

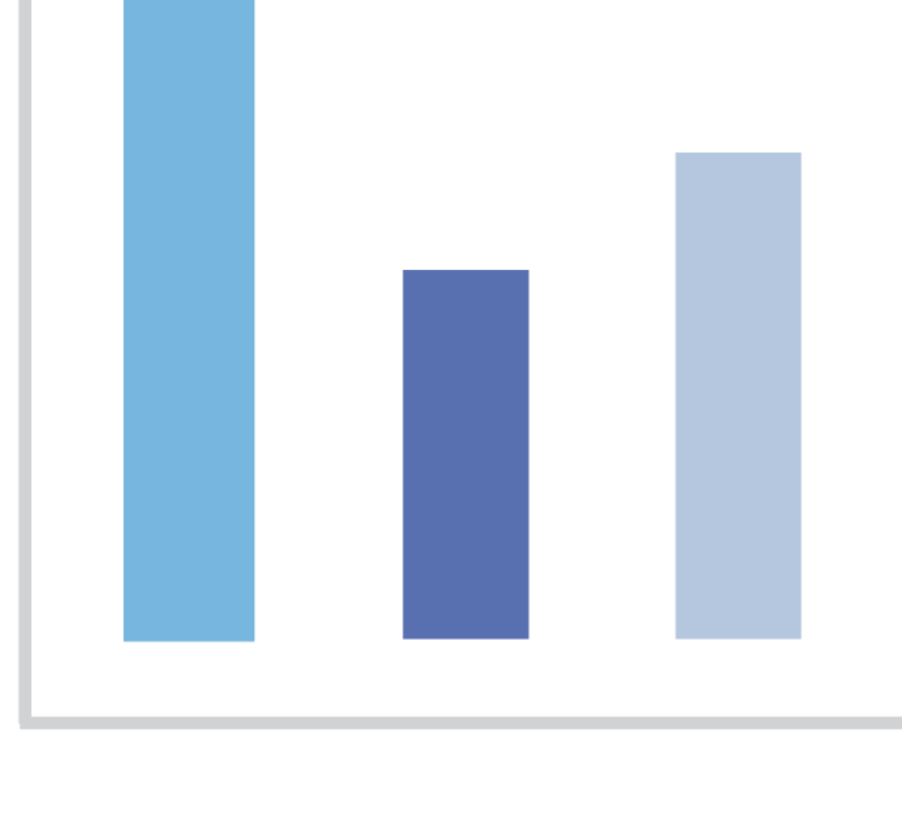
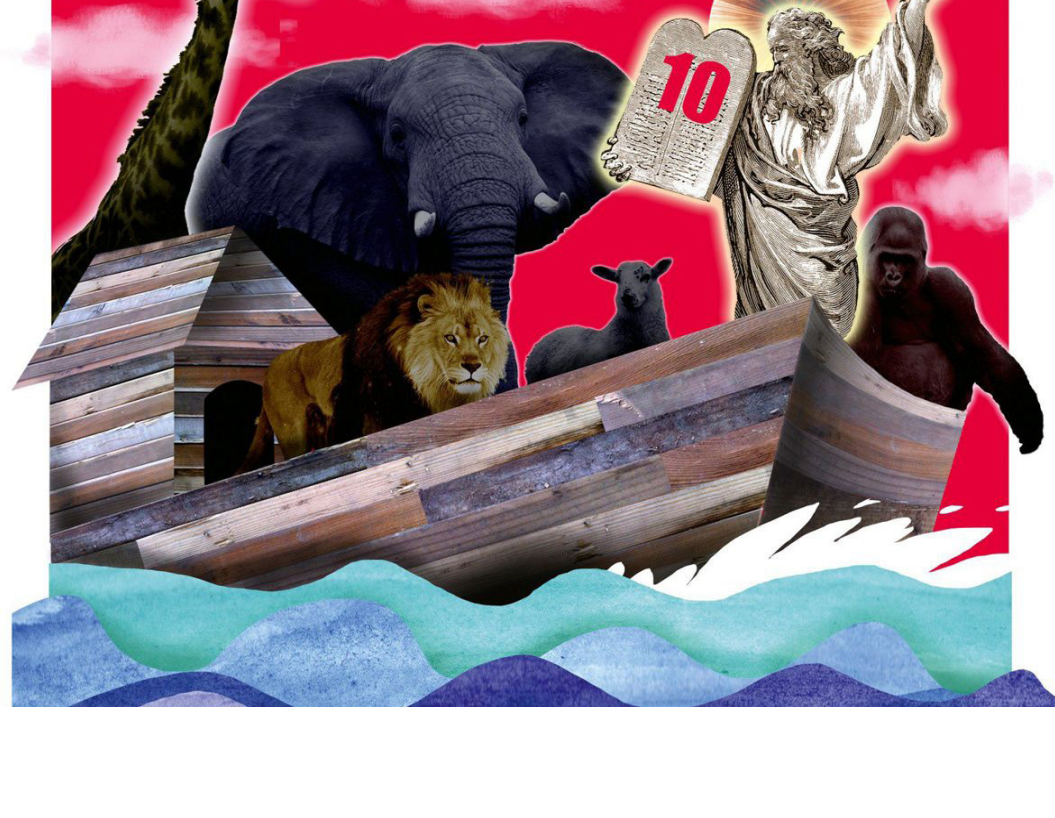
Stop trying to make the web look 'beautiful' – I've forgotten it already

This week, Facebook launched Paper, an app designed to transform the experience of reading Facebook's content on your iPhone. It's uncluttered, slick, minimalist, polished. As one of the project's engineers put it: "Paper was designed on a principle: content should be respected ... [and] if content is to be respected, it should be beautifully presented."

