



Prof Richard Booth

Behavioural Safety - Some Challenging Questions

BEHAVIOURAL SAFETY USER CONFERENCE 2006

Neil Budworth - Conference Chair

Without further ado what I'd like to do now is go straight into the programme and it gives me great pleasure to introduce a Professor Richard Booth who is a professor occupational Safety and health at Aston University to present to us on getting behavioural safety into perspective. Richard.



*Mark Taylor and
Prof Richard Booth
discuss their
respective papers*

Richard Booth

Good morning ladies and gentlemen, thank you very much indeed for the kind invitation to speak at this conference; I am going to be providing I hope a lead in session.....behavioural safety in perspective; can you hear me ok at the back? No? PAUSE So apologies for that; I am going to try and give a background overview to behavioural safety and set it in the context of safety culture and of management systems.

So here are my objectives. First of all behavioural safety and its evolution, secondly I want to contrast behavioural safety with the idea of safety culture interventions and in fact I'll take the second point before I talk about the evolution of behavioural safety which is the first objective. The third point I want to address is James Reasons, Professor James Reasons model of human failures but it seems to me that it is not very useful to try and reduce errors by people unless one has a clear understanding of the nature of those errors and the causal factors that lead to those errors and Reasons model provides a good basis for this, and I'd like to look at a range of schemes, behavioural safety schemes and the criteria of success some of which have already indeed been covered by the.....the, the introduction, a moment ago.

So we next turn to a definition and this definition which I scabbled together myself tends to give one of my reservations about behavioural safety namely I looked up on Google and asked for definition of, of behavioural safety and various sites, couldn't get anything, then one said, we have a definition and if you join our system and pay £50 a year we will give you definition and I thought to myself, this is perhaps indicating of the commercial interest in these areas. Anyway the best I can do is any intervention directed at changing the behaviour of people, what they do, carrying out specific workplace tasks to reduce human failures, human failures embracing quite separately unintended errors or doing things wrong but thinking they're the

right thing to do and separately violations which are people intentionally "breaking the rules" so that behavioural safety engages on both situations I've described and fundamentally the presumption is that changing people's behaviour leads to attitudinal change, as a for instance, very simple example, when seatbelts were first introduced there were attitudes to seat belts were not necessarily very good but once people got into the clunk click routine and the task was routinised then people's perception of the att...people's attitudes to seatbelts improved in consequence. A simple example.

So turning first then to safety culture and making the point about the difference between attitudes and behaviour. From HSE's publication HSG65 safety culture in very summary is the product of individual group and group values, attitudes, competences and patterns of behaviour that determine the commitment and instantly the competence in occupational safe and health, safety and health activities.

