

Decentralized Knowledge

Remix of 40 typical blog posts of the last five years. (Only brown text is new.)

Up front I need to apologize that I am going to stretch the term of ‘decentralized’ a bit, because I did not come up with an existing catch-all term. So I will use it also for what is not built-in or delivered out-of-the-box from, or modeled after, a central source.

1. Independence

1.1. Platforms and Stream

The following question came up on Twitter: Why can’t media be like a conversation? What makes the internet a “polarization factory” of ‘us vs. them’?

I think the problem is that it has turned too much towards ‘push’ media, and that these are prone to scale-free effects, with their potentially unlimited reach. Each statement uttered in this environment, is soon understood as advocating for a cause or for a political strand, because everyone seems to expect that their tweet may go viral, because that is how the platforms work. Then a differentiated statement can be ripped out of its context, and the ‘yes, but’ is distorted to just ‘no’.

By contrast, ‘pull’ media such as the comment section of a personal blog, resemble the conversation that George describes in the tweet. The visitor on the blogger’s ‘front porch’ has bothered to come there, and sees the context and the background of a position. (342)

For me, the great thing of blogging is that it preserves a sense of place, i.e. the idea that I am visiting someone on their (decentralized) front porch, rather than on the central market place, and that I can feel as a guest when I leave a (moderated) comment.

I still believe in the idea of the “conversation”, despite many Social Media users now think that *consuming* content is the important thing here — and hence go to the *large* sites of the power law distribution where this consuming is easiest. (427)

The biggest problem is how to discover the peer learners and their resources, if we just use ‘word of mouth’ (or blogroll?) discovery. The worldwide search for persons and hashtags via Twitter seems utterly centralistic, and will it scale up and work in large federations?

The read-write web 2.0, as opposed to the read-only web 1.0, benefits from lists of participants. (367)

And I need categories. Not for neatly dissecting the world, but simply for sorting. Because unsorted lists require fast context-switching. That’s also why the social media streams exasperate me.

With a sorted list, my brain can leverage the ‘priming’ effect of the similar previous readings, and immerse into their context such that a deep understanding is more likely. By contrast, switching contexts too quickly, is straining and unnecessarily overwhelming and confusing. I suspect, of course, that the confusing and dumbing effect of the stream is very welcome for the big platforms: so they can offer their patronizing guidance and recommendations. The more glaring, screaming and intrusive, the better.

I must not deny that, sometimes, I fall prey to scrolling the stream. When I am tired and have no energy left for sustained engagement, I look for quick bits of stimulation. These bits seem like quickly energizing sugar, while long-digesting fatty acids are then unattractive for the moment. The candy

bits promise superficial engagement and novelty. So, the stultification works, and leads people ever more to dependence and from pull to push. (405)

Digital identity is **another** big opportunity to confuse users — and to lure them into friendly services who ‘take care of’ all this impenetrable stuff. ...

The handling of all this ‘public key’ and ‘private key’ business, is still so confusing that friendly platforms and browsers invented many methods to ease and accelerate it for the users — and patronize us ever more.

So when we want to get rid of the central abusive platforms we must make sure to also get rid of the danger of confusion and new friendly patronizers, to not ‘jump from the frying pan into the fire’.
(374)

1.2. Prosthesis tools

Often, mainstream tools exhibit the ‘sovereign posture’ and push themselves in the foreground.
(407)

What I don’t like about the current trend with personal productivity tools, such as some new note-taking apps: There is a service interface. There is a system that interacts with you, not a helping tool that you can wield like a hammer. It feels both pampering and patronizing, and more ‘push’ than ‘pull’. By Krakauer’s terms, the service is competitive (prosthesis) rather than complementary (real tool).

Sure, you need to contribute and enter stuff yourself. But the expectation is that the system will optimize it for you. For example, some note-taking systems will be generating automatic ‘serendipitous’ backlinks of your hoarded notes, as an ‘idea factory’ that makes you more productive and saves you effort. (421)

This can be contrasted with the ‘clerk’ that Engelbart envisioned, i.e., the tool that helped augmenting the human intellect. Apps that push themselves into the foreground, seem more patronizing than helpful to me.

