7.1 The usability of OH&S management systems and how to implement them
By the time of the 'six pack' of OH&S regulations in 1992, the implementation gap was clear. A management systems approach (PDCA) to implementation was missing, and one of my earliest works (Asbury, 1994c – not submitted) shared how GKN plc overcame this gap. My first book (Asbury and Ashwell, 2007) expressed a view that the implementation of an effective OH&S-MS had been made to look 'too difficult'. In addition, that there may have been too many fragmented OH&S regulations. Too few organisations had connected and implemented the requirements of the laws and the standards. Figure 9 on page 38 illustrates the 'silo'd' approach adopted by many, whilst Figure 12 illustrates my advice for effective implementation (from my work Asbury, 2018: 202).
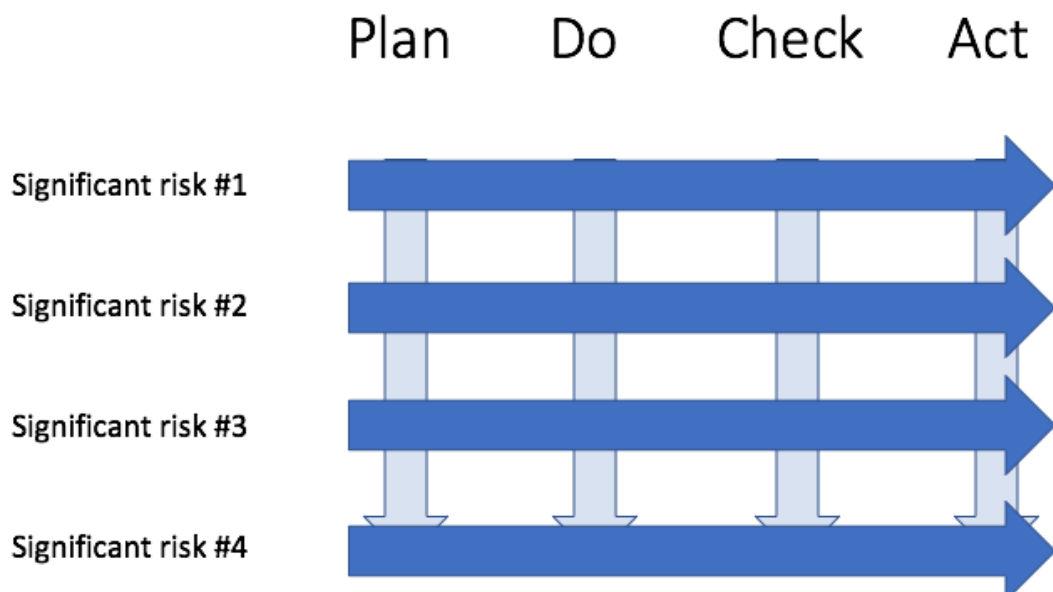
Figure 12 - How management systems should be implemented and audited
From my book Asbury, 2018: 202

The first target of the European Union's safety policy is to improve the implementation of Occupational Health and Safety Management Systems, especially for small and medium enterprises (SMEs) (Bianchini *et al.*, 2017). Despite this, some smaller organisations have abdicated their position to a 'no-one told us we have to', or 'we've not had any accidents'. To many businesses, the implementation of effective OH&S was seen as a burden or cost, something that remains a premise even today (Borley and Page, 2016; Hulshof *et al.*, 2019).

Notwithstanding this, Li *et al.* (2017: 266) show that "safety management involvement and safety personnel support significantly influenced the safety climate … more than the other dimensions".

For those that had tried to implement, there was concern that OH&S-MS had developed to become too focussed on paper-based procedures (Frick, 2004; Stemn *et al.*, 2019; Perez, 2020), and not representing enough the working practices or operational cultures in (some) organisations. The available standards had too many clauses, sub-clauses and sub-sub-clauses which had been implemented in a 'tick-tick', silo'd fashion (policy, tick; training, tick), rather than using the continuity of control THROUGH the elements of the management system (PDCA) to mitigate significant risks. There has been too much focus on trivial risks, and insufficient focus on significant risks (HSE, 2016d; discussed in greater detail in chapter 4 with regard to *risk assessment*). Or the risks had been poorly assessed and the paperwork filed. My works (Asbury, 2013a: 78; 2018: 58) say that "…standards writers, certification bodies, business sectors, consultants and academics who have substituted Deming's simplicity with [unnecessary] complexity". Better performing organisations have overcome this, but others have much to learn. Hence my books on the topic, and why they were written in such a way as to simplify the presentation of OH&S-MS for their audience showing how to use them, and how to audit them in a meaningful way.

Between 1991 and 2012, none of the publicly available OH&S management systems were aligned to other disciplines' management system standards, or to the structure of PDCA (Deming, 1982; my work Asbury and Ashwell, 2007; Jones, 2007; my works Asbury, 2013a; 2018). The UK health and safety regulator, HSE, did not recognise any of the available OH&S-MS except its own (Stone, *pers comm.* 2016), and did not adopt an externally recognised structure in either of its first two editions of HSG65 (HSE, 1991; 1997; Jones, 2007), though to be fair they did contain a 'feedback loop'. This was eventually corrected (from 'POPIMAR') to reflect PDCA in its third edition (2013), and only since 2013 has HSE and the related IOD guidance for directors (IOD, 2007; *indg417*) been likewise revised to reflect this approach.

ISO standards for quality (ISO 9001), environmental management (ISO 14001) and for other management disciplines were not easy to integrate with each other, or with the available OH&S standards. This only changed from 2012 with the arrival of ISO Annex SL, and the consequent

revisions to ISO 9001 (in 2015), ISO 14001 (also 2015) and to other ISO-owned management system standards - ISO says (2020) that there are more than eighty of these.

The absence of an ISO standard for OH&S management has likely hindered Tier 1 (and 2) organisations from pressing their supply chains to adopt a recognised approach. The substitute has been questionnaires galore seeking information (Knight, 2006).

On the effectiveness of questionnaires, Guldenmund (2007) aligns with my view that they have not been particularly successful in exposing the core of an organisation's safety culture. There is limited evidence in the literature (e.g. O'Hara, 2002) of the impact of such questionnaires improving SME's health and safety performance and increased requests for information and advice. Ironically, I have been engaged (quite literally) thousands of times as a consultant by organisations to complete such H&S questionnaires received from their clients they (apparently) had insufficient knowledge or confidence to complete themselves. The irony here is that I (an OH&S specialist) have prepared technical submissions for review by another OH&S specialist, whilst neither of those specialists may have ever attend the work site. It has become a paperwork 'beauty contest'.

2.7.2 Better internal and external auditing

If we are to overcome paperwork 'beauty contests', we need better internal and external auditing in the context of the literature and specifically, my public works (Asbury, 2018). This is why my works focus upon improved methodology for risk-based [focusing on significant risks] auditing.

My work (Asbury, 2013a), it has been said (please see Appendix 4), should be considered the *standard work* on risk-based auditing. That work (*ibid*.) clarifies that auditing is not 'inspecting' nor vice versa – one does not conduct an audit using a checklist as you might an inspection, yet this approach remains common. On this concern, I agree with Gallagher, Underhill and Rimmer (2003) who reflect on this, describing a key problem limiting the effectiveness of an OH&S-MS as "audit tools [which] encourage a 'paper system' or 'tick-the-box' approach that is divorced from workplace reality".

Baird (2005) is amongst those that irritated me. In commentary that "implementing a health and safety management system did not lead to an improvement in performance", in the section 'Inspection and auditing', other than the title, there is not a single reference to auditing. Baird (*ibid.*) advises only that "an inspection system was introduced… concentrating on unsafe behaviours and unsafe conditions…scoring to allow tracking over time". Pain (2010), along with much commercial software, claims to be able to provide 'on-line forms' for auditors' use. My public works advise strongly against such an approach.

The conduct of audit as defined by technical standard ISO 19011 (ISO, 2018b) is a process with prescribed steps, yet it is not widely known despite being in circulation for eighteen years. Like the *Audit Process Roller-Coaster* (in my work Asbury and Ashwell, 2007), it's latest version (ISO, 2018b) demands that the audit is set in the context of the organisation's business environment (aka *Context* from ISO *Annex SL;* ISO 2012a) by requiring audit planning and preparation, yet it remains probably true that most individuals who claim to be auditors have either not been trained to use it or simply find filling in a checklist less-taxing. And for many, it seems being sent on an OH&S auditing course is worse only than attending a regular OH&S course(!).

The OH&S auditing profession is not regulated. Despite all the auditor approval and registration bodies (please see my work Asbury, 2018: 126-32), 'anyone' can claim to be an OH&S auditor – and accordingly (in my experience) the supply of individuals offering their services exceeds the demand. This is evidenced by the low rates of payment offered to OH&S audit practitioners.

Some audits are conducted as some OH&S-MS are constructed – silo'd (as Figure 9 on page 38). "Let's move on to clause 99; I'd like to see your training records". They focus more on the audit process as an end in itself, rather than a means to better-control hazards and improve OH&S outcomes. Evidence is presented as 'Blue Peter's' ("ones I prepared earlier"). The auditor either approves of this or not (depending on what the auditee had wanted to reveal), and the result is recorded "training records were / were not available". Then we move on to clause 100….

Audits can be conducted 'too shallow' or 'too deep'. Too shallow is the acceptance of superficial, low-level audit evidence, whilst too deep is the opposite – too much time spent on testing the control of trivial risk. Together, these lead to all sorts of unintended consequences, including at-risk systems being assured and/or too many low-level findings. My work (Asbury, 2018, Figure 7.7 and the associated text on book pages 216-23) illustrates this point and provides solutions.

I have witnessed internal audit reports that have presented 100 or 200 low-level findings for management to implement. In my experience, management is generally too busy for all that, and the report is filed, as discussed in my work (Asbury, 2018: 263-5). Auditors have dared not fail to report every detail of whatever it was they found. And the auditor notes that the audit programme is up to date and moves on to clause 101…

But the audit programme is sometimes not up to date. In my sometime role as a third-party (external) auditor, I commonly see that internal audits have been conducted 'just before' my visit. The H&S Manager tells me that 'this is probably what I want to see'. I invariably counter by asking whether the organisation and its stakeholders want assurance on whether the OH&S-MS is working effectively, or not…

2.8 Exploration of the research approach for example works

2.8.1 Pearson plc

Pearson says (2020) that it is the world's leading learning company. With head offices in London and New York, it employs over 52,000 people (over 40,000 direct employees and over 12,000 temporary employees) at over 1000 locations in 96 countries. Around 93% of employees are located in eleven countries - 63% in the US and the UK, and a further 30% in nine other countries: China, India, South Africa, Brazil, Australia, Canada, Germany, Hong Kong and Mexico.

In spring 2012, the plc board directed that a global health and safety implementation should succeed a plethora of national programs of varying content and quality. The VP, Insurance, Risk and Health and Safety ('VP') was appointed to lead and became the line manager of the country and regional Health and Safety Managers.

In summer 2012, the VP interviewed several health and safety providers from her insurance agencies and consulting firms, and selected Stephen Asbury as provider of external support. Consultancy advice was provided, followed by a research project, which was completed and reported as a case study in my work (Asbury and Ball, 2016: 75-9).

2.8.1.1 Pre-research consultancy

In October 2012, at my suggestion, the VP assembled a working party of 30 interested managers from Pearson businesses across the world as a focus group to collaborate in the development of a Group health and safety policy and management system standards. Regular telephone conferences were carried out November 2012 to February 2013. It was agreed that the policy and standards should align to BS OHSAS 18001:2007, ANSI Z10-2012 and AS/NZS 4801:2001.

Pearson in the UK was then externally certified to BS OHSAS 18001, and much of the global health and safety policy and standards were shaped from those experiences, with additional input from its US Injury and Illness Prevention Program called 'I2P2'.

In March 2013, the CEO endorsed the new statement of health and safety policy and management system.

2.8.1.2 Methodology

In spring 2013, I was commissioned by the Pearson Internal Audit Committee to undertake an independent audit of health and safety management in the Group. The assignment was conducted as a research project between April and June 2013.

The research methodology was based on phenomenal research with a progressive constructivist epistemology as described by Gray (2009) supported by Robson (2011). It was decided to follow

the principles set out by Glaser and Strauss (1967) and to research a substantive area comprising a sample of Pearson managers.

The sampling strategy was by criterion sampling (Gray, 2009; Robson, 2011) based on 39 client-selected individuals who were understood to have a role, knowledge and/or interest in OH&S. Consent to participate was sought from each, and there was nil declination.

Four research questions were developed, discussed and agreed with the client, and sent to participants one week in advance of scheduled interviews as follows:

1. How does your business manage its activities to safeguard the health and safety (minimise the risks of injuries and ill-health) of its employees?
2. How do you know that your business meets the applicable legal requirements for health and safety?
3. How does your business record and investigate incidents (cases of injury and ill-health), and how many incidents have been recorded in the last twelve months?
4. How is the senior management of your business involved in health and safety?

Data was collected from semi-structured telephone interviews, each lasting 45-60 minutes. These were conducted by me with each of the 39 individuals in sequence to identify the perceptions of these actors in the four research questions. These individuals represented 30 Group businesses in 39 countries, collectively employing 52,155 staff (then 89% of the Group total) as well as managing interfaces with third party contractors, students and the public.

Each interview was audio recorded and the files transcribed. Each transcript was sent to participant interviewees for validation with an opportunity to comment. Each participant confirmed the notes, some with minor, generally positive comments. A research diary (Robson, 2011) was maintained throughout.

The data was analysed by analytic induction (Robson, *ibid.*: 326), and interview transcripts were examined for relevance to the research questions. Data was broken down into units for content analysis, seeking common, special and theoretical classes. Selective coding (Robson, *ibid.*) identified core categories through which a story was reported.

The report provided the methodology and findings. It included as appendices the x39 anonymised interview scripts (presented anonymously as respondent A, B, C, etc.). It contained seven high-level recommendations covering content and class weaknesses derived from the findings. It was published internally by the Internal Audit Committee and accepted by the plc Board.

<u>2.8.1.3 Subsequent steps</u>

Following the research, the working party identified the benefits of a (proposed) document to share Group best practices, and some work was done to develop this. Many contributions were collected from around the world. The development of the guide was paused, while implementation of the standards progressed as a matter of greater urgency. Pearson anticipated that the best practices document would be further developed and published in the future.

<u>2.8.1.4 Incident rates</u>

The working party pressed hard for better, more-accurate reporting of incidents, and produced posters and other promotional materials. It collected data from all its facilities in the world on a six-monthly basis, and calculated total employee injury rates (all employees reporting any injury) per 100,000 employees for each six-month period:

- 1/11/2012-30/4/2013 = 743/100,000 (0.74%)
- 1/5/2013-31/10/2013 = 564/100,000 (0.56%)
- 1/11/2013-30/4/2014 = 720/100,000 (0.72%)
- 1/5/2014-31/10/2014 = 683/100,000 (0.68%)

These (low) rates are considered comparable with world-class organisations (Collins, 2001) in similar occupations if accurately reported (Stewart and Stewart, 2002; Geller, 2008).

<u>2.8.1.5 Conclusions</u>

In 2013, Pearson set mandatory OH&S policy and standards for all of its businesses in the world. These are owned by the CEO on behalf of the board and co-ordinated/promoted by the VP and her team. Effective leadership and a top-down approach have been shown to work across geographical, language and cultural barriers.

The UK business' (then) certification to OHSAS 18001, the management standards and reported performance in the USA and some other territories (e.g. Australia, Canada) assisted as benchmarks for other territories which did not have the same (or any) standards.

Pearson has demonstrated that setting, measuring and enforcing centralised standards has triggered engagement and some measurable improvements in its overall health and safety performance. As a measure of its success, Pearson plc collected a RoSPA Bronze Award in London for its occupational health and safety performance in 2014 on 16 June 2015.

> *We want to do all we can to protect our 52,688 employees, as well as our contractors, and quite literally millions of students in our classroom and virtual learning environments. Using our expertise from our 'best' territories, we can leverage improvements in our 'developing' territories. We look forward to developing and*

demonstrating our progress through many future years. Pearson is committed to high standards of occupational health and safety.

- Pearson VP, Insurance, Risk and Health and Safety (extract from Pearson's RoSPA award entry submission)

On reflection, I remain impressed by the journey travelled by Pearson plc between 2012-5. As a company it had identified deficiencies in its approach to managing OH&S and sought advice. Over a five-year period, driven by research (which I led) and performance evidence, it changed the perceptions and reality from an issue delegated to local management to an important issue appraised at plc Board level. I was as happy as the VP was on achieving the external recognition from RoSPA. I note its limitations in section 5.4.

2.8.2 Petros Barola

In sequence over eleven years, three client organisations (Astra Zeneca, Shell, PetroSkills) enquired the availability of *more-practical* OH&S training. I had been thinking about *different* OH&S training for some time, and these enquiries spring-boarded the development in series of andragogic learning materials over three distinct phases:

2.8.2.1 *Fawlty Contractors* for Astra Zeneca plc, 1995-6
2.8.2.2 *Atlantis Shell* for Royal Dutch Shell plc, 1998-2008
2.8.2.3 *Petros Barola* for the PetroSkills training alliance, 2006-16

The literature I discussed in section 2.6 confirms that adult learning materials should move learning away from a teacher-student to a more student-centred approach in which learners are active, rather than passive. Such learning should be interactive, participative, collaborative and based upon real-world examples and applications. My public works (Asbury, 2006-16) progressively applied those principles into the case study materials using evidence gathered from the respective organisations to create each scenario. This was important, because participants could recognise the issue or problem being raised as well as the solution this training was designed to provide.

2.8.2.1 Fawlty Contractors (1995-6)

From incident investigations, I identified that Astra Zeneca had significant basic and root causes of incidents including defects in pre-qualification of contractors, contractor selection, and setting to work including the use of permits to work. Working with a colleague, I began to formulate a scenario in which a storm-damaged roof should be repaired. I led the development of a suite of new case study materials – contractors' health and safety documents, tender documents, and method statements which would be used in a two-day collaborative knowledge-building class.

Working through the development of the materials, piloting and refining them, and being a part of a two-person teaching team for six deliveries at UK Astra Zeneca sites, I was able to establish that the materials were of good quality.

Through two class days, a sequence of events, changes to the work and ultimately an incident were introduced to participants through a 'play book' to create tailored constructivist learning opportunities. The practice of pre-planning for safe work was advocated, with learning supported by a discussion forum at the end of each day as advocated by Gilbert and Driscoll (2002). This allowed interactivity through the materials, but also with other learners allowing engagement with alternative viewpoints.

In line with action-based and iterative approaches, post-delivery evaluation highlighted three features requiring attention for future work:

a. The case study was too shallow – there was insufficient depth and breadth in the case study 'back-plot'. There were too many questions the tutors could not answer.
b. The approach was too ad-hoc – PDCA had not been incorporated in a sufficiently memorable and repeatable way
c. Comedy did not work – whilst I had assumed that *Fawlty (Towers)* / character names would add levity to the class, it constantly detracted from the learning message.

However, the client was satisfied, and the overall judgement was that the approach had been well-received, and the highly participative approach had developed the learning required. I was inspired to apply the results of this development and action research cycle in a new setting.

2.8.2.2 Atlantis Shell (1998-08)
Shell had a basic industrial case study called *Atlantis* for its auditor training class known internally as *EP-04* which I studied along with participants' feedback to identify strengths and weaknesses. It was owned by a training company, yet under-developed – for example, there was one main HSE-MS weakness (arising from an unmitigated spillage risk at a marine unloading jetty).

I identified some of the same issues from the *Fawlty* work – particularly the absence of structure in management systems (PDCA) and that the case study had insufficient depth and breadth. Using what had been learned from that first experience, I worked with Shell and the course owners to insert an OH&S (and environmental) PDCA management systems framework into the class, and to develop new strengths and weaknesses into a richer, more-detailed setting. To ensure that the case study was fit for purpose, it was necessary to evaluate its content with a range of practitioners whose input was valued. Action research and participant feedback provided evaluations during over 50 classes taught worldwide between 1998 and 2008.

Reflecting now (2020) upon the revisions agreed and implemented at that time, I believe we were right to retain the established Atlantis Shell identity in the scenario, and to build upon what was known. I learned from prior participants' feedback, and this helped me to focus the revised materials onto identified needs.

2.8.2.3 Petros Barola (2006-16)

PetroSkills www.petroskills.com is membership competency provider to c.30 leading oil and gas companies. In 2006, PetroSkills advised that it wanted to add a suite of OH&S training programmes to its existing 28 technical disciplines (well construction, reservoir engineering, etc.). PetroSkills concurred with my view that the modern world of work required a learning context in which participant OH&S practitioners can learn and practice their skills.

My company tendered successfully to be the provider, citing and presenting the evidence of our previous experience and expertise in developing andragogic learning materials. We had (for example) learned how to overcome the difficulties pointed out by Salmon (2002); that the world of work cannot be easily recreated in the classroom.

Learning was applied from the research conducted through the two earlier case study developments since 1995. I followed the advice set out by Genn (2001) – that "…students' experiences of the climate of their … education environment is related to their achievements, satisfaction and success". Illuminative evaluations were obtained from stakeholders i.e. PetroSkills' member curriculum advisers (CA) and member subject matter experts (SME) and from a wide range of other persons involved in the learning experience to elicit the required improvements in the learning process. These evaluations were repeated at regular CA/SME meetings. Cognitive theorists (such as Hopson, Simms and Knezek, 2001) place great importance on thinking skills; the guiding principle was that learners were active in the learning process, drawing on their experiences to construct knowledge.

Petros Barola was developed to reflect the specific learning needs of learners from the oil and gas sector. Ideas for 'risks' to be mitigated and managed came from evidence provided by PetroSkills' members and clients, and the suite of materials was developed extensively to cover a very broad cross-section of HSE issues both on- and off-shore. Appendix 2 on page 223 summarises the three *Petros Barola* case study organisations, with extracts from my public work (Asbury, 2006-16) reproduced herein Appendix 8 providing examples of the actual materials.

Over the time period covered by this context statement, over 15,000 adult participants from over 40 countries attended OH&S/MS/auditor training classes provided using the *Petros Barola* case study. Example participant feedback is contained within my book (Asbury, 2018: 359-61, *Comments from class participants*). All feedback was used to continuously improve the works.

2.9 Contribution and impact: theme 1

I have presented and contextualised eleven public works in support of my first theme. These works provide the following contributions to practice and where indicated, to knowledge:

2.9.1 Management system auditing

2.9.2 Developing OH&S-MS and example implementation experiences

2.9.3 *SafetyCheck* app

2.9.4 My advice to IOSH and ISO / PC283

2.9.1 Management system auditing

From a background of teaching auditors, from the gaps and weaknesses seen in practice, and from a feeling that 'there is a book inside me' (and encouraged by Shell to write it), I presented my thoughts to the world's largest publisher of related technical titles – Elsevier Reed. Ideas and the target audience were explained. There was no competing title aligned to risk-based management systems thinking (PDCA) and ISO 19011, and this proved attractive to an academic publisher.

This work was organised to reflect the necessary steps in the conduct of a technical audit with (for the first time) benchmarks for the time to be used in each step. To simplify these steps and create a powerful and memorable experience of the auditing process, two sequential auditing models (one for the first book, and an evolution of this for the second and third) were developed for conducting such an audit in the approach presented by ISO 19011. My works have made *doing an audit properly* the norm in some huge inter- and trans-national organisations.

Originally working alone on this work (in my work Asbury, 2005), and later adding an auditor-trainer colleague as co-author, a metaphorical 'roller coaster' idea was worked up into the fully-teachable and implementable *Audit Process Roller-coaster* model (in my work Asbury and Ashwell, 2007) to reflect the dynamics of the auditing process – a high-level understanding of the business environment (aka *Context*), progressing into detailed audit sampling, returning to a high-level, future-focussed conclusion. The latest version of ISO 19011 (2018b) embraces the risk-based approach commended by the works (Asbury, 2005; Asbury and Ashwell 2007; Asbury 2013a; 2018). That metaphor was later revised and improved by me alone to become *The Audit Adventure* (in my work Asbury, 2018: 157-68). This development was informed by and built from six years' experience of teaching and using the original method (in my work Asbury and Ashwell, 2007) within Shell and at other clients' (Chevron, Saudi Aramco, RasGas Qatar Petroleum, Repsol) premises around the world. Prior to my second auditing book (Asbury, 2013a), the new model was piloted in a sector magazine (in Asbury, 2013d – not submitted). Feedback was collected from a sample of subscribers and other reviewers and used to refine the presentation of the model.

All three editions of the book in turn have sold well around the world (including having achieved Amazon 'best-seller' status in their category for periods in Australia, South Africa, the USA and the UK).

These auditing works reflect and present the four main stages within ISO 19011:

- Initiate
- Prepare
- Conduct
- Report

For reading, and in my training classes, *The Audit Adventure* is taught in a memorable way using this method (please see my work Asbury, 2018: 157-68). Learning points are illustrated in multiple case studies assimilated through multidisciplinary approaches (Choi and Pak, 2006) throughout the book. In live training classes, participants conduct a five-day real-time audit at *Petros Barola Ltd* (my work Asbury, 2006-16) with this methodology embedded throughout.

Briefly, adult participants (Knowles, 1984a; 1984b; Knowles, Holton and Swanson, 2005) work in audit teams of six, each team lead by a lead auditor, to conduct every element of an audit. Commencing with audit preparation (see my work Asbury, 2018: 169-97) and an opening meeting, the class teaches and verifies *The Audit Adventure* methodology from Asbury (2013a; 2018) throughout the live case study experience at the Petros Barola facility in a five-day training course.

There are generally three instructors for each cohort of eighteen participants. Instructors conduct role-played opening and closing meeting with senior management (see Figure 13), as well as role-played interviews with managers, supervisors and workers. They act as lead auditors to assist their teams of six to create a risk-based work plan (in my work Asbury, 2005; 2007; 2013a; 2018: 187-91; ISO, 2018b), and to review and test the operation of the management system THROUGH / PDCA its continuity of control (in my work Asbury, 2018: 202). The work plan (in my work Asbury, 2018; 187-92) helps the auditors stay on track (*ibid*. 160, 200-05). Understanding '*Gemba*' (*ibid*. 198, 210) assists auditors to obtain the level of detail necessary to assure control. A '*Nemawashi*' approach to audit findings (*ibid*. 269) is recommended to assist auditors to 'sell' their findings and any changes they may recommend in advance of the live closing meeting.

My book (Asbury, 2018: 136-7) presents a powerful case study (*Escorted off the premises*) illustrating what can happen if this latter approach is ignored.

Figure 13 – Class participants meet *Petros Barola* senior management
NB Stephen Asbury is seated, right, role-playing Depot Manager Les Forrest

The risk-based approach to auditing arising from my public works has been adopted into the auditing practices of numerous organisations around the world including original client Shell, Chevron, RasGas and Saudi Aramco; this latter one of the world's largest organisations by valuation (WSJ, 2016b) and the most valuable listed company in history (Guardian, 2019). Over 10,000 OH&S (and other) client aspiring/auditors around the world have attended my classes. There are also regular public classes in London, UK and Houston, Texas, USA.

An additional contribution arising from these works is that this OH&S/E auditor training course (which is associated with and based upon the public works) uniquely secured the technical approval and certification rights from both IOSH and IEMA (CRS, 2017). This widens knowledge of, and access to, the new practices.

2.9.2 Developing OH&S management systems and implementation experience

2.9.2.1 McDonald's

Early in my consulting career, I worked with the Director, Insurance and Safety ('The Director') for the McDonald's company (including travelling with him and his insurance broker for 29 days in Europe and Asia) to develop and share an OH&S best practices guide (see my public work Asbury, 1997) for international restaurant operations. Prepared with an accompanying set of presentation materials, this set of new knowledge and best practices remains in use in over 34,000 McDonald's restaurants around the world to protect the safety of 1.1m people employed (and 1.3m more recruited each year to maintain that employment level) and 68 million customers served every day (Fiscal Times, 2012); this represents about 1% of the world's population.

The unique contribution to restaurant practices arises from on-site research, published to share and add to approaches to reduce staff and public injuries. The Director endorses my works in the forewords to my audit books and confirms the specific contribution of my work (Asbury, 1997) in Appendix 5, pages 231-2 of this context statement.

2.9.2.2 Formula 1

I have researched and published many articles for specific business sector publications expressing the benefits of OH&S management (listed in Appendix 3). Example works include my review of the improvements in F1 motorsports 1895-2007 (please see my work Asbury, 2007). That review of the contributions of safer practices to the led to my report and recommendations commissioned by the sport which led to the elimination of in-race refuelling.

This prohibition, recommended in my report, was implemented in the F1 Sporting Regulations (i.e. the rules) in 2010. Despite early resistance, team principals have voted unanimously to continue it (Autoblog, 2015).

This unique contribution resulted in the absence of in-race pit lane fires and resultant injuries for ten seasons (i.e. ten years) since this prohibition was implemented. Please see section 4.13.3 of this context statement for a more detailed description of my contributions to in-race safety.

2.9.2.3 Petros Barola

As I have described, between 2006 and 2016, I developed the comprehensive and multi-faceted andragogic (Knowles 1984a; 1984b) learning system (in my work Asbury, 2006-16; summarised in Appendix 2) for use as the 'golden thread' through all of the HSE classes provided by international oil and gas sector competency and training provider PetroSkills (www.petroskills.com).

As a constructivist, and following the literature I have studied and presented, I favour embedding learning into the world of real work. The *Petros Barola* case study was progressively developed to reflect this. Over 15,000 adult training participants (10,000 auditors and 5,000 management system implementers) were exposed to challenges in Petros' business environment and encouraged in teams to solve them. These are the cornerstones:

- Pre-course reading with business plans, business objectives and a detailed description of the business *Context* (external and internal environment, needs of interested parties)
- Photographic and videographic site familiarisation tour
- Organisation chart and employee job descriptions
- The Petros Group OH&S-MS, which is built around PDCA / ISO 45001
- Role-play interviews with Petros senior and junior staff

- Scenarios for discovery, engagement, debate and discussion by participants
- Opening and closing meetings, where methodology, findings and recommendations are presented and (vigorously) challenged by Petros senior management (see Figure 13)

Each delivery sets management system and audit scenarios commensurate with the learning objectives (for example, re-contracting road transport deliveries, internal cleaning of fuel storage tanks, refurbishing the sea jetty, and so on). My contributions have provided robust OH&S-MS and auditing methodology to OH&S managers (and others), particularly those in the onshore and offshore oil and gas sector, by introducing a learning and development case study tool to the industry. It enables real-time practice of MS implementation and auditing, including the correct use of ISO 19011 (which itself was revised in July 2018 to align to the public works). The new practices and the new knowledge learned is used by participants to save lives in hazardous on- and off-shore environments. Sample course participants' feedback is provided within my work (Asbury, 2018: 359-61).

2.9.2.4 RasGas (Qatar Petroleum)

PetroSkills' client *RasGas* is the world's largest producer of natural gas and the second-largest producer of helium. It is also one of the safest (PR Newswire, 2013; OGME, 2016). My public work (Asbury, 2006-16; 2018) forms the basis of *PetroSkills* OH&S competency development training classes which were developed from my works. Classes for RasGas are case study based and use the *Petros Barola* suite – represented as *Petros <u>Ras</u> Barola* to reflect the region.

The origination of this class followed attendance by the RasGas OH&S Manager an Applied HSE-MS class I delivered in Houston in 2010. My materials were bespoked to the client's *RGEE* (RasGas Elements of Excellence) standards, and three pilot classes were delivered by in 2011. Since then, I have led 45 classes attended by over 1200 participants. Class attendance has been over 97%.

Today, RasGas is recognised by IOGP (a grouping of c.40 leading oil and gas companies) for its sector leading FAR, LWDC and TRIR (incident) rates.

The works provided the opportunity for RasGas to use the *Petros Barola* learning system and *PDCA-for-OH&S* in teaching of over 40% of its workers, resulting in sustained zero employee fatalities and fewer injuries since this use (PR Newswire, *ibid.*; OGME, *ibid.*). Naturally, I do not claim that the low incident rates are wholly the product of such training – but the client continued to perform at an exceptional level throughout the period covered by this training.

2.9.3 *SafetyCheck* App

I have been an interested observer of OH&S-MS implementations for over 35 years. Over this time, I have seen many times how managers have struggled to know where to start and how to get to grips with the clause-by-clause – apparently linear - requirements of such a system. These observations informed the development of an app for iOS and Android called '*SafetyCheck by CRS*' (see my work Asbury, 2014; where CRS was the initials of my former company). I will summarise its creation, main functionalities (and please see Figure 14), distribution and finally, its fate.

My observations informed the specification for the tool, and it followed the (then) OH&S-MS standard OHSAS 18001. I researched and identified a development partner (SockMonkey http://sockmonkeystudios.net) and agreed a development schedule and budget. A specification was provided, and as a new business, they were enthusiastic to deliver (my company CRS was their first customer). The lead developer and I were the alpha testers. In the first three months of 2014, we conducted beta trials with 34 employees and associates of CRS along with a small number of selected client-contacts to determine final functionality. Naturally, not everyone took the same view, but it was built upon broad consensus, with further improvements incorporated progressively as a result of users' feedback following its launch.

In creating the legislation finder functionality, it was identified that National Archives and HSE used fixed links to their webpages, such that when legislation and guidance is revised, the embedded page link remains unchanged. Over time, this would be validated, and links requiring updating would be corrected in subsequent revisions and updates to the app. Our design planned for this in its inbuilt design functionality (Ottensooser, 1996). Likewise, functionality is by its very nature something that belongs to the receiver i.e. that it is functional to them, and experience of use can cause expectation to change. In these regards, Ottensooser (*ibid.*) provides patented method for determining functionality of a software system. It resonates with Jansen, Finkelstein and Brinkkemper (2009) who advise that software vendors may lack the perspective to develop software within the recognised software ecosystem, noting that this inability has already led to the demise of software vendors, loss of competition and of intellectual property.

To provide the widest-possible access to my software public work (ibid.), I made it available as a free download from the Apple *App Store* and *Google Play*. It proved extremely popular with a large number ('000s) of downloaders/users. I cannot provide an exact number.

I sold CRS (including the intellectual property in this app.) on 27/6/2014 and became unable to influence its development after this. It remained available from app. stores as version 1.2, 30/7/2014, until 2019 when CRS was liquidated. I had expected that CRS would revise it at regular intervals going forwards, and certainly, with different events, I would certainly have developed this tool further to extend its longevity – particularly to reflect ISO 45001:2018.

The app. had <u>two</u> main functionalities as can be seen in the screenshots in Figure 14 from the *App Store*. These are described in sections 2.9.3.1-2.
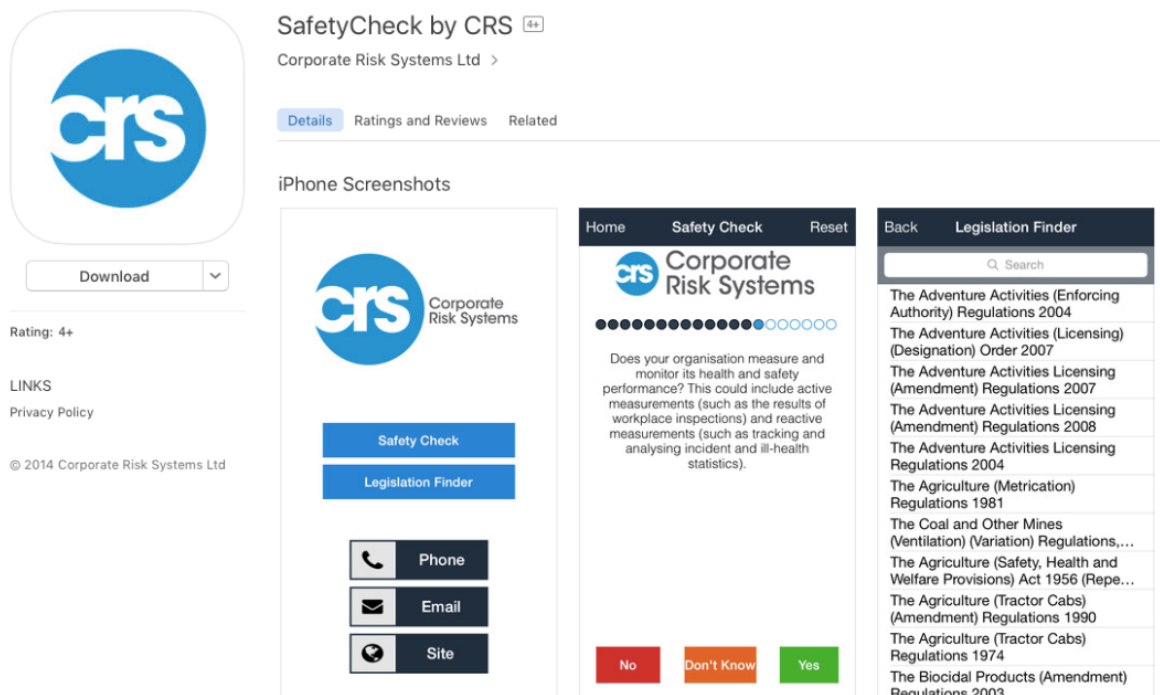
Figure 14 – *SafetyCheck by CRS* – as available from the Apple *App Store*

2.9.3.1 Function 1 – SafetyCheck

A series of questions (aligned to OHSAS 18001, please see the second screen shot) are responded to Yes/No/Don't Know by users, which result in a report highlighting strengths and weaknesses in the current arrangements, as well as tips for improvement.

The report text was pre-built based on respondents' responses to each question, and e-mailed to them upon completion of the questions. It provided free access enabling those wanting a baseline review and subsequent development guidance.

In any resurrection of this app., this function should be updated to reflect ISO 45001 now that this has been published.

2.9.3.2 Function 2 – Legislation Finder

Links to all current UK H&S laws are presented as a Legislation Finder (see Figure 14, third screenshot). This was based on word-search functionality with links to the applicable pages of .gov and .hse websites. For example, a search for 'Electric' hyper-linked the user directly to the Electricity at Work Regulations and HSE guidance on electrical safety. I shall refer to this functionality again in chapter 4 of this context statement, section 4.6 *Legal requirements for risk assessment.*

My contribution to practice and to knowledge arising from this app was the design, test and launch of a tool which simplified understanding of *HASAWA* and *MHSWR* requirements for an OH&S-MS for a non-technical audience. Its platform was later copied by other software companies.

This public work increased accessibility to what was required for an effective implementation. I linked this to focussed and accurate connections to relevant laws and guidance. To implement an effective OH&S-MS and reduce fatalities, injuries and ill-health caused by work, top management must WANT to control variation in its operations, and the app. provided a free tool to highlight areas of strength as well as opportunities to deliver this.

2.9.4 Advice to IOSH and ISO/TC 283
My written advice (please see my work Asbury, 2016a – annotated by IOSH) provided to the Institution of Occupational Safety and Health (IOSH) and the International Standards Organization (ISO) on DIS/ISO 45001:2016 was derived from my works in this theme and from 35 years' experience of implementing and auditing OH&S-MS around the world.

The contribution from my work influenced the presentation and content of the first-ever externally certifiable international management system standard for OH&S, ISO 45001:2018.

IOSH recommended to ISO that my work (Asbury, 2013a) should be added to the bibliography of their new standard when published (see my work Asbury, 2016a; final line, page 5 of 5 / Appendix 8, section 8.1, page 253).

