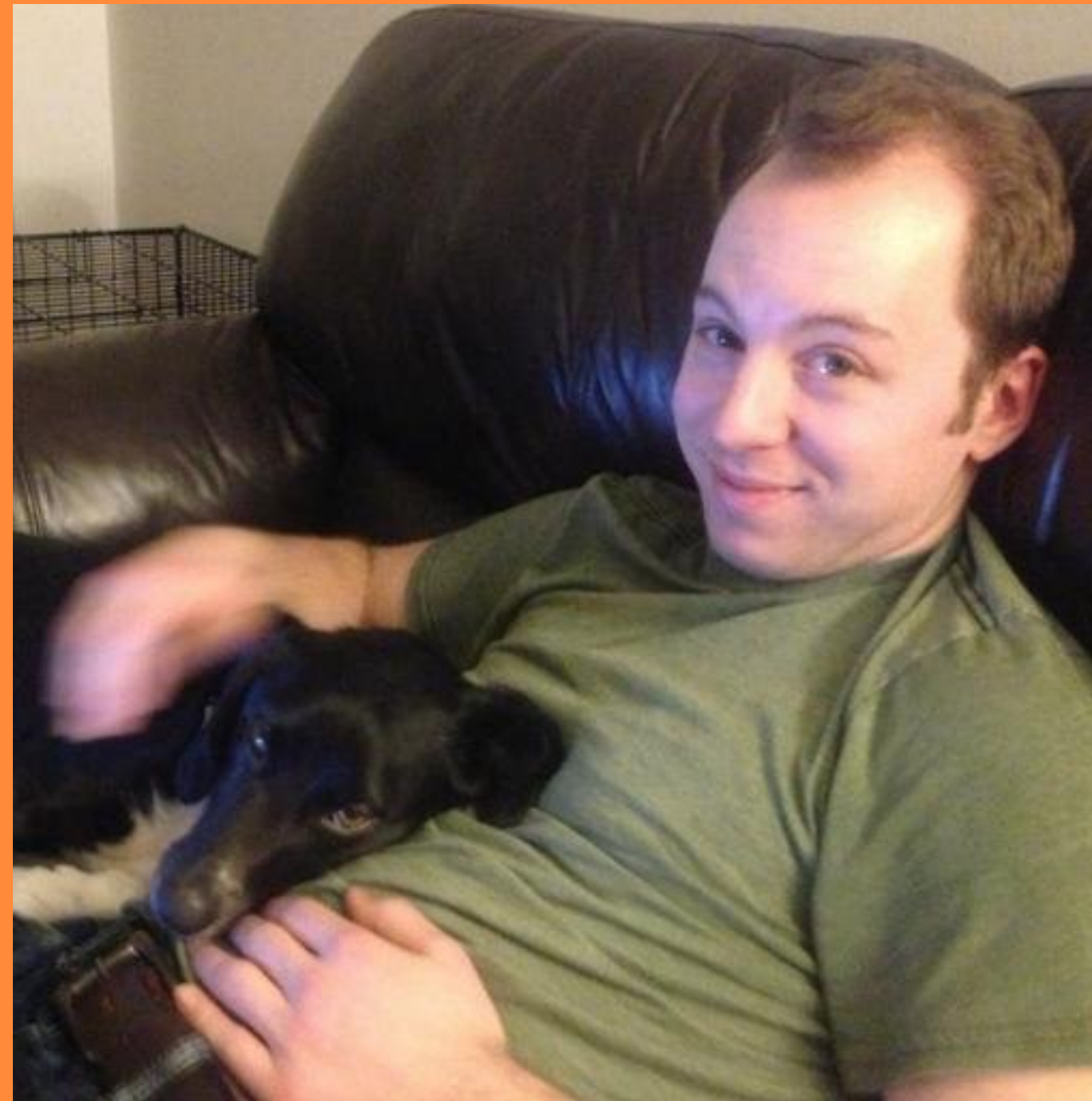


POST MORTEM FACILITATION

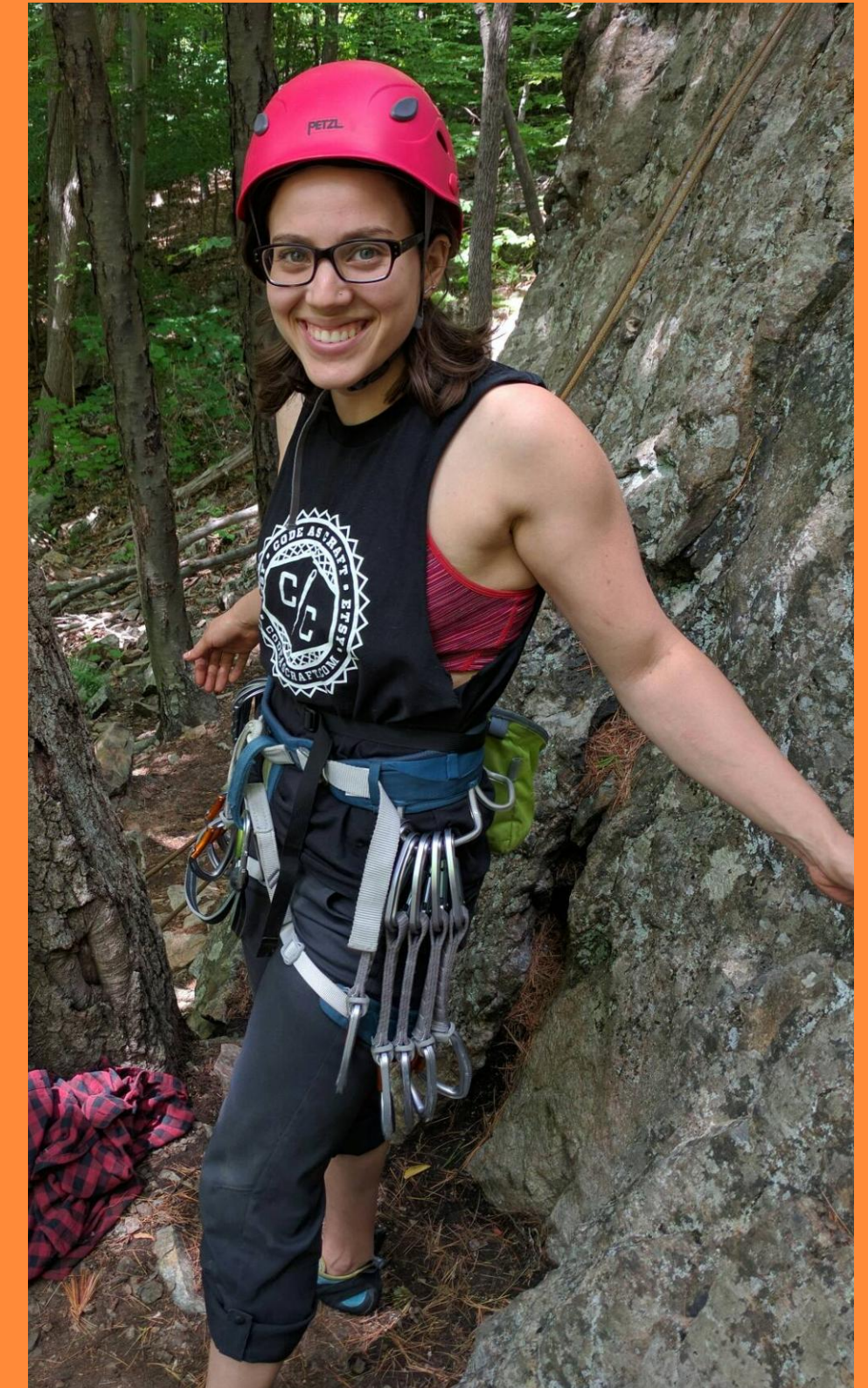
Theory and Practice



[@nphoff](#)



[@wcgallego](#)



[@miriamlauter](#)

Some important folks



Etsy By The Numbers

1.6M
active sellers

AS OF MARCH 31, 2016

25M
active buyers

AS OF MARCH 31, 2016

\$2.39B
annual GMS

IN 2015

35+M
items for sale

AS OF MARCH 31, 2016



Photo by Kirsty-Lyn Jameson

Create ✕

Title

Start Time

End Time

Detect Time

Etsystatus Time

Timezone ⌵

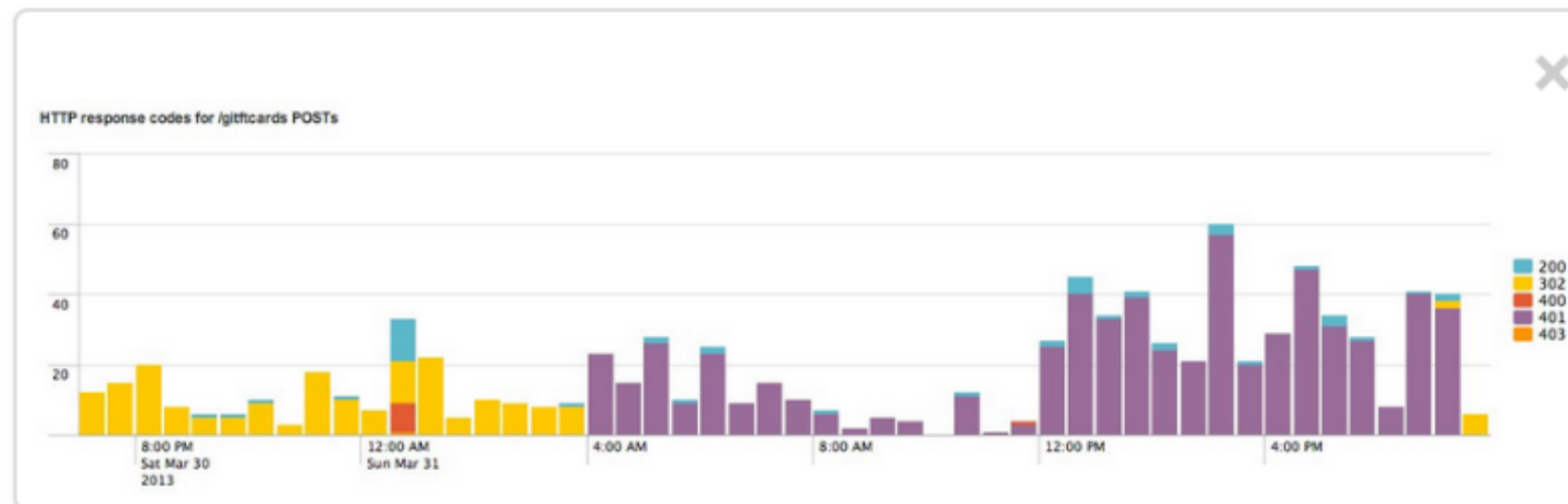
Severity ⌵

Title has to contain at least 3 characters

What happened?

- 15:24 - @jdoe types bad command "**git push -f**", hits Ctrl-C, thinks that it did not propagate (but it did) You can use [markdown](#)
- 15:?? - @rob and @pat both tell @dschauenberg that there is a problem
- 15:43 - push queue is put on HOLD status
- 15:44 - "do not push" email goes out to techall
- 15:46 - @jdoe joins #push to work out the issue
- 15:49 - @klee pushes all but one commit to master
he was missing the most recent merge commit; @dschauenberg advocated that @klee do this push
- 15:52 - @dschauenberg suggests that we use deploy03 git repo to recover
- 16:09 - @schauenberg finishes backing up deploy03 git repo and does "git push -f", recovering the lost commits
- 16:19 - we push princess again at commit b9d6f3615f8ce02b3437977d9e46aea737ef078b and everything is peachy

Images



<https://github.com/etsy/morgue>

[Sell on Etsy](#)

[Register](#)

[Sign in](#)

[Clothing & Accessories](#)

[Jewelry](#)

[Craft Supplies & Tools](#)

[Weddings](#)

[Cart](#)

[Entertainment](#)

[Home & Living](#)

[Kids & Baby](#)

[Vintage](#)

