

Rethinking
Digital
Reading

How to read this document

To ensure an optimal digital reading experience, this document is designed for viewing in landscape orientation. I recommend displaying this documentation in full-screen mode on a device with a screen similar in size to a laptop(13 inches).

Acknowledgements

Firstly, I'd like to extend my deepest gratitude to my supervisor and Interaction Design guru, Mosse Sjaastad, for seeing value in my early ideas and visual communication background. Her dedicated mentoring and honest criticism have been instrumental in shaping this project.

I would also like to thank my external supervisor, Geir Atle Hustoft, an AHO alumnus and Service Designer at PwC, for generously dedicating his time to mentor me in my process and methods.

Lastly, I'd like to thank my parents, especially my mother, for their encouragement and positivity during our video calls from India, which kept me motivated. My good friend and colleague, Hanne Lockertsen, also contributed to my positive mindset with her honest feedback and shared humour.

I would also like to acknowledge the use of ChatGPT in refining my writing structure where the final outcome is a curated blend of my own thoughts, with grammar corrections and language suggestions provided by the AI.

Introduction & Motivation



I am Siddharth Kothiyal, a 27-year-old designer from a small Himalayan town in India. I studied communication design for four years in New Delhi and then worked as a graphic designer for 2.5 years, which cemented my love for the visual media and typography.

In Autumn 2023, I joined Studio course named Editorial led by Mosse Sjaastad. The lectures, curriculum, and collaborative projects gave me inspiration and ideas for my diploma project topic.

My motivation for doing this project is to stretch my creative muscles and demonstrate my experimental approach in my portfolio of work. After graduation, I want to use this project to connect with design practices like Moniker, Special Projects and Heydays that see value in explorative approach.

Part 1

This section provides an overview of my design process and methods, which are elaborated upon in greater detail in the second part.

Introduction

Scope

Approach

Context

Part 2

This main section of the documentation delves deeper into the topics introduced in part 1, along with explorations.

Research

Explorations

Conclusion

Part 1

This section provides an overview of my design process and methods, which are elaborated upon in greater detail in the second part.

Introduction

Scope

Approach

Context

Introduction

Quick Intro

BLINK is an explorative design project about opportunities and possibilities in digital reading that rethinks ways of presentation, interaction and understanding of text.

Process

Possibility-driven approach to make experience prototypes and reflect upon them with research insights, expert review and user testing sums up my process.

Deliverables

The project aims to develop a library of digital experiences—artefacts that are pockets of mini-solutions, which can be integrated in existing products or spark ideas for a new product.

Scope

Position within disciplines

This project is positioned between interaction design and graphic design.

Medium of application

Digital reading encompasses devices such as mobiles, tablets, e-readers, and computers. My exploration primarily targets browser formats and apps that utilise internet capabilities, with potential extensions to operating system functions.

Scope

Nature of content

The type of reading content was pinned specific to knowledge texts in long-form essays where the topic is a blend of technology, digital culture, society and philosophy. It's goal is to inform, educate, and facilitate thought in readers. Unlike purely academic texts- this is more accessible to a wider audience as it blends research with writer's personal insight, and speculation. I have chosen to work with Maggie Appleton's blog and Interconnected by Matt Webb.

Interconnected by Matt Webb

Interconnected

A BLOG BY MATT WEBB [About](#) [Archive](#) [Work](#)
SUBSCRIBE FOR \$0 [Email](#) [Feed](#) (What is a feed?).
UNOFFICE HOURS [Book a call](#) (What is this?).
A.K.A. @GENMON [X/Twitter](#) [Insta](#) [Threads](#) [Mastodon](#) [LinkedIn](#)
BUILDING THE AI CLOCK [Check out Poem/1](#)

Is AI sentient and is it even useful to ask?

15.47, Monday 9 Jan 2023 [Link to this post](#)

June 2022. Blake Lemoine, an engineer at Google, claims that the AI is sentient [and is fired](#) (*The Verge*).

Although, not quite. You can piece what actually happened from Lemoine's own [contemporary Medium article](#) and the subsequent [Washington Post piece](#) [no paywall]: Lemoine shared a doc around Google titled "Is LaMDA Sentient?" (LaMDA is the name of the AI language model like GPT-3) – a colleague said this was "a bit provocative." He started to speak with people outside the company, was placed on disciplinary leave for violating confidentiality. Lemoine upped the ante, "inviting a lawyer to represent LaMDA," and then said "kinda done I reckon. But the point is that the question was asked."

Can an AI be sentient?

Maggie Appleton's Blog

The screenshot shows the top of a blog post. At the top right, there are navigation links: 'The Garden', 'Now', and 'About'. Below that is a menu with 'ESSAYS' and 'BUDDING'. The main title is 'Metaphors We Web By' with a subtitle 'A history of our metaphorical understanding of the web'. There are tags for 'Design', 'Linguistics', 'Metaphors', and 'The Web'. On the right side, it says 'Planted over 2 years ago' and 'Last tended over 2 years ago'. Below the tags is a 'Table of Contents' link. The main text begins with 'In Tim Berners-Lee's original pitch for The Web, he described it as a "non-linear text system" for notes. It was designed for scientific researchers and academics to pass around documents that would otherwise be printed on physical paper. The point of the web was to mimic long, text-based, paper documents, but simply make them easier to move around.' Below this is a section titled 'Paper documents were the original metaphor for the web.' followed by another paragraph: 'It's no surprise we started with paper. At the moment of the web's conception, computers were objects that lived among white-collar office workers. They were pitched as replacements: they would replace your inbox tray, your

Scope

Textual Information

I am working with purely textual information which excludes any other form like pictures, videos, illustrations or audio. Within the text, I will focus on the semantic and presentational aspects.

Typography is essential to text presentation, which is a design discipline in itself. Further scope is on the arrangement and layout of text. Semantics includes meaning-making from textual content for comprehension.

Approach

Possibility-driven approach

This project follows a possibility-driven approach, which doesn't involve solving specific problems but exploring the possibility space within the subject matter. The methods mentioned in the next pages are highly relevant to the above approach. I will showcase a diagram demonstrate my process in the next page

Approach

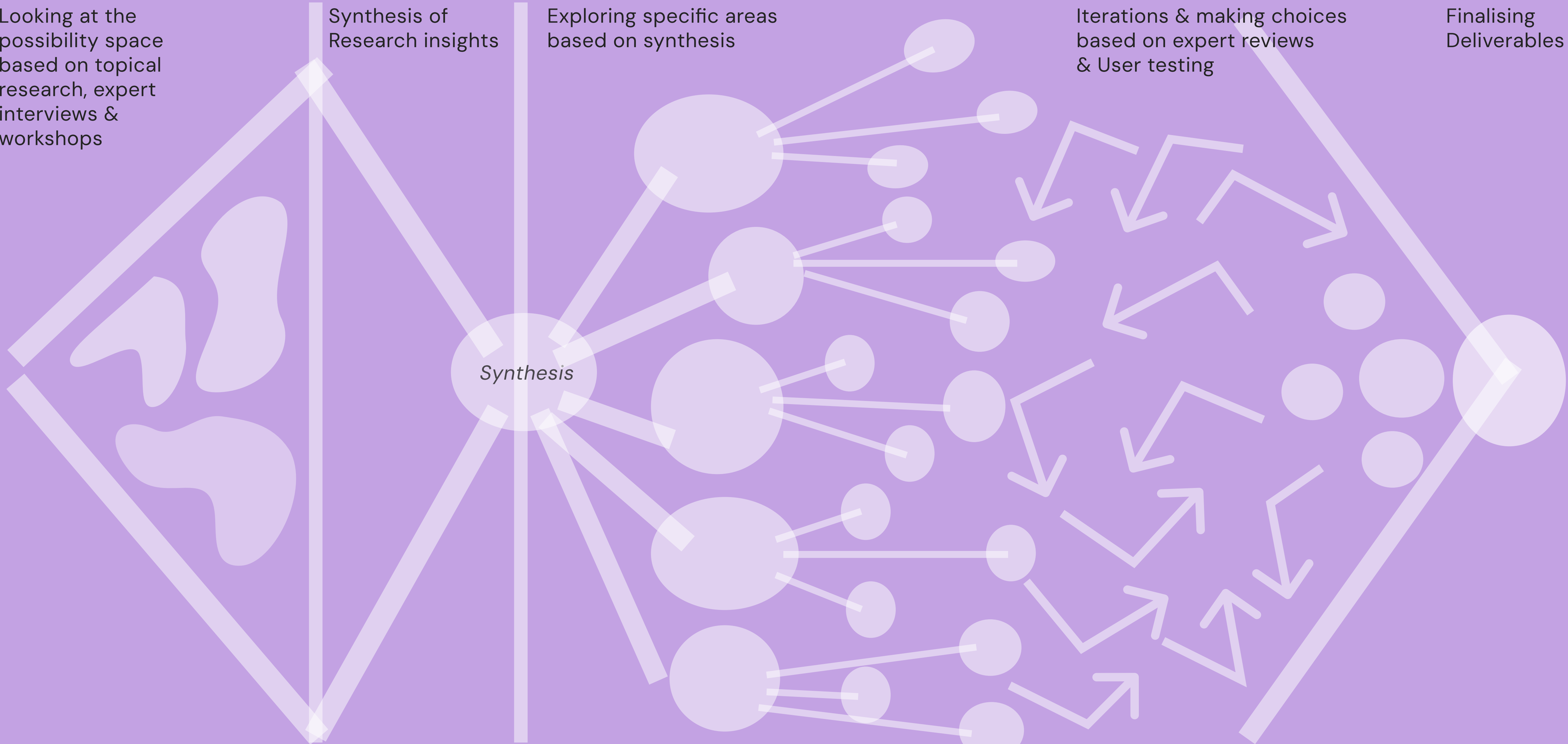
Looking at the possibility space based on topical research, expert interviews & workshops

Synthesis of Research insights

Exploring specific areas based on synthesis

Iterations & making choices based on expert reviews & User testing

Finalising Deliverables



Research

Starting with topical research

Starting with broad topical research, I went through books, research papers, case studies, news articles, blogs, social media posts, and YouTube talks. The richness of the research material on digital reading prompted me to avoid narrowing it down to specific user groups initially.

Expert Interviews

I opted for expert interviews because they can recognise patterns and anticipate market shifts. The format also encouraged them to provide candid and nuanced reflections, which streamlined complex user behaviours for me.

The material also led me to connect with experts in technology, interaction design, graphic design, typography, psychology and reading research for interviewing them.

Workshop & Design Sprint

I conducted workshops and design sprints with fellow designers to address specific obstacles in digital reading.

Research

Synthesis

This involved making sense of the emerging themes, insights and hypotheses from the research methods for the next step of sketching concepts.

Benefit from these methods

The methods allowed me to have an overarching view of my explorative process. The expert interviews were crucial in making sense of the feedback from readers.

Explorations

Designing, reflecting, reviews and testing

Based on the research synthesis above, I built some early experience prototypes for expert reviews and user testing. The feedback led to further explorations within a framework of integration, scenarios and contexts. This process was highly iterative as more expert reviews fed back with more reflections leading to more practical scenarios.

Benefits from Experience prototyping

Experience prototyping helped me in communicating my concepts to frame and find possibilities. Reflection was an important part as it informed my sketching process. Drawing upon Schön's notion of reflective design practice as "going back and forth, between construction and reflection as a means to understand" and having a "reflective conversation" with the situation.

Conclusions

Library, Reflections, Scenarios

I implemented the feedback from testing and reviews in the previous phase into one concept. Using that concept, I showed some practical scenarios. The deliverables also showcase the possibility for library through a mini-design system for digital reading. These deliverables aim to be integrated into existing products or inspire a new digital product.

Context

Shift over history

Textual information has been central to human information acquisition for centuries. History is built around interfaces crafted for the written word, evolving from solid letters on clay tablets to ink on paper, and finally to bits of computer memory.

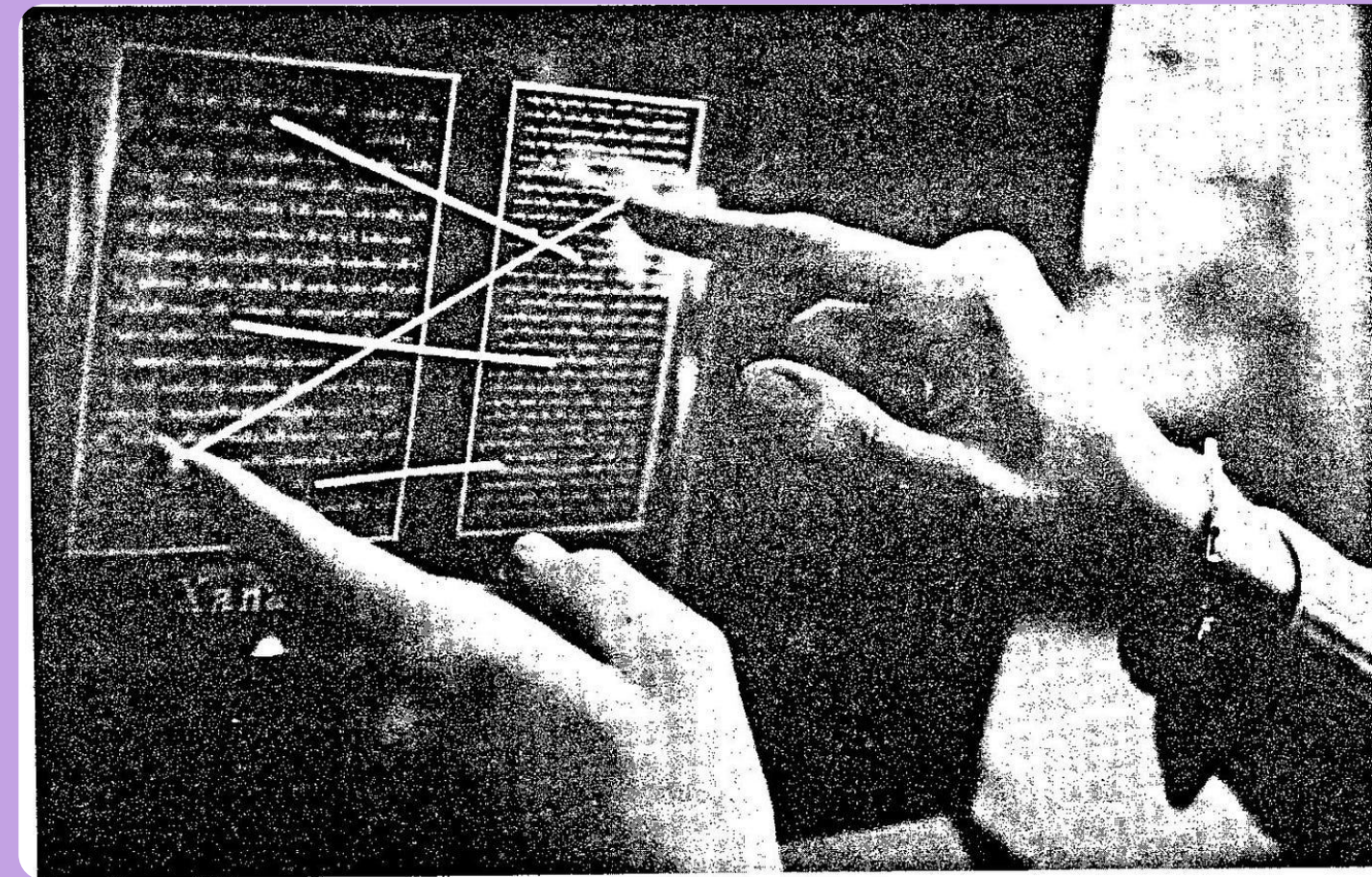
Today, the ubiquitous influence of digital technology like smartphones, tablets and laptops represents a profound shift, as Jaron Lanier, a new media theorist said "...these technologies externalise and objectify the mind". As information grows accessible through the internet, digital interfaces can mediate all of human culture, through browsers, apps and OS. This allows extremely flexible and fluid ways to engage with text.



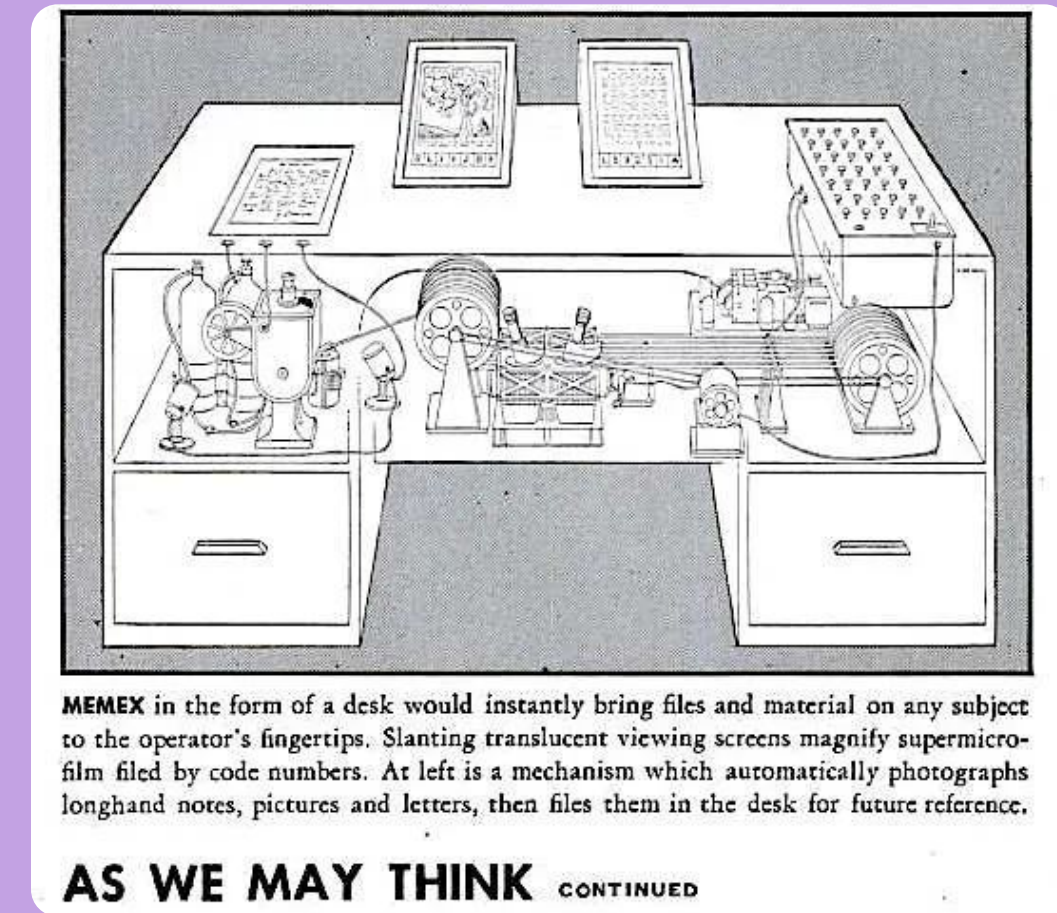
Baggage of conventions

Maryanne Wolf, a neuroscientist at the University of California, Los Angeles notes that our brains have to learn to read and have no special network of cells just for reading. Centuries of reading conventions were defined by books- solid linear objects with separate pages. This established structures like columns, paragraphs, indexes etc.

Projects like Ted Nelson's "Xanadu" and Vannevar Bush's "Memex" liberated text from its traditional storage and laid the conceptual groundwork for today's internet. This has compressed any hierarchy of time and linear order, where we can choose and navigate information our way.



Ted Nelson, "As We Will Think" (1972 version)



Vannevar Bush's idea of memex

Challenges of present

Today, information production has exploded where choosing is stressful and our capacity to make decisions is suffering. We need new rhetorics and aesthetics that address the challenges emerging from this shift.

Part 2

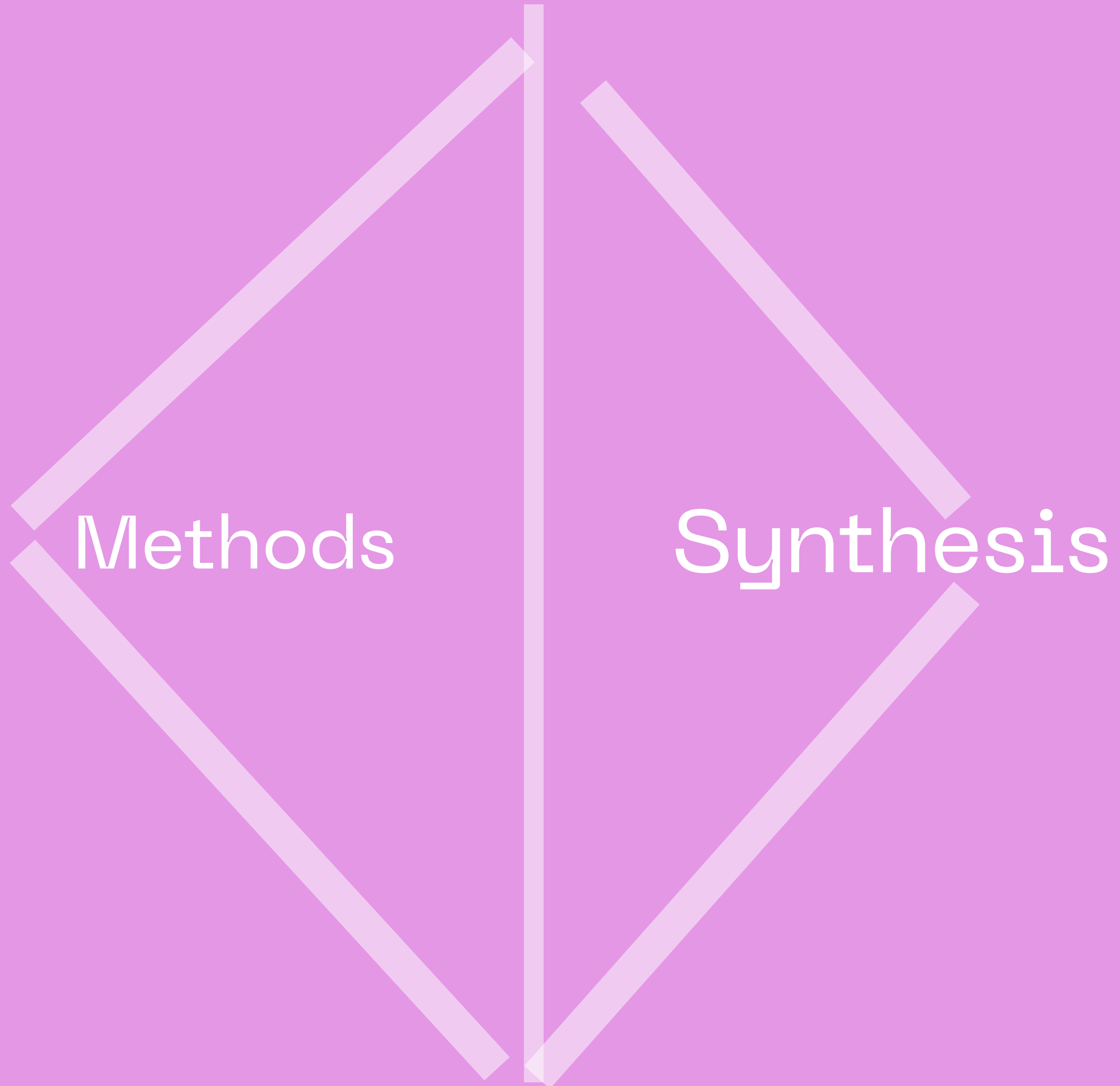
This main section of the documentation delves deeper into the topics introduced in part 1, along with explorations.

