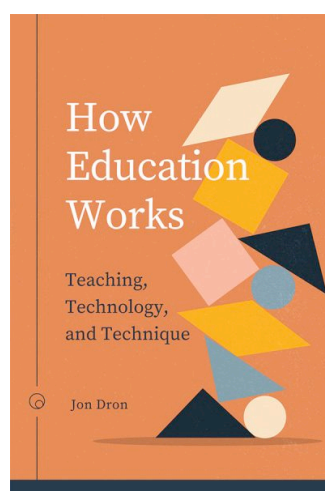


# The Intertwined teacher

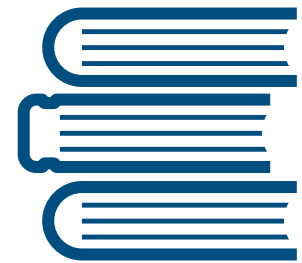
<https://jondron.ca>  
[jond@athabascau.ca](mailto:jond@athabascau.ca)



**Jon Dron**  
**Las Vegas, March 26, 2024**



**So, let's talk about  
technology**





**Pick a non-digital object  
at random that you have  
with you**

**Find a partner or two  
nearby who you don't  
know well  
(introduce yourself!)**



**For two minutes,  
brainstorm:**

**How could your objects  
be used to help  
someone to learn?**

**Could the objects have  
done this on their own?**

What did you *add* to  
make learning happen?



# Takeaway

**It is the complete assembly that matters, not any individual component.**



So these are the wrong questions



Does *the use of **screws** in classrooms improve learning?*



Does *the use of **computers** in classrooms improve learning?*

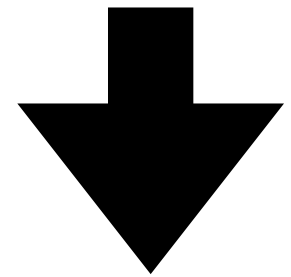
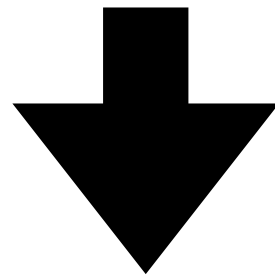
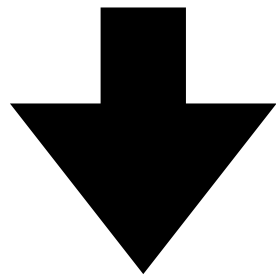


Does *the use of <**insert preferred teaching method here**> in classrooms improve learning?*

# Defining “technology”

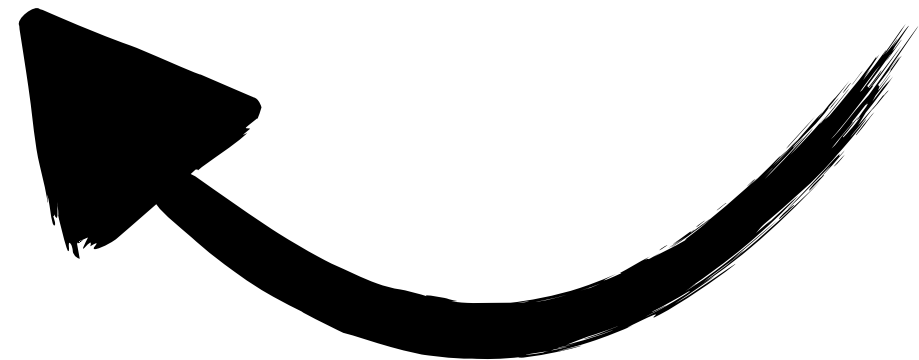
W. Brian Arthur:

The orchestration of phenomena to our use



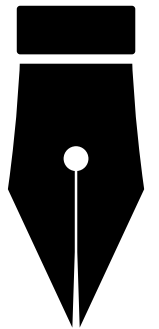
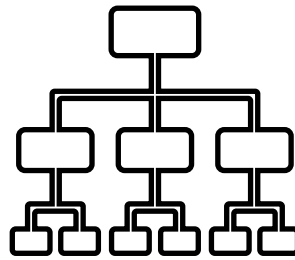
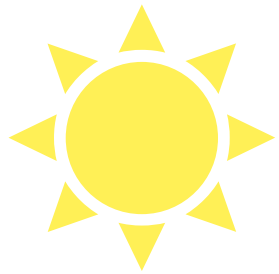
me:

organizing stuff to do stuff

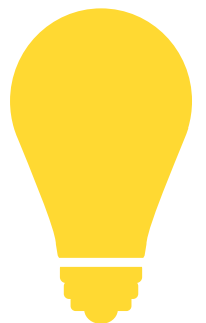
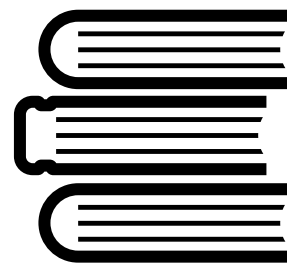
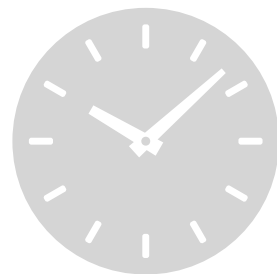
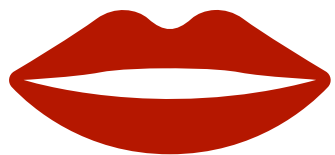


including (nearly  
always) other stuff  
organized to do stuff





*technology can be the  
organization  
of any  
stuff*



“Mahler is very deliberately “programming”  
phenomena in our brains.... At least in this  
sense Mahler is an engineer.” *Brian Arthur*

“[a poem is] a small (or large)  
machine made out of words.” *William  
Carlos Williams*

“there is a technology of prayer as well as a  
technology of ploughing” *Ursula Franklin*

If a thousand lines of letters in UNIX  
qualifies as a technology (the computer  
code for a web page), then a thousand  
lines of letters in English (Hamlet) must  
qualify as well.” *Kevin Kelly*

# Takeaway

**Pedagogical methods and content are technologies, too**

**TPACK**

(of course, the *kind* of technology matters)



# Learning technology

*/'ləɹniNG/ /tek'näləjē/*

*noun and verb*

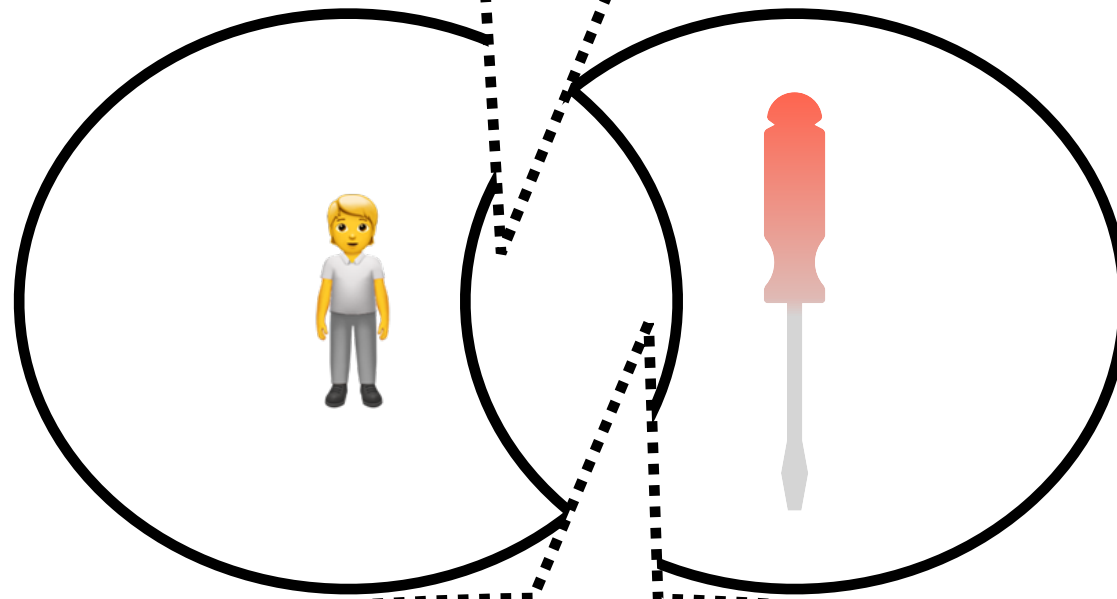
**A technology which includes  
one or more pedagogies as  
part of its assembly**