2.10 Impact summary: theme 1

The culmination of the influence and impetus of my public works in this theme was the publication of ISO Annex SL in 2012 and the revision to ISO 19011 in 2018. The former required all MSS owned by ISO to follow a common high-level standard aligned to PDCA. This was later followed by HSE and others.

My public work *SafetyCheck* app (Asbury, 2014) provided a free tool to benchmark an organization's' OH&S-MS performance.

I provided IOSH's input to the development and acceptance of ISO 45001 (please see my work Asbury, 2016a), subsequently published on 15 March 2018. IOSH recommended to ISO/TC 283 that my work (Asbury, 2013a) should be added to the bibliography when published.

The revision to ISO 19011 (ISO, 2018b) embraced the risk-based approach which had been advanced by my public works since 2005.

The Audit Process Roller-Coaster methodology in my work Asbury and Ashwell (2007), revised as *The Audit Adventure* in my work Asbury (2013a; 2018), provides the benchmark standard for risk-based MS auditing in any organisation, aligned to ISO 19011. This work has been adopted by Chevron, Pearson (case study 3.2 in my work Asbury and Ball, 2016), Shell (which led to my work Asbury and Ashwell, 2007), RasGas and other organisations within their own OH&S-MSs.

McDonald's adopted my advice (see my work Asbury, 1997) at its global restaurants.

The companion training to my work (Asbury, 2018) was and remains the only IOSH- and IEMA-approved risk-based auditing class. It is set in the *Petros Barola* learning suite (see my work Asbury, 2006-16) and had been attended by 15,000+ participants as at the end of 2020, and participants continue to attend. [A fourth evolution of this andragogic case study is now included in the PetroSkills HSE training suite].

The requirements of clients - starting with McDonald's Corporation and Shell plc - influenced the way the works were prepared and the form in which they were published.

Two (groups of) contributions to practice and knowledge provide methodology for a technical, risk-based audit aligned to ISO 19011, and a series of guides for clients, regulators, ISO and others with interest in managing variation (Drucker, 1970) in OH&S performance.

3. PROFESSIONALISING OH&S PRACTICE

Engagement and influence, strategy and planning, sustainable business and technical capability are the core skill groups against which you will measure yourself. They reflect the broad range of competencies from technical knowledge and skills to good management and leadership that you will require as your OSH professional career develops.
- IOSH (2017a)

1. Applying management theories to OH&S

2. Professional-ising OH&S practice

3. Clarifying 'dynamic' in the context of risk assessment

3.1 Preamble

There are two parts within this theme which I will explain in section 3.2 and then address in turn. In sections 3.3-3.6, I will position and contextualise my public works which led to the grant by Privy Council to the Institution of Occupational Safety and Health (IOSH) of a Royal Charter and thereafter the recognition of OH&S as a profession (or semi-profession). As part of this, I will explore the body of literature to provide an exposition of the key terms: *profession*, *professional*, *professionalism* and *professionalising* which are used within this context. My research approach for this part is set out in section 3.7, together with an expose of the approach adopted in section 3.8.

Then, in section 3.9, I ~~will~~ position and present my works which allowed IOSH members to broaden their role and professional skills to include corporate social responsibility (CSR) as part of their continuing professional development (CPD). My reflective appraisal of the research approach(s) employed is signposted in section 3.10, followed by an exploration of the research approach adopted in section 3.11.

Finally, I present my contributions to practice arising from my public works in this theme in section 3.12 with an impact summary in section 3.13.

3.1.1 My journey to lead the professionalising of OH&S practice

As I have said, my MBA (1992-5) included the completion of a research project. I selected *A Study of OH&S Practices in Small Engineering Firms* (reported in Asbury, 1995 – not submitted) as I knew that regulator Health and Safety Executive (HSE) had an interest in health and safety at Small and Medium Sized Enterprises (SME), and I had access to a sample via my occupational contacts at that time.

I was trying to show that the approaches I had advocated in my three OH&S management jobs between 1984-1995 had wider applicability in a substantive area (Glaser and Strauss, 1967) of interest to the OH&S regulator and others. With this in mind, I approached HSE and the Institution of Occupational Safety and Health (IOSH) to seek support. In both cases, I was surprised by the (high) level of interest in my research proposals. A copy of my thesis (Asbury, 1995 – not submitted) was provided to the library of each organisation at the time of its completion.

The interaction with IOSH in particular would prove life-and-career changing for me, particularly over the 1994-2013 period:

- I was invited to join the IOSH Continuing Professional Development Sub-Committee (CPDSC) in 1994, and became its Chair the following year
- My MBA was accepted by IOSH for full membership of the Institution in 1995
- I was elected by a ballot of IOSH members to its Council of Management in 1998. I was re-elected in 2001, 2004, 2007 and 2010, and I served in a variety of roles until 2013
- I chaired IOSH Professional Committee for thirteen years in three periods between 1998 and 2013, leading the body on all of its professional affairs, including membership, CPD, Initial Professional Development (IPD) and the grant by Privy Council of a Royal Charter
- I was appointed a trustee of the IOSH charity (1998-2003) and a statutory director of the IOSH company (2004-08)
- I co-authored IOSH's book on Corporate Social Responsibility and its second edition (my public works Asbury and Ball, 2009; 2014)

Within IOSH, I was surrounded by OH&S specialists and experts, and I listened to them in meetings, at conferences, and at lunch. Some days, it felt like a deluge of new (mainly monodisciplinary) learning. The change I instigated, from this monodisciplinary focus to a broader one, is central to my output. For twenty years (1994-2013), I was at the centre of IOSH membership policy and practice, which provided opportunities to introduce, advocate and implement multidisciplinarity, interdisciplinarity and transdisciplinarity learning (Choi and Pak, 2006). As I shall describe, the IOSH membership structure, Initial Professional Development (IPD), Continuing Professional Development (CPD) and the Code of Conduct suite span so much more than 'health and safety'.

In the transformation of IOSH from a small, certificate-entry, inward-looking body for safety officers, to becoming the world's largest degree-level entry professional body for OH&S that had been awarded a Royal Charter by Privy Council, it was necessary for Professional Committee to understand what a profession was (Webb and Webb, 1917), the characteristics of a professional (Larson, 1978; Brown, 1992; Perks, 1993), what a membership of such a professional body

would constitute, and thereafter recognition of OH&S as a profession or a semi-profession (Prest, 1914; Etzioni, 1969; Toren, 1972; Johnson, 1972; Evans, 2015; AACTE, 2018).

I wanted to consider the need for the inter-relatedness, and integration of theories learnt outside of OH&S into the future practices within my profession. Between 1994 and 2013, I progressively led IOSH to review members' professional development (CPD/IPD), membership and governance practices of other professional bodies including accountancy, law and healthcare to draw on knowledge from different disciplines, into a coherent whole and to transcend their traditional boundaries. My ability to influence IOSH Council to endorse the necessary changes over this time was critical. Research by the Professional Associations Research Network (PARN) at the University of Bristol on CPD (in Friedman and Philips, 2001) confirmed that this work was thought-leading.

Hale and Harvey (2012) explain how the research and knowledge which arose from my published works for IOSH throughout this period were adapted and adopted as new practices by ENSHPO (the European Network of Safety and Health Practitioner Organisations) for transportable OH&S qualifications for OH&S practitioners in Europe.

3.2 My outputs related to this theme

My overarching public works related to this theme comprise two published books, a paper for the IOSH members' magazine and four other public works for IOSH.

In this context statement, I will focus on:

3.2.1 Outputs related to IOSH membership, CPD and IPD
3.2.2 Outputs related to Corporate Social Responsibility

3.2.1 Outputs related to IOSH membership, CPD and IPD
The works in this theme include:

- IOSH CPD policy and standards (my work Asbury, 1994a)
- IOSH Competency and membership frameworks (my work Asbury, 2001)
- IOSH IPD policy and standards (my work Asbury, 2010a)
- IOSH Code of Conduct, Guidance and Disciplinary Procedures (my work Asbury, 2013b)
- An examination of the remodelled IOSH Code of Conduct (my work Asbury, 2013c)

The first two works prepared by me discussed in this chapter (Asbury 1994a; 2001) were used by IOSH as key components in its submission to secure its Royal Charter in 2003. They also led to Privy Council's permission for IOSH to confer Chartered status on its members from 2005. My works on IPD (Asbury, 2010a) completed the present IOSH membership structure, and the revisions to the Code of Conduct (my works Asbury, 2013b; c) completed its membership regulatory arrangements.

My statements here are verified by Rob Strange OBE, IOSH Deputy Chief Executive 1997-2001 and Chief Executive 2001-13 in Appendix 5 (please see page 230).

By 2010, IOSH had evolved to become the world's largest health and safety organisation (IOSH, 2016a; Peach *pers comm.* 2016; IOSH 2020a).

3.2.2 Outputs related to Corporate Social Responsibility

Prior to 2009, there had been considerable interest within IOSH in developing and recognising an approach which demonstrated the benefits available to OH&S practitioners and their employing organisations from learning about corporate social responsibility (CSR) through a structured process of reflective learning.

The public works on CSR in this theme (Asbury and Ball, 2009; 2016) advise those seeking or needing to broaden their role and professional skills built upon such an approach. The works provide a process for structured reflective learning about CSR in a series of *Test Your Thinking* exercises. My book (Asbury and Ball, 2009) was the first - and so far the only - book on CSR endorsed and published by IOSH.

In 2009, this same work was adopted by IOSH to provide the syllabus and content for its members' professional development via its CSR CPD training course.

3.3 Professions, semi-professions and professionalism

3.3.1 Professions

The first part of this chapter seeks to highlight my role through engagement and public works in the professionalisation of the occupational health and safety profession. In order to do this, it is important to explore the literature and provide some degree of definition to key terms.

A profession ('Profession') is a vocation founded upon "specialized educational training, the purpose of which is to supply disinterested objective counsel and service to others, for a direct and definite compensation, wholly apart from expectation of other business gain" (Webb and Webb, 1917: S1). Medieval and early modern traditions recognised just three learned Professions: divinity, medicine and law (Prest, 1914; Lynn, 1963; Buckley and Buckley, 1974; Perks, 1993).

The Industrial Revolution caused a rise in the number of recognised Professions, with scientific and technological development providing new techniques in disciplines such as surveying, architecture and dentistry (Johnson, 1972). The rise to power of an urban middle-class provided expanding markets for various services that had hitherto been restricted to the upper stratums of society. Creation of colleague-controlled institutions of practice added to the occupations already associated with its aristocratic patrons and known as 'the gentlemanly Professions'.

Eraut (1995) describes the gradual transition from a situation where competence was a concept devised by Professions to justify qualifying examinations (i.e. by excluding unqualified practitioners) to one where it is used by governments to justify control over practitioner licensing and public expenditure (limiting autonomy to safeguard the interests of the public). Eraut's (*ibid.*) observations are consistent with what will come fifteen years later with the recommendation for and launch of the Occupational Safety and Health Consultants Register (OSHCR) (Young, 2010), discussed in section 3.8.3.

The power of knowledge is not based on physical might. According to Corfield (1995), knowledge depended upon societal acceptance of its claims. The dignity of the Professions was thus not sustainable if public interest in professional services, and acceptance of their powers, faltered. The Professions can be challenged (discussed in section 3.3.3).

3.3.2 Semi-professions

Corfield (1995) provides a historical and sociological expose of the professions and professional classes up to the industrial revolution. Subsequent to this there has been an exponential growth in employment groupings seeking to claim a professional status. As Corfield (*ibid*.) highlights, the concept of recognising a Profession stems from a societal acceptance and as such the concept of a wider body of semi-professionals arises.

A semi-profession (Etzioni, 1969; Toren, 1972; Arfken, 1998; Hiscott, 1998; Krejsler, 2005; Witz, 2013) is an occupation that requires advanced competency, but may not be widely regarded as a 'true profession' in line with Corfield's (1995) position. Examples of semi-professions include social work (Toren, *ibid*.), teaching (Etzioni, *ibid*.), nursing (Hiscott, *ibid*.; Gordon, 2006; Ayala, 2020) and journalism (Witschge and Nygren, 2009). Semi-professional fields can have less-clear-cut routes and fewer barriers to entry than traditional professions, and practitioners often lack the control over their work exhibited by (say) doctors or lawyers. However, in many cases, such semi-professions have created mechanisms for entry, standards of knowledge and behaviours, and usage of a professional title, so as to distinguish themselves from the untrained (Mathews, 2017).

Krejsler (2005) identified four groups of semi-professionals (teachers, pre-school teachers, nurses and social workers). From an epistemological point of view, the paper explores how analytical strategies can frame what it means to be 'a Professional'.

Trappenburg and van Beek (2019) report how professional status can also change. Social workers in the Netherlands feel, they say, that their profession is being degraded as lay people and volunteers take over their work. They feel unable to resist this development, because resistance might get them sacked. Some social workers, they say, even enhance basic de-professionalization because of their willingness to continue working retired, or as volunteers.

There is an historical identity of the semi-professions as 'women's work' (Arfken, 1998) which has extended prejudices regardless of the level of skill involved. Witz (2013) explained how class and gender have interacted in complex ways to produce hierarchies of power and prestige in professional work.

The precise designation of professions and semi-professions is a contested area, for example, as it relates to nursing. Gordon (2006) reflects on over 100-years of doctors "fighting for an organised monopoly" over healthcare. This monopoly gave state control and thus the right to control the other clinical disciplines, such as nursing. According to Friedson (1970), legally and otherwise, the physician's right to diagnose, cut and prescribe is the centre around which the work of other occupations swings and the physician's authority and responsibility in that constellation of work are primary. Hiscott (1998) rehearses (without answering) the arguments for and against the degree of competence and professionalization in nursing. A similar debate exists related to journalism (Witschge and Nygren, 2009), who report that the changing nature of journalistic work is affecting the way it is perceived, its roles and the autonomy of journalists which is disrupting the established professional status. It is likely that a similar debate on whether OH&S is a professional or semi-professional group (Evans, 2015; to a group of Australian OH&S practitioners, also unanswered) would be equally contested.

3.3.3 Challenge to professional status

In their research of social workers, Trappenburg and van Beek (2019) reported how professional status can change. Professional status of even the primary Professions has been challenged. For example, Light and Levine (1988: 10) reported that while trust and respect in physicians remained evident, malpractice suits abound. They restate Arney's (1982) position that "the character of medical work has become so complex that it threatens to make physicians an appendage to rather than master of their technology". Chopp (2017) discusses the implicit cultural bias in the legal profession arising when lawyers routinely represent clients with backgrounds and experiences vastly different from their own, and how these can impede communication and thus effective representation. In her book *Putting Trials on Trial: Sexual Assault and the Failure of the Legal Profession,* Craig (2018) is deeply critical of lawyers, commenting that the trial process remains deeply harmful for many of those who allege sexual violation.

Challenges to OH&S practitioners was a key part of my motivation for seeking to professionalise the safety Profession.

3.3.4 The development of the Professions

According to Lynn (1963), considering the impressive percentage of gross national product spent on educating professionals, there has been little study of the historical development of the Professions. Challenging Lynn's view thirty-seven years later, Neal and Morgan (2000) take a comparative historical perspective of the stages through which occupations in the UK and Germany developed into the recognised Professions of today.

Neal and Morgan's review (*ibid*.) identifies that the process of professionalisation has been different in these two countries, particularly as regards the role of the state. In Germany, they (*ibid*.) report that the state has had an active, interventionist role in the initiation and administration of the professions, whereas in the UK the process has been 'bottom up' in that professional bodies have resulted from activities at the occupational level to secure professional status. This latter position aligns with the work Professional Committee carried out for IOSH in securing its Royal Charter.

In Europe from 2005, trans-national regulators became more involved in 'the Professions', providing Directive 2005/36/EC and a definition. According to the European Union (EU, 2005), a Profession is one "practiced on the basis of relevant professional qualifications in a personal, responsible and professionally independent capacity by those providing intellectual and conceptual services in the interest of the client and the public".

Self-protectionism within professions has been considered for more than one hundred years (Shaw, 1906; Golembiewski, 1983; Phillips, 2004; Catto, 2005; Narvaez, 2016). Shaw (*ibid.*) regarded professionalism a form of protectionism saying that "all professions are conspiracies against the laity". Golembiewski (*ibid.*) by contrast regarded professionalism as "hopefully… the prescription for what ails our organisational society". His analysis pointed out the conditions that influence a critical balance between performance and protectionism. Lord Phillips of Sudbury (Phillips, 2004: 313*)* provided [for me, leading IOSH in these matters] a definition of professionalism which resonated in this regard:

> "It seems self-evident to me that the essence of professionalism is to be able to call upon the honour, probity and principled-judgement of the practitioner. A self-respecting, fully-functioning profession would surely profess just that, and deal with the inevitable failures".

Catto (2005) emphasised Phillips' (*ibid.*) position, commenting on the alternative to professionally led regulation as being "a rising mass of codified petty regulation, swollen by the need for rules to enforce rules and counter their avoidance…". The debate continues – 110 years after Shaw (1906), Narvaez (2016) picked up the debate on the intricacies of balance will be between performance and protectionism. Some of those issues, such as the separation of awarding bodies (e.g. NEBOSH) from the professional body (e.g. IOSH) had been completed prior to my tenure – see Figure 15 on page 97 for the timeline of related events.

In his *Essays on Professions,* Dingwall (2008) identifies how national professional bodies can distort labour markets and create barriers to free trade, restating one of Adam Smith's most-celebrated criticisms – that such bodies are conspiracies against the public or contrivances to extract excess profits. Dingwall (*ibid*.) proposed that deregulation of labour markets is critical for success in global markets saying that global professions should not sit alongside a single state-like entity, but form part of a network of international bodies involved in regulating, co-ordinating and managing economic activities and political risks.

The debate on how to define a Profession is contested. As a case in point, Saks (2012) highlights the importance of resurrecting the debate on how to define same, while Evans (2015) supports Evetts' view (2013) that '[D]efinitional precision (about what is a profession) is now regarded more as a time-wasting diversion'. Evetts (*ibid*.) adds "…that to most researchers in the field, it no longer seems important to draw a hard and fast line between professions and occupations but, instead, to regard both as similar social forms which share many common characteristics".

3.3.5 Professionalism and being a professional

Whilst many enquiries on 'professionalism' consider one Profession at a time, Abbott (2014) considers the system of Professions as a whole, noting "the spread of professionalism throughout the occupational world".

According to Campbell and Taylor (2019), professional performance depends upon favourable client reactions. They provide a lexicon of positive words in defining a professional: Trustworthy, Competent, Respectful, Act with integrity, Considerate, Empathetic, Courteous, Dependable, Cooperative, Committed, Approachable, Supportive, Accountable.

Pointing out that common definitions of professionalism (along with etymological derivatives, such as Profession and professional) relate to something desirable; merit-laden; something commendable and praiseworthy; something to pursue and to claim; and something whose loss is regrettable, Evans (2015) argues that amongst researchers, professionalism is a contested concept, and that "no-one has emerged as the current guru on what it means today". She identifies a list of nine characteristics of 'being a professional' which I will consider with others (including Perks, 1993 and AACTE, 2018).

Despite the debate, there is considerable agreement (Larson, 1978; Brown, 1992; Perks, 1993; Bullock and Trombley, 1999; Evans, 2015) on the defining features of a Profession.

According to Larson (1978), Professions have "a professional association, licensing, work autonomy, colleague control and a code of ethics". Brown (1992) supports Larson, saying that members of a Profession are "workers whose qualities of detachment, autonomy and group allegiance are more extensive than those found among other groups".

According to Perks (1993), there are six major milestones which may mark an occupation being identified as a profession:

1. an occupation becomes a full-time occupation
2. the establishment of a training school
3. the establishment of a university school
4. the establishment of a local association
5. the establishment of a national association of professional ethics
6. the establishment of licensing laws.

Despite some scepticism in her support for Evetts (2013) ('…a time-wasting diversion'), Evans (2015) provided a list of nine aspects of people's work that add up to identify 'their professionalism':

1. What practitioners do
2. How they do it
3. What they know and understand
4. Where and how they acquire their knowledge and understanding
5. What kinds of attitudes they hold
6. What codes of behaviour they adhere to
7. What purpose(s) they perform
8. What quality of service they provide
9. The level of consistency incorporated into the above.

The American Association of Colleges for Teacher Education provided a list (AACTE, 2018) of twelve points defining a semi-profession:

1. Lower [sic] in occupational status
2. Shorter training periods
3. Lack of societal acceptance that the nature of the service and/or the level of expertise justifies the autonomy that is granted to the professions
4. A less specialized and less highly developed body of knowledge and skills
5. Markedly less emphasis on theoretical and conceptual bases for practice
6. A tendency for the individual to identify with the employment institution more, and with the profession less
7. More subject to administrative and supervisory surveillance and control
8. Less autonomy in professional decision-making, with accountability to superiors rather than to the profession
9. Management by persons who have themselves been prepared and served in that semi-profession
10. A preponderance of women
11. Absence of the right of privileged communication between client and professional
12. Little or no involvement in matters of life and death.

Portwood and Fielding (1980) remind that social inequality has been overwhelmingly studied from the perspective of those who are deprived and disadvantaged, pointing out that this inequality equally implies privilege. They say that this however has received little serious attention – there are relatively few extended references to this. Their work considers the privileges of the professions (especially law, divinity and physics), points out which professions are more privileged than others, and examines professions to account for the differences. This work long-predates modern IOSH and any privilege and/or influence it may develop in the future.

Perks (1993) applied his six milestones to the historical sequence of development of the professions in the USA shows *surveying* achieving such status first, followed by medicine, actuarial science, law, dentistry, civil engineering, logistics, architecture and accounting. With the rise of technology and occupational specialization in the nineteenth century, other bodies claimed professional status: mechanical engineering, pharmacy, veterinary medicine, psychology, nursing, teaching, librarianship, optometry and social work.

Bullock and Trombley (1999: 50) identify that a profession arises when any trade or occupation transforms itself through:

> "the development of formal qualifications based upon education, apprenticeship, and examinations, the emergence of regulatory bodies with powers to admit and discipline members, and some degree of monopoly rights."

Incorporation by Royal Charter is an alternative or supplemental prestigious way of acquiring legal personality and monopoly rights to reflect the status of a professional body. The authority for the grant of a Charter comes from the Royal Prerogative, that is to say, such grant is made by the Sovereign on the advice of the Her Majesty's Most Honourable Privy Council (usually *Privy Council*).

Significant organisations such as universities and learned societies are often so incorporated. As examples, the Royal Society https://royalsociety.org, the Royal Society of Literature https://rsliterature.org, the Royal Medical Society http://www.royalmedical.co.uk and the five accountancy institutes making up the *Consultative Committee of Accountancy Bodies* each has a Royal Charter. This latter allows their qualified members to present themselves as *Chartered Accountants*.

Evans (2015) reviewed developments in the field, explaining the new conceptualisations of i. professionalism and ii. professional development comparing the relationship between these two concepts. She argues (*ibid*.) that professionalism is no longer an exclusive, merit-laden label applicable only to those employed in what are considered the 'classic' Professions: the law, medicine and the church; it is a term used to denote people's being in any work context.

3.4 The professional evolution of OH&S

There is evidence of professional health and safety roles as early as 1916 (see Figure 15 on page 97). The current, mandated role of the OH&S practitioner in the UK arose from legislation from 1993, especially from *MHSWR* Regulation 7(1) which says that "*Every employer shall … appoint one or more competent persons to assist him in undertaking the measures he needs to take to comply with the requirements and prohibitions imposed upon him by or under the relevant statutory provisions…*". A lack of qualified individuals (and probably employer ignorance of what was needed anyway) has led to variety in the calibre of appointments (Young, 2010). First party research over the years has identified individuals offered 'the safety job or redundancy', or a role fulfilled by the car park attendant. In my consulting assignments, I have also heard the safety role called 'a career-ending posting'.

As I have described, the evolution and status of OH&S as a 'true' Profession is contested and mainly unanswered. Provan, Dekker and Rae (2018) say that professional identity is constantly forming and evolving at the intersection of the individual and their landscape. It will be influenced, they say, by the context that an individual is currently operating within. Guided by this paradigm, I could argue for or against the Perks (1993), Bullock and Trombley (1999), Evans (2015) and AACTE (2018) definitions but will defer leaving this to societal acceptance in accordance with Corfield (1995). Instead, I will summarise the evolution (the *professionalising*) of the IOSH organisation and its changed practices to supplement others' debate. More recently, I have reviewed the literature on poly-disciplinaries, particularly as relates to OH&S.

3.4.1 Poly-disciplines

From my earliest exposure in 1984 to a (then possible) career in OH&S practice, I had noticed that OH&S often seemed to be a poly-disciplinary role; and sometimes a second career. This was certainly true for me, coming from law and industrial management. Good OH&S practitioners probably need to be poly-disciplinary. Certainly, possession of the softer skills necessary for a professional, which are often missed, are vital to effective OH&S practice. These skills are included within the IOSH competency framework (2019) and include communication, listening, and understanding across a wide array of other actors.

Hale, Piney and Alesbury (1986) debate the consolidation of occupational hygiene within the broader context of OH&S. They examine the development and consolidation of four groups active in areas related to OH&S in the eleven years since their earlier work (Atherley and Hale, 1975). They proposed a coordinated system of training and qualification accessible to the full range of people working in the field, allowing flexible combinations to meet the needs for skills across the whole spectrum of OH&S. From 1982, this became common in the UK (e.g. NEBOSH / National Examination Board in Occupational Safety and Health), whilst other countries (such as the USA) have retained separate, specialist training bodies for occupational health and hygiene.

More recently, when considering the identity of occupational health (a part of what ISO 45001 calls "OH&S"), Couch *et al*. (2012) identify possible role "confusion", reporting for example that the Environmental Health Policy Committee of the United States Department of Health and Human Services had identified more than 28 different definitions of environmental health. I suspect safety practitioners have to contend with similar confusion as to whether their role is work safety, home safety, road safety or food safety (etc.), and understand that they might need to be adaptable to match their organisation's needs. I concur with Crouch *et al*. (ibid.: 11) that our discipline comprises a complex subject comprised of many, frequently overlapping, disciplines.

On senior oversight of OH&S, Manning (2003) has suggested that often these roles are handed out as a poly-disciplinary 'OBW' – "Oh, By the Way, take care of the safety stuff" to an operations (or other) director. I have seen this occur during my time working in the insurance sector. While OH&S practitioners can use thousands of sophisticated references and manuals, an *OBW* might not understand or know how to access these.

As it has been my own experience, it is easy for me to concur with Brauer (1992) who explains that several routes can lead to the safety profession. He says that while some actors have a degree in safety, others have degrees in different fields and move into the safety profession, supplementing their educational background with experience concluding that a multidisciplinary educational background is a key ingredient. Understanding this position would become important for me when leading IOSH Professional Committee, particularly when developing its membership and practitioner competency structures.

Dwyer (1992) reviewed the birth of an industrial society that had demanded the services of those specialised in matters related to industrial safety, examining three professions in particular – safety engineering, industrial medicine and ergonomics – which either submitted to a single series of demands, integrated contradictory demands or experienced scission.

Olson *et al*. (2005) identified individual and syllabus common themes in competency sets in four US safety and health education programmes from published literature, course objectives, and content summaries. They proposed this set of common competencies be considered for adoption as a set of interdisciplinary core competencies for OH&S practice.

Madsen, Hasle and Limborg (2019) report on their research in Denmark, which reveals that there is not a single health and safety profession there. The field there, they say, comprises professional actors characterised by their multidisciplinarity and heterogeneity. They report a distinction between 'institutionally close' and 'institutionally distant' actors, and describe their tasks as either 'operational', 'systematizing' or 'processual'. I believe that however we put it, poly-disciplinarity enhances our OH&S profession.

3.4.2 A 100-year evolution

The professional emergence and evolution of OH&S in the UK has taken c. 100 years. Figure 15 on page 97 of this context statement consolidates from professional literature (RoSPA, 2015; IOSH, 2020b; NEBOSH, 2020) this evolution from 'nothing' to Royal Charter, Chartered Safety and Health Practitioners and since. This evolution up to 1994 (when I joined IOSH CPD Sub-Committee) influenced my thoughts, and with my research and the other literature, lead to my output public works.

Atherly and Hale (1975) examined the professionalising of health and safety at work identifying advantages from theoretical evidence and from the results of a small survey. They identified obstacles, including occupational control, and advocated progress towards meditative control of OH&S by using a framework of laws. This is an intelligent paper from around the time of the *Health and Safety at Work etc. Act 1974* (HASAWA) which will later align closely with the competency requirements within the *Management of Health and Safety at Work Regulations 1992* (MHSWR). Taking cues from my sequence of works for IOSH herein, Atherley and Hale's (*ibid*.) advice was adapted for IOSH to develop its membership and CPD standards.

According to Klegon (1978), sociological studies of Professions have traditionally focused on definitional list-making in an attempt to differentiate Professions from non-professions. Klegon argues that the ability to obtain and maintain professional status is closely related to concrete occupational strategies and to wider social forces and arrangements of power. As a small (professional) body at this time, IOSH lacked opportunities to exercise social forces or to deploy any real powers. Consideration and application of Klegon's advice assisted IOSH to understand the importance of developing and maintaining influence. A larger IOSH, with Chartered Safety and Health Practitioners, became highly desirable.

Eddington (2006) discussed the scientific, economic and ethical dimensions of OH&S and identifies three broad stages in the development of ethics in Western society which assist understanding the arrival of modern relativism and constructivism under postmodernism. Against this context, the emergence of OH&S is outlined and shown to be of key importance to sustainable development. Eddington (*ibid.*) reminds OH&S workers of the contribution their profession can make to safe and civil society and to sustainable development and their responsibility for upholding and promoting the ethical dimension expressed through duty of care. I will pick up again on the matter of social responsibility in chapter 3, section 3.9.

Analysis of this context revealed several features requiring attention. With only around 5000 IOSH members in 1988 (IOSH, 2016c), there were not enough qualified OH&S practitioners to service the market demands which would be created (in particular) by MHSWR.

From 1992, Government policy (FHEA, 1992) extended university places. If IOSH could develop graduate and post-graduate practitioner standards, it could influence the growth in the number of OH&S degrees (as it has; from just two in 1992 to almost 70 now (IOSH, 2020d).

Understanding this context would lead to my outputs in this theme between 1994-2013.

3.4.3 IOSH and Professions, professionalism and professionalising

This part of my context statement examines the contribution of my works to the professionalising (the professional evolution) of the world's largest OH&S Professional (or semi-professional) body, the Institution of Occupational Safety and Health (IOSH). This meant creating the means for IOSH to exhibit an increasing number of the defining features of a Profession as identified by the literature (Larson, 1978; Brown, 1992; Perks, 1993; Bullock and Trombley, 1999; Evans, 2015).

In summary, my public works in this theme were key parts in the award of a Royal Charter to IOSH by Privy Council, the 935th organisation to achieve such status (Privy Council, 2016).

As I will show in my *Contributions to practice* in section 3.12.1, these public works also triggered wider impacts upon *ENSHPO* (the European Network of Safety and Health Practitioner Organisations) and *INSHPO* (the International Network of Safety and Health Practitioner Organisations) as described by Hale and Harvey (2012). Their paper (*ibid.*) explains the evolution of the OH&S profession at international level over the last twenty years. In it, (*ibid.*), they comment in particular upon how the IOSH professional membership standards derived from my works for IOSH were adopted in Europe by ENSHPO and internationally by INSHPO.

1916	• Safety First Council elected • British Industrial Safety First Association established
1941	• Safety First Association renamed RoSPA
1945	• RoSPA founded Industrial Safety Officers Section (ISOS)
1947	• RoSPA supports UK Safety Groups
1953	• ISOS becomes Institution of Industrial Safety Officers (IISO)
1957	• British Safety Council founded
1979	• NEBOSH founded
1980	• IISO merges with Institute of Municipal Safety Officers to become IOSH • First NEBOSH Associate and Member examinations
1987	• NEBOSH qualifications become the Certificate and Diploma
1988-9	• Stephen Asbury joins IOSH as an Affiliate • Stephen Asbury founds Burton and District Occupational H&S Group
1991-2	• NEBOSH separates from IOSH • First OH&S degrees (Aston and Loughborough)
1994	• Stephen Asbury joins IOSH CPD sub-commitee • IOSH CPD policy and workbook published (Asbury, 1994a) • National Occupational Standards for OH&S published
1995	• Stephen Asbury awarded MIOSH and appointed chair of CPD sub-commitee • NVQ standards for OH&S launched by City and Guilds and OCR
1998	• Stephen Asbury becomes Chair of IOSH Professional Committee (until 2013) • IOSH extends CPD to all Corporate members (MIOSH/FIOSH)
2001	• IOSH publishes new membership structure (Asbury, 2001)
2003	• IOSH Granted Royal Charter
2005	• IOSH given permission to confer individual Chartered status on its members (CMIOSH/CFIOSH)
2009	• IOSH publishes its book on CSR (Asbury and Ball, 2009)
2010	• IOSH adopts Initial Professional Development (IPD) (Asbury, 2010a) • IOSH becomes the largest H&S organisation in the world • Young report (2010) leads to HSE OSHCR register • Stephen Asbury awarded IOSH President's Distinguished Service Certificate
2013	• IOSH publishes new Code of Conduct, Guidance and Disciplinary Procedure (Asbury, 2013b)
2016	• Having acquired the title from IOSH, Routledge publishes CSR book (Asbury and Ball, 2016)
2020	• IOSH membership grades review

Figure 15: Evolution of the OH&S profession 1916-2020
NB: Events related to my public works are shown in red type

3.5 Continuing Professional Development

Figure 16 shows the evolution in the use of the term 'Continuing Professional Development' (CPD) in all fields from 1960. In 1994, 'my' committee recommended this approach to IOSH as a response to what some saw as a poor perception of the OH&S practitioner (Dunbar, 1994). Whilst this term was in use prior to the mid-1990's, IOSH was specifically identified in 1994 as one of the earliest adopters anywhere in the world of a CPD policy (PARN, 2015).
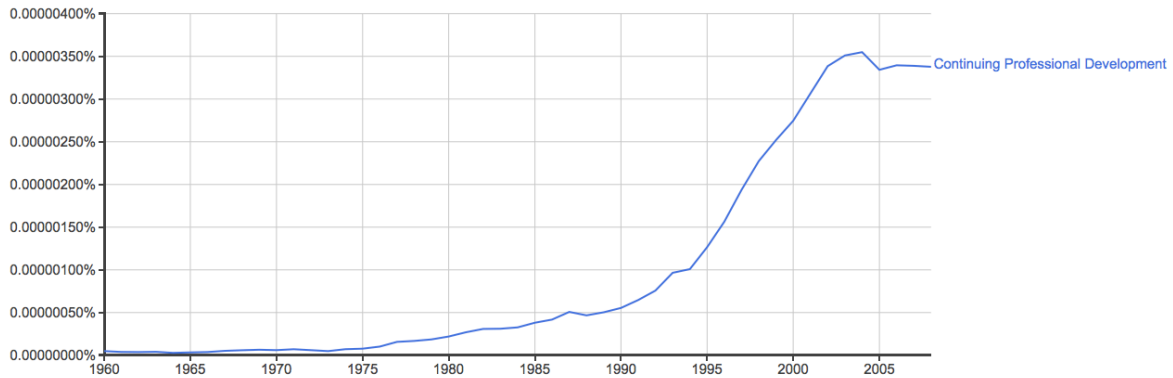
Figure 16: Evolution in use of the term 'Continuing Professional Development' in all fields from 1960. Source: Google Ngram.

3.5.1 The origins of CPD

Davies and Aquino (1975) supported by Grant (2017) identify 'schools' as the place where CPD emerged, from the understanding that they cannot succeed without successful teachers who have confidence that what they are doing is right. Davies and Aquino (*ibid.*) reported that traditional methods of in-service training had not been successful. They recommended that teachers should take responsibility for their own professional development.

Usher and Bryant (1987) examined the relationship between theory and practice in continuing professional education. Recognising practitioner theory, they say that formal theory cannot be simply dismissed. These two types of theory originate in different purposes and circumstances – formal theory being concerned with representation and explanation, and practitioner theory with judgement and understanding. Thus, they propose a relationship of 'practice reviewed through theory'.

Discussing reflective practice, Schon (1983) assumed that competent practitioners usually know more than they can say. They exhibit a kind of 'knowing in practice', Schon reports, and most of this is tacit. Practitioners often reveal a capacity for reflection on their intuitive knowing in the midst of action and sometimes use this capacity to cope with the unique, uncertain, and conflicted situations of practice.

Grant (2017) says that CPD is unquestioned in modern-day society. I agree completely with the early thoughts of Davies and Aquino (1975), Schon (1983), and Usher and Bryant (1987). My public works build upon these corner-posts for professionalising practice, adapted for OH&S CPD from 1994. They deliver what Grant (*ibid.*) says is unquestioned today; that OH&S practitioners are encouraged to take responsibility for their own development through a pre-planned approach to education/training/learning, should reflect on their practice, and maintain a personal development log.

Albritton (1990) characterises CPD as an integrative model of management education which stresses a synthesis of knowledge, skills and attitudes. This accords with the view in my works that CPD comprises knowledge, skills and experience. Albritton identifies that for the individual, the concept of self-assessment will be emphasised as a key component for self-initiated continual learning.

The need for some off-the-job learning was starting to be identified by some professions as early as 1975 as noted, also in the late 1980s and early 1990s (Eraut, 1995). The term Continuing Professional Education (CPE) typically refers to organised conferences, courses and educational events, while Continuing Professional Development (CPD) refers to both (on and off-the-job). Like Usher and Bryant (1987), McLoughlin and Luca (2002) remind on the opportunity and benefits of integrating theory and practice.

Cheetham and Chivers (1996) describe a model of professional competence which attempts to bring together a number of apparently disparate views of competence [knowledge, skills, experience], including the "outcomes" approach, a key feature of UK National Vocational Qualifications, and the "reflective practitioner" approach, which is "now well-recognized" within professional education programmes.

3.5.2 IOSH and CPD

From 1994, IOSH started its nine-year journey to become a Chartered (professional) body led by its Professional Committee, which I incrementally led and worked with to raise professionalism along the way based on contributions to its practices from the literature and our other research.

OH&S professionals continually learn on the job, and despite the evidence emerging elsewhere (Davies and Aquino, 1975; Schon, 1983), there was little researched evidence of this work-based learning in the OH&S sector, though individual cases are frequently cited (for example by Bamber, *pers comm.* 2016). You will find my research approaches for this theme in Table 6 on pages 239-40 of this context statement.

Immediately following the commencement of my MBA research (which was supported by IOSH, as well as HSE), I was invited to join the IOSH CPD Sub-Committee (CPDSC). This group was chaired by Brian Kazer, Safety Manager, Blue Circle plc. Reporting through Professional Committee, CPDSC was empowered to investigate and recommend to IOSH Council a policy on CPD. From evidence arising in the literature, and informed by practice, I saw the need to confirm OH&S competencies. I participated in the development of IOSH's first CPD policy (my work Asbury, 1994a). It was further revised while I was Chair of CPDSC and several more times while I chaired Professional Committee. The exhibited work (*ibid*.) shows this evolution of development.

From the start, I aligned with Usher and Bryant (1987) and Eraut (1995) in that IOSH CPD should encompass on and off-the job learning. Following Professional Committee's advice, IOSH also adopted the reflective practitioner approach described by Cheetham and Chivers (1996) in that IOSH members are required to reflect upon CPD activities undertaken and record this in their log. By reviewing my submitted work (Asbury, 1994a), it is obvious that the approach therein is reflective of both of those approaches.

