

ceej's how to solve it

ceej's how to solve it, or
engineering at npm

a series of maxims
& their application to
problem-solving of diverse kinds



**dedicated to David Zink
with whom I have spent 20 happy years arguing about all this**

it takes **decades** to get good at writing software

**most human beings learn
complex skills through mentorship**

**most programmers learn by working
with more experienced programmers**

**our industry's booms have caused
shortages of experienced mentors**

**exacerbated by a modern contempt for
anybody over 40**

**too often programmers come of age
without experienced people around them**

we keep re-inventing core tenets of our profession

npm's engineering staff meeting
me attempting to share what I know
and let you share what you know

lift each other up

therefore... this talk



And...

systems are how things work together

the npm's registry is a system

npm itself is a system!

systems analyst

once the title for people who do what programmers do now

systems exist in a constant state of failure

The Systems Bible by John Gall

"Every complex working system can be shown to have evolved from a simple working system"

from this we extract a maxim...

write the **simplest thing you can, every time**

**evolve your simple systems to do more
keep them working the whole time**

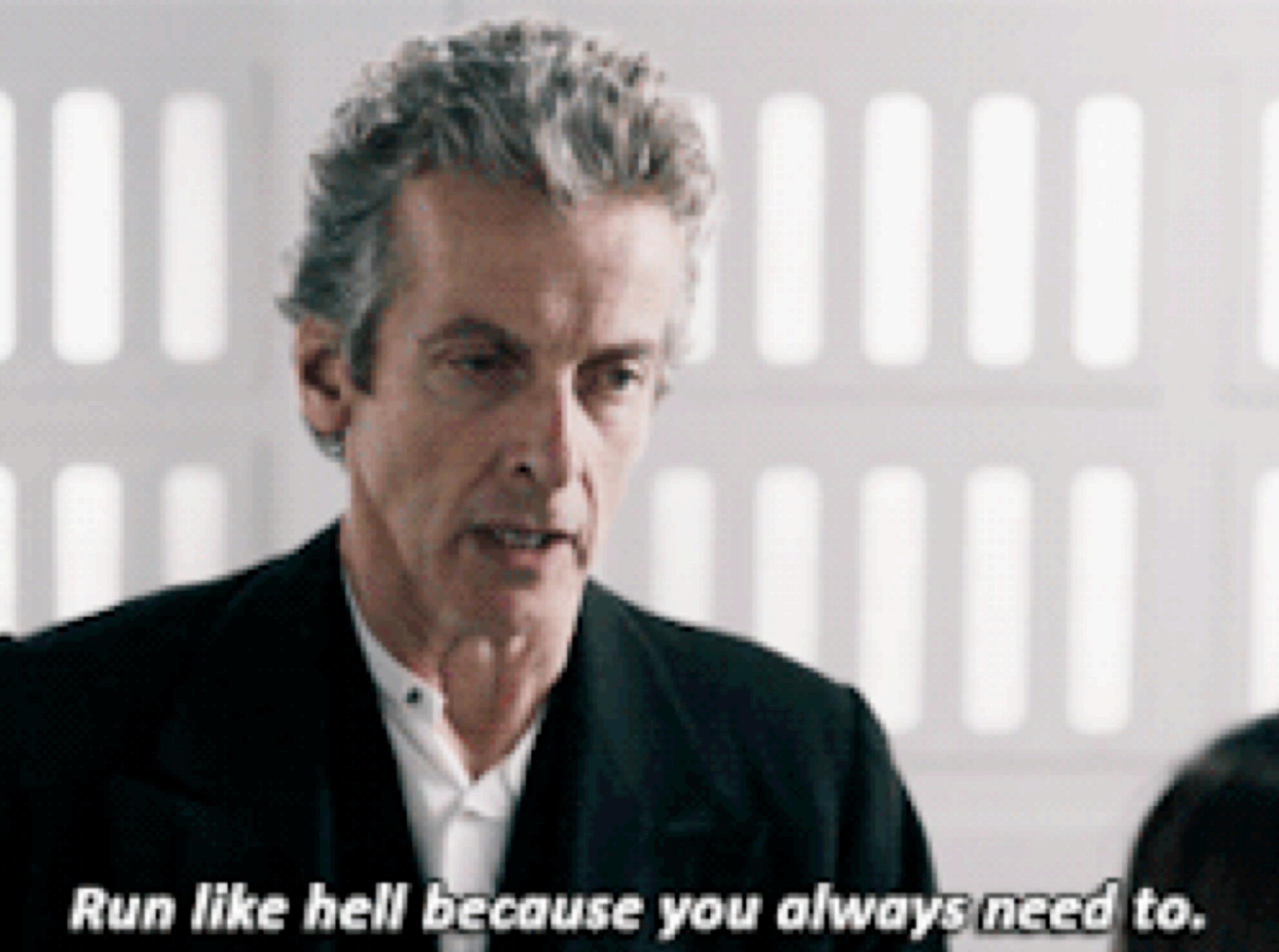
**this is true for people systems
as well as for computers & code**

