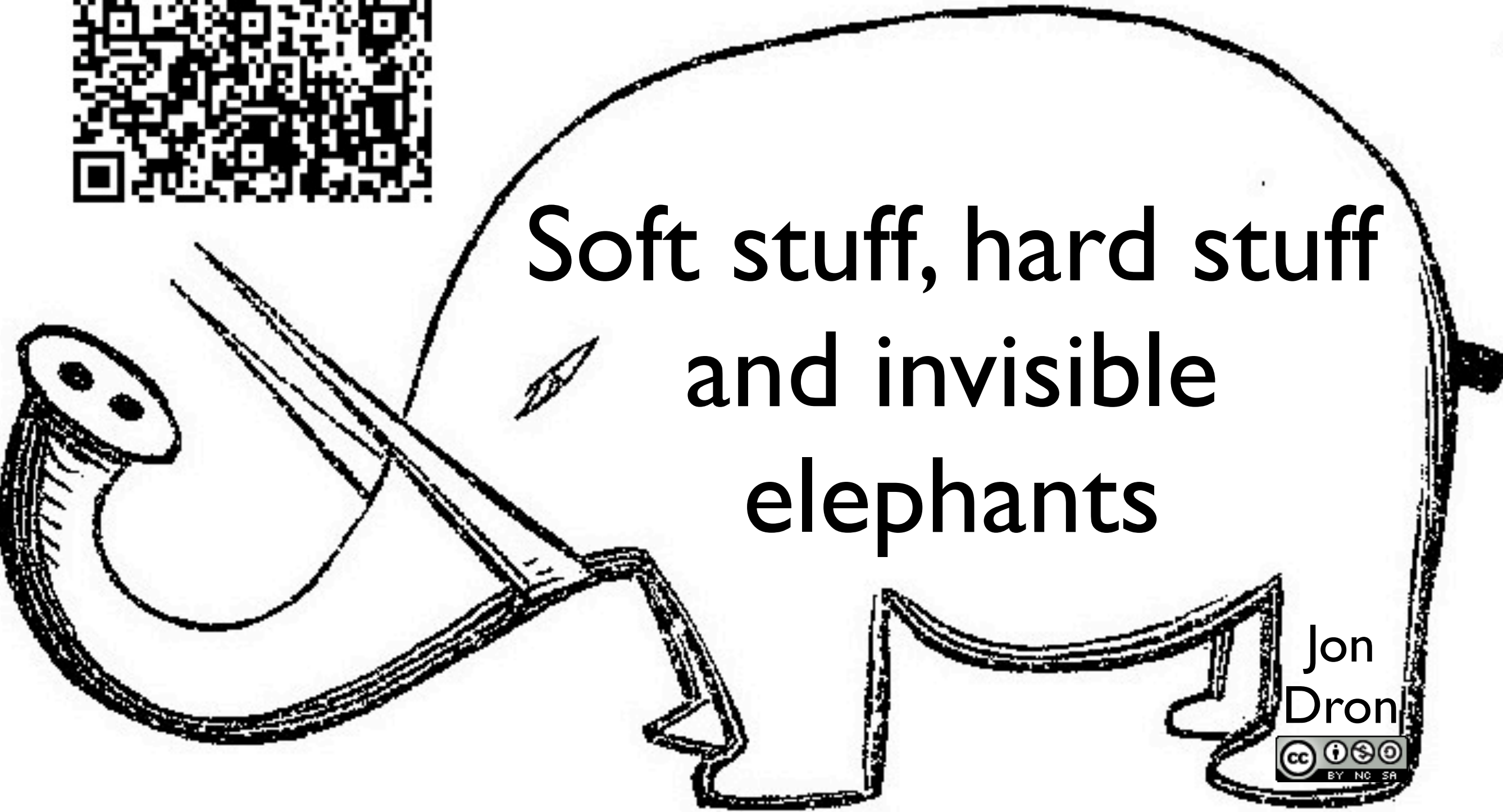




Soft stuff, hard stuff and invisible elephants

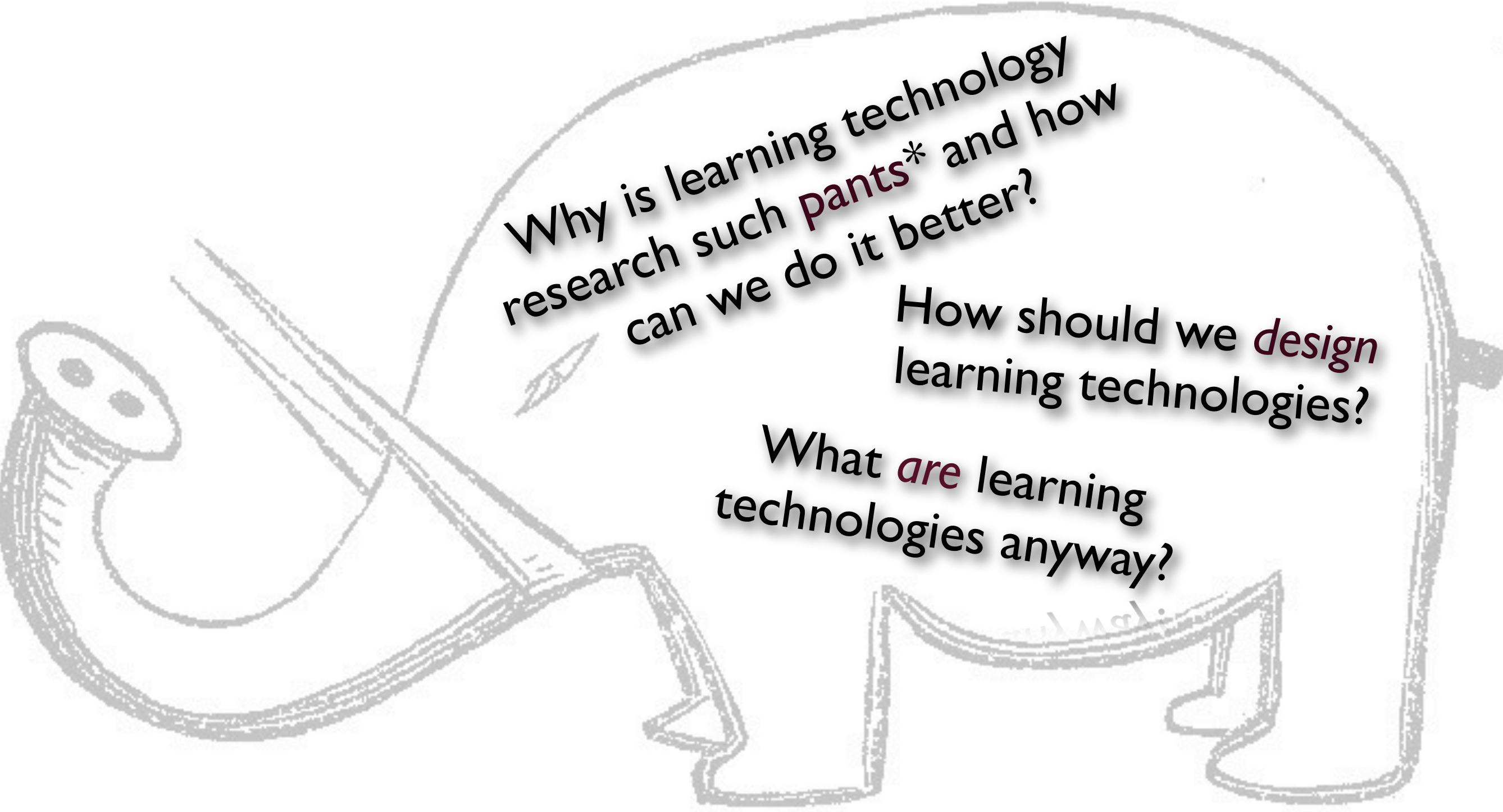


Elephant image by Adolf Oberländer, from http://de.wikisource.org/wiki/Lustige_Naturgeschichte_oder_Zoologia_comica

Sunday, 20 November 2011

Jon Dron, Athabasca University
Change MOOC 2011

Questions



Why is learning technology research such **pants*** and how can we do it better?

How should we **design** learning technologies?

What **are** learning technologies anyway?

* Brit. informal rubbish; nonsense : *he thought we were going to be absolute pants.*

a technology?