Now there are also applications that come with plenty of endowment (provisions/ equipment/ ‘furnishings’?), and some fittings suggest themselves as proposals/ prototypes (templates/ ‘sand moulds’?) for our thought contents.

Maybe for *some* users, such offers may function as an idea generator or a creative muse. For others (like me) they do not work; for users who know distraction-free software, such offers will even appear as obstruction and patronization.

Typically, software won’t accommodate both sorts of users. So, instead of just going ahead, I am often required to find or create a type (sand mould?) for my stuff. This classification, however, is exactly the paralyzing problem of premature pigeon-holing that prevents to see the gradually *emerging* connections. (412)

The motivation of hoarding of links for later is obviously the hope for generating “future serendipitous connections”.

Is this hope justified? I feel a bit guilty that I may have suggested something similar myself: In a previous blogpost “Magic of Zettelkasten” I tried to explain the uniqueness and the surprising success of Niklas Luhmann’s approach with this very serendipity, as he found it in his huge collection of notes.

The difference, however, is that Luhmann did the organisation of his cross-references *manually*, and I think *this* is what helped him to find serendipitous insights later. I doubt that the raw mass of machine-generated full-text matches can have a similar effect. When I played with the above-shown data, I was overwhelmed with tons of “Unlinked References”, and checking them one after another, will probably be more numbing than inspiring. I know how much work it is to sift through the keyword concordances of a corpus linguistics tool like Antconc, but at least these keywords are sorted by relevance and they are promising. Maybe the next step will be to employ some AI to fulfill the sprawling desire of getting one’s outstanding ideas as effortlessly as possible — Devonthink comes to mind. [\(414\)](#)

I don’t want the tool to present me with many artificial creations, or to dominate the joint efforts of **our man-machine partnership**, but to augment my own way of doing it. I want a multi-purpose tool like a ‘hammer’ that fits closely in my hand, rather than an autonomous machine that spits out the ‘deus ex machina’, or generates hundreds of artificial thoughts that I need to sift through. If the tool’s strength is coping with the multitude of ideas, it can serve me well if it just **sorts** that multitude — such that browsing the list feels more intuitive and less straining.

Think tools should not consume my attention with their autonomous creations, but help me sorting things out for myself. [\(413\)](#)

There is also one thing that worries me with the current trend “from documents to data”: it is that the addressability, manageability, and transparency of the document files and webpages is lost — and with it a certain level of autonomy/ majority. In the document model, when you were about to click a link, you were able to see an address of an html file, composed from the gigantic world-wide hierarchy of top-level domain, subdomain(s), hostname, folder, subfolder(s), and page file name. In modern page views, it is totally obscure from where the Javascript loads its tons of ingredients — which, of course, is intended by the platform owners to better patronize you in minority.

But the users’ handling of their data becomes more complicated, and I fear people are willing to delegate ever more of this hassle to the eager offers of ‘helpful’ platforms. The classical example for me was RSS where the simple thing of a feed address is so much obscured that standalone readers died and people were lured into the trap of the Google Reader. [\(369\)](#)

Patronizing is, of course, differently perceived by different people. I remember well how many IT pioneers felt patronized by the GUI replacing the command line interface, or also by the “GML” commands simplifying the “Script” commands, i.e. colon commands like :LI (or later) instead of dot commands .XYZ for indenting and bulleting (or LaTeX instead of TeX). I always welcomed such ready-made simplifications of a single common task, as a great empowerment to do *more* than getting bogged down with details “under the engine hood”.

Therefore I also liked the Web 2.0 startup’s services that did just one task really well, i.e. guaranteeing outstanding usability. I liked them much more than integrated tools that promise countless features with mediocre usability. Of course you need several of the optimized tools — like knife and fork rather than a spoon. But I don’t want to be spoon-fed with mush-pap for babies or soup for elderly under tutelage. The integrated, patronizing, spoon-like application is good for passively consuming of content, but for the Read *and* Write Web 2.0 it needs knife *and* fork. [\(282\)](#)

1.3. Augmentation

I tried to understand more about Doug Engelbart’s visionary text “*Augmenting Human Intellect*”, and especially to understand why some visions about amplification have not come true, despite his plausible argumentation.