A year later (1995), Kazer retired from IOSH Council, and I replaced him as Chair of CPD Sub-Committee. I worked with IOSH members (at branch meetings) and Council to understand the OH&S profession and why the only mandatory participants in IOSH's CPD programme were c. 450 Registered Safety Practitioners (RSP). Others were allowed to participate on a voluntary basis, but few did (IOSH, 2016c).

My work (Asbury, 1994a) was presented to IOSH Council by me as a proposal to extend coverage of IOSH CPD policy. The proposal within this work was accepted. It led to CPD policy being extended to cover all Corporate members (MIOSH/FIOSH) from 1998 (IOSH, 2016c) using my work (Asbury, *ibid*.) as the mandated approach, standard and record-keeping requirement.

The approach adopted by IOSH from the work appears to have been right and thought-leading. Six years later (in 2000), a survey of professional associations by the Professional Associations' Research Network (PARN) at the University of Bristol (in Friedman and Phillips, 2001) found that of 162 respondents (from 436 known UK associations), 62% had since developed CPD policy, 6% had some other post-qualification learning programme, and 5% were developing a CPD scheme. Those without CPD policies were mainly associations comprising less than 1500 members.

From the time of the IOSH Royal Charter (2003), with all Chartered Fellows, Chartered Members, Graduate and Technician (now Technical) members undertaking mandatory CPD, paper-based logs became increasingly impractical. Given their experience and contacts, Professional Committee asked the Professional Associations Research Network (PARN) to research what other professional organisations were doing and report. As a result, we decided to switch IOSH

CPD record-keeping to an on-line, secure, recording system for members. This mandatory, on-line approach to CPD continues to present (IOSH, 2020c). It has to be said that for all of the work, some of the negative perception mentioned earlier has continued; *'elf and safety* became a phrase of ridicule in the early-to-mid 2000s (Young, 2010) and some say this continues (Lundy, 2013; Esbester and Almond, 2016).

3.5.3 Post-IOSH CPD implementations

A review of the literature post-IOSH implementation is interesting and informative in relation to IOSH CPD practices. This review considers examples of contemporary surveys related to mandatory CPD experiences for researched sectors: radiography, dietetics and pharmacy.

3.5.3.1 Radiographers

Henwood *et al.* (2004) explored by postal questionnaire the attitudes to mandatory CPD of 1739 radiographers in the UK (n=250) and New Zealand (n=1489). The survey was completed in association with the respective professional bodies in each country. The study showed that there was a general ambivalent attitude towards CPD and that there were a number of barriers which individuals identified to explain relatively low rates of participation in CPD. The study showed that there was a very restricted view of what constitutes CPD around attendance at study days and formal activities and subsequently less-formal activities not being valued. Lack of CPD recording was highlighted along with problems related to poor staffing levels and in places, lack of employer support.

3.5.3.2 Dietetics

Sturrock and Lennie (2009) investigated the CPD practices of UK dieticians since the mandatory requirement for Health Professions Council (HPC) registrants became mandatory in July 2006. Their questionnaire-based survey revealed that of 206 respondents, over 98% maintained a CPD portfolio. The quarter (23.7%) of respondents who had participated in a placement were more likely to keep their portfolio up to date.

Only 4/10 dietitians were confident that they would currently meet the minimum CPD requirement, whereas 77% believed they would comply by the first audit in 2010. Just over half (50.5%) considered their CPD time commitment insufficient due to obstacles such as workload and time constraints. 96.1% of respondents acknowledged the importance of undertaking CPD, with the introduction of a mandatory system appearing to provide the motivation to engage.

<u>3.5.3.3 Pharmacy</u>

Tofade *et al.* (2013) assessed the paper-based or electronic CPD portfolios of 30 pharmacists from North Carolina who had opted for this in place of an annual 15-hour continuing education requirement when applying for (mandatory) re-licensure. Eighty percent of portfolios had at least 15 hours of learning reported. Portfolios showed an average of five learning objectives per individual, judged to be "adequate" or "comprehensive" for 60% of the portfolios. The researchers concluded that pharmacists were capable of following the CPD process with some potential challenges in documentation. Information to be submitted to the board of pharmacy was considered sufficient for license renewal purposes.

In Australia, Nash *et al.* (2017) compared the results of two separate surveys to examine pharmacists' CPD practices. In the first survey (2012), 91% (*n*=253/278) pharmacists reported that they knew their current registration requirements. However, in the second survey (2013), only 43% (*n*=46/107) reported utilization of the National Competency Standards Framework for Pharmacists in Australia (NCS) to self-assess their practice as part of their annual re-registration requirements. Fewer, 23% (*n*=25/107), used the NCS to plan their CPD. The researchers suggest that low use of the NCS may be symptomatic of poor familiarity with it, uncertainty around undertaking self-directed learning as part of a structured learning plan and/or misunderstandings around what CPD should include. They conclude that training to support meaningful CPD requires urgent attention in Australia. They say that competences to engage in meaningful CPD practice should be introduced and developed prior to entry into practice.

<u>3.5.4 IOSH and CPD summary</u>

Contrasting IOSH CPD (1994-date) with the contemporary literature since 2004 suggests that it has remained ahead of the sampled cases in members' acceptance and performance.

My public works in theme 2, as adopted by IOSH, remain consistent with how to *regulate the professions* in approaches described by Garoupa (2004), supported more-recently by Brennan (2016).

3.6 Initial Professional Development

As described, CPD emerged prior to initial professional development (IPD). Figure 17 shows its origins and growth in interest from 1983. A review of the literature reveals limited reference from diverse sources including mechanical engineering and policing (Robins and Clark, 1983; Taylor, 1983 respectively). The IPD theme is recipient of little research for ten years beyond these two sectors.
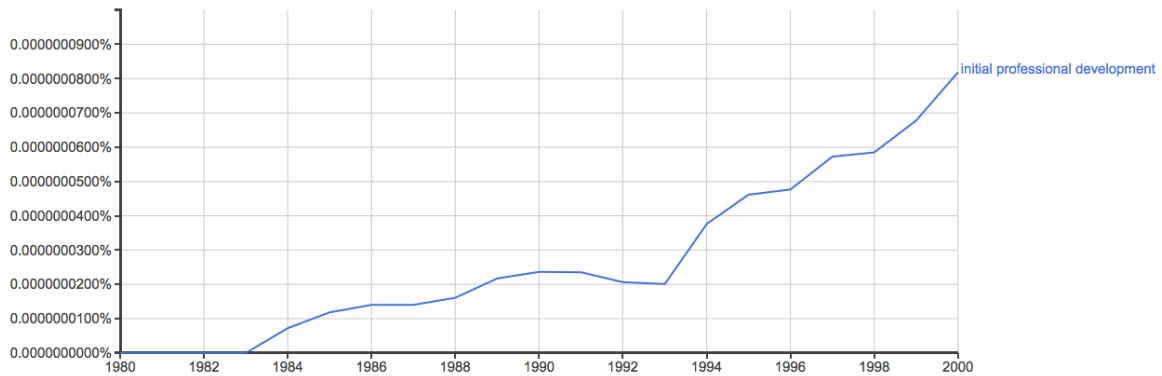
Figure 17: Evolution in use of the term 'Initial Professional Development' from 1980. Source: Google Ngram.

Research in the mid-1990s into professional development (Eraut, 1995) suggests that the initial period during which novice professionals develop their proficiency in their broad professional role continues well-beyond their initial qualification. Eraut (*ibid*.) reports that the first two to three years after qualifying are the most influential in developing the particular pattern of practice that every professional acquires.

Beatty (1998) provides rationale from action research on initial training of teachers, providing advice on processes and methods, and what can be taken from this combined experience on supporting professional development. She says that initial development should continue as continuing development. This was closely aligned with the earliest discussions at IOSH. I led Professional Committee to adapt this consecutive approach for the OH&S setting.

While my work (Asbury, 2010a) addressed IPD, it was not a new concept to IOSH. Professional Committee had discussed an approach in this format from the mid-to-late-1990's and included this within its plan of work – submitted to and agreed by IOSH Council. It was planned for follow-on after embedding CPD and the Royal Charter.

My work (Asbury, 2010a) takes cues from and is consistent with the first two parts (*Entry, Colleague*) of the four-part model of professional development strategy proposed by Dalton, Thompson and Price (1977), later modelled in practice by Rennekamp (1988).

Adapted for IOSH, the four components of the Dalton *et al.* (1977) model are:

1. Entry stage - where IOSH IPD participants confirm their essential skills to perform an OH&S role through achieving an approved qualification. Dalton *et al.* (*ibid.*) saw this as the *Apprentice stage* and thus more dependent, and thus not ready for professional development unless properly supported. A part of IOSH IPD is professional mentoring through the international branch network (and also available via video conferencing).

2. Colleague stage - where IPD participants can progress through a structured programme from GradIOSH to CMIOSH to gain IOSH Chartered membership and identity in the international OH&S professional community.

3. Counsellor stage – where IOSH Chartered members acquire broad-based experience by engaging in problem-solving in their organisation, confirmed through CPD.

4. Advisor stage – where IOSH Chartered members counsel and coach other OH&S professionals, facilitate self-renewal, and achieve positions of influence and stimulate thought in others.

Components 1-2 are addressed by the IOSH IPD policy and standards presented in the public works (Asbury, 2010a). After the Entry and Colleague stages, stages 3-4 are addressed by the IOSH CPD policy and standards presented in the works (Asbury, 1994a), which as described was designed to demonstrate on-going planned development and role competency – discussed further on pages 108-9 of this context statement. My works as published at the time are generally supported by research since, including Wang (2013), Stewart (2014), Bollman, Grundler and Holder (2018) and Nie *et al.* (2018).

Wang (2013) applauds Knowles' (1984a) promotion of andragogy which encouraged adult educators to become learning facilitators rather than "information presenters". Wang identifies recent contributors to compile a reference source providing adult educators with the tools, trends and methodologies to maximize learning and development. These tools are consistent with those provided by the works.

Stewart (2014) reports that professional development in teaching is shifting towards collaborative practice. She says that passive and individual practices are inadequate to prepare teachers to integrate the academic skills that learners will need in the workforce. Stewart (*ibid.*) considers that learning in a professional community is more effective than traditional professional development. The 3-route IOSH IPD (my works Asbury, 2010a) which is described in section 3.8.1 of this chapter includes peer review interview designed to initiate and recognize the participant's inclusion into a professional community consistent with Giaconi (2016) and Vangrieken *et al.* (2017). I was interested in Pope's research (2005), which considers the effect of stress upon the

participants involved. Professional Committee concurred that being subjected to self and peer assessment, while more stressful, led to improved performance and was thus overall beneficial. On reflection, it is also true that Professional Committee was sympathetic to individual cases (following events such as redundancy) and allowed (for example) the member additional time.

Bollman *et al*. (2018) report on a study requested by ILO on trends and promising models for integrating occupational health and safety into education – very early (non-professional) initial development. For ten years, good practice examples were collected by the European Network Education and Training in Occupational Safety and Health (ENETOSH). From these, 756 projects comprising a representative sample of examples was chosen for each level of education - kindergarten/school, initial vocational education and training, higher education and continuing vocational education and training. A category-system was developed which is based on the success principles of the settings-based approach as specified by the World Health Organisation (WHO). 83 examples were categorised and analysed from statistical analysis and interviews with project owners. The study provided a comprehensive evidence-base of practices of good models concerning main-streaming occupational health and safety at all levels of education.

Such main-streaming may better-prepare participants for entry to future workplaces. It will also better prepare aspiring and novice OH&S professionals for and beyond their initial qualifications. This may be true overseas as well as in the UK.

For example, Nie *et al.* (2018) contrasts OH&S in China and the UK covering training-related laws and the educational system. They conclude that while China's work safety continues to improve, there is still a large gap to the UK. They identify deficiencies, particularly that the UK's vocational education and training is characterized by classification and grading management, which helps integrate health and safety into the whole education system. It advises that China can learn from the UK in the development of OH&S training.

Returning to the Counsellor and Advisor stage of the *Dalton* four-part model of professional development strategy (Dalton *et al.*, 1977; Rennekamp, 1988), my CPD public work (Asbury, 1994a) provided steps 3 and 4 from the framework, facilitating IOSH Chartered members to counsel and coach other OH&S professionals and to facilitate self-renewal.

3.7 Retrospective research approach - IOSH membership, CPD and IPD

My research into the professionalisation of OH&S practice between 1994 and 2013 was based on a retrospective research design using questions posed at the time (presented in Appendix 6, Table 6 on pages 239-40.

As noted earlier, my chapter 5 *Limitations of the* research critics the methodology to provide reflective considerations of the research submitted.

3.8 Exploration of the research approach – IOSH membership, CPD and IPD

The research and development followed the plan of work broadly aligned to a phenomenological paradigm in that any attempt to understand social reality has to be grounded in people's experiences of that reality (Gray, 2009); their "lived experiences" (Creswell, 2003). Leading IOSH Professional Committee, I set aside 'my' committee members' prevailing understandings of the current membership phenomena and consulted outside as well as inside the committee in order that new meanings could emerge.

For example, in the approach I promoted:

- all members of Professional Committee undertook CPD themselves and submitted their reflective log and records for review and audit. This small study of subjects, through extensive and prolonged engagement, developed patterns and relationships of meanings consistent with Moustakas (1994);
- I led two workshops for IOSH Council during its twice-annual meetings; and
- Professional Committee researched what a small sample of other professional bodies were doing (using the research services of PARN).

Members of Professional Committee and Council intentionally immersed in the process, and with the external sample, we were thus able to gather data on experiences which were used to refine the process and materials which were later provided to 30,000+ other IOSH members when CPD became compulsory.

3.8.1 Research approach - Commentary

At the time of my appointment by IOSH to a position where I could influence the OH&S Profession, the OH&S discipline was not Chartered as many other Professions were (Privy Council, 2016). According to its (then) Chief Executive, IOSH was "not sufficiently well-regulated" (Strange, *pers comm.* 2016).

As Chair of Professional Committee, I presented my work (Asbury, 2001) to the IOSH Council. It was derived from our research, the literature on Professions, and being a professional as part of a recommendation for a new IOSH membership structure which recognised the changes in qualifications from the university sector, from NEBOSH and National Vocational Qualifications (NVQ) (see Figure 15 on page 97, which illustrates the timeline for these events). The proposal within my work was accepted. It led to a new (and it remains the current) IOSH membership structure from 2001.

IOSH now had a clear membership structure. Its Professional Committee would move to consider broadening entry and greater inclusiveness, and was ahead of the curve as evidenced by later emerging voices, such as Lester (2009: 223) who reported that:

> *'..in recent years, there have been pressures on professions to broaden their entry routes while at the same time becoming more rigorous in the way that they sign off practitioners as fit to practice'.*

At the time of writing (2020), IOSH recognises a total of 76 specific qualifications (IOSH, 2020d) for its TechIOSH/AIOSH and GradIOSH categories of membership, including those from NEBOSH, British Safety Council, NVQs and appointed universities. GradIOSH is the precursor to Chartered membership (in my work Asbury, 2001) through the IOSH IPD process derived from my work (Asbury, 2010a). This will be described later in this chapter.

According to Chief Executive of IOSH (Strange, *pers comm.* 2016) at the time, this public work (Asbury, 2001) cleared up 'the lack of structure and the inconsistencies of the past'. Particular qualifications, taught to agreed syllabus, allowed clear routes to access specific categories of IOSH membership.

As described, my public works (Asbury, 1994a; 2001) were key elements within IOSH's submission to Privy Council for Royal Charter (confirmed in Appendix 5 by Rob Strange OBE).

IOSH Professional Committee, Council, and the Chief Executive believed that we had all we needed to be granted a Royal Charter. However, corporate IOSH had been 'a bit arrogant'

(Strange, *pers comm.* 2016.) in that it did not communicate well outside of itself and lacked influence at Governmental level (this was also likely true because it was so small).

Rob Strange, IOSH Chief Executive (Strange, *pers comm.* 2016), takes up the story. I didn't know all of this until I met him again in 2016:

> *Chartered status had been an on-going discussion for over ten years, having first been raised by Council in the late 1980s. In 2001, as the new Chief Executive, I inherited a six-inch file of letters to and from Privy Council discussing this. It all seemed to come down to better governance, accredited qualifications and CPD.*
>
> *But our Charter was not forthcoming. In hindsight, IOSH had been a bit arrogant. It had ignored others operating in the OH&S field. You [Stephen Asbury] and Hazel Harvey, [Head of the Professional Department] had done all of this [membership criteria based on accredited qualifications and established CPD policy], except we had not taken people with us. I wrote to the presidents of the other bodies and went to see them. David Eves at HSE was supportive. The Department of Education and Science were slow, but then agreed to support us. By the end of 2002, everything was in place.*
>
> *In spring 2003, the phone rang "IOSH has been granted a Royal Charter". The scroll signed by Queen Elizabeth was presented to our President Eleanor Lawson at our Edinburgh AGM later that year.*

IOSH was granted a Royal Charter in 2003. In 2005, it was given permission to confer individual Chartered status to suitably qualified members (Strange, *ibid.*) following an approach later described by, and consistent with, Lester (2009) in that it includes an academic component followed by a period of assessed practice through CPD.

These achievements were secured during my tenure as Chair of IOSH's Professional Committee, where my works (Asbury, 1994a; 2001) were central to IOSH's application and subsequent award / permission to grant.

In 2010, I presented my work on Initial Professional Development (Asbury, 2010a) to IOSH Council as part of a proposal to formalize our professional development routes, and to specify our rigor in the way that practitioners were signed off as fit to practice. As will be seen in the submitted work (Asbury, *ibid.*), I have presented extracts from the original work as well as from its evolutionary drafts. My work (*ibid.*) provided three routes to Chartered membership depending upon the qualification which had been accepted for GradIOSH (from my work Asbury, 2001):

- Route 1 – for those achieving GradIOSH by study and examination (i.e. by approved degree or NEBOSH Diploma)
- Route 2 – for those achieving GradIOSH by National Vocational Qualification (NVQ)
- Route 3 – for those achieving GradIOSH with a cognate degree (i.e. in a related subject, for example environmental health)

The requirements for each IPD route are summarised:

- Route 1 - IPD required submission of a skills development portfolio (SDP) of practice evidence, based on selection of seven (7) from 24 criteria reflecting a variety of areas of specified OH&S practice
- Route 2 - IPD required success in an open book examination externally set and marked
- Route 3 - IPD required completion of both (the SDP and the open book exam)

Applicants from all three routes would participate in a peer interview prior to receiving an offer of Chartered membership.

The proposal illustrated by my work (Asbury, 2010a) was approved by IOSH Council and adopted as policy from 2010. The policy remains current today (IOSH, 2020e); all new members in the GradIOSH category are invited to register for and participate in IPD (IOSH, 2020e).

> *We had completed a big step [the Charter], but the real prize was our ability to confer Chartered status upon individuals. You [Stephen Asbury] as Chair of Professional Committee and Hazel [Harvey, Head of Professional Affairs] were central to making that happen.*
>
> - Strange (*pers comm.* 2016).

These public works impacted greatly upon professionalisation of the OH&S sector in the UK, and as will be seen, globally. They provided (and continue to provide) the practices for admitting members, assessing/maintaining competence, and regulating a Chartered OH&S Professional body. From 2010, IOSH became the largest health and safety organization in the world with over 48,000 members based in over 120 countries (IOSH, 2020a). It became an NGO and the UK representative at the European Network of Safety and Health Professional Organizations (ENSHPO) and at the international equivalent, INSHPO. You will read about the contributions of my works (which were adopted via IOSH) to ENSHPO and INSHPO at the bottom of page 122.

By 2012, the compulsory CPD policy was well-understood by members, even if there was some resistance (perhaps stress, identified by Pope, 2005) to making entries into the on-line system developed from my original CPD work (Asbury, 1994a). Under CPD policy, Professional Committee routinely removed (and continues to remove) those who were not in good standing as regards CPD from Chartered membership.

By 2013, other Professional bodies had followed IOSH's leading practice which had been developed from my works. According to PARN (2015), 87% of professional bodies had a CPD policy of some kind, and in 30% of these (in 2012) it was compulsory.

<u>3.8.2 OSHCR</u>

Despite IOSH achieving its Royal Charter seven years earlier, a Whitehall-wide review of the operation of health and safety laws (Young, 2010) reported a lack of respect for *'elf and safety* and a need for mandatory competency assurance for those advising organisations as OH&S consultants. This ties into my comments above in connection with the challenging of professions and professionals. Published in October 2010, Young's report *Common Sense, Common Safety* (*ibid.*) recommended minimum standards for providers of such advice, and Government accepting this advice demanded *OSHCR*.

The Occupational Safety and Health Consultants Register (OSHCR) was established in 2011 following Young's (*ibid.*) recommendation that all health and safety consultants in the UK should be accredited by a professional body, and that a register of certified professionals be established in the form of a web-based directory.

The arrangements were "rushed through under Government edict" (Strange, *pers comm.* 2016) by seven professional organizations, including IOSH, to help businesses find advice on managing their general health and safety risks. "We did what we had to do, and some things were smoothed over" (Strange, *ibid.*). The new register was only open to those health and safety consultants who have met certain qualification and the IPD/CPD standards of their professional body. For IOSH members, these are precisely the standards I researched, communicated, and were adopted from my works (Asbury, 1994a, 2001, 2010a).

Today, over 95% of the registrants on OSHCR are IOSH Chartered Members and Chartered Fellows (IOSH, 2020a). The small number of members from the six other bodies operating in the OH&S field were included to build consensus (Strange, *pers comm.* 2016).

The changing landscape of OH&S practice is reviewed by Leka *et al.* (2016) covering the period of my research, and since. In April 2016, the outgoing Chair of HSE, Dame Judith Hackitt said (IOSH Magazine, 2016) "I have my doubts as to whether OSHCR in its current form can deliver … We would probably be better off to have a much more radical rethink and look more closely at when expertise is needed and how that's defined".

On 23/4/2019, the Board of OSHCR issued a statement (OSHCR, 2019) confirming it had reviewed research and confirmed support for its findings. It said that "Both the HSE and Board of OSHCR have subsequently confirmed their commitment to the register's future".

3.8.3 IOSH Code of Conduct

IOSH says (2016a: 1) that it:

> *"…acts as a champion, supporter, adviser, advocate and trainer for safety and health*
> *professionals working in organizations of all sizes. We give the safety and health*
> *profession a consistent, independent, authoritative voice at the highest levels."*

As the only Chartered body in its field, IOSH is the custodian of OH&S practitioner standards. It says (IOSH, *ibid*.) that it is "committed to promoting ethical behaviour by our members. For decades, we've had a Code of Conduct for our members to follow."

The Code of Conduct developed in 1995 had set some standards which allowed for investigation and discipline of members alleged to be in breach of requirements. I recognised that this Code had many shortcomings. A solicitor appointed by Professional Committee to advise it in 2004 called it 'aspirational and … very basic'.

My final public work for IOSH was to propose and deliver a revision of the Code of Conduct. I knew from my real-world use of the 1995 Code, and from the legal opinion received, that it had shortfalls and impractical (and probably unenforceable) clauses. Professional Ethics Committee (as Professional Committee was now called) accepted this. Committee member Shaun Lundy (now Dr Lundy) led the development using an approach which as Chair I had agreed and supported (confirmed in Lundy, 2013). I contributed to this throughout (please see the confirmation in Appendix 5 by IOSH Chief Executive, Rob Strange OBE).

This work (Asbury, 2013b) was presented by Lundy and I as part of a presentation to IOSH Council, and with its approval, the new Code and associated documents were launched and effective from 4/3/2013.

Clearly, it was important to make members aware of the new Code, and I participated in numerous initiatives to this end including:

- Presentations to the IOSH network at branch events across the UK
- Paper in IOSH magazine (my work Asbury, 2013c)
- Presentation on IOSH's *AudioBoo* Channel (my work Asbury, 2013 – see Appendix 3 *Broadcasts*, not submitted)
- Proposed 'ICRS' as the design for 2013/4 IOSH membership cards to represent the four 'pillars' of the Code - Integrity, Competence, Respect, Service – illustrated in Figure 18 (also see my public work Asbury, 2013b; c)

Gerhard Fendler

Affiliate

Membership Number **168464**

Valid To **07 Aug 2014**

integrity
competence
respect
service

(iosh)

Figure 18: IOSH membership card featuring the four 'pillars' of the new Code of Conduct (from my public work Asbury, 2013b; c)

Speaking with Lundy (*pers comm*. 2017), we reflected on our work to develop the new Code. Lundy said that "it was right and timely that you had added the revision to the Code into the committee's work plan" and said that "You had been very supportive of me throughout its creation". He said that "I had created a very collegiate committee" and he thought that "Your knowledge of the Council had helped greatly in securing a great achievement from PEC's point of view".

3.8.4 IOSH becomes the largest OH&S organisation in the world

Growth in the numbers of available qualifications, those qualifying from them, and providing varied but rigorous routes to a structured, Chartered membership facilitated IOSH growth from about 5,000 members in 1988 towards almost 50,000 by 2020 (IOSH, 2020a).

IOSH is easily the largest OH&S organisation in the world. The second largest, ASSE (now ASSP), has about 37,000 members (ASSE, 2020). In addition, there are an unknown number of unqualified and/or unaffiliated individuals working in the OH&S field (Strange, *pers comm.* 2016).

As I mentioned in my preamble (section 3.1) to this chapter, I will now move on to the second part of this chapter and introduce the origins and evolution of a subject broadly related to OH&S, Corporate Social Responsibility (CSR), in section 3.9. This theme led to the production of public works that contributed new practices (and new knowledge) to OH&S practitioners in a related discipline.

3.9 Corporate Social Responsibility

Having thought about the professional nature of the practitioner (membership, IPD, CPD, Code of Conduct), I also recognised the scope to expand practice and remit. From 1994, IOSH CPD (established from my work Asbury, 1994a) implied encouraging OH&S practitioners to develop their core and related skills. Such encouraging of IOSH members has continued for over 25 years - in 2017, the (then) new IOSH 'Blueprint' (IOSH, 2017a) continued this.

In 2019, IOSH launched new competency standards. Based on twelve competencies in three families (Core, Technical, Behavioural), it includes 'Sustainability' as a Technical competency and Stakeholder Management as a Behavioural competency. IOSH's position remains consistent with my worldview and primary research 1984-2020 which confirmed that common related and complementary areas for OH&S practitioners include quality, fire, environment, security, business continuity and Corporate Social Responsibility (CSR).

From my retrospective research approach (which is presented in Appendix 6, Table 7, on page 241), it can be seen that Barnard (1938) provided the earliest reference to the social responsibilities of executives and businesses. Modern understanding emerged when Bowen (1953) was the first to use the phrase 'corporate social responsibility'.

3.9.1 Development of CSR

My position, expressed in Asbury and Ball (2009), is that the *modern* evolution of CSR is consistent with the position taken by Carroll (2008). I concur that the late 1800s, or the Industrial Revolution, is a reasonable beginning point for the purposes of modern discourse.

Like Caulfield (2013), in my work (Asbury and Ball, 2009; 2016), I also consider the historic evolution of corporate responsibility and community involvement from 'medieval guilds' [sic] to the more-modern forms of organisations seen at the end of the last century.

Notwithstanding Barnard (1938) and Bowen (1953), my work (Asbury and Ball, 2009, 46-51), traces the roots of CSR to the Hammurabi Code (now thought to be 1754 BCE), through to the mid-late 1800's, and the early individual and business philanthropic practices of organisations including Lloyds Bank, Rowntree and Cadbury.

Heald (1970) identifies the Young Men's Christian Association, founded in London in 1844, as a good example of an early social responsibility initiative. Spreading quickly to the USA, YMCAs were supported by both individuals and corporations.

In 1946, US businessmen [sic] were questioned by Fortune magazine (March 1946, cited in Bowen, 1953) about their social responsibility. Two of the questions stand out:

1. Whether they were responsible for the consequences of their actions in a sphere wider than their profit and loss accounts (93.5% said yes); and
2. About what proportion of the businessmen you know would you rate as having a social consciousness of this sort (the most frequent responses were 'about a half' and 'about three-quarters').

These results support an emerging phenomenon of 'trusteeship or stewardship' (Bowen, *ibid.*). Murphy (1978) proposed four eras of CSR as follows, the evolution of which through the periods is also narrated by Carroll (2008):

- Up to the 1950s – the 'philanthropic era', characterised by organizations donating to charities (in my work Asbury and Ball, 2009; 21-2; also identifies Victorian social reformers such as those mentioned on page 113 who were philanthropic to their workers);
- 1953-1967 – the 'awareness era', characterised by increasing recognition of the responsibility of organizations and engagement in community affairs;
- 1968-1973 – the 'issue era', characterised by organizations' focus on specifics such as pollution, racial discrimination and urban decay; and
- 1974-date – the 'responsiveness era', characterised by organizations taking specific actions, such as examining ethics and social disclosure reporting.

Votaw (1973: 11), repeated in Preston and Post (1975), identified a key issue encountered (and which with my co-author, I resolved) in preparing my work Asbury and Ball (2009), saying:

> *The term [social responsibility] is a brilliant one; it means something, but not always the same thing, to everyone. To some it conveys the idea of legal responsibility or liability; to others, it means socially responsible behaviours in an ethical sense; to still others; the meaning transmitted is that of 'responsible for', in a causal mode; many simply equate it with a charitable contribution; some take it to mean socially conscious, many of those who embrace it most fervently see it as a mere synonym for 'legitimacy', in the context of 'belonging' or being proper or valid; a few see it as a sort of fiduciary duty imposing higher standards of behaviour on businessmen than on citizens at large.*

Preston and Post (*ibid.*) say that they restricted the use of the [social responsibility] term to refer only to 'a highly-generalised sense of social concern'. They comment that "most of these attitudes and activities… lack coherent relationship to the managerial unit's internal activities or .. its host environment".

I understood this lack of general framework for understanding CSR boundaries and with my *anything is possible* ethos and my understanding of the PDCA-based management system process, created the *Do The Right Thing (DTRT) model* shown in the work and in Figure 19 on

page 120 of this context statement as a response. Jones (1980) was the first to identify CSR as a 'process' and I identify strongly with that position. I also concur with Jones' (*ibid.*: 59-60) identification of the voluntary nature of CSR:

> *…the notion that corporations have an obligation to…society other than stockholders and beyond that prescribed by law… Two facets of this definition are critical. First that the obligation must be voluntarily adopted… and second [that] the obligation is a broad one extending beyond the traditional duty to shareholders to other societal groups such as customers, employees, suppliers and neighbouring communities.*

In my work Asbury and Ball (2016), the revised *DTRT model* presented in the work and in Figure 20 on page 124 is based upon ISO Annex SL (2012a) in that it integrates with other MSS such as ISO 9001, ISO 14001 and ISO 45001 and relates directly to the host's environment (or *Context*) and the requirements of its interested parties.

Whilst one can find evidence of CSR in companies (and their reporting) throughout the world, it is mostly seen in the developed countries. Most of the early literature arose in the US, where a sizable body of literature had accumulated by 1999 (Cavrou).

In the 1980s, two related themes emerged – stakeholder theory and business ethics (Freeman, 1984). A series of 'ethical scandals' became prominent in the 1980's, some of which (such as Union Carbide, Bhopal) are discussed in my work Asbury (2018: 99-100).

My works concur with the approach now commended by Business for Social Responsibility (BSR, 2020), founded in 1992, which says that CSR should be viewed as a comprehensive set of policies, practices and programs that are integrated into business operations, supply chains, and decision-making throughout the company. This approach is consistent with the *PDCA* thinking present throughout my works on management systems, auditing and the notion that CSR should be embedded into organisation psyche and business practice rather than being an add-on.

Habisch *et al.* (2005) document the spread of CSR across Europe. They say CSR was virtually unknown a decade before, but that now it is "one of the most important topics for discussion for business-people, politicians, trade unionists, consumers', NGOs and researchers". The mid-late 1990s provide a number of 'High Street' CSR initiatives, including *The Body Shop* reported in my work Asbury and Ball (2009: 35-8, 91).

In my work Asbury and Ball (2016), I concur with the research of Backhaus, Stone and Heiner (2002), who explored the potential benefits arising for organizations adopting CSR-type approaches; the researchers found that jobseekers consider CSR as a feature of employer attractiveness when assessing vacancies.

When preparing my public work (Asbury and Ball, 2016), I liked the approach to targeting a business audience exemplified by Crane, Matten and Spence (2013), Blowfield and Murray (2014) and Pederson (2015), who argued that CSR is an element of overall corporate responsibility. I also identified strongly with Kotler and Lee (2004), who illustrated a way of conducting business that combines the creation of value with a respectful and proactive attitude toward stakeholders in 25 best practices. My works (2009; 2016) increase these 25 practices to 100 specific activities for an organization and/or individual OH&S practitioners in Appendix 1 of my book on pages 250-56. These include ten personal social responsibility (PSR) actions.

Over the years, organisations have felt the full force of society when failing to address CSR. For example, in my book (Asbury and Ball, 2009: 74-7), I discuss cases relating to Nike from 1993 relating to labour disputes in Mexico, and from 1996 in Indonesia related to working conditions and worker abuse. Also in 1996, a photograph emerged of *Tariq*, age 12, stitching Nike footballs in Pakistan. In that work (Asbury and Ball, *ibid.*), I encourage my readers to reflect on their own practices in this regard by engaging in *Test Your Thinking exercise 2* with seven questions developed to broaden their understanding.

I refer the reader to my book (Asbury and Ball, 2016), in particular to its pages 45-83, for my review of other related literature completed at the time.

For the future, while there are doubters, it seems clear to me that CSR can be sustainable so long as it adds value to organizations. Adopting a recognized MS approach, such as the *DTRT* model from my public works, implementable by competent individuals (perhaps broadly skilled OH&S practitioners?), becomes centre stage to achieving this. The increasing voice of 'interested parties' in society plays an increasing part in determining what constitutes business success, and this should keep CSR at the centre of organizations' attention for the foreseeable future.

3.9.2 Origination of my public works for IOSH on CSR

I was present at a meeting in 2009 between CPD Sub-Committee and IOSH Services Limited (then IOSH's publishing company) to identify CPD opportunities for OH&S practitioners. The discussion turned to commissioning a CSR workbook which could provide IOSH members with skills complementary to their OH&S practice. In the future, it would also lead to a training course variant driven by demand from members (discussed further in section 3.12.2).

There were already CSR books in the market (such as Kotler and Lee, 2004; Crane, 2009; and Aras and Crowther, 2009), but IOSH did not judge these to be suitable for developing its member OH&S practitioners' skills, as none had not been constructed with a reflective learning approach.

My company had worked on CSR-related projects (please see the examples noted in Appendix 7, pages 245-6) and had recently completed a CSR output – a workbook for a Midlands university college client based on primary research with our client Coca-Cola.

I proposed that I could work this up into an IOSH-published title. IOSH liked this and accepted my proposal. When published, IOSH called next for a CPD training course based on the book, and from attendees and others, a community of those interested in this broader OH&S remit started to congregate as one of eighteen IOSH Groups (IOSH, 2021). As reported by Weller (2020) eleven years later, as discussed in section 3.9.3, that public work and the subsequent community developments it led to appear to have been ahead of their time and thus thought-leading.

3.9.3 CSR and Communities of Practice

I have subsequently taken this opportunity within my doctoral study to reflect upon social learning within learning designs, exploring the works on communities of practice by Wenger, McDermott and Snyder (2002); Cox (2005); Andrew, Tolson and Ferguson (2008); and Farnsworth, Kleanthous and Wenger-Trayner (2016).

In their book *Cultivating Communities of Practice*, Wenger, McDermott and Snyder (2002) say that 'connections are inevitable'; that given enough time and networking, people are bound to meet and find they share an interest. They (*ibid*.) define 'communities of practice' as (ibid.; 4):

> "…groups of people who share a concern, a set of problems or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis."

This is consistent with what was observed at IOSH in the development of specialist Groups.

They (*ibid*.) share their experiences of working in communities of practice at organisations such as Colgate, Hewlett-Packard and Shell; and they re-tell the story of revitalising operations at Chrysler which was based on documenting engineering knowledge. The communal responsibility for producing the Engineering Book of Knowledge (EBoK), they say, was key to its success. It is interesting to note that the CPD course variant arose as a result of practitioner demand and consistent with the thoughts of Wenger *et al*. (*ibid*.). Cox (2005) provides a comparative review of four seminal works including Wenger, McDermott and Snyder (2002), noting potential confusion over differing conceptualizations of community, learning, power and change, diversity and informality. For example, Cox (*ibid*.) reports a distinct shift towards a managerialist stance, saying that the Wenger et al. (*ibid*.) proposition that managers should foster informal horizontal groups across organizational boundaries is in fact a fundamental redefinition of the concept.

However one sees it, it seems so that 'connections are inevitable' and that these 'groups of people' (Wenger *et al.*, 2002) can be from diverse communities however they form. Commenting on experiences from nursing, Andrew, Tolson and Ferguson (2008) say that communities of practice provide a useful, practice-based framework for constructing collaborative learning. They say that this provides and promotes engagement with professional groups and communities.

Farnsworth, Kleanthous and Wenger-Traynor (2016: 139) explain "conceptualising identity and participation in order to develop a social theory of learning in which power and boundaries are inherent". They draw on their conceptual discussions with Wenger-Trayner to consider how the theory of communities of practice resonates with key debates and issues in education.

Reviewing the recent work of Weller (2020), it was no surprise to me to find that the latest research on communities of practice specifically reports on new opportunities for learning on CSR. It recommends that managers create practices for exploration of shared meaning. Specifically, Weller (*ibid.*: 518) advises that:

> "Companies seeking to effectively manage the ethical dimensions of their business have created formal and informal practices, including… corporate social responsibility (CSR). [By] leveraging a communities of practice theoretical perspective, …these practices can be studied as artifacts of managerial learning. [This] research offers a new lens through which to view compliance and CSR practices as socially negotiated, contextual, and dynamic. Practically, it suggests that there may be new opportunities for learning if managers create practices through an intentional exploration of shared meaning."

On reflection now (in 2021), I believe my co-author and I would agree.

3.10 Retrospective research approach - CSR

In Appendix 6, Table 7 on page 241, I summarise the context for the public works on CSR. The table presents my retrospective research approach based on the literature, and the gaps identified in respect of application by OH&S practitioners.

As noted, reflective consideration of the limitations of the research submitted is provided in chapter 5.

3.11 Exploration of the research approach - CSR

My review of the literature confirmed IOSH's view that there was an opportunity to write a CSR workbook based in reflective practice for its members. This gap in the literature was clear as there was no competing title. Writing for IOSH members influenced the style of the output as a 'jargon-free guide', and the requirements of the profession influenced the way in which the works were presented. As it turned out, an informal interest / community of practice (Wenger, McDermott and Snyder, 2002) later emerged as sustained demand for an associated training course.

I identified a co-author (Richard Ball) with whom to write my book (Asbury and Ball, 2009; and its later revision Asbury and Ball, 2016). I had worked with Ball who was an employee of my company on a variety of CSR projects for clients between 2004-9. Our skills and disciplinary backgrounds were complementary.

In determining an approach to presenting the works, we set a *golden thread* to run through the book; a management system-like (PDCA) model for CSR. We progressively developed our approach by presenting it to OH&S-informed colleagues, clients and IOSH reviewers taking and responding to feedback.

