

Is safe production an oxymoron

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Agenda

- Why this research / background
 - How did I get here
 - Some previous research
- An ongoing project - Two stage project – today I will discuss stage 1
 - Research design
 - Results
- Implications
- What next and Questions

Some terminology from my business lexicon

- Sustainability / sustainable business: a sustainable business meets the economic, social and environmental needs of the present without compromising the ability of future generations to meet their own needs (Bruntland commission 1987)
- Triple bottom line (TBL) – rather than just profits organizational performance is measured on profits as well as environmental and social impacts.

Backing into safety was an accident

- The business / supply chain literature has been examining the linkages between the environmental and economic components of sustainability for a fairly long time but the social component is generally overlooked / ignored
- I was explicitly looking for a manageable way to address the social dimension
- My early conversations with Anthony Veltri at Oregon State University and some very tortured RA's

Outcomes / performance – this is where business academics always start – Our DV is profits

- There is minimal research that empirically links safety to business (operational / economic) outcomes (Das, Pagell, Veltri and Behm, 2008; Tompa, Dolinschni, de Oliveira & Irvin, 2009; Neumann & Dul, 2010)
- What there is suggests that there is likely a positive link between specific local improvements such as ergonomic improvements and productivity
 - But this is limited and generally does not address the larger question of an entire system being safe and productive

There is also a trade-off perspective which is prevalent in much of the safety literature

- The proposition is that making a production system more productive generally means putting workers at increased risk because of:
 - Faster pace of work
 - Need to take safety short cuts to meet production goals
- Generally not addressed empirically but seemingly has some face validity
 - Workers can only do so much and when pushed they trade-off being safe for being productive

What does the business literature say?

- Using the human capital perspective presumes that workers are a valuable resource – and safety should then be a prerequisite for operational excellence
 - Almost no empirical evidence – just a few mainly exploratory studies

Practices

- One of the things that links the study of safety to the study of operations is a practice / process focus – both fields have well developed / accepted best practice models

And they reach the same conclusions (as do various standards)

- Best practice:
 - is proactive (Voss et al., 1995; McDonald et al., 2003; Smallman and John., 2001; Silva et al., 2003; Ai Lin Teo et al., 2006)
 - is built on a foundation of continuous improvement and Deming's plan, do, act, check cycles (Santos-Reyes et al. 2002; Mitchison and Papadakis., 1999; Shah & Ward., 2003; Voss et al., 1995; Granerud 2011)
 - makes use of a human resource management system that empowers and values the workers (Fernandez-Muniz et al. 2007; Shannon et al. 1997; Santos-Reyes et al. 2002; Flynn & Salidin, 2001; Shah & Ward, 2003) and requires extensive training, worker participation, and appropriate incentives.

Yet

- In general no sense of if these are two sets of best practices that just happen to look alike or if it is really one set of practice that should be used to further multiple aims
- Further confusion by how these practices are linked to performance outcomes – especially safety

Linking practice to performance?

- There is a huge body of literature linking the best practices shown previously to enhanced operational performance / productivity.
- Engaging in these practices then makes the system more productive which based on the trade-off perspective puts workers at increased risk ? Even though these are safety best practices as well?
- I am confused – luckily I get paid to explore my confusion

