

An introduction to Frameworks

Learning the language of design

This course has three levels (intertwined):

1 Content — Design

History + Theory

Frames + Frameworks

2 Media — Language

Texts, Concepts, Concept Maps

Loom, Figma, AI, Knowledge Graphs

3 Discourse — Learning

What is it? How do you do it?

Dialectic; Close Reading; and an Opportunity

Level 1: Content — Design

We will read 26 articles (or excerpts)
and make concept maps summarizing each.

We will also read *The Invention of Design*
and make an outline of it.

You will choose one other article, chapter, or book
and make a concept map of it —
and for your final project,
you will propose a way to connect all of these pieces.
(Don't worry about it now; there's time enough later.)

The core readings are divided into two groups:

- **History of Interaction**

Past ways of framing the future (e.g., Bush, Kay, etc.)

- **Design Theory**

Ways of framing design (e.g., design as politics etc.)

Frames vs Frameworks

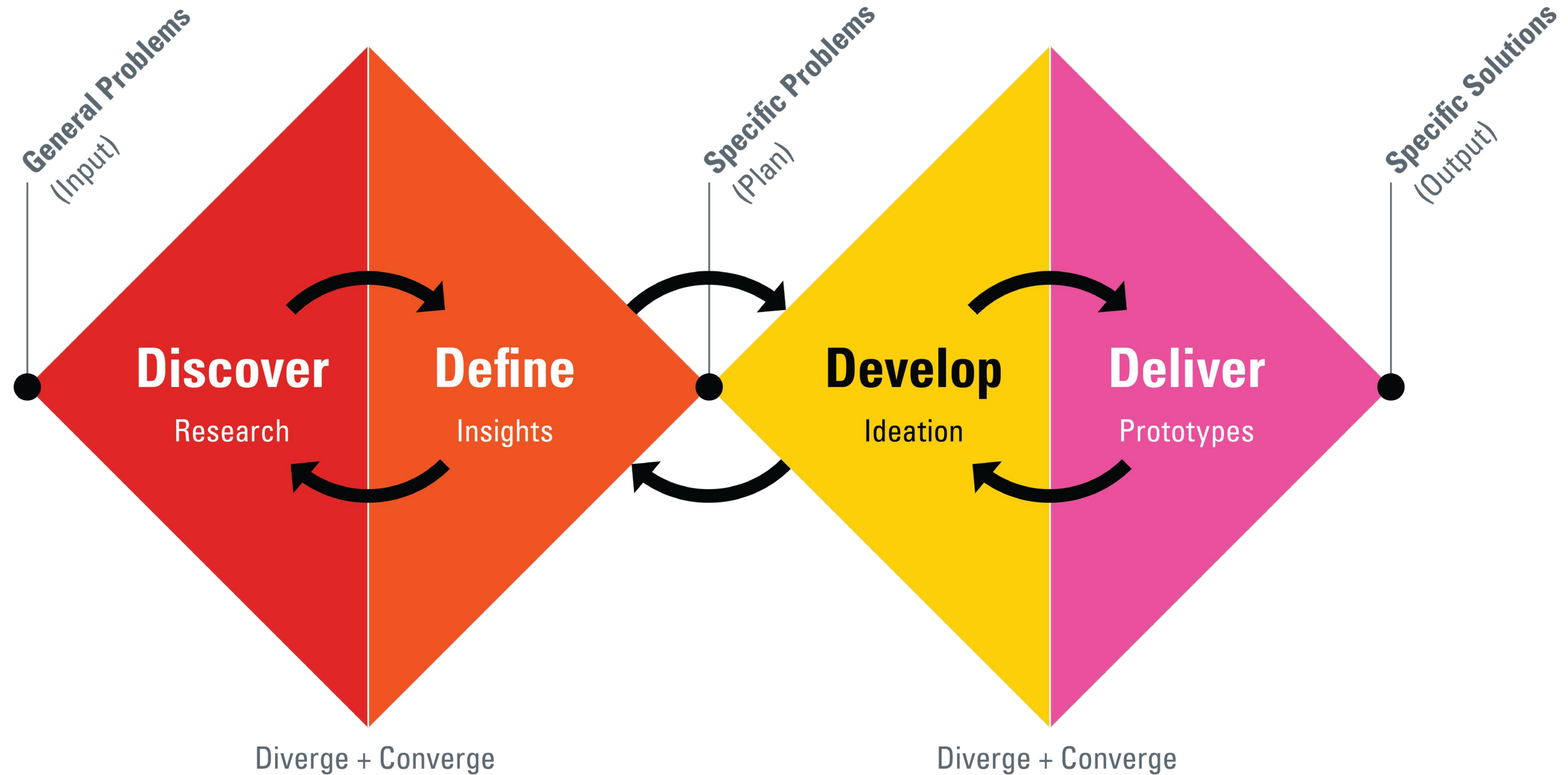
or frameworks *in-the-large* and *in-the-small*