The book follows a management systems approach based on our developed model. When complete, we named it the *Do The Right Thing* (DTRT) model which is shown within the work on page 65, and reproduced as Figure 19. From primary and secondary research, the works present a series of case studies (including Body Shop, Nike, Coca-Cola, Pearson plc and London Olympics 2012) with method and results to underscore key points from the literature.

The research methodology and findings for case study 3.2 *Pearson plc* (from my work Asbury and Ball 2016: 75-9) is presented in chapter 2 of this context statement.

Chapter 10 of this work (Asbury and Ball, 2009: 113-28) provided a forecast for CSR at the London Olympics 2012. The methodology was based on primary research (interviews with nominated Olympic Delivery Authority (ODA) staff) and secondary research (reviewing available ODA documents). Its revision contained within my second edition (Asbury and Ball, 2016: 219-48) reflects, from secondary research only, upon our prior forecasts in Chapter 10 *Learning from London*.

The works promote reflective learning throughout by the inclusion of twenty (20) *Test your Thinking* exercises, the final of which promotes 100 possible CSR actions. These extended the actions proposed by Kotler and Lee (2004). Templates for addressing the practices in these exercises can be downloaded from the work's companion website, hosted by IOSH.

Though it was intended that this would be a self-study book, due to demand, IOSH later commissioned a two-day training course version where the case studies therein were examined by participants in plenary sessions.
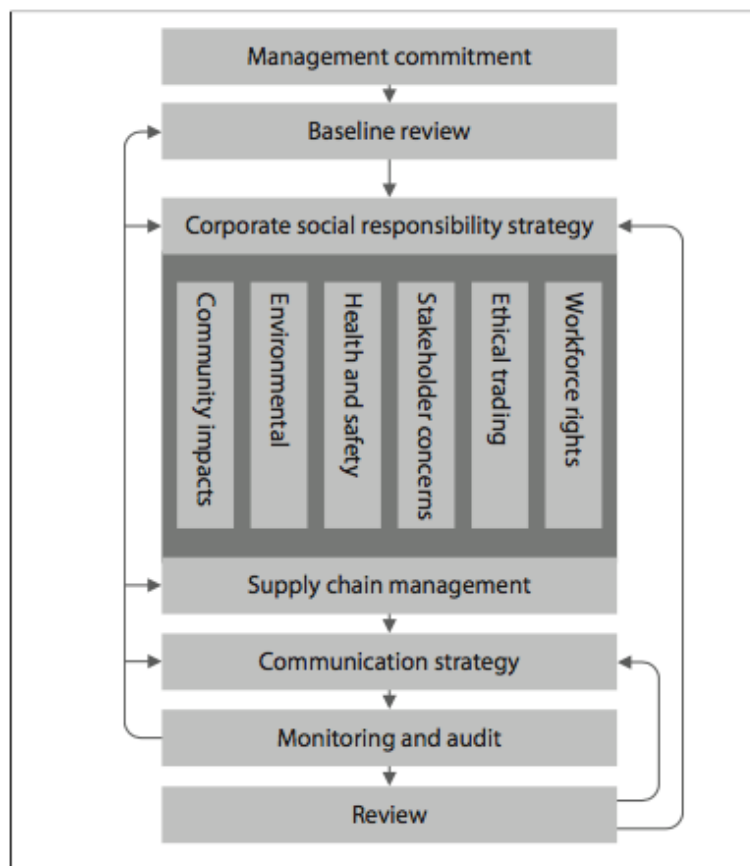
Figure 19 – The Original *Do the Right Thing* (DTRT) model for CSR
From my work Asbury and Ball, 2009: 65

Between 2009 and 2015, the *Context* evolved, including the publication of ISO Annex SL (ISO, 2012a) as explained in chapter 2. Considering this, we proposed and were commissioned to re-develop the work in 2016.

Due to peer approval (and thus the commercial success) of the first edition, the work was acquired with our consent by Routledge an imprint of Taylor and Francis. Our new editor insisted that we should retain the reflective learning approach in the new edition, whilst accepting my position that it should be presented more as a business title by focussing on a (revised) management systems approach aligned to ISO Annex SL (*ibid.*).

3.11.1 Lessons learnt for the second edition

My revised work (Asbury and Ball, 2016) sets corporate social responsibility as a component of overall corporate responsibility consistent with Crane *et al.* (2013), Blowfield and Murray (2014) and Pederson (2015). It advises that CSR can be utilised on a voluntary basis as a response to business risks in non-regulated areas of organisational activity whilst bringing the constructivistic epistemology (Bruner, 1966; Crotty, 1998) for the OH&S practitioner / application angle demanded by IOSH to the forefront of the work.

In reviewing the *DTRT* model, the output was reiterated to reflect ISO Annex SL (ISO, 2012a). This meant that it would relate directly to the host's business environment (or *Context*) and the requirements of interested parties.

The revised model created for the second book (*ibid.*) is presented in the book on page 43 and herein Figure 20 on page 124.

3.12 Contribution and impact: theme 2

I have presented and contextualised seven of my public works in support of my second theme. These works provide the following contributions to OH&S practice:

3.12.1 Professionalisation of OH&S, including regulating the profession
3.12.2 Increasing the scope and competency of OH&S practitioners

3.12.1 Professionalisation of OH&S, including regulating the profession

My public works (Asbury, 1994a and 2001) led to the award by Privy Council to IOSH of a Royal Charter in 2003. In 2005, those same works led to IOSH being granted permission to confer individual Charters upon its competent members. Clearly, others were involved, but the IOSH Chief Executive recognised and confirmed (in Appendix 5 on page 230) the value to the OH&S profession of my works. I was awarded the IOSH President's Distinguished Service Certificate in 2010.

In 1994, IOSH had a 'limited' CPD policy which applied to c.450 Registered Safety Practitioners. My work (Asbury, 1994a) led IOSH Council to extend CPD to all Full (now Chartered) Fellows, Members and Graduates. In addition, Graduates are expected to have completed a CPD cycle at the time of their IPD peer interview. Those documents, naturally, have been revised several times since, but continue to set CPD requirements for around 40,000 IOSH members around the world where such practice is mandated (i.e. CPD remains voluntary for Affiliate and Associate members).

The public work (Asbury, 2001) established the current IOSH membership structure and qualification requirements for each category of membership. My work (Asbury, 2010a) established the current IOSH IPD scheme including the open book examination and the Skills Development Portfolio used by all GradIOSH as they prepare for progress to Chartered membership.

Later, Hale and Harvey (2012) explained how the research and knowledge from my works for IOSH were adapted and adopted by ENSHPO for transportable OH&S qualifications for safety managers and safety technicians in Europe. They explain how the standards influenced other countries, including Russia, to amend and upgrade their national qualifications to meet those standards. In turn, according to Hale and Harvey (*ibid.*), these same standards were also adopted as learning outcomes for professional courses at European Qualifications Framework (EQF) levels. This European development was combined with a parallel development in a community of practice under INSHPO to bring together North American and Asia-Pacific countries to share and learn from each other's certification and accreditation systems.

My public works also include the revised IOSH Code of Conduct, Guidance and Disciplinary Procedures, and a sample of their launch communications (Lundy, 2013; my works Asbury 2013b; 2013c). The Code establishes four pillars (Integrity, Competence, Respect, Service) and associated standards for each, gives guidance on application of the Code, and provides the disciplinary procedures.

As a direct result of my public work, 26 disciplinary cases have been heard, resolved and (intentionally) published on IOSH's website (IOSH, 2017c) in accordance with the Code. Sharing this knowledge informs all IOSH members on ethical practice.

Application of this Code of Conduct serves to protect and reassure other practitioners, the Chartered body, and the public its members serve.

3.12.2 Increasing the scope and competency of OH&S practitioners

I learned from my practice the criticality of embedding OH&S and corporate social responsibility (CSR) into organisational priorities and culture. This has fed back into my outputs. My company had a client interested in CSR. Our service responded with a product and service to deliver it, whilst retaining the intellectual property.

IOSH required public work to broaden the skills and competencies of OH&S practitioners in the relatively new area (for IOSH) of CSR. IOSH said that it wanted a 'jargon-free guide' based on developing practitioner competence through reflective learning.

I recognised this need and engaged a co-author to collaborate with. As a result, my works (Asbury and Ball, 2009; and later 2016) were researched, prepared and published. Demand from IOSH members led to a two-day training course variant of this work, held several times each year for members and the public at the IOSH head office in Leicester 2010-2014. Aside from (positive) end-of-course feedback, I cannot of course comment on specific impacts at participants' organisations following attendance. An IOSH Group emerged including CSR within its community of practice.

Common OH&S management systems were incorporated as frameworks at the time each work was prepared, as we knew that these would be familiar to safety practitioners. The first work was aligned to *HSG65 2nd edition*, and the second to *ISO Annex SL* and *HSG65 3rd edition*. At my instigation, we extended the second book to reflect the new high-level standard required by ISO *Annex SL* (ISO 2012a) and positioned it as a business book for meeting corporate responsibilities with voluntary actions. As a result, the public work (Asbury and Ball, 2016) can be integrated easily with other current ISO standards such as ISO 9001 for quality, ISO 14001 for environment and ISO 45001 for health and safety.

Twenty new case studies were identified, researched and added to the new work - ten of which I prepared (including *Pearson plc* in my book Asbury and Ball, 2016: 53-6). These reflected my interests, my research and the needs of the managers and practitioners we aimed to help.

The DTRT model from my earlier work (Asbury and Ball, 2009) was revised to reflect ISO Annex SL (2012a). We also added *PDCA* annotation (Deming, 1982; and see my work Asbury, 2018). A DTRT mini-model (*The six core elements of Doing the Right Thing*) was additionally created to encourage readers to reflect upon the CSR application and opportunity in each case study (please see my work Asbury and Ball, 2016: xvii, and immediately following each case study within the book).
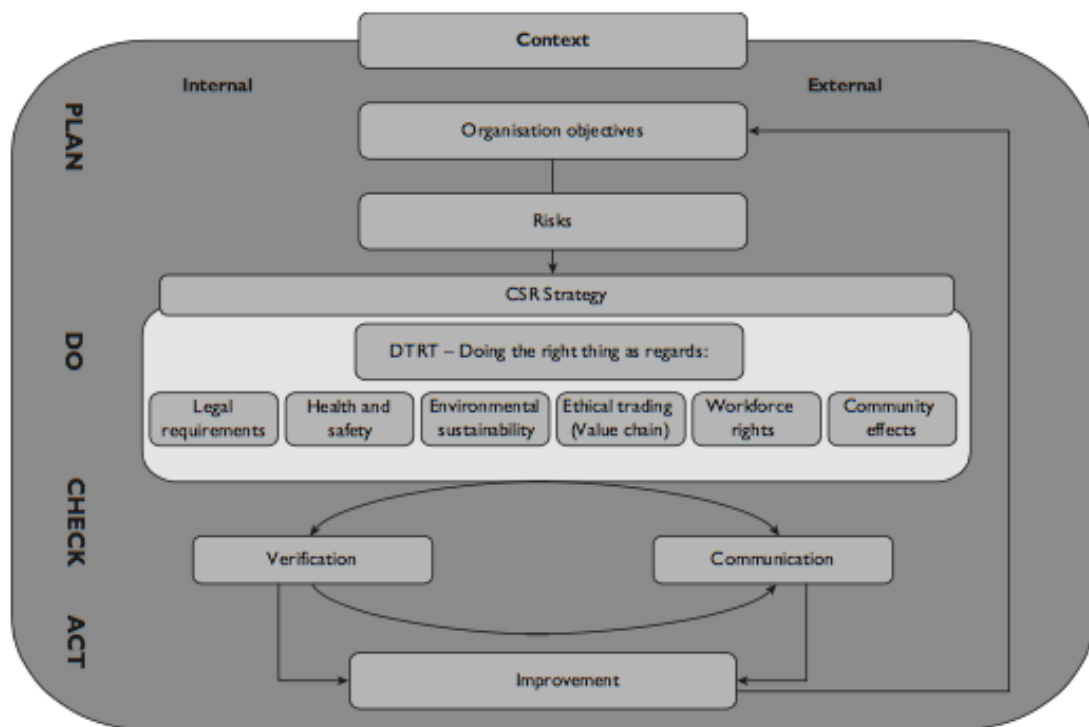
Figure 20 – The Revised *Do the Right Thing* (DTRT) model for CSR
Note: Set in the Context of ISO Annex SL
From my book (Asbury and Ball, 2016: 43).

Figures 19 and 20 are reproduced from my books (Asbury and Ball, 2009; 2016). They reflect the evolution in management systems thinking over the period, applied to CSR. Together, these were the first times that a CSR-MS implementation model had been developed and published for OH&S practitioners. The model shows the chronology of actions necessary to implement a CSR-type approach to risk-based business control using PDCA and ISO Annex SL.

3.13 Impact summary: theme 2

My public works (Asbury, 1994a; 2001) led directly to IOSH's Royal Charter in 2003 and its permission to confer individual Charters in 2005. My works (Asbury, 2010a) continue to provide admission and the routes to Chartered Membership for individuals. Since 2010, IOSH has been the world's largest OH&S organisation (IOSH, 2020a).

The IOSH impacts derived from these public works were subsequently adopted as practices by international OH&S networks ENSHPO in their framework for free-movement and trans-national development and certification of health and safety managers and technicians; and by INSHPO in a development to bring together North American and Asia-Pacific countries (Hale and Harvey, 2012). My public work (Asbury, 2013b) is the current IOSH Code of Conduct (and associated documents).

My work (Asbury and Ball, 2009) provided the IOSH workbook for CSR, which was revised to reflect ISO Annex SL (see my work Asbury and Ball, 2016). It includes twenty practical implementation case studies. Within the OH&S profession, these works provided impetus, approach and accessibility for CSR now to be considered a complementary skill for practitioners (Crane *et al*. 2013; Pederson, 2015). Last year, it was also incorporated in the IOSH competency framework (IOSH, 2019).

The requirements of the OH&S Profession and its practitioners influenced the way the works were prepared and the form in which they were published.

My contributions to the practices of the OH&S Profession in the UK were shared with other international OH&S bodies.

I have shown:
- How IOSH professionalised, grew, and regulated its members

My contributions also show:
- How OH&S practitioners could up- and cross-skill in a new discipline (CSR); and
- How the learning on professionalising OH&S was shared internationally (with ENSHPO and INSHPO) to deliver engagement and influence, strategy and planning, sustainable business and enhanced technical capability.

CHAPTER FOUR

4. CLARIFYING 'DYNAMIC' IN THE CONTEXT OF RISK ASSESSMENT

Effective leadership is putting first things first. Effective management is discipline in carrying it out.

- Steven Covey (1989)

It will become the classic work on the subject.

- Dr Stephen Vickers, Chief Executive NEBOSH 2000-6. In my book Asbury and Jacobs (2014: xv)

4.1 Preamble

There are two parts within this theme which I will address in turn. In sections 4.2-4.8, I will review the literature related to risk and risk assessment prior to positioning and contextualising my risk assessment software public work (Asbury, 2002). Then, in sections 4.9-4.10, I will position and present my public work on decision making which clarifies 'dynamic' in the context of risk assessment for the first time outside of the emergency services sector.

For both parts in this theme, I present my observed opportunities arising in section 4.11, with methodology for my dynamic risk assessment (DRA) research in section 4.12.

Finally, I present my contributions to practice arising from my public works in this theme in section 4.13 with an impact summary in section 4.14.

4.1.1 My journey to risk assessment

As I have explained in this context statement, I became involved in occupational health and safety (OH&S) in 1984. This was around the time that what would become the *Control of Substances Hazardous to Health Regulations 1988* (COSHH) was first being discussed in the

business community. I will mention the earlier requirements, but it was COSHH, Regulation 6(1), that compelled *risk assessment* for the first time in most UK organizations:

> *an employer shall not carry on any work which is liable to expose any employees to any substance hazardous to health unless he has made a suitable and sufficient assessment of the risk created by that work…*

At that time, risk assessment was a new regulatory concept. It would become mainstream with the publication of the *Management of Health and Safety at Work Regulations 1992* (MHSWR), a part of the 'six pack' regulations, effective 1 January 1993 (see HSE, 1998).

Understanding the legal requirements and the literature in this area became critical to my practice and later, to my outputs. This chapter will contextualise the background to the works in my third theme which is related to *risk assessment.* I will position these works within the context of the literature used to inform my position, and then I will summarise the development of each work which in turn provide contributions to practice presented in three groups in sections 4.12.1-3.

As an OH&S practitioner for 35 years, I have encountered too many incidents caused by insufficient attention to known and foreseeable risks. I provide a couple of examples on pages 148 and 157 of this statement. Some of the incidents I have dealt with were powerful influences and each, in its own way, contributed to the construction of experiences from my work which in turn became part of my *habitus* (Bourdieu, 1990 - explained on page 2 of this context statement). Experiences such as these compelled the creation of works to contribute new practices to assist organisations to make better decisions on how to eliminate or control work hazards and thus protect their workers and others.

My public works (Asbury, 2018: 8-51) presents analysis of the business environment, analysing features of the external and internal *Context* (ISO, 2012a *Annex SL, clause 4*) and the needs and expectations of stakeholders aka interested parties. Together with work activities, these give rise to impacts upon an organization's objectives aka '*Risks*' as defined by ISO 31000:2018 (ISO, 2018c).

My works also explain the practicalities of managing risks in an organisation from 'The Start' to 'The Vision' (in Asbury, 2018, Figure 1.7: 44), providing an overview of the history of risk and related topics from the literature. This supplementary, deeper review of the literature is presented from the emergence of quantitative risk assessment in 1938, through the publication in the UK of the HSE 'six pack' regulations (see HSE, 1998) and continuing to more-recent developments.

4.2 Risk and Risk Assessment – An Overview

An informative timeline for the emergence of risk assessment is set out by Kolluru *et al.* (1996), starting from the US *Food, Drug and Cosmetic Act* in 1938. It continued with the development of probabilistic techniques (Bass, 1994) in atomic energy and aerospace operations in the 1940s-50s. The US EPA published its first quantification of chemical cancer risks in 1976.

The evolution of understanding of risk and risk management is probably best captured in four reports - two from the UK and two from the US. In the UK, the Royal Society (1983; 1992) study groups were both chaired by the eminent chemical engineer Sir Frederick Warner. In the US, the National Research Council (1983; 1996) studies were led by Paul Stern and Harvey Fineberg respectively. Both 1983 reports provided objective advice on risk as it related to the insurance industry, largely taking the form of a mathematical equation proposing that risk can be measured (quantified) as the product of probability (or likelihood) and consequence (or severity or impact). Together, the reports say that other factors – e.g. threat and vulnerability – can be considered, but they say prove harder to quantify. My risk assessment software work (Asbury, 2002) was greatly informed by, and is consistent with, these four early sources for example by adopting the R = P x C equation. This is discussed in greater detail in this chapter.

There is remarkably little consensus on the definition of *risk*. There is vigorous debate from some (Fischhoff, Watson and Hope, 1984), and elsewhere intentional silence (Douglas and Wildavsky, 1982). Haimes (2009: 1647-8) says that "a universally agreed-upon definition of risk has been difficult to develop", concluding that "modelling must evaluate consequences for each risk scenario as functions of the threat (initiating event), the vulnerability and resilience of the system, and the time of the event". Kaplan and Garrick (1981) suggested a quantitative definition of risk in terms of the idea of a "set of triplets", extended to include uncertainty and completeness. Bateman (1999), Borge (2001), Boyle (2002) and ISO (2018a; 2018c) provide a variety of other definitions. In my work (Asbury, 2018: 39), I provide further examples from OH&S regulators and the literature.

Possibly the most widely used definition (Wilson and Crouch, 1982 in Pidgeon, Kasperson and Slovic, 2003) underscores the common OH&S use presented by the Royal Society (1983; 1992) and the National Research Council (1983; 1996) as R = P x C:

> **Probability** of an adverse event (e.g. of a person being harmed if exposed to a hazard) **times** the **Consequence** or impact(s) of that event.

In "*Five common risk assessment mistakes (and how to avoid them)*", Chambers (2014: 1) says that risk assessment "has been the central concept of our approach to health and safety for several decades, it makes sense to make sure that they are done right". He comments that "…it is alarming how even large operations and specialist consultancies can make mistakes about the … approach to it". He (*ibid*.) identifies the following common mistakes:

1. Done only for legal reasons
2. Done from the desktop
3. Covering only control measures in place
4. No management plans
5. No ranking [significant risks should be prioritized].

In the use of quantitative risk assessment (QRA) in complex systems, Apostolakis (2004) argues - after comparing the QRA insights with those from traditional (qualitative) safety methods - that those two approaches complement each other, and that peer review and critique is essential. He (*ibid.*) draws an interesting distinction between *risk-informed* and *risk-based* decision making. Space agency NASA (2010: 1-2) characterises QRA this way:

> *Robust decisions are based on sufficient technical evidence and characterization of uncertainties to determine that the selected alternative best reflects the decision-maker's preferences and values, given the state of knowledge at the time of decision, and is considered insensitive to credible modelling perturbations and realistically foreseeable new information.*

Rae, Alexander and McDermid (2014) report that QRA remains widely practiced in system safety, but that there is insufficient evidence that it is fit for purpose. They present a comprehensive maturity model for QRA which identifies the flaws raised in the literature and from a collection of risk assessment peer reviews.

Commenting on risk-based and risk-informed decision making, Hassanien, Langer and Abdolrazaghi (2018) point out the evolution over the last thirty years from the former to the latter in safety-critical industries (such as aviation, nuclear, rail). This implies that QRA is only one part of the decision-making process. Specifically, Abdolrazaghi (*ibid.*) reviews recent advances in the decision-making in the nuclear industry, introducing a combined technical and management decision making process called integrity risk-informed decision making (IRIDM). Kaushik and Kim (2020), however, point out the difficulties in practical implementation of IRIDM "because of the problems with the inputs prioritization and the decision options evaluation". This approach may not be for every user or application.

It is clear (Apostolakis, 2004; Luecke, 2008; Wahlstrom, 2014; Bahr, 2014; Hassanien, Langer and Abdolrazaghi, 2018; Tindale and Winget, 2019) that better decision making through peer review and having 'the right people in the room' (in terms of their competency) is essential to add depth to the understanding of safety and how to achieve it. Tindale and Winget (*ibid.*) describe how decision-making can be social in nature and involve multiple group members. They say that "…literature on group decision-making is conceptualized as falling along two dimensions: how much interaction or information exchange is allowed among the group members, and how the final decision is made". Decisions in safety management build on the *MTOI* metaphor (man [sic], technology, organisational, information systems) to ensure continued safety. According to Chevron (in Luecke, 2008), employee training on how to frame decisions, apply analytical tools and work with other decision-makers to recognise analysis that has or hasn't been thought through is essential. My own work with Chevron (2006-16) has informed and confirmed this view.

As I said in chapter 1, incidents and their investigation have initiated new regulations and approaches. There was considerable literature following a fire at a residential high-rise in London in 2017 (see Grenfell Tower, 2020) including Van Weyenberge *et al.* (2019) who discussed the development of probabilistic techniques (Bass, 1994) for quantifying the life safety of residents in buildings in the context of design for fire safety.

From a review of the literature on construction risk modelling over 27 years, Taroun, Yang and Lowe (2011: 87) report that "risk assessment is probably the most difficult component of risk management, but potentially the most useful". They say that the probability-impact model is predominant, with risk analysis related to project and cost being dominant, with analysis of project performance hardly mentioned in the literature. They (*ibid.*) say that "…no risk assessment approach was discovered that deploys a common scale to simultaneously assess the alternative impacts of a risk on the (many) project objectives, concluding that the limitations of existing theories and tools indicate the need for improved alternatives". Later, Taroun (2014) re-presented the results of that literature review with a review of *the real practice* of risk assessment. He concludes "there has been a shift in risk perception from an estimation variance into a project attribute", though says that the literature reveals "…the lack of a comprehensive assessment approach capable of capturing risk impact on different project objectives". Obtaining a realistic project risk level demands an effective mechanism for aggregating individual risk assessments, he concludes. He (*ibid.*) reports that the various assessment tools available suffer from low take-up. Instead, he says, "professionals typically rely upon their experience", hinting at a more qualitative approach.

Bani-Mustafa *et al.* (2020) present a new method for aggregation of risks arising from multiple hazards based on a hierarchical framework to test the trustworthiness of the risk assessment based on two main attributes – a) the strength of knowledge supporting the assessment and b) the fidelity of the risk assessment model. Risks are then aggregated using a "weighted posterior"

method which is based on the level of trustworthiness. They illustrate the risk aggregation as applied to two hazard groups in nuclear power plants.

I identify strongly with Taroun's advice (2014) that obtaining a realistic project risk level demands effective mechanism for aggregating individual risk assessments (as I developed for use in my software Asbury, 2002). I am not sure that Bani-Mustafa *et al.* (2020) solve this for most users. Taroun's conclusion (*ibid.*) that a simple analytical tool that uses risk cost as a common scale and accesses professional experience could close the gap between risk assessment theory and risk assessment practice is more closely aligned to my position (as presented in my works Asbury, 2002; Asbury and Jacobs, 2014).

In light of evidence from the field and from the literature, and an absence of tools to the close the gap later identified by Taroun (*ibid.*), I was compelled to innovate. In sections 4.3-4, I discuss how this paradigm (its evolution up to its creation period) informed my output (Asbury, 2002). I explain how I was driven to write the material and in the format I chose.

4.3 The evolution of risk assessment

Bernstein (1989) narrates the history of understanding risk, advising that one would not have to go far back in time many years for the "…modern clarity of approach to and measurement of risk to be lost". Without some measurement, some numbers, risk was a matter of gut feel or superstition. He advises (*ibid*.: 2) that:

> *The ability to define what may happen in the future and to choose amongst alternatives lies at the heart of contemporary societies.*

A range of hazard identification tools emerged in the 1960's (including HAZiD and HAZAN; Borge, 2001). HAZOP, originally *Critical Examination*, was created by the Heavy Chemicals Division of ICI in 1963 (Kletz, 1983), for application to complex processes where sufficient design information was available and not likely to change significantly.   By applying guide words and parameters to each process *node,* an organisation can systematically identify possible deviations in its process. For each deviation, the team identifies feasible causes and likely consequences, deciding whether the existing safeguards are sufficient or whether additional safeguards are required to reduce the risk to an acceptable level (British Standards Institution, 2002). It is clear that regardless the hazard and risk tools employed, competence in identifying and evaluating the significance of critical factors is paramount.

Kolluru *et al.* (1996) build upon the work of the Royal Society (1983; 1992) to present a two-factor risk matrix for assessing probability and consequence; an approach supported by Wilson and Crouch (1982, in Pidgeon, Kasperson and Slovic, 2003); Bateman (1999) and UK OH&S regulator HSE (1999; 2003; 2006, 2011; 2014) in their publication *5 Steps to Risk Assessment*.

Around the same time, Thompson and Graham (1996) pointed out the efforts made in improving uncertainty analyses and endorse probabilistic techniques as tools for performing them. They hint at the issues raised by Kaplan and Garrick (1981) fifteen years earlier. A feature of explicitly including uncertainty and variability in risk assessments is that subsequent decision-making (e.g. determining cost-benefit analysis) can use distributions of risk as inputs. I am not sure I agree with them (Thompson and Graham, *ibid*.), if only because of the complexity this approach adds for the often-lay assessor.

Ostrom and Wilhelmsen (2019) provide a list of common hazards and an array of risk assessment tools from basics, to mathematical tools for probabilities, and updating FMEA, FTA, ETA and HAZOP. They also discuss risks from aviation incidents and epidemics. They (*ibid.*) say that "risk assessment tools and techniques, if applied systematically and appropriately, can point out vulnerabilities in a system". The key term, they say, is "systematic". I could not agree more with this latter point.

Wilson and Crouch (1982, in Pidgeon, Kasperson and Slovic, 2003), the Royal Society (1983; 1992), National Research Council (1983; 1996); Kolluru *et al.* (1996), Bateman (1999) and HSE (1999-2014) are much more closely aligned to my experiences and my real-world research from 1984 to present. This too will become the path that the world's largest OH&S body IOSH will follow from 1999 in its *Managing Safely* suite of training courses.

As IOSH developed - influencing, endorsing and adopting as acceptable for Graduate membership the emerging OH&S degrees from 1992, as well as National Occupational Standards (NOS) for OH&S and NVQs from 1995; and then clarifying its membership structure from 2001 (see the timeline in Figure 15 on page 97) - it published its Health and Safety Risk Management *magnum opus* (Boyle, 2002). Even if not a magnum opus in the normal sense, it was endorsed by the Health and Safety Commission, and consolidated the earlier thinking with the legal requirements (*MHSWR*, etc.) for assessing and controlling risks. In addition, it presented a *systematic* risk management model which would also be used for teaching OH&S risk assessment to over 179,000 mostly UK managers in its *Managing Safely* training courses over the next twenty+ years (IOSH, 2018a).

HSE (1999-2014), Boyle (2002), IOSH's syllabus for *Managing Safely*; also the Royal Society (1983; 1992), National Research Council (1983; 1996)*,* Wilson and Crouch (1982, in Pidgeon, Kasperson and Slovic, 2003), Bateman (1999) and Kolluru et al. (1996) were the principal influencers of my risk assessment software output (Asbury, 2002). I suspect that seventeen years after its launch, Ostrom and Wilhelmsen (2019) would be supportive of its *systematic* approach.

In IOSH *Managing Safely* training courses provided by my company from 2002, my software work (Asbury, 2002) was used in the risk assessment module as it was completely aligned to the approach endorsed by IOSH.

Table 2 on page 20 of this context statement identifies examples of major OH&S incidents 1910-2020. Not all realised risks have obvious OH&S consequences. For example, Eichenwald (2005) explained increasingly uncontrolled and illegal financial practices at Enron Corporation which led to the collapse of the organisation and its accountants Arthur Andersen, imprisonment for some of its executives and 50,000 job losses. Broader business risks such as that one are expressed in a variety of works, and I like in particular the metaphor for business resilience expressed by Johnson (1999). In designing this software (Asbury, 2002), I decided that it should provide functionality presenting opportunity to assess *business* risks, instead of (just) OH&S risks.

Following explosions at BP Texas City in 2005, CCPS (2007) presented guidelines for risk-based process safety. They remind users to focus upon 'significant risks'. Flin, O'Connor and Crichton (2008) explain safety-critical decision-making where time is short - *At the Sharp End*.

Significant risks are not always 'probable'. Taleb's *The Black Swan* (2008), followed by Gardner (2009), explains low-probability, high-consequence events. Gardner (*ibid*.) brings perception of risk into focus, reflecting on how categories of risk such as those related to radon, germs, paedophiles, BSE (Bovine Spongiform Encephalopathy) and CJD (Creutzfeldt-Jakob Disease) have seen public interest rise and fall over time (and with this, often a perception-cum-fear of increased likelihood). Similarly, *outrage factors*, which originate from the work of Sandman (1993), and which relate to public opposition to a policy that is not based on knowledge of the technical details can significantly influence the perceived impacts. I had previously identified this within the OH&S setting, and my software work (Asbury, 2002) adapts this thinking for use by denoting the low probability-high consequence risk-rating as potentially *significant*. It is critical that *Black Swan* risks (discussed further in section 4.8) are recognised as a potentially significant outcome of any risk assessment process; it is important that those doing the risk assessment seek to see 'the big picture'.

Complementary to these risk assessment tools and approaches, Dekker (2014) advises on leadership, cultural aspects and self-determination related to managing risks. He is right to remind us of this. Hollnagel (2014) contrasts decision matrices for *Safety*-I ('investing in safety is a cost and non-productive') with those for *Safety-II (*'investing in safety is an investment in productivity; in ensuring that as many things as possible go right'), advising on appreciative enquiry that *What You Look for Is What You Find* (Lundberg, Rollenhagen and Hollnagel, 2009).

In *Black Box Thinking,* Syed (2015) brought new thinking to 'high performance', including OH&S performance outcomes (i.e. failures). Creative breakthroughs can often arise from (multiple?) failures, such as *Grenfell Tower* and other disasters such as those mentioned earlier. The software work (Asbury, 2002) incorporates and embraces this thinking by providing methodology for users to facilitate their understanding and response to failure which organisations must learn to notice and welcome.

These earlier debates influenced the outputs and the way in which they were presented. Whilst it was written in the *Context* of 2002, this output I would argue, remains consistent with the overwhelming voices of later research. It places *risk assessment* in the wider business *Context*, whilst determining significant risks for the planning part of *PDCA* (Deming, 1982; ISO, 2018a). As I will explain, from my learning experiences in the field, it was not uncommon to see risk assessments presented at though they were divorced completely from the business/business activity to which they related. The result of my two-way learning, I contend, was better and more-usable product output.

4.4 Assessing OH&S risks

As we shall see, there is considerable debate on assessing OH&S risks, but little practical advice. At the time, HSE did not even provide a template document for organisations to consider. This is likely why my clients were seeking the software tool I created (Asbury, 2002).

In *How Safe is Safe Enough*, Fischhoff *et al.* (1978) used psychometric procedures to elicit quantitative judgements of perceived risk, acceptable risk, and the perceived benefits of 30 activities and technologies from 76 members of the League of Women Voters. The results indicated little systematic relationship between perceived existing risks and benefits of the 30 risk items – current risk levels were generally viewed as unacceptably high. When current risk levels were adjusted to what would be considered acceptable risk levels, however, risk was found to correlate with benefit. When nine attributes of risk were studied, two dimensions proved to be effective predictors of the trade-off between acceptable risk and perceived benefit. This, and literature which followed, informed my position that assessments of risk should assist in providing a reliable prediction of reasonably foreseeable risks to facilitate better action planning. My software work (Asbury, 2002) provides a systematic opportunity to deliver upon this.

According to Lave (1987), knowing the nature and magnitude of OH&S risks is helpful in setting priorities as well as in making decisions, saying that "Risk-risk situations require choice among risky alternatives". Lave (*ibid.*) says that "How safe?" situations require choice as to which activities are sacrificed for increased safety, recognising that these are difficult to manage and must be conveyed explicitly to arrive at sensible decisions.

Slovic (1987), and later Gardner (2009), reflect on the judgements lay people make when asked to evaluate hazardous activities. Slovic (*ibid.*) aims to aid risk analysis by providing a basis for understanding public perceptions of hazards and improving communication of risk information between the public, technical experts and decision-makers.

In 1988, the SARF framework (Social Amplification of Risk Framework) was published by researchers from Clark University, identifying that some risk events had particularly high signal values. Risk events, when they undergo substantial amplification can cause "social shocks" (Lawless, 1977), as well as extreme attenuation of certain risk events which pass un-noticed until reaching significant proportions – called "hidden hazards" by Kasperson and Kasperson (2005). SARF thus provides a framework for testing a broad array of risk problems and point the way to "disciplined enquiry" (Pidgeon, Kasperson and Slovic, 2003).

Creedy (2011) reported that although much has changed in how the consequences (or severity, or impacts) are treated in risk assessments, estimation of frequency (or likelihood, or probability) still appears to be largely based on values from several decades ago i.e. many things can seem

unlikely until they occur. Taleb (2008) would almost certainly agree.

The implications of this (potential) under-estimation of frequency are reviewed with learning from process industries, aerospace and finance. Creedy (2011) points out the significance of factors such as organizational culture, normalization of deviance, ownership and demographic change which are becoming increasingly recognized in the analysis and hence the control of risk.

Failure to consider such factors and their effects can pose a problem, because even for a motivated management team, it can be difficult to justify expenditure on (further) protective measures if they produce no apparent difference in the risk.

Bryant, Croft and Cole (2017) explain the *ALARA* principle (as low as reasonably achievable, aka ALARP / practicable) which arose from radiological protection and incorporated into the *Health and Safety at Work, etc. Act 1974* (HASAWA) to cover all work hazards. I accord with their concern that current methods for assessing hazards can become isolated, in that as one hazard is assessed independently of another, it can be challenging to ensure a truly holistic view of the risks and whether they have been reduced sufficiently. Section 2 of HASAWA requires that risks should be reduced 'so far as is reasonably practical' (SFRP). Legal requirements (as an aside to business decisions) will be considered later in this chapter. Suffice to say, extensive civil case law has tested 'negligence' and 'breach of statutory duty' in a wide variety of settings.

Answering the *How Safe is Safe Enough?* question, Alston (2017) says that safety is a win-win proposition worth the expended resources. Leaders, he says, must ensure that their organisations are safe enough to achieve their mission. My public works examined by this chapter provide tools to facilitate Bryant *et al*'s concern (2017) and Alston's aspiration (2017).

4.4.1 Risk assessment matrices

The evolution of risk assessment discussed herein is broadly supported by Bateman (1999; 2006; and 2011), Dalton (1998) and UK H&S regulator HSE (1999; 2003; 2006; 2011; 2014) in using five steps to making a risk assessment. Cox (2008) reflects this evolution, pointing out the limitations and suggesting that risk assessments should be used with caution, and only with careful explanations of embedded judgments. Similarly, Aven and Kristensen (2019) point out the importance of "reflecting knowledge and lack of knowledge in relation to the understanding, assessment and management of risk". Clearly, we have to know what we are measuring. Hubbard (2020) comments that "risk as something that could occur is not tangible in the same way as progress on a construction project might be, but it is every bit as measurable".

For IOSH, Boyle (2002) follows Wilson and Crouch (1982, in Pidgeon, Kasperson and Slovic, 2003), the Royal Society (1983; 1992) and NRC (1983; 1996) on using likelihood (or probability)

and severity (or consequence) as independent parameters for predicting risk. IOSH *Managing Safely* adopted this approach from its publication in 1999.

Friend and Kohn (2005) present several risk matrices in presenting the PxC equation. Kolluru *et al.* (1996) support the risk matrix, presenting a simpler 3x3 representation. Gul and Ak (2018) discuss the application of the 5x5 matrix in the copper and zinc mining industry. My former client Bombardier Transportation used a 5x4 matrix, while current client Chevron uses a 9x9 matrix; but the overarching principle is similar with different graduations for likelihood and severity. All of the public works in this regard, especially my own (Asbury, 2002) were founded upon this continuity and extend the utility and application.

For tolerable risks, Woodruff (2005) supports a simplified approach, reporting that risk estimation methods commonly used in UK OH&S practice are biased towards consequence rather than overall risk, and proposes a re-working of practice in lower-risk industrial and commercial sectors to reflect whether the overall risk is likely to be in the intolerable, tolerable or acceptable zones. That paper argues that once this evaluation has been completed, tolerable risks (i.e. those which meet the legal standard SFRP) can be prioritised using values of exposure to the hazard.

In *Safety Science*, Duijm (2015) provides *Recommendations on the use and design of risk matrices*, noting that they are widely used in risk management / standards and for corporate risk tolerance criteria. Duijm (*ibid.*) explores the weaknesses of risk matrices and provides recommendations for the use and design of same. The recommendations cover a range of issues including the relation between colouring the risk matrix and the definition of risk and major hazard aversion, the qualitative, subjective assessment of likelihood and consequence, the scaling (say 1-5) of the discrete likelihood and consequence categories, and the use of corporate risk matrix standards.

The limitations of an assessment derived from this PxC equation are well documented (March and Shapira, 1987; Bernstein, 1989; Pidgeon, Kasperson and Slovic, 2003; Cox, 2008; Covello and Merkhoher, 2013; Wei, Xu and Zhang, 2020). Notwithstanding this, Woodruff (2005) and Duijm (2015) provide compelling positions applicable to the majority of low/medium risk workplaces. I support their positions through these public works (Asbury, 2002), whilst recognising the need for other approaches in high-hazard, safety-critical sites/operations.