**We are *all* learning  
technologists**

# We are part-technology. Technologies are part-us.

**cognitive gadgets**



**technique**

## Participants, not (just) users

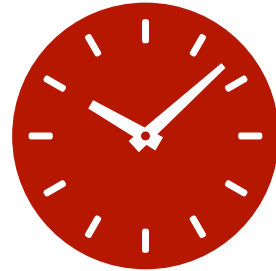


# Technique

**What we do with what has been done**

**A technology instantiated by a human**



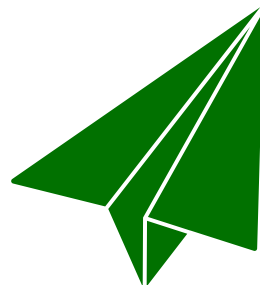


# Hard technique

We are **parts** of the orchestration  
(methods, processes, procedures that *must* be done **correctly**)

# Soft technique

We **are** the orchestrators  
(the *ways* we do stuff that can be **done well** but *never* correctly)



# Takeaway

Tain't what  
you do...

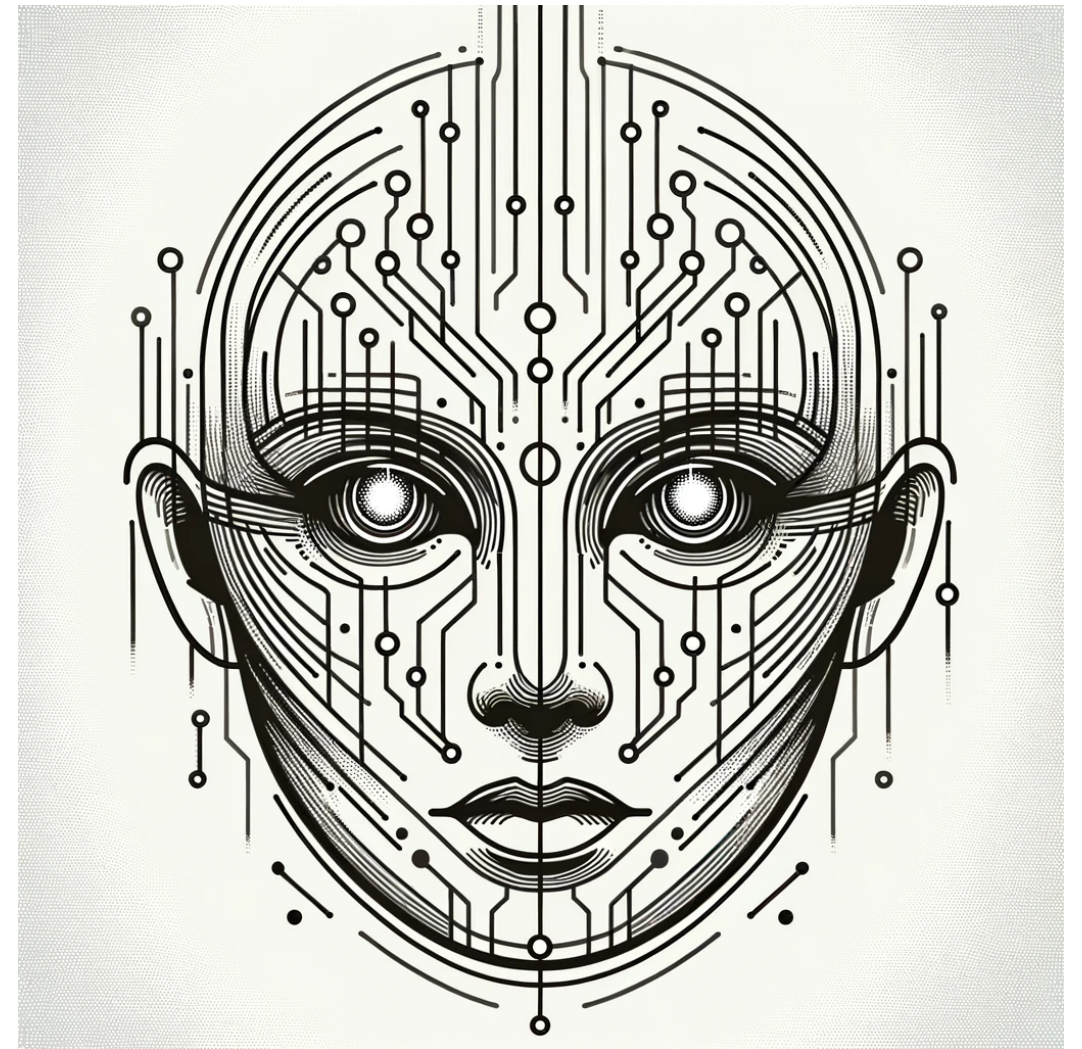


# Bonus aside: Generative AI

The first technology that can plausibly replicate **soft** technique.