Design frames or ways-of-framing-design are *large* —
schools of thought or branches of discourse,
so large that you might miss them.

Design frameworks are *small*, everyday things —
tools you use in-class or on-the-job,
patterns and structures that recur.

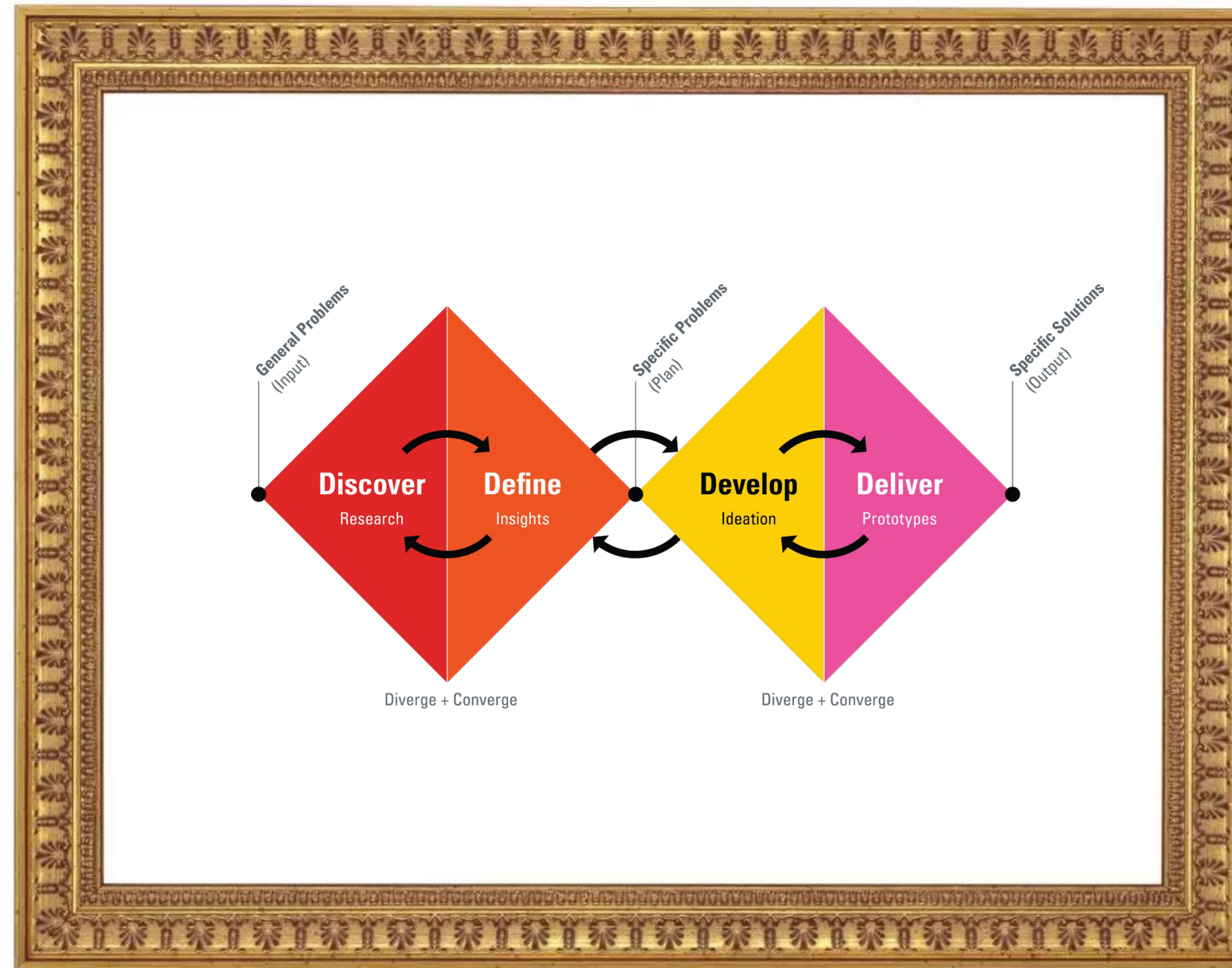
Examples of frameworks as practical tools:

- double diamond design process map



Examples of frames as schools of thought:

- design as... “problem solving”



Level 2: Media — Language

Here, we consider the evolving structures
in which we think, communicate, *and live* —

distinguishing the *content* of the course
from the *media* which contain it.

The linguist Ferdinand de Saussure
made a fundamental distinction between

- **langue:** the abstract, shared *system* of language rules;
which is relatively stable, slowly evolving

and

- **parole:** the concrete, individual *acts* of speaking (or writing)
which is more fleeting, changing continuously

i.e., langue is to parole :: as :: theme is to variations.

Typically, Saussure's *langue* evolves quite slowly,

but sometimes the underlying technology shifts abruptly —
perhaps analogous to punctuated equilibrium in evolution.

And that's happening now!

We are in such a period of abrupt shifting,
not only with generative AI (gen AI),
but also computing, networks, the cloud, the edge, IoT, ML, etc.

**These emerging technologies are deeply intertwined.
and they are the *new tools, material, and media of design* —
and everything else.**

Consider this series of design innovations:

NB: Inventions happen repeatedly and involve sub-inventions.

- language, ~100,000 BCE
- inventories + writing, ~10,000 BCE; ~3200 BCE
- papyrus + paper, ~3000 BCE; ~100
- libraries + cataloging systems, ~2000 BCE
- marginalia + glosses, ~300 BCE
- commonplace books, ~100
- indices + concordances, ~1230
- printing, ~1455
- portable libraries, 1501
- scientific journals, 1665
- newspapers, highspeed printing, ~1830, ~1847
- formal citations, 1881
- radio + TV, 1920; 1936
- computers + databases, ~1962
- the web + smartphones, ~1993; 2007
- gen AI + agents, ~2022

Until Gutenberg, books had been rare, worth about three years salary; they we're literally chained to shelves in medieval libraries.



In 1455, Gutenberg published his bible, two volumes weighing about 70 pounds. Early tech replicates existing tech, increasing speed + reducing cost.



New tech takes 20 or 30 years to find its own form.
A generation after Gutenberg, Aldus Manutius published a “portable library”.



The result of printing was:

- direct access to “the word of god” — and the Reformation
- nearly universal literacy — and the Enlightenment
- perhaps even the “democratic” nation-state
- and arguably “modernism” itself

The invention of printing was enormously beneficial —
and enormously disruptive, e.g., more than 130 years of religious wars.

Maturana reminded us: **We are responsible for our technology.**

He notes, we live in discourse — i.e., in language —
and the language we use brings forth our technology and our world.

“The reality that we live arises instant after instant
through the configuration of emotions that we live,
and which we conserve with our living instant after instant.