Shop directly from people
around the world



Susan of susansimon
Gold Coast, Australia

36
items

Discover items

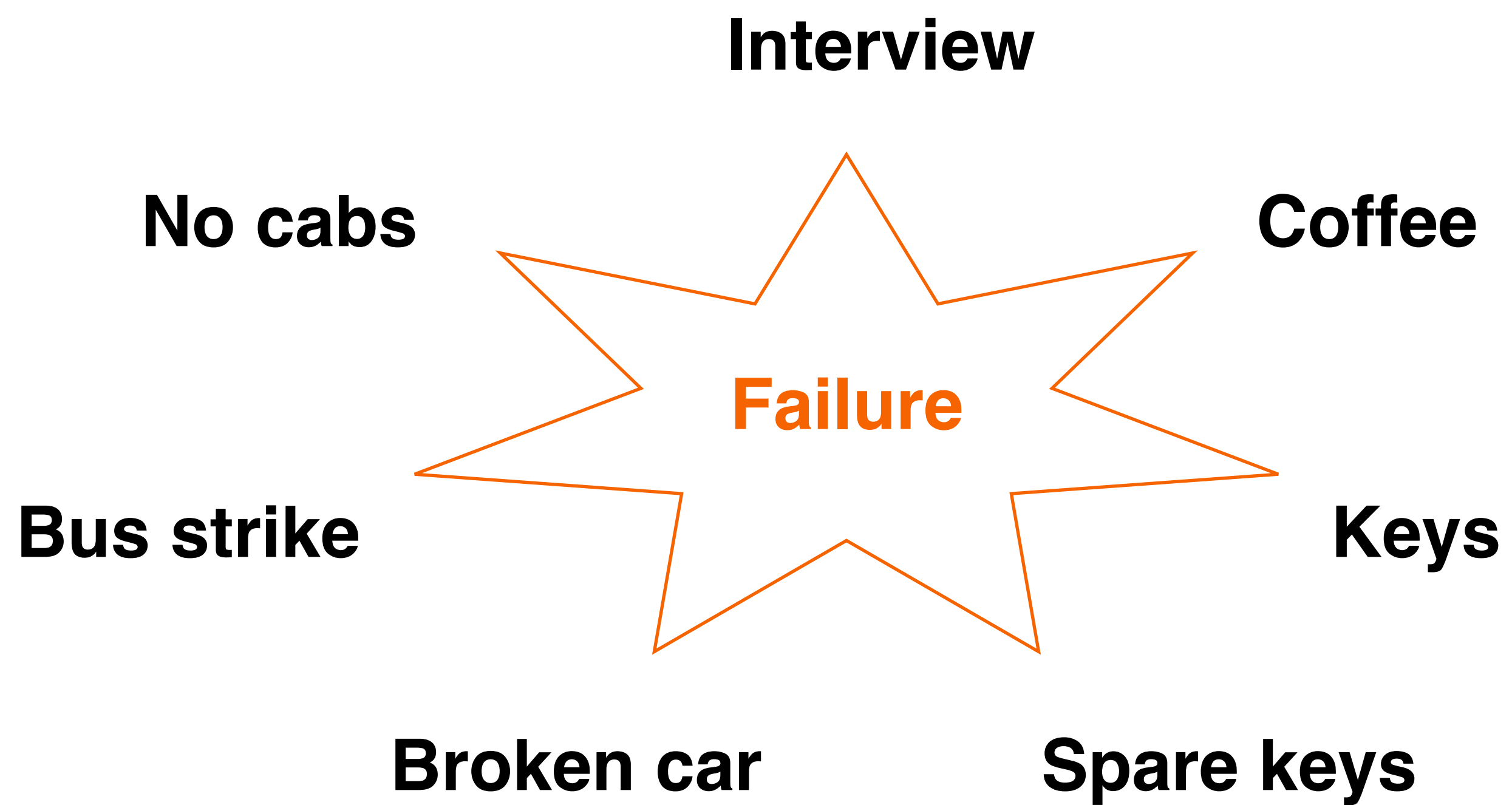
can't find

when

A Story



“It’s just too crazy to try to explain...”



What was the cause

- **Human error?**
- **Mechanical failure?**
- **The environment?**
- **Design of the system?**
- **Procedures used?**



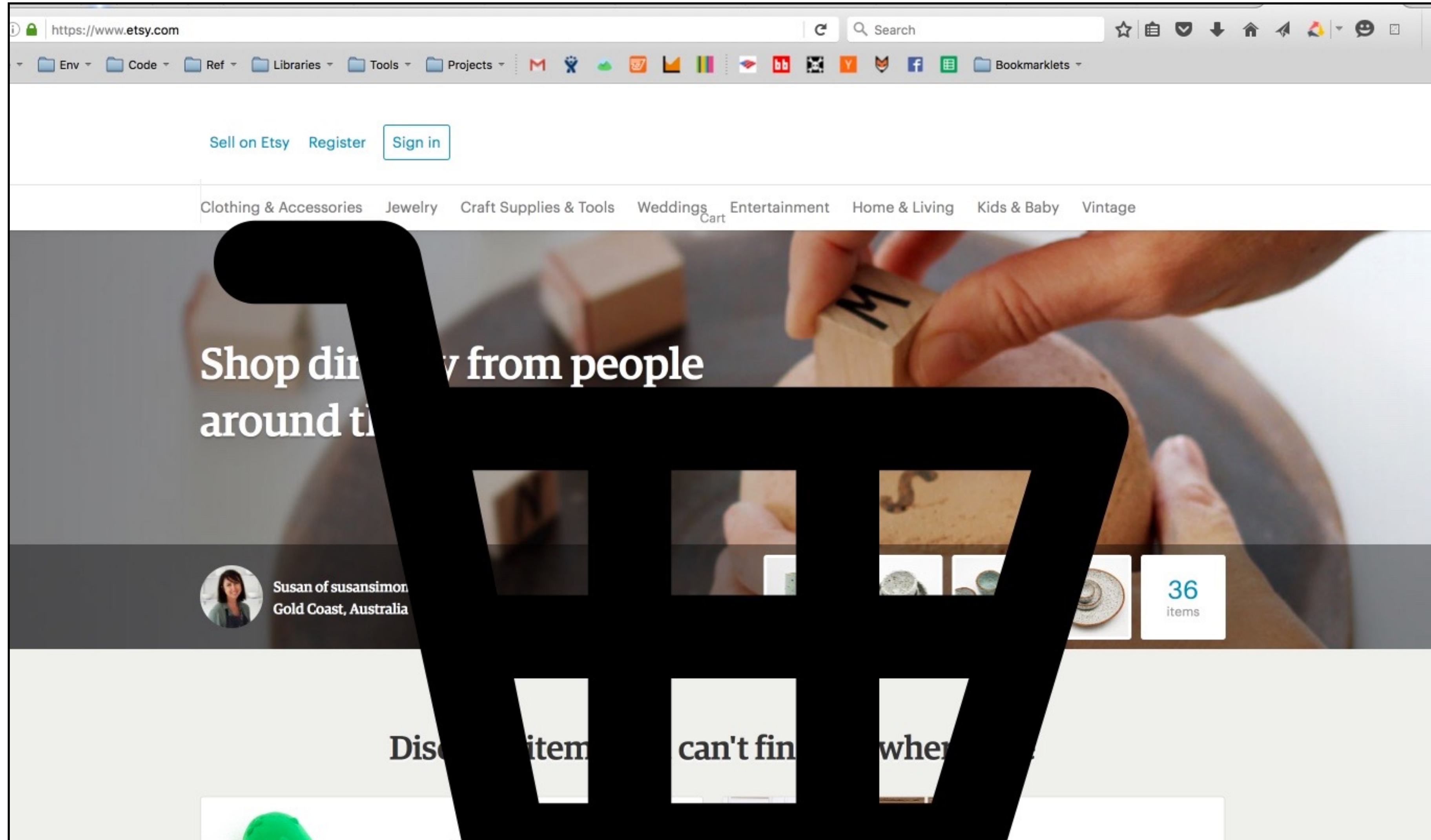
Complex systems

Complexity

- **Robust**
- **Unpredictable**
- **Produce large events**

**Bottom up emergent
phenomena**

Surprise!