**Jon's advice:**

Use it as a partner, a slave, a team member but **not** as a tool

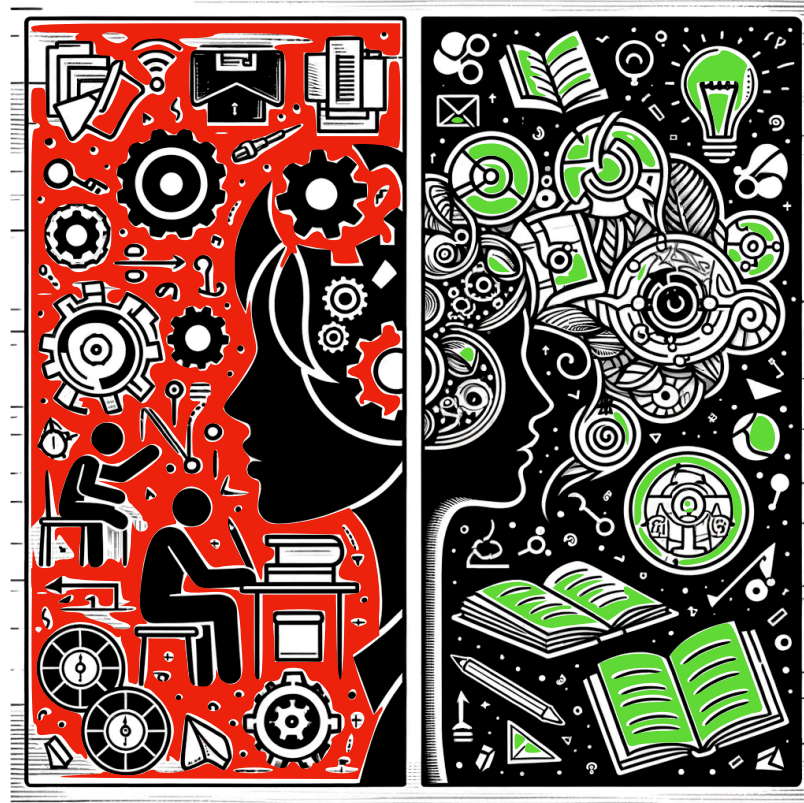


Self portrait - ChatGPT4

More at <https://jondron.ca/ai/>

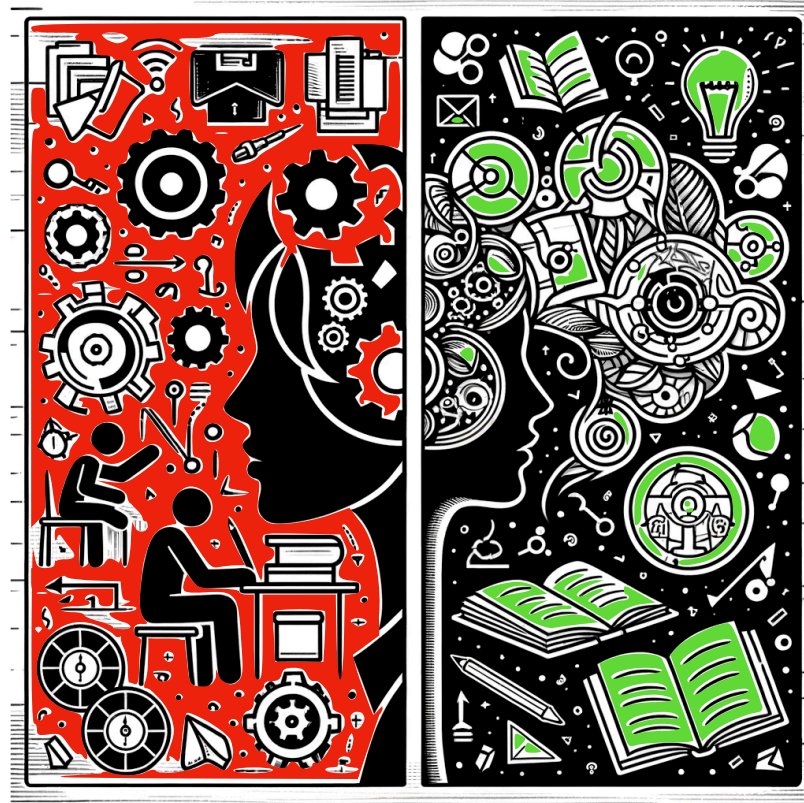


# The slower-changing parts provide the context for the faster-changing parts



# The **hard** constrains the **soft**

# The **hard** enables the **soft**



We learn to do in order  
to learn to be



Through education we  
learn to participate in the  
technologies of our many  
cultures



Their  
*literacies*

*Training* for hard technique  
*Teaching* of soft technique

**It's not just about the  
learner or their teacher**

# Through technologies, we participate in the minds of others.



Every new  
technology we  
enact makes new  
adjacent possible  
empty niches for  
ourselves and  
others.



**look around you**

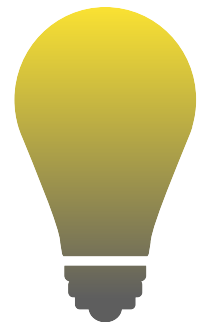
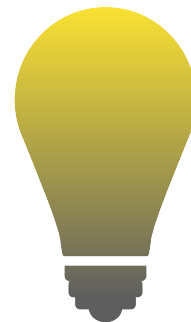
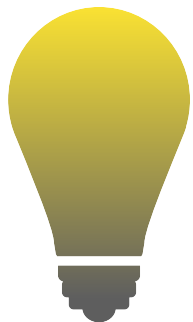
**What do you see in this room that might contribute to or affect your learning?**

# Co-participants

Everyone is a teacher



And so are our creations





# Many, many teachers

**designated  
teachers**

**regulations**

**admin processes**

**pedagogical models**

**architecture**

**software**

**computers**

**other  
learners**

☆ **The Learner** ☆

**textbooks**

**web sites**

**timetables**

**classrooms**

**professional bodies**

**quizzes**

**funders**

**boards of governors**

**whiteboards**

**bookshelves**

**pens**

**interaction designs**

**essays**

**papers**

**radios and radio shows**

**exams**

**cleaners**

**legislation**

**news stories**

**conversations**

**whiteboards**

**instruction manuals**

**Stack Exchange**

**funders**

**quizzes**

**boats**

**email servers**

**Google Search**

**cafes and bars**

**corridors**

**curricula**

**printers**

**notebooks**

**clothing**

**libraries**

**support staff**

**Wikipedia**

**common rooms**

**whiteboards**

**past teachers**

**letters**

**lighting designers**

**gardens**

**chairs**

**signs and notices**

**caterers**

**windows**

**LMSs**





**Everything is  
intertwined**

**EDUCATION**





**Explaining a few  
phenomena**

# Reductive research methods cannot predict the effects of most educational interventions because:

1. The adjacent possible is unprestatable and
2. It ain't what you do, it's the way that you do it, **plus the way everyone else does it.**
3. Softness is everywhere