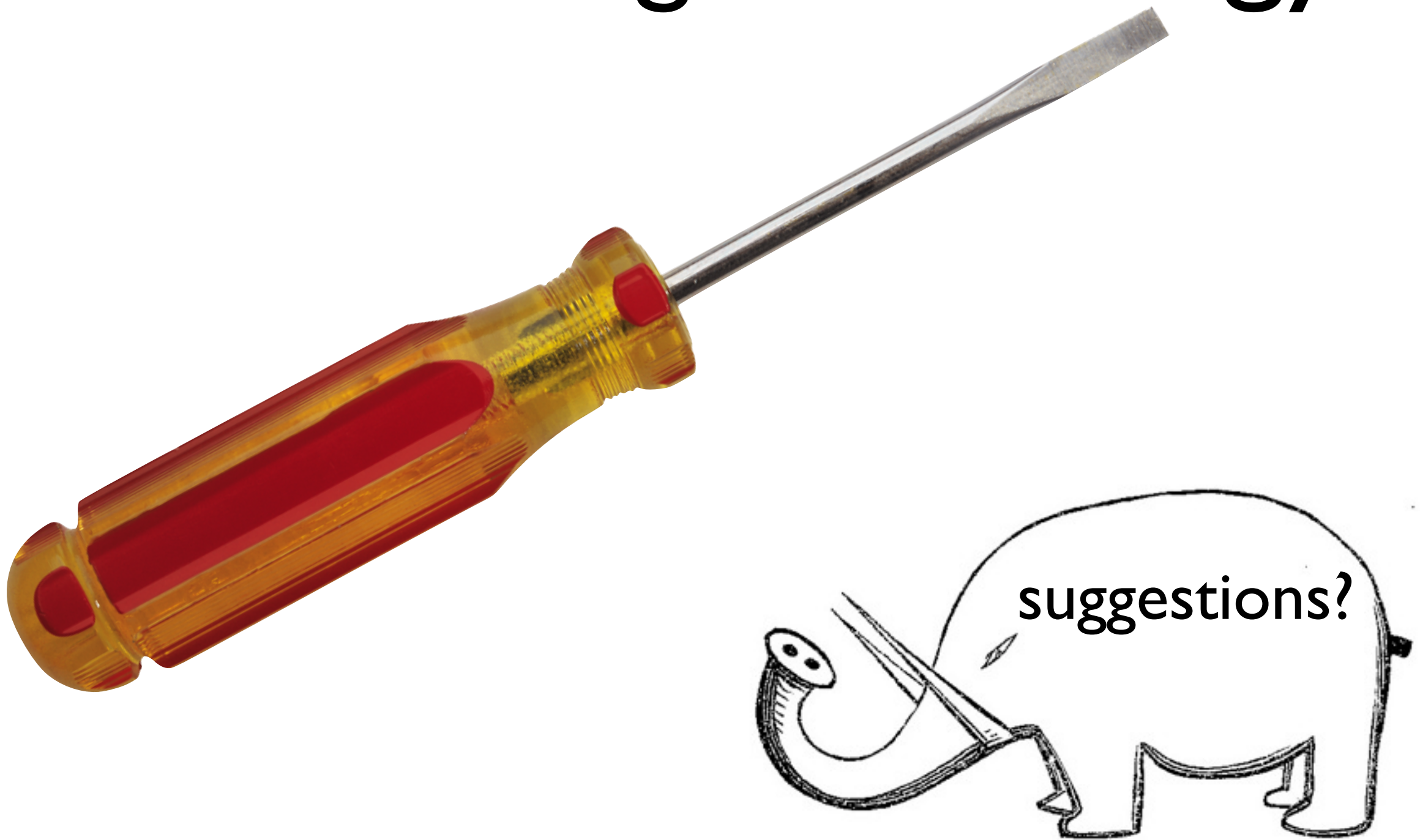


- paint stirrer
- murder weapon
- tin opener
- back scratcher
- door-stop
- chisel
- beard curler
- hole punch
- iPad stand
- sink unblocker
- door handle
- tyre lever
- plant aerator
- paint scraper
- screw tightener
- etc

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a screwdriver is a single tool, but it can be many technologies. This is an important distinction.

a *learning* technology?



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a screwdriver is a single tool, but it can be many technologies. How can it be a learning technology?

Starting ideas – a pointer, an engraving tool, an example of a tool, a head scratcher, a key presser, a stirrer for a cake baking class, a design template, a means to build a desk...

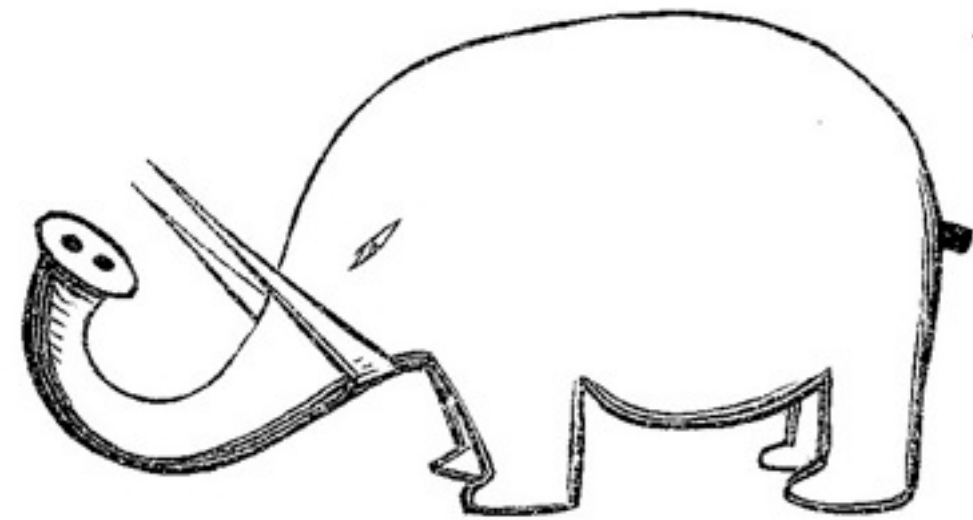
do people learn better with screwdrivers or without screwdrivers?



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by analogy, this is the same as asking if e-learning is better than f2f. Of course not. Of course. Whatever

do people learn better
with ~~screen~~^{computers} ~~drivers~~ or
without ~~screen~~^{computers} ~~drivers~~?



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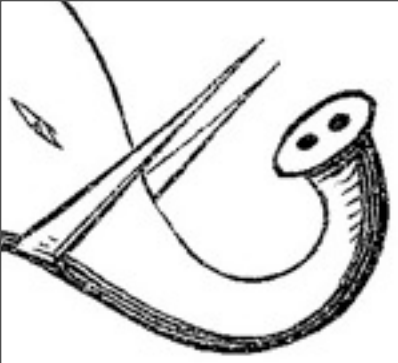
by analogy, this is the same as asking if e-learning is better than f2f. Of course not. Of course. Whatever

It depends on your point of view



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the same tool can be many technologies. The screwdriver is a different technology if it is used to stir paint than if it is used to tighten a screw
to a computer programmer, a sales terminal is a soft device that can become whatever he or she wants it to be. for a sales assistant, it is a hard technology that forces one kind of behaviour
(‘the computer says no’). The same tool is orchestrating different phenomena for different purposes



it ain't what you do...

moodle

Blogger

facebook

Bb

elgg

<http://www.flickr.com/photos/cornelluniversitylibrary/3855473015/in/set-72157622140446726/>

http://www.flickr.com/photos/library_of_congress/2163782226/sizes/o/in/photostream/

http://commons.wikimedia.org/wiki/File:AHW_Prof_Moritz_Vogel_Matt_haeikirche_Leipzig_um_1920.jpg

...it's the way that you do it

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this is not the same as saying media and technologies do not matter. simply saying that it is the soft parts that matter most - the ways we make use of the tools in order to create technologies