You hear the word "beautiful" all the time, these days, when web design's being discussed. Medium, the blogging platform created by the Twitter co-founder Ev Williams, was conceived to be "simple [and] beautiful". Likewise Svbtle, another "beautiful" stripped-down publishing system, was designed to "get out of the way". This is the aesthetic of Jony Ive's iOS7, with its flat icons and defiant lack of adornment; it's an aesthetic for a world that does its reading on smooth pieces of black glass with curved corners. It's the aesthetic that's rapidly coming to dominate the web – which is why I feel some nervousness in poking my head above the parapet to say: what if I don't want my reading experience to be this beautiful?

Yes, yes, of course this is partly just the ranting of a decreasingly young web user, disgruntled by change. But it isn't only that. There's some evidence to suggest that when you make the reading experience too smooth and glossy and beautiful, you make it less engaging and satisfying, too. The key concept here, explored in depth by the psychologist Adam Alter, author of the book Drunk Tank Pink, is "**cognitive disfluency**". When information glides by too frictionlessly, we're liable to find it harder both to understand and to retain.

In a classic experiment, students were presented with a printed question: how many of each animal did Moses take into the ark? When the question was displayed in an easy-to-read typeface, 88% missed the error – that the gentleman in question was Noah, not Moses. When it was displayed in a hard-to-read font, that proportion fell to 53%. When a font's harder to read, writes Alter, "we assume the task is difficult and requires additional mental effort ... We respond by recruiting additional mental resources to overcome that challenge, and our responses tend to be more accurate." Other studies have found that information received in unfamiliar fonts is memorised more effectively, and that it may be harder to grasp material consumed in e-book form, where the words slide by as if on ice skates, than in print.



I'm not really suggesting that online publishers should deliberately employ awful fonts. But I doubt I'm alone in feeling a certain satisfaction when what I'm reading is presented in a non-beautiful way. It's hard to describe. But for some reason (linked to cognitive disfluency?) there's a greater sense of getting purchase on the material, of getting the meat of it between my teeth.

I hope the people at the New York Review of Books won't take it wrongly when I say I consider their magazine to be Exhibit A in this regard. Every time I see that crazy jumble of fonts on the cover, then turn to the dense columns of type inside, I get a small but palpable thrill. All that density and lack of white space says: dive in; there's lots to get absorbed in here.

By contrast, there's an unbearable lightness to the slippery minimalism of Medium, and sometimes it gets in the way. Writing presented like that is wonderfully easy to consume, yet also wonderfully easy to forget. By the time I get to the end of even a short piece, the first paragraph has faded not just from the screen, but from my mind.

I don't expect the born-again minimalists of Silicon Valley to start re-cluttering their user interfaces. But it would be nice if they could remember that current aesthetic fashions are just current aesthetic fashions – not some ultimate Platonic ideal of how to communicate online. And if anyone wants to design a plug-in to make Medium look like the New York Review of Books, I can guarantee you one customer, at least.

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Online Behavior and Disfluency: The Ugliness Payoff

The “Nudge Revolution,” and the idea of applying behavioral insights to policy, came packed with a number-one mantra called “Make it easy.” Make it easy means that if we want people (i.e., citizens and consumers) to do something, we need to make it easy for them. If we want to get people to eat healthier foods, we need to put them in the cafeteria, and make them easier to find. If we want people to save more, we need to make saving the default option, automate the money transfer, and associate it with salary increases to avoid loss aversion. If we want people to take vaccines, we should simplify the information and make it salient, to reduce the effort necessary to find the doctor and take the shot. But recent research in cognitive psychology is telling us: When it comes to learning and memory, making things easier is not always ideal, because fluency makes people less likely to comprehend and remember what they read. Thus, contrary to the idea that the easier the better, making material harder to read – what researchers in cognition called disfluency – might actually improve comprehension. What does this imply in terms of behavioral insights? A lot, as we will see, especially when the behavior we want to influence happens online.