But if we know this,
if we know that the reality that we live
arises through our emotioning,
and we know that we know,

we shall be able to act
according to our awareness
of our liking or not liking the reality
that we are bringing forth
with our living.

That is, we shall become responsible of what we do.”
— Humberto Maturana, “Metadesign,” (1997)



See http://www.digitalcultures.org/Library/Maturana_Metadesign.pdf

Level 3: Discourse — Learning

Here, we think about what it means to learn —
to “know what you’re talking about.”

Consider some common analogies for learning:

- practice and study (studio)
- struggle with content
- absorb information
- distill the essence
- retain a concept
- translate into other words
- make something relatable
- discuss an idea
- stick or land a point
- hold an idea in mind
- make larger connections
- recognize a recurring pattern

Printing wasn't the first disruption of communication.
(And it happened not only in Europe, but also in Asia.)

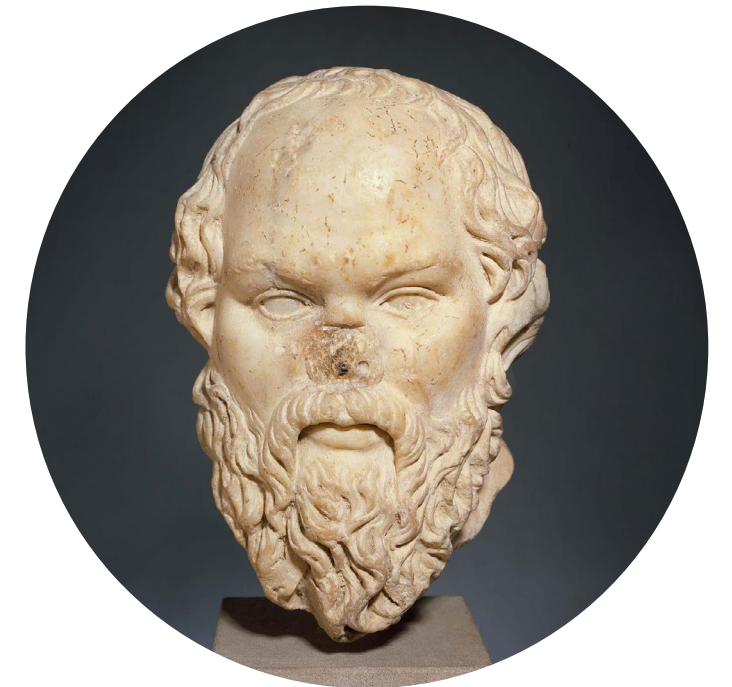
Before printing, there was an earlier disruption — writing —
the move from an oral culture to a written culture.
(And it happened in several places around the world.)

Like parents and teachers complaining about phones and AI, **Socrates complained about “kids today” and their damn books.**

“... **this invention will produce forgetfulness**
in the minds of those who learn to use it,
because they will not practice their memory.
Their trust in writing,
produced by external characters
which are no part of themselves,
will discourage the use
of their own memory within them.”

“You have invented an elixir not of memory,
but of reminding;
and you offer your pupils the appearance of wisdom,
not true wisdom,
for they will read many things without instruction
and will therefore seem to know many things,
when they are for the most part ignorant
and hard to get along with,
since they are not wise,
but only appear wise.”

§ 275a, translated by Harold North Fowler, Loeb edition 1914
<https://topostext.org/work/94>
Written ~370 BCE, describing events from ~418.



“... you might think [written words] spoke
as if they had intelligence,
but if you question them,
wishing to know about their sayings,
they always say only one and the same thing.

And every word, when once it is written,
is bandied about,
alike among those who understand
and those who have no interest in it,
and it knows not to whom to speak
or not to speak;

when ill-treated or unjustly reviled
it always needs its father to help it;
for it has no power to protect or help itself.”

§ 275a

Socrates contrasts mute writing
“...with intelligence in the mind
of the learner,
which is able to defend itself
and knows to whom it should speak,
and before whom to be silent.”