technology

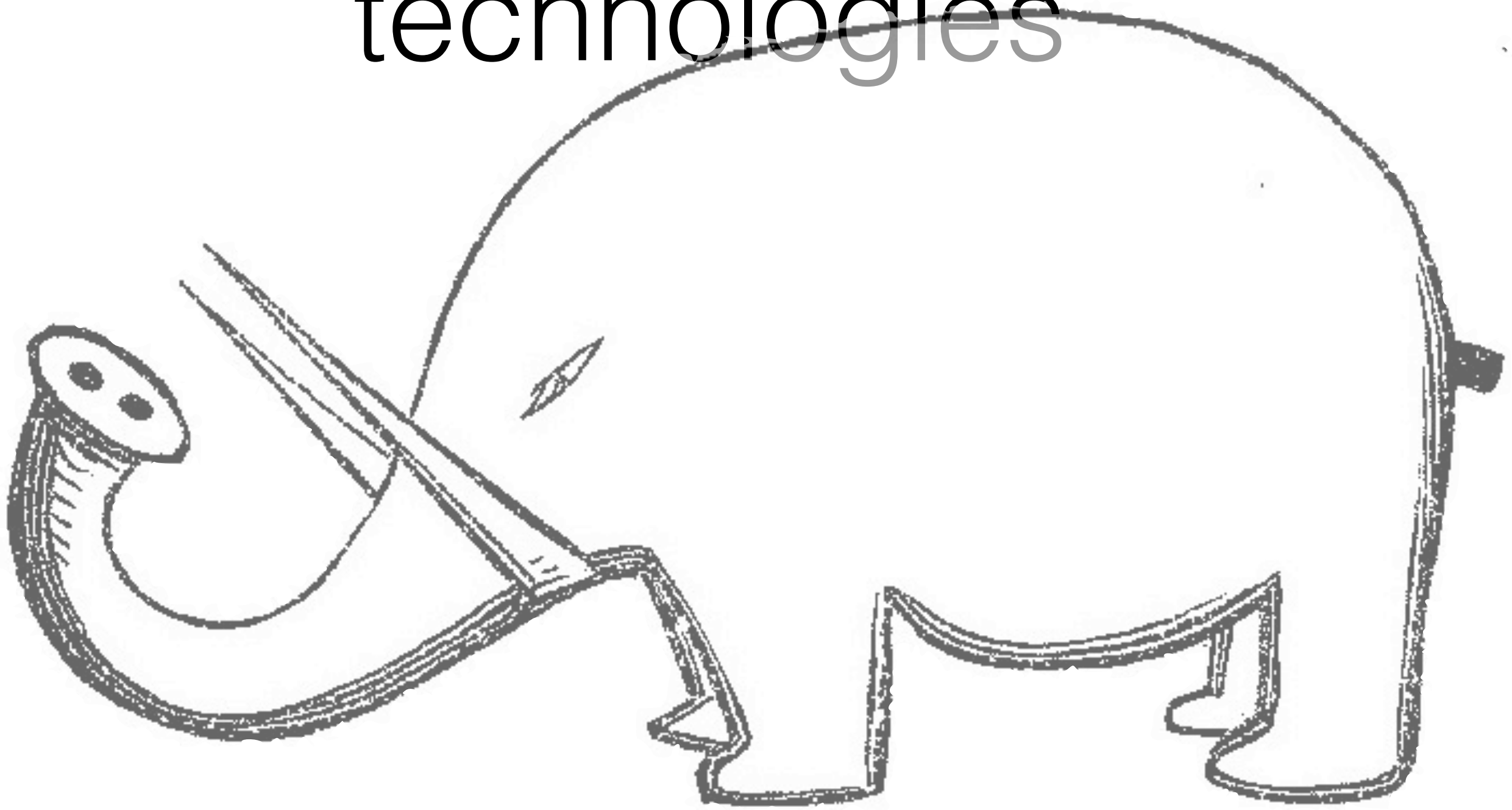
“the orchestration of phenomena for some use”

(W. Brian Arthur)



<http://www.amazon.com/Elephant-Orchestra-David-Soldier-Richard/dp/B00005B19H>

pedagogies are technologies



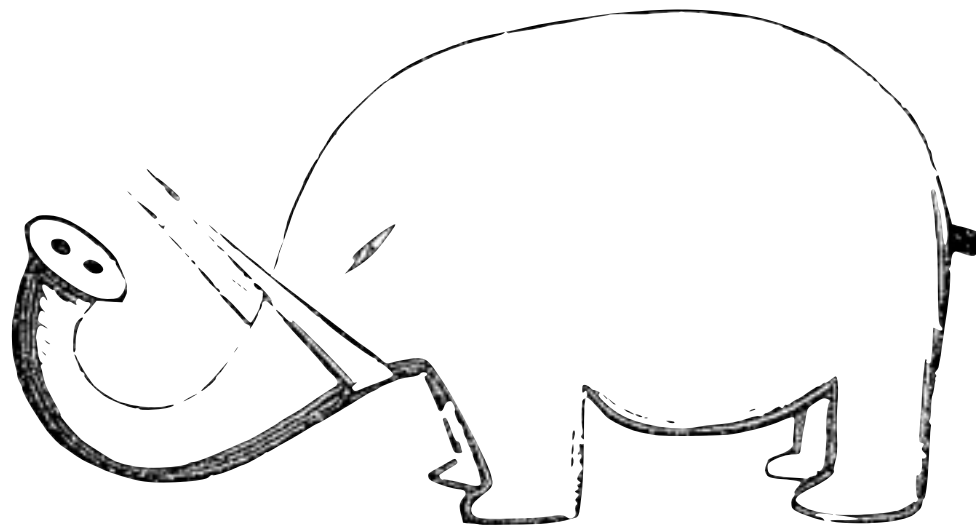
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orchestrating our beliefs/understanding of how people learn, the processes that bring that about, and other tools and technologies in order to help people to learn



nsd NO SIGNIFICANT DIFFERENCE

<http://www.nosignificantdifference.org/>



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not surprising there is no significant difference as we do not consider the technology assembly - we just look at a subset of tools. worse, we do not look in enough detail at how those tools are used