Research

Explorations

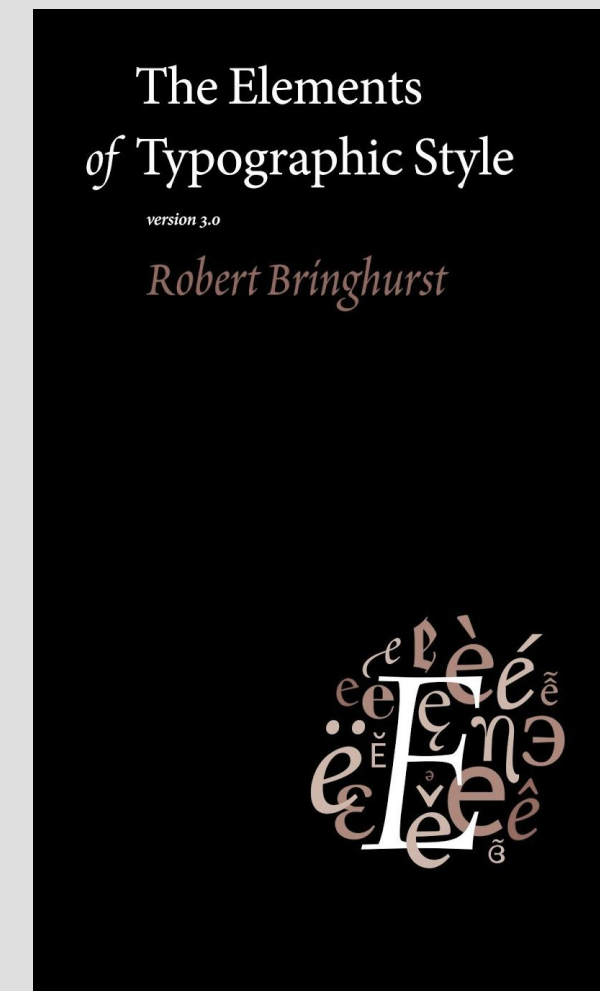
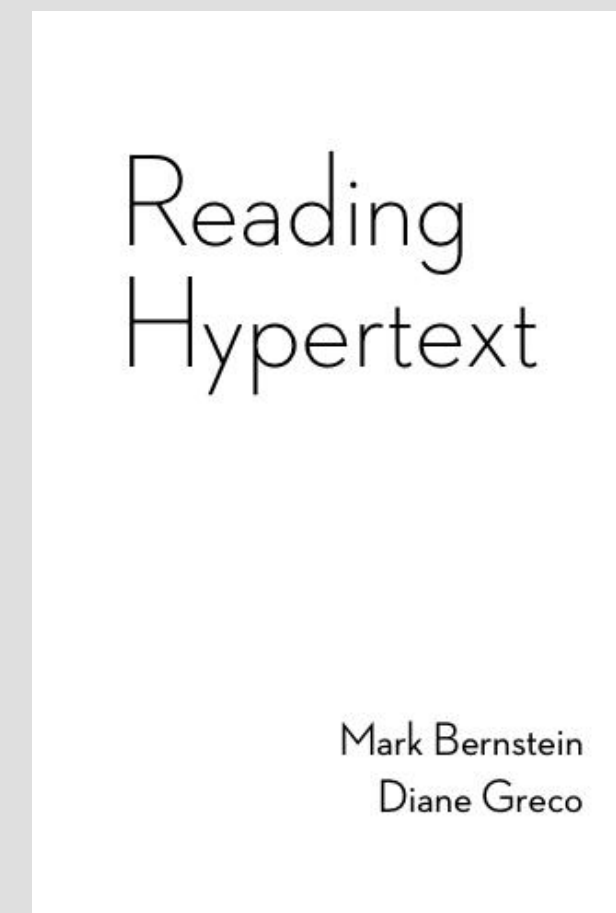
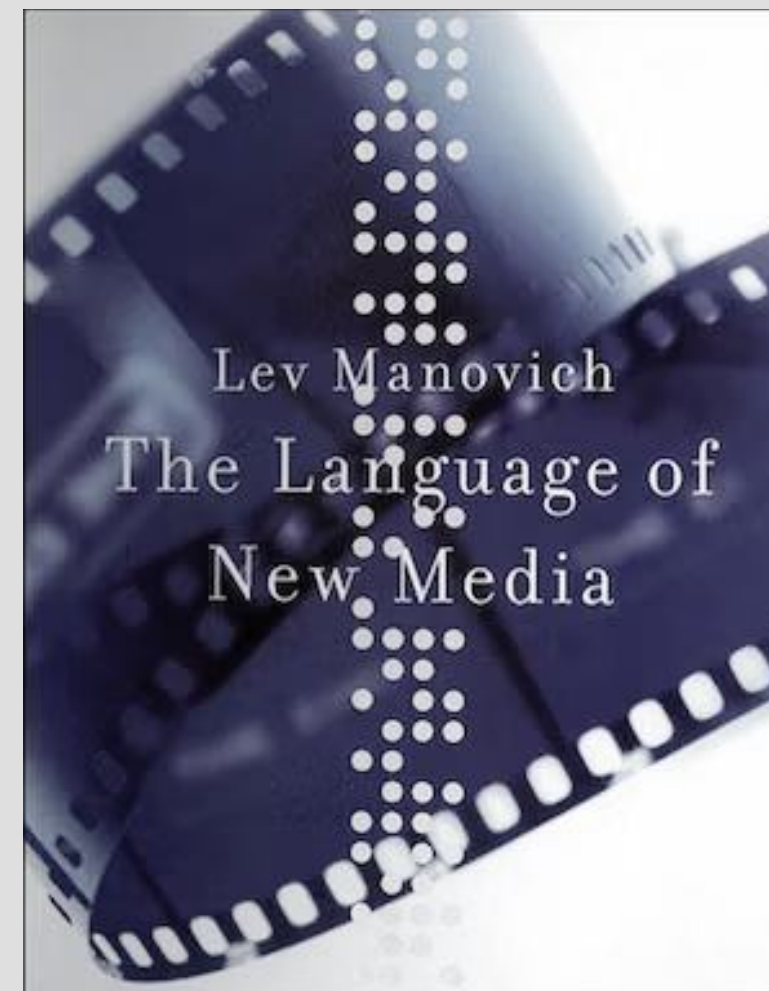
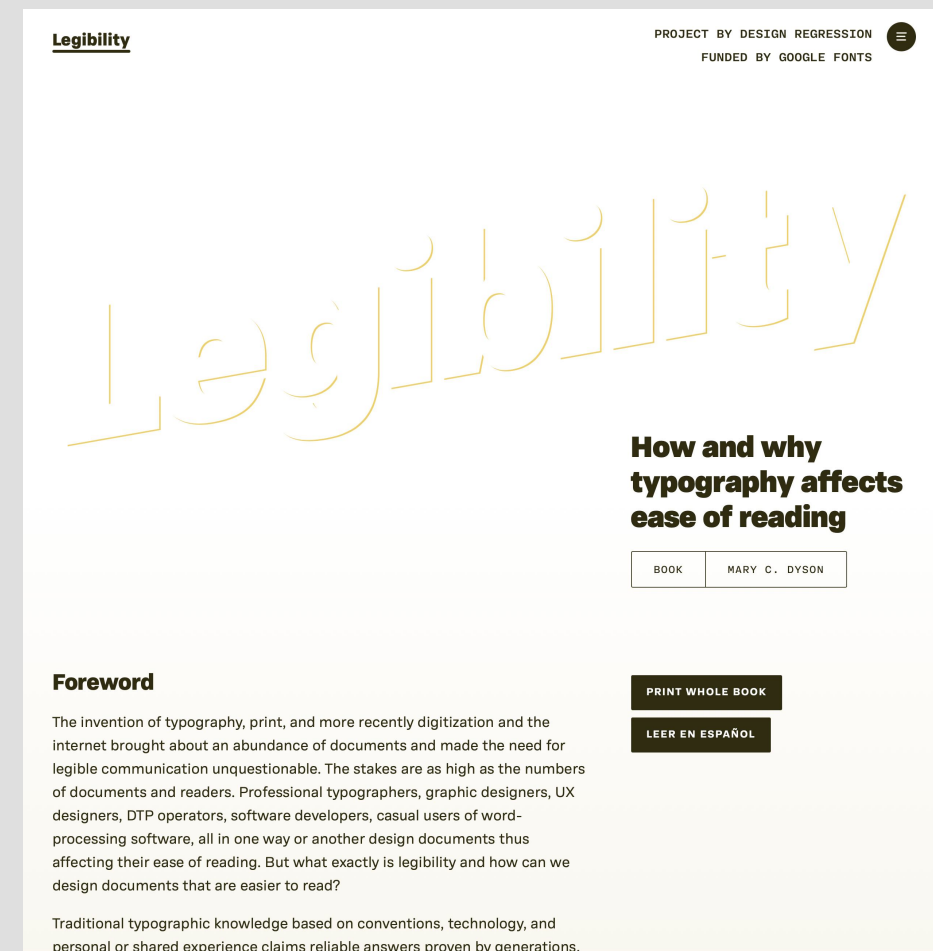
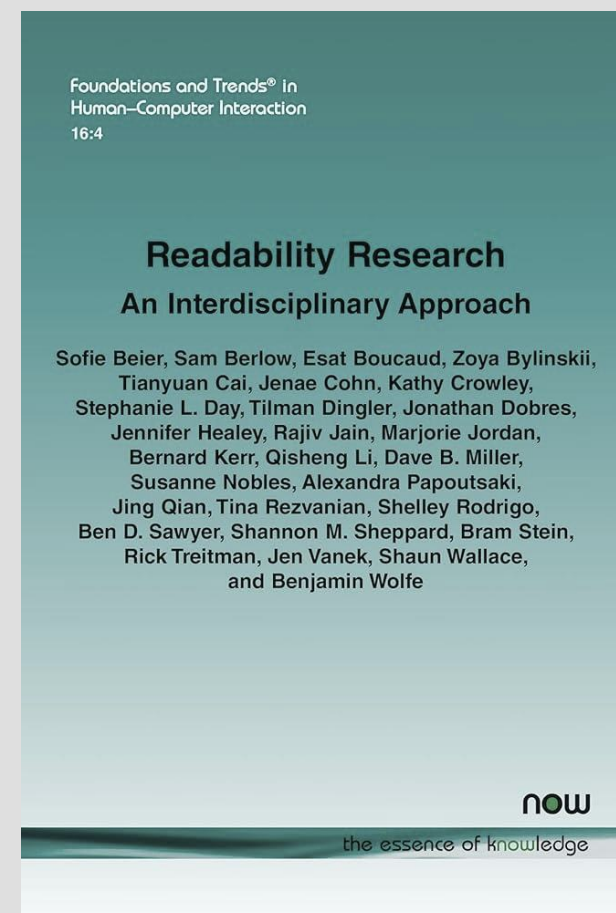
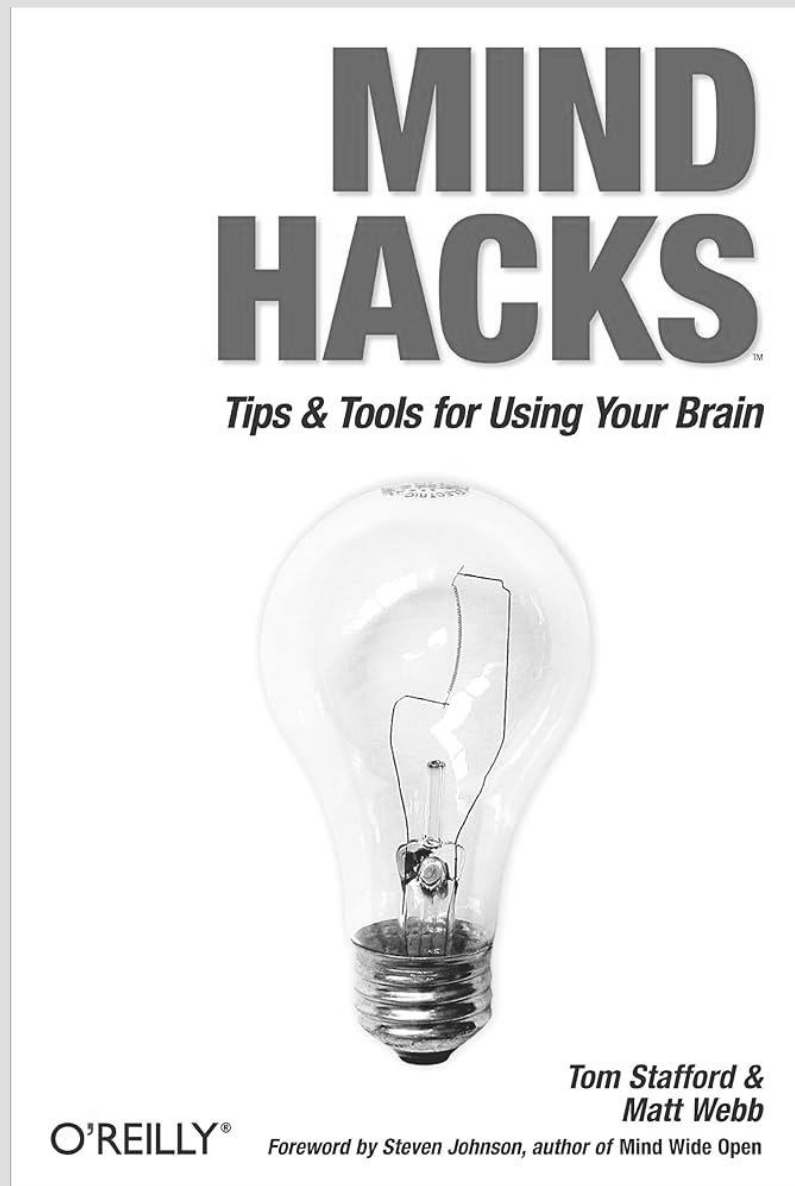
Conclusions

Research



Methods

Topical Research



Methods

Topical Research

Topical research involved gathering and reviewing information specific to the topic based on academic journals, research paper, new articles and case study

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Search journals, books, images, and print

JOURNAL ARTICLE

Redefining Reading: The Impact of Digital Communication Media

NAOMI S. BARON

PMLA
Vol. 128, No. 1 (January 2013), pp. 193-200 (8 pages)
Published By: Cambridge University Press



<https://www.jstor.org/stable/23489277>

Jh

Book History
Volume 25, Issue 2, Fall 2022
Johns Hopkins University Press

Article

Viewed Download Save View Citation

Additional Information

New Leaves: Riffing the History of Digital Pagination

Martin Paul Eve — (bio)

Introduction: Against the Page

Page space isn't a given, an a priori static entity.

Johanna

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People and Computers XX — Engage
pp 41–56 | Cite as

People and Computers XX — Engage > Conference paper

Measuring the Aesthetics of Reading

Kevin Larson, Richard L. Hazlett, ... Rosalind W. Picard + Show authors

Conference paper

631 Accesses | 10 Citations | 2 Altmetric

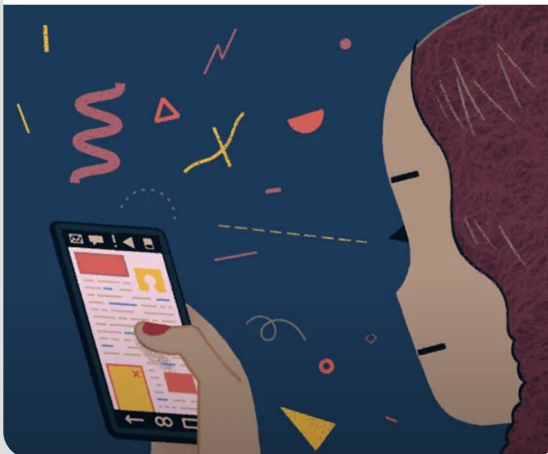
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MARIA KONNIKOVA

BEING A BETTER ONLINE READER

By Maria Konnikova
July 16, 2014

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Computers in Human Behavior
Volume 23, Issue 3, May 2007, Pages 1616-1641

Cognitive load in hypertext reading: A review

Diana DeStefano, Jo-Anne LeFevre

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<https://doi.org/10.1016/j.chb.2005.08.012>
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Abstract

A process model of hypertext reading was used to generate predictions about the effects of hypertext features on cognitive processing during text navigation and comprehension. We evaluated the predictions of the model with

sciencedirect.com

Research Article

'TL;DR' (Too Long; Didn't Read)? Cognitive Patience as a Mode of Reading: Exploring Concentration and Perseverance

Authors: Inge van de Ven, Frank Hakemulder, Anne Mangen

Abstract

Reading literature is often related to cognitive patience (i.e., the ability to read with focused and sustained attention and delay gratification, while refraining from multitasking or skimming over parts of the text). In this explorative, survey-based study, we investigate the relations between reading literature (especially longer texts) and concentration and perseverance, as well as the role of different modes of reading like skimming and skipping. Our measures include an adapted

ssol-journal.com

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Online, critical ignoring is just as important as critical thinking. romeocane17 / iStock / Getty Images Plus

To navigate the dangers of the web, you need critical thinking – but also critical ignoring

Published: May 14, 2021 2:37pm CEST
Updated: June 15, 2021 1:06pm CEST


Sam Wineburg, Stanford University

The web is a treacherous place.

theconversation.com

Will you learn better from reading on screen or on paper?

One size doesn't fit all situations. But for now, experts say, don't throw away your books



Computers are very much a part of education today. But books and paper are still a good way to learn information. Depending on the material, they can be the easiest way, studies find.

CAROL YEPES/MOMENT/GETTY IMAGES PLUS

By Avery Elizabeth Hurt

October 18, 2021 at 6:30 am

ResearchGate Join for free Login

Home > Neuroscience > Visual

Article PDF Available

Rapid serial visual presentation in reading: The case of Spritz

April 2015 · Computers in Human Behavior 45
DOI:10.1016/j.chb.2014.12.043

Authors:

- Simone Benedetto, Jakala
- Andrea Carbone, Université de Vincennes - Paris 8
- Marco Pedrotti, University of Applied Sciences and Arts Weste...
- Kevin Le Fevre, Université de Vincennes - Paris 8

Methods

Expert Interviews



Nahuel Gerth
Creative technologist



Matt Webb
Technologist, Designer
& co-founder of Berg
Design Consultancy



Jack Schulze
Designer at Apple,
co-founder of playdeo &
Berg Design Consultancy



Mary Dyson
Senior Visiting Research
Fellow at University of
Reading



Edouard Berard
Type+Graphic Design,
ex-student of Master Type
at ECAL



Caterina F Ríos
UX concept developer
at reMarkable



Henrik Fjeldberg
Digital Director at
Heydays Oslo



Neilson K Safrata
Interaction Designer
working with AI



Theo Z Tveterås
Senior Designer at
Teleplan Globe



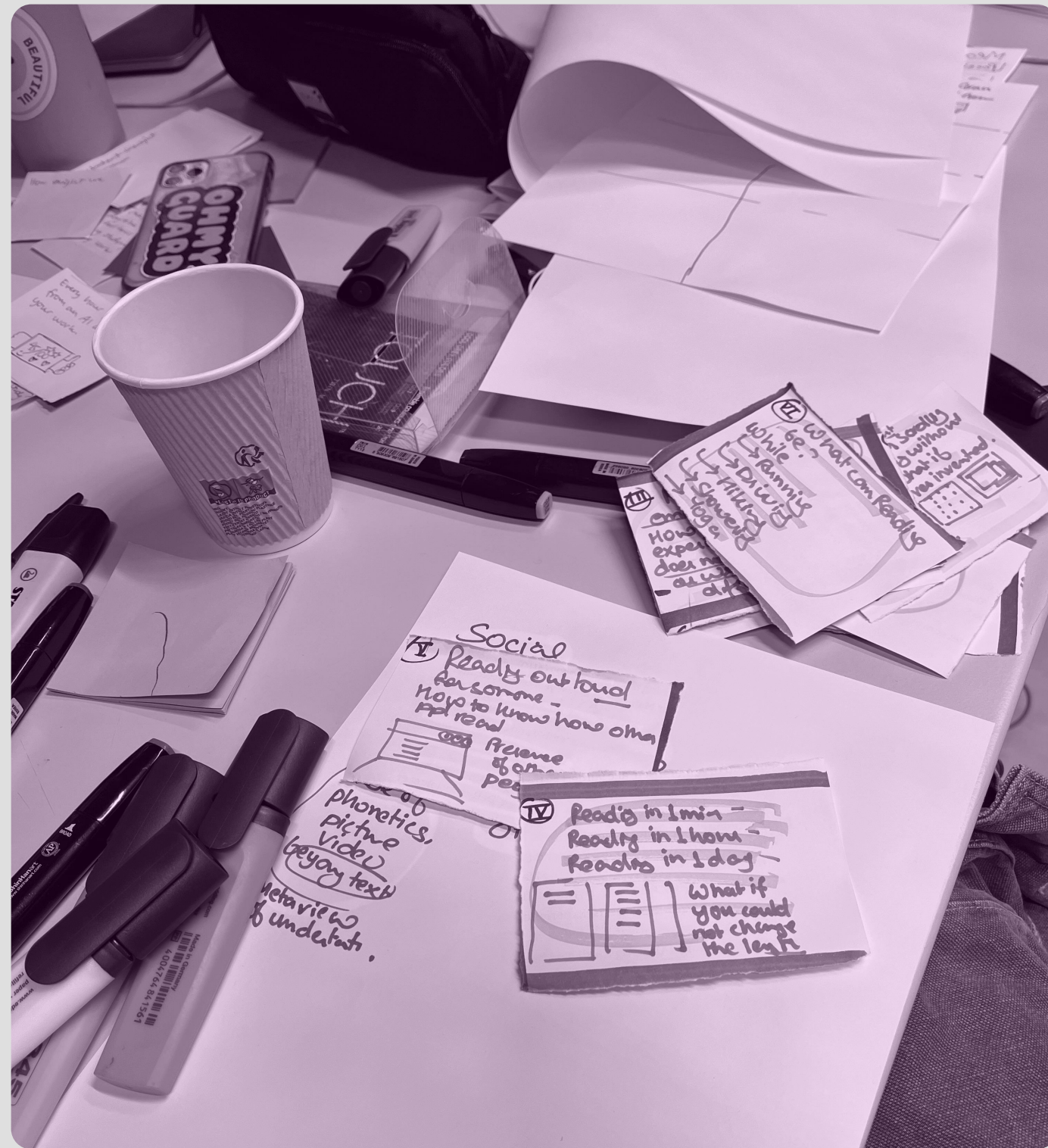
Denis Bolshakov
Creative Design Director
at Intangic



Benjamin Gaupset
Designer at Heydays Oslo,
Masters in Type & Media at KABK

Methods

Workshop



Methods

Workshop

1. Commercials in articles, not-so-smooth breaks in the text - irrelevant commercials!!!

2. Too much text, and no page turns I don't like scrolling

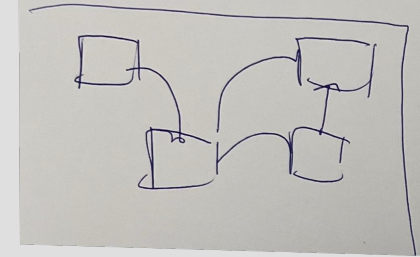
3. "the article continues further down" FUCK OFF!!!