04-01 19:12:46: (#etsy) **cathi** adi: anything related to your icon work?

04-01 19:13:02: (#etsy) **adi** might be... i didn't make any changes to [the homepage] though

04-01 19:14:57: (#push) **marty** oh my god

04-01 19:14:59: (#push) **marty** i saw that on [our qa server]

04-01 19:15:01: (#push) **marty** and i thought it was an april fools joke

Whoever you are, find whatever you're into

What are you shopping for?

Search



From the shop CountryCoutureCo



Get something you love

Our marketplace is a world of vintage and handmade goods



Find your new favorite shop

More than a million independent sellers from everywhere are right here



Buy safely and securely

Etsy handles and protects every transaction, so shop with confidence

Shop by category



Home & Living



Jewelry



Clothing



Craft Supplies & Tools



Weddings



Toys & Games

Browse our latest collections



EDITORS' PICKS

Personalized & Custom



EDITORS' PICKS

Accident Models

WHY DO ACCIDENTS HAPPEN?

“HUMAN ERROR”

Amazon blames human error for Xmas Eve outage; Netflix vows better resiliency

[Derrick Harris](#) Dec 31, 2012 - 3:58 PM PDT

14 Comments

Human error causes NASDAQ outage

31 October 2013 | By Penny Jones



ne of NASDAQ's premier data feeds – the Global Index Data Service which provides valuation data for electronic trades - went down for more than half an hour at 11:53 EDT Tuesday following a “human error” in the data center.

Germany train crash: Human error to blame, says prosecutor

🕒 16 February 2016 | Europe

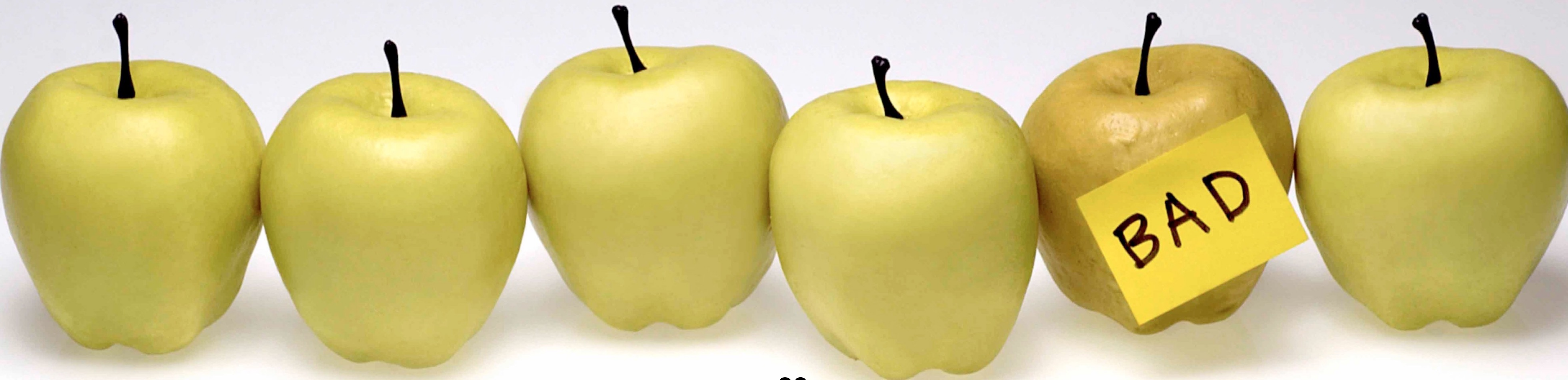
[Share](#)



The trains collided head-on while travelling at about 100km/h (60mph)

Bad Apples

The system is basically safe.
Unreliable humans cause failure.
Get rid of bad apples.



A large red and white ferry ship, the MS Herald of Free Enterprise, is shown at sea. The ship has two prominent funnels and a complex superstructure. The name 'TOWNSEND THORSEN' is visible on the side of the hull. The ship is moving through the water, leaving a wake. The background shows a hazy horizon and a small dark structure in the water to the right.

March 6, 1987

**The Herald leaves the Belgian port of Zeebrugge
193 passengers and crew died.
bound for Dover.**

MS Herald of Free Enterprise



HUMAN ERROR?

Four years earlier...

October, 29 1983: The *Pride* of Free Enterprise makes it from Calais to Dover with both bow and stern doors open, successfully.

Two years after that...

“There is no indication on the bridge as to whether the most important watertight doors are closed or not.”

“Thanks for the suggestion.”

The year before the Herald disaster

Two different captains ask for door closure indicator lights.

They are told: “Please submit a request via application.”

They do so.