The TBL- Pagell and Gobeli, 2009

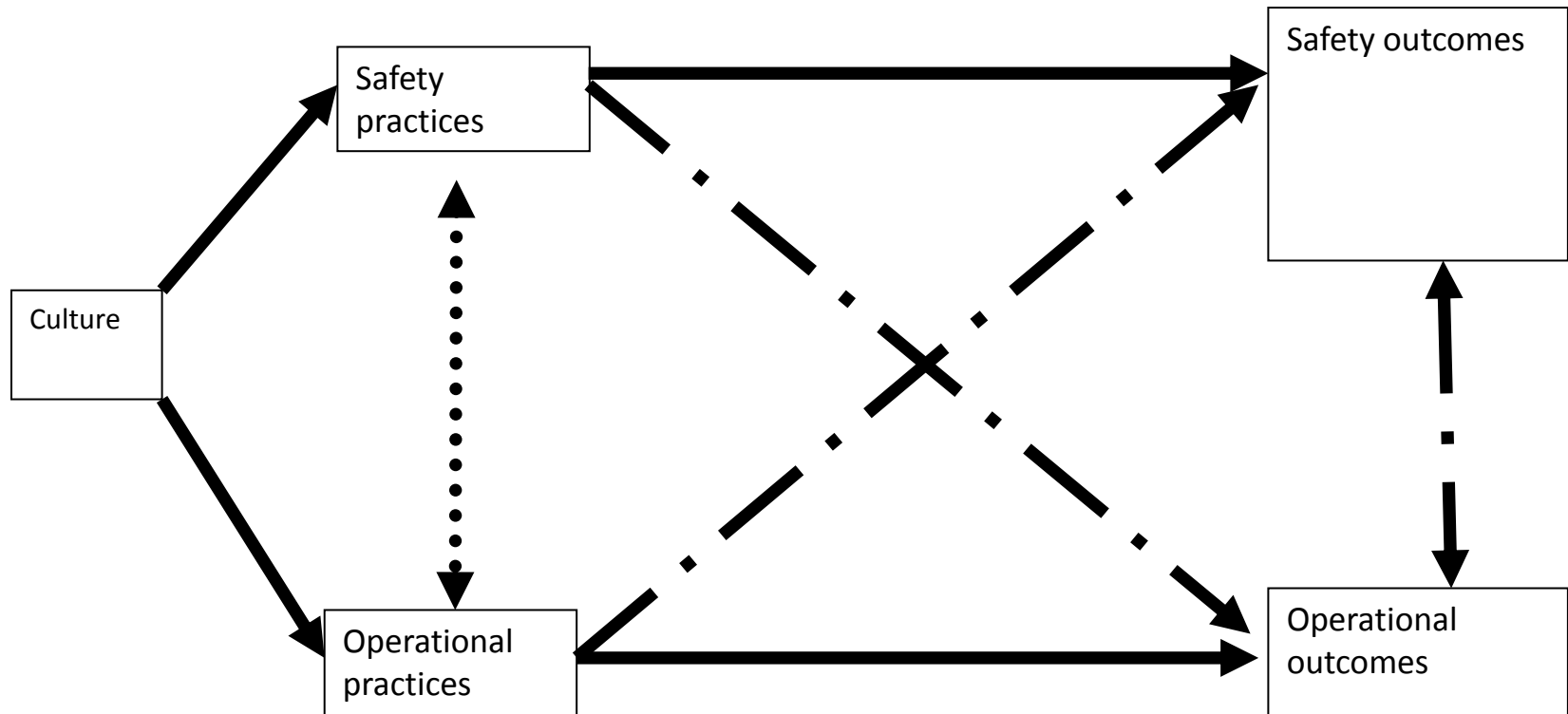
- Exploratory research using a mix of primary and secondary data
 - Top operational performance (again business norms) occurs when organizations also have very high (or very low) safety and environmental performance.
 - That said managers don't actually think in TBL terms – their attitudes and experiences surrounding safety / well being are not related to their attitudes and experiences surrounding environmental management

Is safe production an oxymoron: understanding safety in the context of business operations

Research supported by the WSIB

- Research team: Benjamin Amick, Markus Biehl, Shiela Hogg-Johnson, David Johnston, Robert Klassen, Lynda Robson, Emile Tompa, Anthony Veltri.

What we are testing



Positive relationship with empirical support

Unaddressed in literature

Implied positive relationship operations management literature (untested) / posited
negative relationship safety literature (untested)

Research design – 2 stage project

- Stage one – case studies
 - 10 facilities / plants – broad cross section of Ontario manufacturing / distribution.
 - Will discuss results today
- Stage two – survey of approximately 200 Ontario firms – data collected but analysis not yet done

Case studies: data collection

- Worker perceptions of safety climate: approximately 30 workers per facility
- WSIB Safety outcome data: 10 years worth per facility
- Practices, processes and policies: interviews with a minimum of 4 managers per facility
- Additional information

Results

Key constructs - culture

- What the organization values: Our interest lies in elements of the culture that influence the management of the operations and management of worker health and safety
- Managing the operations and managing safety share the same space - to talk of a safety culture or an operational culture ignores this – which is a critical problem from the workers' perspective

Why this matters - the example of Smelter

- A brief description of Smelter:
 - Safety is a top priority for top management
 - They have significant formal safety process and procedures
 - They invest a great deal of time and money into training and safety improvements
 - They have separate dedicated staffs for health and for safety
 - They provide significant resources to general health and well being activities / programs
- This sounds like a strong safety culture and should lead to good safety performance right?