He hoped that the human intellect would not only be *augmented* by a smart computer “clerk” (such that their combined capacity would increase), but that the intellect would indeed be *amplified* through using this clerk.

Why didn’t this work? What went wrong?

I think if we carefully read how Engelbart imagined his clerk, in contrast to how we see our modern computers, we might get a hunch.

My observation was in particular, that he did not describe such a fixedly defined way of interaction with, and separation from, the clerk as the modern ‘interface’ that we are used to. Rather, the user seemed to continually readjust this division of labor. The user “*would find it very natural to develop further techniques on their own*”, and he would offload and externalize a very internal part of their thinking, and would entrust it temporarily to the clerk. (396)

There are some less popular tools that might be called ‘idiosyncratic’, such as my own tool, or gRSShopper, or FedWiki, or Luhmann’s Zettelkasten.

All of these differ from the mainstream tools in a certain same way: You notice that they were crafted for the developers’ own use, and tailored to their recurring real needs, not as a fixed offering that exploits low-hanging fruit. While the latter often exhibit the ‘sovereign posture’ and are specialized to a narrow context, the idiosyncratic tools resemble the clerk that Doug Engelbart described in his visionary text about the augmented intellect.

The idiosyncratic tools are often quite simple and universally applicable (more like Notepad or a sheet of paper). Their strength is not the shiny designed *features*, but more general *affordances* and opportunities for adaptation. But their benefit may not always be immediately obvious; they may require a short steep learning curve, and as readjusting they may be ‘perpetual beta’. They require (and also offer) some understanding of their simple mechanisms, and thus avoid the notorious patronization by intransparent black boxes. Their developers invite others to try them out, much like cooking recipes are exchanged for mutual appreciation. (407)

The ideal symbiosis between human and the digital, also shows in “Reading in the Digital Age”, where, particularly, I liked the recurring emphasis on “*the cultural technique of mastering the switching*” (p. 51) between the different formats, “*the fluid switching between these modes of reading, [...] organ stops of reading*” (p. 171), “*the metacognitive capabilities: to know which reading mode is suitable for which reading*” (p. 170). Also, how we “*become symbiotic with our computer*” (p. 72). (423)

1.4. Working and learning

Re personalized learning, it occurred to me that the problem with this is very similar to what I don’t like about the current trend with personal productivity tools, the service interface, where the expectation is that the system will optimize your input for you and saves you effort.

Similarly, [interactive textbooks](#) do require your input, but the interactivity is typically confined to a sequence of requests and response presentations, with reading separated from writing, rather than ‘collaboratively’ creating an artifact for insight which would be possible, for example, by flexible mapping and annotation. **This interactivity just simulates the teacher - student dialog**

The predefined optimized service interface separates the system like an independent actor, whose contribution is perceived as a separate unit of independent work.

And such a system creates and reinforces expectations, and eventually an attitude of entitlement to get some turbo results with less efforts. This prospect is, of course, more sexy than my think tool

which works more like a hammer (i.e. you have to do the thinking yourself). Similarly, Downes's self-directed personal learning might be seen as less attractive than personalized learning?

I wonder if there is also a difference between paid learning and free learning involved. Does the paying impact the expectation of more effortless, more turbo learning? ([421](#))

OK, people are very different when it comes to working more or less independently.

In a recent MOOC, there were elements that motivated me to reflect and engage, and there were elements that put me off. The latter ones often included a task, or an objective, or the big final project, and I was surprised about myself how often the edX platform with its rigid goal-directed framing, increased my reluctance to 'obey'. For example, the 'prompts', the 'due dates', the 'next' button, the 'activities', and in particular the size of the 'project': a 1 hour lesson. (I did not mind writing the three little essays in CCK08 despite I was not a for-credit learner because this felt like just the right size for voluntary engagement.)

I don't doubt that such tight pacing, or 'lock-step' walkthrough, across a wide field of content might be useful for some at-risk learners. But I think many adult learners do not like such a tight prescriptive style, and for workplace learning such formal structures are even more unpopular.

