

# **Safety leadership**

**MEC-E3004 Safety management in complex  
sociotechnical systems**

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# MEC-E3004 Safety management in complex sociotechnical systems

1. 2.3. Introduction and the basic concepts of safety management
2. 9.3 Basic concepts: Human Factors and Safety Management (Douglas Owen)
3. 16.3 Accident models
4. 23.3 Accident case (BP Texas City refinery explosion in 2005)
  - Mid-term assignment
5. 30.3 Organizational learning
- 6.4 NO LECTURE
- 13.4 *Returning the mid-term assignment*
6. 13.4. Safety culture
7. **20.4. Safety leadership**
8. 27.4. The basic principles of safety management
9. 4.5 Safety management systems
10. 11.5. Tools of safety management
11. 17.5 Future challenges and new directions of safety management (TIME!)
12. 25.5 Recap and Q&A
  - Deadline for returning the paper 31.5.2023

# Selected accident cases with good information available and adequate complexity to extract lessons

## Nuclear

- Three Mile Island 1979
- Chernobyl 1986
- Davis Besse NPP reactor head corrosion discovered in 2002
- Fukushima Daiichi nuclear accident 2011

## Petrochemical

- Bhopal chemical accident, India, 1984
- Piper Alpha oil rig disaster, North Sea, 6 July 1988
- BP America's Texas City isomerization unit explosion 23 March 2005 - only with a very good reason
- BP Deepwater Horizon explosion, Gulf of Mexico, 20 April 2010

## Rail

- Clapham Junction railway crash, London, 12 December 1988
- Ladbroke Grove rail crash, London, 5 October 1999
- Amagasaki rail crash, Osaka, 25 April 2005
- Lac-Mégantic oil shipment train derailment, Quebec Canada, July 6, 2013

## Aviation

- Tenerife airport runway collision 27 March 1977
- Space Shuttle Challenger 1986 – only with a very good reason
- Überlingen mid-air collision, over Germany, 2002
- Space Shuttle Columbia disaster 1 February 2003
- ValuJet Flight 592 DC-9, Everglades, 1996
- Air France Flight 447, 2009
- Boeing 737 Max airplane accidents 2018-2019

## Maritime

- Capsizing of the Herald of Free Enterprise, English Channel, 6 March 1987
- Sinking of MS Estonia in the Baltic Sea 28 September 1994
- Capsizing of Costa Concordia, Italy, 13 January 2012
- Sinking of MV Sewol, South-Korea, 16 April 2014

## Others

- King's Cross London underground fire 18 November 1987

## Learning logs on safety culture

- Definitions of safety, “a scale rather than arrows?” => yes!
- “safety is created every day”, “safety is more than just fixing problems”
- “Is safety culture universal across different fields, or if there are variations in safety culture between industries.”
- “Are there cultural differences, such as nationality and specific backgrounds, that can impact safety culture in the workplace”
- “How can you model something that has no clear definition and how can you assess something that cannot be measured. In engineering circles, if there is no number to put on something the thing might as well not exist.” Exactly!
  - See Feldman, S. P. (2004). The culture of objectivity: Quantification, uncertainty, and the evaluation of risk at NASA. *Human Relations*, 57, 691–718.
- “Edgar Schein’s safety model keeps safety culture separate from the organization culture.” No it does not, Schein does not have a safety culture model.
- Carl Jung's concept of the “shadow” as a metaphor for culture => Johari window also used in organizational analysis

## Safety culture: summary

- Safety culture is created by all employees, yet it also influences how they behave in future
- There are several layers in culture – from visible behavior and structures to largely taken-for-granted assumptions
  - Assumptions are at the core of culture – what is taken for granted, what is important and what is not important
  - How people perceive safety and risks affects what is done and not done, what is talked about, what is communicated and subsequently what is perceived as being real
- Safety culture is a normative concept – there are models of good safety culture
  - Healthy culture includes few blindspots and encourages questioning, raising of concerns and speaking up – psychological safety and respectful work environment
  - Healthy culture avoids complacency – safety requires constant effort to maintain, it is never ready
- Culture changes whether we pay attention to it or not – systematic approach is needed to monitor and develop safety culture
- Leadership is key in creating and maintaining healthy safety culture

# Features of good safety culture summarized (see e.g. Reiman & Rollenwagen 2014,2018)



# **Safety leadership**

## Edgar Schein

*“The only thing of real importance that leaders do is create and manage culture ... “*

*“Leadership is wanting to do something new and better, and getting others to go along”*