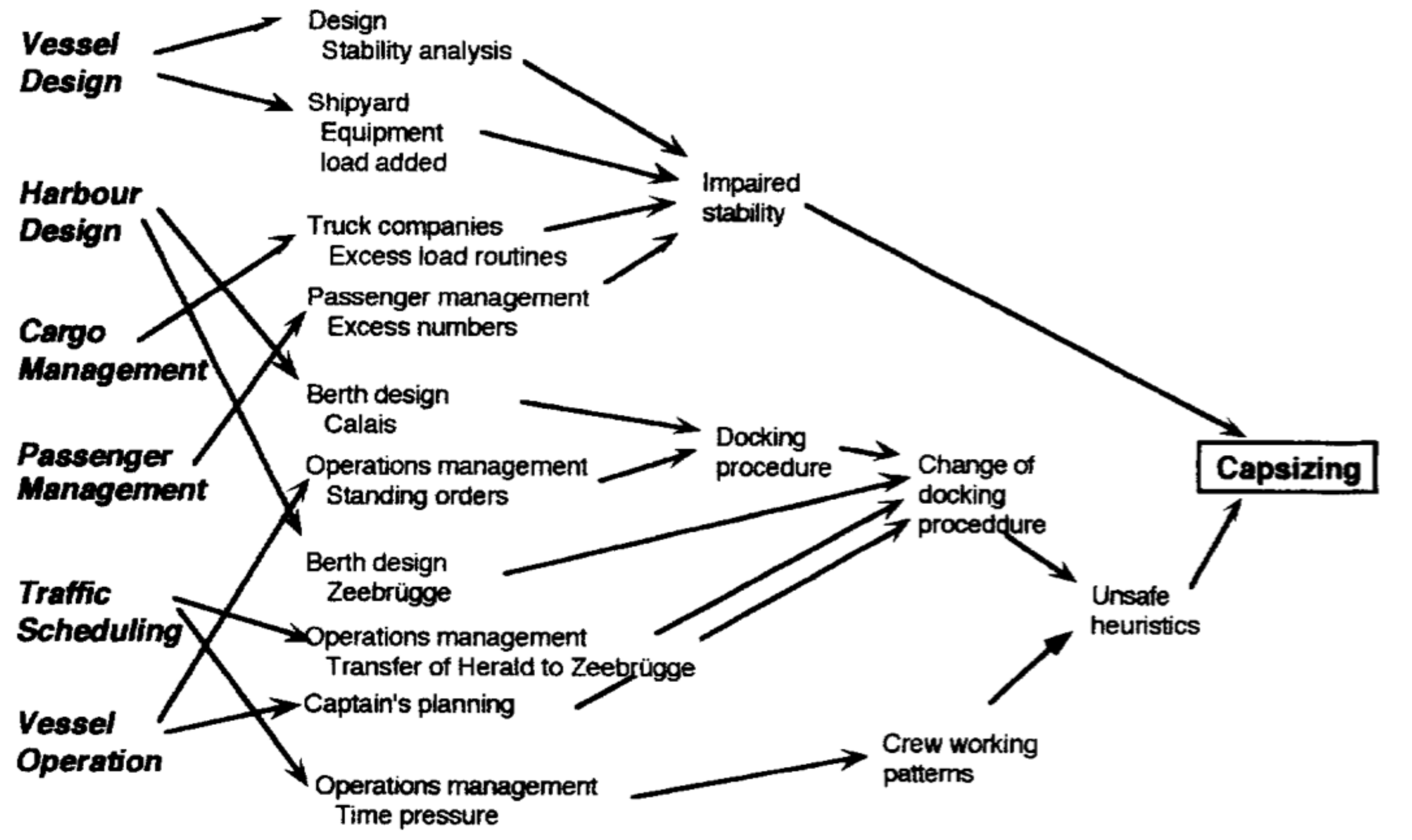
“Do they need an indicator to tell them whether the deck storekeeper is awake and sober? My goodness!!”

“Nice but don’t we already pay someone?!”

“Assume the guy who shuts the doors tells the bridge if there is a problem.”

Other factors

- **Herald designed for berths at Calais/Dover**
- **Zeebrugge run added later**
- **High tide (need to fill the ballasts)**
- **Transfer time at Zeebrugge under tighter constraints**



→
Operational decision making:
 Decision makers from separate departments in operational context very likely will not see the wood for the trees

←
Accident Analysis:
 Combinatorial structure of possible accidents can easily be identified

Fig. 2. The complex pattern of the Zeebrugge accident.



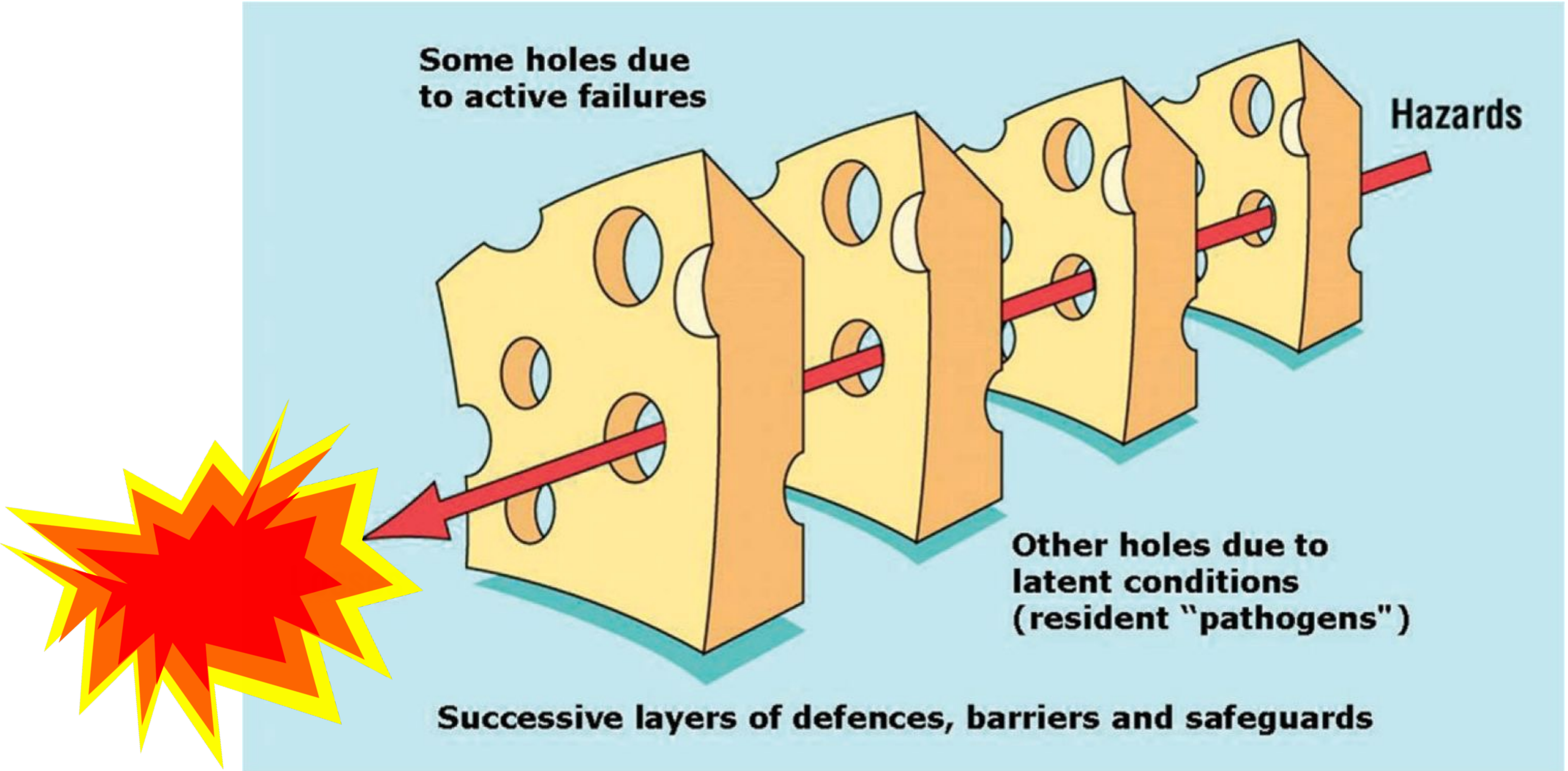
Dr. Steven Shorrock
European Safety Culture Programme
EUROCONTROL

“Someone did (or did not do) something that they were not (or were) supposed to do according to someone.”



