A photograph of a person's hands typing on a laptop keyboard. The scene is dimly lit, with the laptop screen and keyboard providing the primary light source. The background is blurred, showing what appears to be a desk and possibly another monitor.

Emergency Remote Teaching: A Post-Secondary Reality Check

Ian Milligan, Dept. of History,
University of Waterloo




Who am I?

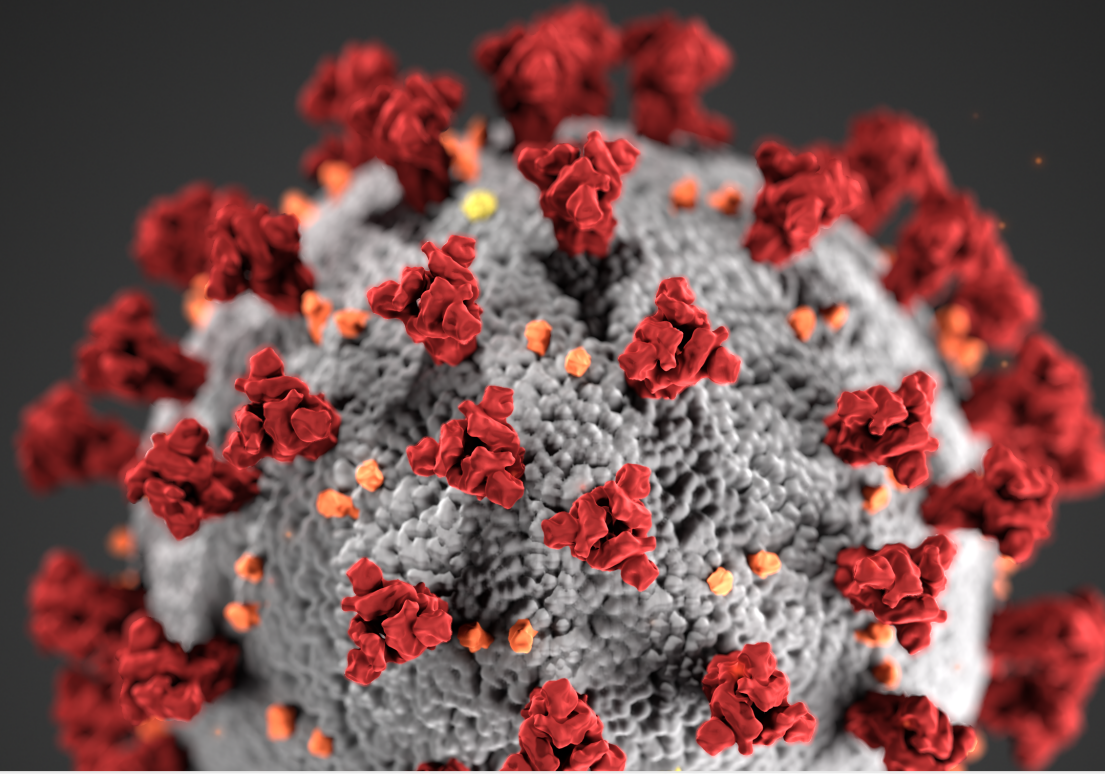
Tenured Historian

Work on developing
digital infrastructure
for studying big
datasets

Teach history of the
Internet/etc. in an
online capacity



Oh, and currently like so many
doing jobs w/ kids running
around (they are napping!).



This is our new normal for a while.

#COVIDCAMPUS

What does an "online" course at Waterloo look like?

Development begins about ~12-18 months before first offer

Instructor gets one or two course releases

Instructor works with a team of three staff (each of whom are supporting ~ 3 courses):

Online learning consultant;

Instructional designer;

Quality Assurance/LMS support person.

Workload for creating a real online course

It was probably about the same as a **new prep** to convert an **existing, on-campus course** to a high-quality online one



In general, over a six-month period, I would work one eight-hour/day week on the course

The resulting product was great, and a co-created course that should last ~ 5 years

Introduction to the Memex

Many of the technologies discussed in this course do not have clear genealogies. For example, in Module Three, we discussed how the telephone and telegraph have very scattered origin stories. Yet when scholars look at hypertext and begin to trace citations and ideas, they continue to come back to the same origin story: Vannevar Bush and the Memex.