Simplicity is prerequisite for reliability.

-Edsger W. Dijkstra

simple is not the same as easy
Rich Hickey: Simple Made Easy

**Do the simplest thing that moves you toward your goal
while preserving your flexibility. —ceej**



Run like hell because you always need to.

modularity

modularity is one of the big secrets

modularity is hiding
the details of an implementation

if you hide the details
you can change it later

the other secret is that
change is guaranteed
so prepare for it

**the easy connection is with what npm does:
we manage a javascript modules**

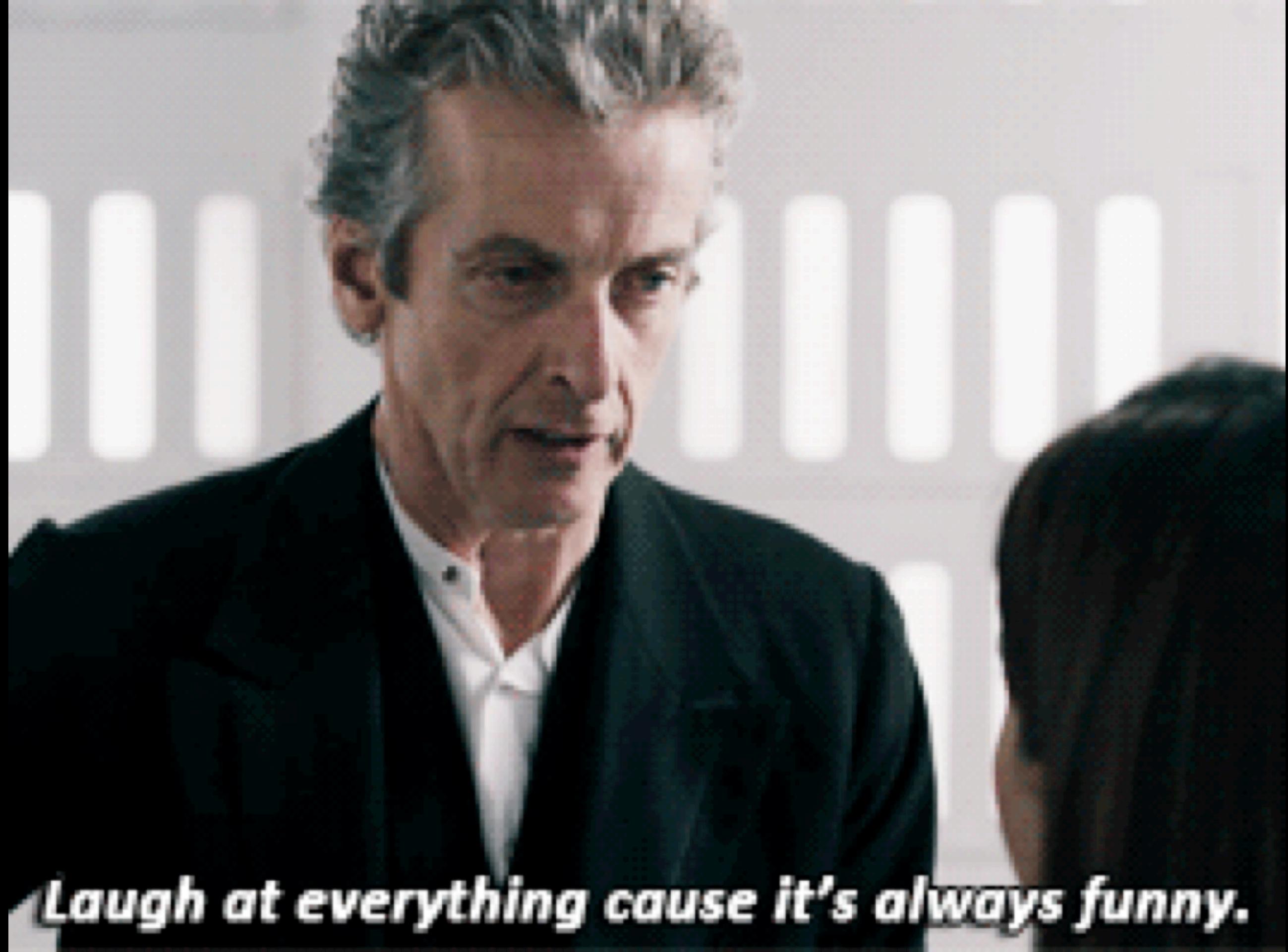
modularity's more important applications
are at a *systems* level