March and Shapira (1987) explore the relationship between decision theoretic conceptions of risk and the conceptions held by senior managers. They conclude that managers take risks and exhibit preferences, but that the processes that generate their decisions are removed from the classic process of choosing actions from alternatives. They identify three ways in which the conceptions of risk differ from what would be expected from a theoretical perspective:

- Managers are insensitive to estimates of probability of possible outcome;

- Decisions are affected by attention to critical performance targets; and

- They make a sharp distinction between taking risks and gambling.

Ultimately, *risk assessment* is about making decisions and choices (including bad ones). Unfortunately, it has become throwaway language for (almost) anything related to OH&S. I agree with Ball and Ball-King (2011) that done well, risk assessment properly conducted, is highly beneficial – it saves lives, prevents injuries and protects health. But done badly, they say, it can damage public life and perceptions of safety. A management consultant colleague characterised safety training as '*show them a funny video and get them to do a risk assessment*'. Possibly as a result, "a large proportion of risk assessments are not very good" (Bartley, *pers comm.* 2016). Assessors had not sufficiently engaged common sense or with line management to determine the magnitude of the 'real' risk (March and Shapira, 1987; Covello and Merkhoher, 2013). Even where priorities had been identified, this was not reliably met with new practices or precautions to control the risks sensibly in the workplace.

This situation has provided opportunity for a regulatory initiative to interrogate some of the questionable decisions made on a *non-enforcement* basis, and to make those investigations available to the media as 'proof'. It was known as 'Myth-busting' (Bartley, *pers comm.* 2016; HSE, 2016c).

Covello and Merkhoher (2013) say that while the specialisation and fragmentation of the risk assessment literature may be acceptable to the specialist, it is not useful to the reader with a more general interest. They express concern that makes it difficult to see how the methods described by one author can be extended to assess risks not addressed by that author. They say it is easy to miss opportunities to use efficient or effective methods that have not been developed specifically for a selected area of application.

Clearly, gaps remain here despite the wide range of available publications (including Acts, Regulations, ACoPs, guidance, books and leaflets) and regulatory initiatives. The critique from the literature is that challenges remain to identify effective methodology which is valued by managers, while addressing difficulties in identifying accurate data to derive probability, and consistently predicting the consequences. Makin and Winder (2008) discuss the difficulties in transferring OH&S-MS approaches (including risk assessment) to smaller organizations. They say that any approach must bring together three control strategies – safe place, safe person and safe systems – to simplify implementation and make the benefits more obvious. As I have intimated, the evolution through the literature led to my risk assessment software output (Asbury, 2002) to enable sensible but simpler, *systematic* OH&S risk assessments to be undertaken.

Regardless of these limitations, the PxC (sometimes LxS; likelihood times severity) approach is the one used by many organisations of all sizes in the public, private and third sectors today – mainly as a result of HSE approval and promotion (HSE, 1991-2013; 1999-2014). It is also the method required by the world's largest H&S body IOSH within its *Managing Safely* training syllabi.

In 1999, Health and Safety Executive published *5-Steps to Risk Assessment* (indg163); now in its fifth revision (HSE, 1999; 2003; 2006; 2011; 2014). It has continued to propose the PxC equation throughout this life. I allowed the literature, the four reports of the Royal Society (1983; 1992) and NRC (1983; 1996), the IOSH training syllabi, *HSG65* (HSE, 1991; 1997; 2013) and indg163 (HSE, 1999, 2003; 2006; 2011; 2014) to inform my work (Asbury, 2002) from the start.

The common representation of the risk evaluation equation is as a matrix - often along the lines shown in Figure 21. It provides for prioritisation of attention according to its relative position and shading using a hierarchy of control. The risk assessment software (Asbury, 2002) adopts this approach in a highly structured manner.

Figure 21 – Common risk assessment prioritisation matrix

NB This example matrix shows the 5x5 format and RAG (red/amber/green) prioritisation for control (acceptable, tolerable, intolerable; Woodruff, 2005). The matrix also shows the Black Swan risk characteristic in the top left corner which is characterised by very low probability but with catastrophic consequence (Taleb, 2008; Gardner, 2009).

In using any risk assessment approach, users should understand that changes (such as to working time, changing employment contracts, the organisation of work, work equipment and conditions, or the means and effectiveness of control measures) are inevitable, and thus that any risk assessment is inevitably both time bounded and time limited. This means that they require periodic review and reflection to check if the judgements (Cox, 2008) remain accurate. My risk assessment software work (Asbury, 2002) is consistent with HSE requirements in this regard (*Step 5* of *5 Steps,* 1999, 2003; 2006; 2011; 2014) and Papadopoulos *et al.* (2010) in reminding users of the importance of periodic review, as well as review following an incident.

Papadopoulos *et al.* (*ibid.*) report 'new' occupational health risks related to disruption of human biological rhythms, increased fatigue from patterns of working hours and years of employment, stress caused by employment insecurity, and possible deterioration in workers' living conditions and to family life following changes to income. These, they report (*ibid.*), also have potential to increase the likelihood of occupational accidents related to workload and time pressure. They are right to consider health risks as well as safety ones - as does my work (Asbury, 2002) by allowing health hazards (such as noise, vibration and organ sensitizers) to be associated with Departments, Operations and Tasks as shown in Figure 22 on page 143 and its associated commentary.

4.5 Risk assessment software

This then forms the academic backdrop to my risk assessment software work (Asbury, 2002). Table 8 on page 242-3 of this context statement provides a summary of my research for development my OH&S risk assessment software public work. It is critical to understand, however, that the product was informed by my understanding of some of this literature which I have reflected upon in retrospect, but also by my practice and in particular from 1995 when I joined Royal & Sun Alliance Insurance Group (R&SA). Consulting activities were generally agreed with the liability underwriter, particularly those concerned at rising incidents and/or claims. Understanding 'risks' and how to control them became my specialty.

My learning in the late 1980's about the (then) new legal requirements for risk assessment, my work with Rugby, BTR and GKN, and then R&SA's clients had highlighted that many organizations had experienced difficulties in completing the required assessment and turning completed paperwork and action plans into 'action'. My context statement reveals the opportunity arising to design, develop, test, market and sell a computer software programme for risk assessment.

Two years after leaving R&SA to run my own organisation, I saw the opportunity to develop such software (Asbury, 2002) to systemise and prioritise risk assessments. With two business partners, I had acquired a consulting business from R&SA. To make it successful, we needed products and services to sell. It was these factors that together led to the creation of this software.

This novel work was informed from work on insurance accounts that had presented organisations spending three (or more) months designing a risk assessment form, and perhaps five minutes (or less) completing it (!). Through a sequence of development, my risk assessment software work provided a unique and cutting-edge solution to the London insurance market and others by 2002.

The software provided a toolkit to facilitate compliance with OH&S legal requirements for risk assessments (which I will summarise in section 4.6) and an opportunity to drive OH&S improvement actions in the organisation. Put simply, the software provided process, method and structure to assist with the identification of hazards, those exposed, to assess the risks using recognised methodology, and to create a record of those risks which may be significant. It triggered an action plan, with reminders of due (and overdue) response. I agree with Power (2007), who says that risk, as an object of management, is 'transformed from uncertainty…when objects of concern are connected to expectations about management'. And I agree with Drucker (1970) that "What gets measured gets done".

The design of the software work was founded from a comprehensive appraisal of risk assessment and RA approaches from the literature (Royal Society, 1983; 1992; National Research Council, 1983; 1996; Kolluru *et al.*, 1996; Bateman, 1999; HSE, 1999-2014, and IOSH *Managing Safely*) using a 5x5 approach presented previously in Figure 21 to make probability and consequence assessments of inherent and residual risks (explained in my book Asbury, 2018: 40). Whilst there remains some critique of this approach, it was at that time a recognised and frequently employed approach. Following this existing model but employing it in a practical computer-mediated way was something novel, and hence its inclusion within my public works.

Three development partners/clients were identified - Gent Limited (fire detection systems) and two organisations from the insurance sector - THB Clowes and James Hampden Insurance Brokers. From meetings and workshop sessions with those partners, I developed a specification for a department-led, hierarchal approach as I had championed and utilised at GKN and in the London insurance market. The specification was discussed with the software developer to ensure feasibility. Figure 23 shows an extract of the version control file showing step-by-step creation, alpha/beta testing and multiple refinements.

The specification for the work evolved as an *Explorer* style of presentation named and marketed as *DOT-H* as shown in Figure 22 (please look to the character icons in the '*Explorer*' view) and summarised in the text below:

- **D** represented Department(s), where different O(perations) take place
- **O** represented Operations, which comprise a sequence of T(asks)
- **T** represented Tasks, the finest level of granularity where workers may be exposed to hazards
- **H** represented Hazards, which can affect Departments (such as fire), Operations (such as noise) and Tasks (such as repetitive movements). Hazards could be associated at any level of this hierarchy for subsequent risk assessment.
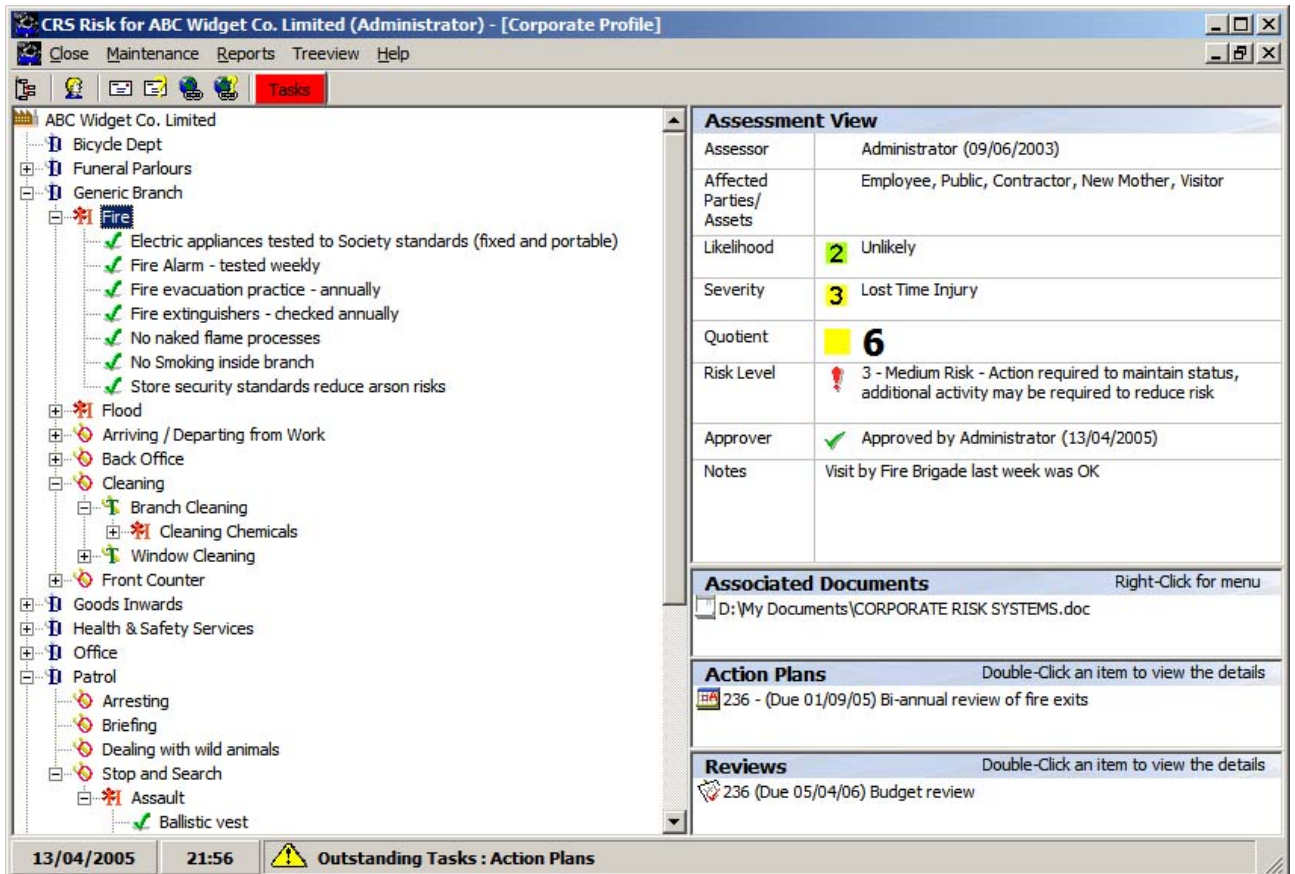
Figure 22: Screenshot from my risk assessment software public work
From my public work (Asbury, 2002)
NB Screenshot shows the then unique hierarchal (DOT-H), Explorer style of presentation

Taking cues from Kolluru *et al.* (1996), HSE (1999-2014) and IOSH *Managing Safely*, risks were assessed using a 5x5 matrix with drop-down menus for likelihood and severity predictions. Where residual risks were assessed as significant (including *Black Swans Low probability, High Consequence incidents)*, the software prompted users for an action plan (shown bottom right corner of Figure 22, *Action Plans*) which - if selected - sent prompts at user-definable intervals to encourage attention to or when appropriate, closure of the action. All the risk assessments and action plans for the organisation were attached to the DOT-H spine and could be tracked through time as each action closed or review completed created a new version.

An additional feature added during the life of the product from client/user group feedback was the ability to add associated documents – also shown in the bottom right corner of Figure 22 (see 'Associated Documents'). These could be photographs, videos, working procedures, indeed any digital file.

100% of the content and functionality in the product was specified and created by me. Software programming was by Carl White (the partner of a neighbour) under a development and income-sharing agreement. Ownership of the intellectual property in the product was assigned to me.

The software was extensively alpha tested through each stage of development within my organisation. When ready, a beta test was initiated with our three launch clients – Gent, a direct user; and the insurers who wanted the product for their respective clients. We also provided the software 'to the world' as a free download to obtain feedback from a diverse audience. Over six years, we received and responded to hundreds of support calls, attended user forums, and attended client meetings. These provide opportunities to improve stability, add functionality, and fix glitches and bugs.

All revisions and refinements were version-controlled under an UKAS ISO 9001 certification. During its life, there were over 70 unique versions tracked in our control systems, a sample of which is shown in Figure 23.

CRS Risk – Risk Assessment Toolkit ©

Version Release History

Version	Release Date	Notes
1.0.34	5/2001	Original release. Only tested on CRS internal laptops via employees and external launch client Gent Limited.
1.0.42	8/2001	1.0.35 – 41 not released; internal only. Initial trial version used in 'user groups' (T.L. Clowes motorsport client group).
1.1.1	10/2001	Fixes to glitches in 1.0.42
1.1.2	1/02	Fixed various bugs and improved functionality for reporting.
1.1.3	NA	Fixes to glitches in 1.1.2 Not issued.
1.1.4	6/02	1. Fixed several bugs in preview and report layout 2. Fixed major database issue with Microsoft Database engine, update created to allow automatic upgrade of older versions 3. Added review report 4. Modified printer selection and layout of page 5. Added Email functionality 6. Administrator could perform all functions 7. Changed installer technology to be Microsoft supported (uses Windows Installer technology allowing update of software without total reinstall, supported on ALL versions of windows including 2000 and XP) 8. Task list now allows direct update from items without use of Corporate Profile. 9. Help File updated to include new functionality
1.1.5	9/02	1. Added additional email report – Descending risk 2. Fixed bugs relating to email, further validation and checking 3. Added document search function 4. Improved user interface 5. Administrator name could be changed to user preference 6. Further improvements to preview and reporting 7. Dynamic risk details now include action plans 8. Windows 98 bug with Outlook integration work-around included (removed reports from menu whilst in profile view – will be reinstated with fixes in 1.1.6)
1.1.6	11/02	1. Administrator name change bug fixed 2. Error code 2 during installation – caused when the target machine includes the up to date components, error code is the message for 'not required' 3. Error 91: Object Variable or With Block Variable not set. Related to the implementation of a CRS package where no printer is currently installed or setup. 4. To re-work the original menu and outlook problem on Windows 98 machines with Outlook as their email client.

1.2.0	3/03	1. Modified the help file, improved search, contents page and added sub heading links on each page in the help file, aiding navigation. Content of pages updated and added as necessary during development.
		2. New installer based on Install Shield technology
		    o Specify database location at installation
		    o Installs on all current windows platforms
		    o Correct installation of database access technology
		    o Installs complete messaging sub system for clients who do not have it installed.

Figure 23: Example page from the risk assessment software version control file

Between 2002 and 2007, my company sold 528 software and support packages to organisations including the British National Health Service (NHS), the governments of Bahrain and Gibraltar, Manchester University and the higher education sectors of Canada and Hong Kong, motorsport teams Scuderia Ferrari, Renault and Force India, and the *Co-op* which had a licence permitting its use in over 1000 UK retail premises.

4.5.1 BBC Dragons' Den

In 2007, my risk assessment software work (Asbury, 2002) was identified by the BBC as a new product for TV show *Dragons' Den*. In their invitation to participate in the show, the BBC producer advised that the show sought out for showcase "great new products like this".

I was filmed making 'the pitch' to the *Dragons* at the BBC's Manchester studios. In the end, it was not used in the televised show, but the experience was unforgettable.

4.6 Legal requirements for risk assessment

As an OH&S practitioner from 1984, *HASAWA 1974* and its approved / codes of practice (ACOPs and COPs) provided my reference framework for health and safety at work, for managing risks and achieving legal compliance. *Directive 89/391/EEC* (1989; the *OSH Framework Directive*) and its *Daughter Directives* were implemented in the UK as MHSWR and the *six-pack* from 1/1/1993 (see HSE, 1998).

The new regulations specified risk assessment as the basis for making decisions on eliminating hazards and controlling risks, as had those relating to lead, asbestos and COSHH previously, and others since. An assessment of hazards in the workplace should lead to a hierarchy of risk mitigation decisions (i.e. '*E-SEAP'* from section 8.2 of ISO 45001:2018) that are *reasonably practicable* (SFRP / ALARA / ALARP) unless otherwise prescribed. My works reflect this hierarchal approach to decision-making.

As *risk assessment* was now embedded into a range of legal requirements, I decided to add a *legislation finder* to my *SafetyCheck* app (Asbury, 2014; please see the description and Figure 14 on pages 77-8 of this statement) which was critical to guide practitioners and lay people to the appropriate legal provisions. It provided simple access to OH&S laws and related guidance by providing searchable links to relevant pages of .gov and other relevant websites.

My literature reviewed included the legal requirements for risk assessment and led to my early ideas, incorporated into my other works. For example, my work on the PDCA implementation of the DSE Regulations (Asbury, 1994c – not submitted) was influenced by the *Health and Safety (Display Screen Equipment) Regulations 1992*. That work is not presented here. It was produced for Health and Safety Executive and The Ergonomics Society and provided a practical, reasonable-cost interpretation of the requirements for health and safety at computer workstations. It created a picture in my mind of what could be done to share learning with others.

The same guiding principles are incorporated into my book on risk assessment and decision making (Asbury and Jacobs, 2014). In that work, we set out three levels of decision-making (strategic, predictive, dynamic) derived from analytic induction of eighteen case studies that meet the legal requirements as well as the moral imperatives to get risk control right (as exampled from HSE, 1991-2013; 1999-2014; 2001; Dekker, 2014).

4.7 Risk assessment in practice

The earliest legal requirements in the UK for risk assessment were in the early 1980s and related to lead (1980) and later asbestos (1987). As I said in section 4.1.1, in the OH&S field, risk assessment rose to much-greater prominence in the *Control of Substances Hazardous to Health Regulations 1988*.

As stated, I became a health and safety officer in the time leading up to COSHH. Those earliest experiences influenced the way I would later write and publish my books and other works. I remember a visit from an HSE field inspector in about 1986. I was in my office with the inspector where I maintained a filing cabinet marked 'COSHH' filled with paperwork. The inspector seemed pleased that I had gathered and sorted alphabetically a material safety data sheet (MSDS) for each substance including tributylin oxide - which I shall come back to on page 148 - and completed a *COSHH assessment* for each using a *Croner* form.

I recall, however, being concerned that compliance from this regulatory perspective seemed to be more about having the paperwork than improving actual working practices, and it troubled me. This concern has positioned my works thereafter to focus on the actual process of risk appraisal and capturing actual improvements in control. These works rightly fly in the face of some of my experiences in practice and from regulatory and other inspections and audits which demanded paperwork rather than demonstrable safe systems.

HSE 'news' e-mails and the monthly safety press are filled with the decisions of legal cases which illustrate risk-creating and risk-avoiding decisions of senior management which have not been joined-up to the legal requirements for risk assessment (March and Shapira, 1987; Covello and Merkhoher, 2013; Watterson and Michaelis, 2019). On managing and preventing aircrew and flight safety problems, Watterson and Michaelis (*ibid*.: 138) rather worryingly report on a "…dominant approach has all too often been – 'don't look, don't find, where is the problem?'". They comment that attending to this problem "…has failed even where there is a regulatory system that theoretically applies the standard occupational health and safety management hierarchy". There are other examples in the case studies within my works (see throughout Asbury 2018 and Asbury and Jacobs 2014).

The public work on risk assessment (Asbury and Jacobs, *ibid*.) was informed by practice and I will provide an autoethnographic account as an example to explain why I felt so strongly about shortfalls in OH&S leadership. It was such occurrences that lead me to believe that I needed to write and publish materials showing how to overcome known (or knowable) gaps (Watterson and Michaelis, 2019).

Example: Strategic control vs Operational control

Timber treatment was carried out at a Burton upon Trent joinery works. The treatment was carried out in a pressurized cylinder (an autoclave). Timber components were loaded onto so called *bogies*, rolled into the cylinder, and the door closed. The cylinder was then pressured to inject the preservative treatment. Afterwards, vacuum was used to extract excess treatment chemicals, and the removal process the reverse of the loading.

Management had decided that the process would use a particular timber preservative called tributyltin oxide (TBTO; Pesticides News, 1993). TBTO has a very high acute toxicity to mammals and classified by the World Health Organisation (WHO) as hazardous, with some data and case reports indicating it as a severe dermal and respiratory irritant though the data was inadequate to characterise the exposure-response relationship (IPCS, 1990).

Failing to understand 'eliminate' or 'substitute' meant that our COSHH assessments described good working practices to control exposures along with RPE and PPE. We did not know the frequency that components fell from the bogie during our process, or how our worker would climb into the cylinder to recover them.

Lack of knowledge about worker exposure, and of the health effects related to TBTO (IPCS, *ibid*.; WHO, 1999) resulted in this man developing a rare respiratory condition. His health deteriorated, and he was frequently away from work. Eventually, he could not work as he could not breathe unaided. I lost track of the long-running health (and EL insurance) case when I left the company. I later heard that he had died because of his deteriorating condition some years later.

My realisation that control could and should have been exercised at management level – to change the process or the substance in use – instead of relying upon operational controls and PPE informed my view that risk assessments could (and should) be conducted at a variety of levels.

Some years later, I presented this approach (at different levels) for the first time outside of the emergency services in my public work (Asbury and Jacobs, 2014).

My work on making decisions in risk assessments (Asbury and Jacobs, 2014) is consistent with Lave (1987) in advocating the position that done correctly, a systematic risk assessment can provide prioritization for the necessary actions to be budgeted, planned and implemented. Done badly, risk assessment consumes a lot of time and produces much paperwork of limited value as it does not introduce structure into control of the specified risks. It may even miss major risks, as Farber (2003: 146) points out in his insightful examination of the complexities of risk assessment:

> *"Notwithstanding our best efforts at prediction, from time to time the world presents us with nasty surprises. Engineers explore highly unlikely worst-case scenarios and discard them as too far-fetched to worry about, only to learn, after the Space Shuttle is destroyed, that some of their concerns were close to what happened".*

When formal, structured control is absent, I agree with Adams (1995) and twenty years later, Thorvaldsen (2015) who advise that control of hazards defaults to (informal) practices based on experiences (work as imagined; work as done) that individual workers rely on to stay safe. Deep-sea fishing is dangerous with a high fatality rate (Thorvaldsen, *ibid.*; HSE, 2020). Thorvaldsen highlights for many in fishing, safety is about taking precautions and using common sense. In practice, this means that they use the safety equipment they see as necessary, evaluate the weather, look out for each other on board and keep in touch with fishers on other vessels while out at sea. Fishers who fish alone often go fishing in the same area, so they can assist each other. Experience is also seen as key when it comes to safety. Through experience, fishers learn which precautions they must take to stay safe. Staying safe for fishers includes embodied knowledge, such as learning to maintain balance while working on a moving work platform (boat). Like Adams (1995) and Thorvaldsen (2015), the works commend structure in control of work and advise against lack of formal control arrangements.

Since learning to conduct risk assessments, I have questioned whether the statutory requirements for health and safety risk assessments address the wider business opportunities to use a similar approach. While used by some for other purposes, the statutory requirements appear quite narrow (i.e. mainly OH&S), and my risk assessment software work (Asbury, 2002) provides functionality to address this gap. As an example, our NHS client *Kings College Hospital* used my software to conduct and record its clinical risk assessments.

On integration, my outputs on management systems and auditing (Asbury and Ashwell, 2007; Asbury, 2013a; 2018) were informed by practice and in particular by my role at BTR plc between 1989-91 where my OH&S role was supplemented with environmental management responsibilities. Through this practice and subsequent integration into my public works, I advocated the alignment of environmental risk assessments with OH&S risk assessments.

To highlight the impact, the world's first publicly available specification for integration of management systems *PAS 99* (British Standards Institution, 2006; revised 2012) provided methodology for integrating common management system requirements sixteen years after I had started to do it. Chapter 2 of this context statement explains this in further detail, including my public work (Asbury and Ashwell, 2007) which was reflected five years later by ISO in its creation of Annex SL (ISO, 2012a) which triggered and facilitated theme (risk) integration in all of its management system standards.

4.8 Black Swans

Conventional thinking (Royal Society 1983; 1992, National Research Council 1983; 1996) has suggested that very low probability events were probably low risk. I have always disagreed with this proposition, and I ensured that my risk assessment software public work (Asbury, 2002) identified this combination of factors as potentially significant – of course, within the bounds of knowledge. It certainly needs those doing any risk assessment to see 'the big picture'. Understanding the business environment aka *Context* (please refer to section 1.7 on page 21 of this context statement) will likely help.

As noted earlier in this chapter, Farber (2003) also accorded with my disagreement in his examination of the complexities of risk assessment. My thoughts are now reflected in the more recent work of Aven (2017: 33), who advises that "current risk management frameworks are to a large extent probability-based, and … as a result, they may not be able to predict the black swan [low-probability, high-consequence events] type of risk". As an alternative to that approach, Talarico and Reniers (2016: 117-8) propose a 'disproportion factor', which they say can be used to bias decision-makers toward safety and therefore to account for low probability, high consequence events. This, they say, "is especially interesting for deciding about the prevention of high impact low probability (HILP [aka Black Swan]) accidents".

Durodie (1999) provides an example of the type of event that suitable risk assessment software works could identify and prioritise in his account of low probability events involving children choking on parts of toys contained in food products (high consequence events). Farber (2003) might find this interesting. Summarising low probability, Durodie (*ibid.*) reports that the manufacturer of *Kinder* eggs had sales in excess of 4,600 million units since 1974, 218 millions of which had been in the UK, and 58 millions in the preceding 12 months, without incident when a three-year-old was choked by the foot of a *Pink Panther* toy (Trading Standards Review, 1990).

Wolff (2007) presents an interesting analysis of VPF (Value of Preventing a Fatality) and RCBA (Risk Cost-Benefit Analysis) as regards justification of 'reasonably practicable' risk control actions including those related to low-probability events (summarised as *how much would you spend to reduce the probability of an already very low-probability occurrence*). Similarly, and like the data provided for twenty years by the Department of Transport (Lewens, 2007), HSE (2011) presents methodology for calculating a VPF that is willing-to-pay (WTP) based – it values the benefit of measures designed to prevent one statistical fatality. In the data most-recently provided, this is £1.489m.

For some people, VPF and RCBA may seem cold ways making decisions about safety as it appears to put a value on a life. Defenders of the method (Lewens, *ibid.*) deny this implication. HSE says (2001: 65) in their major work on the topic *Reducing Risks, Protecting People*:

VPF is often misunderstood to mean that a value is being placed on a life. This is not the case. It is simply another way of saying what people are prepared to pay to secure a certain averaged risk reduction. A VPF of £1m corresponds to a reduction in risk of one in a hundred thousand being worth about £10 to an average individual. VPF therefore, is not to be confused with the value society, or the courts, might put on the life of a real person or the compensation appropriate to its loss.

My public works (Asbury and Ashwell, 2007; Asbury, 2013a; 2018) specify the considerations for making risk control improvement recommendations. These, I say, should be guided by a *Nemawashi* approach (in my work Asbury, 2018: 269, 280), legal requirements and (ultimately) by a management decision that control is reasonable (and not grossly disproportionate) when compared to the risk. This view is also confirmed by Alston, 2017. At around the same time, by contrast, Stewart and Mueller (2017) reflect on a discussion with a Transportation Safety Administration (TSA) official that "… the more security elements we have in place, the more secure the travelling public in railroad stations and airports are going to be". They (in my view rightly) question whether society should "keep throwing security elements at the problem without bothering to investigate whether they improve security enough to justify the cost".

In 2008, I was influenced greatly by Nassim Nicholas Taleb's book *The Black Swan – The Impact of the Highly-Improbable* (2008). Risks with the three characteristics of:

- very low probability/outside the realm of expectation (Taleb: an 'out-lier'),
- extreme impact/catastrophic consequence, and
- that after-the-event human nature has us concoct explanations for its occurrence

piqued my interest when I read and thought about the report of the BP Texas City incident in 2005 (CSB, 2007). By this time, I was consulting in the oil and gas industry, and everyone was talking 'process safety'. CSB Chair Carolyn Merritt (CSB, *ibid.*) spoke to me very powerfully on this matter, saying:

BP management paid attention to, measured, and rewarded personal safety rather than process safety.

While there was a huge diversion of effort following the *Texas City* explosion to 'process safety', my view was different. It seemed that the structured, systematic assessment of risks in departments, operations and tasks (aka D/O/T) might have been incomplete, with one risk set (personal safety) incorrectly prioritised over another (control of the isomerisation process). My works on this theme since have been to encourage others to join up all elements of the risk assessment at all levels (my software Asbury, 2002), including the selection of *Black Swan* risks in management and audit planning (in my book Asbury, 2018: 44-6), and the correct selection of appropriate risk controls.

Given its recency, I studied the research on world market indices undertaken by Kaplanoglu (2020) *Are Pandemics Black Swans?* Though these impacts are not directly related to my field, I found the interdisciplinary thinking interesting. The research considered the (possible) Black Swan effects of pandemics SARS, Swine Flu, MERS, Ebola and Covid-19 on 33 market indices between 2000 and 2020. Kaplanoglu (*ibid*.) accepts and restates Taleb's (2008) three characteristics of rarity, extreme impact and retrospective predictability, and concludes that while pandemics can have (and have had) extreme impact and retrospective predictability, organisations such as OECD and The World Bank as well as recent studies in the literature have warned about pandemics and their impacts. Accordingly, he says, they are not black swans.

In their insightful paper *Dragons, black swans and decisions,* Ale, Hartford and Slater (2020) report the latest research related to black swans, which concurs with my position that selecting the right risk controls should come from an informed management position. Options for decision makers are discussed. They (*ibid*.) in my view rightly observe that classification of a risk as a 'black swan' has been used as an easy excuse not to invest in safety (as proposed in *Safety-II*; Hollnagel, 2014), saying that:

> *Since Nassim Taleb coined black swan as an event that occurred as a complete surprise for everybody, the metaphor of the black swan has been applied to a much wider variety of events. Black swan events now comprise events that are a surprise for some but not for others, events that have a low likelihood, events that were not believed to be possible but still proved to be possible, events that were dismissed as being too improbable to worry about but happened anyway.*

When it comes to deciding what (and what not) to do, management must ultimately be able to choose where to put effort to prevent or mitigate events for which there are warnings. This does not mean (as Ale, Hartford and Slater, *ibid*. comment) that though there are many books written about fire-breathing dragons, that an anti-dragon defence shield should be developed. While the appearance of a *black swan* might have been a surprise for Willem de Vlamingh in 1697 (Taleb, 2008), it was probably no surprise to Aboriginal Australians where the swan lived. Their *black swan* might have been the appearance of tall, white Europeans.

Now that I have completed my review of the literature related to risk and risk assessment, in sections 4.9-10, I will move on to the second part of this chapter which relates to decision-making and dynamic risk assessment.

4.9 Decision-making

Making decisions pervades every aspect of life: people make hundreds of decisions every day, mostly trivial and without right or wrong answer. Decision-making has been of interest to psychologists (including Evans and Over, 1996; Sloman, 1996; Stanovich and West, 2000; Tindale and Winget (2019). This is discussed in my public works (Asbury and Jacobs, 2014; 4-9, 79-82), where factors in decision-making are reviewed, including my analysis of the interesting and well-known *Captain "Sully" Sullenberger* aircraft river landing from 2009 on pages 38-41 of the book.

Reviewing key papers over twenty-five years, Harris (2017) says there is nothing extraordinary about pilots' decision-making. Only the setting for, and the potential consequences of, a poor decision are different. They are often made with incomplete information and under time-pressure. Poor cockpit decisions are implicated in over half of all aviation accidents. My work (Asbury and Jacobs, 2014: 80-1) summarises decision-making training provided to pilots by British Airways and Lufthansa.

Research has been conducted for many years on how individuals and groups make decisions. Over the years, psychologists have suggested that humans have dual processes for reasoning and problem solving. Stanovich and West (2000) named these 'system 1' and 'system 2'. System 1 is said to use implicit knowledge and would be utilised in fast decisions based on intuition, and processes information quickly. It is argued to be an unconscious reasoning influenced by previous experience, memories and emotions. System 2 uses explicit knowledge and would be used in slow, conscious, controlled decisions and for rule-based decisions. While it is more effortful, it is not immune to the influences of beliefs, biases and emotions.

When individuals lack specific knowledge about risks, or are under time constraints, they have to make inferences based on salient information to judge how likely the risk is to occur and its severity. This type of inferential judgement is better known as *heuristics* and concerns strategies to reduce cognitive load. While heuristic strategies can be useful, they can lead to severe and systematic errors or biases (Slovic, Kunreuther and White, 1974). These are discussed in my work (Asbury and Jacobs, 2014).

Of course, not all decisions are made by individuals. While one might reasonably expect that a group decision might be better (Tindale and Winget, 2019), Stasser and Titus (2003) report that when people gather to discuss problems, they often make inferior decisions due to individuals not disclosing all of the information know to them. Stasser and Stewart (1992) argue that one of the main issues is that the group tend to spend more time on known information, and do not ask for more information. Asch's experiments (1940; 1948) showed that individuals tend to conform to group beliefs (labelling this *phenomenal social conformity*) as they did not want to show dissent.

Emotion has also been shown to affect our judgement of risk (Janis and Mann, 1977). Sandman (1993) points out that emotions can cause people to act and respond in an illogical manner (on instinct or over-react) to protect the vulnerable. Bargh and Chartrand (1999) argue that humans make an automatic and effortless appraisal of almost everything we see (stimulus) and that it registers as good or bad. Such emotions can also cause people to disregard their own safety (Dodson 2004, cited in Lusk 2008) such as when fire-fighters may ignore their operational responsibilities to rescue a colleague in danger. I have personally encountered a double-fatal incident where one worker entered a confined space in an unsuccessful attempt to rescue his colleague overcome by an oxygen-depleted atmosphere.

In some cases, public opinion can contribute to perceptions of risk-taking (Trimpop, 1994). Risk takers can be seen as heroes (e.g. a police officer who jumps into the river to save a child); and society often honours and rewards this type of behaviour. However, if people avoid risk (no matter what the outcome), they can be labelled cowards or dishonourable (e.g. a police officer who does not jump into the river). It seems clear that rigid training and policy can get in the way of doing the right thing, and accordingly a less-rigid, more-dynamic approach to decision making might be helpful.

Understanding the effects of how stories might be reported is also a factor when decisions are to be made. Sandman *et al*. (1993) report on three experimental studies which presented hypothetical news stories to compare the effects of readers' risk perceptions where a) an agency behaviour was responsive to citizens' risk concerns, and b) where the agency was reported as unresponsive. They (*ibid*.) reported that manipulating levels of public outrage significantly affected cognitive components of the perceived risk, but not hypothetical behavioural intentions – seriousness and technical detail of the news story had little effect on the perceived risk.

Pek et al. (2017) report upon injunctive safety norms (ISNs) as they relate to young people; perceptions of others' expectations of one's safety-related conduct. Unsurprisingly, they say that friends' ISNs are associated with more frequent work injuries as a result of more frequent risk-taking. Personality is also a factor. West and Hall (1997) found that sensation seeking, aggression and social deviance are particularly related to road traffic accidents. Combining this with the findings of Pek *et al. (2017)* sounds like a dangerous mix (and higher insurance premiums). Even in unknown or unfamiliar activities, individuals who are "high sensation seekers" will evaluate risks as being lower than do "low sensation seekers" (Horvath and Zuckermann, 1993).

Having discussed factors that influence perceptions in decision-making, in section 4.10 I will move on to trace the origins, evolution and use of a technique that links risk assessment to this – dynamic risk assessment (DRA).

4.10 Dynamic risk assessment

Dynamic risk assessment (DRA) evolved from the recognised primed decision-making model (RPDM; Klein and Klinger, 1991) of naturalistic decision making (NDM), which itself came from the study of decision making in psychology and, over time, superseded classic decision making (CDM) dating to the 1940s. It is well documented (Lipshitz *et al.*, 2001) that RPDM based on prior experiences to inform decision-making were used by emergency services, tank platoon leaders, pilots and offshore installation managers. In my work (Asbury and Jacobs, 2014) I track this evolution up to the publication of the exhibited work.

My public work on DRA (Asbury and Jacobs, *ibid.*) was informed by policing and justice practices and other research including interviews completed as part of research for the case studies therein. The evolution in my thinking on how to conduct risk assessments (how to make structured, informed decisions) in *short-time* led directly to the output.

I knew Edmund Jacobs from his position with City of London Police (CoLP). Jacobs had been recommended to use my services by Chief Inspector Jackie Holder-Wooloff at Thames Valley Police, where I had been the author of over 40 policing risk assessments during 2003-7. Jacobs subsequently took on a senior role with the Ministry of Justice (MoJ), which is responsible for safety at Britain's courts and prisons. I had delivered OH&S-MS training based on HSG65 (HSE, 2013) and indg417 (IOD, 2013) for CoLP's Commissioner, senior officers and managers, and Jacobs and I had discussed approaches to risk assessment in challenging, short-decision-time environments (such as policing). We decided together to research and prepare novel work which would provide a unique contribution to others' practice.

Figure 24 on page 156 of this context statement shows the evolution in use of the term 'dynamic risk assessment'. In summary, it was devised by the London Fire Brigade in response to several high-profile fire-fighter deaths in service 1991-4, and a total six HSE improvement notices that had been served on the London and on the Hereford and Worcester brigades as a result (discussed further in my book Asbury and Jacobs, 2014: 73-4).

We met with the principal architect of DRA in the Fire Service, John Norton-Doyle, to discuss our work, and he strongly encouraged us to write it (Asbury and Jacobs, 2014). Norton-Doyle wrote the Foreword for this work, and I will quote from this later.

