A review of “How Complex Systems Fail”

https://how.complexsystems.fail

Richard I. Cook, MD

Cognitive Technologies Laboratory
University of Chicago

Dr. Richard Cook is a Principal with Adaptive Capacity Labs and Research Scientist in the Department of Integrated Systems Engineering at The Ohio State University (OSU) in Columbus, Ohio.
He is an internationally recognized expert complex system failures, post-accident reactions to failure, and human performance at the sharp end of these systems.

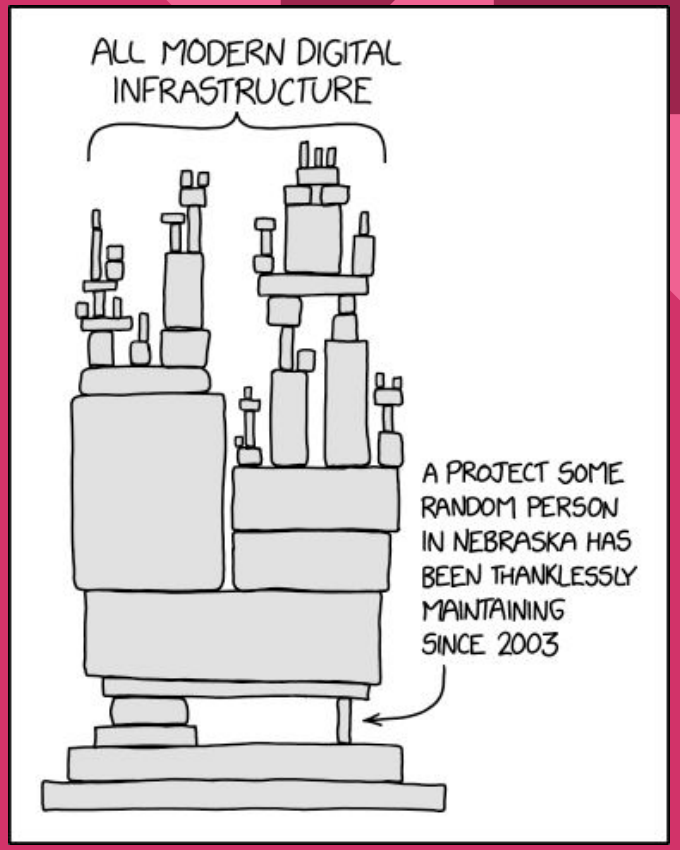
@ri_cook

Complex systems are intrinsically hazardous systems

Complex systems are heavily and successfully defended against failure


Catastrophe requires multiple failures –
single point failures are not enough

Complex systems contain changing mixtures of failures latent within them



Complex systems run in degraded mode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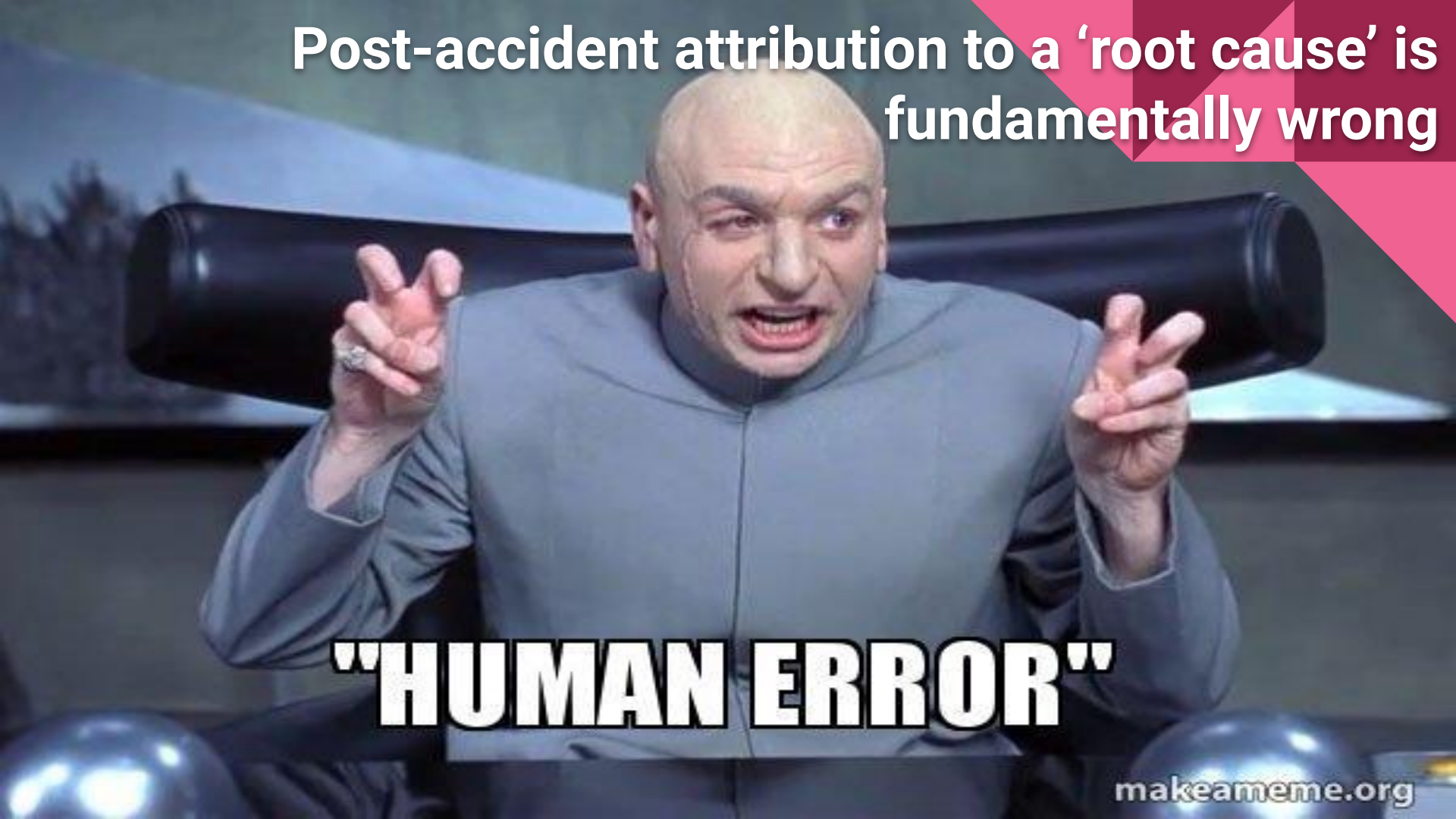
