

## **Surviving the Flood**

by Matthew Neary

It's quite likely that machine-generated texts will soon outnumber human-written ones. With social media we got machine-generated feeds, but the content itself is still man-made. Soon most of the content might be machine-generated, too.

Let's take the example of news. First social media newsfeeds automated the editor, and now AI has the potential to automate journalists, too. When we replaced editors with algorithmic feeds, we gained certain advantages. Compared to newspapers, social media is more dynamic and more personalized. If automation is extended further and the content shared online is increasingly generated by AI reporters, these advantages will increase as well.

However, it's important to remember that in addition to these benefits, social media also introduced new kinds of problems—such as fake news, toxic discourse, and political polarization. At base, there's one big problem with social media: people live increasingly in information bubbles that reinforce their biases. This makes it very hard to reach broad consensus. In recent years, we've seen the effects of this: historical events have been interpreted in opposite ways by different groups, without ever really reaching a resolution.

Considered at a higher level, these trends are not limited to just social media or just text. The media environment of the Internet is, in general, highly individualized. This is often a good thing. However, at the limit, we all end up atomized—unplugged from community and disconnected from the broader world. With AI this trend toward atomization will accelerate. Our information silos will shrink further, asymptotically approaching one-man bubbles. In the future, we might encounter the world primarily as a fantasy land of hallucinated, machine-generated content.

For society to survive the coming flood of machine-generated content, there needs to be a countervailing force: technologies that can bolster collective sense-making and counter the gravitational pull of atomization. Otherwise, social reality will be so completely fractured that there won't be any society left. As Alan Kay once said, "The best way to predict the future is to invent it." Similarly, the best way to avoid a terrible future is to articulate a better alternative.

There's already an overwhelming amount of content online. The near-future of AI-generated content promises to greatly exacerbate this problem. Luckily, the same LLMs that power content generation can help sift through an increasingly noisy information ecosystem. However, this merely transforms a quantity problem into a quality problem. As we get more information second-hand, filtered through LLMs, we must be more careful to discern the truth and context of what's being conveyed. To survive and thrive in the era of AI-generated content, we need tools that leverage AI to help in all of these areas. It's essential that we adopt tools that help us not only to get through more content, but also to validate claims and contextualize ideas.

Solving the general case is a huge undertaking, but a new workspace for documents is a good place to start. I've started working on one. It lives, in its current form, at [MagicPaper.ai](https://magicpaper.ai)—here you'll find the beginnings of an online workspace for distilling, summarizing, and correlating texts. The main insight is that the best way to validate texts and clarify context is by tracking the provenance of where ideas come from. Furthermore, when AI is leveraged to process information automatically, provenance can provide the missing link between the cursory view and full-length sources. Let me walk through some examples:

**Question Answering:** First, load a document and then ask a question. The margins will fill with answers, each attached to a specific part of the document that backs it up. You then have the option to open the answers as a page of their own. Even once they've been lifted into their own document, the answers are all linked to the corresponding parts of the source.

Answer x

What is the kitchen sink conundrum?

GO

ANSWERS

Open

The Kitchen Sink Conundrum and Simulation's Balancing Act x

To simulate a world is almost a divine act. [One Jewish tradition](#) holds that there were multiple worlds created and destroyed before our own. They didn't quite work out—beta versions perhaps?—and so the universe was restarted again and again, until we got to the current version.

But we will never simulate a world perfectly. First we must contend with the wrench of [chaos theory](#)—butterflies flapping and the inherent imprecision of measurement and all that—which has demonstrated that systems more complicated than a swinging pendulum can cause computational simulations to rapidly diverge over time despite small changes in the initial conditions. Start with a tiny rounding error, or a measurement mistake, and there's no guarantee that a prediction will be anywhere close to where the system will actually end up.

**But there is also something that might be called the Kitchen Sink Conundrum:** as more and more detail—both in modeling features and data—is thrown into a simulation, there is no guarantee that it will get us closer to a good understanding of reality itself (see also [kitchen sink regression](#)).

Decades ago, in a RAND Corporation report from 1979 by David Leinweber, entitled "[Models, Complexity, and Error](#)," this was clearly articulated. This report examined two types of error: error of measurement and error of specification.