Research by Tissington and Flin (2005) found that the introduction of DRA into the Fire and Rescue Services had led to a significant cultural change with *risk* becoming central to the way crews were managed by their commanders.

Between 1978 and 2008, a total of 122 fire-fighters were killed at work in the UK (FBU, 2008). For seven consecutive years following the implementation of DRA (within ORM; the Fire Services' *Operational Risk Management*), the three-year rolling average of operational fire-fighter deaths remained below two per year from a high of four per year in the early 1980's, suggesting that the new approach was to a certain extent effective.
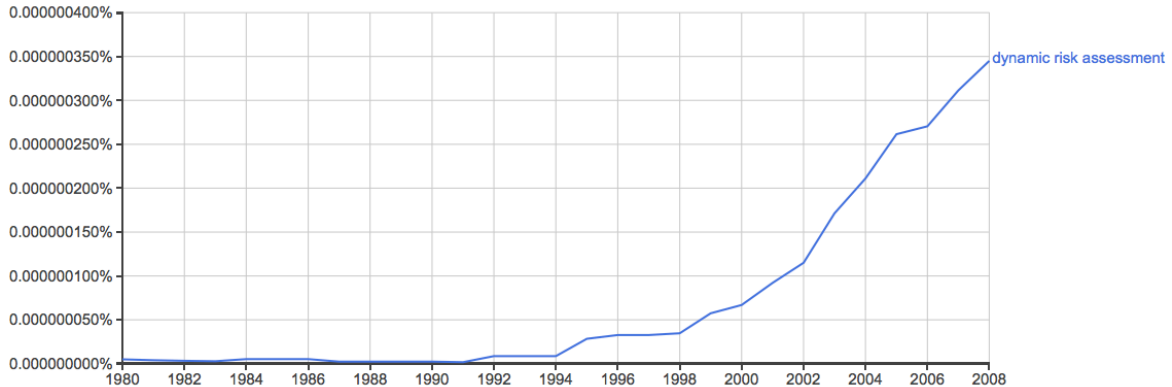
Figure 24: Evolution in use of the term 'Dynamic Risk Assessment' from 1980.
Source: Google Ngram

Research on DRA (published in my work Asbury and Jacobs, 2014) led us to identify the frequent characteristic that dynamic assessments were to 'do your best in the circumstances'. Flin (1996) explains command decision making, and Flin, O'Connor and Crichton (2008) quote a police commander, saying "*There's 1,000 things happening, you're aware of 100, and you can only do something about 10*". Having worked with the police for many years, I understood this paradigm completely. The police commander quotation from Flin, O'Connor and Crichton (*ibid.*) was repeated to me by Sara Thornton, Chief Constable, Thames Valley Police when she attended my training class in 2009. Dame Sara is now the UK's Independent Anti-Slavery Commissioner.

What is often not understood, however, is that the thinking that went into the *SRA* (Strategic Risk Assessment) and the *PRA* (Predictive Risk Assessment) will likely be reflected in choices presented to workers when making a *DRA.* These three levels of decision-making are connected.

My work (Asbury and Jacobs, 2014: 3-4,8) explains the *size up* approach used by the Fire and Rescue Service commanders prior to c.1991 (and sometimes afterwards). Considering the numbers of fire-fighter fatalities identified (*ibid*. 2014: 74; FBU, 2008) it was clear that *size up* did not work well enough.

Sub-Officer Paul Metcalf

I was the researcher for the *Lessons from a Fire and Rescue Service* case study published in my book (Asbury and Jacobs, 2014: 82-4). It was prepared with assistance from a personal contact who was a strategic risk manager in the Fire Service at the time of events.

The case study summarises the accidental drowning of Sub-Officer Paul Metcalf of Greater Manchester Fire and Rescue Service in Bury in September 1999. The part-time fire-fighter was despatched as part of a crew to save Reyaz Ali aged 15 who had not been seen for 30 minutes. Metcalf was directed into the water with a rope tied around his waist. He was said to be a "strong swimmer". He drowned after his safety line became snagged on a submerged branch. Ali had drowned before the fire crew had even arrived.

The work (on page 84) explains how, using the *3-Level Risk Management Model*, the risk might have been better-understood at Strategic (SRA), Predictive (PRA) and Dynamic (DRA) levels, and how the incident, and others like it, may have been prevented.

As an ex-police service OH&S Manager, Jacobs understood the influence of policing risk assessments upon real-time, minute-to-minute (short-time / fast-time) decision making. These had been brought into focus by the (unsuccessful) HSE prosecutions of Metropolitan Police Commissioners Lord Condon and his successor Sir John Stevens in 2003 (Hansard, 2003) following the death of police officer Sidhu in 1999 and injuries to officer Berwick six months later, both falling while pursuing suspects on roofs. The Met' went on to develop an officer training pack on what it called '*Red Mist*' (temporary clouding of a person's judgement) (Peterson, 2013) and dedicated it to Sidhu. Jacobs had been a recipient of that training, and undertook research into the application of DRA for his Master's in OH&S.

The 'blue light' background to DRA led us to investigate non-emergency use for the first time, and its link to other approaches to risk assessment. The *3-Level Risk Management Model* (from my book Asbury and Jacobs, 2014) is a significant contribution to knowledge and thus to the development of OH&S practice, as it had not been researched for use outside of the emergency services sector previously. It is presented in Figure 23 and explained in the work (and summarised in section 4.13.3 on pages 164-5 of this context statement). Within the book, Professor Rhona Flin (*University of Aberdeen*, in Asbury and Jacobs, 2014; xv-xvi) says that 'the authors have sensibly realised that their readers will need advice for implementing this method and there are useful tips throughout the book which should help to transform their framework into practice'. Khan *et al.,* (2016) also appear to support the overall premise behind my work (Asbury and Jacobs, 2014), summarising current opinion in chemical engineering:

- Risk-based process safety management is now an accepted approach by the industry
- Dynamic risk assessment is important to ensure continuous safety improvement
- Dynamic risk assessment incorporates new evidence to update risk, and
- A strong safety culture is required for a successful dynamic risk management.

4.11 Opportunities arising

My review of the literature and experiences from real-world projects identified the following opportunities to address gaps which set up my research approaches.

4.11.1 Fragmented families of risks and fragmented risk assessments

From the implementation of HASAWA in 1974, section 2 implied duty to assess risks, but few carried this out (Bamber, *pers. comm.* 2016). The UK, as a member state of the EU, was required to implement the *Framework* and *Daughter* directives into domestic laws. These became the '*Six pack plus COSHH*' which provided an unfortunate architecture for lots of standalone risk assessments that for many were more about writing about seven discrete families of risks (and more since) than they were about understanding the activity and all of its risks which exposed workers and others to harm.

> *A large proportion of risk assessments are not very good.*
> - Bartley, *pers comm.* 2016d

When I was working in the London insurance market, I recall insureds I was auditing presenting "…our manual handling assessments", as though these were a complete aside from their main business. This fragmentation of risk assessments as seen guided the development of my risk assessment software work (Asbury, 2002) to ensure that all of the risks in a Department, Operation or Task were identified, assessed and prioritised for action as a whole family of risks. My research approach for this work is summarised on pages 160-1.

4.11.2 Difficulties with definitions

Problems with definitions of the risk factors and how they have been used are revealed throughout the literature of the last 40 years (Lawless, 1977; Fischhoff *et al.*, 1978; March and Shapira, 1987; Slovic, 1987; Bernstein, 1989; Gardner, 2009; Creedy, 2011; Covello and Merkhoher, 2013; Taroun, 2014).

Put simply, there is confusion in assessing risk likelihood. This confusion commonly arises from failing to understand the difference between (say) the 'likelihood of crossing the road' vs 'the likelihood of harm occurring while crossing the road'. Likewise, a common mistake is to misunderstand severity. If participants come away from safety or risk assessment event believing that carrying a pencil could result in death, something has gone very wrong. The concern that this leads to is that two groups assessing the same risks may come to very different conclusions and thus set very different priorities.

<u>4.11.3 Paperwork for the file</u>

Risk assessments have potential to become (just) 'paperwork for the file'. I witnessed this first-hand during an HSE inspection at 'my' site in 1985-6 (see the second paragraph on page 147 of this context statement), as well as in the autoethnographic account which follows. My public work (Asbury, 2002) was informed by practice to provide clear solutions - the systematic and integrated approach to identifying departments, operations, tasks and hazards, to assessing risks for significance, and where applicable initiating and progressing action plans.

<u>You cannot come onto site without the paperwork</u>

My consulting company worked with the installer of TV and internet services to a major UK hotels and leisure group. One day, the client was denied access to a site as he had not taken along a risk assessment as required. He asked me to prepare one for him, and we collaborated with the workers to identify the hazards and record how each would be controlled. If I say so myself, it was a 'proper' risk assessment, prepared and recorded for future reference using the software. It was prepared with, briefed to, and understood by, those exposed to the risks we had identified.

A few days passed, and the client telephoned me to advise their work at this leading hotel was now complete. He advised earnestly that the risk assessment had been taken from his hand at the hotel reception, where the manager said, "it is important that we have this for the file" - and then filed it.

I have heard variants of that story 00's of times. It is not easy to resolve, but we must start.

<u>4.11.4 Levels of decision-making</u>

Bateman (1999; 2006) reports that risk-creating and risk-avoiding decisions of senior management have not been joined-up to the legal requirements for risk assessment. Identifying drivers for health and safety performance, Bamber (*pers. comm.* 2016) identifies that in smaller companies, the attitudes and beliefs of the owners are a dominant force, whilst in larger corporations and public bodies the social norms are subject to the broader forces of corporate governance. The level of performance in small organisations [employing less than ten people], reports Bamber (*ibid.*), is often poor and almost wholly dependent upon suppliers, customers and peers. I have to say that I concur.

These are important findings from the literature and my research. They compelled the production of works which can connect strategic decisions (particularly those which can impact upon OH&S) to operational decisions, yet this continuity is not always recognised - the *safety man* can end up trying to deal with the residual risk with administrative and PPE controls.

The research methodology is summarised in section 4.12, and also see Appendix 8, Table 9 on page 244. The output was the *3 Level Risk Management Model* provided by my public work (Asbury and Jacobs, 2014: 64-86) which addresses this lack of continuity in decision-making. It is re-presented for convenience in Figure 25 in section 4.13.3 on page 165.

4.12 Exploration of the research approach - DRA

In order to ensure that we, as authors, had become "experts" in our emergent field of applied DRA (as a component of 'risk assessment'), and had the right product for the right market, we met a number of times between 30/3/2011 and 10/4/2013 to discuss and agree content for the public work (Asbury and Jacobs, 2014).

On 30/11/2011, it was agreed that the book should be broad in nature, covering a variety of industries and have an international component for broad interest. My notes from that meeting show that the authors' objective in preparing this public work was 'sharing for furtherance of OH&S best practices'. I prepared notes ahead of the 29/1/2013 meeting at which the authors' contract was confirmed. Those notes set out the construct for the work which included 2-3 case studies (one major, 1-2 minor) in each of eight chapters. This structure was agreed at the meeting and we noted that eight months were available to review the literature, conduct the fieldwork and prepare the text (our authors' contract required submission by 30/9/2013).

The completed work contained eighteen case studies (presented in Asbury and Jacobs, 2014: xi), ten of which I researched and prepared. Each case study was selected to meet the design intent agreed on 30/11/2011, and from access and availability. For each case study selected, there was a pre-planned research methodology:

- Case studies 1.2 (Welly-wanging DRA and its incorporation into case law, book pages 14-6), 2.1 (Fatality at Glenridding Beck, book pages 31-4), 6.2 (Suzy Lamplugh, book pages 109-11), and 6.3 (Piper Alpha, book pages 11-3) were researched and contextualised from reviewing published secondary materials.

- Case studies 2.3 (Lessons from Formula 1, book pages 42-6), 4.2 (Lessons from a Fire and Rescue Service, book pages 82-4), 4.3 (Medium pressure gas main strike, book pages 84-5), and 6.1 (Lessons from an NHS Trust, book pages 104-6) were researched by me in semi-structured, face-to-face interviews with senior officers from each respective organisation applying the principles set out by Gray (2009) based upon the emerging *3-Level Risk Management Model* as a framework and aide-memoire. Each was audio recorded for data capture, the recording transcribed, and returned to the interviewee for their review.

- Case studies 2.2 (Captain Sullenberger lands on the Hudson River, book pages 38-41) and 4.1 (NASA: the hot seat, book pages 68-73) were conducted in a combination of those methods with review of the secondary materials followed by a semi-structured telephone interview with the Captain lasting 50 minutes in the first instance, and a site visit to Johnson Space Center, Houston, Texas lasting three hours in the second.

Each case study presented within the public work concluded with *Authors' comments* on the characteristics of failure in relation to strategic (SRA), predictive (PRA) and dynamic (DRA) elements of the *Model* (Asbury and Jacobs, 2014).

We reviewed each other's work at regular intervals, providing two-way feedback and comment throughout preparation of our respective sections.

4.13 Contribution and impact: theme 3

I have presented and contextualised my risk assessment software public work and my book on risk assessment and DRA in support of my third theme. These public works provide the following three groups of contribution to practice:

4.13.1 A better means for assessing, recording and responding to the legal requirements for health and safety risk assessment

4.13.2 Opportunities for use of dynamic risk assessment (DRA) in organisations outside the emergency / blue-light-sector

4.13.3 Joining-up DRA to PRA (predictive; the legal requirements) and SRA (strategic; the decisions of senior management) for improved OH&S performance.

4.13.1 Better means for assessing, recording and responding to OH&S risks

My risk assessment software public work (Asbury, 2002) was designed, developed, marketed and launched to address the identified gaps. My OH&S-MS application software (Asbury, 2014; described in section 2.9.3) provided simplified access to health and safety legal requirements and guidance.

This software (Asbury, 2002) provided architecture for structured (non-fractured) families of assessed risks attached to Departments, Operations and Tasks. This compelled increased ownership by line managers. Its functionality was designed to de-bunk myths and focus managers on identifying work hazards (DOT-H) and on controlling significant OH&S risks with proportionate controls. Standardised (but bespokable) definitions of probability and consequence were created to overcome the difficulties identified in the literature. The software generated reports and action plans, and triggered reviews and other required inputs by sending targeted email messages.

This work (Asbury, 2002) provided the first software-based hierarchal approach to health and safety risk assessment. It was based on the works of the Royal Society (1983; 1992) and National Research Council (1983; 1996), on HSE's *5 Steps to Risk Assessment* (indg163, HSE, 1999-2014) and the risk assessment approach from *IOSH Manging Safely*. It was designed, tested, produced and technically supported under an accredited ISO 9001 certification.

The software product found favour in the market, and it was promoted (and in some cases paid for) by London-market liability insurers and brokers. Over 500 packages, many with multiple user licences, were sold and configured for use at over 2000 work locations in the UK and elsewhere

in over 20 countries. Major clients included British NHS Trusts (including King's College Hospital), the governments of Bahrain and Gibraltar, several universities in the UK and overseas, High Street retailers, motorsport teams and large numbers of SMEs. My own view was that it was particularly suited to the SME sector, where the employment of a full-time OH&S specialist was frequently less likely.

Whilst my company decided in 2007 to withdraw from the software market – due mainly to the requirement for substantial investment to move from CD delivery to a web-based / .net delivery – the approach presented within the work had clearly influenced others and set in train a series of events to revolutionise how risk assessments were completed, tracked and updated.

My risk assessment software public work set the standard for competitors which would follow, and by 2007, it's structure, functionality and reporting were being copied by several large and specialist software companies including these which were reviewed at the time:

- SHE Software - https://www.shesoftware.com/risk-assessment-software;
- RAM Software - https://www.effective-software.com/risk-assessment-software;
- Eighty20 Risk Systems - https://www.eighty20risk.com; and
- LogicManager - https://www.logicmanager.com/erm-software/product/assess/.

Most of the commercial risk assessment software on the market today including that exampled above has a look and feel like my work *CRS Risk* (Asbury, 2002) in that they have adopted its hierarchal *Explorer*-style structure, its 'attach documents' functionality and its action-tracking features. They typically follow my works in adopting indg163 (HSE, 1999; 2003; 2006; 2011; 2014), the IOSH *Managing Safely* approach to risk ranking and use of a 5x5 risk matrix.

4.13.2 Opportunities to use DRA outside the emergency sector

My research on DRA identified the frequent characteristic to 'do your best' when making OH&S decisions in *short-time*. In the Fire and Rescue Services, this had led to fire-fighter fatalities and *HASAWA* statutory notices. The Fire Services responded with a formal approach to DRA, implemented from 1998, which halved UK fire-fighter deaths (FBU, 2008).

Research identified the opportunity to present applications for DRA outside of the emergency services. Continued research identified eighteen case studies presented within the public work (Asbury and Jacobs, 2014) each of which suggest merit to this approach.

This public work (Asbury and Jacobs, *ibid.*) was the first to present such opportunities to use DRA in a structured and *systematic* way outside of the emergency / blue-light sector. It was written and published because the DRA approach appeared to have reduced fatalities in the fire service by 50% following its introduction and we saw opportunities for other organisations to derive comparable benefits from adopting those practices.

It was written for a general audience, including OH&S managers and line managers. As I have said, John Norton-Doyle at London Fire and Rescue Service was the original architect of DRA. In the work's Foreword (Asbury and Jacobs, 2014: xiii-xiv), Norton-Doyle says:

> *Much of the subsequent development [on DRA] elsewhere has been misguided… it was always intended as part of a wider, strategic approach, not a stand-alone…*
>
> *This book puts many of the misconceptions about DRA to bed. DRA is not a substitute for pre-planning, safe systems of work, or when a pre-work risk assessment can be made. It is a means of keeping people safe when exposed to unknown and changing, dynamic situations.*

Through these eighteen case studies (ten of which were researched, analysed and prepared by me), we showcase opportunities which encourage use of DRA in other workplaces.

The work has retailed well following positive reviews in the professional safety press. IOSH subsequently adopted the work's methodology and case studies as content for its two-day CPD training course on DRA, offered to its members and the public since 2009.

4.13.3 Joining up SRA-PRA-DRA for improved OH&S performance

Primary research over thirty-five years has revealed that decision-making in organisations may not be joined up from the top (the decisions of senior management) to the bottom (where the work is performed). The 'middle' of this hierarchy reflects the legal requirement to conduct as risk assessment; to predict the likelihood (probability) and severity (consequence) of future events.

In my work (Asbury and Jacobs, 2014), this latter level of decision making is called *predictive risk assessment* (PRA). Above and below PRA in this hierarchy are *strategic risk assessments* (SRA) and *dynamic risk assessments* (DRA), and the whole is set within the *Context* of the organisation, so that it is compatible with the ISO high-level structure for management system standards, Annex SL (ISO, 2012a). My work shows how decisions 'at the top' may influence options at the predictive level and thus decisions and outcomes at the dynamic level. I provided a feedback loop from operations to future predictive and strategic decision-making.

The three levels of decision making are thus connected. They are presented in my public work (Asbury and Jacobs, *ibid.*: 64-86), summarised in Figure 25.
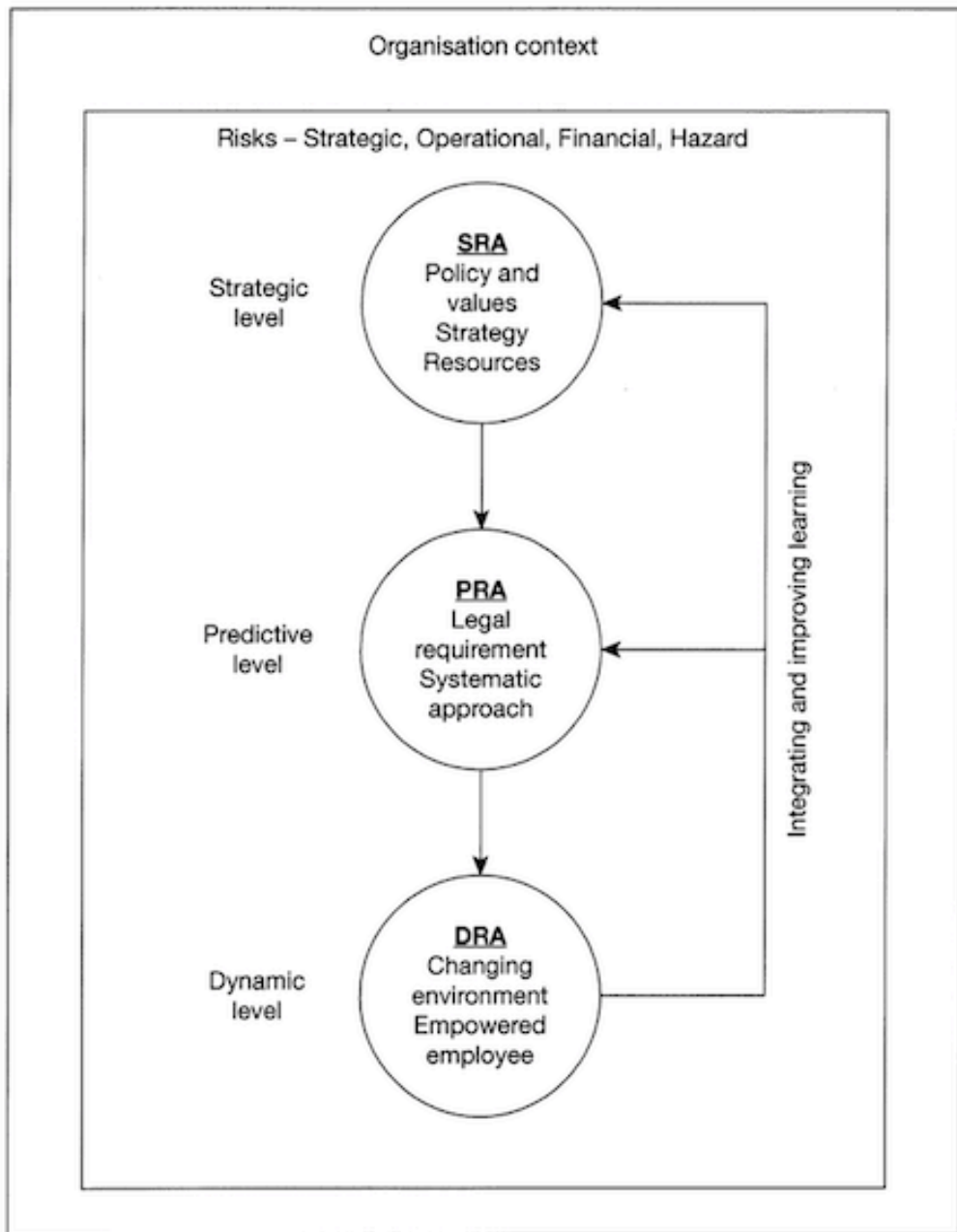
Figure 25: The 3-Level Risk Management Model (from my book Asbury and Jacobs, 2014: 66)

There follows an example of the real-world impact of using appropriately this 3-Level, SRA-PRA-DRA, approach upon an activity that had previously caused several serious injuries to workers in motorsport teams and professional racing drivers.

Formula 1, in-race refuelling

In 2007, I was asked by IOSH to write about motorsport safety for its journal. My public work (Asbury, 2007) is reproduced in Appendix 8 of this context statement. My work critiques the evolution of driver, circuit and event safety in the motorsports sector, and uses those reflections to provide lessons for the future. I practically applied one of those lessons in 2008 using my emerging thoughts that would later lead to a case study *Lessons from Formula 1* and the *3-Level Risk Management Model* (in my book Asbury and Jacobs, 2014: 42-6).

I was contracted by a Formula 1 team, on behalf of the sport, to conduct fire and explosion safety risk assessments on fuel storage, handling and fuelling/re-fuelling activities at F1 events, as required by the *Dangerous Substances and Explosive Atmospheres Regulations 2002*. The assignment was carried out on site at Circuit de Catalunya, Barcelona, Spain on 24-27 February 2008. I inspected teams' hardware, including the design and use of FIA-approved *Intertechnique* fuel dispensing systems ("Rigs"), examined fuel storage, observed fuel-handling practices and interviewed garage and pit crew from several teams to make recommendations for future events.

In considering the observed fire and explosion (and other) hazards, controls and risks, I also considered the history of pit lane incidents, including fires and spillages, since in-race refuelling was re-introduced in 1994. The assignment provided an opportunity to use evidence to create my works. It validated my *3-Level Risk Management Model* in the practical setting of a hazardous, 'at-risk' activity.

Whilst my recommendations could have included fire-fighting equipment and fire-resistant PPE, my most important advice was directed at the strategic level - to eliminate in-race refuelling. As a direct result of the recommendation within my report, a ban on in-race re-fuelling was incorporated into the rules of the sport (the world's seventh-most-watched sport; Total Sportek, 2017) from the start of the 2010 season. There has not been a pit lane fire in ten seasons completed since.

The credibility I had established during that assignment in 2008 (related to strategic, *slow time* decision making) was instrumental in allowing my access to the Sporting Director of Sahara Force India Formula One Team (today known as *Racing Point F1 Team*), Andy Stevenson, to discuss *fast time* decision making in 2013. As I said in section 4.11.5, I prepared case study 2.3 (in Asbury and Jacobs, 2014: 42-46) following that meeting. It presents the application of the linked thinking from the *3-Level Risk Management Model* (SRA-PRA-DRA) in the practical setting of a Formula 1 race weekend, powerfully summarised in six *Authors comments* on page 46.

NB The 2008 report prepared for my client is not included in my works as it is confidential, and. I could not secure permission to release it.

When my public work (Asbury and Jacobs, 2014) was published, Dr Steven Vickers, the former

Chief Executive of NEBOSH, endorsed it (please see the book, page xv) saying:

> *'There can be no doubt that risk assessments have proved a rational and efficient way of reducing negative outcomes in the workplace… Yet for too many, they have become a bureaucratic activity rather than a matter into which one puts deep thought. 'Have you done a risk assessment' is a standard mantra of a superior to a subordinate however low or high the risk. Stephen Asbury … [has] addressed this flabby approach head-on, and restored vigour and utility to the risk assessment process. Risk assessments, [he] argue[s], are an essential and invaluable tool of the process of managing safely, but on occasions, there are unexpected situations that may arise where static risk assessments may not provide the necessary solution in isolation. The authors drawn upon and develop the concept of DRA developed within the emergency service to show how DRAs can be used more widely within rapidly changing environments to manage developing risks… It is an academic and well-thought out work that is nevertheless interesting, applicable and eminently readable… It will become the classic work on the subject.*

4.14 Impact summary: theme 3

The public works I have positioned and presented in this theme (Asbury, 2002; Asbury and Jacobs, 2014) build upon the founding principles of hazard identification, risk assessment and control arising from the literature. The works are consistent with this literature and extended the opportunity for systematic application from what was known. My book on DRA (Asbury and Jacobs, *ibid*.) has been endorsed to become '*the classic work on the* subject'.

My two works connect with the thinking from the origins of risk assessment and QRA to the later works of Taleb (2008; identifying low-probability, high-impact risks), Gardner (2009; timeline of assessed risks), Dekker (2014; differently) and Hollnagel (2014; Safety-II). Specifically, I agree OH&S risk assessment should be done *differently* (Dekker, 2014) with focus on doing things right on significant risks / 'big rocks' (in my book Asbury, 2018: xxix *Big Rocks;* Taleb 2008: *Black Swans)*.

Knutt (2016) following Dekker (2014) is possibly right too – she proposes an end to the established culture of "zero harm" policies and commends a greater acceptance of minor incidents as part of working life. This she says is probably inevitable as the focus moves from 'smaller to bigger rocks'; tolerance of paper cuts and intolerance of major injuries and deaths.

Two-way learning experiences from many workplaces influenced the way the public works were prepared and the form in which they were published – principally so that they would be accessible to their probable users. They provide well-researched and practical solutions for others who want to attend to 'risk' in accordance with legal requirements and the moral imperatives (from HSE, 1993 up to and beyond Rae and Provan, 2019).

The three (groups of) contributions to practice I have identified in section 4.13 show others how to make and implement informed, prioritised decisions to do the right thing, at the right time, at the right and proportionate cost, and involving the right people to manage or control identified significant OH&S risks.

> *First things first, with discipline and continuity in carrying it out.*
> - Stephen Asbury, adapted from Steven Covey (1989).

CHAPTER FIVE

5. SUMMARY, LIMITATIONS AND CONCLUSIONS

The people I want to talk to are the ones who are not here.

- Stephen Asbury

Health and safety is not a role for the enthusiastic amateur.

- Lawrence Waterman OBE, IOSH President 2004-5, Head of H&S at London 2012 / Olympic Delivery Authority 2006-13 (Waterman, *pers comm.* 2017)

Only the exemption of responsibility for employers through effective implementation of the OHSMS, together with an adequate incentive policy, can significantly improve occupational health and safety.

- Bianchini *et al*. (2017: 33)

5.1 Introduction

My context statement presents fifteen of my public works which showcase my varied professional and scholarly outputs. For each, I have described their contributions to OH&S practice in the UK, as well as pointing out how they have been adopted widely or internationally.

I grouped thematically my works, although in reality they overlap and link-up as shown in Figure 4, reproduced above. Together, these three themes build a picture of my role in advancing the application of management theories to OH&S, of professionalising OH&S practice, and of clarifying the role of 'dynamic' in the context of risk assessment. In this summary, I will present that picture by bringing the themes together, showing my doctoral learning from practice, and my impacts upon practice.

I believe that the areas I have focussed on for 35 years in my practice were appropriate. Over that time, on OH&S-MS and professionalising safety practice, the world appears to have moved

towards my position. That said, research supporting the link between competently implemented OH&S-MS and improved safety performance remains limited, occasionally challenged, and often not of high quality (Robson, *et al*. 2007).

Since Robson et al. (ibid.) however, new evidence has emerged as discussed (including Bottani, Monica and Vignali, 2009; Suan, 2017; Lis and Nowacki, 2019; Aburumman, Newnam and Fildes, 2019) that start to confirm a positive relationship. My field experiences from practice since 1984 have been broadly similar (but note the *Limitations* on pages 183-4). Likewise, the international OH&S community was persuaded, and ISO 45001 (ISO, 2018a) was published in 2018. I have explored the voices along my journey, and here I will summarise Jones (2007), Cooper (2014) and Aburumman, Newnam and Fildes (2019) who each saw similar opportunities to those that I saw earlier.

Jones (2007, writing for IOSH) said that "The aim [for OH&S-MS] is for significant health and safety issues to be part of strategic decision-making across an organisation and recognised as material to its licence to operate and a sustainable future. Such thinking can help drive health and safety improvements throughout organisations and their supply chains".

Cooper (2014, writing for ASSE; which in 2020 after IOSH was the second-largest OH&S body; now called ASSP) said that "What the ISO 45001 process can do that the ad-hoc efforts cannot is [to] create a single approach to worker safety over-sight… it is time, in fact past time, to bring … 'civilization' to the far ends of global supply chains".

Aburumman, Newnam and Fildes (2019: 376, 391-2) summarise recent studies which have called for the translation of "theoretical research in safety culture into intervention efforts that can guide organisations in improving their workplace safety culture". Like others previously, they report overall weak methodological quality within 23 peer-reviewed studies included in their review. However, they say that, when interpreted with caution, the majority of the studies had a positive impact on safety culture.

We have indeed come a long way since 1974 (*HASAWA*) and 1984 (my entry to safety practice). The journey was long, but I remained focussed. As I said at the bottom of page 42 of this context statement, it is time to update *Robson*.

5.2 Improvements in a changing world

The 35-year period spanning the research and creation of these fifteen public works has borne witness to huge changes in UK and global business *Context*s which I have explored. Overall, OH&S outcomes in the UK have improved over this time (see Figures 2 and 3 in section 1.6.1, pages 16-7 of this statement).

Individually, and collectively as I will explain, the public works have contributed to advancements in OH&S practice through:

5.2.1   The innovative adoption of PDCA for OH&S-MS and auditing (in chapter 2);

5.2.2   Research and publication of new practices for professionalising and regulating an OH&S membership organisation from its base in the UK (IOSH), to adoption in Europe (ENSHPO) and globally (INSHPO) (in chapter 3); and

5.2.3   Providing a better means of assessing, recording, consolidating, prioritising and responding to OH&S risk assessments, and by sharing novel findings from research on how to address opportunities to use dynamic risk assessment (DRA) outside of the *blue light* emergency sector to join up SRA, PRA and DRA for improved OH&S performance (in chapter 4).

The works provide specific evidence of OH&S improvements arising from the application of these contributions, which are presented as case studies within the works, with examples herein this context statement.

Of course, the OH&S business environment (in my works Asbury and Ashwell, 2007) aka *Context* (ISO, 2012a; in my works Asbury, 2013a; 2018) will continue to evolve with new politics, economics, social demographics and technologies (identified as *PEST* in my book Asbury, 2018: 11-2). As I said in chapter 1, these will be interspersed with events like Brexit, COVID-19 and others we cannot yet imagine. In this changing world, many business owners and managers still focus on the wrong things – doing things that are easy or look good, rather than making a serious commitment to preventing harm (Dekker, 2014). There are still shortfalls; and people still get hurt or killed. Sadly, it's no surprise to any of us when the news reports another catastrophe.

5.2.1 OH&S-MS and auditing

One of the most important contributions I have made to practice, evidenced by the public works and how they have subsequently been used by others, is through the innovative adoption since 1984 of *PDCA* (Deming, 1982) from general management into OH&S management systems and MS auditing (IOSH, 2018b). The public works in my theme 1 show in a new and novel way the use of an existing form of knowledge in a new discipline.

Those public works influenced and impacted on the rise of and approach to management systems thinking in the OH&S field, exemplified by ISO Annex SL (ISO, 2012a), and including my specific contribution to the new international OH&S-MS, ISO 45001:2018 (see my work Asbury, 2016a).

It is noted that organisations including BSi, HSE, IOD, ILO and ISO have each now adopted this same *PDCA* approach I was advocating in the 1980s. This could be coincidental, yet virtually everyone in the OH&S field adopted a similar approach post-2012 (ISO, 2012a). The rise of published OH&S management systems since 1991 has contributed to the improvements the UK and the world has witnessed (as observed by Cooper, 1998; Edkins, 1998; Yasi, 1998; Alsop and LeCouter, 1999; Bunn *et al.*, 2001; Heras, Dick and Casadesus, 2002; Hendy and Ford, 2004; Bottani, Monica and Vignali, 2009; Murali, 2012; Stevens and Bamber, 2016; Suan, 2017; George, 2018; Campailla *et al.,* 2019; Aburumman, Newnam and Fildes, 2019; Jounila *et al.* 2020 and others). And so this approach is good news, as *PDCA* will better-integrate with other business management systems and thus be better understood by business owners and their officers and managers using them.

5.2.2 Professionalisation of OH&S

I have also presented the contributions which arose from the public works in my second theme, which provided the new practices for professionalising and regulating an OH&S practitioners' membership body (IOSH). The application of those works led to the grant of IOSH's Royal Charter and its permission to grant an individual Charter to suitably qualified and competent individuals.

The practices presented in those works have subsequently been applied by international OH&S practitioner bodies including ENSHPO and INSHPO as they have professionalised and regulated their own structures and admissions criteria (Hale and Harvey, 2012).

My public works on CSR (Asbury and Ball, 2009; 2016) provide OH&S practitioners and others with the first PDCA and the only IOSH-approved definitive systematic approach on how to implement a CSR-MS.

5.2.3 Risk assessment – strategic, predictive, dynamic (SRA, PRA, DRA)

The innovation, design, development, testing and launch of my novel risk assessment software public work (Asbury, 2002) described in my third theme provided the knowledge and practice necessary for others to advance.

Another important contribution arising from the public works (Asbury and Jacobs, 2014) in the third theme was the novel advancement of dynamic risk assessment from use in the fire and emergency services from the early 1990's into mainstream OH&S risk assessment practice.

The same public work joined up for the first time the three levels of OH&S decision-making in the *3-Level Risk Management Model.* Dr Steven Vickers, formerly CEO of NEBOSH, said that it would become '*the classic work on the subject'.*

5.3 ISO 45001 and my contributions to OH&S practice

Chapters 2-4 of this context statement present in detail my contributions to practice arising from my public works in each of three themes. Here, I will organise, consolidate and summarise these contributions by reference to the international management system standard for OH&S-MS.

As described in chapter 2, ISO published the first certifiable OH&S-MS on 15 March 2018. Based on PDCA, it is called ISO 45001:2018 (ISO, 2018a; and see Figure 26).

Four months later in July 2018, the ISO guidance for management system auditing ISO 19011:2018 (ISO, 2018b) was re-published. It too reflected the public works (Asbury, 2018; also Asbury and Ashwell, 2007; Asbury 2013a) by providing a new 7th principle of auditing – "risk-based".
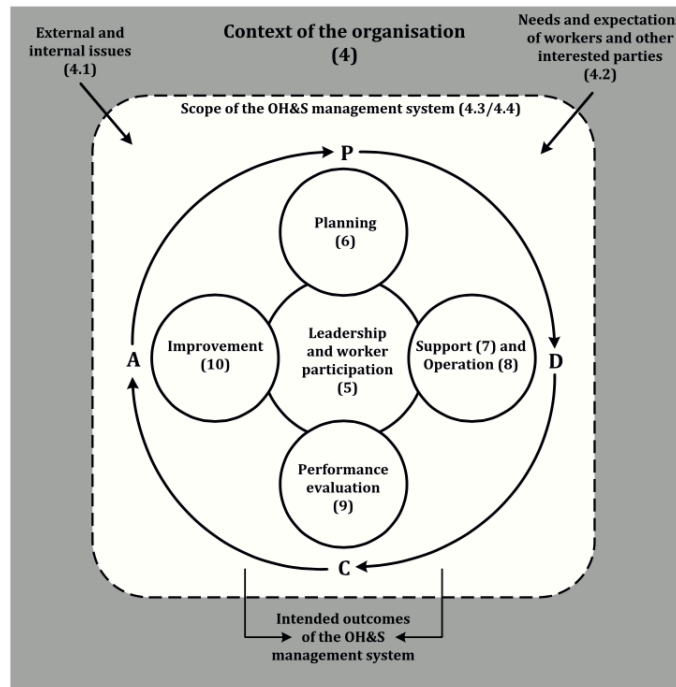
Figure 26: International standard for occupational health and safety management systems; ISO 45001:2018 (ISO, 2018a)

Table 4 identifies where my public works have contributed to new OH&S-MS practices by reference to individual clauses of ISO 45001:2018 – my contributions are highlighted with light shading. I want to make clear that the works have had impacts across the complete PDCA cycle (Deming, 1982; my works Asbury and Ashwell, 2007; Asbury, 2013a; 2018; HSE, 2013; ISO, 2018a; b). Whilst some of my contributions where at the centre of step-changes in OH&S practice, other contributions influenced at the edges. In the text that follows the table, each of these contributions per identified clause are summarised with a description of the impact(s).