*complex, not complicated*

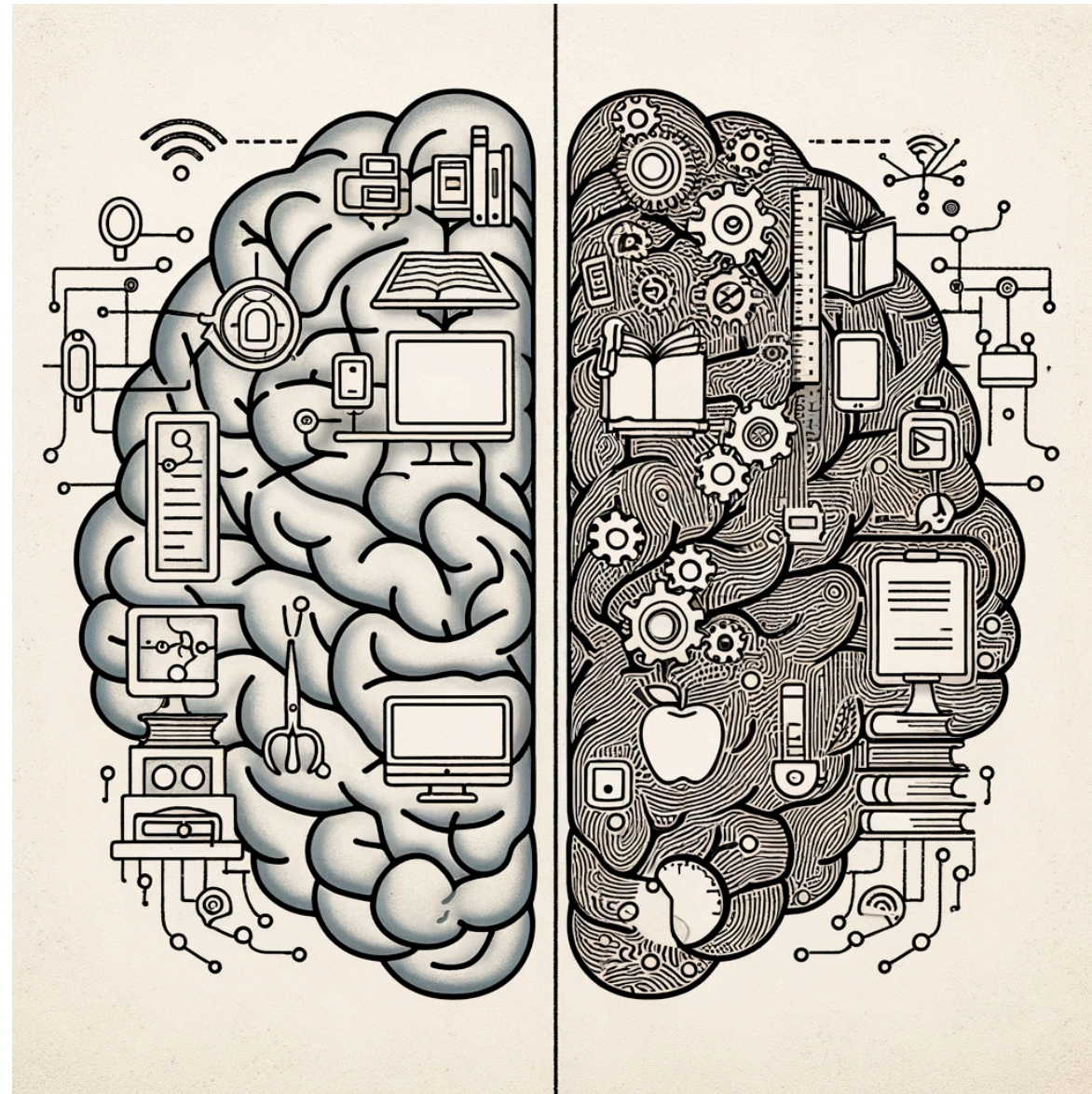




# Teaching







**No significant difference**



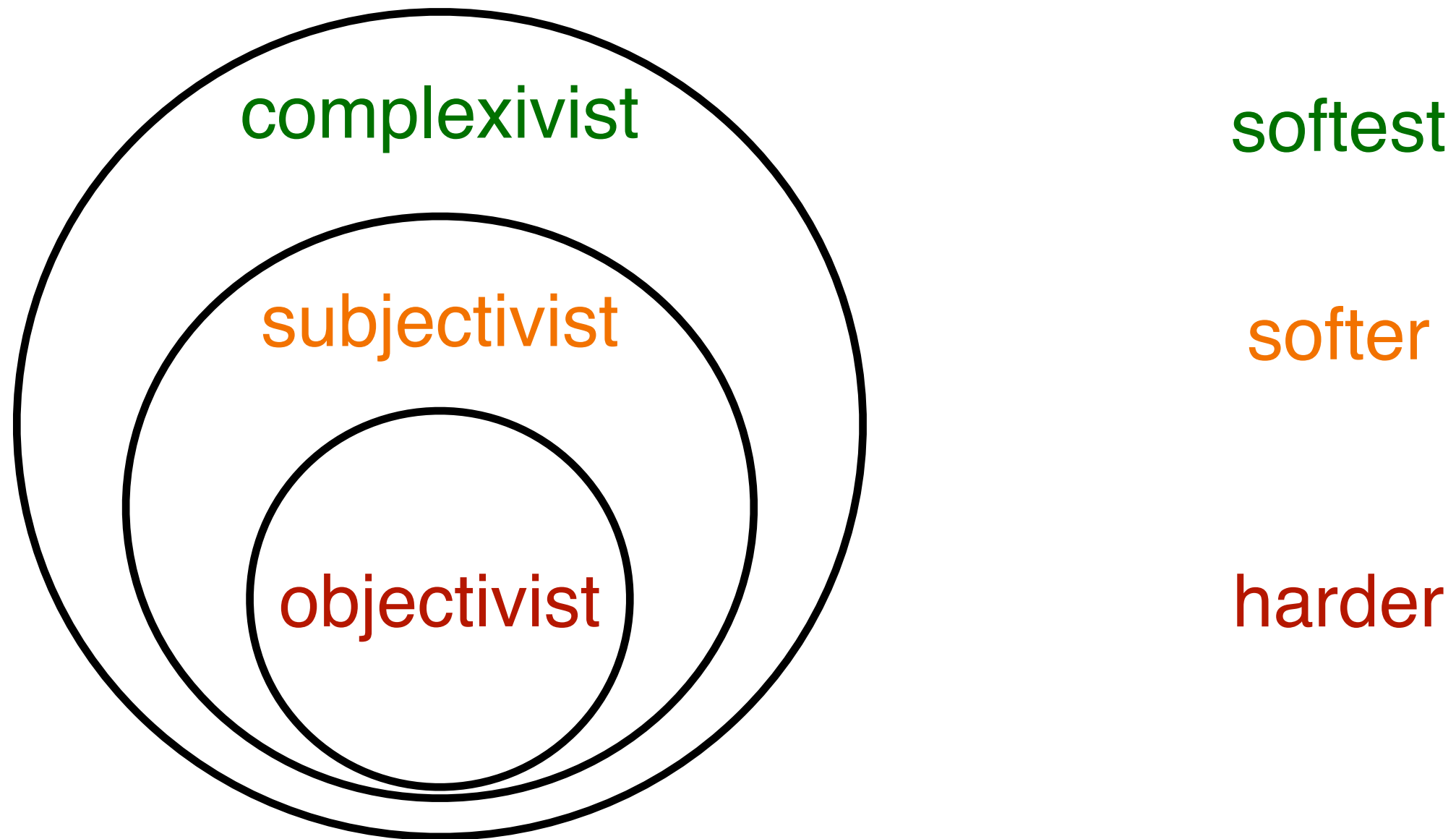
# Being-taught habits



# The 2 sigma problem



# Pedagogical models