The Memex was introduced by Bush in a July 1945 article in *The Atlantic Monthly*, entitled "As We May Think." If you haven't read the article, please do so now.

Module 5b Individual Activity: The Memex

I would like you to reflect on the article you have read by Bush. In one paragraph, please describe the following:

1. What is the Memex?
2. How does the Memex work?

For instructions about how to submit this activity, refer to the [Individual Activities](#) page. Be sure to post your responses by the date indicated on the [course Schedule](#).

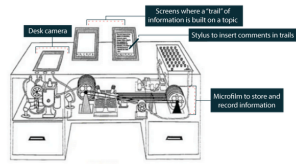


Figure 1: The Memex, (Bush, 1945)

Now that you have thought about the Memex, let's reflect on a few key characteristics of the device.

- It was based on **microfilm** to store and record information.
- You can use a **disk camera** to add more material to the Memex.
- You can tie things together between documents: you can draw links between criteria (for example a bow and an arrow), and the link that you have tied between the two concepts.

We will return to the last point shortly, as it lies at the heart of the Memex's importance for hypertext. To understand the Memex, we need to understand two

It continues to grow. It is publicly demonstrated in 1972, and by 1973, the node is quite a bit larger. In the following image, you can see Stanford, University of Southern California in Los Angeles, Case Western in Cleveland, Lincoln Labs, MIT, and BBN in Boston, Harvard, ARPA in Washington D.C., the University of Illinois in Urbana-Champaign, Illinois.

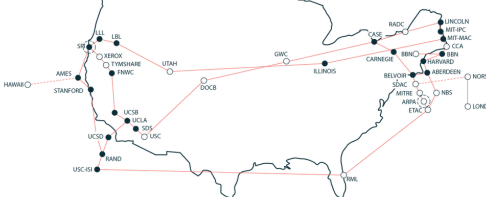


Figure 3: Nodes in the ARPANET network, 1973. [Image courtesy of \(Walker, 1978\)](#)

Imagine how messages could then travel. Imagine a message being sent from SRI in Stanford, California (in the upper-left corner of the image) to ARPA in Washington, D.C. (in the mid-right). The message could go via Los Angeles (thanks to the USC node in the lower-left), Utah, Illinois, and MIT via Harvard or via Cleveland. This is the majesty of the distributed network. If nodes went down, messages could route around them. This is the Baron vision realized. If a nuclear attack, let's say, destroyed Cleveland or Boston, messages could still find different paths. **Redundancy was built into this system.**

The network begins to run into trouble as more and more people use it - the initial version of the ARPANET does not scale well. This is because the network itself was responsible for the integrity of the data: each IMP router had the job of receiving a packet, making sure that it had been received properly, and then passing it onto the next IMP. In other words, if the message is going from Stanford Research Institute to ARPA, it is passing through at least eight routers, each of which is verifying the data. This gave them a lot of work, leading to network congestion, as packets waited in long queues to be processed and verified by each IMP.

Imagine this in a real-world analogy: a letter is being sent from Vancouver to Halifax, and at every postal facility it touches, a mail employee has to carefully inspect the letter to make sure it is in perfect shape. Sure, they would catch problems a bit earlier (since when it arrived in Edmonton they could send the letter back and get it to be re-sent) - but mail would in general slow to a snail's pace.

To solve that problem, ARPANET engineers looked across the Atlantic to a French research network run by the Institut de Recherche en Informatique et en Automatique: CYCLADES, located in Rocquencourt, France. This had a different paradigm that saw the verification of data just being done by the senders and receivers, rather than anything in the middle. The infrastructure in the CYCLADES model did not have to do the heavy lifting of verifying data. By adopting this new approach, the modern internet could begin to scale.

So what brings this all together into what we think of as the modern internet? The United States had ARPANET, the French had CYCLADES, and the British - who've been given credit before, but their SRI network, with these networks, there were connected to be one single standard to bring them all together. How

4b. Early Telegraphs

Let's step back, now, and look at the problem that Hallett and others were trying to solve with the power of electricity: the problem of trying to communicate with other people over long distances.