In the digital world, visual consistency might be achieved by using *unimodal* typelines in 60 percent grayscale, but, when it comes to dis-fluent designs, anything that makes visual perception less automatic – an unexpected layout, unusual colors, or a low foreground-contrast – will originate more cognitive reflection. What can be the consequences of making material harder to read? People will think more about what they read? Let's imagine you want to travel to an African country. To know which document to apply for a visa, you consult the embassy's website to check the information. There, you can read the following announcement:

In order to apply for th

- Passport
- 2 photos
- Invitation letter
- Travel Proof

Or the same announcement, in a slightly different format:

In order to apply for the Visa you need the following documents:

- Passport

- Invitation letter

– Travel Proof

Then is it more likely that you will remember which documents to bring to the Embassy? In the first example the information was presented in 16-point Arial pure black font. Not only the size of the letter was bigger, but the font was also more familiar and pure black (i.e., 100% in terms of grayscale), what we would call a visual fluid condition. In the second example, the information was not fully presented in a larger size and unfamiliar font (12-point Comic Sans MS), but also in a 60 percent grayscale, what we would call a degraded condition. The first task was to read the visual fluid condition and the second to read the degraded condition.

don't make the question. That you would bring the right documents to the Embassy and get your Visa without further delays.

What researchers from Princeton University have shown is that, also when it comes to digital information, common sense is hiding good sense. Using a different example related with specific facts about alien species, the scientists showed that while subjects in the fuedn readed correctly (i.e. 16-point Arial pure black font) answered 72.8 percent of the questions about the fictional creatures, those forced to read dis-fluent forms (e.g. 12-point Comic Sans MS in a 260 percent grayscale) correctly answered, on average, only 56 percent of the questions. Thus, ugliness seems to have its advantages. Presenting information in a lower, less familiar, and less saturated color font, might slow down the reader's brain, allow the reader to engage with the material at a deeper level, and improve information comprehension and retention. In other words: It can significantly improve the percentage of applicants who show up with all the necessary documents at the embassy when applying for a visa, and because of that, to allow the embassy and the applicants to save time and resources.

Cognitive Disfluency: How t
o Make People Think

Dis-fluency can be of the visual, but also of the cognitive type. To make people notice important information they'd normally skip over, not only visual dis-fluency can help (e.g., highlighting the most important notice in a difficult-to-read format, or in an unexpected layout) but also cognitive dis-fluency can be introduced. Increased depth of processing can be obtained if we require the reader to generate rather than passively consume information. Studies showed that requiring participants to generate letters in a word pair (e.g. "saltpp_ppr") during memorization results in a higher retention rate of the word pairs than when the pairs were presented in their entirety (e.g. "salt: pepper"). This principle can be extended, with significant return, to the way we design the contracts that determine the conditions of the transactions established in the online and offline world.