Table 4 – Elements of ISO 45001:2018 showing (shaded) my contributions to practice

ISO 45001:2018	
Clause #	**Clause name**
4.1	Understanding the organization and its *Context*
4.2	Understanding the needs and expectations of workers and other interested parties
4.3	Determining the scope of the OH&S management system
4.4	OH&S management system
5.1	Leadership and commitment
5.2	OH&S policy
5.3	Organisation roles, responsibilities and authorities
5.4	Consultation and participation of workers
6.1.1-4	Actions to address risks and opportunities
6.2.1-2	OH&S objectives and planning to achieve them
7.1, 7.3-4	Resources, Awareness and Communication
7.2	Competence
7.5.1-3	Documented information
8.1.1-2	Operational planning and control, eliminating hazards and reducing OH&S risks
8.1.3-4	Management of change, Procurement
8.2	Emergency preparedness and response
9.1.1-2	Monitoring, measurement, analysis and performance evaluation Evaluation of compliance
9.2.1-2	Internal audit, Internal audit programme
9.3	Management review
10.1-2	Incident, non-conformity and corrective action
10.3	Continual improvement

Clause 4.1

ISO 45001:2018, clause 4.1 says: *The organisation shall determine external and internal issues that are relevant to its purpose and that affect its ability to achieve the intended outcome(s) of its OH&S management system.*

In chapter 2, I explained the evolution, purpose and outcome for management systems, in particular OH&S-MS, from the literature, from need, and through the development of technical standards.

My public work (Asbury and Ashwell, 2007) was the first to describe a process therein called "Understand the business environment". This step-change in approach, adopted internationally by Royal Dutch Shell plc, concerned identifying and taking due account of external and internal influences which may impact upon an organisation.

The review of the literature in chapter 2 confirms that an approach of this type had not been used previously in any BSi, HSE, IOD, ILO, ISO publication or in the Redinger and Levine (1998) universal OHSMS model prior to this contribution to practice. Nor is the approach mentioned in the systematic review of the literature between 1887-2004 undertaken by Robson *et al.* (2007).

To support the argument that this approach was new, it was only in 2012 that this approach was adopted by ISO and incorporated into the High Level Structure (HLS) of ISO Annex SL as clause 4 *Context* (clauses 4.1-2). Thus, all management system standards owned by ISO, including ISO 45001, have subsequently followed this requirement.

The impact of adopting this approach is that from 15 March 2018, an ISO OH&S-MS must be set in the *Context* of the scope organisation – its external and internal influences and addressing the needs and expectations of its stakeholders (discussed below and further in my work Asbury, 2018).

Clause 4.2

Clause 4.2 says: *The organisation shall determine:*
   a) *The other interested parties, in addition to its workers, that are relevant to the OH&S management system;*
   b) *The relevant needs and expectations of workers and these other interested parties;*
   c) *Which of these needs and expectations become applicable legal requirements and other requirements.*

In my work (Asbury and Ashwell, 2007; repeated in Asbury, 2013a; 2018), a definition of control as 'Structured Means to give Reasonable Assurance of Meeting the Objectives of the organisation, and satisfying the Responsibilities to Stakeholders' was introduced (taught as *SM-RA-MO-RS*). Stakeholders aka interested parties were defined as five specific groups:

- Investors
- Employees
- Partners (or 'those with whom we do business')
- Customers
- Society (neighbours, regulators/regulatory requirements, society/societal expectations)

The review of the literature in chapter 2 confirms that this feature of understanding the need for identifying the needs and expectations of stakeholders had not been used in any BSi, HSE, IOD, ILO, ISO or the Redinger and Levine model (1998) for OH&S-MS prior to this contribution. Again, it is not identified by Robson *et al.* (2007) in their systematic review.

Only after the works had raised this approach in 2007, I noticed that this focus (on interested parties) started to appear in professional literature and government outputs (such as ISO, 2012a and HSE, 2013).

Clause 4.4

Clause 4.4 says: *The organisation shall establish, implement, maintain and continually improve an OH&S management system, including the processes needed and their interactions, in accordance with the requirements of this International Standard.*

In paragraph 2 of page 22 of this context statement, I expressed the premise of witnessing too many workplace injuries and cases of ill-health, and inheriting systems for control that were not working. A principal contribution to knowledge has been the application of management theories to the field of OH&S. From management studies, I have explained my recognition in the mid-1980's that managing OH&S could and should be like managing anything else, using management theories and *systematic* approaches. I explain how my advice was to use consistently a simple framework for control and improvement (Deming, 1982 / PDCA) that could be widely understood, was repeatable, and could integrate with other management systems. Figure 1 in chapter 1 evidences my early adoption and thus leadership in this field.

The review of the literature in chapter 2 reveals that no-one had applied PDCA to OH&S in a substantial manner previously – indeed Bamber (*pers comm.* 2016) explained to me how UK H&S regulator HSE had intentionally resisted this since 1995. I have shown the timeline for adoption of this approach by others (i.e. BSi, HSE, ILO, IOD, ISO). In particular, PDCA was adopted by ISO in 2012 (*Annex SL*, ISO, 2012a) and by HSE a year later (*HSG65, 3rd edition*, HSE, 2013).

Chapter 2 provides the context for my contribution to Draft International Standard DIS/ISO 45001:2016 (my work Asbury, 2016a) which became ISO 45001:2018 on publication. Section 2.9.4 on page 79 of this context statement summarises the submission to ISO/TC 283 (via IOSH). Of particular note is IOSH's advice to ISO that my work (then my book Asbury, 2013a) should be added to the bibliography of that standard when published.

Clauses 6.1.1-4

Clauses 6.1.1-4 say: (extracts) *When planning for the OH&S management system, the organisation shall consider the issues referred to in 4.1 (Context), the requirements referred to in 4.2 (interested parties)… and determine the risks and opportunities that need to be addressed. When determining the risks and opportunities that need to be addressed, the organisation shall take into account:*

a) OH&S hazards and their associated risks…
b) Applicable legal requirements and other requirements
c) Risks and opportunities related to the operation of the OH&S management system that can affect the achievement of the intended outcomes

From the literature (including Kletz, 1983; Royal Society, 1983; 1992; National Research Council, 1983; 1986; HSE, 1991; 1997; 2013; HSE 1999; 2003; 2006; 2011; 2014; Kolluru *et al.*, 1996; Bateman, 1999; Borge, 2001; Boyle, 2002), I recognised that the identification of hazards and those exposed should lead to structured (hierarchy of control) application of systematic and thus systematically-improvable controls. This recognition led to the origination, specification, build, testing, refinement and sale of the risk assessment software work (Asbury, 2002).

Figure 22 in chapter 4 of this context statement provides an illustration of the *Corporate Profile* view from the risk assessment software public work (Asbury, 2002) where it can be seen that the *DOT-H* approach (discussed on page 142) addresses the focal points from the literature as well as (continuing to) meet the legal and other requirements / regulator's guidance (HSE, 1999; 2003; 2006; 2011; 2014) for risk assessment (page 146).

The software does not provide checklists. Instead, it provides an organised structure with record keeping allowing users to work through the '5 Steps to Risk Assessment' (*indg163*; HSE, 1999-2014) recommended by the regulator. As explained in chapter 4, the software facilitates compliance with the requirements of legislation (MHSWR, etc.), builds on the regulator's guidance (indg163), and uses the common / IOSH 5x5 approach to risk-ranking. It helped users to identify and focus upon significant risks *big rocks* (in my books Asbury, 2013a; 2018: xxix), adapting key points from the literature and regulatory framework as identified in a pragmatic, user-friendly manner.

As noted on page 163 of this context statement, my work (Asbury, 2002) set the standard for risk assessment software which would follow it, including those products identified, providing evidence of the impact of this work.

The organisation shall maintain documented information of its risks and opportunities, and processes needed to address risks and opportunities.

Figure 22 provides the '*Corporate Profile*' from the risk assessment software (Asbury, 2002). As can be seen, this provides the platform (*DOT-H*) for such records to be built, maintained, retained through the archiving feature, improved and updated through time / forever. As with any other software, competent back-up was necessary.

The organisation shall establish, implement and maintain a process for the ongoing proactive identification of hazards arising. The organisation shall establish, implement and maintain processes to identify opportunities to enhance OH&S performance… and opportunities for improving the OH&S management system.

As discussed in chapter 2, Deming (1982) and the OH&S systems which followed (e.g. ISO, 2018a) provide modern-day impetus for continual improvement in management and performance. Chapter 4 explains how the software public work (Asbury, 2002) provided flexible utility and opportunity to identify hazards (DOT-H) and to plan, schedule and then undertake proactive reviews.

The organisation shall establish, implement and maintain a process to:
   a) *Determine and have access to up-to-date legal requirements…*
   b) *Determine how these legal requirements and other requirements apply to the organisation*
   c) *Take these requirements into account…and maintain and retain documented information on its applicable legal and other requirements…*

In the UK from 1992-2012, there was considerable development and change in OH&S legal requirements (see chapter 2; extensively covered in the literature including Bateman, 1999; 2006; Fuller and Vassie, 2004; Bamber, 2011). By 2013-4, this had largely settled down, but corporate knowledge and access was mixed and (perhaps) had not caught up in all but the most well-resourced organisations. As such, when I designed and developed the '*SafetyCheck by CRS*' mobile software app (Asbury, 2014 and see Figure 14 on page 78), my observations led me to include a 'legislation finder' in addition to its main OH&S-MS functionality. This provided keyword searches with links to up-to-date UK legislation (www.legislation.gov.uk provided and maintained by National Archives) and to HSE guidance. It was not expensive to do so, and it was felt that it would give confidence to users. It also provided users with a straightforward opportunity to meet the requirements of this ISO 45001 clause.

As I said in section 2.9.3, in creating the legislation finder functionality, I had identified that National Archives and HSE used fixed links to their webpages, such that when legislation and guidance is revised, the embedded page link remains unchanged. This meant that the links provided remained current sources.

The organisation shall plan actions to address these risks and opportunities, legal and other requirements, prepare for and respond to emergency situations; and how to integrate and implement the actions into its OH&S management system… and evaluate the effectiveness of these actions.

My public works app (Asbury, 2014) provided a 'first step' for organisations seeking to assess their performance against all of the clauses of a recognised OH&S-MS (OHSAS 18001, which was the predecessor OH&S-MS to ISO 45001). Its design provided a red/amber/green qualitative result of control (which I intended) to compel action planning. It should be revised by its new owners to reflect ISO 45001:2018 now that this has been published.

Chapter 4 (on pages 141-5) explains the conception, alpha and beta-testing, and evolution of the risk assessment software (Asbury, 2002); also see Figure 23 on page 144. This software provided opportunity and functionality to plan detailed actions per department, per operation, per task, and per hazard (i.e. *DOT-H* as described) to address risks and opportunities in an integrated and systematic manner. The review feature allowed for planned reviews and reflection on the effectiveness of any actions planned or taken.

My work (Asbury, 2018) explains how to establish, operate, audit and improve an OH&S-MS based on PDCA, including case studies featuring organisations that have implemented such an approach.

Clause 7.2

Clause 7.2 says: *The organisation shall determine the competency of workers that affect or can affect its OH&S performance…*

Chapter 3 of this context statement explains how from 1994 my public works provided competency frameworks for UK and international OH&S qualification and membership of IOSH and other bodies at various (competency) levels. This was later adopted by HSE for its OSHCR register (see page 110).

Over the last 30 years, IOSH has grown from 5000 to almost 50,000 members, and is now the world's largest organization for health and safety (IOSH, 2020a). The developments included within my works included review and acceptance of three routes to competency (NEBOSH Diploma, approved degree in OH&S, and NVQ levels 4/5/6), initial professional development (IPD as later proposed by Lester, 2009) and continuing professional development (CPD) consistent with the literature including Hale, Piney and Alesbury (1986) and Bullock and Trombley (1999). Together, these facilitated IOSH's Royal Charter in 2003 and its permission to confer Charter

upon its competent members from November 2005. Former IOSH CEO Rob Strange (*pers comm*. 2016) says that "this development was the game-changer in terms of the influence and impact of IOSH on the Governmental and international stage." Hale and Harvey (2012) confirm the adoption by ENSHPO and INSHPO of IOSH's professional membership and related standards derived from the works presented in theme 2.

Chapter 3 examines the evolution of the 'OH&S Manager' role and OSH competencies. The public works (Asbury and Ball, 2009; 2016) met IOSH's desire to broaden the skills of OH&S practitioners. In my other works (Asbury, 2011c, 2011d – not submitted), I provided advice to practitioners seeking OH&S roles in organisations.

My work (Asbury, 2013b) provides the current Code of Conduct, etc. for the largest OH&S organisation in the world.

My article for the IOSH magazine (Asbury, 2013c) is an example of how as chair of PC (on behalf of IOSH), I communicated and explained the new Code to members. I also broadcast on *AudioBoo* (please see Appendix 3 on page 226, *Broadcasts*), and this remains available.

Clauses 9.2.1-2

Clauses 9.2.1-2 say that: *The organisation shall conduct internal audits at planned intervals to provide information on whether the OH&S management system conforms to the organisation's own requirements for its OH&S management system, the requirements of this International Standard, and is effectively implemented and maintained.*

Chapter 2 explains the origins of auditing from reviewing the literature and case law. In my work (Asbury and Ashwell, 2007), methodology for creating a risk-based audit plan for any organization is presented. The 'Audit Process Roller-Coaster' provided a novel metaphor for conducting a risk-based audit. Reading Dekker (on *Safety Differently*; 2014) and Hollnagel (on *Safety-II*; 2014), I realised that my early thoughts were broadly aligned to these emerging positions in that concentrating resources on the most significant risks meant that fewer resources would be deployed on risks of lower significance, and that 'zero harm' as previously expressed as a target might be unachievable. Knutt (2016) provides an example from practice in application by construction giant Laing O'Rourke.

In my work (Asbury and Ashwell, 2007), with improved illustration and description in my second and third editions (Asbury, 2013a; 2018), a revised model for audit planning is presented (as a 'jigsaw puzzle' – 2018: 116). *The Audit Adventure* provides a powerful and memorable, top-down and bottom-up (Asbury, 2018: 161) approach to conduct any risk-based audit. The approach can

be used in organisations of all types and is aligned to the ISO standard for management system auditing, ISO 19011, amended in 2018 to reflect "risk-based auditing" (ISO, 2018b).

My book (Asbury, 2018) explains and gives rational for the Terms of Reference (TOR – see book page 118-9) for each audit to include the '3As' as objectives:

- Assurance (based on evidence) that the management system is working as intended to address the selected risk
- Alert(s) that the management system is not working as intended to address the selected risk
- Advice (or recommendations) to improve or enhance the framework for risk control.

The organisation shall plan, establish, implement and maintain an audit programme(s) including the frequency, methods, responsibilities, consultation, planning requirements and reporting… and define the audit criteria and scope for each audit.

My work (Asbury and Ashwell, 2007; Asbury, 2013a; 2018) provide the evolution of my thinking about risk-based audit planning, with a Lead Auditor and terms of reference (TOR) for each individual audit. The approach is consistent with Dekker (2014), Hollnagel (2014), Knutt (2016) and ISO (2018b) as regards ensuring that the focus is upon the risks of the greatest significance throughout fieldwork sampling.

Clause 10.3

Clause 10.3 says that: *The organisation shall continually improve the suitability, adequacy and effectiveness of the OH&S management system by:*
  a) *Enhancing OH&S performance:*
  b) *Promoting a culture that supports an OH&S management system*
  c) *Promoting the participation of workers in implementing actions for the continual improvement of the OH&S management system*
  d) *Communicating the relevant results of continual improvement to workers, and, where they exist, workers' representatives;*
  e) *Maintaining and retaining documented information as evidence of continual improvement.*

Chapter 2 explained the evolution of management systems and MS auditing based on the cycle of improvement provided by Deming (1982), followed by ISO (2012a). The context statement provides the argued case for the role of my theme 1 works (Asbury and Ashwell, 2007; Asbury 2013a; 2014; 2018) in extending the utility of the PDCA cycle into the OH&S field for the first time.

In chapter 2, I summarised my career experiences of developing and using OH&S-MS. They are consistent with virtually all the evolving (if somewhat limited) voices of the day, and those that came thereafter, including Kolluru *et al.* (1996), Bateman (1999 and 2006), Boyle (2002), Fuller and Vassie (2004), Friend and Kohn (2005), Bennett and Foster (2007). Robson *et al.* (2007) reported that only thirteen from 4837 studies of the effectiveness of OH&S-MS undertaken and reported in 117 years between 1887 and 2004 met quality criteria, with (just) one judged to be high methodological quality. Twelve years later, da Silva and Amaral (2019) reported little improvement in quantity or quality.

This limited voice led to my works arguing the business case for OH&S (please refer to the examples in my works Asbury, 2010b; 2011b; and 2012) and case studies (examples in my work Asbury, 1997 re: McDonalds; Asbury and Ball, 2016 re: Pearson) which individually and collectively provide senior management with the opportunity and impetus to address this clause meaningfully. These extend the 'costs of accidents' work of HSE (1993, *iceberg*) and Davies and Teasdale (1994).

The Audit Adventure (my work Asbury, 2013a; 2018) provides a continual improvement process for any organisation. It provides for evaluation as a *watchdog and a bloodhound* (Law Times, 1896) of the effective operation of the OH&S-MS.

The organisation shall retain documented information as evidence of the results of continual improvement.

My public works (Asbury and Ashwell, 2007; Asbury, 2013a; 2018) discuss the utility of 'Audit Finding Working Papers' (AFWP) and provide copyright-free template documentation from a publisher-supported companion website at
https://routledgetextbooks.com/textbooks/9780815375395/ as contributions to the practices of others.

With the auditable trail of improvement presented within my risk assessment and action planning software (Asbury, 2002), these tools provide the opportunity for an organization to build and retain in a structured format a detailed analysis of the fieldwork at their premises. It allows the organisation to deliver on its ethical responsibilities to prevent (serious) harm and to *relegate bureaucratic accountability to the back seat* (Dekker, 2014).

5.4 Limitations of the research

The outputs are time bounded. These fifteen public works I have submitted were written through a period led by advances in health and safety regulation but where the design and detail for an OH&S-MS, embedding this into the strategy of an organisation, and confirming validation in operations by independent auditing were missing.

As a consultant, it was imperative for me to explore what leading voices from management, social sciences and psychology were saying. I was informed by my own early learning (from law and management studies) and incorporated this into my outputs. As such, the outputs and advice were guided by case law, Deming (1982) and others including Tzu (2009), Drucker (1970), Peters, Goldratt and Handy. There were other management system specialists whose work was not reviewed at the time (since addressed in my work Asbury, 2018: 54-70 and see Figure 2.2: 56).

The contents of my public works are built around my appointments and those with whom I consulted. On page 15 of this context statement, I discussed the limits of autoethnography, and how this was addressed. The case studies within the output utilised a variety of methodologies and approaches. However, they are themselves bounded by their organisational *Context* and it must be recognised that direct extrapolation and use by the sector may be limited and should be used a medium for debate rather than advocation of implementation.

Likewise, the field-based research was very much based on convenience and conducted with willing partners who may have improved anyway for other reasons. As such, the response/outcome from these organisations could produce skewed data. They may have been early adopters rather than laggards as identified by Gunningham and Sinclair (2002), Braithwaite, Healy and Dwan, (2005) and Cantrell and Dickinson (2019). Institutional theory towards OH&S-MS, including ISO 45001 (Darnall, 2017) suggests that external pressures shape organizational actions. As Wells (2018) advises, "when ISO 45001 represents four years of work by safety experts all over the globe, it is always worth paying attention to that much knowledge".

It is possible that in "paying" for my services, clients adopted the changes suggested and that the results reported were accrued to show value on their investment.

Additionally, and on reflection, the research was sometimes conduced with nominated correspondents who may have been atypical. As is often the case, there were no control experiments.

I cannot say that my public works and nothing else influenced the adoption of management theories to OH&S as I have proposed. As was said on page 21 of this statement, OH&S may not be scientific enough to say, "Do a, b and c and the performance will improve by x%". But performance over the period has improved, and the tide has moved towards these works.

The works were written through a time where legislation and standards were being developed and were prepared to be fit for purpose. Clearly, ISO 45001 now exists albeit perhaps ten or more years late. Looking at the world today and how it may evolve in the future, I see the emergence and traction of the *safety anarchist* and *adaptive safety* as new 'bottom-up' approaches led by safety champions (such as Dekker, 2017a and Rae and Provan, 2019). It will be seen how these may affect occupational health and safety on the ground, but their vital role will sit alongside OH&S-MS approaches.

On the role of OH&S professionals, INSHPO (2014) and Provan, Dekker and Rae (2018) discuss professional identity. Provan, Dekker and Rae (*ibid.*) say the role is rife with unresolved contradictions and tensions. They pose whether they are advisors or instructors, native or independent, enforcer of rules or facilitator of front-line agency, and ultimately, a benefactor for safety or an organizational burden? Perhaps they believe that they are all of these. As time has advanced, and the IOSH Royal Charter being held now for seventeen years, the public works from that time must evolve further to better-understand the professional identity of OH&S professionals providing a new foundation for exploring professional practice, and by extension, understanding organizational safety more broadly. Earlier in 2020, I was asked to participate in a *Member Grades Review Focus Workshop*. I am pleased to see that IOSH is reviewing its application of my works since 1994 in light of changing times and *Context*.

I have noted with interest the work of Carol Weiss (1986), who discussed the limitations of partnership between academic research and policy making. She concluded that researchers should be aware that the work they do, no matter how applied in intent or practical in orientation, is not likely to have major influence on the policy decision at which it is directed. When competing with other powerful factors, such as political or bureaucratic advantage, limited study (and she says that all studies are limited in some way) is likely to have limited impact. Such a sombre warning should remind researchers of the need for humility amongst proponents of systematic enquiries. We should all have a realistic appreciation of the limits of real-world impact. I do.

5.5 Summary: my *habitus*

At the start of this context statement (chapter 1, page 2), I introduced my 'signature'; my *habitus* (Bourdieu, 1990). Through this context statement, I have presented and engaged with fifteen of my public works to explore and illustrate the sum of my life experiences with which I inhabit my practice in OH&S.

To summarise my learning from practice and my impacts upon practice, in Figure 27, I exhibit my representation of the expertise brought to my works through exploration, generation and development of new practices. It is a two-way model; I have learnt from my learning, experiences and education, but also these outer segments have been informed by my public works.
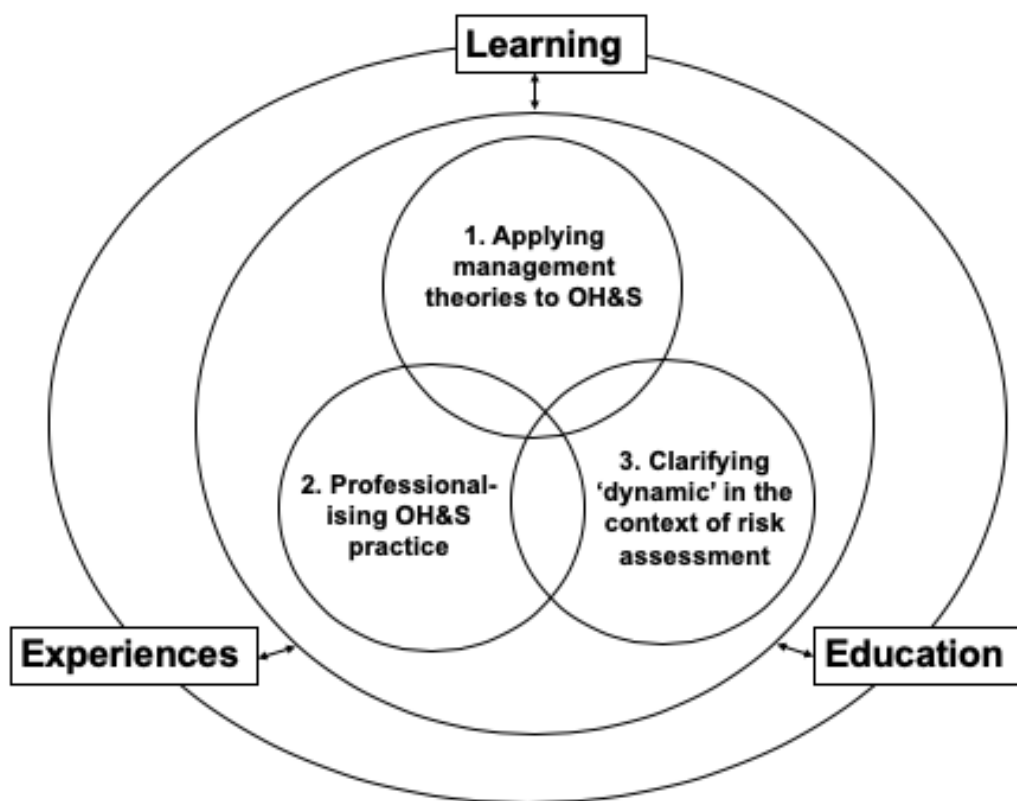

Figure 27: Stephen Asbury my *habitus*: Learning from practice and impact on practice.

5.6 Conclusions

The good guys don't need them, the bad guys won't read them.

- Dr Alex Grieve, former Chief Medical Officer British Army, Shell and GKN (Grieve, *pers comm.* 2016)

We do not need any more OH&S regulations. I agree with Young (2010) and Lofstedt (2011) that they are broadly fit for purpose. Brexit enables the UK Government to 'take back control' of the OH&S regulatory agenda. Those doing a good job don't need any more in the rule book (Grieve, *ibid.*) – by definition, they already know what's to be done and are doing it. I agree with Michaels (2018) who, concurring with Grieve, says that "While many employers will comply with … standards even if no … inspector shows up at their door, there are far too many employers who cut corners on safety".

The road forwards from here to continue deliver improved OH&S results should be built upon externally certified systematic PDCA control (i.e. ISO 45001). As such, this will be focussed on the safety AND health priorities ('*big rocks*') identified by risk assessment, conducted in a partnership with appointed Chartered (i.e. competent, with up-to-date CPD) OH&S advisers to advise upon and assist with implementation and risk-based audit. This should be supplemented by publication of a risk-based OH&S audit report each year by organisations. As well as the oversight of worker and public scrutiny, this would inform future *Robson* (and other) reviews of the effectiveness of OH&S-MS. Such an approach passes the 'red tape' and 'burdens on business' challenges as it remains voluntary as envisaged by Robens.

Those doing a poor job (those that kill and injure their workers), possibly don't bother about the law on OH&S anyway. In the UK, 2-3 people are killed in workplaces each week (HSE, 2015; 2016a; 2020). A further 3 from the 8 killed on the roads each week were at work (Adminaite, Stipdonk and Ward, 2017). Work seriously injures another 1500 workers each week. Their employers need the full focus of regulators until they 'get it'. Pressure will also come to bear through supply chains as wider adoption of ISO 45001 grows.

Together, these influence business owners' future OH&S decisions. To support this, a renewed strategy to link up all the tools of Government – regulatory oversight, presentation of cases to the courts, sentencing guidelines, along with insurers' sanctions - should continue to be brought together to compel further goal setting, self-assessment and 'volunteering'.

The people I want to talk to are the ones who are not here

- Stephen Asbury

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Appendices

1. List of my submitted public works, with a list ranked by impact
2. Summary of the *Petros Barola* public work
3. List of my other public works
4. Example reviews of the public works
5. Statements of contribution by co-authors
6. Summaries of retrospective research questions and investigatory actions
7. My curriculum vitae
8. Full texts of my submitted public works

Appendix 1 – List of my submitted public works

Books (4)

Asbury, S.W. (2018), *Health and Safety, Environment and Quality Audits,* 3rd edition, Abingdon and New York: Routledge Taylor & Francis.

Asbury, S.W. and Ball, R. (2016), *The Practical Guide to Corporate Social Responsibility,* Abingdon and New York: Routledge Taylor & Francis.

Asbury, S.W. and Jacobs, E. (2014), *Dynamic Risk Assessment – The Practical Guide to Making Risk-based Decisions with the 3-Level Risk Management Model,* Abingdon and New York: Routledge Taylor & Francis.

Asbury, S.W. and Ball, R. (2009), *Do the Right Thing – The Practical, Jargon-free Guide to Corporate Social Responsibility,* Abingdon and New York: Routledge Taylor & Francis.

Articles and other published works (11)

Asbury, S.W. (2016a), advice to, and feedback from, IOSH and ISO/TC 283 on DIS/ISO 45001:2016 (which became ISO 45001:2018).

Asbury, S.W. (2014), *SafetyCheck by CRS* (a mobile application software app for Android and iOS, available from the Apple Store and GooglePlay), Derby: Corporate Risk Systems Limited.

Asbury, S.W. (2013b), *Code of Conduct, Guidance and Disciplinary Procedure,* Leicester: Institution of Occupational Safety and Health (IOSH).

Asbury, S.W. (2013c), Peak Practice – An examination of the remodelled IOSH Code of Conduct, in *SHP* (Safety and Health Practitioner) June 2013, London: UBM Information.

Asbury, S.W. (2010a), *Guide to the Skills Development Portfolio and requirements for Initial Professional Development (IPD)*, Leicester: IOSH.

Asbury, S.W. (2007), Racing Certainty (a study of safety improvements in motor sport since 1895), in *SHP* October 2007. London: CMP Information.

Asbury, S.W. (2006-16), *The Petros Barola Case Study* (implementation case study for HSE classes), Derby: Corporate Risk Systems Limited.

Asbury, S.W. (2002), *CRS Risk© – Risk Assessment Toolkit* (computer software programme), Derby: Corporate Risk Systems Limited.

Asbury, S.W. (2001), IOSH membership categories and structure (which led IOSH to Royal Charter in 2003 and granting a Charter to competent members in 2005), Leicester: IOSH.

Asbury, S.W. (1997), *Safety Project – Vision for the Future,* restaurant H&S guide (over 34,000 copies printed and distributed), Oakbrook IL: McDonald's Corporation.

Asbury, S.W. (1994a), *Continuing Professional Development for Safety and Health Practitioners* and *How to maintain a successful CPD record* (CPD scheme and recording documents) Leicester: IOSH.

NB: These exhibit public works are presented via a link to a folder on Microsoft OneDrive.

Ranked list of my submitted public works

As described in section 1.1 *Introduction*, I have ranked by impact each of my fifteen submitted public works. This ranking is into three groups as summarised:

- High value, longer term impacts

- Medium value, medium term impacts

- Supportive impacts, of limited scale or delivering an impact for a shorter duration

<u>High value, longer term impacts</u>

Reference public work	Rationale for this ranking
Asbury, 2018	This was a unique book on risk based HSEQ auditing on publication in 2007 and it remains so. On publication of its second edition (Asbury, 2013a), academic review said that it 'ought to be the standard work on HSEQ auditing' (see Appendix 4). Its methodology was endorsed by IOSH and IEMA and followed by ISO. It has been adopted by international companies and used to teach over 10,000 HSE auditors. Now in its third edition, it was the first book covering OH&S-MS based on ISO 45001:2018. It continues to sell (relatively for its field) in large numbers.
Asbury, 1994a Asbury, 2001 Asbury, 2010a Asbury, 2013b	These four public works seem indivisible in the long-term impacts they have provided. The first two facilitated IOSH's Royal Charter in 2003 and led to Privy Council's permission to confer Chartered status on members from 2005. The work on IPD completed the current IOSH membership structure in 2010. The Code of Conduct and associated documents completed the regulatory arrangements in 2013. Members, and the employers and public they serve, are held to account by their Profession under twenty code points under four broad headings: Integrity, Competence, Respect and Service. The products of all four of my works remain in current use within IOSH, and as described, by ENSHPO and INSHPO on the international stage.
Asbury, 1997	The *Safety Project – Vision for the Future* for McDonald's established approaches and standards to protect 1.1m workers, to induct 1.3m new-hires annually and to safeguard 68m customers at 34,000 locations each day. Though it has evolved, its use continues.

<u>Medium value, medium term impacts</u>

Reference public work	Rationale for this ranking
Asbury and Ball, 2016	This book developed the original thinking from Asbury and Ball, 2009 and repositioned it as a text for a business audience. It is aligned to ISO Annex SL to facilitate integration into other MSS. Its value and impact may increase, as and when CSR is adopted by the business community more widely.
Asbury and Jacobs, 2014	The book presented applications for DRA outside of the emergency services for the first time. It was adopted by IOSH for its CPD course.

	The book is in its ascendency, and its value may rise when dynamic risk assessment is adopted as a more mainstream OH&S function.
Asbury, 2006-16	This andragogic learning case study for OH&S and MS auditing was embraced by the international oil and gas industries via its primary competency provider, PetroSkills. It was used from 2006 in a variety of HSE training courses delivered to over 15,000 OH&S, environment and audit practitioners from organisations such as Chevron, Saudi Aramco and Repsol.
Asbury, 2007	This article for IOSH's magazine was researched and prepared as a general interest article. On its own, it had modest impact for a short period.

However, it triggered a significant future impact. As described, it set in train a course of developments that led in 2010 to the current prohibition on in-race refuelling in F1 motorsport. There has not been a refuelling fire in the ten seasons (years) since. |
| Asbury, 2002 | At the time of its development and launch, this was an innovative solution to standardise and systemise H&S risk assessments aligned to the literature.

In five years, it sold to over 500 organisations where it was deployed to over 2000 UK locations and elsewhere in over 20 countries. It was selected for BBC *Dragons' Den*, which sought "great new products like this". It subsequently set the standard for competitors who would follow (see section 4.13.1) prior to being discontinued in 2007. |

Supportive impacts, of limited scale or delivering impact for a shorter duration

Reference public work	Rationale for this ranking
Asbury, 2016a	By 2015-6, a real push was evident to develop and publish an externally certifiable ISO standard for OH&S management systems.

Endorsement and advice from the world's largest H&S body was supportive of this 'push', and my works provided advice, content and impetus. Two years later, the ISO 45001:2018 standard was published. |
| Asbury, 2014 | The first iPhone launched in 2007 and the first Android device, the *HTC Dream*, launched in 2008. By 2013, there were over 500k apps available from the app store. By June 2020, this had grown to 2.96m (Mindsea, 2020).

In 2013, I saw this potential, and with my expert knowledge of OH&S-MS, developed this app. It was downloaded (free) from app stores 000's of times.

It was sold with my company in 2014, but not updated to reflect ISO 45001:2018 when published. It was innovative when launched but has now lost much of its currency. |
| Asbury, 2013c | This was an important article in IOSH's house magazine to brief members on the new Code of Conduct at the time of its inception. There were other communications with members as described in my context statement, but this one was considered by the body as the centre piece of its briefing. It effectively launched the Code and had significant impact when published. Naturally, having served its primary purpose, its own impact was short-lived, and was superseded by other communications. |
| Asbury and Ball, 2009 | This was the first book providing a reflective learning approach to CSR for OH&S practitioners. It was endorsed by IOSH and used in its CPD training courses. It provided the springboard for the research that led to Asbury and Ball, 2016. |

Appendix 2 – Summary of the *Petros Barola* public work

Petros Barola

My work the *Petros Barola* andragogic learning system (Asbury, 2006-16) was originated, developed and continuously improved over ten years. Its application was as a *golden thread* in the (then) new suite of HSE training classes developed for members of the PetroSkills LLC oil and gas training alliance.

It comprises adult learning experiences in three simulated organizations located on the island of *Barola* and in its offshore waters:

- Petros (Barola) Limited – OH&S management and MS auditing at a bulk goods-in (rail and shipping) facility with an oil products storage tank farm and the operation of a delivery fleet of owned and contracted LGV fuel haulage vehicles from Orkney depot www.petrosbarola.com
- Petros Exploration and Production Offshore Ltd (PEPO) – management and MS auditing at off-shore drilling and oil and gas production platform *Caspian Explorer*, a FPSO vessel and associated pipelines and infrastructure www.petroscaspianexplorer.com
- Petros Projects Limited – management and MS auditing of an organization delivering energy projects, including the demolition of a coal-fired power plant and the construction of a gas power station and solar array www.petrosprojects.com
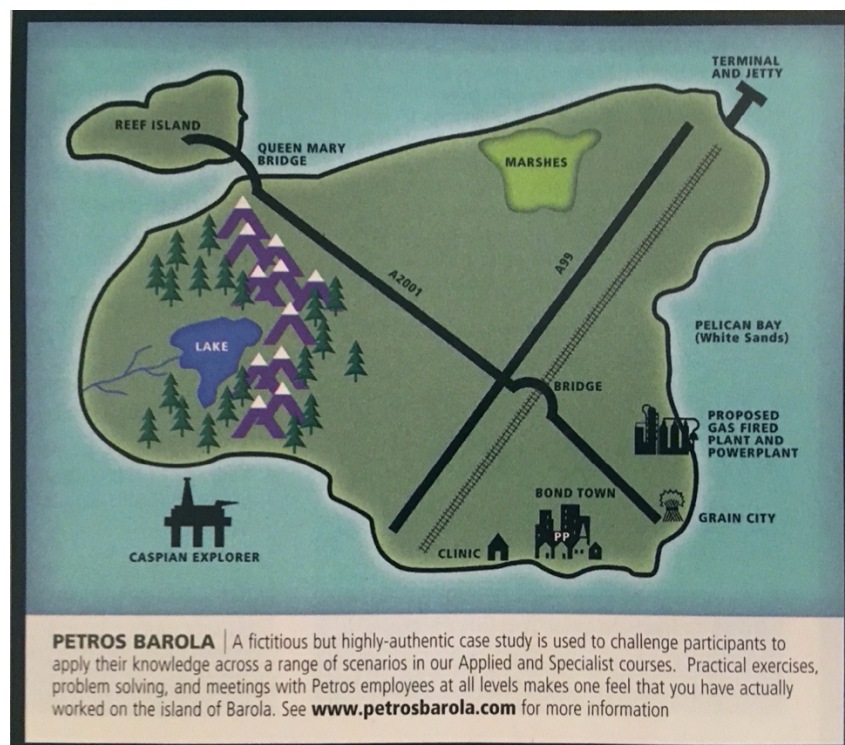

Figure 28: Map of Barola (from PetroSkills' catalogue, with permission)

Examples of participants' materials appear in the public works (my work Asbury, 2006-16).

Appendix 3 – List of my other public works

Other published works

Asbury, S.W. (2018), From ineffective auditing to effective auditing, available from https://www.quality.org/knowledge/ineffective-auditing-effective-auditing London: Chartered Quality Institute and International Register of Certificated Auditors (CQI and IRCA).

Asbury, S.W. (2016), RasGas 2011-2015, In competency development catalogue, available from Houston: PetroSkills LLC.

Asbury, S.W. (2013), *Health and Safety, Environment and Quality Audits,* 2nd edition, Abingdon and New York: Routledge Taylor & Francis.

Asbury, S.W. (2013), Business assurance using The Audit Adventure, in *Foundry Trade Journal International 187/3708* October 2013, West Bromwich: The Institute of Cast Metals Engineers.

Asbury, S.W. (2012), Looking Outwards – Comment, in *Safety Management* April 2012, London: British Safety Council.

Asbury, S.W. (2011), Making the Case for Safety, in *The Ergonomist* **497**, November 2011, Loughborough: Institute of Ergonomics and Human Factors.

Asbury, S.W. (2011), Integrated for efficiency and continual improvement – the case for integrated management systems, in *Foundry Trade Journal International* **185/3689** November 2011, West Bromwich: The Institute of Cast Metals Engineers.

Asbury, S.W. (2011), Training and Career Development – Just the Job, in *SHP* August 2011, London: UBM Information.

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Asbury, S.W. (2010), Making the Case for Safety, in *Foundry Trade Journal International* **184/3676** July/August 2010, West Bromwich: The Institute of Cast Metals Engineers.

Asbury, S.W, (2009), A History of Risk, in *Inform*, Issue **24**, London: International Register of Certificated Auditors (IRCA).

