

**sasol**  
reaching new frontiers



## ***Human Behaviour and its impact on Process Safety***

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CAIA Process Safety Workshop  
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# Limited view of reality



Wendy C. Mitchell

# Definitions

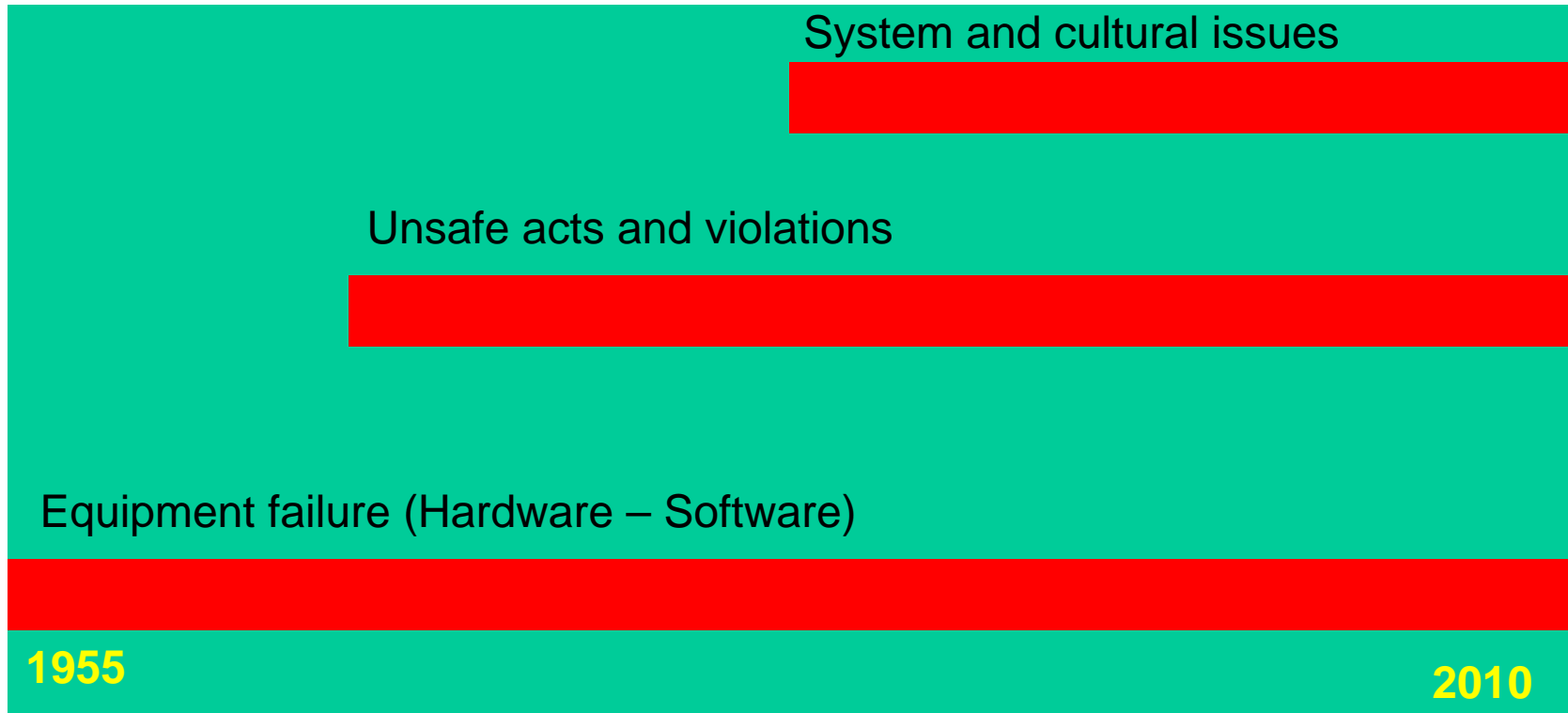
- Behaviour: Observable Actions – things we can see people do.
- Culture: The way things are done in a collective group
- Human Error: (Trevor Kletz)
  - *Errors due to slip or momentary lapse of attention. (The intention is correct but the wrong action is taken)*
  - *Errors due to poor training or instruction. (Someone does not know what to do or worse, he thinks he knows but does not – these are Mistakes)*
  - *Errors which occur because a task is beyond the capability of the person. This is a mismatch*
  - *Errors due to deliberate decision not to follow the instruction. These are violations.*

*“Man is a creature made at the end of the week...  
..... when God was tired” - Mark Twain*