But even worse: I noticed that for me, such MOOC 'objectives' ("Detail how...", "Describe how...") actually inhibit reflections in the sense of: What struck me as surprising or salient or resonating?. Because, for the latter, a 'broad vigilant attention' is needed (sorry for borrowing once again from McGilchrist), while the guiding objectives switch off this kind of attention and turn over to a 'narrow focus' kind of attention, to follow the tip of the teacher's pointer stick, so to speak. So, the well-meant suggestions for 'activity' may just put off from reflective activity — and maybe this is why reflecting is so unpopular among pressed students? ([352](#))

Similarly, in meetings. How can they cater to the different temperaments and styles — in particular, of those colleagues who just don't thrive in the synchronous, live, face-to-face meetings?

Our Bundesland is well-known for its tinkerers and inventors ("*schwäbische Tüftler und Bastler*"), and many of these need a few hours of undisturbed retreat to puzzle about a wicked problem. It is not that they were just generally slower — on the contrary.

They would prefer to take some written and drawn stuff away into their room, and return the next day with a significant step forward. ([395](#))

At school during the pandemic, the difference showed after the changed circumstances, e.g. asynchronous vs. synchronous, and the feat of creating motivation for what pupils normally just let wash over them.

Asynchronous mode furthers, but also requires, more independent work, which cannot quickly be learned in addition to all the traditional subject matter. But isn't independent thinking the ultimate goal that is normally the effect of dealing with all the [McGuffin](#) of content?

(Yes there is content that may need to be quickly acquired. How the ventilator in the ICU works, for example, cannot wait for independent insight by the student. If some effective "Nuremberg Funnel" can optimally animate or simulate the necessary theoretical knowledge, we will welcome it, although it might skip the fostering of independent learning.)

For remote learning, without permanently being nudged, it is much more important to have an honest and plausible justification of why the stuff is relevant. A desired Unit 1 may require some Unit 2 for understanding, and in turn, Unit 2 may presuppose some Unit 3. In a flipped classroom, all this

is flipped upside down. No longer does the teacher do the sequencing (Unit 3 > Unit 2 > Unit 1) to push stuff to the learners. Instead, the dependencies may be discussed on the face-to-face day preceding the canned-stuff day, and then the pupils pull the units themselves. (424)

Often, expectations focus too much on how easily stuff can be ingested — a Nuremberg Funnel would be the ideal exchange value for the many dollars of a commercial textbook, wouldn't it?

But such a measure of effectiveness would be questionable. In my own discipline, math, we have the saying: *"A king's road to mathematics does not exist."* There are, instead, two completely different goals. One is to learn how to apply the rules for the necessary calculations that you may have to carry out in later life. The other one is to learn mathematical thinking. If you focus on making the former as easy as possible (which is a legitimate goal), it is less probable that mathematical thinking emerges. For example, if you always have perfect pictures, visualisations and simulations in your textbook media, you will memorize the concepts and procedures quicker, but you won't develop the ability to visualize difficult relationships on your own, i.e., if the abstract is made less abstract for you, you won't learn from it how to cope with new abstract things.

To repeat an older metaphor: If we compare learning to carrying a load upstairs to the attic storage, there are two distinct goals. One is that the load should be stored up there, and the other is to work out one's muscles. If it is only necessary that the stuff is accumulated up there in our brain, a 'lift' would be a welcome optimization.

So, if measuring the 'effectiveness' is mainly about knowledge content and about storing it safely away (in a compressed way, i.e. in isolated chunks that are typical for 'left-brained' thinking), it will be very unbalanced.

Measuring OERs, by contrast, offers the opportunity to try out and define new criteria. An obvious new affordance is that you practice your mental 'muscles' more if you have to find your stuff on the web, by navigating and traversing the very connections that 'are' the knowledge. (351)

1.5. Digital literacies

"There is automation that enables choice & human agency & that which doesn't" (@gsiemens, see @Autumm's [tweet](#)).

Of course, choice in IT may also be intimidating, when the user interface is stupid and the help texts mindlessly reiterate nonsense like "select the desired option" — because the programmers were too lazy to think enough about the options themselves.