The first "telegraph" comes from a scientist named **Claude Chappe** (1763-1805). Chappe begins experimenting on sending messages with his brother. They decide first to try a way that combines the power of sight and sound to try to send complicated information a long way away. They accordingly set up two clocks, each having 10 numbers and two hands that go around the dial - one going twice as far as the first one.

Claude and his brother each have a clock. They first **synchronize** the two clocks by banging a big dish (i.e. Claude bangs when his hands are at the top of the clock, so his brother knows that he should put his hands at the top of the clock too). They can then communicate by banging a dish whenever the hand goes over a number (i.e. if Claude wants to tell his brother something about the number four, he can bang his big dish, and his brother just needs to look at his clock that is synchronized to receive the message). They come up with a dictionary, and begin sending numbered codes. Yet they realize that this has a problem: if there is wind or loud noises, it is hard to synchronize and use sound. They begin to drop the sound component and focus on vision.


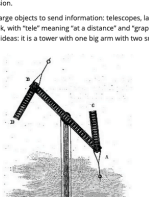


Figure 1: Claude Chappe, (Perruquet, 1805)

This leads to a series of experiments to see how to make large objects to send information: telescopes, larger clocks, sliding panels, and beyond. The idea gives rise to the word "telegraph" or "the writer". It is from Greek, with "tele" meaning "at a distance" and "graphein" as to "write". The brothers begin to get support and develop a version that can communicate complicated ideas: it is a tower with one big arm with two smaller arms (each attached at either end of the long arm). You can see this here:



Supports included

- Copyright clearance;
- Film studio for the short 3-5-minute clips;
- Consulting support on how to best organize online discussions that get results;
- And so, so much more.



So suddenly..
We're all going
to go online?
Without any of
this support?



So let's be clear: this is
**Emergency Remote
Teaching**



What does this mean?



Emergency: This is a response to a rapidly-evolving situation - this is not usual;



Remote: It isn't "online" per se, scholars are adapting in-person courses to a remote environment;



Teaching: Still our main core job and goal.

In the “Crash to Online” Mode, Things might be different...

Real “online course” videos are generally no longer than five minutes; maybe in the “crash to online” they can just be a full narrated PowerPoint;

Discussion forums and engagement prompts work in a “real online” course, maybe e-mails or *anything* will suffice now.