Error of specification refers to how accurate the model is in accounting for the richness of the system being modeled. A more sophisticated model, with more operations on the input, will hopefully correspond better to the real world: it will be more accurate. So as the complexity of the model is increased, it will adhere better to reality and there will be a lower error of specification (though there may be diminishing returns).


On the other hand, there is also error of measurement. The more complex a model, the more likely that any measurement error will compound, and cause the outputs to be wildly inaccurate. As Leinweber notes, "As the models grow larger and more complex, the compounded error in the prediction increases."

So one curve goes down with complexity and the other goes up.

1,656 tokens id:2612808005-184

**Extractive Summarization:** Again, load a document into the tool. Click distill and two things will happen: fragments of the document will be automatically highlighted and you'll be presented with a histogram. The histogram visualizes the distribution of fragment salience. You can use this chart to adjust the filter threshold. As you change the threshold, the highlights in the document will change. You can open the highlights as a page and they will remain linked to the source.

Distill x



AUTO FILTER

FRAGMENTS

Hide

Ok

The Death of the Author x

to attract an audience. Unsurprisingly, theorists and philosophers, so often the harbingers of death, rarely gain mass appeal. Whether it's deconstructionists like Roland Barthes and Jacques Derrida, or accelerationists like Nick Land, theorists get accused of encouraging apocalypses. But that misses the point: their ideas aren't aspirational, but despite this and perhaps because of this, they're often right. Camus put it well in his appraisal of Nietzsche. Nietzsche, he said, "recognized nihilism for what it was an examined it like a clinical fact." Theorists aren't in the business of architecting utopia; their job is to diagnose the present.

Returning to Barthes, his diagnosis was of course a prophecy of death: The Death of the Author. [Writing, he said, has taken on a new meaning. It is now apparent that the author doesn't build a world of his own ex nihilo, but rather channels innumerable cultural influences and presents not a linear monolith, but rather a galaxy of signifiers, open to interpretation. This gives way to the Barthesian circle of life: "the birth of the reader must be at the cost of the death of the Author."](#)

[In the new world, prophesied by Barthes and others, and realized by technologists over the following decades, writers become mere relay nodes in a global network of symbols and ideas. It was already true, in 1977, that the genius of the author had been subsumed by semiotic bricolage. Accelerating technology rebuilt the literary environment to make this an unavoidable fact in the media we now inhabit.](#)

Crying out hopelessly from the zeitgeist of the '70s and '80s, a technologist named Ted Nelson wanted the media architects of his day to know that a profound transition had already begun. The author is now a bricoleur, he declared: our new media systems must honor this. As computing technology advanced and our media systems evolved, Ted remained a persistent advocate for a comprehensive redesign that he called Xanadu. [His ideas were buried by the explosive success of the Web, but then, decades later, many of his ideas were revived among a set of tech hipsters: roamers and digital gardeners and hypertext maximalists.](#) I was among this set. I spent my senior year of college in close communication with Ted Nelson as I set out to write his story. The redesign of our media environment for its new life on computer screens felt like one of the most interesting chapters in the history of technology. And for me, as someone studying history, the fate of writing and research held a special significance.

1,368 tokens id:2979761957-208

Highlights of The Death of the Author x

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When authorial genius becomes inaccessible, bright minds can turn instead to systematic curation and organization of ideas. This is what Ted sought: the writer of the future need not labor to produce a glimmering monolith of text, but rather, writers can enter into free play in the realm of networked ideas.

Hypertext authorship centers a new kind of authorship, in which the network of ideas in the author's head can itself be shared, without being reduced to a line of words. The death of the author, however, will not give way to a new kind of author. The Barthesian circle of life will not be realized in the proliferation of a million hypertext authors.

The text is where a "variety of writings, none of them original, blend and clash," but until now these interactions couldn't be modeled comprehensively. A systematic way of reading will make the death of the author complete. At that point, when texts can be mathematically modeled as a galaxy of signifiers and the interactions between ideas can be calculated automatically, reading will finally outgrow its dependency on the author. Historically, it's been the job of the author to elaborate new ideas as an outgrowth and recombination of the ideas that came before. But soon, all these latent ideas will be readily discoverable by the reader and, empowered by new kinds of tools, readers will be free to roam farther than any author could reach.