Now the important point about that definition which is well established is that it embraces not only what people think, deeply recessed perhaps in the onion rings but it also encompasses behaviour and competencies so the important point is that safety culture is an all embracing terms covering what people think, feel and do in health and safety and that's an important part of definition but there is a subset of safety culture which engages exclusively on the attitude and issues and I will reach that on the next slide. Incidentally I hope that you have this open to the right page because there's one or two slides which at the back of the room will be a bit difficult, I refer to.....don't know what page number, its on my third page, reasons error types, you will need to open the book at that page in a moment. Sorry I'm treating you like my course at Aston. I...digressing a second I gave a talk to 60 10 year olds who are studying the Victorian age, and in fact about some relatives of mine who were Victorians and all I can say is that I've never known 60 10 year olds absolutely quiet writing notes, listening intently, asking profound questions and I care back to Aston University I felt there isn't quite the distinction in progress that I might have liked, so its very reassuring, very reassuring I was talking about poverty and one of the 10 year olds said, and this reflect on it, when did poverty begin a child said and I thought, that child will go far. So I beg your pardon, a positive safety culture as our initial speaker Neil was saying think issues such as truthful communications, shares perceptions in important safety, confidence in the epic icy of the preventive measures. Now this is the important bit because this is where the real distinction lies between behavioural safety trying to change people's behaviour and the issue of safety climate which is about trying to measure people's attitudes and with a view to subsequently changing them so.....safety climate is a subset of safety culture concerned with a values of attitudes of staff at all levels so this is just about what people think. Climate survey tools and the best known is that given by health and safety executive in safety climate tool but there's questions set all over place, there's a set of about 30 climate tool questions in British Standard 8800 2004 for example. But the point about climate tools is that they first of all seek to measure attitudes as demonstrated by responses in a questionnaire, liquored scale, varying degrees of agreement with statements and these questionnaires responses can then be used to make identifiable improvements in people's attitudes in the company and I know one company, its, its, which has questions which quite correct ones, the question is, staff trust the management in health and safety or staff just trust the management, strongly disagree, strong, disagree, agree, neutral, agree etc. Now the company found that, that it wanted to increase trust from the existing 40, 40% to 42% and that sounds a bit bizarre but I think that's actually a jolly good objective, what can we do to improve trust and this can come out in these surveys but so we can measure people's attitudes much better than we used to largely because we've discovered that do you believe in safety to an individual is not as important a question as, what do you think you're gaffer thinks about safety which is much more powerful and important question. But coming in presumption, the changing attitudes changes behaviour and of course varies the dichotomy and of course fundamentally we should be attacking the problem from both ends; we should be looking at how we can change behaviours, we should be looking at how we can change attitudes, and the combination is the basis of, of success I think but I am not primarily talking about behavioural safety.

So turning to the evolution; the evolution of behavioural safety really started from people saying accidents are caused by human error. Heinrich I think we know there's been figures quoted about for years, 88%, 90% of accidents due to human error, these of course are nonsense figures because they usually only refer to the person at the sharp end and what really matters is 100% of accidents are caused associated with human error but those errors may be upstream of the person at the sharp end so the key point that even in engineering areas human error, human failures may play a part. Though of course behavioural safety to a large extent engages on the sharp end but it needn't. Dupont, the.....the American company 1812 had a serious accident in its explosives company, I suspect it was trying to increase production and breaking the rules because we had just burnt down, we had (unclear) the last time we did

something in the area we'd just burnt down Washington and therefore the Dupont company was on overtime to increase their explosive output and they blew up the place and from that time and one of the Dupont sons was killed, or family was killed and this led to Dupont taking a keen interest in health and safety ever since and arguably being very good and they introduced the first behavioural safety scheme called Stop which is still up and running and going to this day. And they have other interventions but that's one of the things that they do and market.

There's been a boom in behavioural safety and I think its coming forward in the United Kingdom as well sometimes with evangelical zeal I attended the behavioural safety now conference at Las Vegas a few years ago and I have to say I felt that I was at a religious convention rather than a safety conference. And indeed one of the most distinguished researchers in health and safety, a man called Zohar who really invented or he described most of thee, he came along at that conference and his findings in behavioural safety interventions were one of the only ones which didn't produce, and of course he's a brilliant scientist, didn't produce these enormous improvements and of course I find it very sad because he was by certainly the most distinguished scientists at the meeting but his views were completely rejected because he didn't produce the answer which was required. Marketed perceived as a panacea and that's the other worry about behavioural safety the fact is that behavioural safety is.....part of an overall system, you cant just say lets do a behavioural safety programme and ignore all the other issues; there is, there is both in the United States and in this country and perhaps elsewhere but there is clear evidence that behavioural safety schemes work subject to certain prerequisites and work very well and that they're a good idea but it should also be said that there are lots of failures and these broadly break down into choice of scheme inappropriate, and I give some examples of these in a moment or the organisation is not mature enough read enough for interventions of this kind. I remember many years ago a Dupont consultant saying to a training and infrastructure operator in the early 1990's which may be a recognisable company; we have studied your organisation, it is so violation prone there is nothing we can do. This says something for their ethics and also something about the importance of you can't do behavioural safety until a lot of prerequisites are in place and there is a basic foundation starting point based on trust and a reasonable degree of compliance.