*“leadership is the ability to step outside the culture”*



# The difference between a leader and a manager

Managers exist as a part of an organization's structural hierarchy and exert formal authority over their subordinates, where leadership is a voluntary activity by which an individual exerts social influence over coworkers by setting an example of appropriate behavior to elicit shared goals and effect positive change in the organization

Leaders create and change the culture, managers act within the constraints and possibilities of the existing culture

A leader is always a position, a relationship, that is earned based on the recognition and trust of peers, subordinates and superiors – it is never only a formal position

# Leadership as constraining or creating possibilities (Alvesson & Spicer

2016; Schein 2010; Schein & Schein 2018; Quinn 2015)

*Constraining* leadership - telling employees how to think and act

- Simplifies reality, helps to avoid ambiguity and uncertainty about their work => “just follow the orders”
- Leader is there to reassure the employees, take care of problems, and take the blame when things go wrong
- Underlying this model of leadership is the assumption that leaders know better what is right for their subordinates and for the company
- Compliance, dutifulness, commitment, efficiency are characteristics of good employees

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*Creating* leadership - building conditions for employees to think and act

- Creating leadership is a collaborative relationship based on trust and openness => “let us work together”
- The role of the leader is to support and coach - they genuinely want to learn about the work, people and what is going on in the organization
- They have the ability to listen (and practice humble inquiry)
- Initiative, judgment, effectiveness are characteristics of good employees

## In order to create conditions for the organization to succeed, leaders need to

- **Have no negative ego involvement**
  - They should not be trying to prove something to themselves or others
  - They should accept being proven wrong, even cherish it
- **Not be self-protective**
  - Do not worry first and foremost about their own liability or careers
- **Have a genuine wish to help others succeed**
- **Be humble**
- **Realize** that both constraints and possibilities (freedom to act) are needed
- **Create constraints in terms of goals, vision, and values** rather than tasks, schedules, and pressure
  - Avoid micro-managing the work itself

# **Humble leadership** (Edgar Schein 2013)

”Why is it so important to learn to ask better questions that help to build positive relationships? Because in an increasingly complex, interdependent, and culturally diverse world, we cannot hope to understand and work with people from different occupational, professional, and national cultures if we do not know how to ask questions and build relationships that are based on mutual respect and the recognition that others know things that we may need to know in order to get a job done.”

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*Humble inquiry* is the fine art of drawing someone out, of asking questions to which you do not already know the answer, of building a relationship based on *curiosity* and *interest* in the other person.

# **Safety leadership's role in creating a healthy (safety) culture**



# **Schein (2010) has proposed the following mechanisms by which leaders create/change/maintain organizational culture**

## **Primary embedding mechanisms**

- What leaders pay attention to, measure, and control on a regular basis
- How leaders react to critical incidents and organizational crises
- How leaders allocate resources
- Deliberate role modelling, teaching, and coaching
- How leaders allocate rewards and status
- How leaders recruit, select, promote, and demote

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## **Secondary articulation and reinforcement mechanisms**

- Organizational design and structure
- Organizational systems and procedures
- Rites and rituals of the organization
- Design of physical space, facades, and buildings
- Stories about important events and people
- Formal statements of organizational philosophy, creeds, and charters

# Leadership should contribute to psychological safety

(Edmondson 1999; Edmondson & Verdin 2008, Edmondson & Lei 2014)