Heinrich's Domino Theory

James Reason's Swiss Cheese Model



Safety

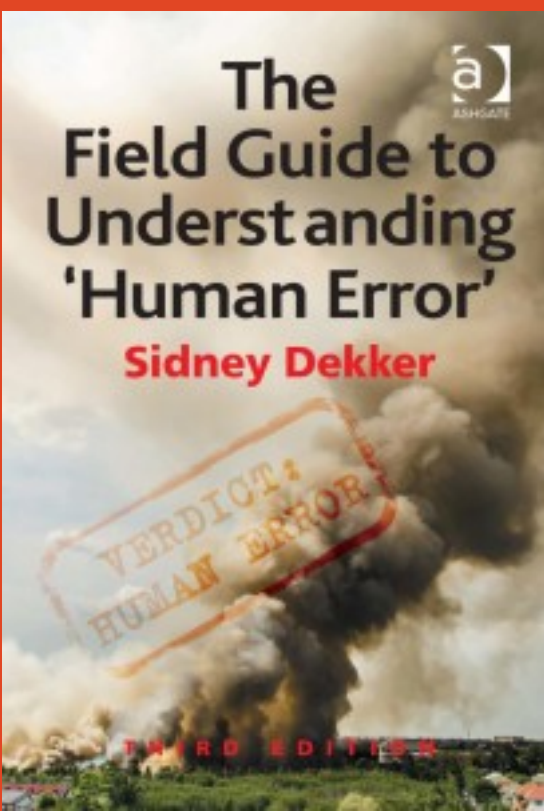
Getting work
done



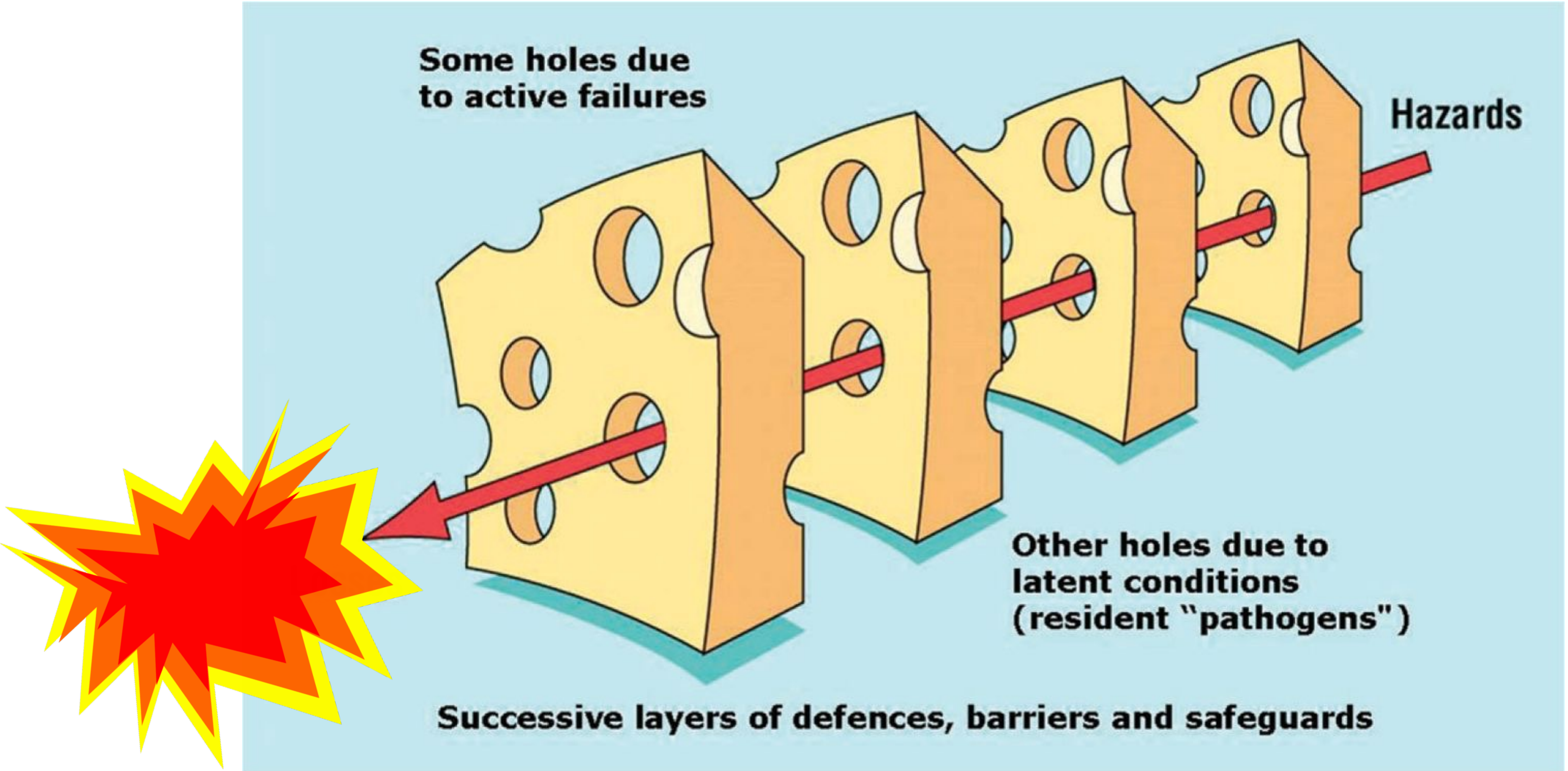
A top rope anchor on bolts



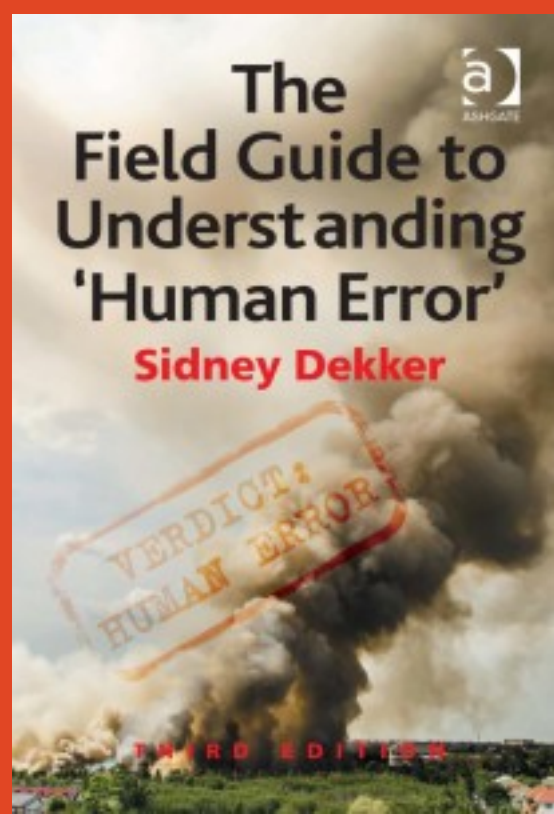
Safety is an EMERGENT PROPERTY that arises when components and processes interact with each other and their environment.



Reason's Swiss Cheese Model



**Cause is not something you find.
Cause is something you construct.**



Thank you!

References

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- Rasmussen, Jens. "Risk management in a dynamic society: a modelling problem." *Safety science* 27.2 (1997): 183-213.
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- <https://humanisticsystems.com/2014/09/30/safety-ii-and-just-culture-where-now/>
- Rosness, Ragnar, et al. "*Organisational Accidents and Resilient Organisations: Five Perspectives Revision.*" (2004).

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- Rasmussen, Jens. "Risk management in a dynamic society: a modelling problem." *Safety science* 27.2 (1997): 183-213.
- <http://safety-doc.com/safety-blogs/blog/pull-the-domino-and-build.html>

Related Reading/Learning

- **Todd Conklin's Pre-Accident Investigations podcast (<http://preaccidentpodcast.podbean.com/>)**
- **<http://www.safetysdifferently.com/>**
- **Steven Shorrock's blog (<http://humanisticbydesign.blogspot.com/>)**
- **Don Norman's *The Design of Everyday Things***



Blame Awareness
in Incident
Investigation

Blame



Hey, I'm Will!



Ops Engineer @ Etsy







Global
10



(Yes, this is me.)





I'M IN THE
BOX OF SHAME
TODAY BECAUSE:

I THREW UP



Richard I. Cook

@ri_cook



Following

Without biases we'd not survived sabertooth days. Biases WORK! For every cog fixation there R 10^4 good results.



“You will undoubtedly
fall into biases.
This is natural.

You’re not trying to stop them,
just call them out in a non-shameful way”
- **Morgan Evans**



What kind of biases are
we running into?

Hindsight bias

OBJECTS IN MIRROR ARE
CLOSER THAN THEY APPEAR

Counterfactual

- “If only they had...”
- “They failed to...”
- “They should have...”
- “They could have...”

Outcome bias

- **Misspelled copy on the header**
- **Prevent users from logging in**
- **Site running 15% faster**



@wccgallego



*Assignment of Responsibility for an Accident -
Walster, 1966*

The Colorful History of the Internet and Its Increasingly Problematic Future

A number of factors have pushed the development of the powerful Internet that society enjoys today—businesses, universities, governments, medical institutions, financial institutions, adults, and children. No single factor produced the World Wide Web that today connects so many global networks. Groundbreaking events in hardware (the mechanical parts composing the computer network) and software (the programming language running the network and doing the necessary computations) creation have taken place, and these developments have had large social and economic impacts on society.