4. "you might also like" NEI!! I don't want to read just to read don't bombard me!!!!!!

5. AI Summarizes just tell you how BORING the article is

6. This is very colored by my poor choices in online media-reading-habits just so you know

when I can tune the conversation to in the direction that interests me. Creating the content as I go.



when I have to produce something, it feels productive to read stuff, but really it is more like procrastination. It is easier to read when I want to distract myself.

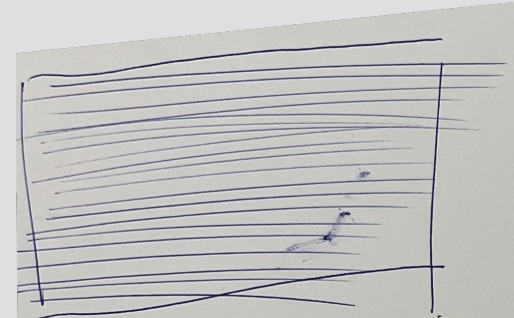
I can for example refresh NRK multiple times or go back to check VG twice. I often read NRK and VG just to have something short and quick to read.

If I read longer it's often a crime article lol, but also spontaneous I don't like to read on my

phone, it's too small and bright light - hurts my eyes.

Also, where would I find interesting stuff to read - I only have news apps - maybe Medium, oh! I actually read music news but bc of the music not because I want to read specific

Jumping between different linked topics. Going on tangent after tangent

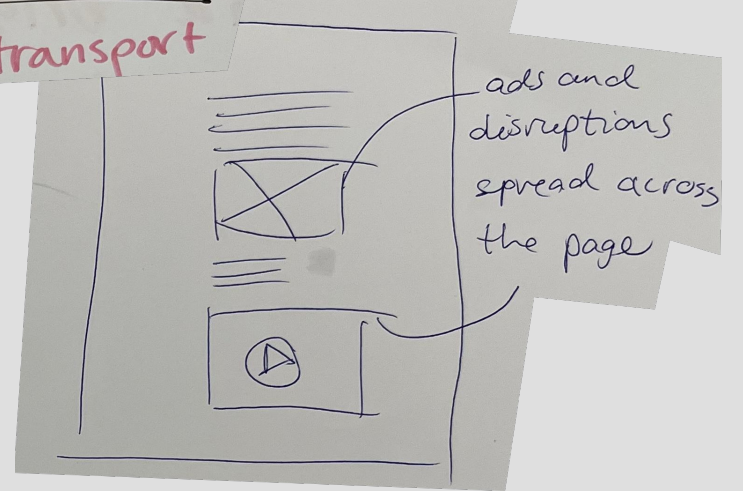


When the website looks like this. No hierarchy or segments

I like to read on my phone in the morning, with coffee - on the bus / public transport

BUT it is often to have something to do - because I am bored.

comment sections are interesting because people have weird and stupid and interesting povs. I like seeing what people's opinions are on what I am interested in.



When there is too much beating around the bush. Like for recipes... "I remember when I was a kid and my grandfather used to make pancakes for me..."

The goal was for participants to express their experience of digital reading. Here are key sum up:

- Readers read to pass time, and distract themselves during morning or late evenings.
- Reader's need more expectation:
 - From interface:** Evident when they skim text and feel strong distaste for scrolling.
 - From content:** Evident when they summarise and personalise meaning to comprehend better.
- Readers feel strained while jumping between links of information on a phone.

Synthesis Highlight

Cognitive challenges of readers & the unique needs of each medium

Digital reading is facing cognitive challenges with readers having a shallow reading mindset leading to the habit of skimming text.

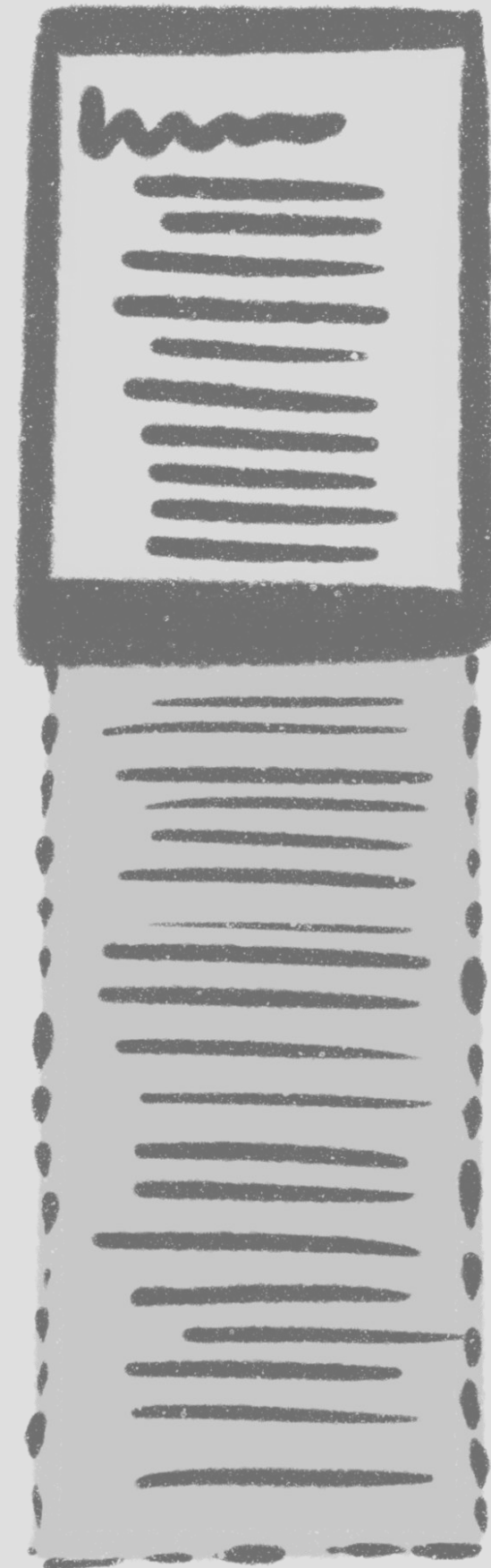
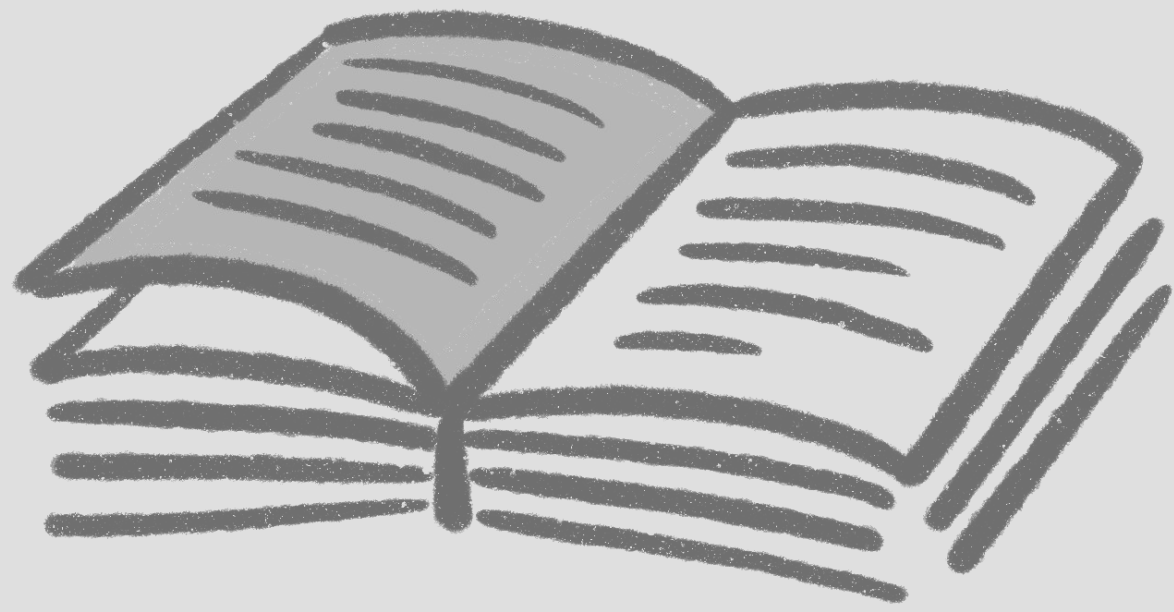
Digital medium affordances do not align with our brain's works with memory, visual strain and attention.

Research highlights the need for tailored learning approaches for both print and digital mediums, which is inherent to our brain's plasticity to adapt through appropriate training.

Synthesis

Details

Comprehension in decline



Study of reading comprehension: print vs digital

The Guardian reported on a study by the University of Valencia in 2023, which compared comprehension levels between printed text and digital text.

Comprehension better in print

The study concluded that comprehension is better when reading printed materials compared to digital formats.

Low semantic quality of digital texts

Explaining one of the reasons, Ladislao Salmerón, who co-authored the study, said that the “linguistic quality of digital texts tends to be lower than that traditionally found in printed texts”.

[Synthesis](#)[Details](#)

Mindset come our from expectations & habits

Shallow Reading Mindset

Salmerón adds that the 'reading mindset' for digital text tends to be shallow which can mean that the reader "doesn't fully get immersed in the narration, or doesn't fully capture the complex relations in an informative text".

Our expectation of digital medium

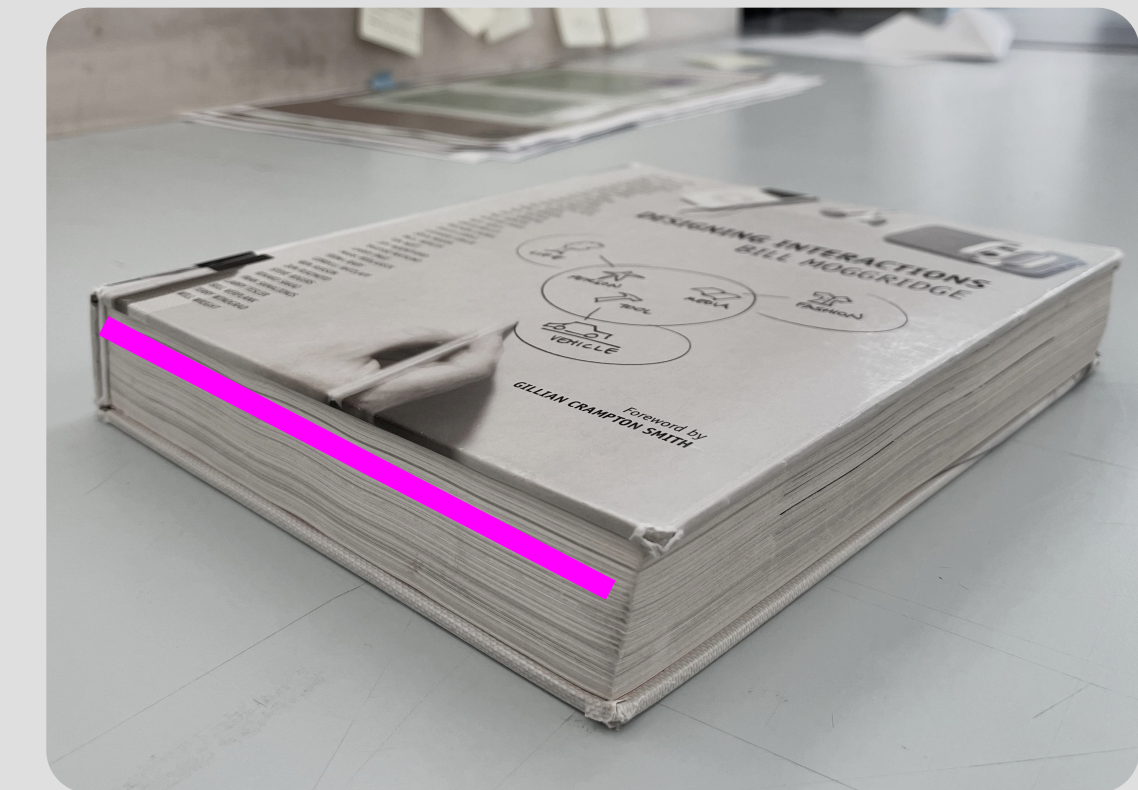
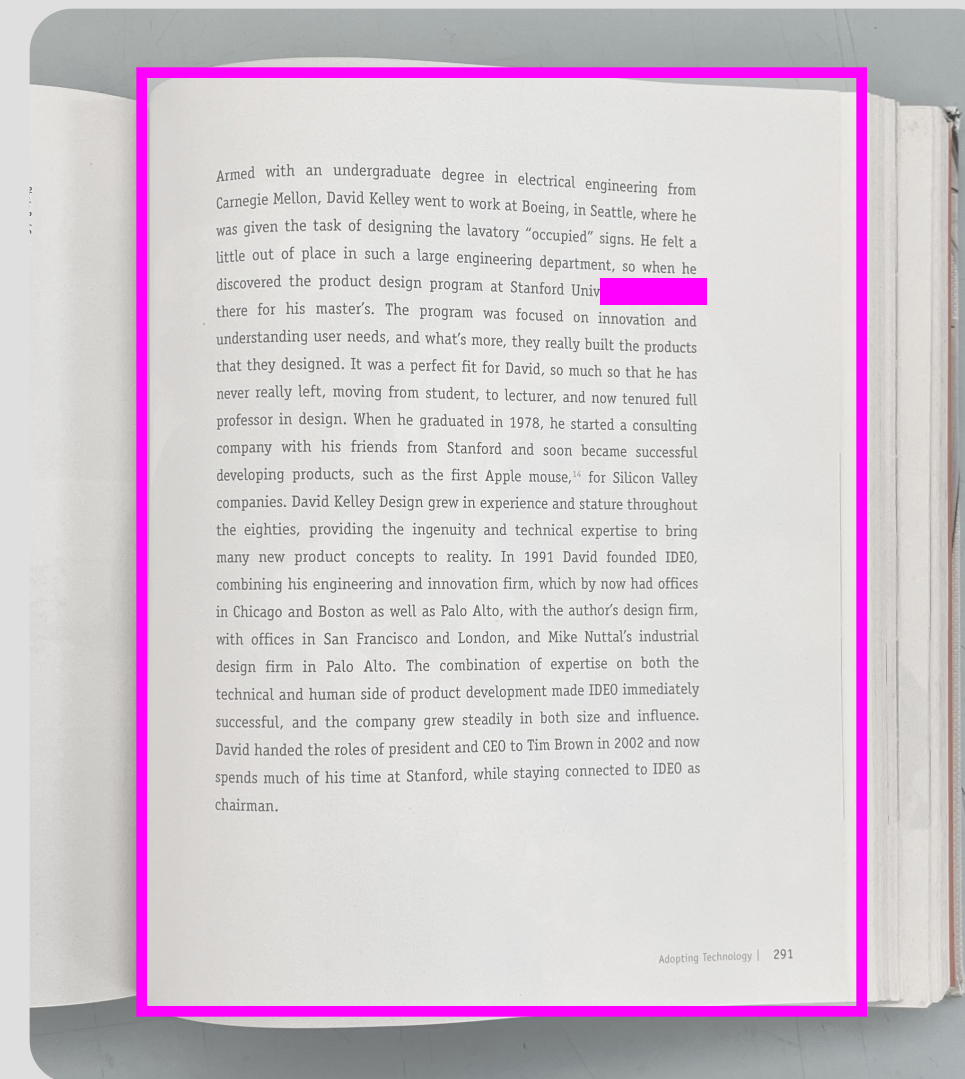
Naomi Baron, who authored "How We Read Now", suggests that this mindset is shaped by our anticipation of how easy or difficult we expect the reading to be.

Impact of social media habits

Social media posts and text messages, which typically lack complex syntax and reasoning, dominate our screen reading habits. This encourages scanning and skimming, which becomes habitual when reading on-screen. It can be said that reading on screen activates the same brain networks used for swiping quickly through TikToks, further planting these habits.

Synthesis Details

Spatial Memory & digital reading affordances



Impact of the medium on our mindset

The affordances of the medium, such as scrolling, not only contribute to our reading mindset but also influence our spatial memory of information, which is our ability to recall and learn the location of objects by interacting with them repeatedly.

Spatial memory in print reading

In printed books, we use spatial memory to recall information, noting its page location (like top-right) and position within the book (e.g., middle of the second half). An example of spatial memory is remembering that 'footnotes' are always at the bottom of a page.

Synthesis Details

Spatial Memory & digital reading affordances



Limitation of the current approach

The design addresses this challenge with more print metaphors– like skeuomorphism. But, the core aspect is our ability to anchor information in our spatial memory. Reading is a complex, multi-sensory experience that is layered with semantics.

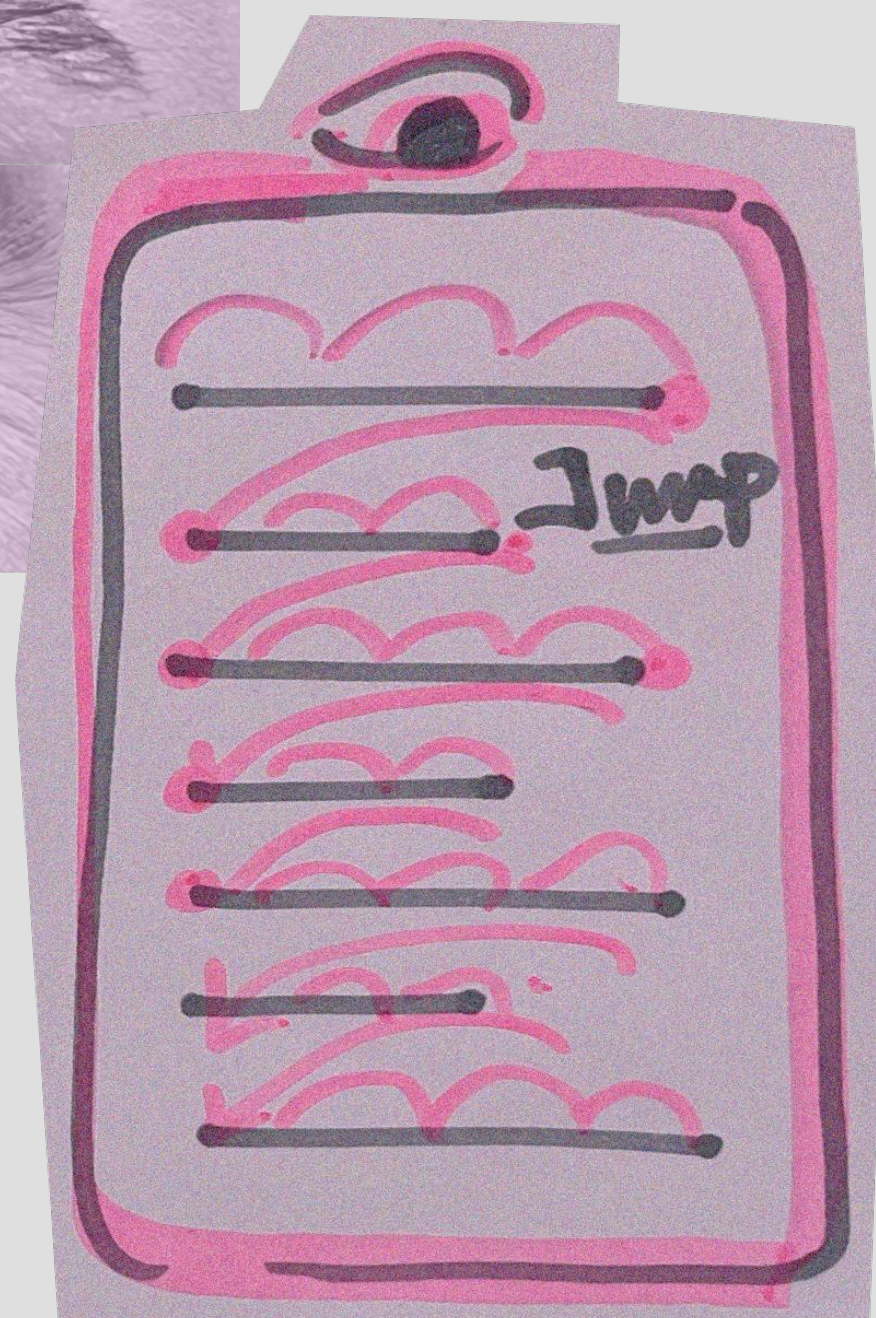
Spatial perception in a digital context

This rich perception is skewed when long digital texts simply scroll past, preventing any mental mapping.