But things will be different for the fully-online semesters



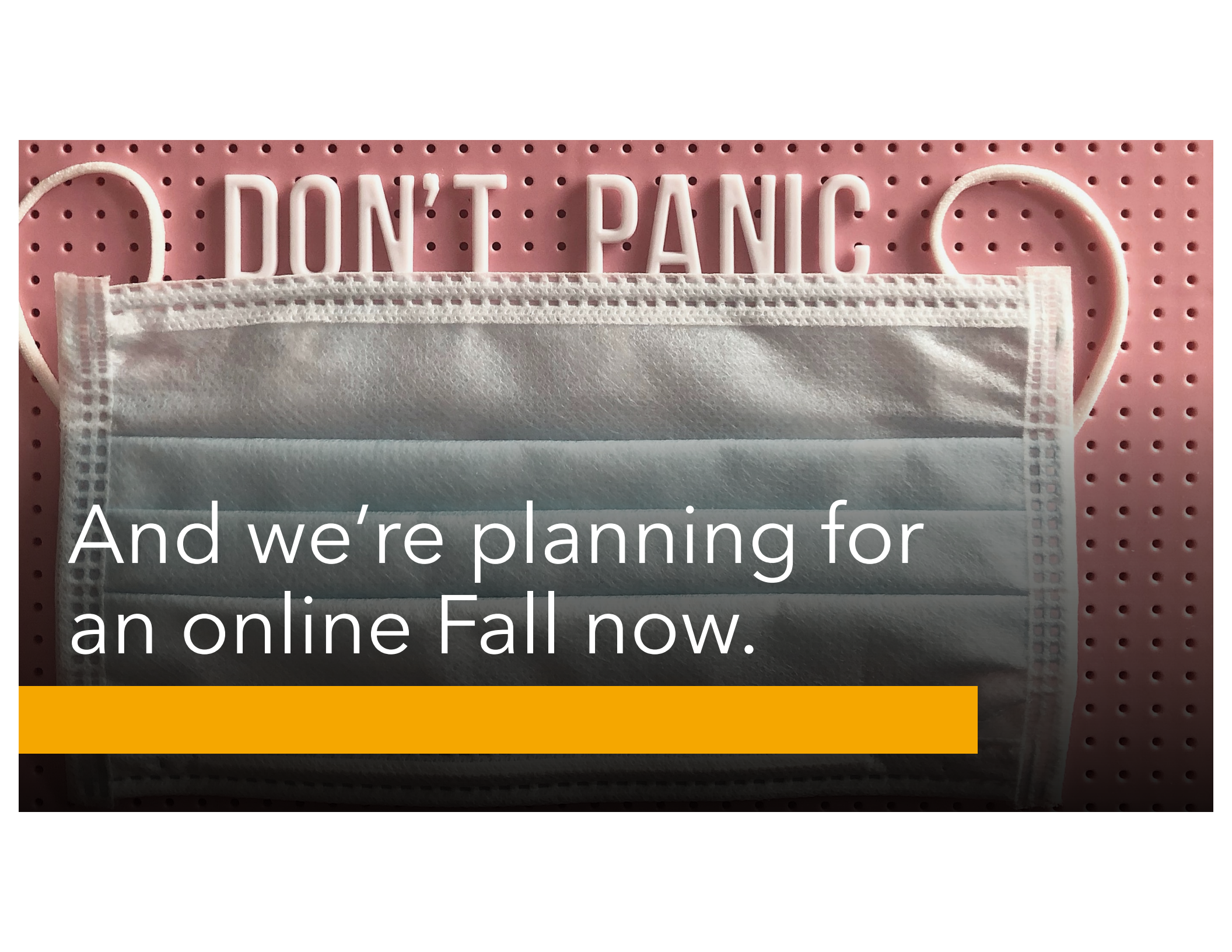
Maybe look to Waterloo? We are running a full spring/summer term online.



Students will have higher expectations than they did during Weeks 10-12 of Winter term.



So what to do?



DON'T PANIC

And we're planning for
an online Fall now.



So for administrators, what I would say



Keep framing it as **“emergency remote teaching”**



This helps to manage expectations



No matter what faculty do (I’ll come to them), this is *not* going to be a polished masterpiece. It’s unfair to expect that.

But for faculty, where's what I say...

Drop the **"do a bad job"** framing in Spring/Summer/Fall; this is our new reality, and we must do the **best job we can do with the resources we have.**

Attend the "remote teaching" workshops being hosted by CEL/CTE. Many of us don't go to these things. Now is the time.