Deliberate Dis-fluency and Digital Information Goals

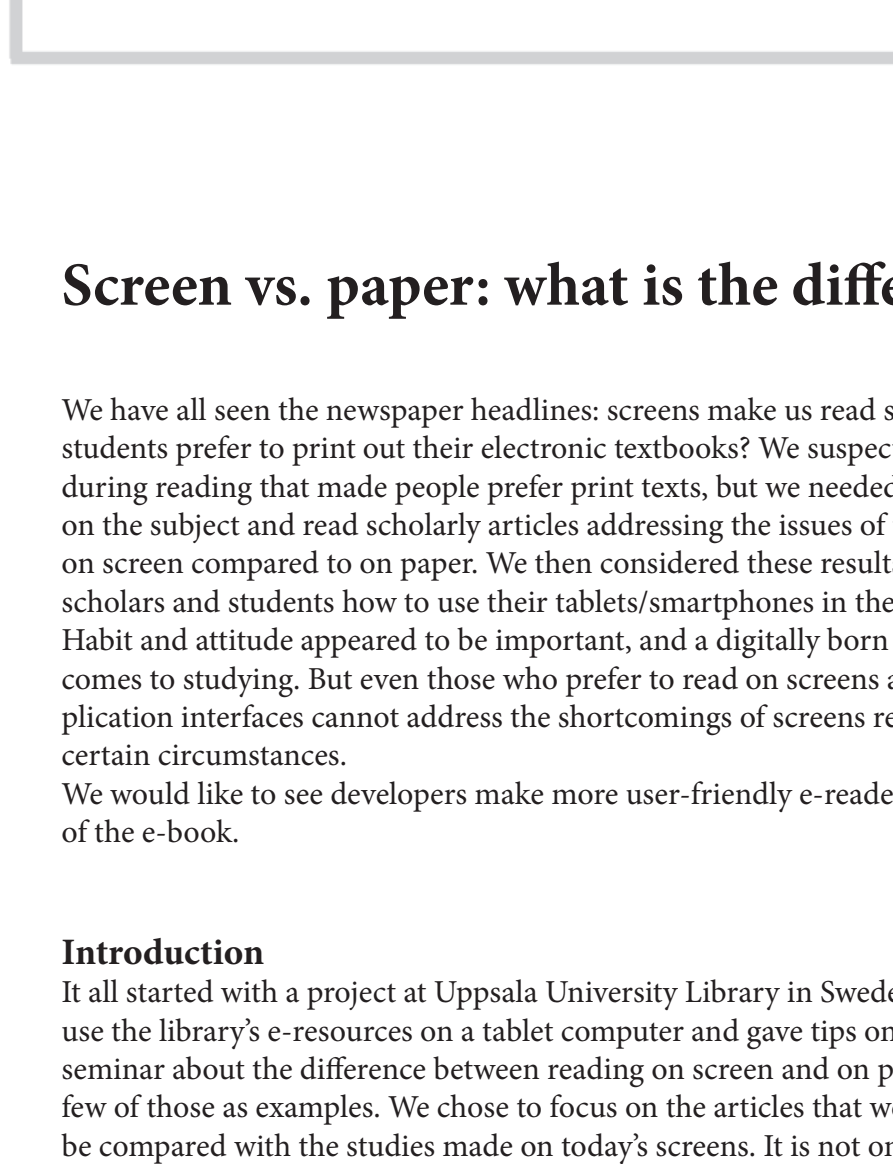
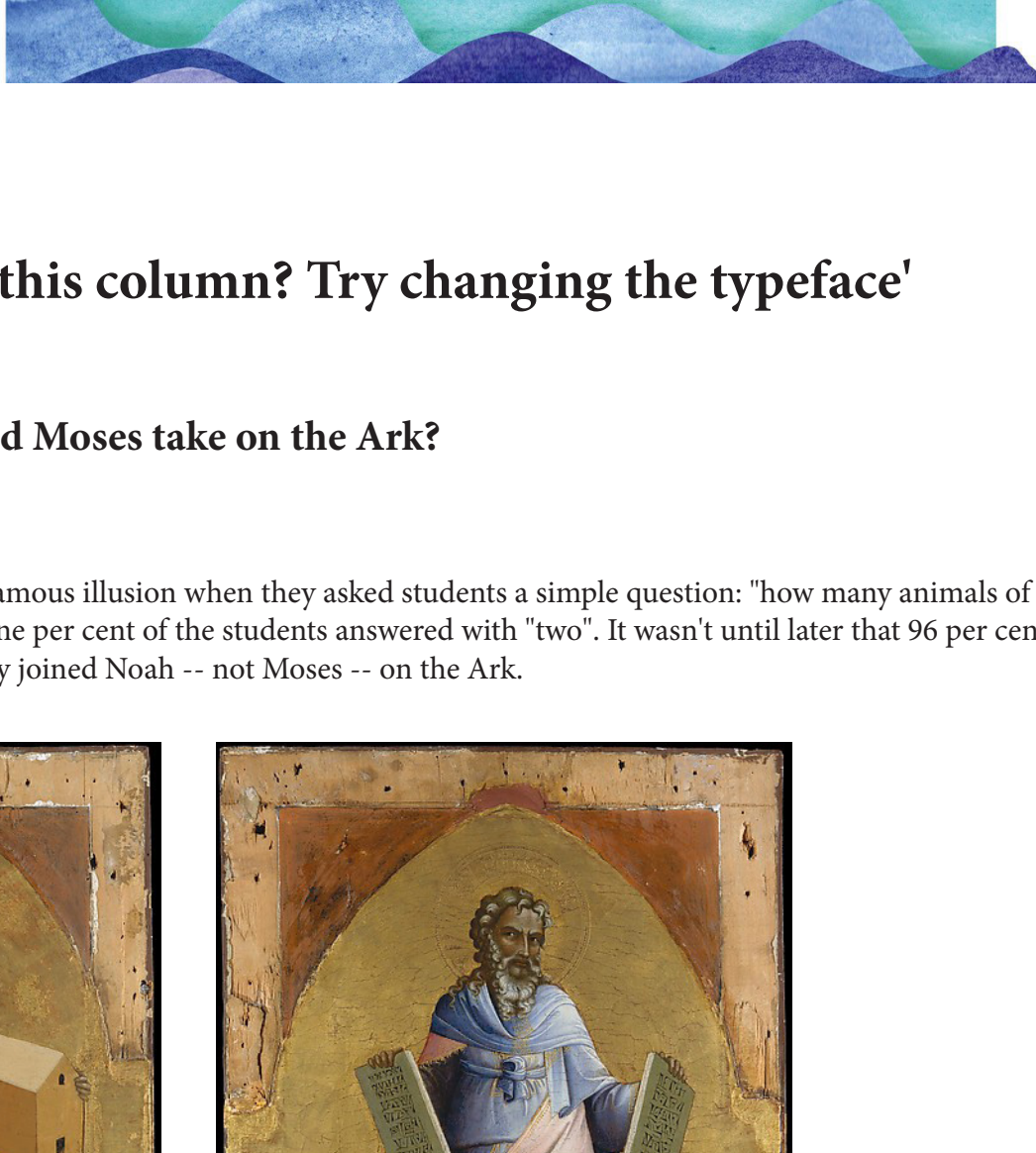
The digital world, and to a greater extent the offline world, tend to

people to think more carefully about what is on the screen or even on paper. The main idea this piece of writing wants to communicate is that dis-fluency works as meta-cognitive alarm that makes people to process information more carefully. Thus, if we want people to slow down and process the information they read more carefully (e.g., healthwarnings on packs of cigarettes, mortgage information, warning signs) we need to present information with a "desirable level of difficulty." In the digital world, this level of difficulty will depend on the goal of our digital information. If we want people to complete a transaction (e.g., complete an online check in) or make a quick purchase (e.g., buy a book in Amazon), then high levels of fluency are ideal, and we should make the process as easy as possible. If, on the contrary, we want people to reflect on, and remember what they read, then we should introduce dis-fluency, to slow the mind down, and allow the reader to engage with the information.

