Creating a Lean Typology for Prevention Purposes: Initial Observations

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INRS
What is ‘LEAN’? A model of work organization widely promoted as a means to increase productivity and performance.

**Mass Production**
- USA Production systems (Ford, GM)
- Toyota Production System (TPS)
  - T. Ohno

**Lean Production**
- Modelized by MIT researchers
- Toolbox Age
  - 1978

**Lean Manufacturing**
- Management Age
  - 1990

**Lean Management**
- Dissemination
  - 2008

**Sectoral Lean**

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**Sectoral Lean**
Lean manufacturing

- Lean thinking – Respect for people
- Performance
  - Deadline
  - Quality
  - Just-in-time
  - Jidoka
- Waste elimination (muda)
- Lean thinking
- Takt-time
- Kanban
- SMED
- Audonomation
- Visual management
- Standardization
- VSM
- Kaizen
- 5S

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‘Lean’ or ‘Mean’ production?

**Positive points**
- Job enrichment
- Autonomy
- Social job support (team work)
- Empowerment, participation in decision-making
- Job satisfaction and commitment
- ...

**Negative points**
- Intensification of work
  - pressure
  - workload
  - work control
  - recovery time
- Lack of true participation
- Feeling blame of defects
- Worker job stress
- Musculoskeletal disorders
- Injuries...

Conflicting evidence on outcomes, with quantitative and qualitative studies often contradicting each other 20 years of methodological difficulties to evaluate the impacts on working conditions and H & S
Methodological problems in Lean production research

• Lack of knowledge about:
  - What constitute actual Lean practices
  - How Lean is implemented

• New school of thought (Parker, 2003; Hines et al, 2004; Conti et al, 2006; Pettersen, 2009; Westgaard and Winkel, 2011; Langstrand, 2012; Koukoulaki, 2013; Ughetto, 2015...)
  - Lean is constantly evolving – ever changing nature of the concept
  - Large variations in the operationalization of Lean
  - Lean: not an inherently harmful management system but can have mixed effects depending on management style and the way it is implemented

• Shift from cause-effect focus to consider Lean implementation and contextual factors:
  • Lean implementation as a change initiative
  • How can it be coupled with H&S initiatives
Exploratory multiple case-studies in different sectors

Exploring ‘Lean trajectories’ in different contexts:
- How an organization becomes Lean?
- What Lean becomes within a certain organization?
- What about non-industrial sectors such as construction sites and hospitals?

Multiple case-studies (in industry, construction and hospitals)

Interviews, observations, documents analysis, field studies

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A Lean trajectory in the auto-industry from a ‘group rigid Lean’ to a ‘relatively flexible homemade Lean’

- **Initiative G1**
  - First type Lean
  - Rigid cost-killing top-down external consultants short-term Excessive

- **Initiative Auto 2**
  - Second type Lean
  - Homemade
  - Relatively flexible
  - « Built to last »
  - Participative
  - Achievable goals

**Ergonomics analysis**

- Safety initiative
- MST prevention initiative
- Psycho-social prevention initiative
- Chemical risks initiative
- Quality of working life initiative

- Historical, cultural contextual factors of the company strategy
- Implementation design
- Operationalization Lean functional structure
- Health and safety culture
- Initiatives
- H &S resources

**Timeline**

- Creation Auto 1
- Take over by G1
- 1960
- 1998
- 2004
- 2006
- 2008
- 2009
- 2010
- 2012
- 2014
- Integration Auto 2 in G2
- 2006
- Bankruptcy G1
- 2008
- Creation Auto 2
- 2009
- MST prevention initiative
- Psycho-social prevention initiative
- Chemical risks initiative
- Quality of working life initiative

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A Lean trajectory in the construction sector
Flexible management support – Lean-inspired methods

Recent change initiative (2 years) –> employee development
• On a regional scale - construction sites managers and craftsmen
• Internal Lean implementor: production manager
  (with a Lean industry background)
• Experimental and soft approach
• On a volunteer basis – no top-down communication campaign
• Adaptational approach of several Lean-inspired tools - (designed by and for users - no audit, no standard, no waste elimination discourse...)
  ■ Visual management
  ■ Team-based task preparation
  ■ 5S
• Based on dialogue and operational support from production managers

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Lean implementation strategies: a typology

- Prescriptive process
- Copy-and-paste methods (auto-industry)
- Substitutive approach
- Top down
- Implementation design (Lean experts): strict deployment plan
- Relatively short-term strategy
- Normative (control, audit, detailed SOP)
- ...

- Interpretative approach
- Lean inspired methods, transfer makes translation work necessary
- Attention given to local, cultural, historical, social, contextual factors
- Soft and slow - «Little step by little step» strategy
- Change is a matter of experimentation
- Bottom-up - Adaptation to workplace problems (perceived by workers)
- ...

Rigid

Flexible

continuum
Possible implication for H&S purposes

A better understanding of Lean as an evolutive concept and a change process brings about new perspectives for prevention research and action.

Lean as a change process

Rigid
- Detrimental to health
- Eliminates flexibility
- Intensifies work

Flexible
More conducive to the consideration of
- on the ground realities
- Actual work performed
- Working conditions

Competitivity
Cost
Reduction
Etc.

Lean: most evident keys for increasing performance
Strategic Decisions
Design of change
Implementation work
Integration work
Performance Working conditions

‘Articulation work’
H&S working conditions and performance

Articulation work’
H&S working conditions and performance
Thank you for your attention