Synthesis

Details

Screen fatigue from the ephemerality



Affects of scrolling on our comprehension

Mary Helen Immordino-Yang, a neuroscientist at the University of Southern California studied how we read and found that our minds get pressured from continuously adjusting to the constant scrolling, leaving less cognitive capacity for comprehending the actual content.

Eye strain reinforce our expectation of the digital

The reader's eyes get strained from focusing while chasing words/sentences in a scroll. This leads to a fickle relationship with the digital medium from the shifting screens, layouts, colours, and contrasts.

Synthesis

Details

Digital distraction, noise and attention challenges

Distraction from the devices

Jenae Cohn, author of 'Skim, Dive, Surface,' argues that the core issue with concentrating while digital reading isn't just the text on screen but the overwhelming distractions within devices. Our attention is fragmenting between browser tabs, applications and windows.

Battle for our attention

Introduced by James Sosnoski in 1999, hyperreading involves non-linear methods such as skimming and scanning. This stems from hyper-attention where readers are rapidly switching between tasks with "multiple information streams". These multiple stimuli battle for our attention leading to a low tolerance for boredom (Hayles, 2012).

Synthesis

Details

Digital distraction, noise and attention challenges



Shift in Information Consumption

Eryk Salvaggio's FACT 2024 speech says "The information age has ended and we have entered the age of noise" while he spoke about the rise of Generative AI. The high number of available options has led us to depend on machines for mediating this "noise" of information, marking a shift in our information consumption.

Synthesis

Details

Brain plasticity to tailor for each medium's needs

Neither of the media is better, just different

Patricia Alexander, a psychologist at the University of Maryland studied differences in learning between print and digital reading, stating that neither is inherently better as each requires different interaction approaches

Optimism on Digital Reading

Wolf is optimistic about digital text as she points at the brain's inherent plasticity that allows relearning and developing deep reading skills for new environments.

Different Training for every medium

Julie Coiro, in her study, found that gamers are often better online readers as they are more comfortable in the digital environment and can stay focused. She notes that a different training in self-monitoring is needed for each medium- print or digital.

Synthesis Highlight

Questioning design for digital medium, not aligning with reader's cognition

Starting with questioning our design conventions for digital media, the synthesis connects back to the core tenets of how our mind navigates and comprehends information.

It looks at digital reading from the lens of metaphors, memory, typography, spatial perception and anticipation.

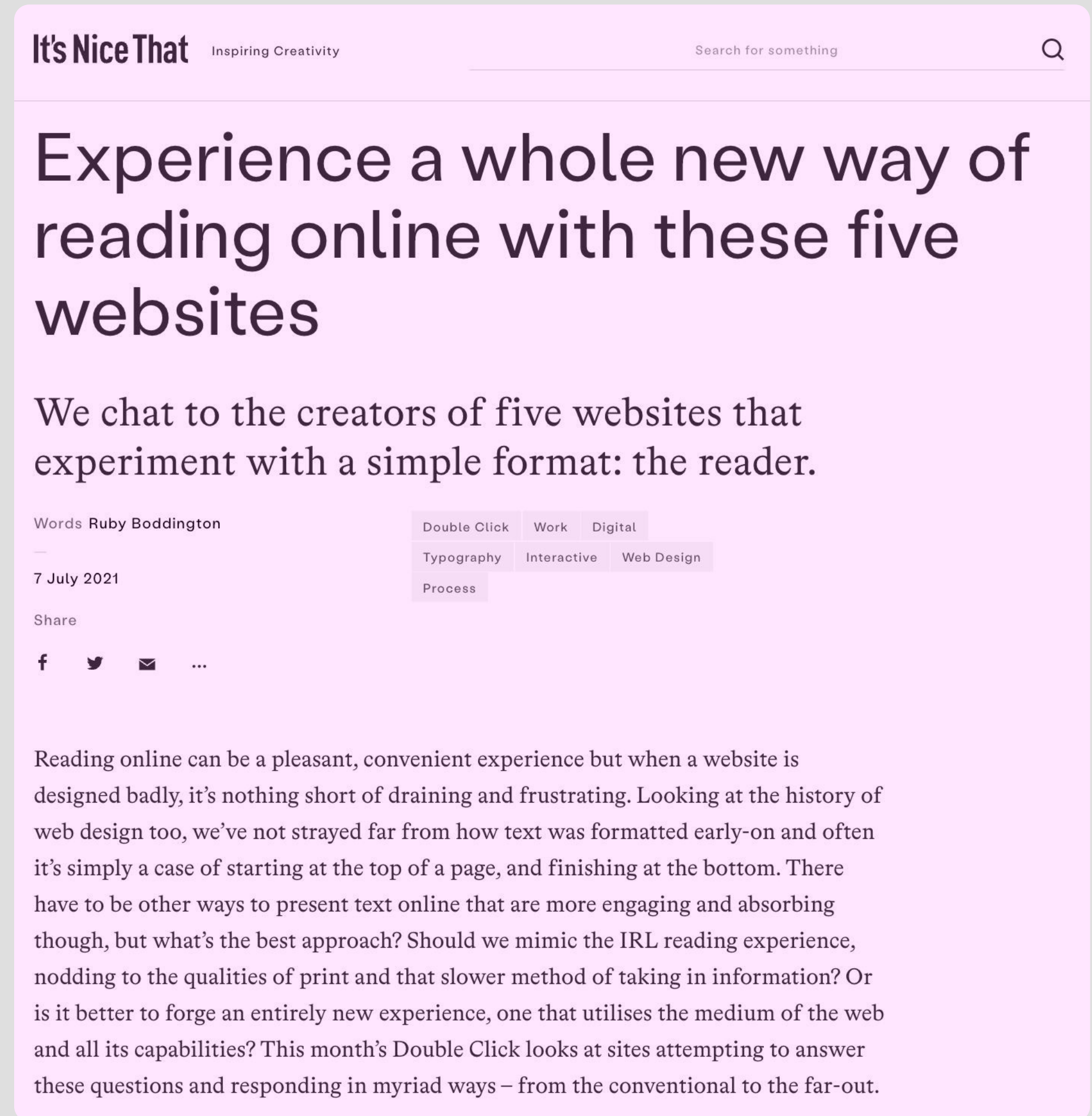
Synthesis

Details

Rethinking Text presentation beyond conventions

Introduction to current digital formatting

Ruby Boddington writes for It's Nice That article that formatting text on the web has largely remained unchanged since the early days of the internet.



Synthesis

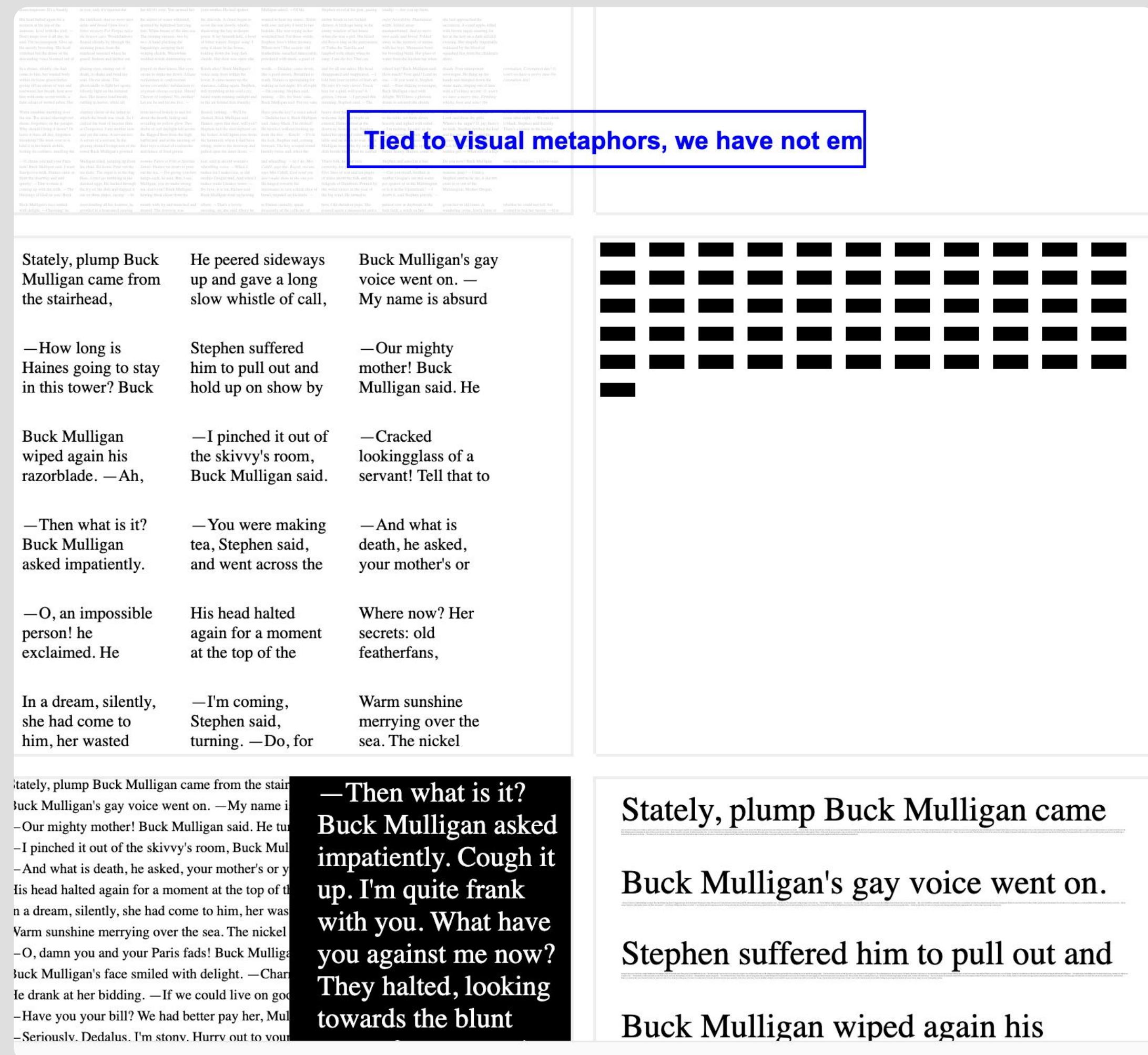
Details

Rethinking Text presentation beyond conventions

Experimental approaches by designers

An experimental website by Tessa Modi and Jon Lucas, "Making as Thinking," challenges digital text formatting through explorations and also critiques the influence of digital metaphors on our interaction with digital environments today, by saying:

"Tied to visual metaphors, we have not embraced the computer for its inherited characteristics but instead are attempting to emulate our world within it. The Mac operating system was built specifically for the office environment."



Synthesis Details

Rethinking Text presentation beyond conventions



Reconnecting to my bigger goal

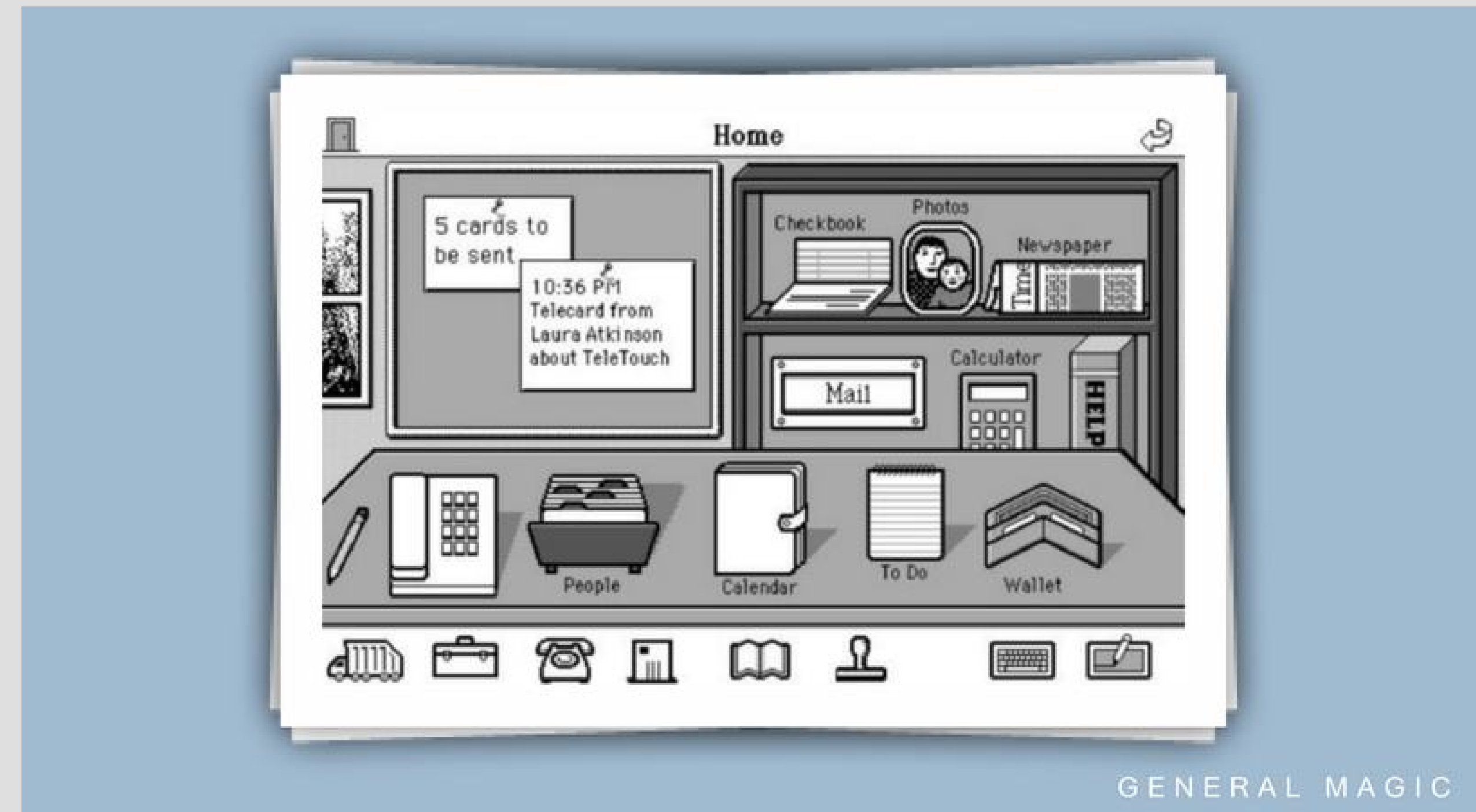
While their explorations were inspirational with text presentation, I was moved by their core question about the 'emulated' approach while designing for the digital. This reconnected with the fundamental goal of my project- Rethinking and I was inspired to approach this by exploring possibilities within the medium.

Synthesis Details

The Limiting trope of Digital metaphors

Role of digital metaphors

Digital metaphors such as pages, icons, windows etc help us interpret the complex function behind interfaces. Modi and Lucas noted that these metaphors helped early users become comfortable with digital devices. Their pattern of familiarity is what makes the medium “intuitive”, the more we use them (As Jeff Raskin puts it, “intuitive” means familiar).

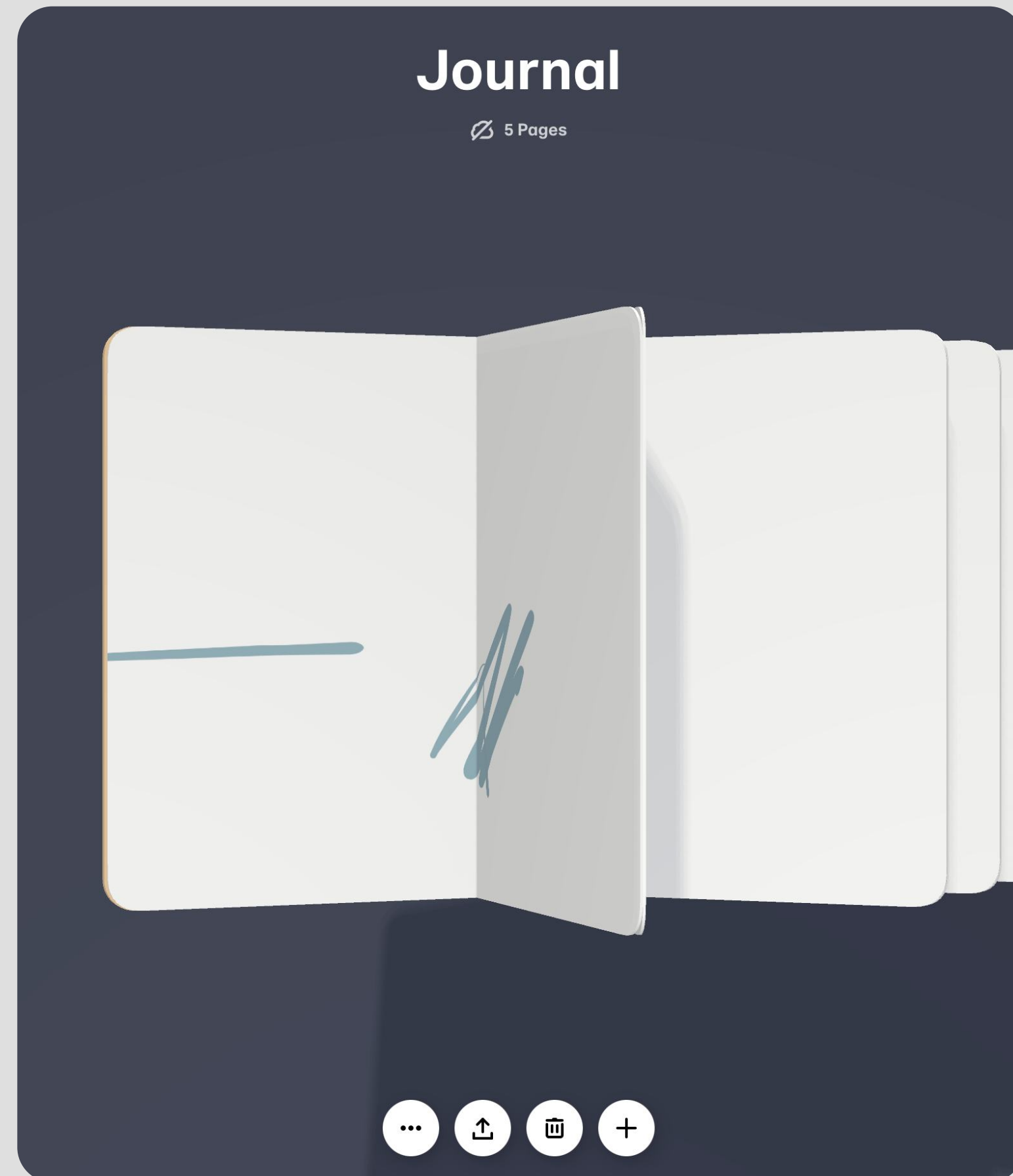


The Magic Link home screen created by the General Magic team back in the early 90s.