assemblies



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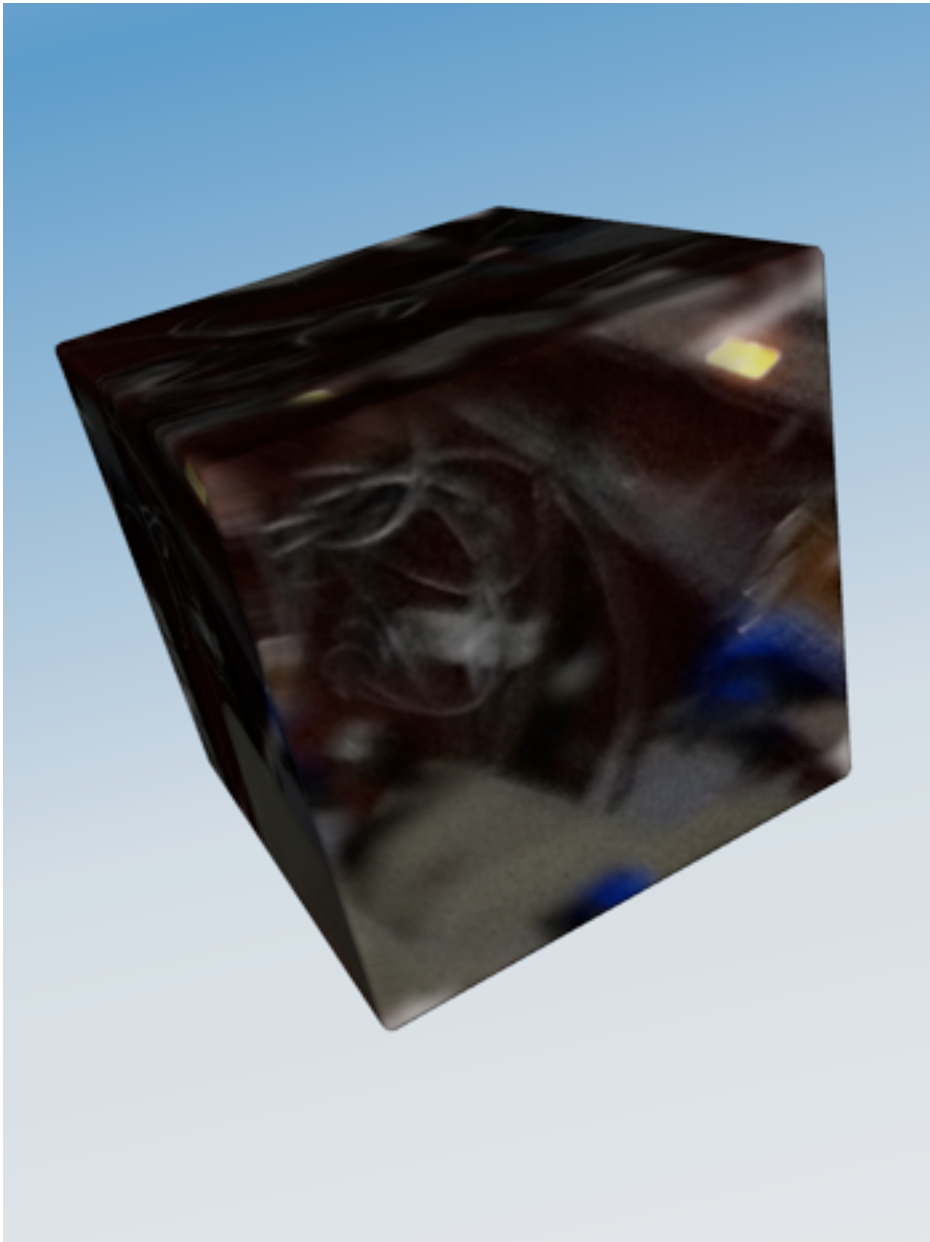
all technologies are assemblies of other technologies. they are defined in relation to one another, not as atomic components.

Soft technologies

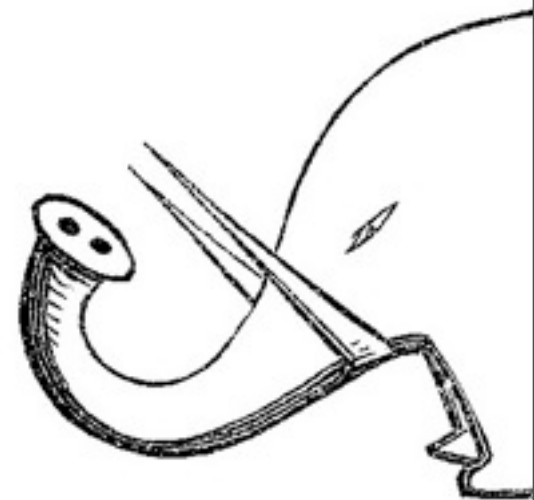


Active
orchestration
of
phenomena
by people

Hard technologies



Orchestration
of phenomena
embedded in
the technology



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hard technologies reduce choices

orchestration of phenomena embedded in rules, laws, physical parts etc - e.g. automatic transmission vs manual transmission

note that laws, rules etc are hard technologies if they are inflexible - it is not about embedding in a machine but in a technology



Bulletin **JUDGE THUMB.** *Publ. Nov. 27. 1870. by W. Humphrey N. 227 Strand*
or— Patent Sticks for Family Correction: Warranted Lawful!

http://upload.wikimedia.org/wikipedia/commons/4/4f/Judge_Thumb.jpg

Not just about
machines:
hard
technologies
can be
human-
embodied
too

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http://upload.wikimedia.org/wikipedia/commons/4/4f/Judge_Thumb.jpg

Hard is easy



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hard technologies have their processes embedded - may be laws or rules or part of the software or hardware - notably, LMSs embed implicit pedagogies

hard technologies tell us what to do - they reduce choices. So, they make things easy. and reliable, fast, free from error