The 1940s, 1950s, and 1960s. In the late 1940s and 1950s, when computers were made with 10,000 vacuum tubes and occupied more than 93 square meters of space, there was indeed a limit to how big the cyber beasts could be, but they could overheat and explode. There were other problems with these early computers. The vacuum tubes could leak, the metal that emitted electrons in the vacuum tubes burned out, and all of those tubes required tons of power to run. Major improvements came in computer hardware technology with the development of transistors, invented by John Bardeen and Walter Brattain in 1947 and 1948 at Bell Telephone Laboratories, and the development of integrated circuits, invented by Jack Kilby at Texas Instruments and Robert Noyce at Fairchild Camera in 1958 and 1959. Integrated circuits resolved a number of vacuum-tube technology's problems and did much to further the development of smaller computers with greater power. With this improved technology, instead of making transistors one by one, several transistors could be made at the same time and on the same piece of semiconductor. In addition to transistors, other electric components such as resistors, capacitors, and diodes could be made using the same process and materials (Haviland, 2005).

It is important to note that since the 1960s, the number of transistors per unit area has been doubling every one-and-a-half years—thus increasing computing power. This amazing progression of circuit fabrication is called Moore's Law, named after Gordon Moore, a pioneer in the integrated circuit field and founder of the Intel Corporation (2004).

What an Intranet Is

An intranet is an information system that is typically exclusive to an organization's employees. It is accessed via private Local Area Network (LAN) servers like those used in a company's office. The language used to create the pages is their standard layout and rendering. Intranets have a number of functions, but most are used to disseminate information about a company's upcoming events, intranet software, intranet online, New Intranet software made by companies such as the Microsoft Corporation and Plumatic Software, Inc., has made the technology available to 200 even for small and medium-size companies (Palmer, 2005).

Curse of Knowledge

Defensive Attribution Hypothesis

So how do we know when our
biases are negatively impactful?



Practice Empathy

Takeaways



- **Replace bias heavy language. Typically, there's a question hidden underneath**
- **Failing during failures is ok!**
- **Blame awareness exists outside the vacuum of a Post Mortem**