**we hide our data storage implementations
behind microservices**

**nobody knows if we're using mysql, postgres, or mongodb
we can change it without other services caring**

just did this to the **downloads API**

mysql → **redis**



Laugh at everything cause it's always funny.

**always pronounce the names of things
in the funniest possible way**

**don't let the perfect be the enemy of the
better than what we have now**

continuous improvement
our products, our processes, our systems

iterate toward victory!

don't be clever

don't be clever

“Debugging is twice as hard as writing the code in the first place. Therefore, if you write the code as cleverly as possible, you are, by definition, not smart enough to debug it.” —Brian Kernighan

A dramatic, low-key lighting photograph of a man and a woman. The man, wearing a dark suit and sunglasses, is positioned in the foreground, looking towards the woman. The woman, dressed in a red dress, is partially visible behind him. The scene has a moody, cinematic feel.

Listen to me, listen, I just want you to think!

think

the **RFC** process is about stopping to think

what problem are you solving?

**Defining the problem clearly helps you
understand what a solution looks like.**

**RFC stands for
request for comment**

seek feedback



It's just a fancy word for changing your mind!

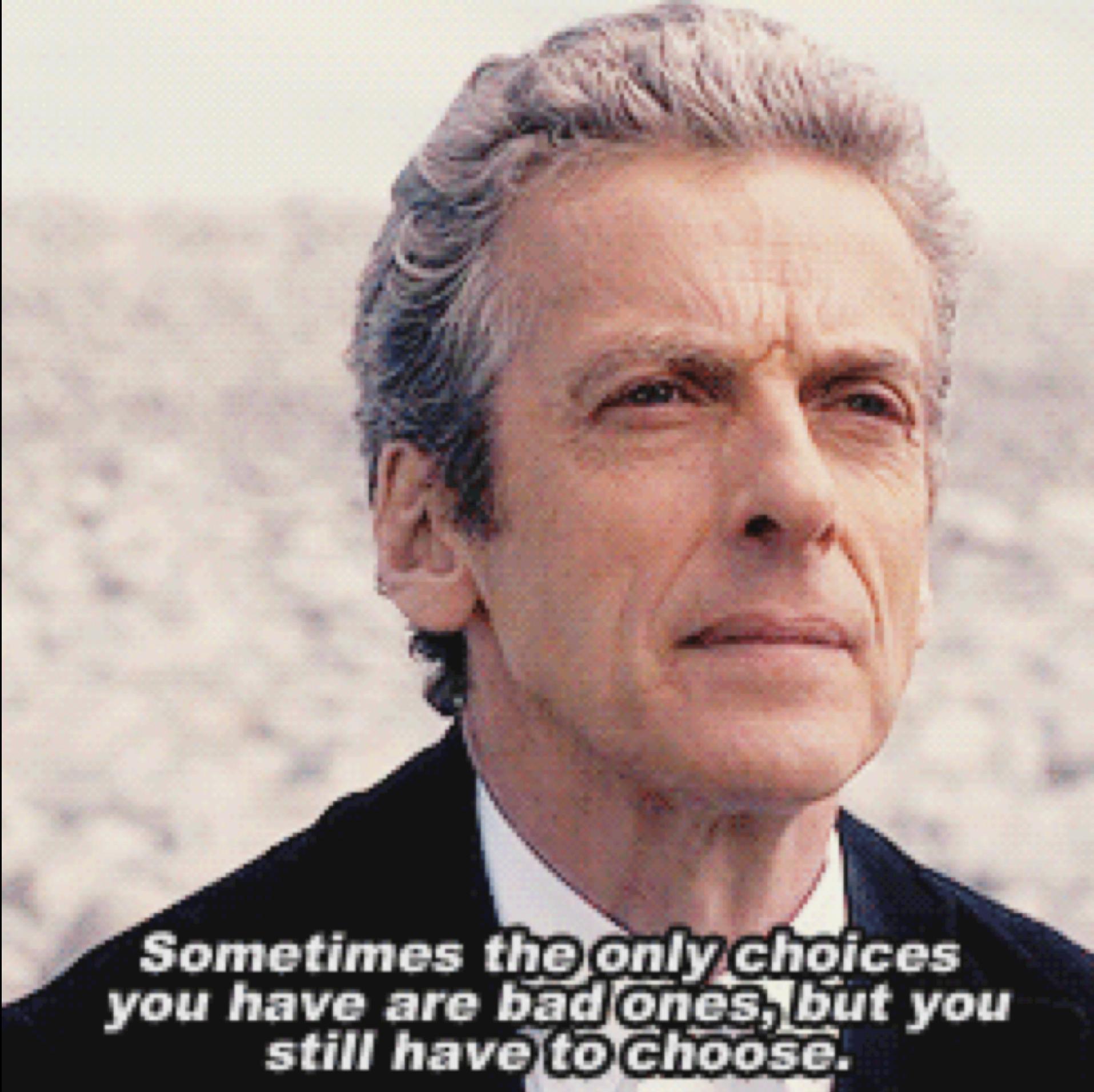
people make the **best** decisions they can
given their information & abilities

**improving the quality of your information
will improve your decisions**

give good feedback in return

**your colleagues rely on you
just as you rely on them**

**tie your ego to being right in the end
not to being right from the start**



**Sometimes the only choices
you have are bad ones, but you
still have to choose.**

you can't fool me, young man. it's
tradeoffs
all the way down

what's a tradeoff?

**you accept something that's meh in one way
but that's great in a way that matters more**

**every solution to a problem
requires tradeoffs**

make tradeoffs with your eyes open



Never be cruel and never be cowardly.