§ 276a

“... he who has knowledge
of the just and the good and beautiful ...
will not, when in earnest, write them in ink,
sowing them through a pen with words
which cannot defend themselves by argument
and cannot teach the truth effectually.”

§ 276a

“... he will ... write, when he writes,
to treasure up reminders for himself,
when he comes to the forgetfulness of old age,
and for others who follow the same path, ...

**in my opinion, serious discourse ... is far nobler,
when one employs the dialectic method**

and plants and sows in a fitting soul intelligent words
which are able to help themselves and him who planted them,
which are not fruitless, but yield seed
from which there spring up in other minds other words
capable of continuing the process for ever,
and which make their possessor happy,
to the farthest possible limit of human happiness.”

§ 277a

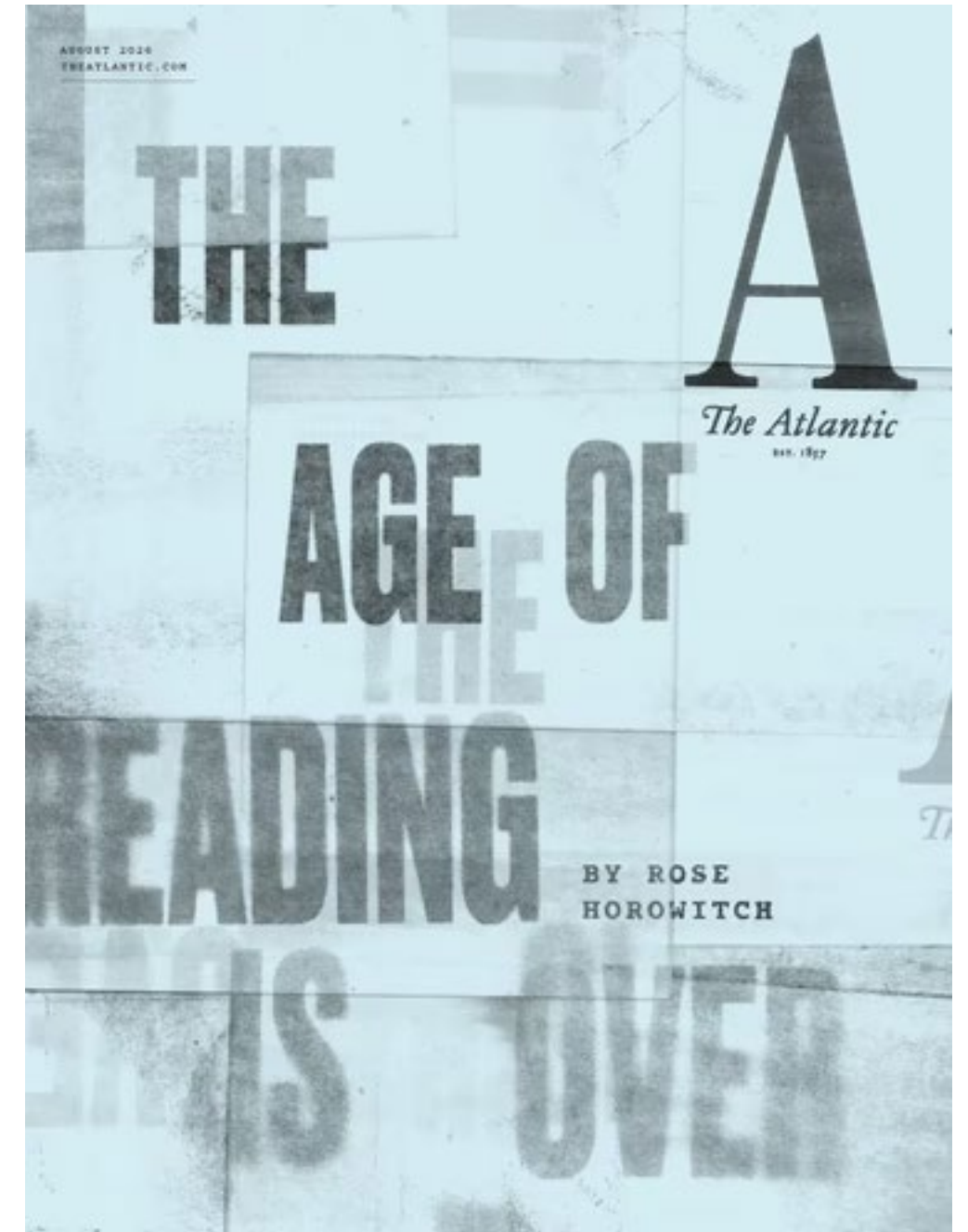
The Atlantic published a cover article titled:

“The End of Reading Is Here

Optimists once believed
that universal literacy was inevitable.
Now it seems that the age of reading
might be a short anomaly in human history.”

July 8, 2026

https://www.theatlantic.com/magazine/2026/08/reading-crisis-postliterate-age/687618/?gift=5sVoCBt0QWb9a4Rm82hZ9xTokes1HKYBK44l7C0aRKY&utm_source=copy-link&utm_medium=social&utm_campaign=share



Following in the steps of Marshall McLuhan and Neil Postman, the author, Rose Horowitz, updates an important argument:

“The media we use to interact with one another shape the world we inhabit.”

“We shape our tools, and thereafter, they shape us.”
[Culkin after McLuhan, Churchill]

And our media shape us
and how we think
They also limit what we can think.

Horowitch believes

... that books (long-form text) taught focus and scaffolded reflection.

And that supported logic, inference, and abstraction — traditional “thinking” skills.

... that TV distracted and overwhelmed people,
that smartphones and social media made it worse,

... and that AI will be a disaster.

She quotes historian **Walter Ong's** 1982 book, *Orality and Literacy*.

“More than any other single invention,
writing has transformed human consciousness.”

Horowitch adds,

“[Ong] argued that literacy created the conditions
for inner concentration, extended focus, and logical deduction.
It allowed for a new kind of rational, linear, and analytical thought.”

She argues that now people are becoming worse at thinking.

She cites a study,

“Nearly 30 percent of American adults cannot paraphrase or make inferences from a multipage text.

... people are losing the ability to think deeply about writing. ...
they are losing the higher-order abilities of comprehension and synthesis.

America, in other words, isn't illiterate. It's postliterate.

Things are about to get worse, and fast.”

Horowitch briefly mentions *The Phaedrus*,
“But as writing eroded individuals’ memories,
the media theorist Andrey Mir has observed,
it improved society’s collective memory.

Could the generations growing up
with their brains hooked to endless video feeds
be developing some kind of novel,
as-yet-undetectable cognitive brilliance? Perhaps.

But for now, the decline of reading seems to be ushering in
a less rational, analytical, and sophisticated mode of thinking.
It’s difficult to see any advantages in that.”

New technologies — innovations — have trade-offs.

- Writing reduced individual memory but increased collective memory.
Individuals have less depth but way more breadth.
- Computing further reduced individual memory but vastly increase collective memory.
Search, Wikipedia, the Wayback Machine, Amazon, YouTube, even TikTok
- AI (et al) is doing it again,
but the upside should be more than efficient summary.
The potential is for AI to understand you, your interests, and your context.

Imagine a future in which you have research assistants.
They know what you've read, what you're working on, and your goals.

They “know” because you've carefully tended your context files — including a series of mark-down (.md) files.

Your .md files include all the concepts you've gathered in Loom, your concept maps, and even the raw readings (and your highlights).



Knowledge Navigator, Apple (1987)

That's among the goals for the Loom tool:

- extending your memory (a “MemEx”)
- collecting your readings and notes
- building a vocabulary and glossary
- and beginning the social construction of knowledge —
engaging with your colleagues, teams, and cohort,
so that one cohort builds for the next.