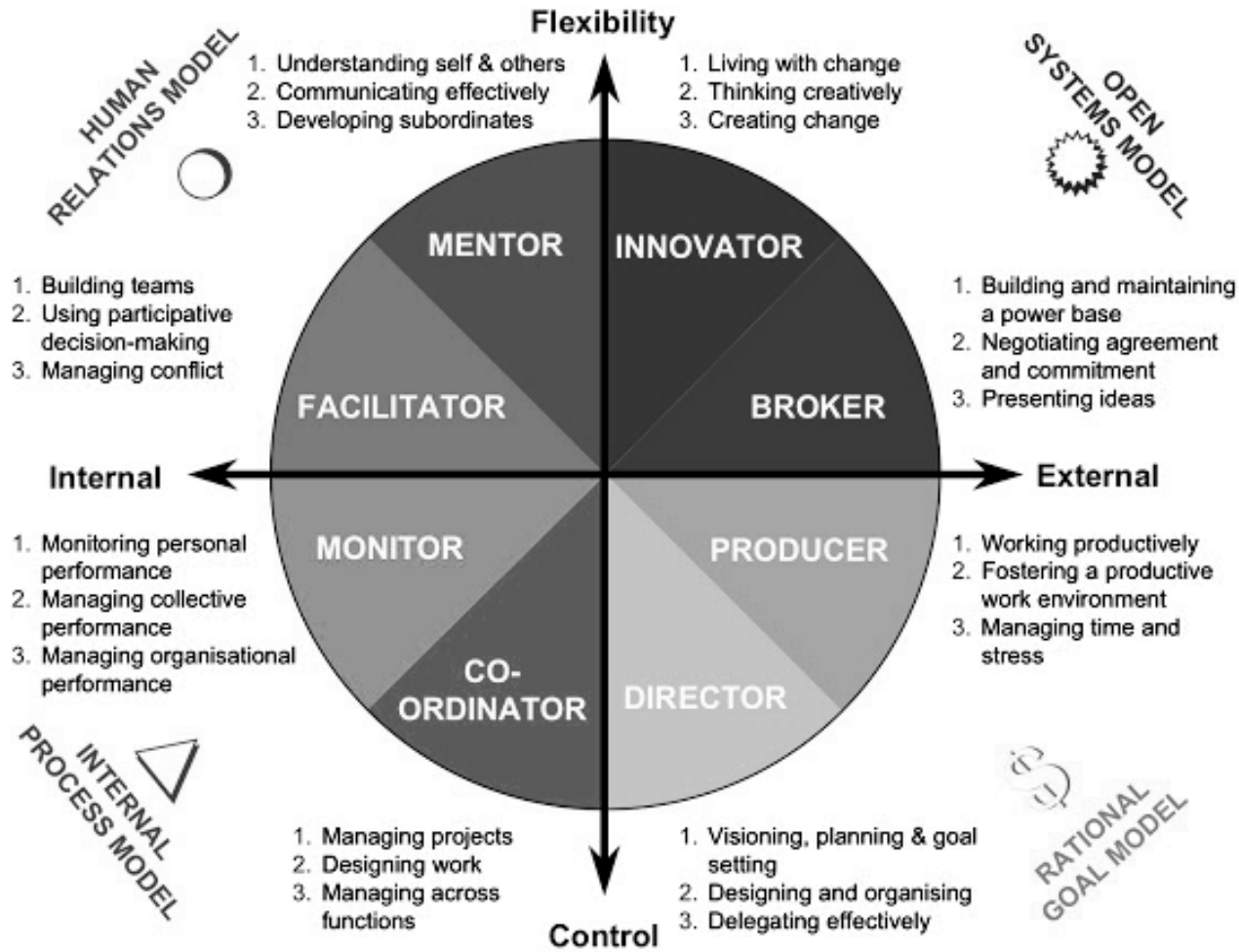
- “Psychological safety describes perceptions of the consequences of taking interpersonal risks in a particular context such as a workplace” (Edmondson & Lei 2014)
  - The degree to which people perceive their work environment as being conducive to speaking up; reporting and highlighting errors; asking for help; offering ideas; candidly discussing risks; dissenting
  - Psychological safety fosters the confidence to report, discuss, manage and learn from any issues encountered by the group
- Psychological safety is a group-level (interpersonal) phenomenon, heavily dependent upon leadership in the given group
  - Also the behaviour of peers has a large influence
  - Relationships in groups with high psychological safety are characterized by trust and respect
- High power distance makes creating psychological safety more difficult – efforts to decrease power distance typically improve psychological safety as well
  - E.g. humble inquiry, dialogue, leader presence, employee involvement / participation