And some users are easily contented with perceived control. A dashboard — doesn't this sound great? I think it is important to distinguish between true control and disguised patronization. (330)

Disinformation and IT insecurity have in common that most users cannot evaluate the trustworthiness of systems and sources on their own. In both cases, one can try to rely on central authorities, or ask a friend. If you trust a friend's email attachment in too naive a way, their imprudence may ripple across your circles because you may be trusting their virus who really sent it. Similarly, the friend may have retweeted a falsehood from a false central authority because evaluating the authority, too, is difficult. But if your friend is aware of you trusting them, they might be more cautious. So, it is important to ask the right friend who, in turn, relies on the right friends, too, rather than on questionable central mass sources.

Of course there is not always enough time to ask a friend, so, the first skill is to decide whether I feel safe enough without the friend or if I should stop and wait for him or her — for example, to install some app or to change some settings. And there are some minimal questions that a digitally literate

person should be able to answer for themselves. Most prominently, this involves a permanent awareness of one's logins and of one's backups, i.e. what would happen if a file was lost or if a password got stolen. (384)

Because I'm an IT professional, it bugs me when some peers urge all the rest of the world to adopt our way of thinking.

On one hand I understand very well the future role of plumbing and fiddling and tinkering — e.g. changing parameters in Jupyter notebooks and trying again. But OTOH, this 'plumbing' should not literally mean that I have to repair the red or blue taps for hot and cold water, but rather, to use the water for cooking and then 'change the parameters' to experiment with new meals. Yes, plumbing where no algorithms exist yet, this will probably be the job left over for humans.

To co-exist with the algorithms, then, it is necessary to be able to talk to them and to their developers. Talk across the divide, not trying to blur the division of labor. Most prominently this means, to understand why, and get used to *that*, IT staff and devices are sometimes so annoyingly stubborn; for example, when end users talk about their colorful fuzzy subject matter, we insist in asking back until we can model their stuff into our rows and columns. (371)

2. Trajectory

2.1. How it begins

According to the traditional learning theories, we construct knowledge upon existing knowledge, for example by linking the new stuff into the known. When we see knowledge as representation, all the higher order concepts are nicely grown from lower level concepts. But at the very bottom there must be some special knowledge, sort of "seed" knowledge, to enable this recursive mechanism because otherwise we would run into an infinite regression.

Even if we use the less abstract idea of "recognition" we might misunderstand it and ask: how can we recognize what we do not already know? The trick is that recognition needs only a *part* of the features of a pattern to see the whole pattern.

The artificial neuronal networks described in the [this](#) post, apply such pattern recognition to learn solely from *conversations*. How far can this approach be extended? To the bottom, to eliminate the need for previous knowledge?

Let's first look at *human* neuronal networks. The conversations begin long before the human can talk, when the baby has their first gaze "conversations" with their mother, at the age of just a few weeks. It is here that they recognize the world around them, long before they learn propositions about "he, she, it, they", and even the "I" is learned only via the "thou" in these first bodily conversations.

(If it seems far-fetched to compare this kind of conversations with the sophisticated concepts of a given knowledge domain, consider how language covers a long scale of words: While it ends with isolated concepts coded in specialized, domain-specific terminology, it starts with basic ideas that suggest a very bodily context, and a full-senses/ all-at-once recognition, such as the deictic notions of "I", "now", and "here", or other simple [spatial](#) or temporal descriptions which are gradually extended via synaesthetic metaphors, or with the modal words that extend from "wanting" to deontic use to epistemic use.)

Human neuronal networks use recognizing from the very beginning and require no indispensable prerequisites. (335) See also more on the cognitive 'navel string' later.

2.2. Imitation and Social learning

“Children eagerly imitate other human beings,” (McGilchrist p. 249) ([426](#))

Human minds grow from a seed of trusted grounding, into diverse individuals.

“Human imitation is not slavish. It is not a mechanical process, dead, perfect, finished, but one that introduces variety and uniqueness to the ‘copy’, which above all remains alive, since it becomes instantiated in the context of a different, unique human individual.” (McGilchrist p. 247)

i.e., it does not work like programs are copied, but with individuality and subjectivity that guarantees sufficient diversity for further evolution. ([368](#))

Another aspect: I have often wondered if it is just a matter of style and taste whether one emphasizes an individual access to learning or not, i.e., whether one prefers learning in the same way a backpacker individual tourist learns about the world, or if one finds it easier and more effective to go with a guided group tour to get the proven optimized standard sight.