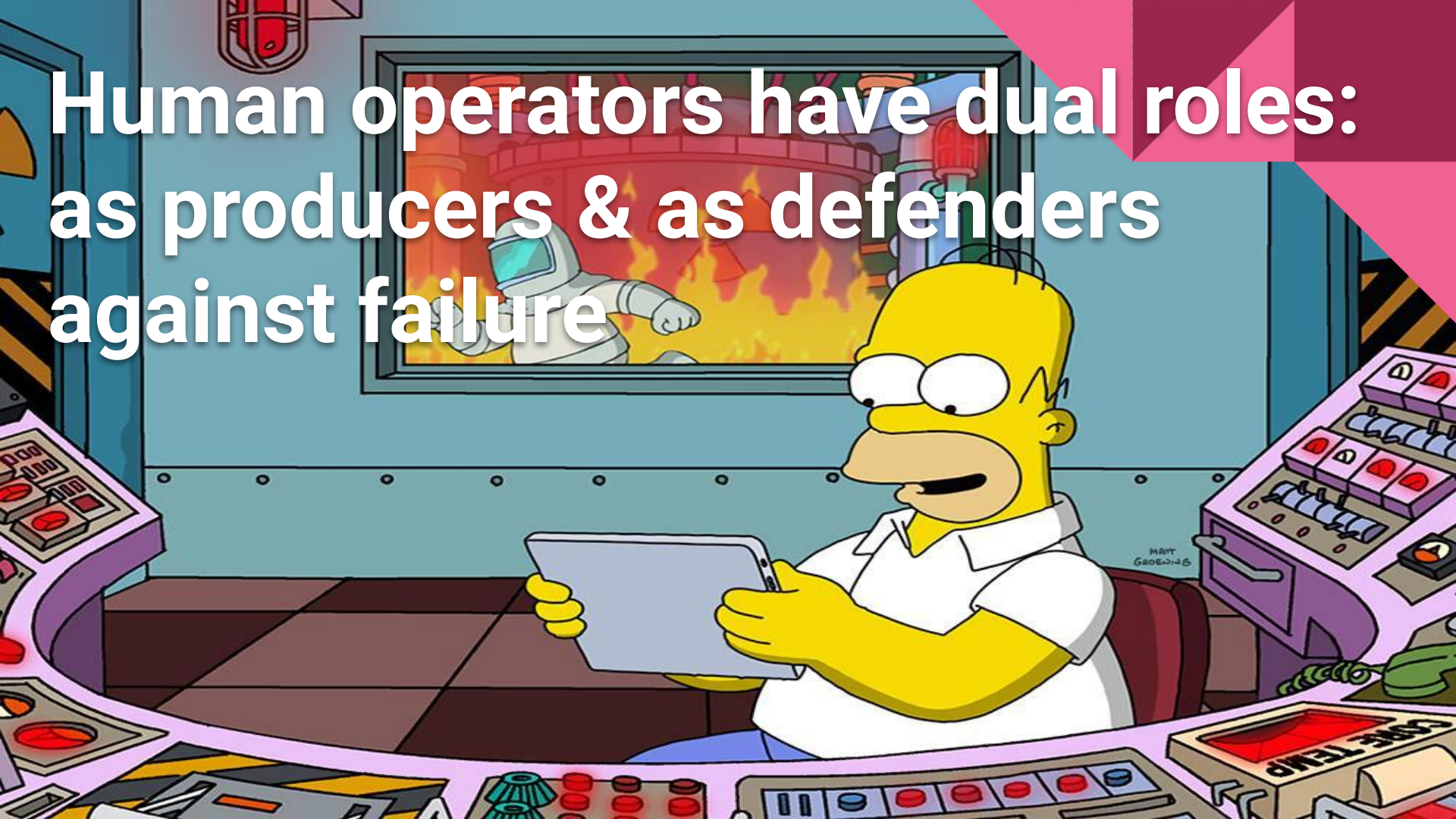
WHAT COUL
Catastrophe is always just around the corner
POSSIBLY GO WRONG?

Post-accident attribution to a ‘root cause’ is fundamentally wrong



Hindsight biases post-accident assessments of human performance


Human operators have dual roles:
as producers & as defenders
against failure

All practitioner actions are gambles

Actions at the sharp end resolve all ambiguity

Human practitioners are the adaptable element of complex systems

Human expertise in complex systems is constantly changing

Change introduces new forms of failure

Views of ‘cause’ limit the effectiveness of defenses against future events

Safety is a characteristic of systems and not of their components

People continuously create safety

Failure free operations require experience with failure

Keep in mind

- Hindsight biases
- Route-cause
- Human error