# How does leadership create psychological safety – practical advice

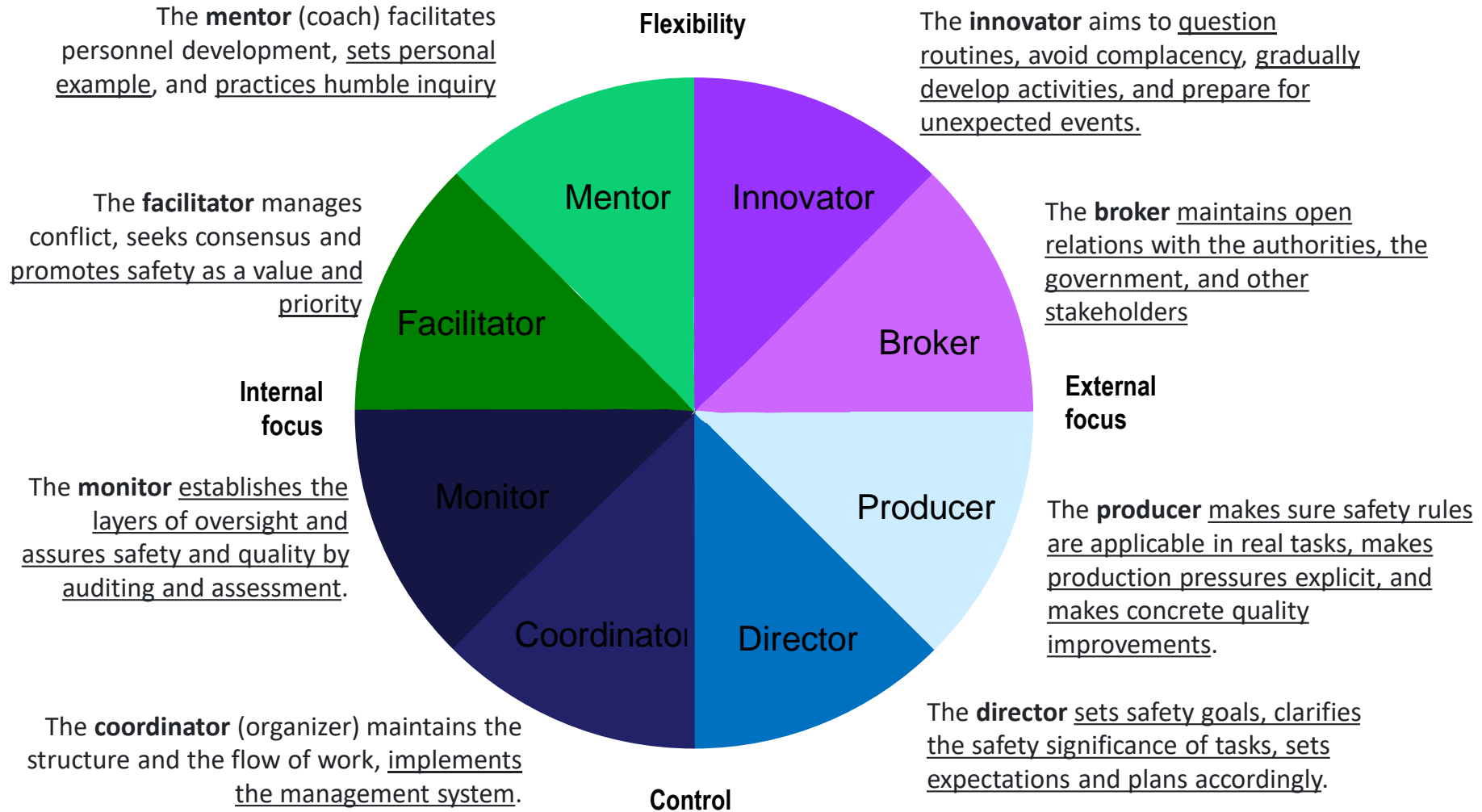
1. Increase your self-awareness – how does your behavior affects others
2. Communicate openly and honestly
3. Listen and ask for feedback – welcome different opinions
4. Treat everyone with respect and dignity
5. Be fair - Do not blame individuals for mistakes, but intervene in case of intentional negligence
6. Give employees autonomy and delegate – do not micromanage or make all the decisions by yourself
7. Reward fairly – based on performance & process
8. Give constructive feedback on performance and ask questions with a genuine interest to learn

There is no one type of successful leader - success depends on the situation, context (including culture and life cycle of the company) and personality of the leader

Leadership roles according to the competing values framework (Quinn 1988, Cameron & Quinn 1999)



# Competing values leadership model applied in a safety critical organization



## Leadership is about balancing between different styles and objectives

WHY	HOW
LISTENING	TELLING
GLOBAL GOALS	LOCAL GOALS
INTERNAL STANDARDS	EXTERNAL EXPECTATIONS
INVOLVEMENT	EXCLUSION
DIVERSIFICATION	STANDARDIZATION
DEEP LEARNING (double-loop)	OPTIMIZATION (single-loop)
SHARED LEADERSHIP	INDIVIDUAL LEADERSHIP

# In order to create conditions for the organization to succeed, leaders need to

- Realize their own leadership style and its effect on others
- Have both self-awareness and social awareness in order to recognize emotions and their effects on others
- Have the ability to control emotions and actions
- Have no negative ego involvement
  - Not trying to prove something to themselves or others
  - They should accept being proven wrong, even cherish it
- Not be self-protective
  - Do not worry first and foremost about their own liability or careers
- Have a genuine wish to help others succeed
- Have the ability to explain WHY
- Be humble, yet have the confidence to act





## Discussion

- What role did leadership issues play in the Challenger Space Shuttle accident?

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