I'll phrase that more **positively**

be kind
be courageous

be kind to each other

kindness doesn't mean never saying hard things

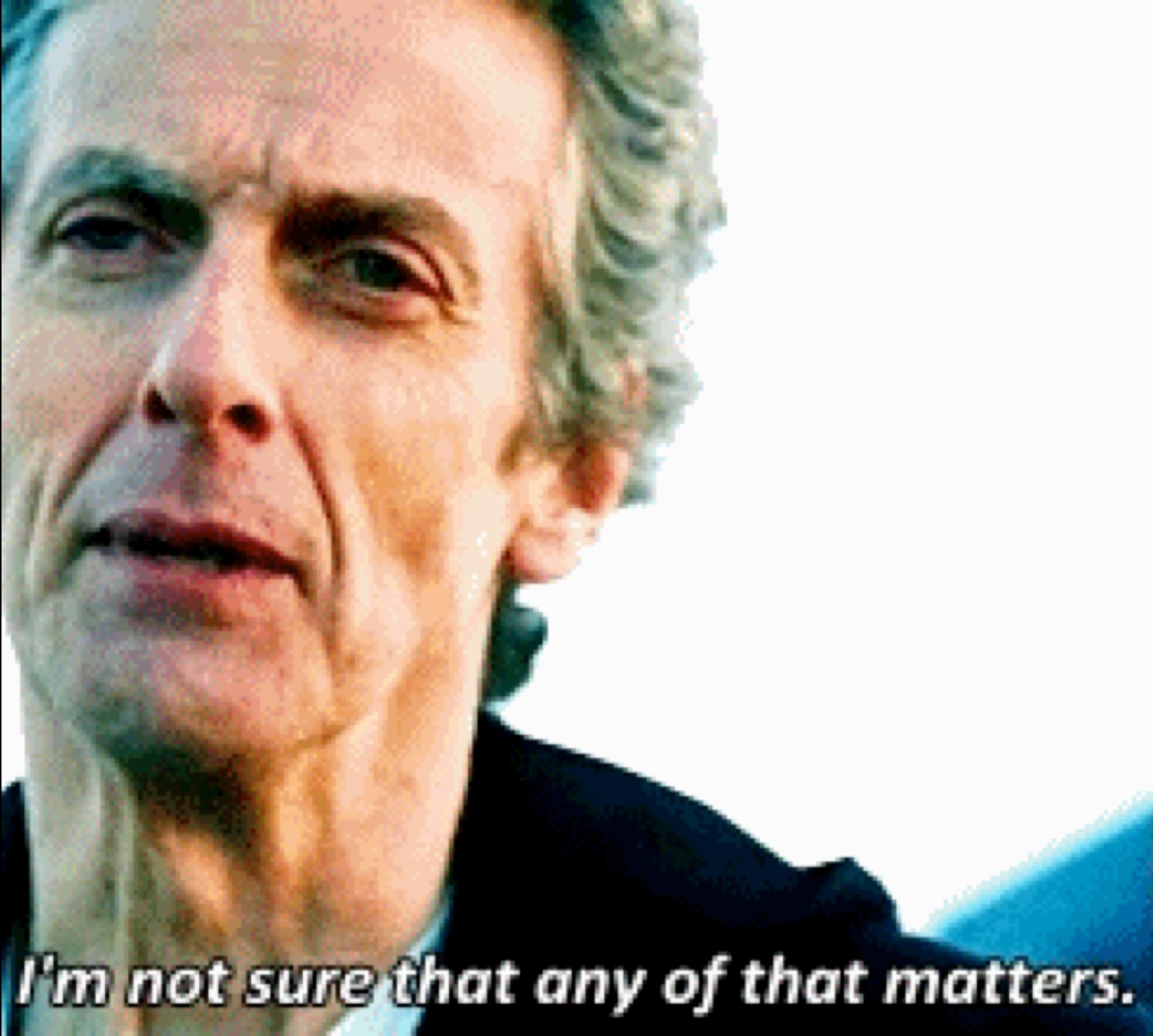
kindness shapes how you say them

what does courage have to do with problem-solving?

be bold about tackling hard problems

be bold about re-examining what we do now

sometimes you need to blow everything up



I'm not sure that any of that matters.