**Methods and tools matter. But  
how they are assembled with**

**passion,  
compassion, and  
skill**

**matters more**

**And, above all...**



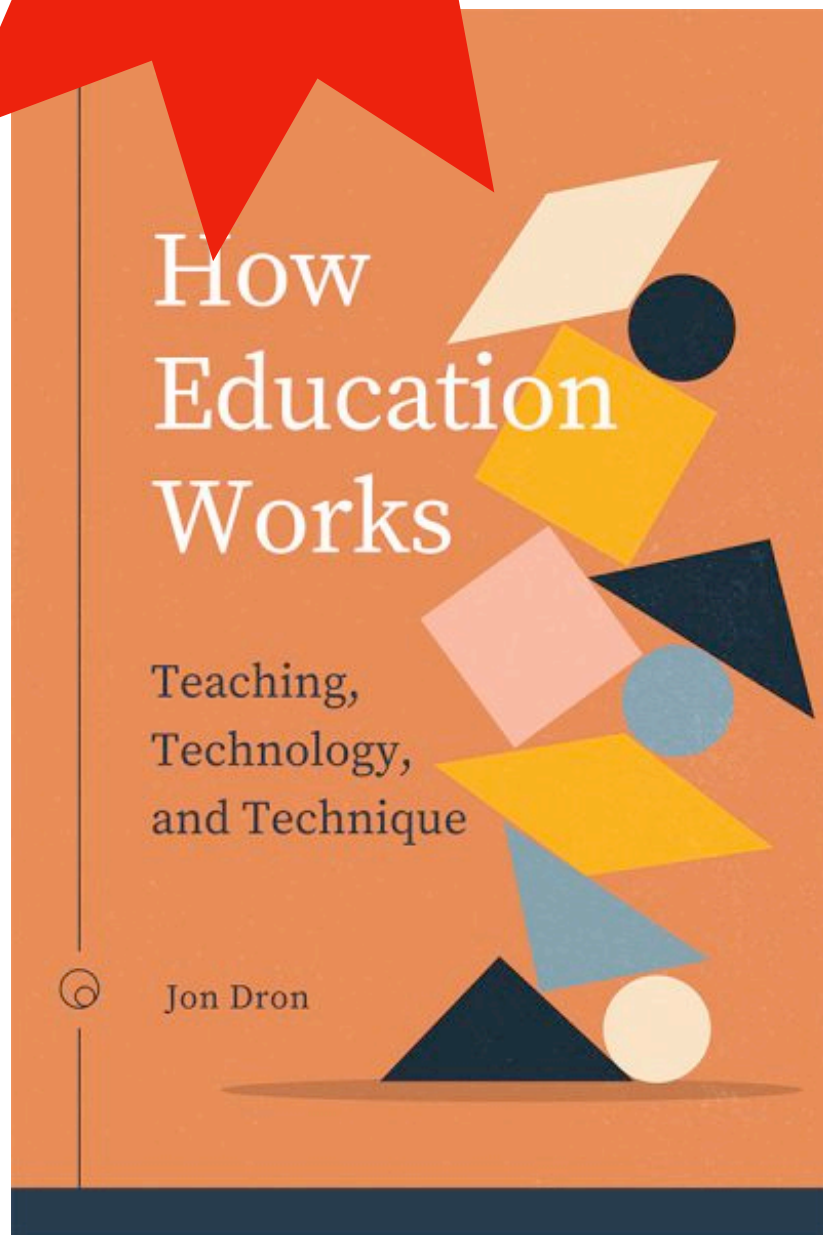
t'ain't what you do, it's the  
way that you do it



that's what gets results

# Thank you

Free to  
read, cheap  
to buy!



✉ [jond@athabascau.ca](mailto:jond@athabascau.ca)

🌐 <https://jondron.ca/>

📺 [@jondron@mastodon.social](https://jondron@mastodon.social)

<https://howeducationworks.ca>