Hard is complete

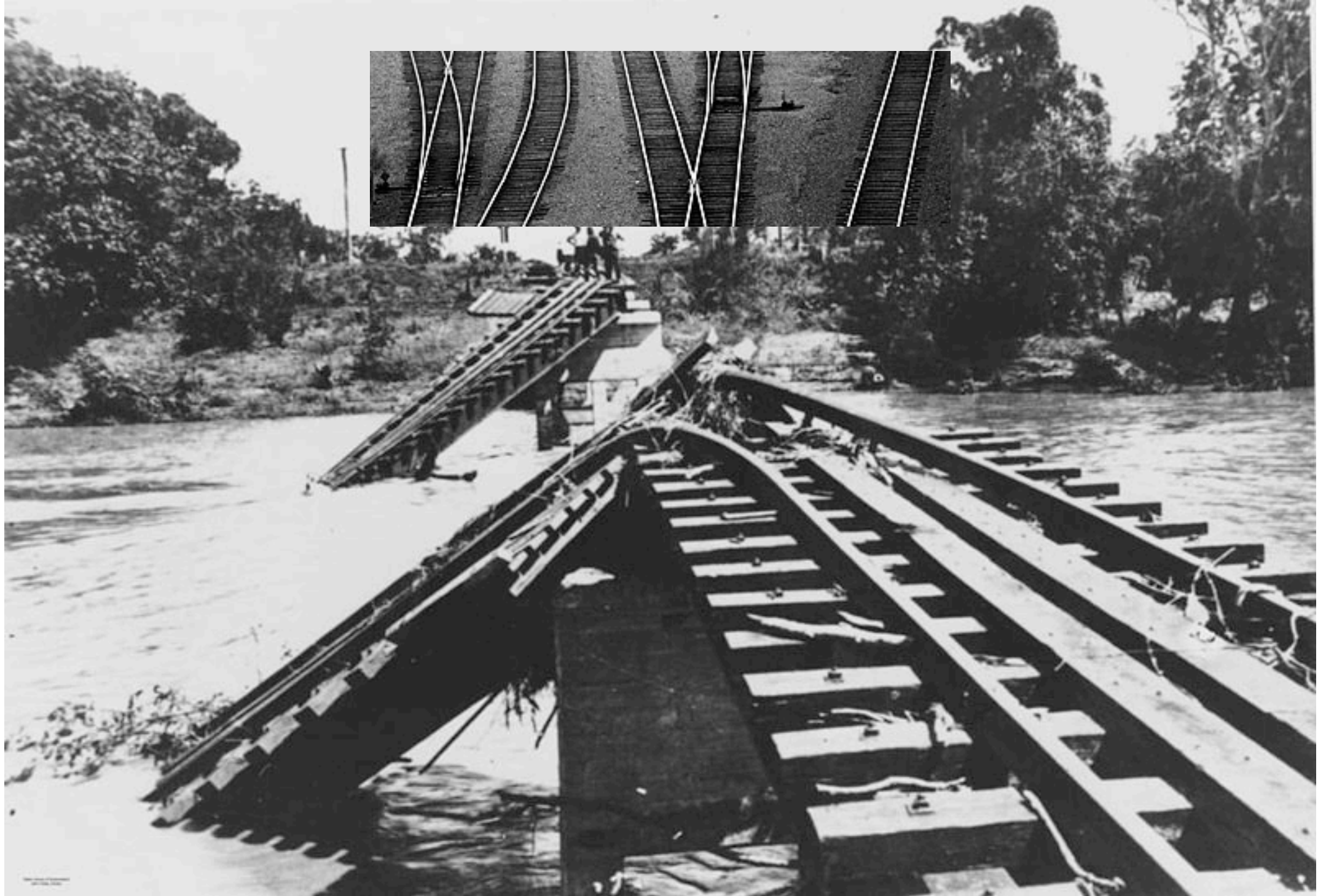


<http://commons.wikimedia.org/wiki/File:Linkware.jpg>

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the orchestration is part of the technology so a hard technology is complete