the companies that survive are
phoenixes

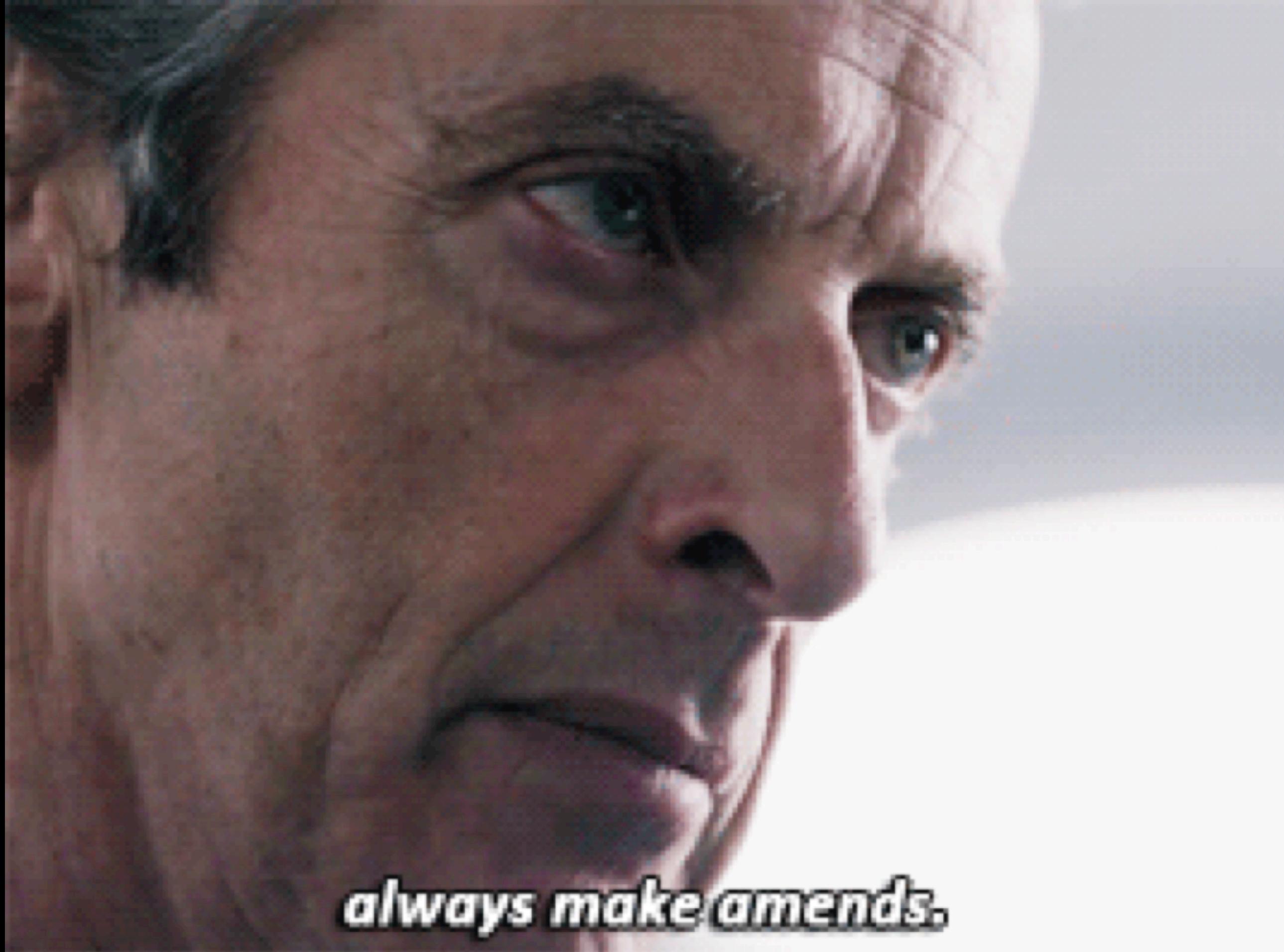
all code has a lifespan

**code is originally written
to solve a specific problem**

our **understanding** of the problem changes
the **context** around it changes
the **code** itself changes

**plan to replace
all solutions to problems**

feel good about how long your solution lasted!



always make amends.