Post Mortem Facilitation

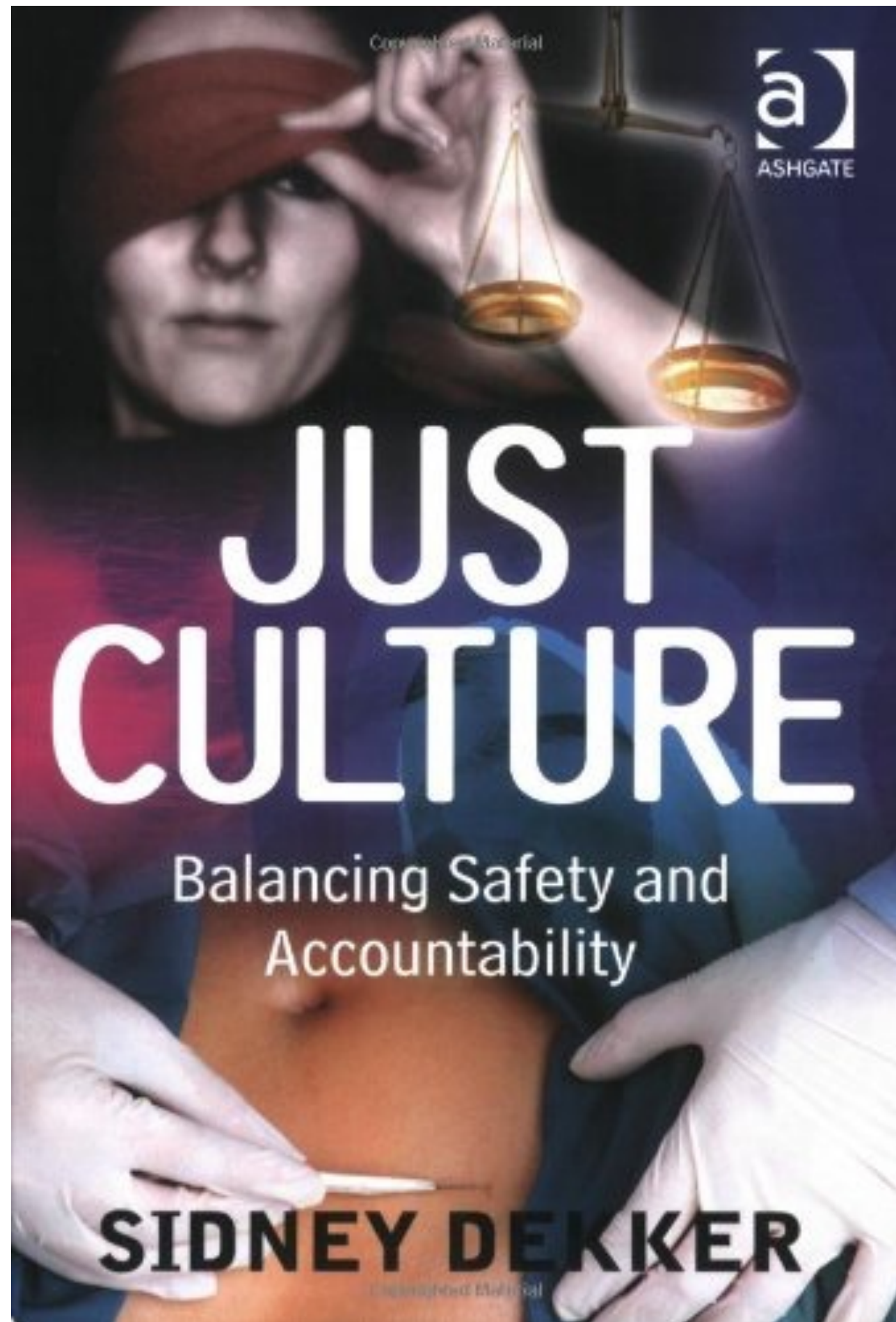
The Practical Bits

Overview

1. Learning Culture

2. Debriefing

Learning Culture



Local Rationality

“People do things that make sense to them given their goals, understanding of the situation and focus of attention at that time.”



JUSTICE



Retributive Justice

- **Looks to the past**
- **Determines blame**
- **Tries to prevent a “bad apple” from re-offending**
- **Feels good**
- **Easy**

Restorative Justice

- **Looks to the future**
- **People involved give their account**
- **Focus on organizational safety**

REPORTING

ANALITIK
TIETOKONEEN OHJELMOINTIKIELI
YLEISKUVAUS

BLOMGVIST, NISSE HUSBERG JA
JOUKO SEPPÄNEN

N:o 11 1974



TEKNILLINEN KORKEAKO
LASKENTAKESKUS
02150 ESPOO 15

FORMULA MANIPULATION

Nisse Husberg
1983 No 26
Research Report

HELSINGIN TEKNILLINEN
LASKENTAKESKUS
02150 ESPOO 15

A SAC MACHINE
CONNECTED TO
A UNIVERSAL COMPUTER
Nisse Husberg
1982 No 21
Research Report

HELSINGIN TEKNILLINEN KORKEAKOULU
LASKENTAKESKUS
02150 ESPOO 15

ALGEBRAIC DESCRIPTION
OF
HIGH LEVEL LANGUAGES
USING
CATEGORY THEORY

Nisse Husberg
1980 No 16
Research Report



EMPATHY



Debriefing

Talk to the people involved

- **Let them know you're on their side**
- **Set their expectations**
- **Get a sense for their expectations**

Gather Data

- **Graphs, Metrics**
- **IRC Logs, emails**
- **Commits, Pull Requests**

During the Debriefing

- **Set the stage**
- **Ask people about their story**
- **Tell their story back to them**
- **Identify critical junctures**
- **Progressively re-build how the world looked to people inside the situation at each juncture.**

BIASES

ASK BETTER QUESTIONS



<http://bit.ly/DebriefingPrompts>

CUES

Cues

- **What were you seeing?**
- **What were you focusing on?**
- **What were you expecting to happen?**

INTERPRETATION

- **If you had to describe the situation to a colleague at that point, what would you have said?**

HISTORY

History

- **Did this approach work for you before?**
- **Did this situation fit a standard scenario?**
- **Were you trained to deal with this situation?**
- **Were there any rules that applied clearly here?**
- **Did you rely on other sources of knowledge to tell you what to do?**

GOALS

Goals

- **Were there any conflicts or trade-offs to be made that you were aware of at the time?**
- **What were the goals you were reaching for?**
- **Too what extent did you feel time pressure at this point?**
- **What was most important to accomplish at this point in the incident?**

ACTION

Action

- **How did you judge you could influence the course of events?**
- **Did you discuss or mentally imagine a number of options or did you know straight away what to do?**

COMMUNICATIONS

Communications

- **What communications mediums did you prefer? (IRC, Vidyo, phone, email, in person, etc.)**
- **Did you use any communication channels together?**

HELP

Help

- **Did you ask for help?**
- **What was the signal that brought you to ask for help?**
- **Were you able to get in touch with the people you wanted to talk with?**
- **How did you know to trust the guidance that you got?**

Our Goal is to Learn

Remediation

- **Action items not always necessary**
- **Soak time**

Thanks!

Homework

(Due during the next session)

**Think of a time when your skills were particularly challenged,
or when your experience really made a difference in the way
something turned out.**

It should be something that you can share.

Questions?