Mindfulness in a Digital World

By avoiding dis-fluency in the digital world, we might also be preventing people from taking heed of the reduced speed limit and wipe out of the information which is presented to them online. This will significantly affect the quality of their decision-making, not allowing people to deliberately consider whether or not they should take out a particular service, buy a particular product, or apply to a particular insurance. Given the stunning progress of the last decade, one might expect digital reading to have leapfrogged paper reading. This originated a "digital reading gap" due to the fact that the current generation of LCD screens makes reading excessively easy. The brain doesn't need to work hard enough and we fail to process the words on the screen and to reflect on them. Thus, and contrary to the behavioral economics logic of making it easier for people to do the right thing, we might need to upgrade our behavioral insights toolkit to the digital world, and create a digital reading environment that resembles the ancient technology of paper. Given a desirable level of reading difficulty originated enough cognitive reflection from the reader, and consequently, wiser decision-making. Arguably, when it comes to the digital world, it seems that "making it difficult" might also be the right way to help people do the right thing.

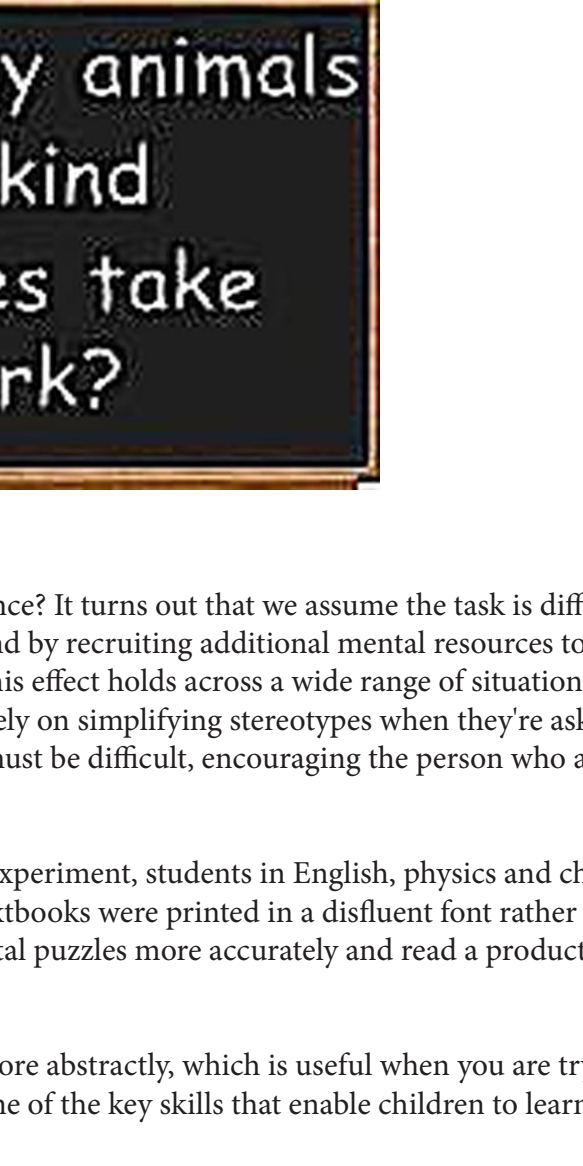
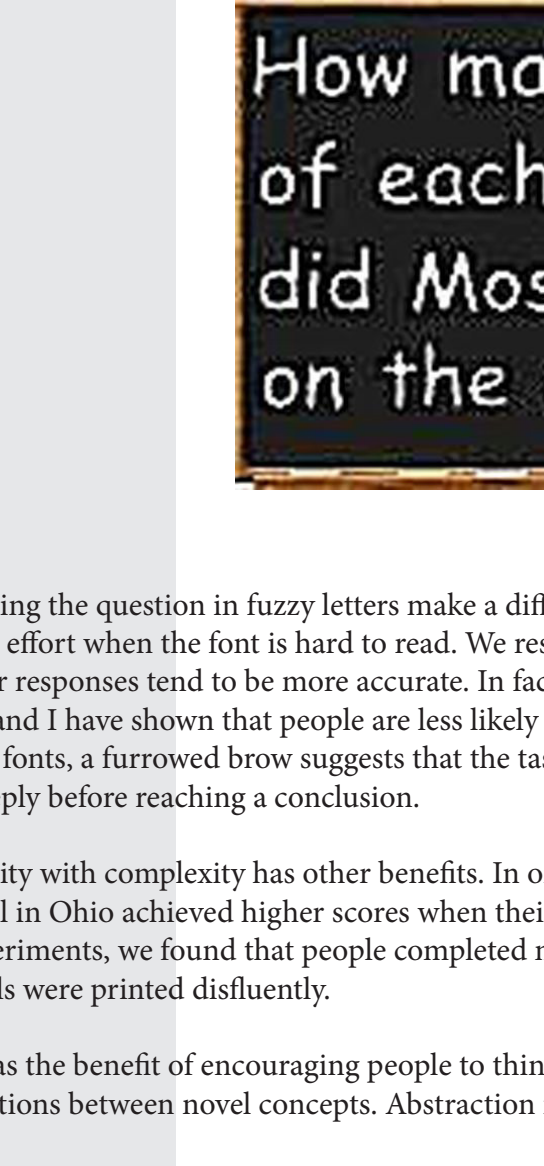
When the question was displayed in an easy-to-read typeface, 88% missed the *n* in question was Noah, not Moses. When it was displayed in a hard-to-read font, 95%. When a font's harder to read, writes Alter, "we assume the task is difficult and exert additional effort ... We respond by recruiting additional mental resources to overcome the difficulty. Our responses tend to be more accurate." Other studies have found that information presented in a hard-to-read font is memorised more effectively, and that it may be harder to grasp material presented in a hard-to-read font, where the words slide by as if on ice skates, than in print.