It doesn't

- They might have a strong “safety” culture but that is ineffective in the face of the overall culture which is best exemplified by their SUPA program
 - Management – intended practice “see, understand, plan, act”
 - Worker interpretation via lens of culture – realized practice - “safety unless production affected”
- Operational managers don't worry about safety – that is someone else's job – and the operations are out of control – The realized practices look nothing like what is on the previous page

Two dominant cultures – in data

- ***A Supportive culture for safe operations*** is one that is committed to safety, is disciplined in how work is done, has a prevention focus and is participatory. These organizations tend to take a long term perspective when managing both safety and operations.
- ***A day-to-day operations culture*** is not committed to safety, not disciplined, has a reactive focus and is not participatory. These organizations have a short term focus on meeting operational (production) goals.

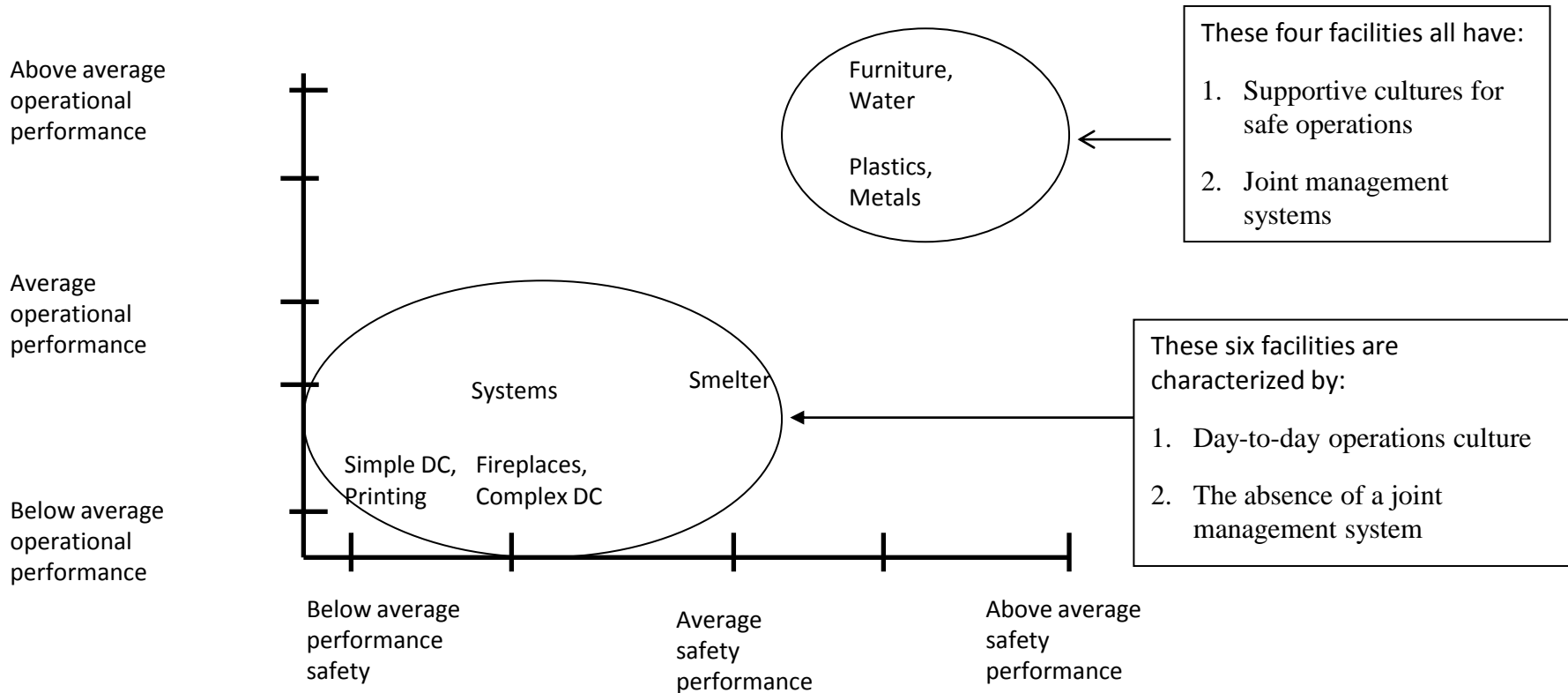
Practices ?