# Shifting focus of safety concern across industry



1955

2010

1960s

Metal fatigue  
Aberfan  
Ibroy

1970s

Flixborough  
Seveso  
Tenerife

1980s

Chernobyl  
Bhopal  
Piper Alpha

1990s

Paddington  
Estonia

2000s

Columbia  
BP Texas City  
Buncefield  
Professor James Reason

# Understanding Transformations in Safety Culture

## Bradley Curve

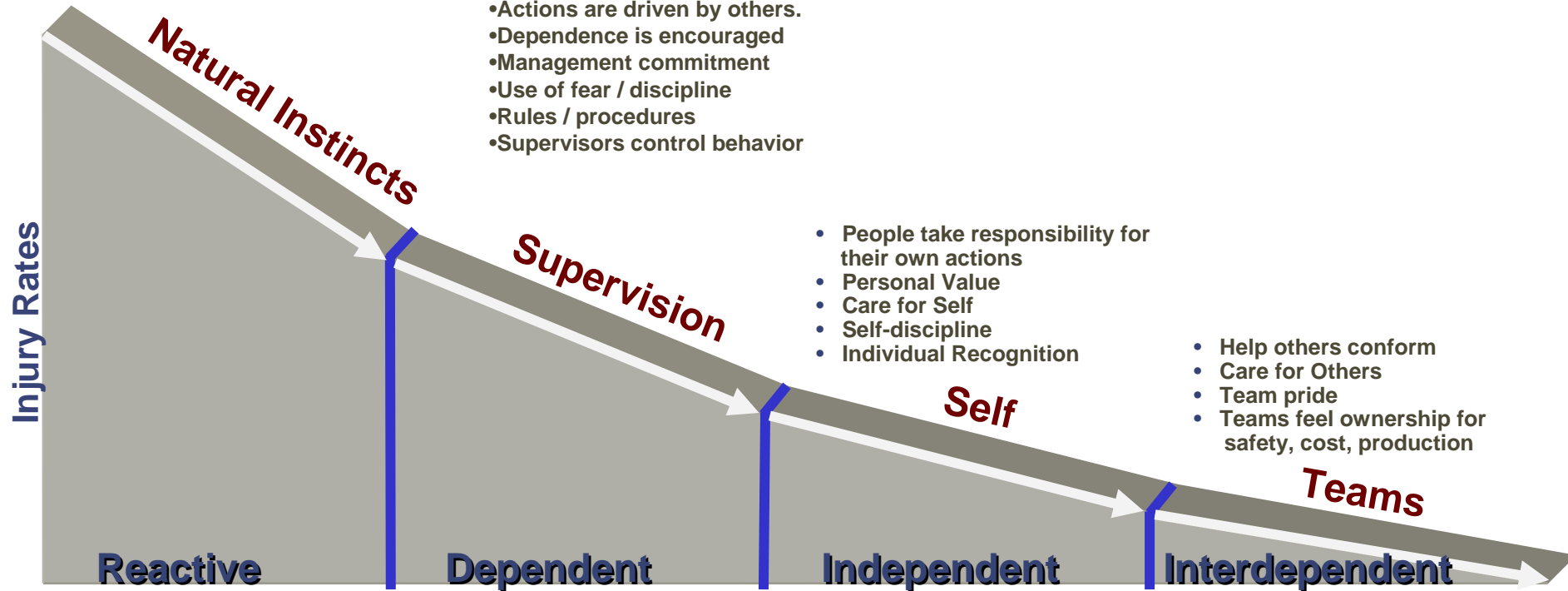


- Safety by natural instinct
- Compliance is the goal
- Delegation to safety manager
- Lack of management involvement
- Take action when something happens

- Actions are driven by others.
- Dependence is encouraged
- Management commitment
- Use of fear / discipline
- Rules / procedures
- Supervisors control behavior

- People take responsibility for their own actions
- Personal Value
- Care for Self
- Self-discipline
- Individual Recognition

- Help others conform
- Care for Others
- Team pride
- Teams feel ownership for safety, cost, production