Synthesis

Details

The Limiting trope of Digital metaphors



The UI from Paper, a sketching app by WeTransfer is one of the many examples of Skeuomorphism

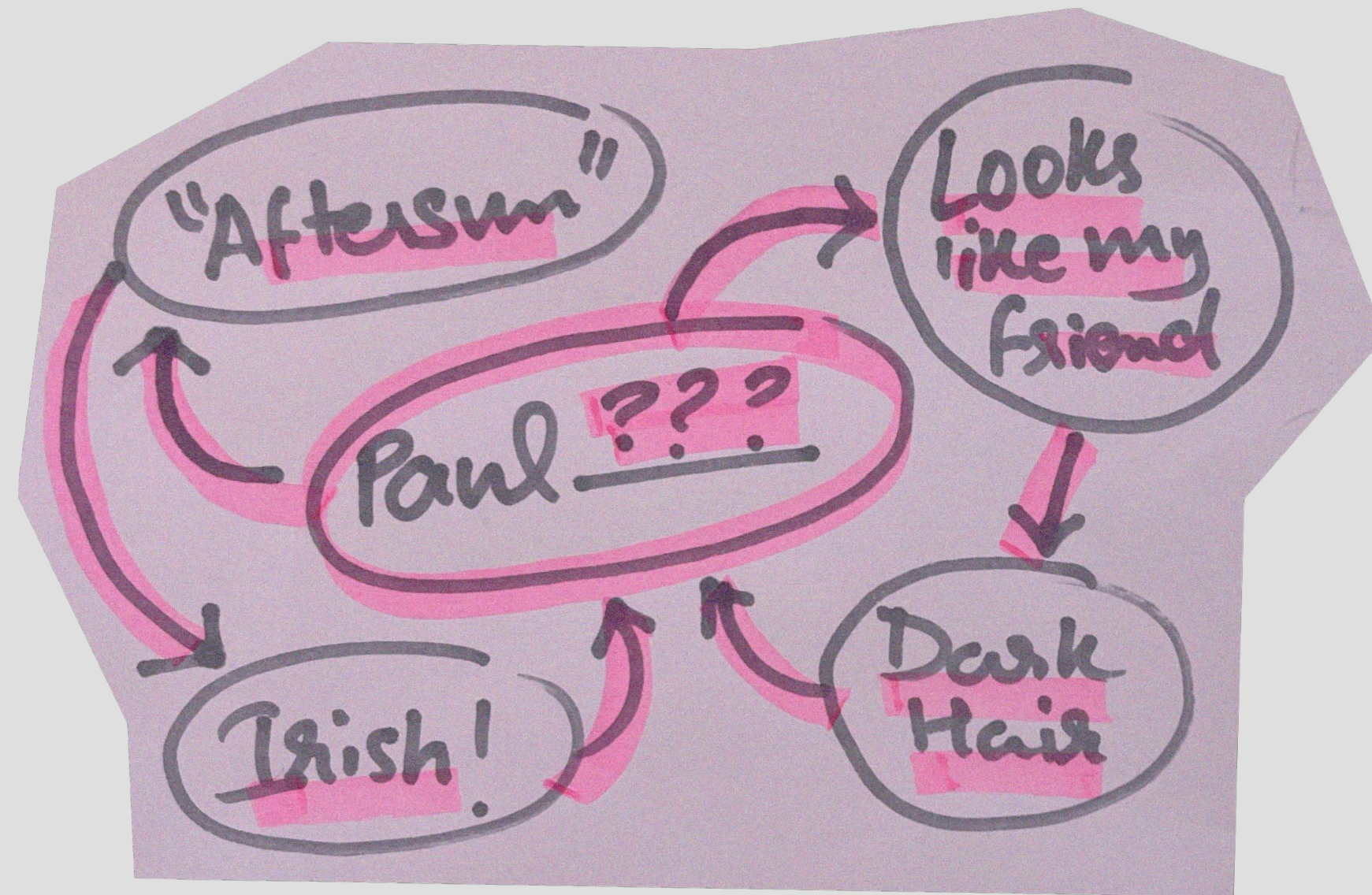
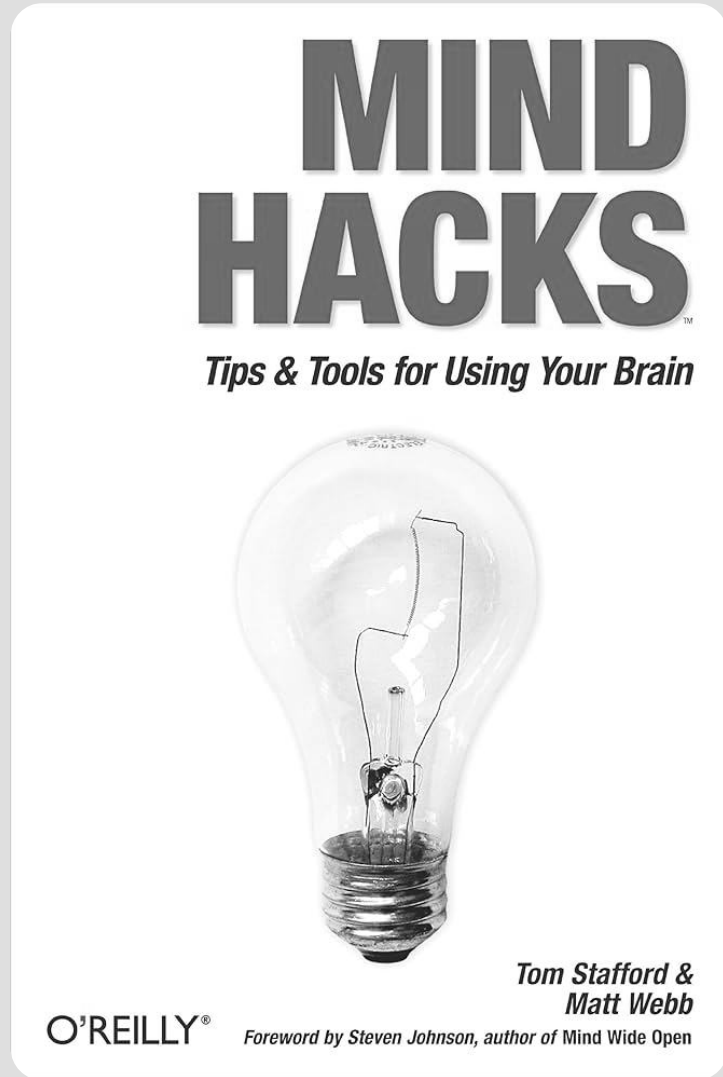
Complicated argument in metaphors

Martin Paul Eve writes critiquing the saturated presence of physical metaphors in contemporary computing. While quoting Johanna Drucker, Eve mentioned that digital formats have a persistent yet frustrating (and even unnecessary) “need to acknowledge the historical priority of books and to invoke a link with their established cultural identity.” Drucker argues the paradoxical nature of metaphors where they accustom users to the new digital environment with an ambition to exceed beyond the limitation of physical forebears yet their trope of familiarity also restricts new users to imagine ways to use them. Modi and Lucas also commented on this limiting trope of metaphors.

To explore possibilities, parallels drawn by metaphors need to expand and become more open-minded.

Synthesis Details

Navigation within memory



Memory in practice

When trying to remember the name of a celebrity, we can recall their nationality, movies they did, hair colour, and even controversies they had. Memory comes with built-in navigational skills for thought through associations we form with it. This simply doesn't happen through explicit repetition but through a series of different contexts that sharpen the thought further.

Making associations

Tom Stafford and Matt Webb discuss the role of memory in their book "Mind Hacks: Tips and Tricks for Using Your Brain," by highlighting the brain's ability to make associations.

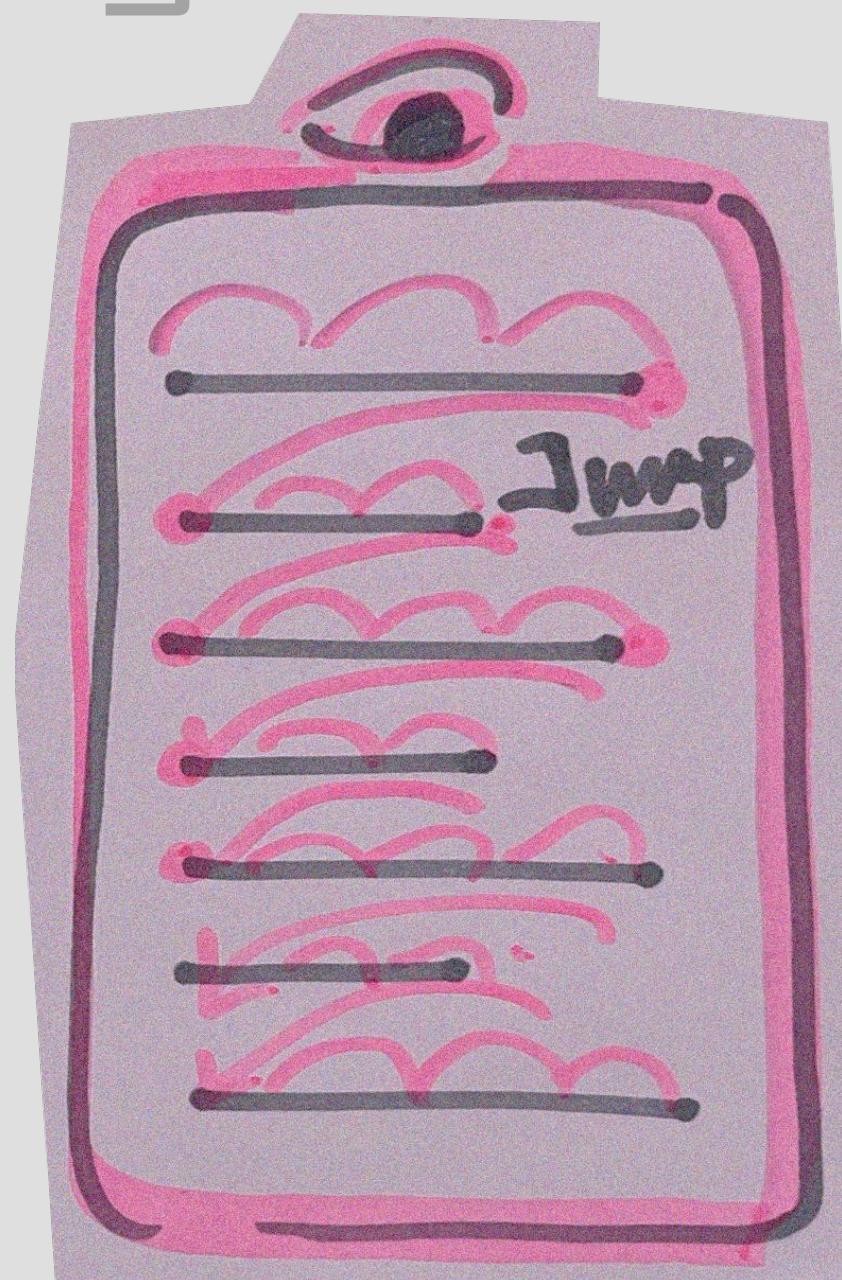
Example of memory techniques

Mnemonic techniques such as the method of loci or memory palace help us remember things by positioning them along a familiar route or spatial environment.

Synthesis

Details

Eye movements through typography



Nuances of line lengths

The longer line lengths make it difficult to trace back to the beginning of the next line. High eye movement is related to more eye strain. However, She argued for a balanced approach in the amount of eye movement by referencing a case study that compared traditional reading(left-to-right) against Rapid Serial Visual Presentation (RSVP) which has minimised eye movement by displaying words at a fixed location. It concluded that reduced eye movement could also impair comprehension and increase visual fatigue due to decreased blinking resulting in dryness.

Insight from Mary Dyson (Expert Interview)

Mary Dyson, a psychologist at the University of Reading, elaborated on the broader role of typography and presentation of text on the reader's eye movement while reading.

Synthesis

Details

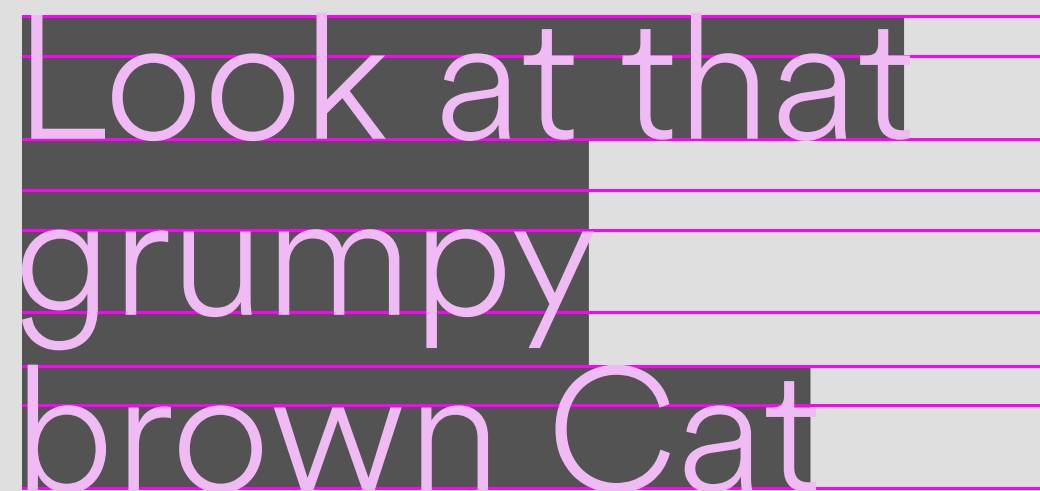
Eye movements through typography



Letter at small text sizes



Eyes movement in layout of text



Intro to the role of typography

When designing letters to be used in small text sizes, the goal is more functional- letter recognition, smooth reading flow and less eye-straining. The craft gets into specifics like precise positioning of bezier points and making optical corrections. Thus, the readers should be absorbed in reading content and not get distracted by noticing typeface details.

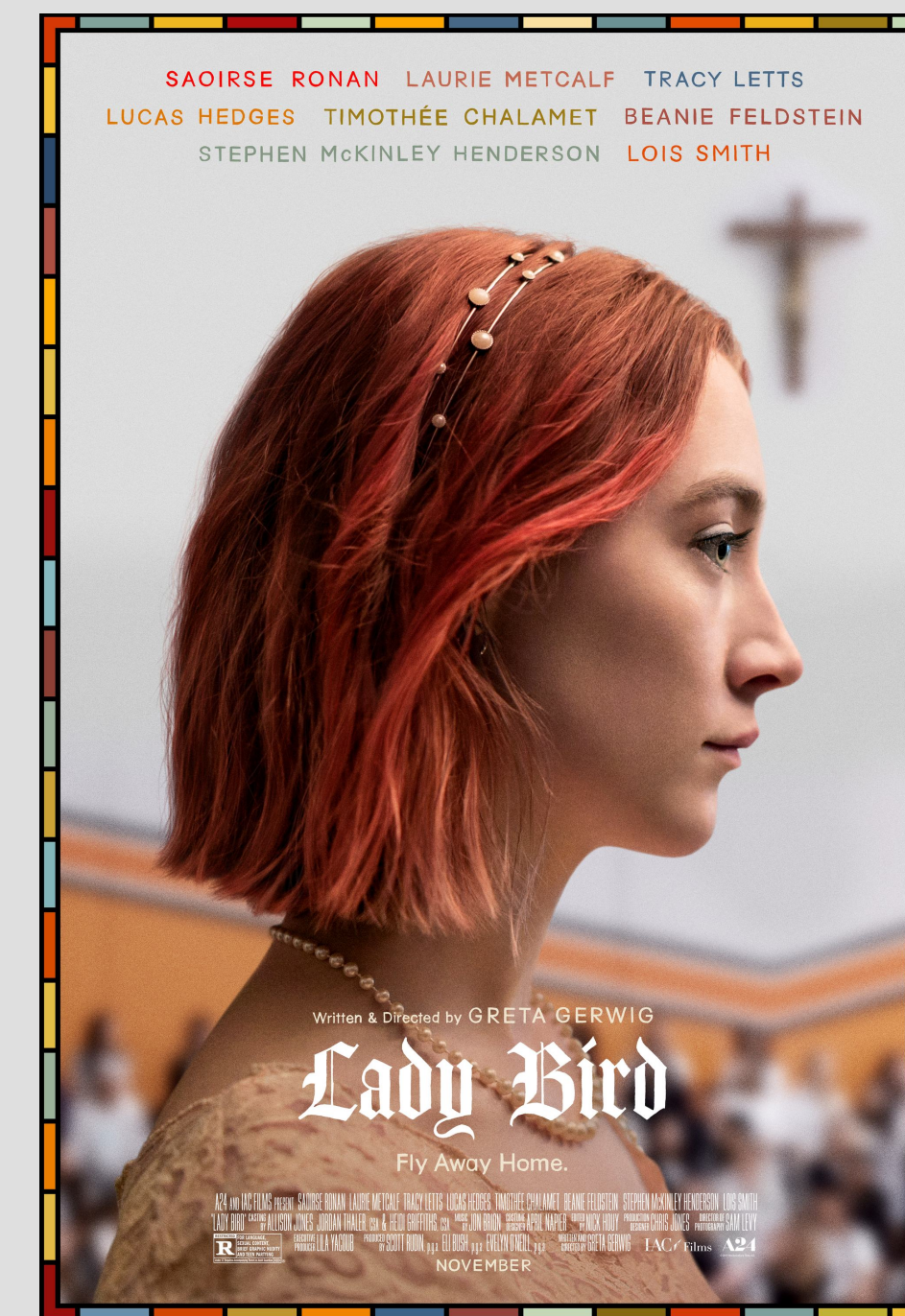
The layout of text influences our eye movement and cognitive burden by factors like word count per line and interline spacing. This is also the aspect of typography covered by the exploration phase of this project.

Synthesis Details

Eye movements through typography



Brand logos

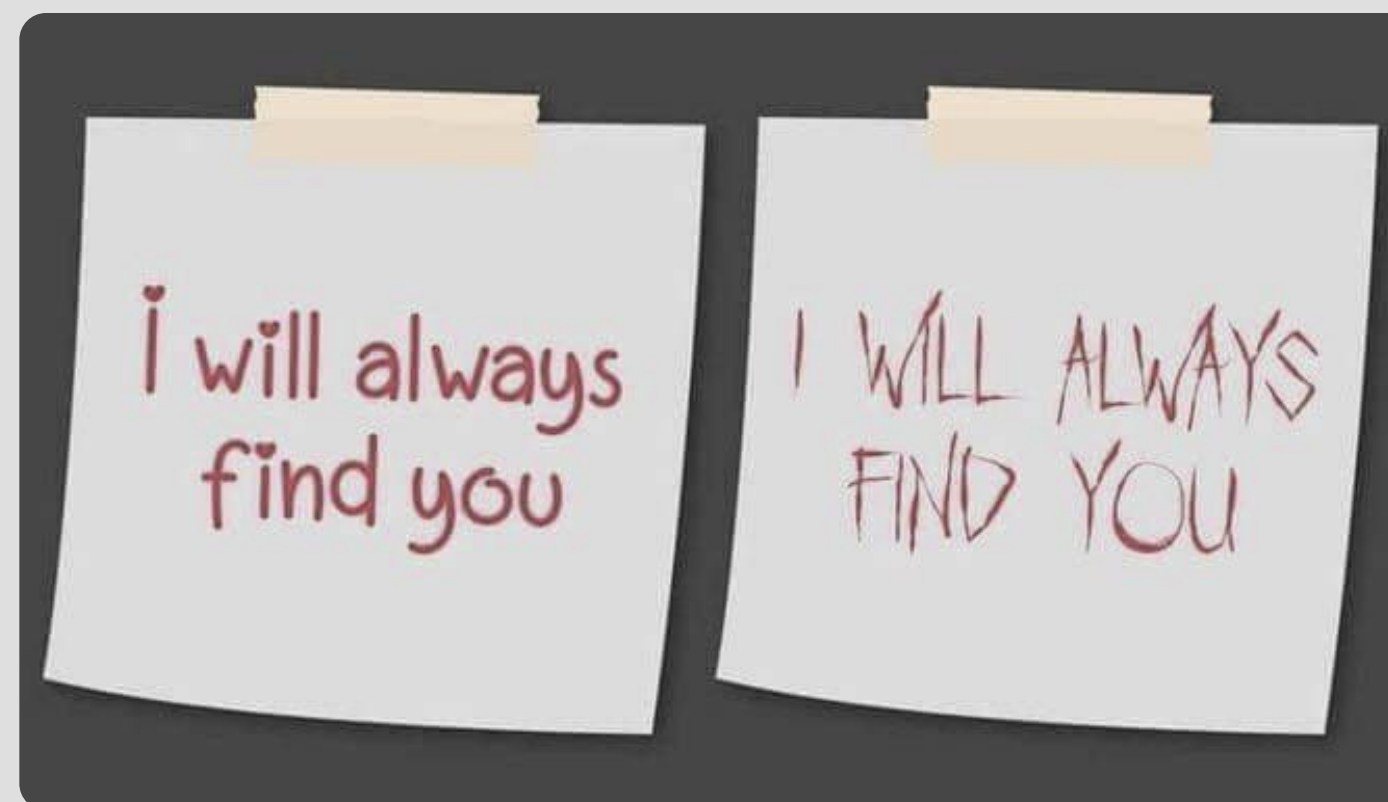


Typeface for film posters

Intro to the role of typography

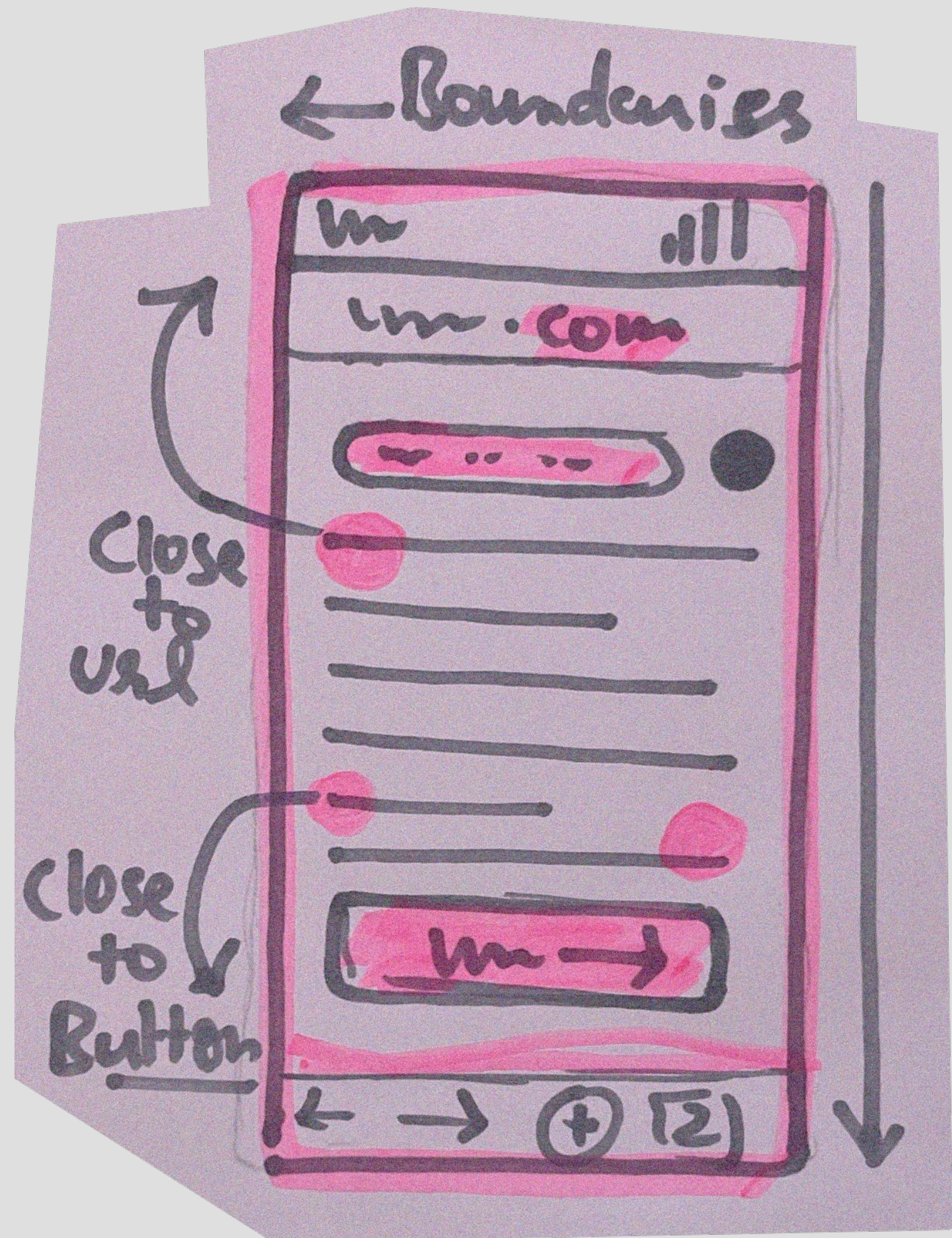
In cases like branding, selecting a typeface is a subtle way to nudge psychological impact and bring more overall personality. Here, typeface details and forms could express themselves more flamboyantly.

Typography is a complex field that links presentation with the semantics of the text and thus does not function in isolation.



Typeface selection and message intention

Spatial perception



Spatial perception, in the context of my project, is how we understand and remember space in the digital medium. Cognitive science and HCI research say that users develop spatial memory about boundaries and landmarks. Users remember how objects are positioned relative to the visual “boundaries” of the viewport such as the device screen, browser media player etc. “Landmarks” help in locating objects about prominent positions closer to the search bar on top of the input field at the bottom.