But what will prove as ‘distinctively human’ ?

I think it is exactly the *personal* approach which cannot be standardized, that cannot be automated. It is the individuality and subjectivity that guarantees sufficient diversity for further evolution and to avoid collapsing into a ‘black hole’ of power law distributions, and that guarantees sufficient embodiment for staying grounded in reality.

By contrast, approaches that only accept objectivity, and strive for algorithms that promise an optimized, rational, assessable, uniform solution — are eligible for cognitive automation, sooner or later. ([341](#))

Moreover, *“Children eagerly imitate other human beings, but do not imitate mechanical devices that are carrying out the same actions.¹⁸ This is like the finding in adults that we make spontaneous movements signifying our involvement in events we are watching evolve – so long as we believe them to be the result of another’s action. Such movements are, however, absent when we believe that (in other respects identical) results have been generated by a computer rather than a living being.¹⁹”* (McGilchrist p. 249).

When we notice that we are being tricked by a fake, these functions of the mind are blocked, much like we would reject counterfeit money (my interpretation). ([426](#))

Later, *“Why do we need [interactivity] ? [...] we need to know that other people are in the learning experience with us.”* (Downes in the MOOC).

IMHO, this includes that we are watching our co-learners in their stage of recognizing, which is much more similar to the recognizing that we need to do ourselves, than the settled, packaged, resources presented by a traditional teacher. If the co-learners ‘teach’ us what they have just come to understand, they are ‘modeling and demonstrating’ their own understanding process.

And watching our co-humans, puts us automatically in a mode which is more open to immediate, contextual, multipoint, ‘all-at-once’ experience than consuming a slice of canned information. Frankly, I was long sceptical about the value of ‘social’ learning, and I suspected that it just helps those who are not willing to interact directly with the resources, and (of course) benefits those who repeat the stuff by explaining it to the weaker students. But in the meantime I have understood that there is more to it. ([339](#))

What does my Personal Learning Environment need as a minimum? For me, it is not sufficient to have discussions with posts and comments, but I need to see people behind the comments, and this

means that I like to look at their profiles and click the URLs leading to their blogs or other homepages. If there is no permanent address like a blog but only a stream like Twitter, Facebook or Google plus, it is less attractive for me since my preference is not the rapid flow but the more asynchronous affordance of slower conversations. (329)

What is the obstinate obstacle against some *more* online meetings? I have a very special suspicion. I think it is probably the jostle at the flipcharts and murals that many don't want to give up. (404)
Thanks Alan Levine for commenting: *"Is it really the jostle they miss? I think more it's the proximity"*.

2.3. Trust

Trust is not (only) an idealistic concept from removed dreamers or verbose humanities scholars, but it can even be an economic idea: in our knowledge economy, it saves resources if I can trust someone's information or judgment, rather than fetching external evidence. Or if a superior trusts me (rather than trying to check everything on his own).

And there is so much more connected to the idea of trust. (355)

Some face-to-face meetings are really indispensable, because they seed the trust relationships for long-term future cooperation. (404)

Early social bookmarking and blogging networks helped not only guarantee the validity but also the relevance of the recommended posts — before the cloaca of the 'stream' generated such a mess that everyone is now dependant on the platforms' patronizing algorithms, whether we trust them or not. (355)

Why are people so hesitant to interact with smaller sites — to interact with each other? I suppose social media is an intimidating business that generates lots of mistrust.

Initially we subscribed to feeds that we trusted to be not only honest but also relevant and worth our clicks. Today, people subscribe to major news outlets and hundreds of 'must read' celebs — and are then surprised to receive tons of rubbish and intrusive popups. Hence it is understandable that they are very skeptical about any new or unknown source. Is it trying to 'sell' me something? (406)

An important [article](#) from 2017 by Tim Requarth of Slate Magazine observed: *"lectures from scientists built on the premise that they simply know more (even if it's true) fail to convince this audience"*

and suggested *"communicators can be more effective after they've gained the audience's trust."*

This is the most important, and seems obvious to me: trust has been lost, and the gap has become too wide.