Asbury, S.W. (2009), Health and Safety Training – Is it Worth the Cost?, in *Building News* November 2009, Birmingham: Butler Publishing.

Asbury, S.W. (2009), The CDM Regulations: What Difference Have They Made to Construction Safety?, in *Building Engineer* October 2009, Northampton: Association of Building Engineers.

Asbury, S.W. (2009), Using the Audit Process Roller Coaster to Develop a Risk-based Approach to Auditing, in *Safety Specialist* Winter 2009, Cheltenham: SOS Ltd.

Asbury, S.W. and Ashwell, P. (2007), *Health and Safety, Environment and Quality Audits – A Risk-based Approach,* Abingdon and New York: Routledge Taylor & Francis.

Asbury, S.W. (2002), Managing Crisis and Feedback from Exercise 'Nawras', *QRMB* (Quarterly Risk Management Bulletin) Quarter 2 2002, London and Dubai: Hong Kong Shanghai Banking Company (HSBC).

Asbury, S.W. (1999), Diagnosing the Ergonomic Causes of Injuries, and Implementing Business-Focused Remedies, in *Contemporary Ergonomics 1999,* London: Taylor & Francis.

Asbury, S.W. (1997), Can Environmentalism be a Commercial Prospect?, in *Journal* **1/2** Leicester: IOSH Publishing Limited.

Asbury, S.W. (1996), *Yearbook,* Burton upon Trent: Burton and District Occupational Health and Safety Group (BDOHSG).

Asbury, S.W. (1995), *Occupational Safety and Health - A Highly diverse and Rewarding Career,* Leicester: IOSH.

Asbury, S.W. (1995), *Programme,* Burton upon Trent: BDOHSG.

Asbury, S.W. (1994), *Programme,* Burton upon Trent: BDOHSG.

Asbury, S.W. (1994), The Case Methodology for the Implementation of the Health and Safety (Display Screen Equipment) Regulations 1992, *in proceedings*, HSE and The Ergonomics Society Conference, Swallow Hotel, Bristol 1/9/94; repeated at CHaRM Conference, Loughborough University 1/11/1994.

Asbury, S.W. and Baxter, R. (1991), *Lotus 123 – A User's Guide,* Burton: Burton on Trent Technical College Print.

Public presentations and conferences

Asbury, S.W. (2018), *Case Study: A Management Systems Approach to Initiating Change and Enhancing Your Workplace Culture,* Presentation to IOSH National Safety and Health Conference 2018, Nottingham Belfry, 14/6/2018.

Asbury, S.W. (2017), *HSE Risk Management Best Practices*, Presentation to Swansea and West Wales Occupational Safety Group on 22/3/2017.

Asbury, S.W. (2017), *CSR for Risk Control and Business Improvement,* Presentation to North Staffs Health and Safety Group, Stoke Fire Service HQ, 21/2/2017.

Asbury, S.W. (2017), *Using Management Systems for HSE Improvements,* Presentation to IOSH Mid Shires Branch, Rugby, 12/1/2017

Trampini, A.; Foss, I.H.; Asbury, S.W.; and Smith, N. (2013), *HSE Competencies and Operational Challenges,* Society of Petroleum Engineers (SPE) European Conference, 18/4/2013, London.

Hearle, A and Asbury S.W. (2013), *Petros Barola – A Virtual Oilfield Model for Improved Learning,* PetroSkills 11th Annual Conclave 30/1/2013 (repeated 31/1/2013), London.

Asbury, S.W. (2012), *The Evolution of Safety in International Motorsport,* Universities Safety and Health Association (USHA) Spring Conference Bristol 19/4/2012 (repeated at the Barbour Directors' Club, Safety & Health Expo, NEC Birmingham, 17/5/2012).

Sansom, A.; Asbury, S.W.; Arp, D.; Harvey, H.; Sinclair, D.; and Passey, R. (2011), Experience *versus qualifications: Just what is the best route to a career in health and safety?,* SHP Round Table webinar, 29/11/2011.

Asbury, S.W. (2011), Linking OH&S and CSR: A Practitioner's Approach*,* In conference proceedings, *CSR and SHE: What is the Missing Link?,* Middlesex University 3/2/2011.

Asbury, S.W. and Ball, R. (2009), *Do the Right Thing Live,* at IOSH '09 Conference and Exhibition, IOSH premiere and book launch, 17-18/3/2009, BT Convention Centre, Liverpool.

Asbury, S.W. (2008), *Be the Best – Gaining and Maintaining Chartered Status,* Safety & Health Expo 2008 – Seminar Programme, Birmingham 15/5/2008.

Asbury, S.W. (2007), *HSEQ Audits – A Risk-based Approach*, Safety & Health Expo 2007 – Seminar Programme, Birmingham 22-24/5/2007.

Asbury, S.W. (2003), *Corporate Social Responsibility,* Keynote presentation to the Association of Police Health and Safety Advisers Conference (APHSA), Llandudno 21/10/2003.

Asbury, S.W. (2002b), *Auditing in a Technical Environment, p*resentation to the 'SHE Solutions 2002' Conference, CMP, Harrogate International Centre on 15/10/2002.

Asbury, S.W. (2000), *The World's Most Admired Airlines*, in proceedings, The 2000 Business Strategy and the Environment Conference, ERP Environment: University of Leeds 18-19/9/2000.

Asbury, S.W. and Pritchard, P. (1999), *The Most Esteemed Environmental Performers in the UK FTSE200,* in conference proceedings, The 1999 Eco-Management and Auditing Conference, ERP Environment: University of Leeds 1-2/7/1999.

Asbury, S.W. (1996), *Health and Safety is No Accident,* in conference proceedings, GKN plc Annual Health and Safety Conference 1996 (at GKN plc, Redditch).

Asbury, S.W. and Jeskines, M. (1996), In*cident Investigation Strategies,* in insurance conference and presentation at Telford (Sun Alliance Insurance Group, London) 21/5/1996.

Broadcasts

PetroSkills webinar (several broadcasts 2013-4), *Evolving HSE Management Systems for Continual Improvement in the 21st Century.*

IOSH AudioBoo Channel (2013), *The new IOSH Code of Conduct,* remains available from http://audioboo.fm/boos/1220138-iosh-s-revised-code-of-conduct-for-members

IOSH YouTube Channel (2009), Corporate Social Responsibility 'Do the Right Thing' book launch, remains available from http://www.youtube.com/watch?v=Ma3NFPQN1oA

Finalist, BBC *Dragons' Den* (2007).

BBC Radio Shropshire, 30 November 1993 – One-hour live radio interview on new health and safety regulations and the 'six pack' (with Dr Dale Archer).

Public awards

PetroSkills 'Top of Class' award (2014).
IOSH President's Distinguished Service Certificate (2010).
RoSPA Safety Professional of the Year (Engineering) (1995).
Institute of Management 'Management Student of the Year' (1989).

Citations

IRCA 'Auditor of the Month' *INform* e-zine October 2013 http://www.irca.org/en-gb/resources/INform/archive/Issue42/Auditor-of-the-month/
Feature article 'My Career' In *the environmentalist*, December 2012, Lincoln: IEMA.
Feature article in De Montfort University alumni magazine *The Gateway*, **7** Winter 2010/2011.
Feature article How Did I Get Here? In *SHP*, July 2005, London: CMP Information.
Listed in 'International Who's Who of Professionals' – Marquis Publishing.
Listed in 'Britain's Business Elite – Owners of Britain's Most Successful Companies'.
Listed in 'Who's Who in Finance and Industry'.
International VIP, Pacific Whale Foundation.

Appendix 4 – Example reviews of the public works

"Essential reading for people wanting to create long-term social and economic value and protect and enhance natural capital."
- *Tim Balcon Chief Executive, Institute of Environmental Management and Assessment (IEMA), in Practical Guide to Corporate Social Responsibility (Asbury and Ball, 2016)*

"It will become the classic work on the subject."
- *Dr Stephen Vickers, Chief Executive, NEBOSH, in Dynamic Risk Assessment – The Practical Guide to Making Risk-based Decisions with the 3-Level Risk Management Model (Asbury and Jacobs, 2014)*

"This is the second edition of a very successful book which first appeared in 2006. I said then that it was a most welcome addition to the library of any manager active in this field and ought to be the standard work in HSEQ auditing; this second edition only confirms me in this opinion. A thriving and constantly improving HSEQ culture depends on those in control questioning its condition, measuring its successes and failures and defining routes towards development. Much in the way that a financial audit determines the monetary health of a management system, HSEQ audits test these elements of performance. Some audit systems are one-size-fits-all prescriptions, which, although successful in many applications, cannot be said to succeed in all, simply because management structures vary so much. Indeed, earlier audit systems tended to give a false sense of security precisely because there was a fundamental mismatch between the management system under scrutiny and the audit system chosen. Hence Stephen Asbury's approach to letting the management structure determine the what and how of auditing, and that is its major strength. 'Risk' is defined herein as the scale of any type of impact on an organization's objectives, i.e. very widely. The purpose of this book is therefore to instruct the reader in how to focus on especial classes of risk, how best to interrogate the management system responsible for that aspect, and what to make of the outcome(s).

The book comprises 10 main chapters plus 5 appendices. The novice auditor and senior general manager or director would be well advised to simply start at the beginning and wade in, for there is much to be gained from Asbury's understanding of the current business environment and how the structure and control functions of an organization operate. If you're familiar with modern management studies, then you might skip the first two chapters, but there are plenty of inset boxes with nuggets of good sense and advice that you won't want to miss. The crux of the matter starts in the next section, where it is explained why, how and by whom and auditing culture comes about in an organization. This leads into a discussion of the interactions between auditor and those individuals who control the aspects of management under scrutiny. This is important if the audit process is to elicit the best and most accurate data on which future strategy can be confidently based.

'The Audit Adventure' is the author's term for the thought processes around the dynamics used by auditors. This steers auditors through the major steps of the audit. Since an audit is a project like any other, it comprises a series of inter-related activities with a timescale, budget and resource allocation, plus clearly understood objectives. The remainder of the main sections of the book detail the principles and practices of this audit adventure.
If you have been appointed as lead auditor, chapters 6-10 will lead you by the hand, telling you how to approach the tasks involved, how to get the best from your team, and to prepare and execute the best programme you can. All the important aspects of this vital process are dealt with expertly, and with good humour. Good preparation is, naturally, vital for a potentially complex project such as an audit. The audit team and especially the lead auditor must understand what is expected of them, the audit processes they will use and how the deliverables agreed will be uncovered. As Asbury says, "the key to a successful audit is a thoroughly prepared audit team". Once the groundwork has been laid, the audit team will, hopefully, have unearthed a representative sample of significant risks for inclusion in the audit work plan. The actual conduct of the audit is, quite properly, the major section of this book and the author explains in some detail the variables inherent in these processes, how difficulties can be minimised and focus

retained. It's all most helpful, with case studies, tips and pithy asides to guide the reader towards a deeper understanding. Of greatest use to the auditee will be the formal report and perhaps a presentation giving the conclusions of the audit. Where immediate risks or major non-conformances have been uncovered, the lead auditor needs to be prepared to help in arriving at workable solutions. This is all part and parcel of the audit process. All these aspects are covered in enough detail to let the prospective lead auditor understand what is required, and conversely what a director of an auditee company can and should expect.

The graphic design is superb with inset case studies to illustrate important points and tips garnered from the author's personal experience. Special mention must be made of Paul Richardson's cartoons. Auditing may not be the 'sexiest' topic for humour, but these really do work well and don't detract from the seriousness of the subject.

There is so much to enjoy and admire in this book. The introductory chapters are as good a summary of the nature of business risk as one can have without straying into magnum opus territory for management studies undergraduates. That this is achieved without recourse to 'management speak' is quite remarkable. The writing style throughout is accessible and the layout leads the eye to the salient matters of each topic. There are, in addition to the main text, five main appendices plus lots of extras, not the least of which is the useful website supported by the publisher. There is also a good index, which makes life a lot easier.

Auditing 'how-to' guides tend not to be the most thrilling reads. One reads them because one wants to understand the process or to pass an exam. This one, however, actively draws the reader into an understanding of how important these activities are to the health of an organization so that one appreciates that without such processes, success or failure would be pretty much left to chance. In today's business environment, no senior manager should be content with that. This book will tell you how to find out what could go wrong and how to address such challenges. This second edition remains the 'go to' handbook for those who aspire to drive a prosperous and thriving business and I highly recommend it."
- *Dr Andrew Rankine, Glasgow University, on HSEQ Auditing (Asbury, 2013a)*

"this is an admirable book – not just for those who inhabit the boardroom or are aspiring to do so, but for anyone who wants to get to grips with CSR"
- *RoSPA OSH Journal, Sept. 2009 on CSR / DTRT (Asbury and Ball, 2009)*

"an excellent book by two authors who are among the best in the world at both auditing and training auditors"
- *Health and Safety at Work Magazine, August 2007 on HSEQ Auditing (Asbury and Ashwell, 2007)*

"an excellent read, brilliantly written by two authors who clearly know their subject…it deserves to become the standard work in this area"
- *SHP Magazine, July 2007 (on HSEQ Auditing, Asbury and Ashwell, 2007)*

Appendix 5 – Statements of contribution by co-authors

Statement of contribution

I, Rob Strange OBE, confirm that Stephen Asbury made the following contributions to IOSH and its professional practices and membership publications whilst he was Council's appointed Chair of our Professional Committee, Professional Affairs Committee, Professional Ethics Committee and CPD Working Parties during the period 1994 to 2013.

Stephen's contributions:

- Developed and presented to the IOSH Council revised membership policies, including the present membership structure included in IOSH's Royal Charter and recognised in individual members' Chartered memberships (CMIOSH, CFIOSH)
- Developed IOSH's continuing professional development (CPD) policy, presented and agreed with our Council to extend CPD requirements from a few hundred Registered Safety Practitioners (RSPs) to all Technical, Graduate and Chartered Members
- Developed initial professional development (IPD) policy, overseeing the work of the IPD Sub-committee, which is now used by all Graduate members (GradIOSH) progressing to Chartered membership
- Participated in the development of the IOSH Code of Conduct, Guidance and Disciplinary Procedures through a working party he established. Led the (successful) presentation of same to IOSH Council, and our global launch including articles in SHP magazine and an interview on the IOSH AudioBoo Channel
- Additionally, he was chosen to feature in our 1995 publication 'Occupational Safety – A Highly-diverse and Rewarding Career', and assisted with its preparation

I support the use of these contributions in Stephen's application for the Professional Doctorate by Public Works.

Signed: _____   Date: 5th May 2020

Rob Strange OBE
Chief Executive, Institution of Occupational Safety and Health (IOSH), 2001-2013

Apartment 2
Great Bowden Hall
Leicester Lane
Great Bowden
Market Harborough
Leicestershire
LE16 7HP

Statement of Stephen Asbury's contribution

Jim Marshall
Director, Insurance & Safety (retired)
McDonald's Co.
Corporate Headquarters
2111 McDonalds Drive
Oak Brook
IL 60523
USA

5 May 2020

To whom it may concern

I was Director of Insurance and Safety at McDonald's Corporation 1981-2011. I worked with Stephen Asbury during his appointment to my account by the Royal and Sun Alliance Insurance Group in 1997-1999.

In 1997, we worked together (and with my insurance broker Linda Holan) on a US and pan-European project to identify best safety practices in some of our selected restaurants. We visited many McDonald's locations including in the US, UK, Germany, France and Italy.

Stephen's contributions:

- Working with underwriters, Stephen identified restaurant locations that had experienced higher-than-expected losses, and as such were of interest to our project (we also visited better-performing locations to create contrast in our story)
- Stephen provided technical input and questioning of our employees during visits to build case studies of best practice
- Stephen took photographs and authored articles and a large number of case studies identifying examples from the 'best practices' we had observed

- He reviewed and commented upon our final document *Safety Project – Vision for the Future* (our restaurant H&S guide) including his content prior to final issue to our restaurant managers around the world

Since then, I have read and been pleased to publicly-endorse Stephen's books on HSE management systems and risk-based auditing.

I support the use of these contributions in Stephen's submission to Middlesex University London, UK for DProf by Public Works.

Signed: *James M. Marshall*   Date:
5-5-2020

Statement of co-authorship

I, Richard Ball, confirm that Stephen Asbury made the following contributions to our book 'Do the Right Thing – The Practical, Jargon-free Guide to Corporate Social Responsibility', published by IOSH Services Limited and later Routledge, an imprint of Taylor and Francis *ISBN 978 0 901357 42 7*

Stephen's contributions:

- Secured contract with Loughborough College Enterprises (LCE) to develop a CSR workbook, negotiating the retention of the associated IP rights
- Worked with me to scope out this workbook with case studies from his clients, including Coca Cola
- Origination of the idea to convert the workbook into a text book
- Preparation and submission of a fully-structured, accepted book proposal, and securing an author's contract with IOSH Services Limited
- Linking of my knowledge of CSR to his knowledge of business context and *management systems thinking*
- Co-authored the book – around equal contributions to the total effort (chapters, case studies, illustrations, CSR actions)

I give my permission for this book to be used as a part of Stephen's application for the DProf by Public Works.

Signed: _____ Date: 18-5-20

Richard D. Ball
Senior Corporate HSE Manager
High Speed Two (HS2) Limited
Birmingham, UK

Statement of co-authorship

I, Richard Ball, confirm that Stephen Asbury made the following contributions to our book 'The Practical Guide to Corporate Social Responsibility', published in 2016 by Routledge, an imprint of Taylor and Francis ISBN 978-1-138-90184-1

Stephen's contributions:

- Secured contract with Routledge to re-write and update our 2009 DTRT book as a new book
- Preparation and submission of a fully-structured, accepted book proposal, and securing an author's contract
- Leading on the re-positioning of the book as a high-level business book, linking CSR to corporate legal responsibility and corporate responsibility
- Linking of my knowledge of CSR to his knowledge of business context / business control / management systems thinking / Deming / PDCA
- Researching and writing ten of the twenty new case studies
- Re-writing and updating the book – around equal contributions to the total effort (chapters, case studies, illustrations, CSR actions)

I give my permission for this book to be used as a part of Stephen's application for the DProf by Public Works.

Signed: _____   Date: 18-5-20

Richard D. Ball
Senior Corporate HSE Manager
High Speed Two (HS2) Limited
Birmingham, UK

Statement of co-authorship

Edmund Jacobs CFIOSH
Head of Profession, Corporate Fire Health and Safety
Ministry of Justice
London, UK

Edmund Jacobs worked with lead author Stephen Asbury on the book 'Dynamic Risk Assessment – The Practical Guide to Making Risk-based Decisions with the 3-Level Risk Management Model', published in 2014 by Routledge, an imprint of Taylor and Francis ISBN 978-0-415-85403-0 (pbk) and ISBN 978-1-138-16853-4 (hbk).

Edmund had worked with / engaged Stephen for around ten years previously as a consultant, and knew of his writing style and abilities. Accordingly, he proposed that we write a book about DRA together, and he agreed.

This statement confirms Stephen's contributions to the book.

Stephen's contributions:

- Led our preliminary meetings, and established the nature and structure of the book, including the presentation of non-blue light DRA in case study examples
- Prepared and submitted a fully-structured, accepted book proposal, and secured the author's contract with Routledge
- Author of the Preliminary sections and Chapters 2, 4, 6, Appendices and Glossary
- Pressing for and leading on the development of our own 3-level risk assessment model, which later formed part of the title and providing the unique contribution arising from the book
- Linking of Edmund's knowledge of DRA to his knowledge of context, stakeholder requirements, business control, management systems thinking / Deming / PDCA
- Writing ten of the eighteen case studies (as list in appendix 2)
- Writing the book – we agreed in writing that our contributions had been around equal as regards the total effort (proposal, pre-work, preliminaries, chapters, case studies, illustrations; our author's rights and royalties are likewise split 50:50)

Stephen will be using this book to be used as a part of his application for the DProf by Public Works.

Signed: _____   Date: 29/5/2020
Stephen Asbury

A dispute over the ownership of a website in 2013 (since resolved) caused friction between the co-authors, and Jacobs has not responded to correspondence regarding this statement.

Statement of co-authorship

Peter Ashwell FCA, FCIPD, FInstLM
former Managing Director
Kingdom Management Limited
Sevenoaks
Kent, UK

Stephen Asbury asked Peter Ashwell to work with him on book 'Health and Safety, Environment and Quality Audits – A Risk-based Approach', published by Elsevier and later by Routledge, an imprint of Taylor and Francis ISBN 978-0-750-68026-4
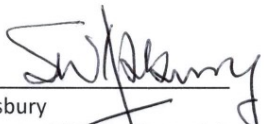
Peter had worked with Stephen on technical auditing classes provided to Shell by KML between 1998 and 2008.

This statement confirms Stephen's contributions to the book:

Stephen's contributions:

- Origination of the idea to write a book about management system auditing
- Preparation and submission of a fully-structured, accepted book proposal, and securing a lead author's contract with Elsevier Butterworth Heinemann
- Linking Peter's knowledge of internal auditing to management systems thinking, particularly that of William Edwards Deming / PDCA
- Developed Peter's original 'roller coaster' model to become the 'Audit Process Roller-Coaster' used in the book
- Completed all of the literature review
- Co-authored the book – around 50:50 contribution to the total effort (chapters, case studies, illustrations, A-Factors)

Stephen will refer to this book (which has subsequently been completely re-written by him twice) as a part of his application for the DProf by Public Works.

Signed: _____   Date: _29_/_5_/_2020_
Stephen Asbury

I have been unable, despite applying best endeavours, to make contact with Peter Ashwell.

Appendix 6 – Summaries of retrospective research questions and investigatory actions

Table 5: Summary of the research in theme 1, 1984-2018

Research question
Would management theories, such as PDCA and management systems auditing, work in other settings such as OH&S?
Background and purpose
Early in my career, I heard the voices of Drucker (1970), Peters and Waterman (1982), Deming (1982), Moss-Kanter (1989), HSE (1993), Davies and Teasdale (1994), and Lorriman and Kenjo (1994) that explained improvements in quality and costs. It seemed possible that similar improvements may be possible in OH&S using similar techniques of application and engagement. I particularly connected with PDCA / the Deming cycle and started experiments with this in my first job (from 1984).
Plan of work 1988-2018
1988-9: To create a peer working group with whom to engage on OH&S-MS (heuristic enquiry, BDOHSG, 51 member companies in the Midlands area of the UK) 1992-5: To use my MBA to study a group of SME's to assess whether engagement on OH&S led to improved performance (Phenomenal research, a study of safety management practices in engineering SMEs supported by HSE and IOSH). 1995: To assess the value of an andragogic case study approach to learning. 1999: To develop a more-detailed case study for teaching MS auditing using PDCA. 2006-date: To develop an OH&S-MS case study for the oil and gas industry. 2012: To research the application of an OH&S-MS in a FTSE100 company (phenomenal research, Pearson plc – 60,000 employees based in 96 countries) 2014: To develop an app. based on OHSAS 18001 from heuristic enquiry. 2014-8: To contribute to the first ISO MSS for OH&S (ISO 45001).
Financial implications
I negotiated time and secretarial support from my employers/clients. IOSH funded printing, postage and packing for my Master's SME research. Other requirements were financed and resourced from my own time and funds.
Ethical implications
I maintained an ethical approach and courtesy, based on informed consent, privacy and common sense throughout. My works do not appear on the ESRC *list of larger risks* (Gray, 2009). I took a deontological guiding principle throughout, seeking permission where applicable to refer to companies when publishing and reporting. Where this was not possible, I referred to company or respondent 'A', 'B', etc. As a member of IOSH, I recognize that I am bound by its Code of Conduct, including ethical practices (indeed I led the team that reviewed and recreated the Code in 2013).

Table 6: Summary of the research on professionalising OH&S, 1994-2013 (theme 2)

Research questions
Can an OH&S membership body demonstrate internally and externally that its members were maintaining their competency? Could OH&S body IOSH achieve a Royal Charter to confirm its monopoly rights (Bullock and Trombley, 1999) and status as a Profession? Was the IOSH Code of Conduct fit for purpose?
Background and purpose
Many Chartered bodies (and other organisations) require their members to undertake continuing professional development (CPD). Founded in 1945, IOSH adopted a limited CPD scheme for its Registered Safety Practitioners (RSP) in 1994. As part of its preparations to apply for a Royal Charter, IOSH Professional Committee (PC) sought permission from IOSH Council to extend CPD on a mandatory basis from c. 450 RSP members to all Corporate members (over 30,000). The public works (Asbury, 1994b) present the IOSH CPD policy and record book and its evolution toward an on-line recording system for OH&S practitioners. The IOSH membership structure was amended by Asbury (2001). Together, these works successfully underpinned the application and subsequent grant of Royal Charter. Today, these works provide the competency determination of the world's largest OH&S organisation including recognition by regulator Health and Safety Executive (HSE) for its Occupational Safety and Health Consultants' Register (OSHCR). IOSH had a members' Code of Conduct since 1995, revised several times. A solicitor consulted by IOSH in 2004 said that "The Code is in many respects a combination of the aspirational… and the very basic… which does not make the judgement on precisely what conduct will amount to breach particularly straightforward". PC experience of using the Code in handing 21 complaints made against IOSH members between 2000 and 2008 revealed its limitations in the real world. In 2008, as chair of PC, I proposed it should be reviewed and revised. Lundy (2013) reports the research methodology and processes involved. The public works present the revised Code (Asbury, 2013d) and an examination of it prepared for and published in the IOSH magazine *SHP* (Asbury, 2013c). My involvement in this research project is confirmed in Appendix 5 (by Rob Strange OBE, then IOSH Chief Executive).
Plan of work 1994-2013
1994-8: Apply/appointed member of IOSH CPD sub-committee. Stand as candidate for IOSH Council. Appointed chair of PC. Phenomenal research (Gray, 2009) to review IOSH CPD policy and revise. Seek Council approval and publish. Audit members' compliance and report.

1999-2001: As chair of IOSH PC, phenomenal research (Gray, 2009) to review, revise and publish OH&S competency and membership framework with the agreement and support of Council.
2009-10: As chair of IOSH PC, phenomenal research (Gray, 2009) to create a framework for IPD providing pathways from approved study to Graduate membership and on to Chartered membership (CMIOSH).
2013: As chair of IOSH PC, to review, revise, reissue and publicise a revised members' Code of Conduct and associated documents with the agreement and support of the IOSH Council.

Financial implications

I negotiated my own time and other support from my employers.

Expenses, type-setting and production of hard-copy and web documents researched and developed for IOSH were funded by IOSH.

All other requirements were financed and resourced from my own (and co-author's) time and funds.

Ethical implications

Throughout my research I maintained an ethical approach and courtesy, based on informed consent, privacy and common sense.

I was appointed to chair PC by the IOSH Council of Management on the recommendation of its Nominations Committee after an application and interview.

I submitted annual programmes of PC's work for oversight by IOSH Council and the Board of Trustees.

As a member of IOSH, I recognize that I am bound by its Code of Conduct, including the commitments to ethical practice.

Table 7: Summary of the research on developing practitioner-based works on CSR (theme 2)

Research question
Is there a need for a practitioner-based book to develop CSR competency?
Background and purpose
Concern for social responsibility can be traced to the late 1930s. Barnard (1938) provided the earliest reference to the social responsibilities of executives and businesses. Modern understanding emerged in 1953 when Howard Bowen first used the phrase 'corporate social responsibility' – he is regarded as the father of CSR. It comprises a multi-faceted business approach contributing to sustainable development by delivering economic, social and environmental benefits. Most definitions of CSR include health and safety (Asbury and Ball, 2009), yet by 2008, IOSH did not have a position on this. Following discussions, I was asked by IOSH to write this work. I will describe my methodology. The works became IOSH's position and its first book advising its members on CSR; it was later supplemented by a two-day CPD training course based wholly on the works.
Plan of work 2008-2016
2008-9: Discuss CSR with IOSH. Secure author's contract. Identify co-author. Research case studies, write and publish IOSH's "jargon free guide to CSR". 2010-4: Prepare and deliver IOSH's CSR CPD course. 2015-6: Update CSR textbook in light of lessons learnt from the first edition, and the publication of ISO Annex SL (2012a).
Financial implications
I negotiated research time and other support from my employers. Type-setting, proof-reading and of hard-copy and accompanying e-documents were paid by IOSH in accordance with the authors' contract. All other requirements were financed and resourced from my (and co-author's) time and funds.
Ethical implications
Throughout my research I maintained an ethical approach and courtesy, based on informed consent, privacy and common sense. In Asbury and Ball (2009; 2016), my co-author and I took a deontological guiding principle throughout, seeking permission where applicable to refer to companies and individuals. Where this was not possible, we referred to company 'A', 'B', etc. As a member of IOSH, I recognize that I am bound by its Code of Conduct, including the commitments to ethical practice.

Table 8: Summary of the research for development of OH&S risk assessment software, 2001-7 (theme 3)

Research question
Could software assist organizations to meet legal and business requirements for OH&S risk assessments?
Background and purpose
Regulations require OH&S risk assessments with records of significant risks where organizations employ five or more people. This has led to multiple methodologies for assessing risks and much paperwork in some organisations.   Between 2001-7, a project was undertaken involving major UK insurers/brokers and over 500 subscribing organizations to develop software (Asbury, 2002) using approaches from the literature to meet organization and legal requirements. Over this period, data was broken into units to identify common, special and theoretical classes (content analysis), and used to make refinements resulting in over 70 unique versions tracked in our version control system.   It was selected for BBC *Dragons' Den* in 2007.
Plan of work (summarised from ISO 9001-controlled version release history)
To design, develop, test, launch and continuously improve an OH&S risk assessment software product.   2001 – Review market, literature, initial design and programming. Internal alpha testing. Beta testing with free web downloads and testers/launch clients Gent Limited and T.L. Clowes (versions 1.0 to 1.1.1).   2002 – Refinements including changing installer technology and fixing major Microsoft database issue. Added email functionality. Added security options (versions 1.1.2 to 1.1.6). 13 licenses sold   2003 – Major revisions (version 1.2.0), including option to add associated documents. Improved 'Help' files, improved search and navigation (versions 1.2.0 to 1.2.3). 60 licenses sold   2004 – Major revisions, including network set-up, archiving past assessments and security improvements. Added options to amend likelihood and severity descriptions, and choose numbers, colours, range and descriptions. At request of NHS King's College Hospital Trust, amended DOT-H format to allow Departments (D) to be called 'Wards' (versions 1.2.4 to 1.2.6.5). 112 licenses sold   2005 – Add demonstration database. Fix bugs. (version 1.2.6.6). 231 copies sold   2006 – Add 'check for updates' function. Addition of multiple administrators. Additional database verification and checking. (versions 1.3.0 to 1.5.0). 62 licenses sold   2007 – Amend to allow run on SQL server and MS Jet. Added Crystal Reports. (version 1.6). 50 copies sold. Review product; decision to proceed (or not) to .net version

Financial implications
Beta testers and launch clients provided their own time in return for free product. All other requirements were financed and resourced by my company.
Ethical implications
The software provided a user's platform for data input; there was zero external access to user's information except by the administrator's consent. There was nil communication of others' information. Where (informal) user groups developed, participation was by consent.

Table 9: Summary of the research for a public work on decision-making and dynamic risk assessment, 2013-4 (theme 3)

Research questions
Outside the emergency / 'blue light' sector, do legal requirements for risk assessment intersect with high-level decision-making and 'dynamic' risk assessments?
Background and purpose
Organisations can identify hazards, and control risks in a variety of ways and at a number of levels. Brudacini (1991) sounded a 'wake-up call' on command safety at fire grounds in the US. Following six improvement notices served by HSE on two UK Fire and Rescue Service brigades, 'dynamic risk assessment' was developed as a response (Home Office 1995, 1996; Klien 1996; TSO 1998). This led to a significant cultural change within fire services, with risk becoming central to the way crews were managed by their commanders (Tissington and Flin, 2005) and reduced fire-fighter fatalities by 50% (Asbury and Jacobs, 2014: 73-4). Was it possible for other, non-blue-light, organisations to adopt similar learning based on a structured approach to decision-making? The public works (Asbury and Jacobs, 2014) presents review of literature, legal cases, and eighteen case studies which were examined to see whether they were consistent with the research question (analytic induction).
Plan of work
2013: Discussion and agreement with co-author. Secured authors' contract. Meetings to agree identify of, and conduct research covering eighteen case studies 2014: Research the levels, authorities and methods for decision-making in respect to OH&S risk assessment. Book was published 15/4/2014.
Financial implications
All requirements were financed and resourced from my own (and my co-author's) time and funds.
Ethical implications
I maintained an ethical approach throughout, based on informed consent, privacy and common sense. My co-author and I took a deontological guiding principle throughout, seeking permission where applicable to refer to companies and individuals. As a member of IOSH, I recognize that I am bound by its Code of Conduct, including commitments to ethical practice.

Appendix 7 – My curriculum vitae

Stephen Asbury MBA (Distinction) CFIOSH FIEMA PEA CEnv

Current roles:
- Author for Routledge an imprint of Taylor & Francis of six internationally published books on safety and risk management
- Founder, Managing Director, Consultant, AllSafe Group Limited www.theallsafegroup.com

Education and qualifications:
- DProf by Public Works – current study, Middlesex University London
- Six Sigma Green Belt, PECB, 2017
- Certified Practitioner of NLP and Certified NLP Coach, American Board of NLP (ABNLP), 2012
- NEBOSH Diploma, Aston University 1995-6
- MBA with Distinction, De Montfort University 1992-5
- ILEX (now CILEx) Law 1989-91
- IIM Certificate and Diploma in Industrial Management 1987-9
- Chartered Fellow, Institution of Occupational Safety & Health (CFIOSH)
- Chartered Environmentalist (CEnv) and Fellow, Institute of Environmental Management & Assessment (FIEMA)
- Professional Member Emeritus, American Society of Safety Professionals
- Former Fellow, International Institute of Risk and Safety Management (IIRSM)
- IEMA Registered Principal Environmental Auditor (PEA)
- TDLB assessment and verification units D32, D33, D34, D35

Career experience:
Twenty-six years' OH&S and risk management consulting and training 1995-2021:
- AllSafe Group Limited (2017-date)
- Corporate Risk Systems Limited (Founder, owner, managing director,1999-2016)
- Aon Risk Consulting (Director, 1997-9)
- Royal & Sun Alliance Global Consulting (Head of Liability Consulting, 1995-7)

Twelve years in plc executive OH&S and risk management roles 1984-1995:
- GKN plc HSE Manager, 1991-5 (aerospace, defence, automotive and agricultural engineering, industrial services)
- BTR plc HSE Manager, 1989-91 (polymer technology)
- Rugby Group plc / John Carr H&S Adviser, 1984-8 (joinery and construction)

Statutory director of IOSH (the charity) 1998-2003, and IOSH Services Limited 2004-8.
Member of the IOSH Council 1998-2013, and chair of its Professional Committees (three times) during that time www.iosh.com

Technical expertise:
- Practical HSE, risk management and loss prevention expertise from projects in over 60 countries on six continents
- Expert skills in HSEQ management systems and auditing (OHSAS 18001/ISO 45001, ILO OSH-2001, HSG65, ISO 14001, ISO 9001, ISO 19011)
- Specialist in risk assessment and risk management
- Incident investigation, including handling of EL/PL insurance claims
- Experienced and energetic technical instructor – approved at various times by IOSH, NEBOSH, IEMA, City & Guilds, ProQual, CIEH, CITB and PetroSkills

Experience and examples of major projects undertaken / completed:

Recent / Current

- Course director, HSE-MS and auditing classes for PetroSkills, Saudi Aramco, Chevron, Shell, Ecopetrol, Petronas and AgipKCO in Angola, Australia, Canada, Colombia, Kazakhstan, Malaysia, Netherlands, Oman, Saudi Arabia, South Africa, UAE, UK and USA - 1999 to date
- Technical author and principal trainer for operational policing and HQ support - health and safety and risk assessment program for 550 senior officers and managers at Thames Valley Police - 2003 to date
- Development and roll-out of global HSEQ business management system training for ERIKS - 2013 to date
- Retained H&S business partner, Kinetik (Arrival and Charge Automotive electric and hybrid vehicles, including for FIA Formula E and RoboRace) – 2016 to 2019
- Development of ISO 45001-compliant OH&S-MS for Renault Sport Formula 1 Team - 2015 to 2018
- Development and delivery of environmental management system and strategy for Saudi Arabian Oil Company (the world's largest company) - 2014 to 2018
- Development and roll-out of global health and safety strategy for Pearson plc (60,000 employees at 1000 locations in 96 countries) - 2012 to 2016

Past

- Supply chain auditor for the Achilles *BuildingConfidence* scheme - 2009 to 2012
- Developer and course director for the 'HASMAP' auditor training course for 150 international universities (USHA) - 2007 to 2012
- DSEAR and pit lane risk assessments for Formula 1, Circuit de Catalunya, Spain - February 2008 (which led to the current prohibition of in-race refuelling)
- Developed property, BCP, fleet and liability technical standards for Coca-Cola. Leader of the loss prevention audit program at 80 Coke bottling plants in 26 countries in Europe, Asia and Africa - 1998 to 2000; and 2005 to 2006
- Member of the Marks and Spencer plc property, fire and safety audit team - 1996 to 2003
- Developer of the world's largest offshore emergency scenario; and the on-site incident controller in a real-time staging of a major ER exercise ('Exercise Nawras') for ADNOC in UAE and Zirku Island in the Arabian Gulf - 2002
- Environmental impact assessments (EIA) at ADCO, GASCO and ATHEER at Habshan / Bab for ADNOC, Abu Dhabi - 2001
- ISO 14001 reviews for Panama Canal Commission, Panama - 1998
- Review of EMS performance / ISO14001 on behalf of Malaysia Airlines – Kuala Lumpur and Subang - 1997
- Event Safety Advisor to Ministry of Defence, *International Festival of the Sea*, Portsmouth – 1996-7
- Specialist health and safety adviser to £2.5B high-technology South Korean inward-investment in *Silicon Glen* - 1995-6
- Managed and implemented major risk management and management development programs for other global organizations such as Bombardier Transportation, McDonald's, Repsol/YPF and Qatar Petroleum/RasGas

Appendix 8 – Full texts of my submitted public works

Note 1: Four of my published books are presented as separate .pdf files, as follows:

Asbury, S.W. (2018), *Health and Safety, Environment and Quality Audits,* 3rd edition, Abingdon and New York: Routledge Taylor & Francis.

Asbury, S.W. and Ball, R. (2016), *The Practical Guide to Corporate Social Responsibility,* Abingdon and New York: Routledge Taylor & Francis.

Asbury, S.W. and Jacobs, E. (2014), *Dynamic Risk Assessment – The Practical Guide to Making Risk-based Decisions with the 3-Level Risk Management Model,* Abingdon and New York: Routledge Taylor & Francis.

Asbury, S.W. and Ball, R. (2009), *Do the Right Thing – The Practical, Jargon-free Guide to Corporate Social Responsibility,* Abingdon and New York: Routledge Taylor & Francis.

Note 2: Texts of eleven of my other public works are presented in date order and organised to reflect the three-theme structure of this context statement, as follows:

Appendix 8.1: Public works related to my theme 1 – Application of management theories to OH&S, pages 248-321

Appendix 8.2: Public works related to my theme 2 – Professionalising OH&S practice, pages 322-412

Appendix 8.3 Public works related to my theme 3 – Clarifying 'dynamic' in the context of risk assessment, pages 413-4

All of my public works have been submitted via a link to a folder on Microsoft *OneDrive*.