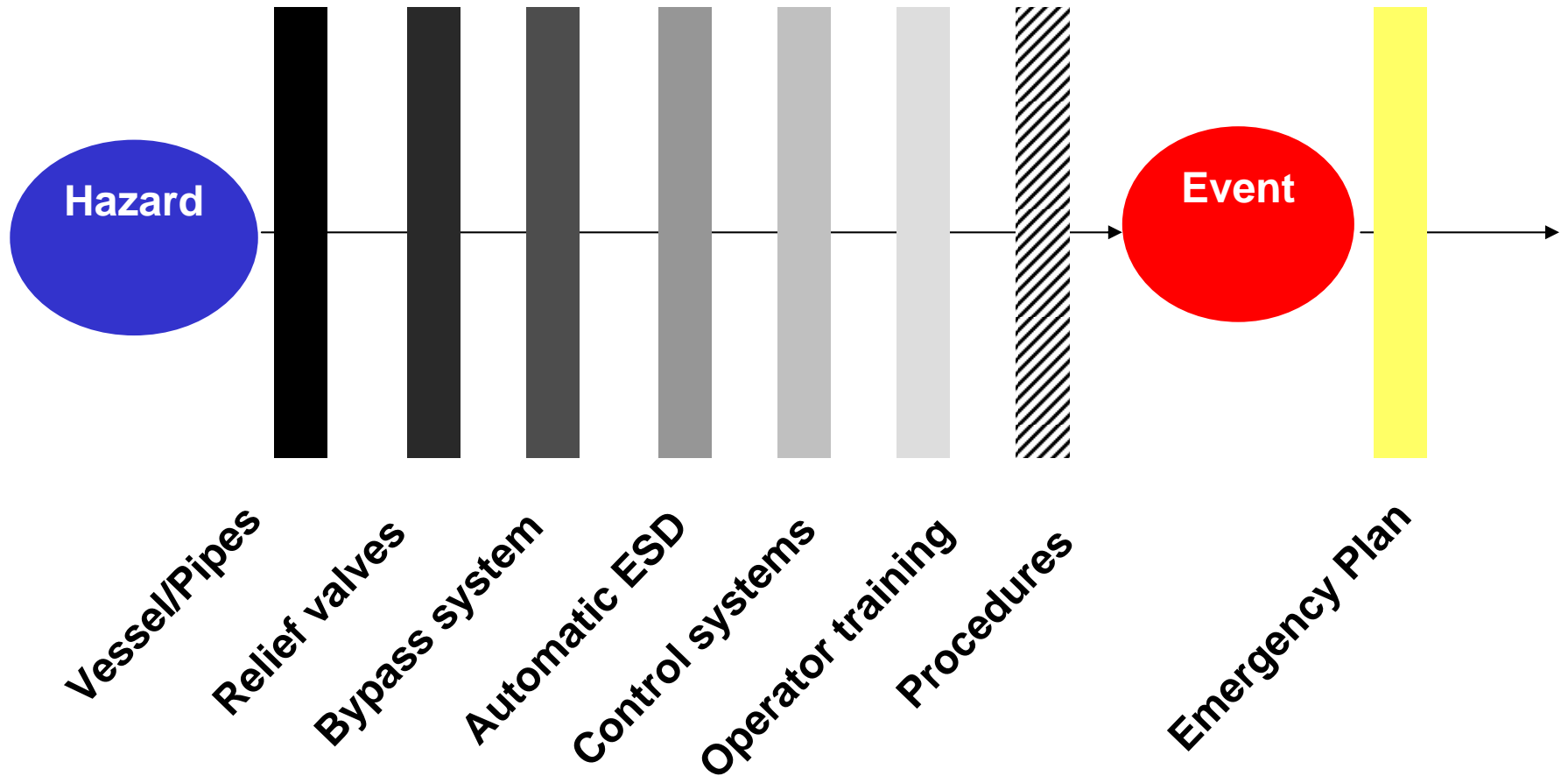
I do it so I don't  
get **caught**

I do it so I don't  
get **hurt**

We do it so  
**none of us** gets  
hurt

# Barrier Models – “Hard to soft”

Barriers in place to prevent incidents and reduce severity



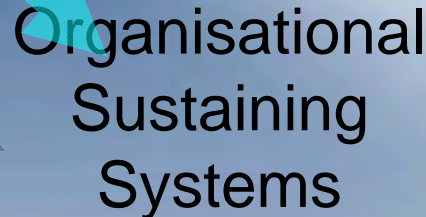
# Blueprint for Safety Transformation



# Leadership



## Organisational Culture



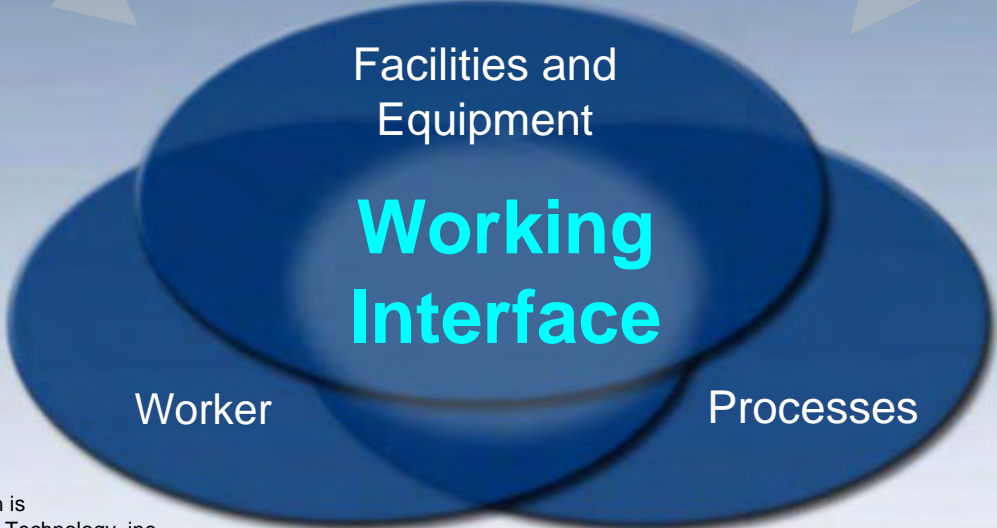
## Organisational Sustaining Systems



## Safety Enabling Elements

- Hazard recognition & mitigation
- Skills, knowledge & training
- Policies & standards
- Exposure reduction mechanisms

- Selection & development
- Structure
- Performance management
- Rewards and recognition



## Facilities and Equipment

## Working Interface

Worker

Processes