And: *"it may be more worthwhile to figure out how to talk about science with people they already know, through, say, local and community interactions, than it is to try to publish explainers on national news sites"*

This reminds me of Downes's *successful networks*, which are not centralized hub and spoke networks, but those that work through a ripple effect and propagate the messages on trusted shorter pathways.

In a polarized environment, we cannot expect that someone abruptly changes their mind against all of the closest acquaintances, without gradually seeing their neighborhood rethink, too. (415)

And finally, trust is distinctively human and cannot be learned by robots, since it grows from the early gaze 'conversations' where a baby learns about the world through the eyes of their mother. (355)

A paper on “AI for common welfare?” speaks of a “*basis of justified trust and acceptability for users*” (section 3.9), and this needs, IMHO, a palpable guarantee and commitment for jobs. Not job security for existing jobs, but for sufficient jobs. And not just welfare (in a reservation where AI keep us benevolently as well-fed pets?), but sufficient gainful employment.

Any administration of shortages done by AI will be intolerable. (361) *In particular, regarding assessments:*

Will automatic assessments be more objective, and will they distribute the scarce, best-paid, positions more fairly?

I think, for the final *summative* assessments deciding about the future life of a human, such algorithms are not acceptable. By contrast, for the *formative* assessments throughout the study, they might be perfect. With human teachers, both types of assessments are equally costly, therefore we have too few of the latter and too many of the former. This may hopefully change now. (377)

2.4. Ethics and Wisdom

[This](#) talk pointed me to the ethics of care and its awareness for vulnerability and dependence. While vulnerability and dependence in education are no doubt a familiar aspect for teachers or parents of smaller children, I must confess that I had not spent much thought about them. After all, in *higher* education, gaining intellectual *independence* seemed to me a crucial goal because, simply, *someone* must be able to decide even if there is nobody available who can be asked!

Now the “care perspective”, in the immediate situation, seems to take on the responsibility without trying to ‘delegate’ it. But the decisions and criteria need not always be independently derived. They may be learned from others who were in a similar situation and whom we may ask about how they would decide here. We may also ask others about what ethics they follow, but the ultimate accountability of adopting their ethics for ourselves, cannot be offloaded on to these others, or on to some higher authority.

Learning this ethics takes different ‘contagion’ paths, so to speak, which vary with the decreasing dependence. For infants, the cognitive ‘navel string’ is from mother and parents, later from family and friends, colleagues and communities of practice — the path is the same as for the primordial trust to be seeded and then grown. This percolation path may not yield perfect results and may be slow to change. But it is robust against nonsense from a central, influential source — just as Downes’s “successful networks” promise. (411)

The ripple path may be compared to Ebb and flow -- “*What is needed is to attain a middle point, where full connectivity is achieved, but where impulses in the network ebb and flow, where impulses generated by phenomena are checked against not one but a multitude of competing and even contradictory impulses.*” ([source](#) section ‘Truth’). (410)

Later in the lifecycle there may be wisdom. Some definitions of wisdom depicted knowledge as simply knowing a googleable fact, and wisdom as something that is beyond that. But if this were true, everybody would have to be wise in the future — or else they would be displaced by artificial intelligences. Emergent knowledge based on long experience and intuition, will become more necessary but IMHO, it is not already wisdom.

Also, if knowledge cannot be transferred, or ‘told’, it is not already wisdom. Of course, wisdom cannot be told, but can it at least be *taught*? If teaching is Downes’s “to model and demonstrate”, this is certainly a useful prerequisite for developing wisdom, since we can sometimes recognize wisdom in other people even if we cannot describe it. But an important connotation of the term is,

IMHO, that it takes a long time to develop wisdom. So, it is not for impatient teachers who expect an instant impact of their interventions.

In my understanding, wisdom grows very slowly, and it is often about what is really important, or actually, what is *not* important. ...

People who are wise enough to perceive their wisdom as a gift, like wealth and other powers (and not as result of hard work that needs compensation), see their responsibility. ...