One more thing: Navigating the transition

You will find yourself caught between two worlds:

- the liberal order of print, literature, and structured thinking
- the emerging (dis-)order of computers, the internet, and AI

You will need to navigate both.

You will need to “code switch”.

I will end with a few hints, but the biggest is: Experiment!

Semiotician Umberto Eco wrote ***The Role of the Reader.*** (1979)

“... (texts are lazy machineries that ask someone to do part of their job).”

pg 214

A close reading does not *drain* a text; it creates something new.

Whatever “meaning” emerges is (re-)created by the reader,
as they connect what they read to their experience of the world
(and ignore or reject some or all of the text).

And whatever the author wrote only dimly mirrors
their reflections on a small part of their experience of the world.

Hints for reading (doing the book's work for them):

- **Start at the back, with the bibliography and end notes.**

They will give you a sense of the author's tribes.

And you can correlate those with your tribes.

- **Read the abstract, introduction, and first chapter.**

The main ideas should be spelled out there.

- **Read the ToC thoroughly.**

Look for sections relevant to your work or in opposition.

- **Flip through the whole book, and flag diagrams.**

If the author took the trouble to make a diagram,
then the subject is important to the author.

Also, diagrams sometimes summarize a system.

Bjoern Hartmann, in CS HCI, has advice for grad students.

- Back up your research to GitHub, so you don't lose anything.
- Avoid the details trap
- Focus on the big picture
- Prioritize substance over polish
- Look at what is omitted
- Don't bury the lede
- Order by importance
- Use headings
- Include crisp citations + links

<https://people.eecs.berkeley.edu/~bjoern/advice/firstsemester.html>

<https://people.eecs.berkeley.edu/~bjoern/advice/reviewing.html>

An old canard is that all writing is re-writing; (likewise designing).

The same goes for reading:

Close reading is rereading — rewinding and reflecting.

- Read once quickly to get the main idea
- Reflect on the title, sub-title, and abstract or intro
- Read a second time more slowly
- Highlight key passages; look for quotes; note concerns
- Identify key concepts; **make a list** — your first translation
- Order the concepts; rank and triage
- **Look for connections** — your second translation
- **Re-present the concepts and connections** — your third

Close reading (understanding) **begins with distinctions that matter;**
e.g., langue vs parole.

At the very same time, **understanding also requires analogy,**
e.g., langue : parole :: theme : variation

These two operations, **separating and linking, are the foundation.**
e.g., distinction : analogy :: nouns : verbs
e.g., nouns : verbs :: concepts : links
e.g., link : separate :: compare : contrast

Concepts and Links form Propositions.
Linking Propositions forms Concept Maps.

Concept Maps are rudimentary Knowledge Graphs.
Knowledge Graphs mirror How-we-Think.

The goal of this class (and of learning) is to extend your thinking.

MIT Professor Vannevar Bush wrote in **“As We May Think”** (1945)

“The human mind ... operates by association.

With one item in its grasp, it snaps instantly to the next that is suggested by the association of thoughts,

in accordance with some intricate web of trails
carried by the cells of the brain.

It has other characteristics, of course;

trails that are not frequently followed are prone to fade,
items are not fully permanent, memory is transitory.

**Yet the speed of action, the intricacy of trails,
the detail of mental pictures,
is awe-inspiring beyond all else in nature.”**

Bush went on to add,

“Man cannot hope fully to duplicate this mental process artificially, but he certainly ought to be able to learn from it.”

As a start, Bush proposed his version of the MemEx.

He inspired Douglas Engelbart.

Engelbart inspired Kay, and Nelson, and Licklider.

Their work became Xerox PARC, and Apple, and Microsoft.

That thread (and many others) became modern computing.

It also became part of design discourse:
each generation **reading the last,**
and **writing to the next.**

Now, that includes you.

Special thanks to

Ben Shaw

Eric Rodenbeck

John Cain

Kevin Ma

Lingxiu Zhang

Ryan Reposar

Presentation posted at

https://courses.dubberly.com/frameworks_2026_fall/