The other prerequisite is simply having a management system, what I haven't shown is that the right hand one is the conventional health, HSG65 model policy which looks very similar to the one on the screen, policy, organising planning and implementing measuring review audit so that that's another pre-requisite to proceeding in these areas. Standard figure, the idea this risk indicators on the left but further down they are the better, time and effort on the horizontal axis and the presumption is if we just look at these areas by legal compliance then there's a certain amount of progress can be made; if we then introduce management systems then further progress can be made but it tapers off and its only when there is an involvement with the people, everybody in the organisation, the sharp end staff, its only then that we can make the decisive contributions at the bottom of the diagram. The safety culture is shown slightly misleadingly as, as getting better and better as things proceed. The important point when you look at this diagram is because historically we started regulations, then we went to management systems, then a greater involvement with people, people say well we'll do these sequentially, this is codswallop, the point is that I remember somebody saying, we'll develop our management systems and after that we'll think about safety culture, the point is, but you cant develop the management systems which are going to be effective without considering what people think and feel about them so historically that was a sort of from left to right diagram and I've left it a little like that but it really should be all happening together. This is one of the screens which I hope you can read at the back. Looking at behavioural safety now in greater detail, most schemes based on behavioural questions, they rely on a list of specified unsafe behaviours, very often rely on one employee or a manger observing another person and require records, now behavioural safety tends to be a all embracing subject and perhaps the definition is pushed by the 2 examples which I'm going to give as well.

I attended in one company a role playing scenario where actors came in and acted out a scenario which the participants, the audience joined in and made recommendations about what should be done in this scenario, it was about arrangements for motorway maintenance as it happened. This went down exceptionally well, the role...the actors were good, the role playing were good, the people participated extremely well and on the face of it it was very effective; it may however change, it may have done a little bit to attitudes but behavioural safety is about routinising safe behaviour; sending people away to listen to actors and participate with actors in those circumstances is not actually leading to people arriving back at work on Monday morning and doing things differently. And so the scheme I don't think made very much difference sadly although I think it was well devised. The other kind of schemes which I think are worth mentioning and I have to declare an interest in the scenes such as these is rather than intervening behaviourally at the doing the job the intervention is in the planning of a job and of

course the planning of a job can be at the sharp end or not at the sharp end but the idea is that you get people to routinise the process of thinking how a job should be done, now clearly with mainstream behavioural safety routine tasks then you don't have to think so much in advance whereas one off tasks say by maintenance fitters, people of that kind, maintenance tasks what you want is people to think out clearly how the job is going to be done, whether they've got the right tools and equipment, a basic if you like dynamic risk assessment so the important point is we can change behaviour in advance of a job with the hope that we may change it during the job or we may change it directly in terms of a task being done. Its four step process I think incidentally E Scott Geller is one of the gurus in this field and I have to say that having spoken, listened to him I, I think that he's got a very clear view of the kind of issues I've been describing about its part of an overall system, its not a panacea, it's a basic, you need a starting point as he is very much seen as a keen advocate its worth making that comment, so he just makes the point that we needs to find what we're going to look at, observe to collect baseline data, intervene to influence target behaviours, test to measure impact and feedback, that's little more than just any kind of intervention planning process.

Now....this, this is where I would be grateful if you could turn to your notes, this is James Reasons error type classification and as I said at the beginning, if you don't know what the errors are and why they're caused then its very difficult to be able to intervene effectively. Human failure of any kind breaks down into in fact...no cant move...into errors and violations; errors being ones where we either make a mistake or we think we're doing it right albeit erroneously; skill based to unintended errors is slips or lapses, slips being pouring, putting the teabags in the kettle rather than the teapot, lapses in when you forget to do something, distraction plays a part; mistakes, intended actions, rule based mistakes which are where we diagnose a situation but we diagnose it wrongly; we identify that one of our engines in on fire in an airplane. We correctly cut of that engine but it's the wrong engine, it's not the one on fire. Knowledge based errors are where we simply don't know what to do, we're not adequately trained. In crucial contrast violations are where we beak the rules on purpose. Routinely where everyday we don't wear our high vis, we don't, to the point where its autopilot almost, autopilot breaking the rules.