In wisdom of crowds, it is the aggregated knowledge of the many that creates the higher level, that cannot quickly be attained by a single human. And in a twin simulation [here](#), it is the aggregation of many iterations of a trust game that leads a wise behavior — which, again, points to the long time that wisdom needs to be built. ([359](#))

3. Imagination

In my view, McGilchrist's "Master" and "Emissary" modes are the mind's equivalent of what bending and stretching are for the body: they are both involved in almost every activity, and if they are not in balance, we fall.

So we need to understand the 'flexors' and 'extensors' of brain operation, and we need to identify their respective contribution to the balance in everyday behaviors. ([344](#))

Here are some more basics to consider.

3.1. Expectations

For the brain as a 'prediction machine', expectations are important.

"I think that learning is the process of adjusting our expectations to align with experience so we are not taken by surprise and thrown off balance by what comes next." ([Downes, December 13, 2017](#))

Depending on what usually comes next, the very same event may be experienced in very different ways. This can also be beautifully demonstrated with musical chords.

When a chord with a 'nonharmonic tone' is played out of context, it sounds awful, but when we hear it as a 'passing tone' or as a 'neighbor tone', we don't notice the dissonance — because we expect that it will immediately be resolved. ([354](#))

3.2. Working memory

Working memory plays a great role in processing both temporal and spatial perceptions. Baddeley's model contains, among others, the "phonological loop" (audio over time) and the "visuo-spatial sketchpad". And these dimensions are closely related:

Vision is not exactly like a photographic snapshot at a specific point in time. Rather, our eyes cover only a small area of our viewport at a time (like a torch flashing for short moments to light up a single spot in front of us). As Nick Sousanis put it, they are "dancing and darting", and we need to fill in all the rest of the picture from our memory, to connect the "disconnected snapshots" and make the view complete ("Unflattening", p. 90, with a reference to E. Pelaprat and M. Cole.)

The spatial and temporal functions may be not only be interrelated but they may indeed be similar. Which is a plausible idea, and it is fascinating, in particular in the light of McGilchrist's account of *isolating* (spatially) and *fixing* (temporally) and of how similarly they are done by what he calls the emissary. ([349](#))

3.3. The Invisible

In a reading group, we were reading some definitions of “What is Cognition” (<https://doi.org/10.1016/j.cub.2019.05.044>), and it struck me that many resonating criteria involved invisibility:

- absence (“*absence of direct stimulation*” (Suddendorf), “*freedom from immediacy*” (Shadlen), “*stimulus-independent*” (Bayne), “*exclude any behaviour to a goal stimulus that is actually present to the animal’s senses*” (Webb), “*processes that originate in the brain rather than solely with environmental stimuli*” (Chittka)),
- abstraction (“*certain abstract operations in between [peripheral senses and motor output]*”, Intro),
- and imagination (Bayne, Mather). ([403](#))

For the externalization of the ‘invisible’, see also the section on Augmentation.

Criticisms of practice-orientation sometimes seem to suggest that: ‘indirectness’ is nobler than jumping at stuff that is immediately palpable, the abstract is more ‘noble’ than the concrete, theory more than practice, and ‘Bildung’ (Humboldt’s ideal) more than ‘Ausbildung’ (training), because these detours foster the capability known as transfer of learning from one problem to another one that may arise in an unknown future.

Rather than dismissing these criticisms altogether, I was musing as follows. What is so valuable in the indirect and abstract? It can’t be just that it seems more difficult? Why is it more difficult? Often the indirect and abstract is powerful but difficult to understand because it involves something invisible.

One needs some imagination to cope with the invisible. ([380](#))

3.4. Creativity

It is always difficult for me to come up with an idea, when I am supposed to do so (including, unfortunately, christmas presents).

Creativity in the usual sense does not only mean *creating* something and having some *imagination* to ‘see’ what the result might look like despite it is yet invisible ... Rather, we think of an *origin* where an originator creates something original. A single point (like a well? a fountain? a mountain spring that has the potential to grow from a tiny creek into a wide river?) And confronted with such a challenge, many people’s imagination just runs dry, since we don’t feel like a genius artist.

But in Amy Burwall’s conversation with Stephen, she said something that resonated very much with me:

“*Creativity is about connecting dots*” (20:08)

Ah, not a single dot of ‘origin’ but multiple dots! That is easier (and BTW, it also sounds like connectivism). ([382](#))