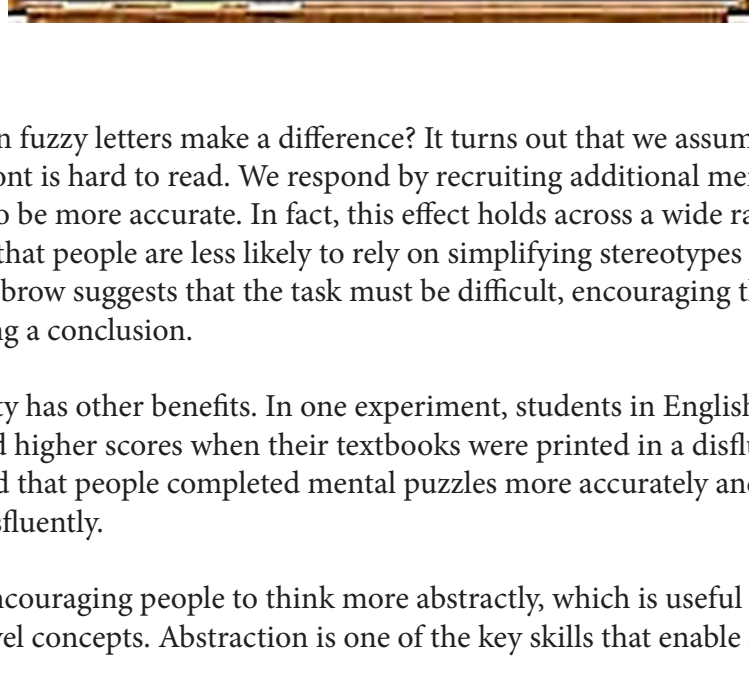
scape more closely. Consequently, we tend to miss obvious flaws that elude us because

One answer is to challenge the over-applied mantra to "keep it simple", where "it" ranges from written communication to ideas shared aloud. As mantras go, this one usually makes good sense; it suggests that people have limited processing capacity and they're more likely to take a new idea on board when the idea is uncomplicated, accessible and memorable. Unfortunately, since simpler messages are less likely to challenge us, we're also more likely to overlook them.

Researchers have shown, then, that small bursts of mental complexity -- also known as cognitive disfluency -- encourage us to think more clearly. In one demonstration, psychologists found that students fell for the Moses Illusion 88 per cent of the time when the



Like the students who failed to see that Moses had replaced Noah on the Ark, we tend to blindly follow mantras such as "keep it simple" without questioning when complexity should replace simplicity. Communicating simply and clearly is better most of the time -- but strategic bursts of complexity encourage people to leave the mental highway for slower but steadier side roads.



It can be advisable to shut off your screen a couple of hours before bedtime. The light of the screen may suppress the body's production of melatonin, a hormone that helps regulate sleep.

Is it more difficult to read from a screen?

Kretzschmar et al. did a study in 2013 that compared reading effort on three different types of tablet computers. They studied eye movement, brain activity and reading speed. The paper determine reading comprehension. The older participants read both faster and with less back lighting giving a better contrast, and because of this being better for older eyes. A study was undertaken in 2013 with tenth-graders in Norway, where the students were two texts (1,400–2,000 words) in print and the other group read the same texts as PDF-prehension test that was administered, the students who read on paper scored significantly higher. It was easier for those who read on paper to remember what they had read. Many spatio-temporal markers while you read. Touching paper and turning pages aids the memory. You read something. Having to scroll on the computer screen makes remembering more difficult.