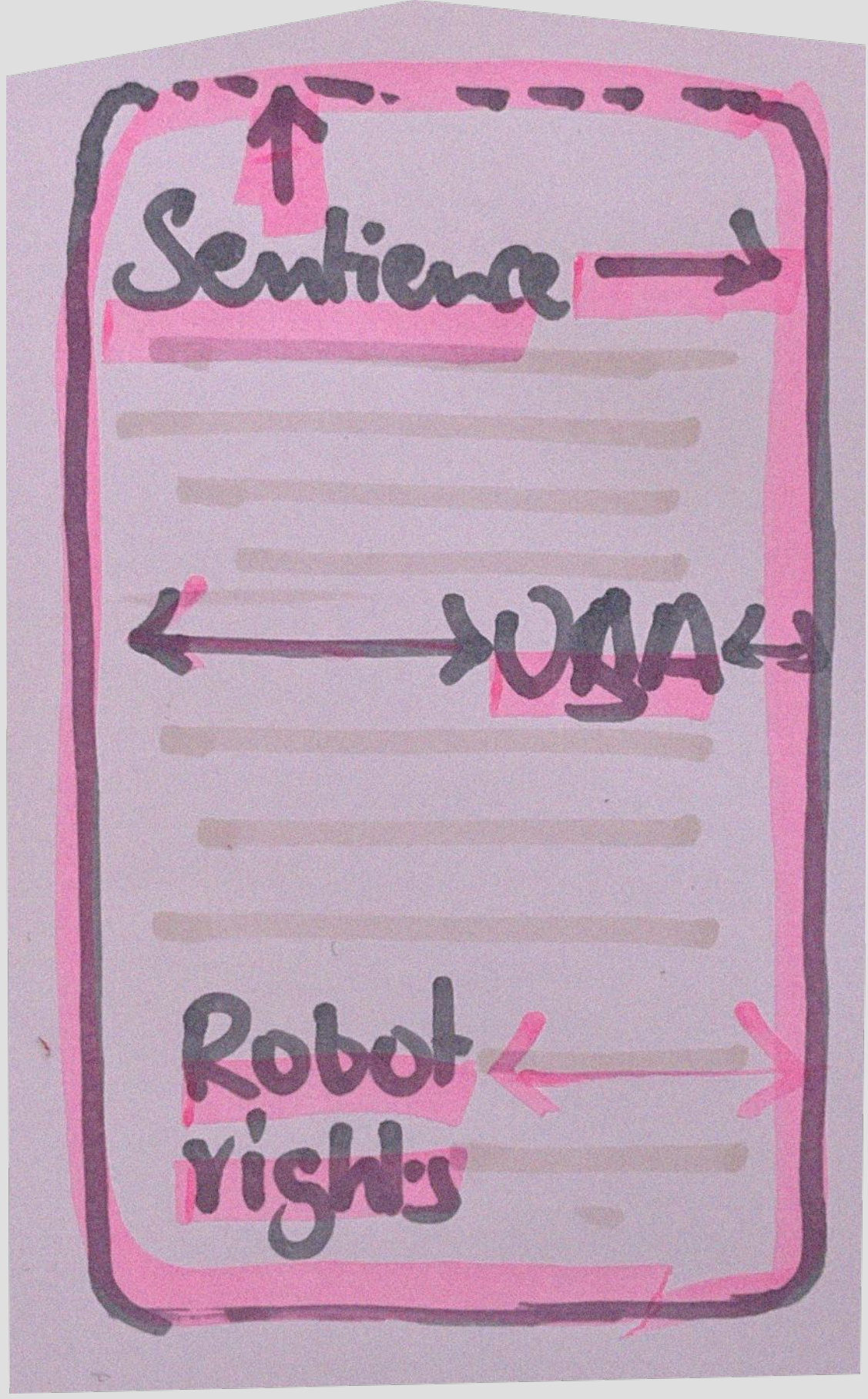
The metaphor of “screen” is reflected deeply in media theory as a “window into another space” which goes beyond the device’s physical screen into the digital space in UX.

Spatial perception

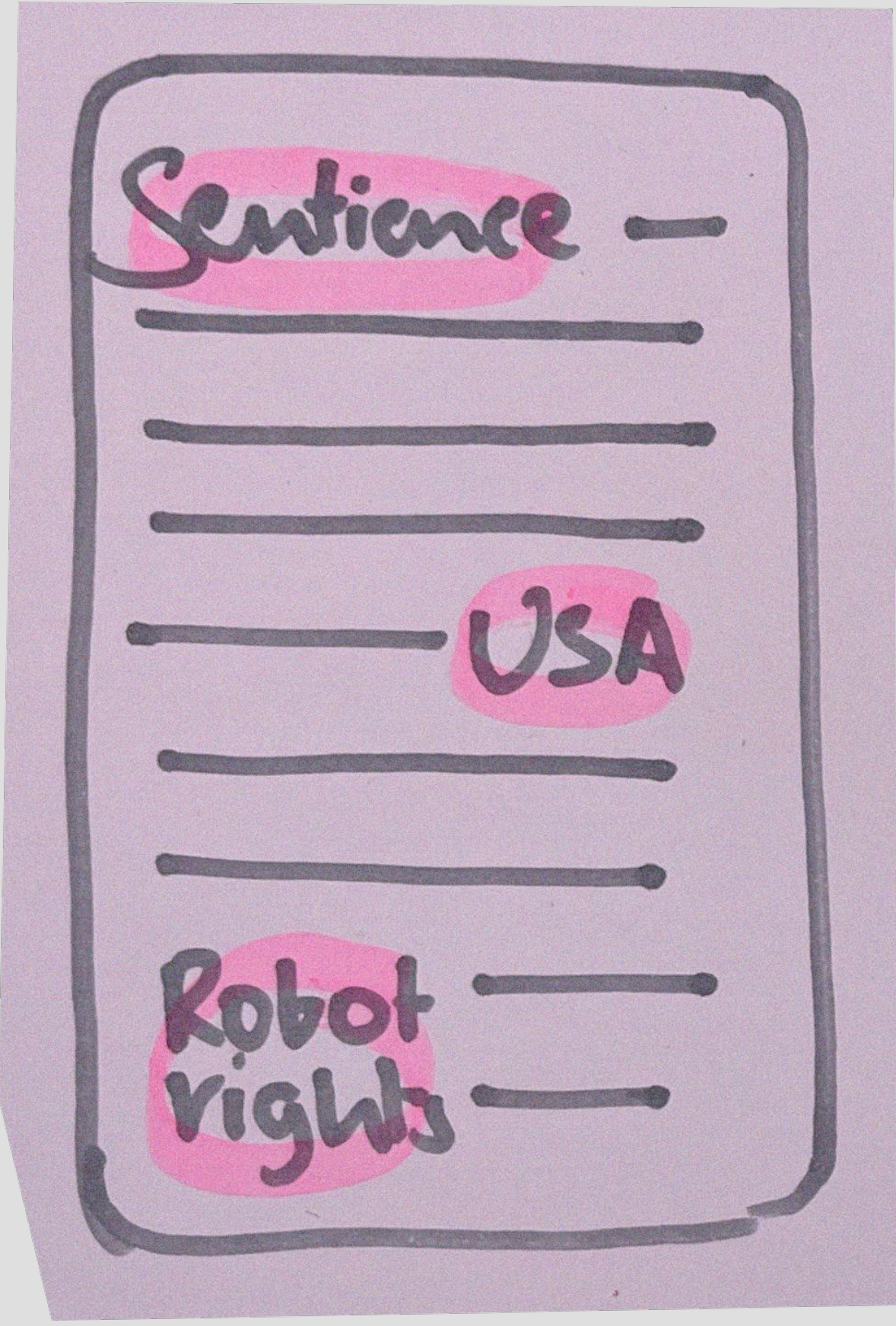
Challenges of Navigation in digital reading and the role of semantics

In digital reading, spatial perception is intertwined with the semantics of the text.

- Consider, a user scenario about reading about 'Sentience in AI' on a browser. They might create mental 'landmarks' based on the information's meaning:
- The 'top of the scroll' began with a Sentience discussion
 - The 'middle' section gave an analogy of "USA" to explain sentience
 - And the 'bottom' concluded with comments on "robot right".



Position in relation to screen space -boundaries of spatial perception



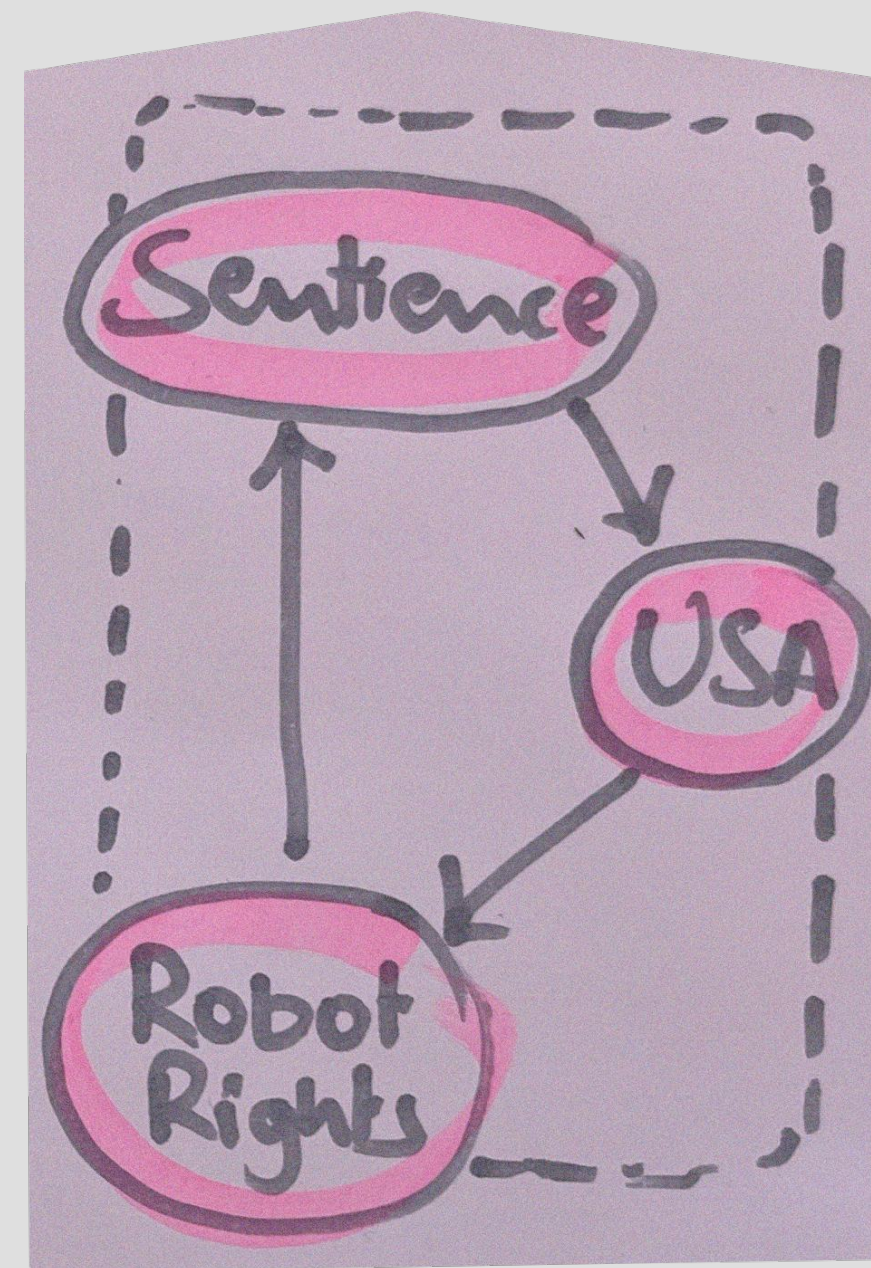
Shifting position in the scroll

Synthesis

Details

Spatial perception

This represents a 'spatial map' of the reader's understanding through meanings. Knowledge texts are written with signs of structure through repetition, allusions, summarisation, and chapters/headings/subheadings. Reading interfaces can use these structures to support readers' spatial memory of their understanding and help them navigate the text.



Structure of information in text



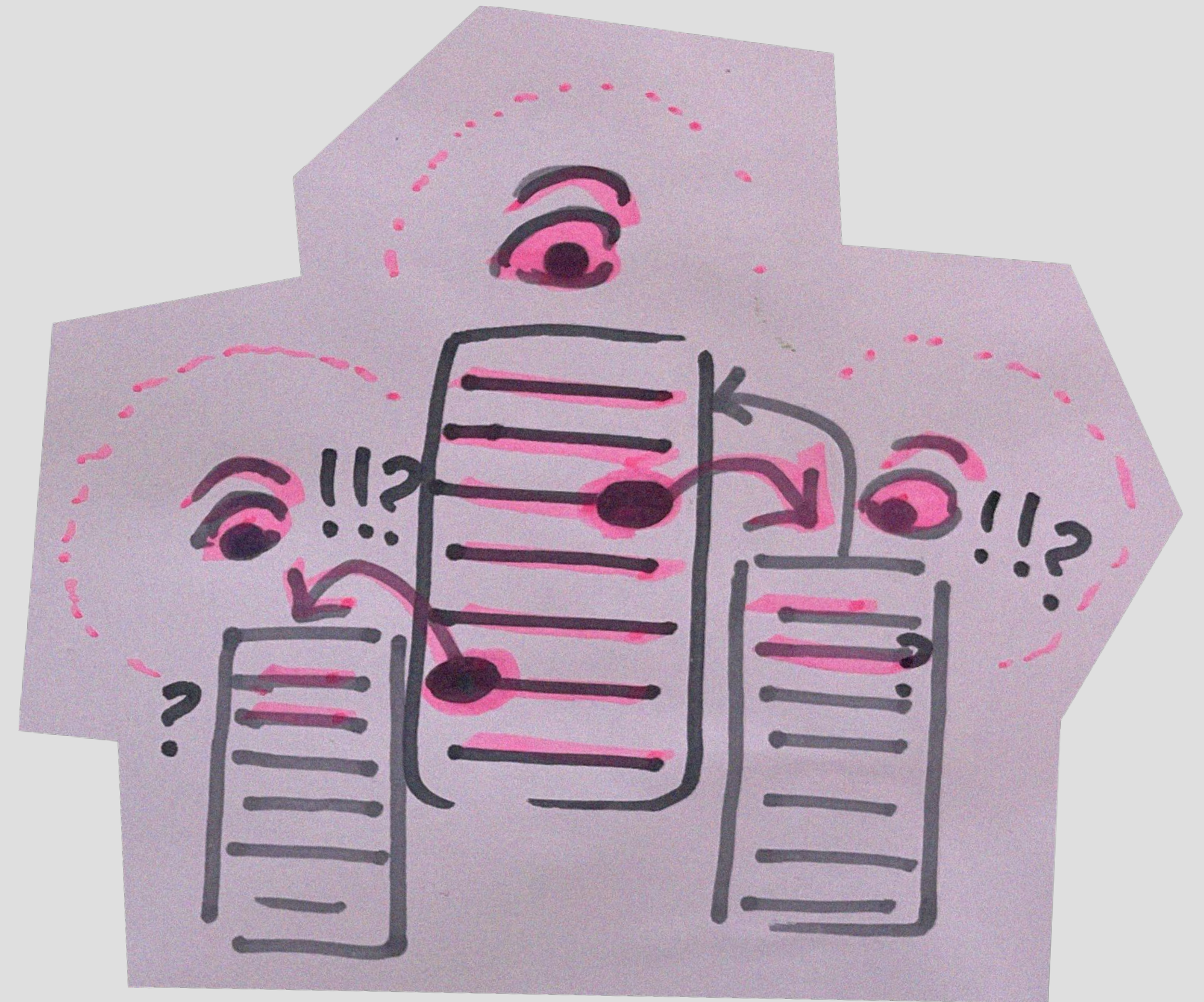
Synthesis Details

Spatial perception

The link aims to add depth, but the abrupt change in direction can confuse readers as they haven't fully concluded the original text.

Mark Bernstein and Diane Greco's book "Reading Hypertext" notes that interconnecting texts can disorientate the readers about their position and make it difficult to retrace steps in the network of information.

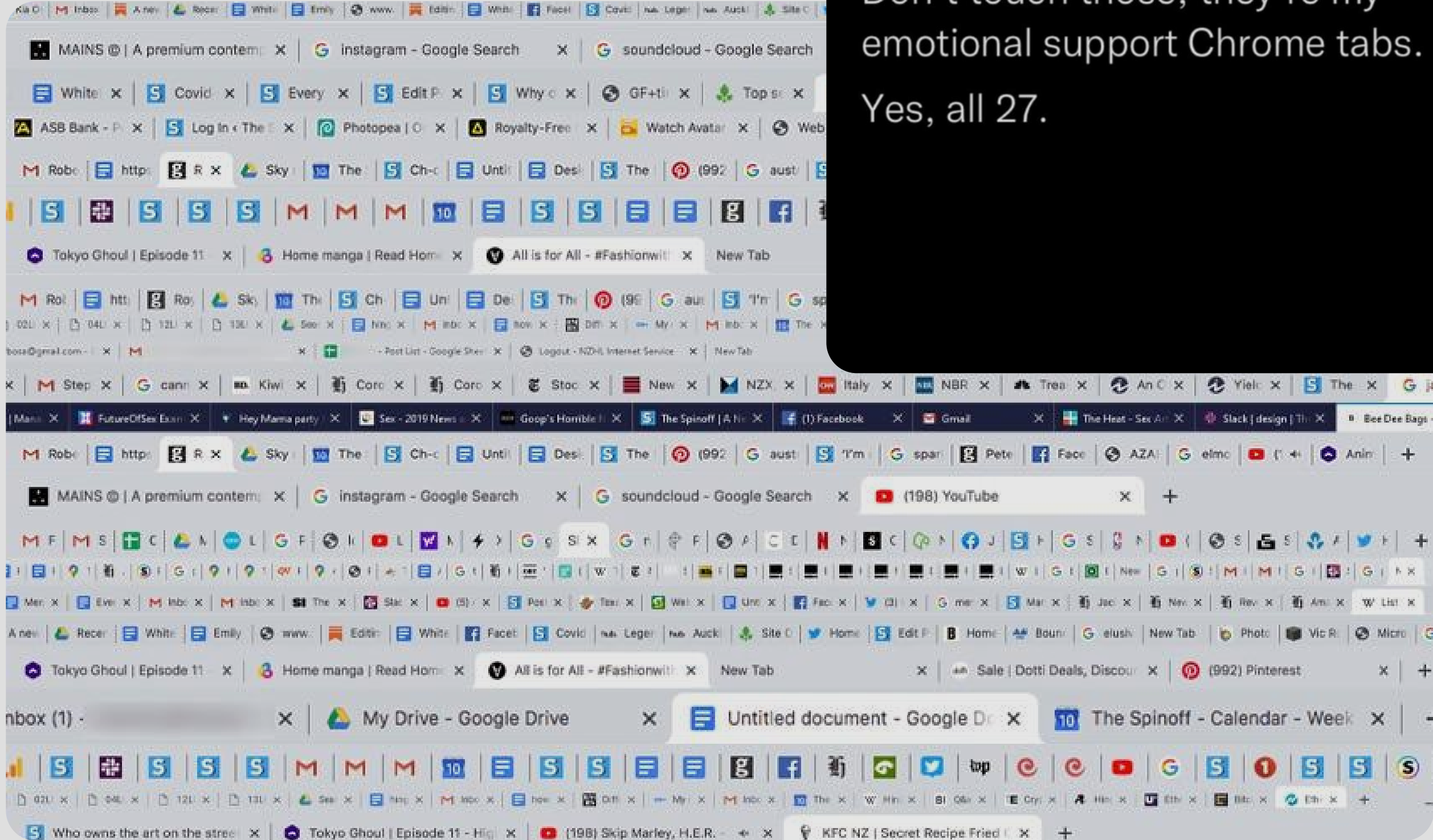
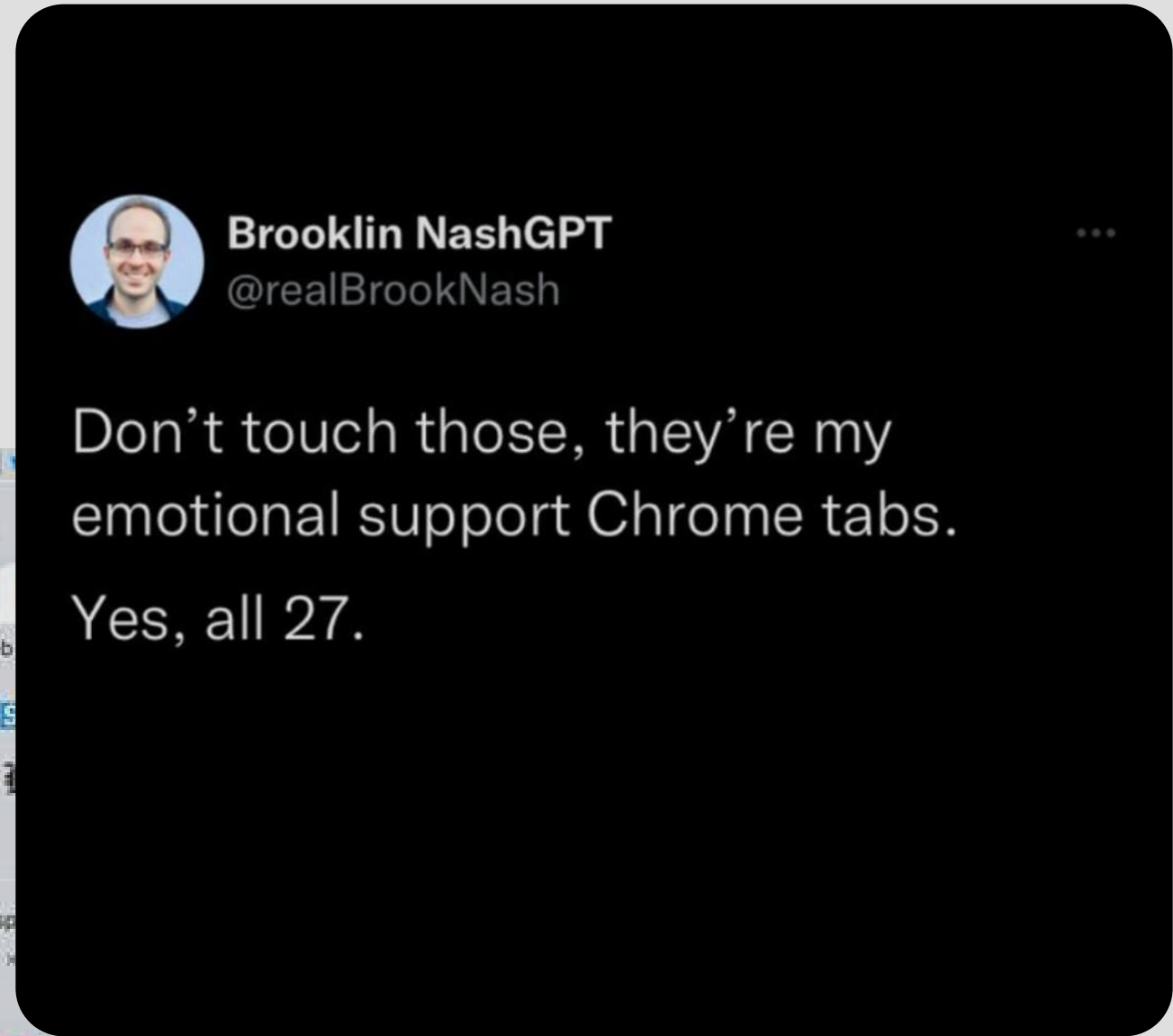
The user clicks on 'robot rights,' linked to an NYCT article on 'Consciousness and human constructs.' After reading the first paragraph and user gets overwhelmed by the change in topic and returns to the original text.



