The ETTO (Efficiency Thoroughness Trade Off) Principle
The Reason Why Things That Go Right, Sometimes Go Wrong
Human Error

• The most common cause cited in incident Investigation Reports
• Overly simplistic
• Assumes accidents are a result of carelessness, inexperience and/or attitudes
• Ignores complexity of decision making
• Negative – promotes blame
Human Performance

- Resources required are insufficient
- Lack of time, information, materials etc.
- People regularly adjust how things are done to meet current requirements
- **Most of the time they succeed**
- This trade-off is normal and done by all of us
ETTO Principle

- People and organization's must make a trade-off between the resources they spend on preparing an activity and the resources they spend on doing it.
- *Thoroughness over Efficiency* - if Safety and Quality are the dominant concerns.
- *Efficiency over Thoroughness* - if Throughput and Output are the dominant concerns.
Efficiency

Level of investment or amount of resources used or needed to achieve a stated goal or objective are kept as low as possible.
An activity is carried out only if the individual or organisation is confident that the objective will be achieved and not create any unwanted side-effects.
Efficiency and Thoroughness

Many believe people can be efficient and thorough at the same time:

• This is a fallacy
• Never possible to maximize both simultaneously
• An activity will not succeed without a minimum of both
ETTO’ing In Practice

Examples all around us:
• How much do I pack?
• How long do we give presenters?
• Will I attend every presentation?
• Will I stay up late tonight to answer all of my emails?
Work related ETTO Rules

• “It looks fine”
• “It is not really important”
• “It is normally OK, there is no need to check”
• “It is good enough now
• “It is not my/our responsibility”
• “It will be checked, or done, by someone else later”
• “It has been checked, or done, by someone else before”
Work related ETTO Rules

• “(Doing it) this way is much quicker”
• “There is no time (or no resources) to do it now”
• “We must not use too much of X – so try another way to get it done”
• “I cannot remember how to do it (and cannot be bothered looking it up)”
• “We always do it this way here”
• “It looks like Y so probably is Y”
Work related ETTO Rules

- “It normally works (or it has worked before)”
- “We must get this done”
- “It must be ready in time – so let’s get on with it”
- “There is no time to wait”
- “If you don't say anything, I won't either”
- “I'm not an expert on this, so I will let you decide”
Individual ETTO Rules

In addition to work related ETTO rules, individuals use ETTO rules to manage their own situation.

“Scanning styles” – differences in the way in which assumptions are tested, either by conservative focussing where only one aspect is changed at a time or by focus gambling where more than one attribute is changed at a time.

“Levelling versus sharpening” – individual variations in the distinctiveness of memories and the tendency to merge similar events.
Individual ETTO Rules

“Reflection versus impulsivity” – differences in the ways in which alternative hypotheses are formed and responses made.

“Learning strategies” – a holist gathers information randomly within a framework, while a serialist approaches problem-solving step-wise, proceeding from the known to the unknown.

These rules can be found for situations of information overload and general ways of thinking and reasoning (cognitive style).
Collective/Organisational ETTO Rules

Collective rules exist alongside Individual rules.

“Negative reporting” – only things that deviate or go wrong should be reported. If nothing is reported we assume all is going well. Improves efficiency but consequences for safety.
Collective/Organisational ETTO Rules

“Prioritising dilemma or Visibility-effectiveness problem” – Managers often focus on efficiency (completing administrative duties) and trade-off thoroughness, being less visible in the organisation. If all goes well they will be rewarded otherwise they will be blamed for lack of thoroughness.
Collective/Organisational ETTO Rules

“Report and be good”

Subcontractors and suppliers often feel under pressure to meet the organisation’s standards for openness and reporting. But at the same time they may have experienced, or believe they will experience, that they will be punished if they have too many things to report, while a competitor that reports less may be rewarded. In ETTO terms it is thorough to report everything and efficient to report enough to sound credible but not so much that one loses the contract.
Collective/Organisational ETTO Rules

“Reduce unnecessary costs” - While this may sound plausible enough at first, the problem lies with the definition of ‘unnecessary.’ The rule is used to improve efficiency, at the cost of thoroughness.
Collective/Organisational ETTO Rules

“Double-bind” - describes a situation where a person receives different and contradictory messages. A common example is the difference between the explicit policy that ‘safety is the most important thing for us,’ and the implicit policy that production takes precedence when conflicts arise. The double-bind that results from this is used to improve efficiency, at the cost of thoroughness.
Deepwater Horizon

DEEP WATER: The Gulf Oil Disaster and the Future of Offshore Drilling

Report to the President

National Commission on the BP Deepwater Horizon Oil Spill and Offshore Drilling

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"Corporations understandably encourage cost-savings and efficiency. But given the dangers of deep-water drilling, companies involved must have in place strict policies requiring rigorous analysis and proof less costly alternatives are in fact equally safe."
Deepwater Horizon

“Of course, some decisions will have shorter timeframes than others, and a full-blown peer-reviewed risk analysis is not always practicable.”
ETTO’ing in Drilling

- Do we need to review successful activities to determine the appropriate levels of Efficiency and Thoroughness?
- Would applying these rules give you a better understanding of cognitive processing?
- Would sharing the ETTO Principle with your workforce give a greater understanding of human performance?
Questions?