Do you learn less when reading e-texts?

Studies that control for factors like experience and attitude among respondents are seen Ackerman and Lauterman let 80 undergraduate engineering students read five texts either on paper or on a tablet. They found that the students who read on paper spent more time they completed a test, but before the test they had to make a prediction on how well they did the texts under three different time conditions: for two texts they were allowed only 10 minutes, for three texts 15 minutes and for four texts 20 minutes. The students who read on paper spent more time on the test, but they also spent more time on the test, and they also spent more time on the test.

The paper readers generally got better results, but both groups (see Figure 1), which is nonsignificant.

Figure 1 consists of two bar charts, A and B, showing the percentage of correct answers for two groups: On-Screen Learning (OSL) and Control. The y-axis for both charts represents the percentage of correct answers, ranging from 60 to 80. The x-axis for both charts shows three conditions: Baseline, Training, and Transfer. Error bars are present on all bars.

A. On-Screen Learning (OSL)

Condition	OSL Group (%)	Control Group (%)
Baseline	~77	~69
Training	~66	~62
Transfer	~70	~62

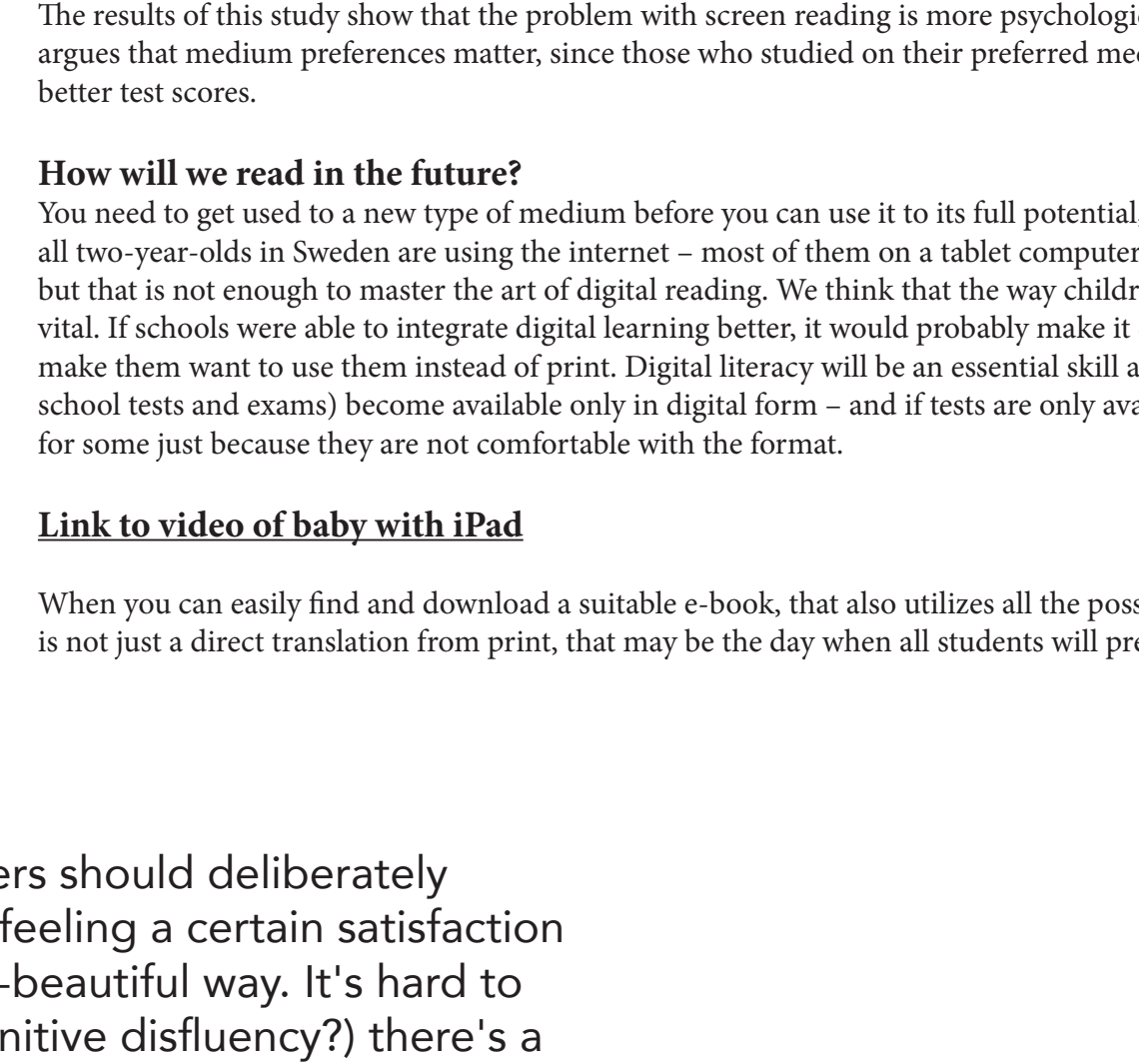
B. Control

Condition	OSL Group (%)	Control Group (%)
Baseline	~77	~75
Training	~66	~62
Transfer	~70	~75

Figure 1

Mean test scores and predictions of performance (POP) for the three time conditions (Free, Interrupted, Pressured) and the standard errors of the mean.