- At Water:
 - There was no discernible OHS management system
 - There were few if any safety practices,
 - The person responsible for safety did safety as part of a much larger HR role, had no safety training, and viewed the safety part of their remit as mainly tracking incidents for reporting purposes

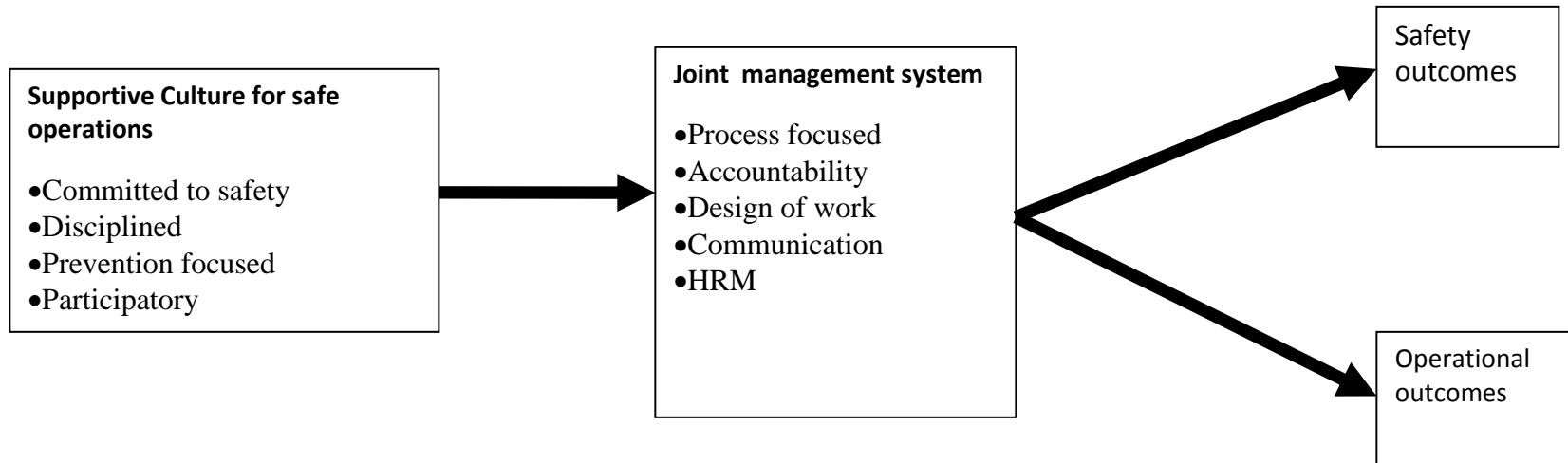
Joint practices

A joint management system is a formal set of processes that allow for the shared planning, measurement, monitoring and continuous improvement of both OM and H&S. One of the key attributes of these systems is not only that the processes exist, but that the organization focuses on these processes and expects them to be followed.

2 groups of organizations



Symbiosis – 4 organizations



Evidence supports multiple perspectives

- Trade-offs – increased “productivity” puts safety at risk: 6 organizations display these attributes
 - These organizations cut corners to get work done. Generally react rather than prevent
 - This also harms operational outcomes over the long term – which is not considered in the trade-off perspective
- Human capital – well run operations are safe: 4 organizations display these attributes
 - Long term preventative focus – do not let short term production goals put people or production at risk over the long term

Contributions

- Models suggest support for multiple perspectives
 - The trade-off perspective is incomplete - confuses increased productivity in the short term with operational performance
 - Will symbiosis be as prevalent in population?
- Symbiosis can be achieved in highly competitive and or inherently dangerous industries – it is not what they produce – it is how they manage – the culture they create and the practices they engage in – all of which is within management's control and has to be examined simultaneously

Key conclusion from stage 1

- It is the management of the joint space that really matters
 - When this is done well performance on multiple dimensions improves. When it is done poorly performance on multiple dimensions suffers: safe production is not an oxymoron but it is rare

What next – well after the survey

- Build on this project by returning to two critical (to me anyway) issues from Pagell and Gobeli
 - Adding environmental management and environmental outcomes to the mix to further explore the notion of sustainability / the TBL from both a practice and an outcome perspective
 - In the cases we did not see organizations with high economic performance and poor safety performance but they were present in Pagell and Gobeli – rather than a typical exemplar study I want to examine these organizations.

Questions ?

Dimensions of culture

- 1. The Organization is committed to working safely**
- 2. The Organization is disciplined in how work is done**
- 3. Employees participate in managing their work environment**
- 4. The Organization has a prevention focus**

Key Joint practices

- A process focus and strict adherence to rules
- Accountability – noting role of operational management
- Design of Work
- Communication
- Human Resource Management

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- Pagell, M. and Gobeli, D. (2009) “How Plant Managers' Experiences and Attitudes Towards Sustainability Relate to Operational Performance.” *Production and Operations Management Journal*, 18(3), 278-299.
- Veltri, A., Pagell, M., Behm, M. and Das, A. (2007) “A Data-Based Evaluation of the Relationship Between Occupational Safety and Operating Performance.” *Journal of Safety Health and Environmental Research*, Vol. 4, No. 1.