how we deal with **mistakes** is important

because mistakes are **inevitable**

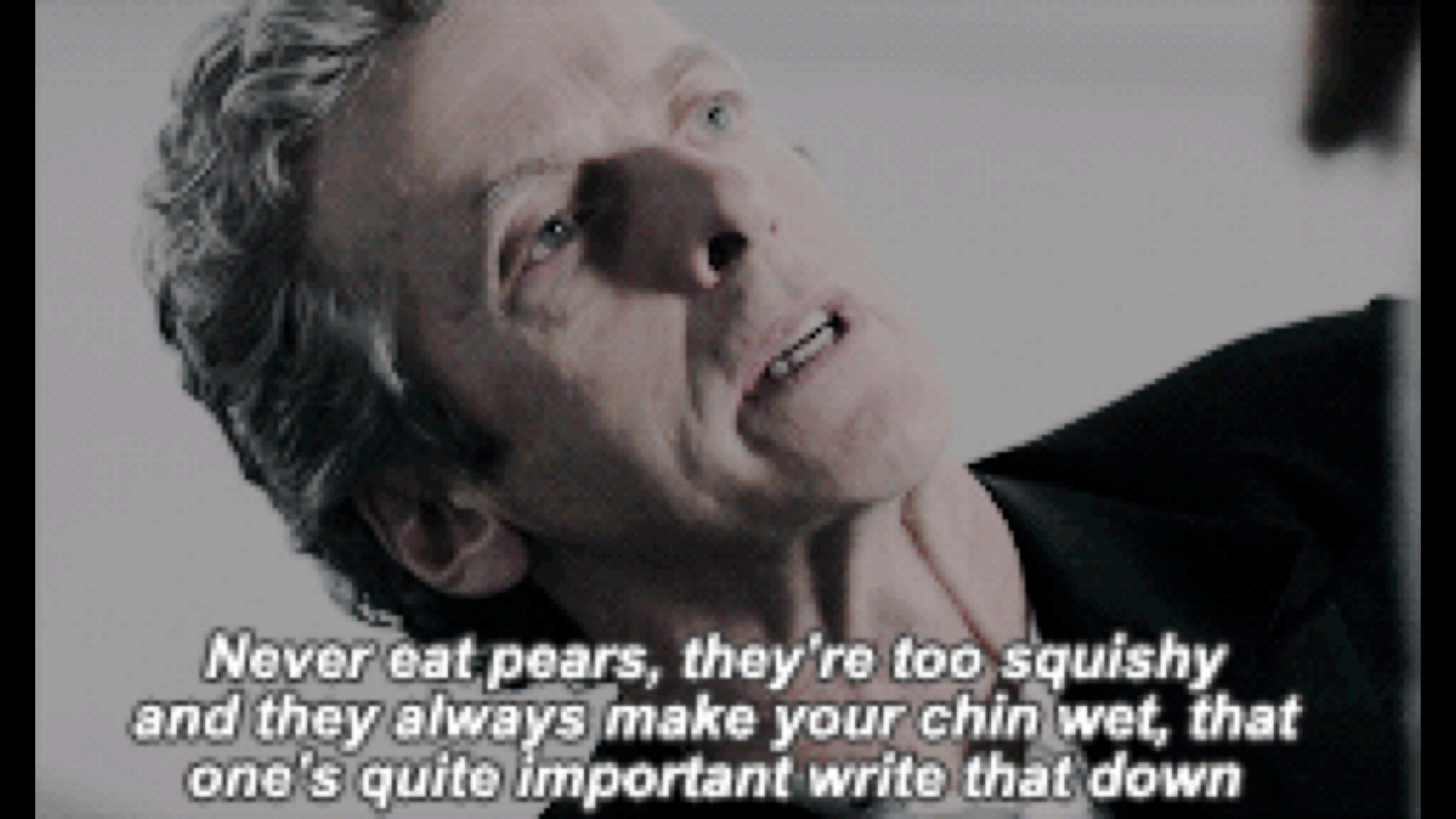
we try for blameless postmortems

**we redesign processes
when things go wrong**

the **right** thing to do
should be the **easiest** thing to do

work hard to make the right thing easy

do small things daily to tidy up



Never eat pears, they're too squishy
and they always make your chin wet, that
one's quite important write that down

A photograph of a group of people in a dimly lit room. In the foreground, a person is seated in a white chair, facing right. Behind them, several other people are standing or walking. A red ribbon banner hangs across the top left of the frame.

Sit down and TALK!

all code is communication

all of our work requires communication

learning our professions requires communication

how much time in each day do you spend
talking to your colleagues?

do the work to get better at communicating

find where you can get better & do it!
writing? chatting in slack?
listening to feedback? giving feedback?

communication skills always pay off



Never be cruel and never be cowardly.

**never be cruel or cowardly
if you are always make amends -- The Twelfth Doctor**



Always take a banana to a party, Rose.