Hard is brittle



Soft is hard



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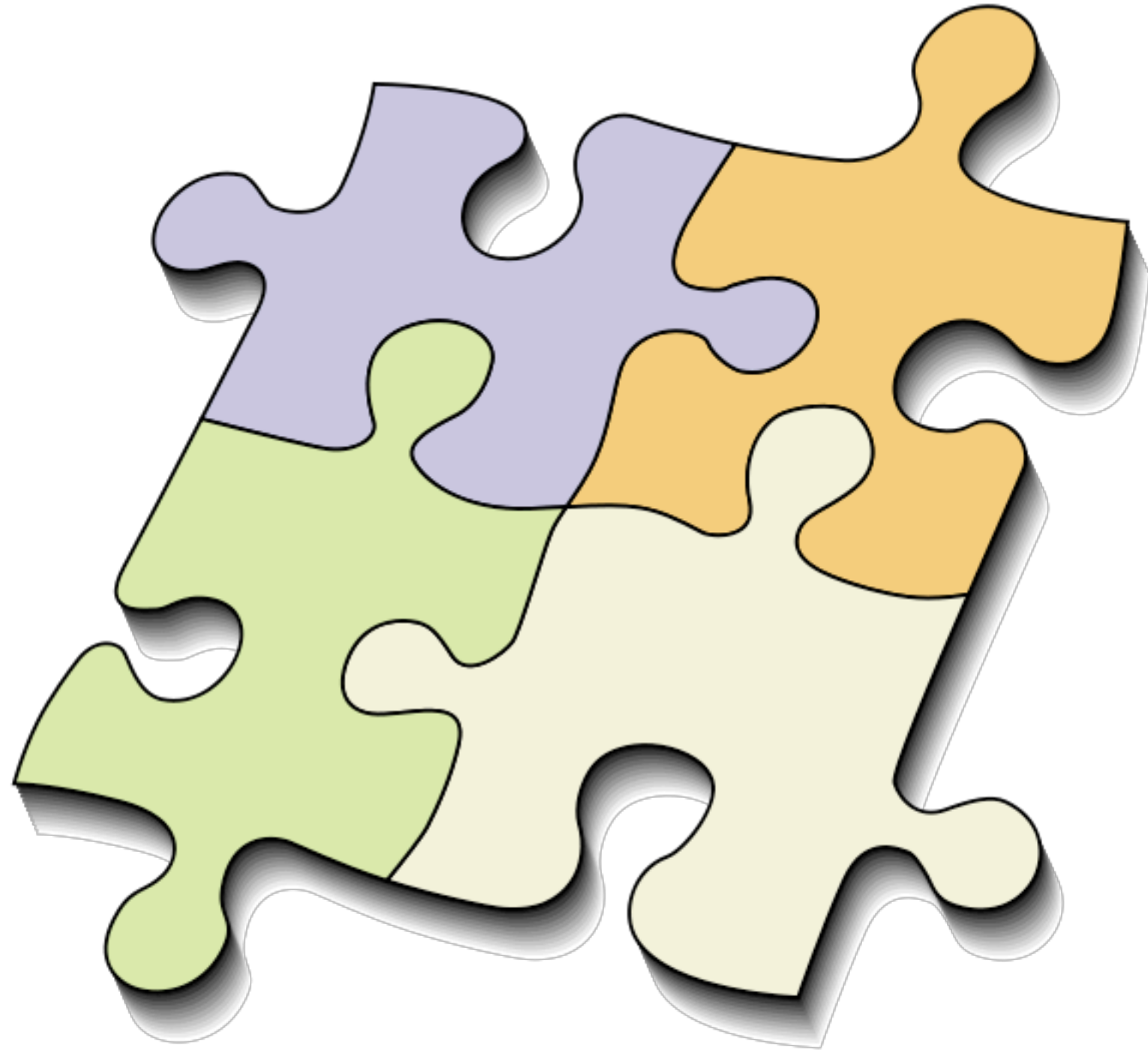
by which I mean soft technologies are more difficult (and unreliable, slow)

We have to invent social technologies and to literally be a part of them

Softer technologies increase the adjacent possible by enabling and/or making more likely new choices to be made. They enable creativity

More choices come at a price - we have to make them. That is one thing that makes them difficult or hard.

Soft is incomplete

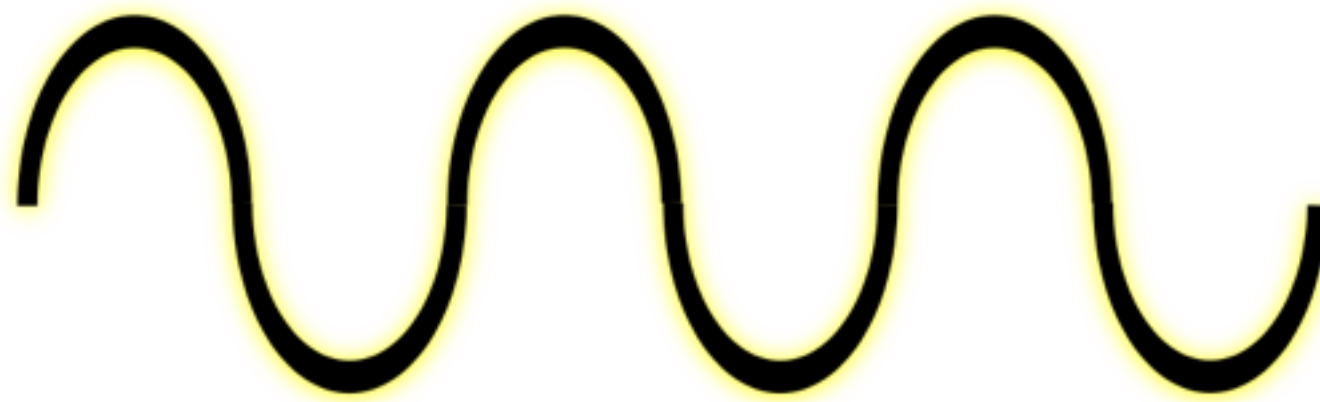


<http://commons.wikimedia.org/wiki/File:Jigsaw.svg>

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we have to find ways to use soft technologies - without the parts we add, they are not technologies at all, just tools waiting for something to happen

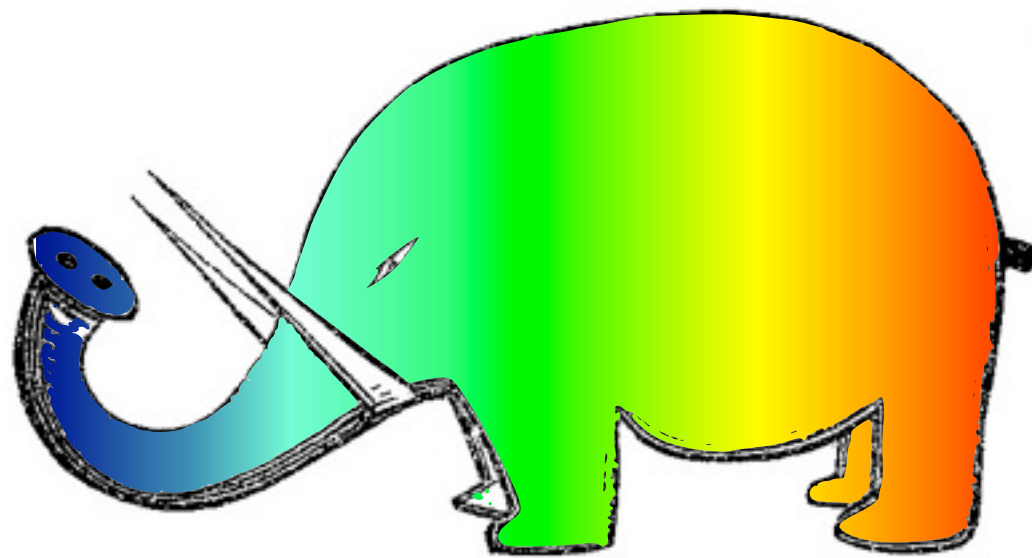
Soft is flexible



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because many different things can happen, we can orchestrate phenomena in many ways, so soft technologies are flexible