Synthesis

Details

Spatial perception



Browsing experience & attempts to innovate

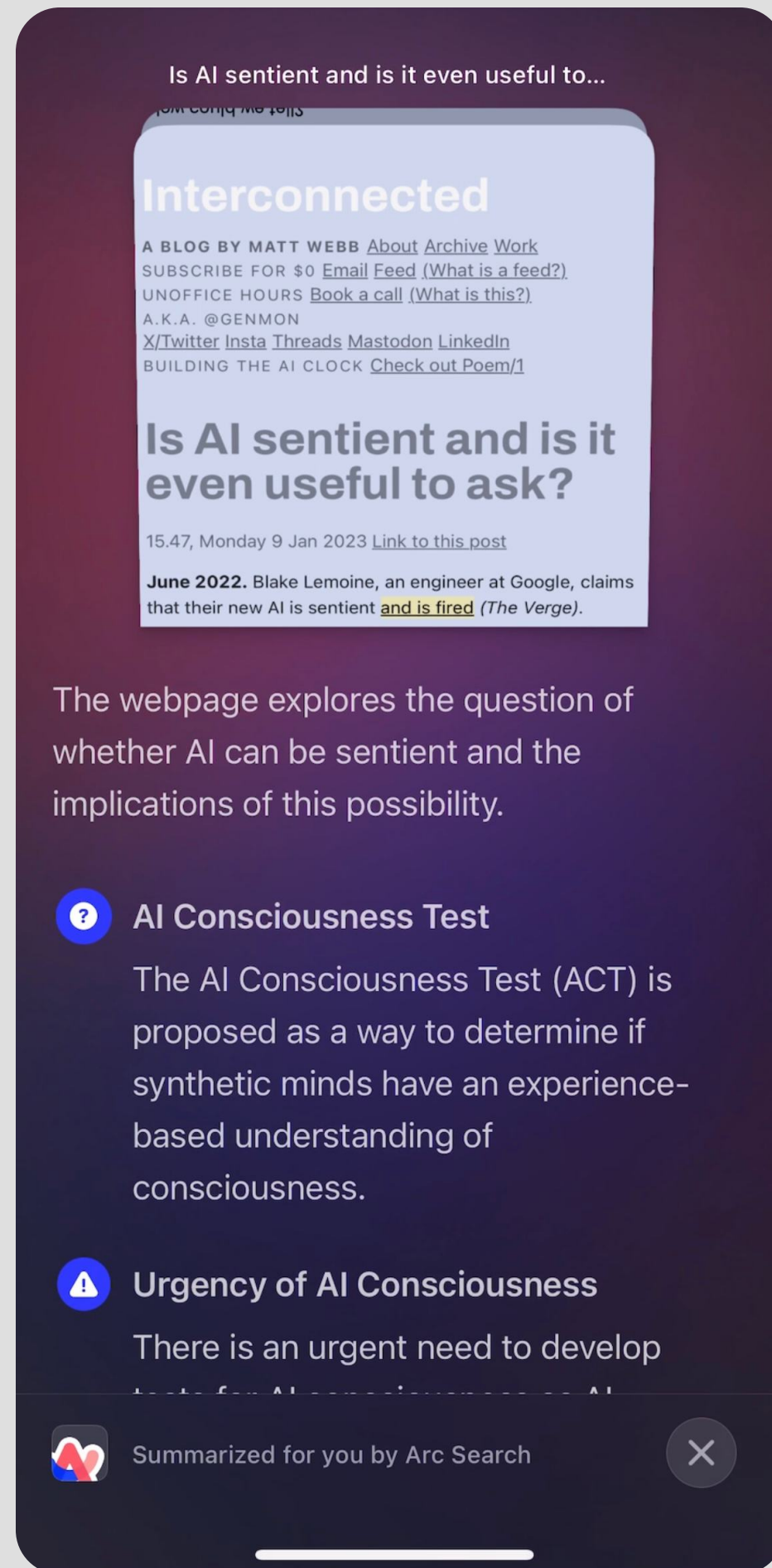
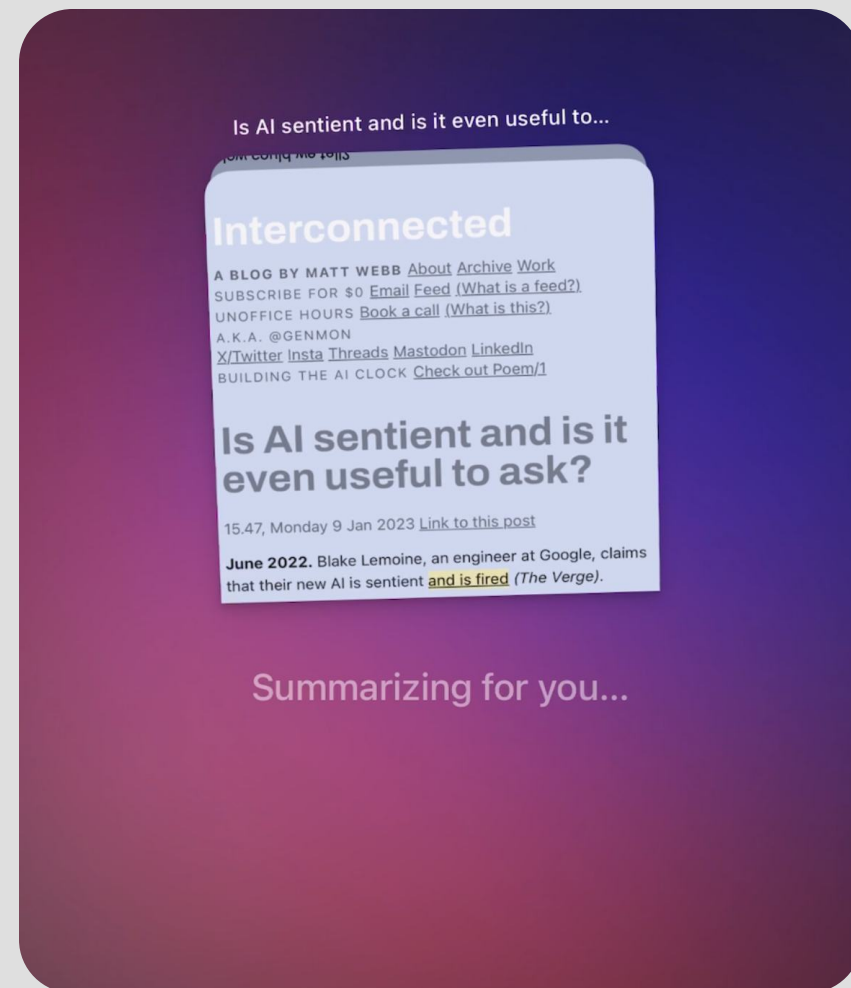
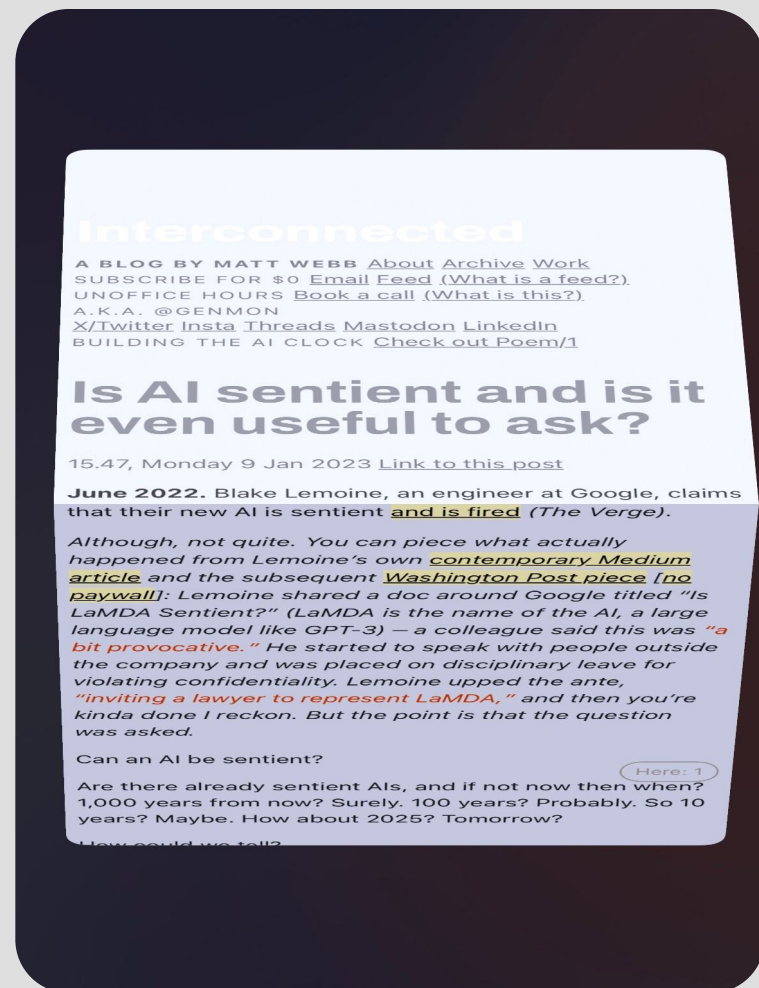
Poor spatial memory in digital browsing is evident when struggling to remember and locate information across multiple open tabs or a specific scroll position.

Synthesis

Details

Spatial perception

Pinch on any website → The content of the website get summarised



Browsing experience & attempts to innovate

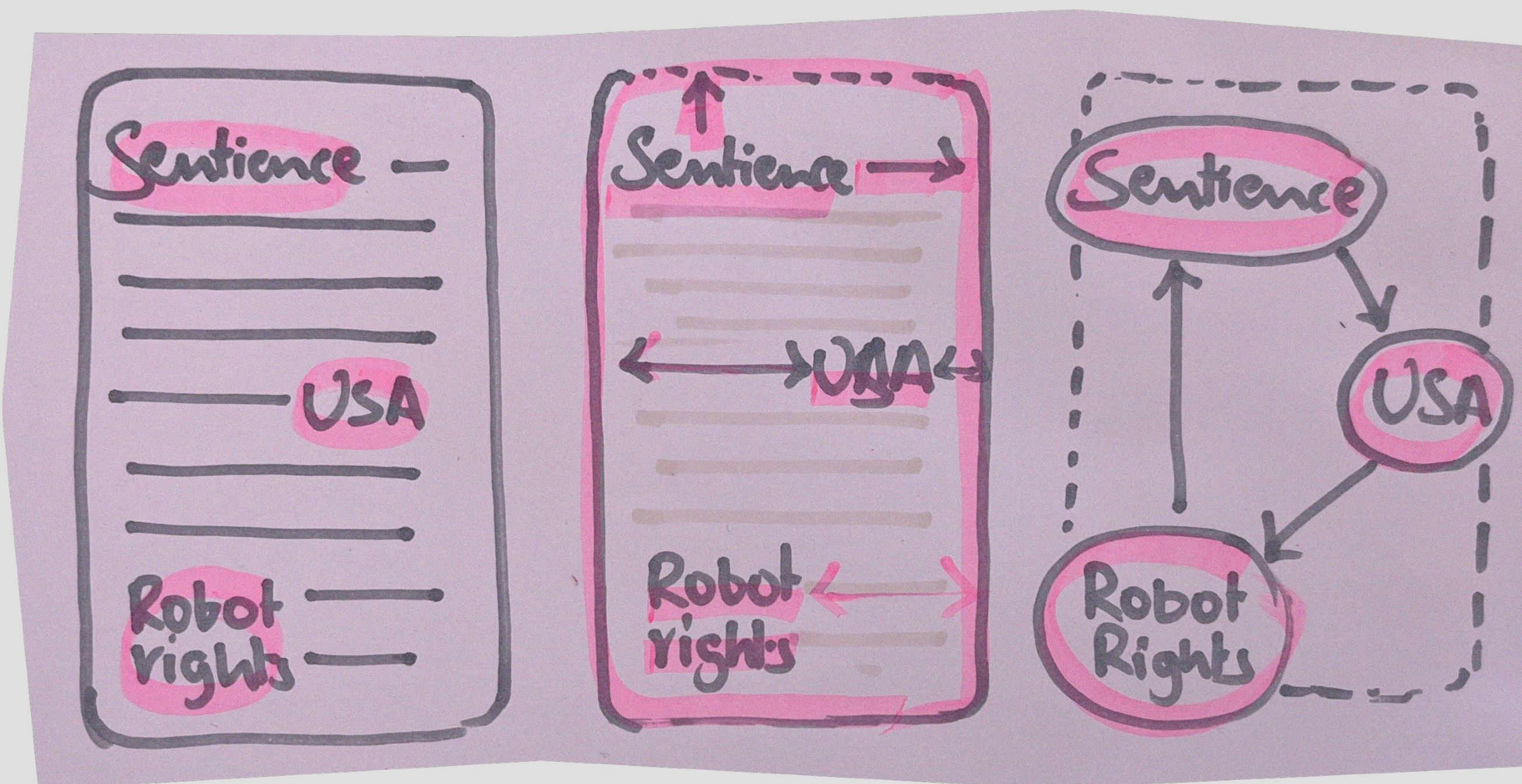
Maggie Appleton in her blog "Spatial Web Browsing" writes about the fundamental affordances of our browsing experience remaining unchanged: "Enter URL, load the page, click on links, move forwards and backwards in browser history. We can only see one website at a time, or max two if we stack our browser windows in columns."

However, there have been innovative attempts like: Arc Search by The Browser Company comes integrated with AI that can summarise a website for you.

Synthesis Details

Spatial perception

Spatial perception linked with the semantics of text



Core of the challenge

Addressing spatial perception for digital reading needs a more sophisticated approach as it is linked with the semantics of the textual information.

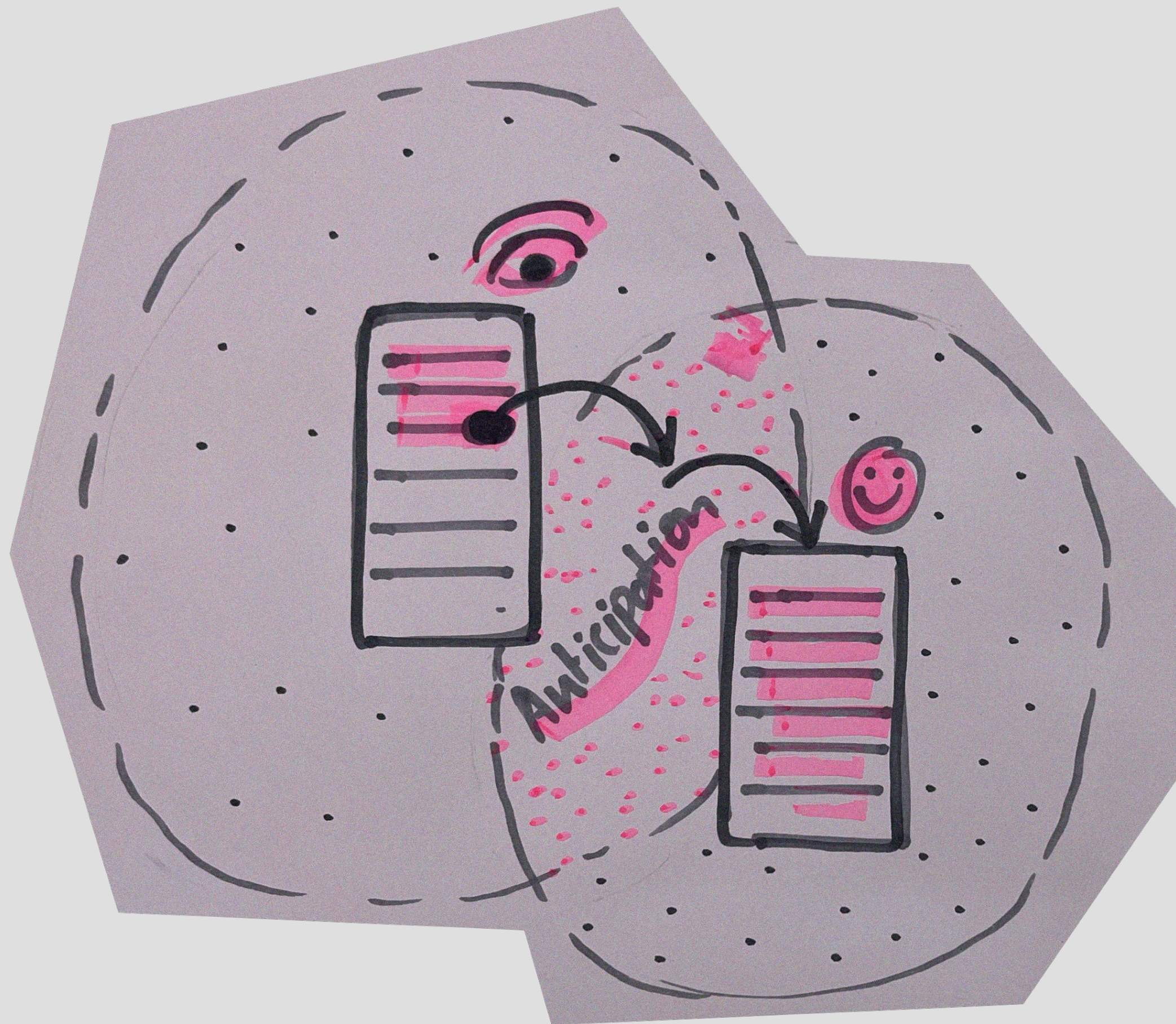
Our brain's spatial thinking abilities can become very challenging about reading and comprehending informative text digitally.

This leads to my next insight about anticipation which is about having an expectation based on our spatial perception.

Synthesis

Details

Anticipation: Built upon our spatial perception



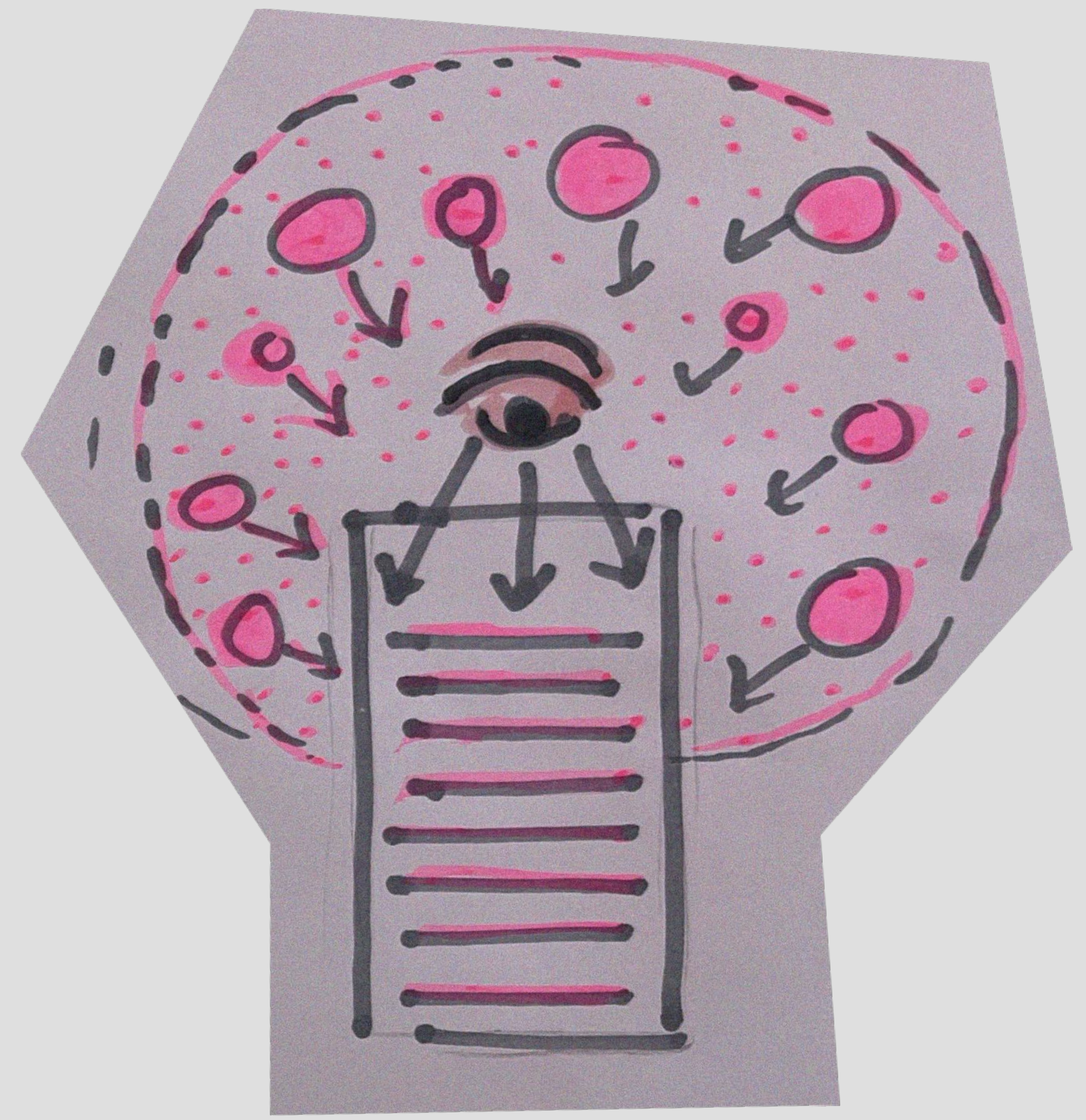
Anticipation, in the context of my project, is built upon our inherent spatial perception. It helps us in navigating the digital medium by giving an expectation of the next step. This is evident in hover-based interactions in digital interfaces. It is also reflected in our experience of digital navigation like finding a scheduled meeting on a calendar layout compared to a linear stack of emails. Anticipation is also integral to the act of reading as it involves navigating the structure of written text.