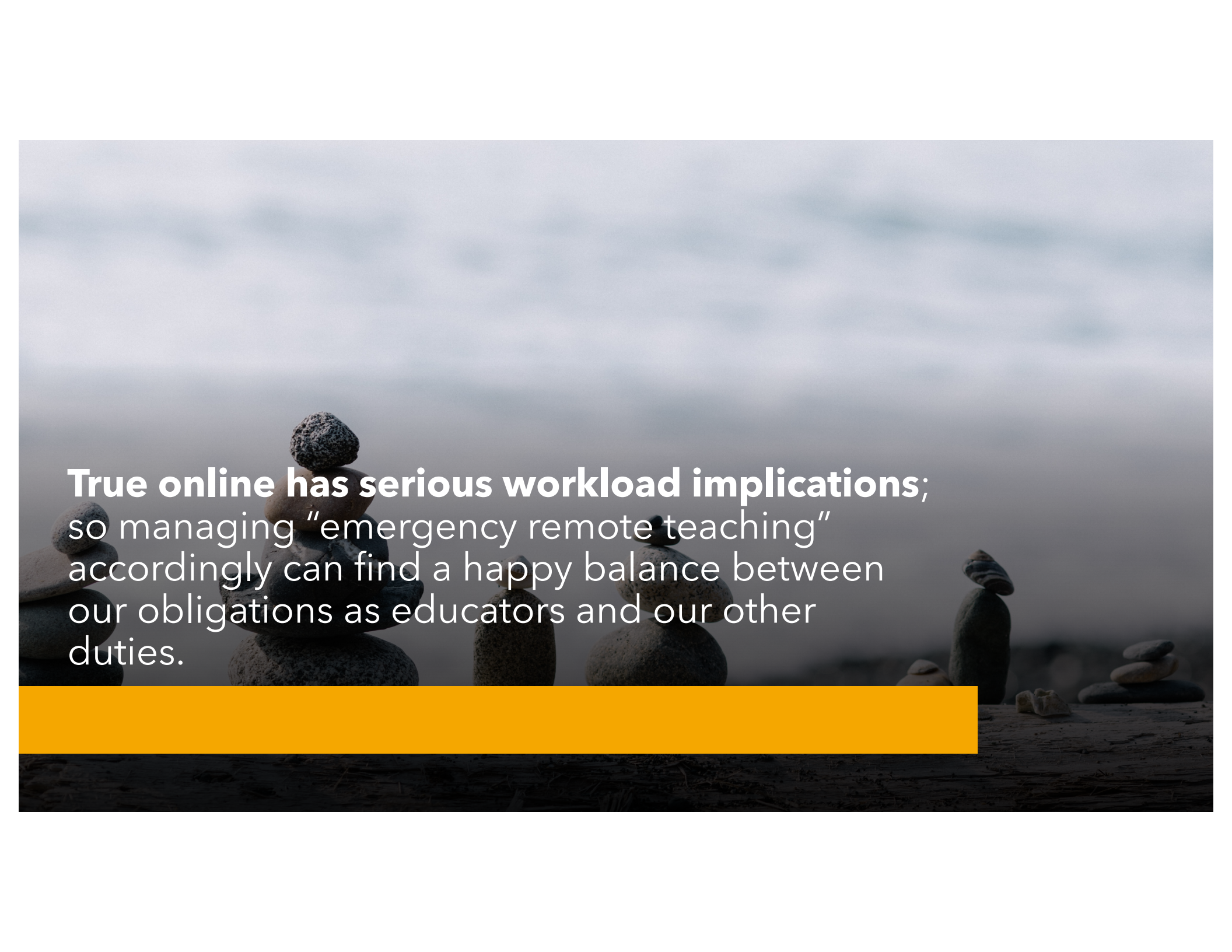
Why is this?

- Example: Group discussions in a 40-student class
 - Inclination is to: dump all students into a big discussion group, or maybe replicate the 15-student tutorials. You'll get **crickets**.
 - Instead: groups of 4-6 learners; post once by Weds; response by Friday. You'll force interchange and jumpstart community.





Or...

- The inclination might be to **narrate a PowerPoint** for two-hours a week
- Don't do this!
 - Student engagement drops off dramatically after the first few minutes;
 - You will find that your two-hour lecture notes, when perfectly delivered to your webcam, take up like less than half that.
- So you'll do too much work, and your students won't learn.



True online has serious workload implications; so managing “emergency remote teaching” accordingly can find a happy balance between our obligations as educators and our other duties.