530 tokens id:860316367-230

Abstractive Summarization:

This is the most complicated workflow, but also the one that I intend to focus on the most going forward. First you distill the key fragments from a document, then you generate a summary based on those fragments. Finally, you use another tool to correlate the summary with the input fragments. Now, every point in the summary will be connected to parts of the source text that support it.

Summary of Hypertext	Hypertext (Wikipedia)
<p>Hypertext is a technology that allows for the easy publication of information on the internet. It supports complex systems of linking and cross-referencing. The World Wide Web is the most famous implementation of hypertext. The concept of hypertext was inspired by works such as "The Garden of Forking Paths" and "As We May Think". Ted Nelson coined the terms 'hypertext' and 'hypermedia' in 1963. Tim Berners-Lee proposed and prototyped a new hypertext project in 1989, which led to the development of the World Wide Web. There have been various early implementations of hypertext, including FRESS, ZOG, and HyperTies. Hypertext fiction has emerged as a unique style of storytelling. Hypertext signifies a shift from linear to decentralized forms of media.</p>	<p>In 1963, Ted Nelson coined the terms 'hypertext' and 'hypermedia' as part of a model he developed for creating and using linked content (first published reference 1965). He later worked with Andries van Dam to develop the Hypertext Editing System (text editing) in 1967 at Brown University. It was implemented using the terminal IBM 2250 with a light pen which was provided as a pointing device. By 1976, its successor FRESS was used in a poetry class in which students could browse a hyperlinked set of poems and discussion by experts, faculty and other students, in what was arguably the world's first online scholarly community which van Dam says "foreshadowed wikis, blogs and communal documents of all kinds". Ted Nelson said in the 1960s that he began implementation of a hypertext system he theorized, which was named Project Xanadu, but his first and incomplete public release was finished much later, in 1998. Douglas Engelbart independently began working on his NLS system in 1962 at Stanford Research Institute, although delays in obtaining funding, personnel, and equipment meant that its key features were not completed until 1968. In December of that year, Engelbart demonstrated a 'hypertext' (meaning editing) interface to the public for the first time, in what has come to be known as "The Mother of All Demos".</p> <p>ZOG, an early hypertext system, was developed at Carnegie Mellon University during the 1970s, used for documents on Nimitz class aircraft carriers, and later evolving as KMS (Knowledge Management System).</p> <p>The first hypermedia application is generally considered to be the Aspen Movie Map, implemented in 1978. The Movie Map allowed users to arbitrarily choose which way they wished to drive in a virtual cityscape, in two seasons (from actual photographs) as well as 3-D polygons.</p> <p>In 1980, Tim Berners-Lee created ENQUIRE, an early hypertext database system somewhat like a wiki but without hypertext punctuation, which was not invented until 1987. The early 1980s also saw a number of experimental "hyperediting" functions in word processors and hypermedia programs, many of whose features and terminology were later analogous to the World Wide Web. Guide, the first significant hypertext system for personal computers, was developed by Peter J. Brown at the University of Kent in 1982.</p> <p>In 1980, Roberto Busa, an Italian Jesuit priest and one of the</p>
166 tokens id:2584359425-816	4,488 tokens id:4144397038-240

Interestingly, a document workspace like above isn't a new idea. It predates even the personal computer and the Web. Much of the design I've adopted in Magic Paper is inspired by ideas from decades ago. The provenance-tracking and parallel pages, specifically, are similar to designs Ted Nelson shared in *Literary Machines* (1981). These design primitives, I've found, are a perfectly countervailing force for the major challenges presented by AI adoption.

By adopting a tool like Magic Paper, we can upgrade our information bandwidth to get through more content. This will be increasingly necessary as the volume of online content grows. Similarly, we'll need to put greater care into tracing ideas back to their source and context, as more of it comes second-hand through LLMs.

The underlying designs here are nothing new. As we adopt AI in our knowledge work, we need to go back to the future of decades past. Advanced tools for reading and writing have been anticipated since the earliest days of personal computing, but they never really took off. Now, with LLMs, more powerful tools are both a possibility and a necessity.