Small differences between prediction of performance and actual test scores means the calibration often leads to better results simply because you do not stop studying too soon.



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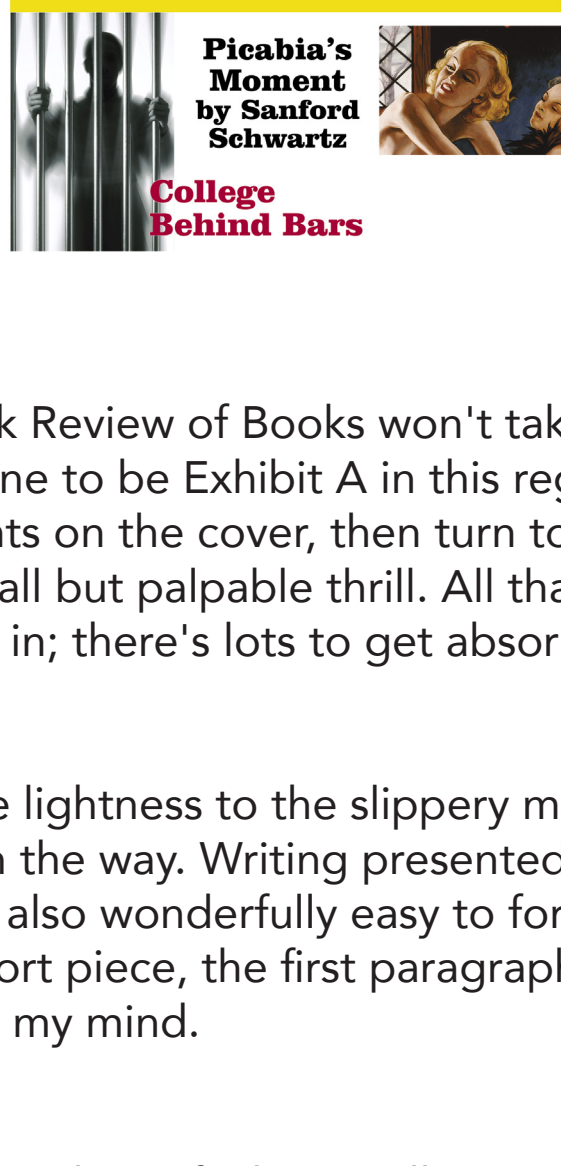
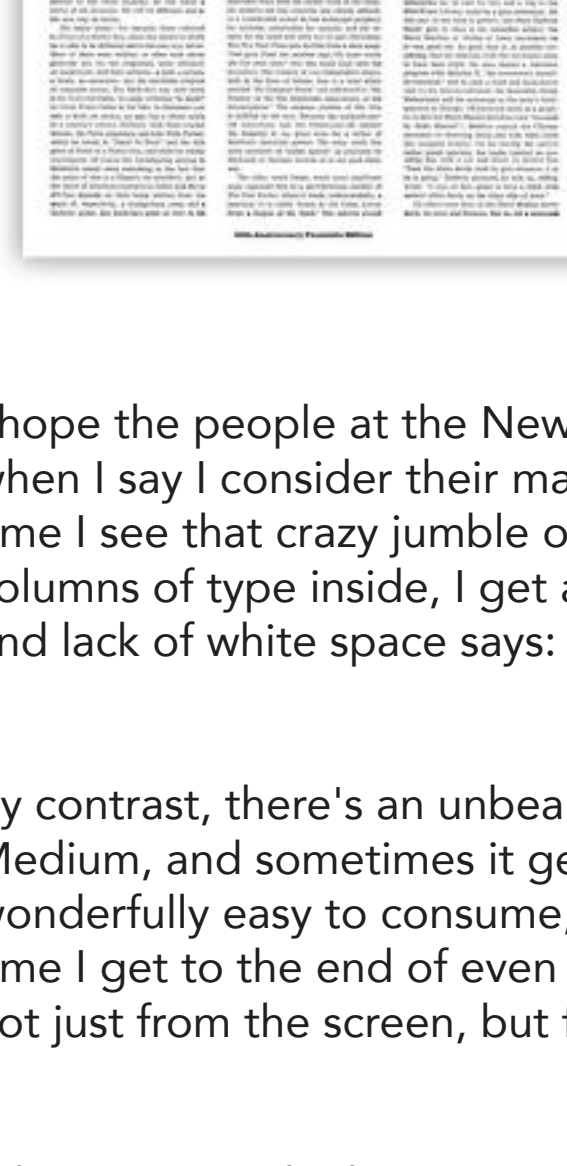
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