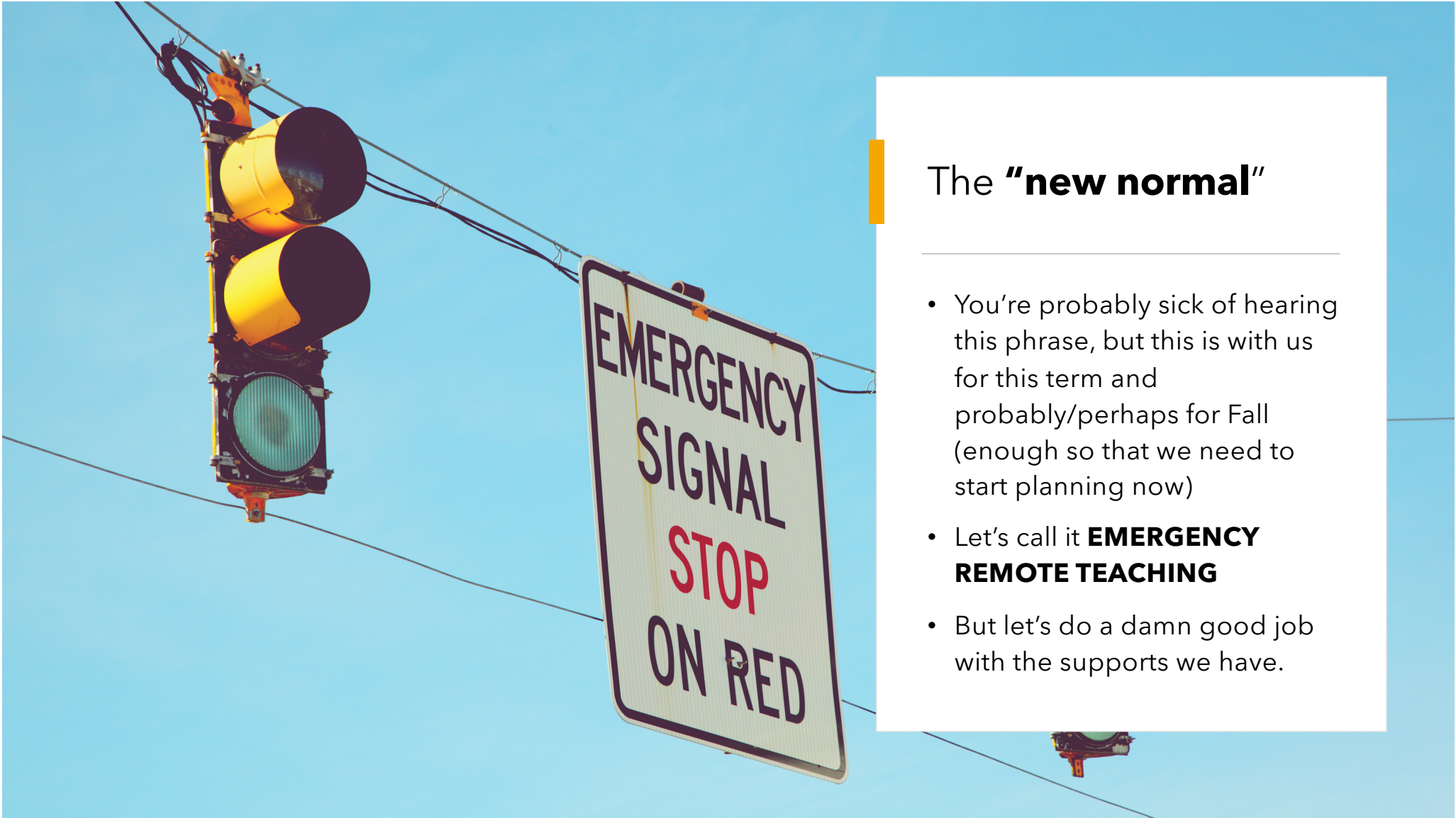
A silhouette of a person standing on a globe with arms raised against a sunset sky. The person is positioned in the center of the frame, standing on a small globe. The background is a vibrant sunset with orange and red hues. The foreground shows a dark silhouette of a mountain range.

We can do a great job, *if* this is framed the right way, expectations are managed, and supports are at least available. Faculty need to take advantage of them too.

—

Look, I'm not the expert, but the teaching folks know what they're doing.
Listen to them.





The “new normal”

- You’re probably sick of hearing this phrase, but this is with us for this term and probably/perhaps for Fall (enough so that we need to start planning now)
- Let’s call it **EMERGENCY REMOTE TEACHING**
- But let’s do a damn good job with the supports we have.



Thanks!

E-mails, tweets, comments, etc.?
Stay in touch.

- **Ian Milligan**
- i2millig@uwaterloo.ca
- **@ianmilligan1**