a continuum



a dance



<http://antiqueclipart.com/image.php/elephant-dancing-with-doll.html>

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we shape our dwellings and afterwards our dwellings shape our lives (CHurchill) or we shape our tools and then our tools shape us (McLuhan). Technologies can help, can shape, can guide, can simplify

a tug-of-war

Tractor Out-pulls Elephant in Tug-of-War



SEVENTY-TWO hundred pounds of elephant came in second best in a tug-of-war recently conducted between Ruth, a 30-year-old elephant, and a small tractor. Four legs proved to have less “pulling

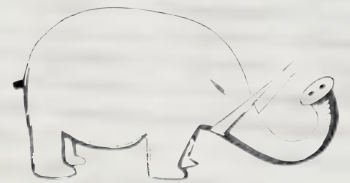
power” than the caterpillar treads of the tractor. The elephant is shown bracing herself just as the irresistible pull of the tractor began to carry her backward.

<http://blog.modernmechanix.com/2008/10/24/tractor-out-pulls-elephant-in-tug-of-war/>

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but sometimes our technologies act against us

poor compatibility



<http://www.flickr.com/photos/nationalarchief/2948560477/sizes/o/>

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a lot of the time we fail to fit things together well. An LMS, for instance, could enable new pedagogies that are not hampered by limitations of f2f teaching (e.g. group size, 1->many connections, etc, single channel of communication etc) but we tend to harness them to known problem rather than explore the solution space.

incompatibility



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sometimes we jam incompatible technologies together. for instance, assessing discussions in a forum, or using a student-based pedagogy with a top-down restrictive design



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LMSs are hardened in order to make things easier by reducing choices. They act as filters on the adjacent possible as well as enablers of possibilities. Unfortunately, this sometimes limits creative potential and guides development along lines that can be sub-optimal

balance



<http://www.flickr.com/photos/photonquantique/2596581870/sizes/l/in/photostream/>

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there is a balance between soft and hard

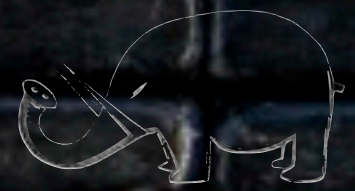


not too hard...not too soft...just right

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we need systems that are not too hard, not too soft, but this varies in every context - there are no fixed rules

assembly



http://commons.wikimedia.org/wiki/File:Building-bricks_hg.jpg

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Design patterns

Soft



Hard

- Adapt
- **Aggregate**
- Recommend
- Extend

- Automate
- **Replace**
- Filter
- Limit

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The general principles of softening involve making things adaptable, using signposts rather than fence posts, opening up new uses and, above all, aggregating: adding new technologies to increase the adjacent possible. These may involve automation but, if so, not involving the loss of previous capacities.

To harden typically involves automation of things that were formerly manual but not just automation per se – it has to replace something softer. Automation that forces a particular way of doing things is hard. Filtering means removing of possibilities (good example: adaptive systems that only show what they think is relevant, rather than those that suggest possible alternatives or highlight things of value). Hard technologies explicitly limit choices.

aggregating



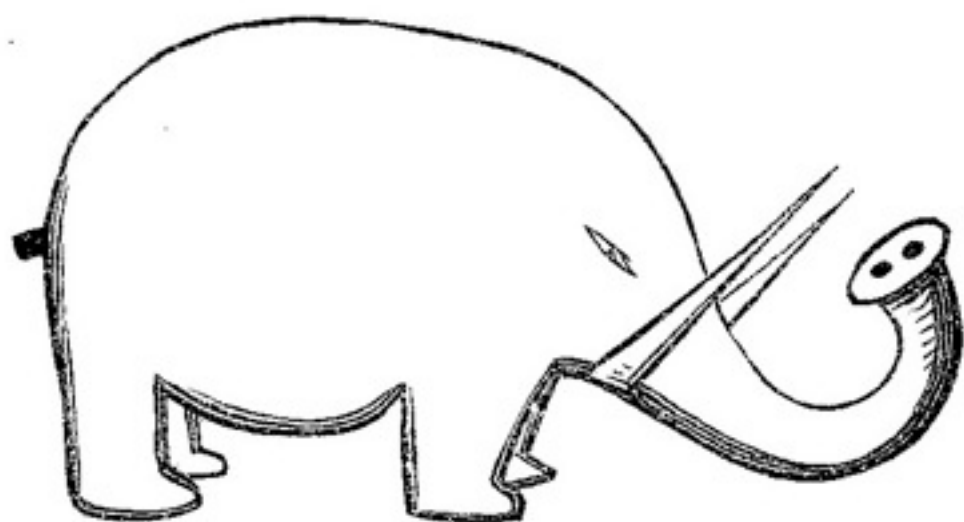
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to make things by assembly they need to fit together. while soft processes are malleable, that is not always true of hard technologies. standards, service-based architectures, plugin architectures, frameworks, etc are all useful

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