Situational violations are ones people.....break the rules in order to deal with specific situation, a machine has broken down its only possible to sort it out by removing the guard of the machine running and exceptional ones apply particularly to the emergency services; a fireman entering a building without breath apparatus to save a child, where incidentally a very rapid dynamic risk assessment would seem to be an important part, so can you see that.....Pause....can you see that various types of errors unless one is familiar with which types we're dealing with then its hard to intervene. Our slips and lapses on autopilot engineering task design, fatigue and it has an involvement, fatigue and drugs are important; the asterisks indicate the role of behavioural safety in these cases, rule bases errors, behavioural safety can make a big contribution; knowledge based errors rather less so the number of starts indicates where behavioural safety of one guise or another may help.

Turning to violations, routine violations, positive and negative motivators, behavioural safety may well contribute a lot there but if the errors are routine then you have to ask whether company is mature enough to engage upon it. Situational good on planning work, less good on others but generally an area of behavioural. Safety can intervene, an exceptional red mist conflicting goals, organisational values, difficult to perceive precisely how it will operate there but I am really suggesting that behavioural safety has a different role in relation to different kinds of error and violation. So causal factors for human failures are sharply different, solutions embrace options well beyond the core scope of behavioural safety, that's to say we shouldn't be just trying to change people to the environment, we should be thinking about changing environment to make people more reliable but in many cases behavioural safety should contribute directly. Successful scenes, educate on what is safe and provide reinforcement; have workable definitions of safe behaviours for tasks, they remove barriers to working safety which is impede none, the sort of technical areas; changing employers perception of management commitment hopefully in a positive direction. So positive features, focus on health and safety goal attainment, it's a leading performance indicator, errors etc are a predictor of problems in the future, may promote improved operating procedures and engineering improvement's demonstrated research evidence of success but caution regarding specific claims and one point which not often mentioned is the idea if the gathering data normally an audit looks topped down but here we've got some bottom up data which can be fed into the, fed in at the top end. So the negative problems issues; there's a tendency of behavioural safety to focus on trivial hazards and trivial tasks, the problem, is that with some schemes we're only dealing with observable behaviours which can be easily observed, it may be resource intensive, intensive, may ignore non behavioural sources of human error which are so important to deal with, there may conceivably be commercial interests in the sense of companies encouraging people to take on this area before they are ready for it but there are certainly some controversial areas and

conflicts may be exacerbated in, within an organisation. This is a bit repetitive but its from the ATC Contract research report identified, only target shop floor behaviours, too easy to blame individuals, lose sight of root causes and management failures, let management off the hook, maybe seen as spying and can result in negative view from a work force so the point is its all to do with how the interventional is made and how the company stands before you start and a good schemes appropriately timed are likely to work. Righton Hawberry said, for companies where the initiatives were ineffective had organisational cultural problems or no safety management framework to support the behavioural safety initiatives which captures very well the points I was making earlier.

So in conclusion, first of all reliable evidence that many schemes work. Too may schemes only look at observable behaviours so that a fitter going out into people's houses or on other jobs may not be captured within a scope or late on the night shift. It's not a panacea meaning it must be part of an overall system; only works when the prerequisites are in place and flippantly the organisations most in need of the behavioural safety are those least likely to benefit from it I suggest. And my final comment; is the most fruitful focal point for change before the task begins as a basis for safe task behaviour or the observed behaviour when you're doing the job; both have advantages.

So thank you very much indeed ladies and gentlemen; I hope I provided a reasonable lead into the issues of behavioural safety; I've tried to tackle the controversies, perhaps I've overstated them a little bit but I think that unless one realises that behavioural safety is, can be effective but isn't a panacea and has got to be part of a larger system and ideally is linked with a safety climate exercise at the other end; if those sorts of things are done it will be very successful but its not a panacea and quite often companies do not achieve success.

Thank you very much indeed.

Neil Budworth (Chair)

Thank you Richard.