Synthesis Details

Anticipation: Built upon our spatial perception

Insights from the book

"Reading Hypertext" reflects on anticipation through the act of clicking which, "compresses the complex anticipatory gestures" in navigating text. This underlines opportunities in the peripheries of our attention sphere, where subtle digital interaction can enrich our overall reading experience.



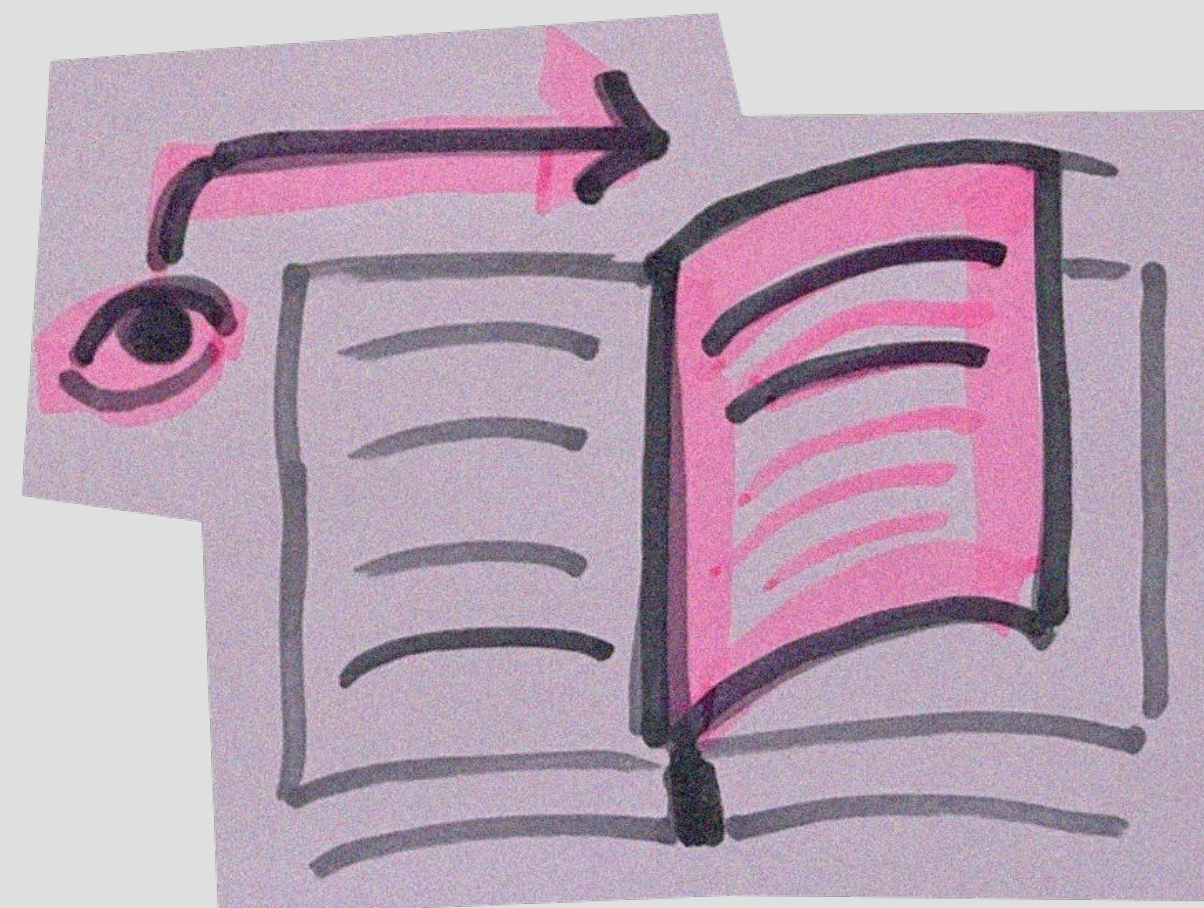
Synthesis

Details

Anticipation: Built upon our spatial perception



Thickness and weight of the book



Leafing through pages on the book



Texture of the pages

Multi-sensory Experience of reading

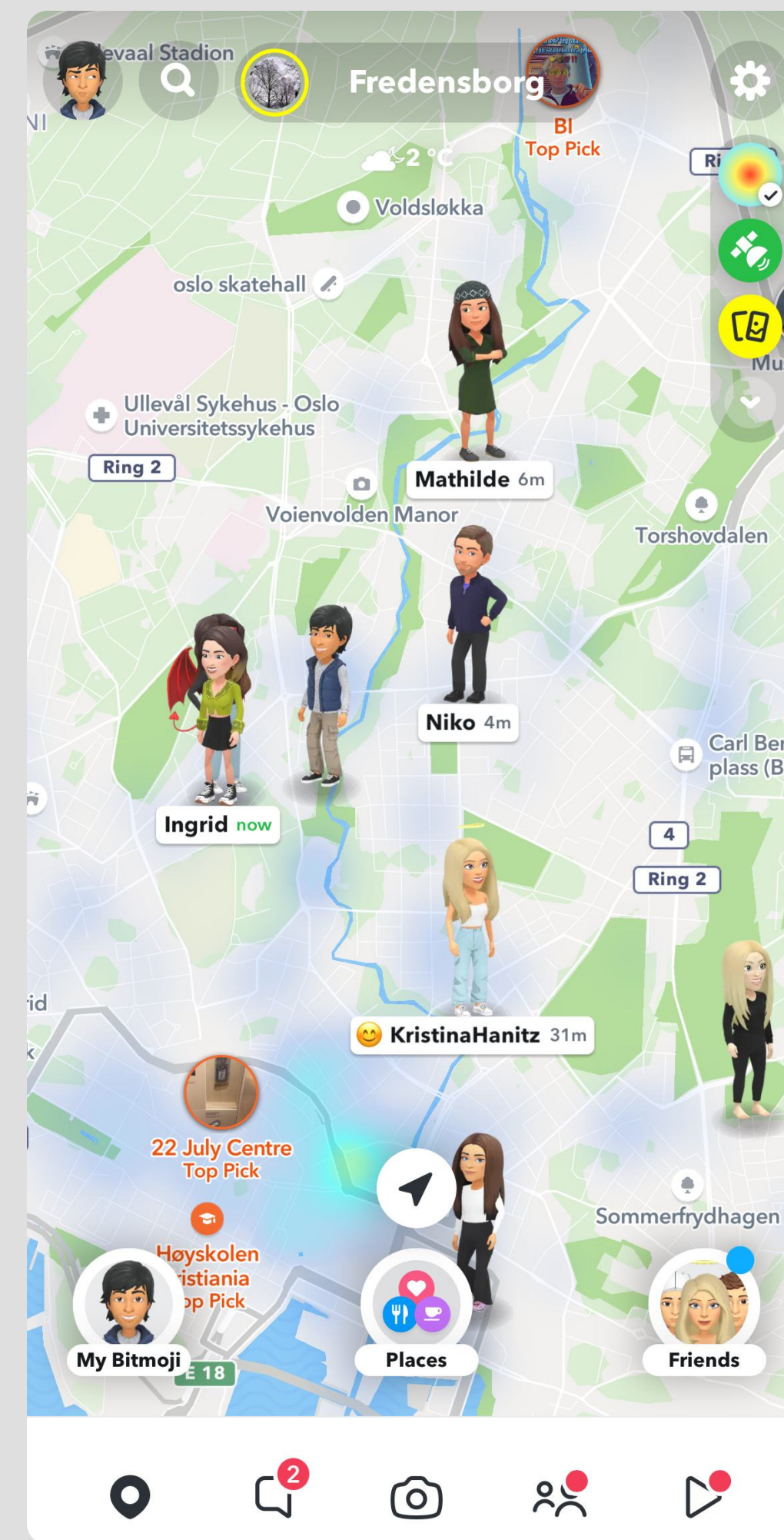
Let's compare this with the nuances of reading a book, which is an embodied experience. The rich sensory experience of texture, weight, thickness and number of pages brings clarity to readers about their position and progress in the structure of information. The process of leafing pages is even more sophisticated, when you lift the page, often wondering midway to continue before moving to the next one.

Synthesis Details

Anticipation: Built upon our spatial perception

The possibilities within spatial thinking

John Palmer discusses in his blog- Dark Blue Heavens the power of spatial thinking in interfaces, with the growing popularity of gaming, suggesting a future where UI elements may evolve from traditional skeuomorphism to more dynamic spatial organisations such as 3D avatars on Snap Map or movement-rich workspaces like Figma. It can scale from Skeuomorphism in UI elements to information organisation structures like 3D avatars of our Snapchat friends placed on a Snap Map or navigating in flexible, movement-rich workspaces like Figma.



Spatial organisation of friends based on their actual location


Synthesis

Details



Discovering early signals of doxing and calls to harassment online

Attack strategies used by online harassers have evolved over time, including their scale and ability to cause offline harm. Coordinated...

 Jigsaw
Jan 19, 2022 · 6 min read

Showing estimated reading time in long article titles

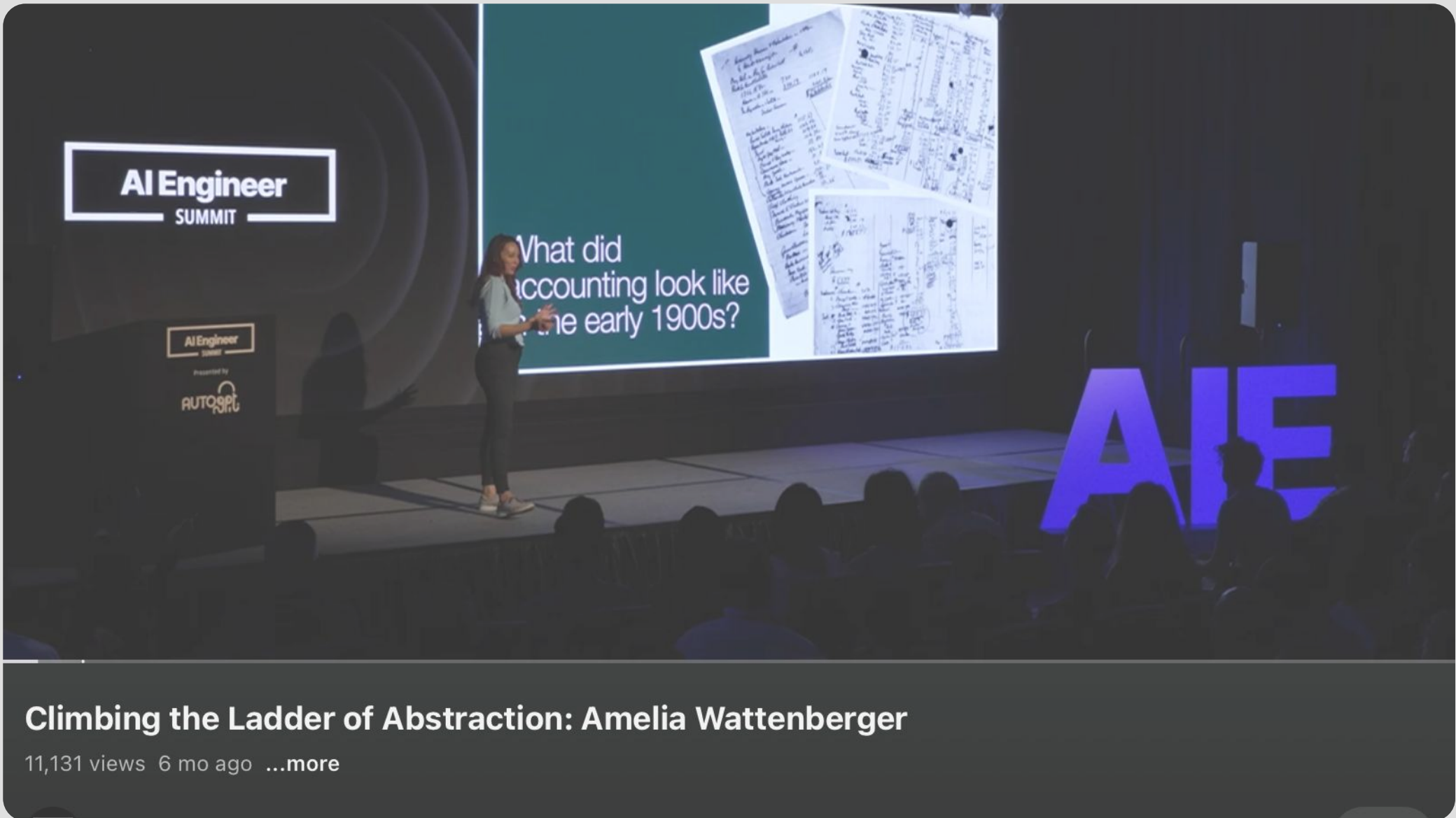
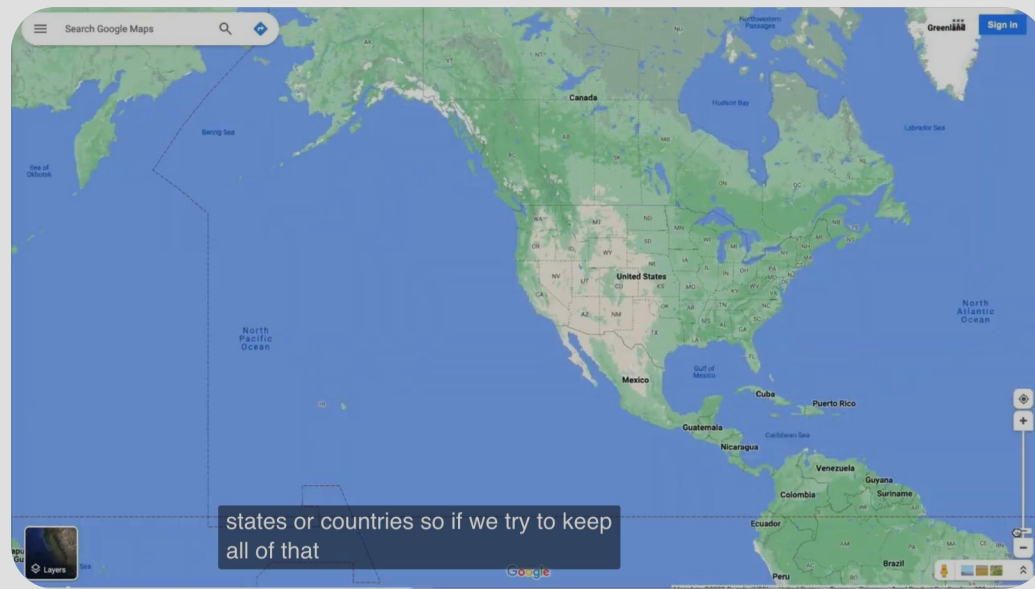
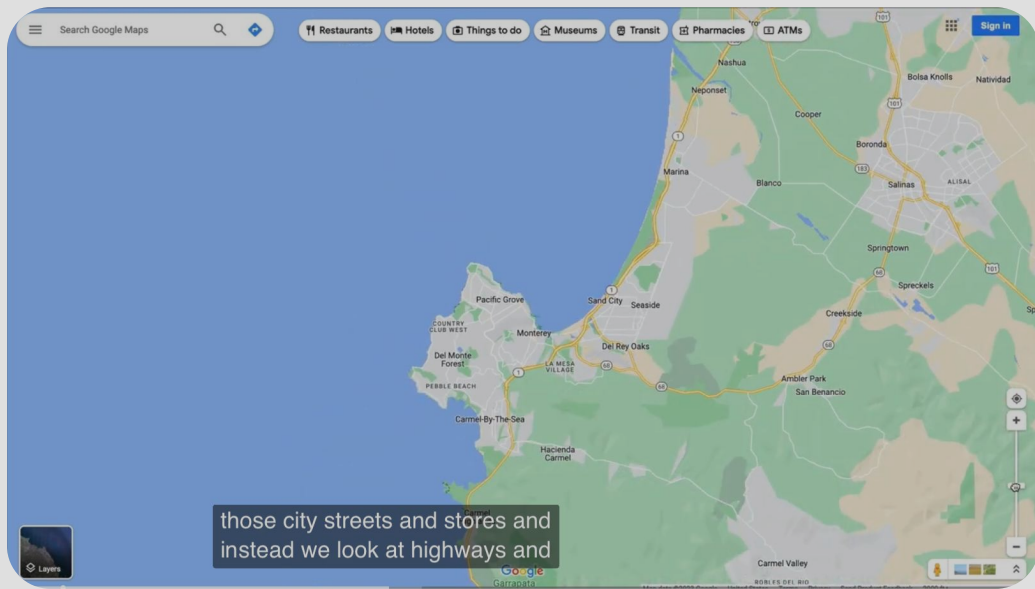
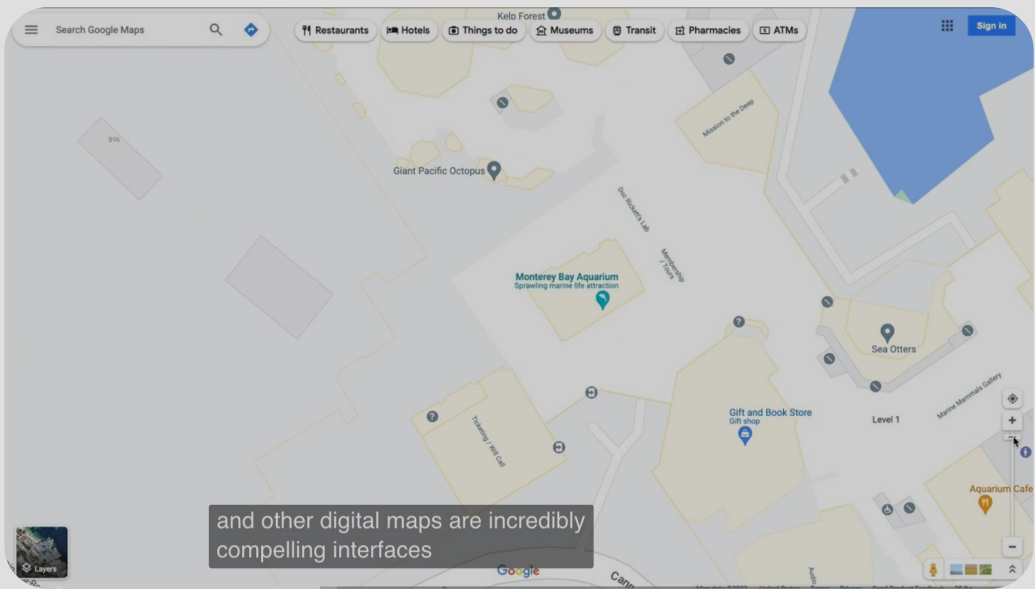
Conventional approaches like estimated reading time

Conventional solutions like displaying estimated reading time at the beginning of digital text fail to consider the complex insights by readability research about reading time being a good measure of a reader's skill but not engagement. Reader adjust their speed based on the difficulty of the material and comprehension which can be highly subjective and complex topics to boil down to common reading time.

Synthesis Inspiration

Watch her talk about the Google map reference at 4:59/16:47

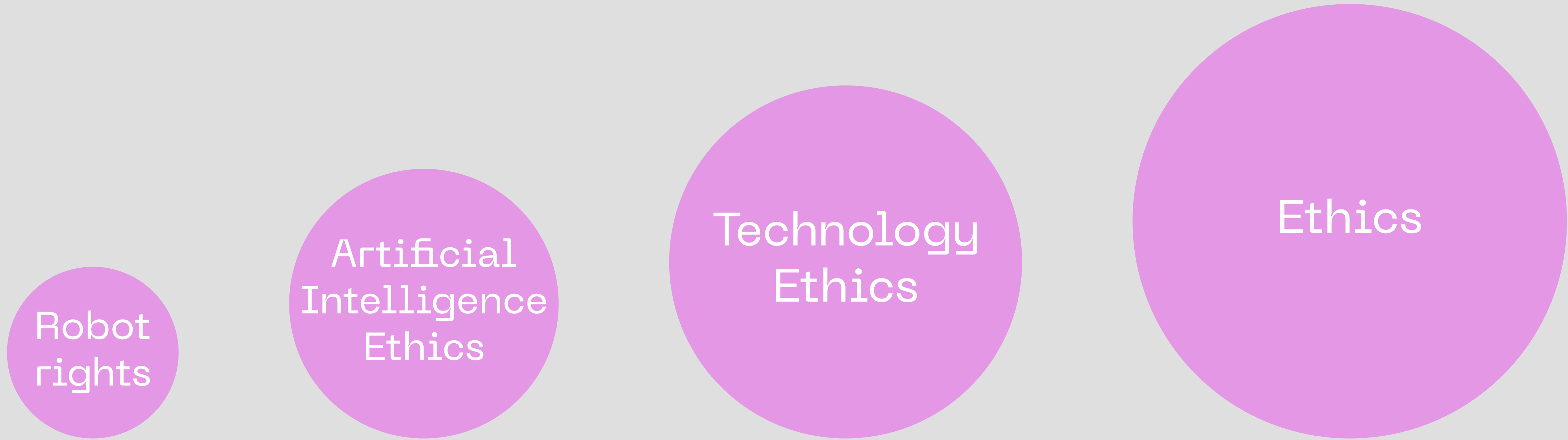
More detailed like road crossing → Few and big details like continent size



Inspiration and imagining it's application in Digital Reading

Amelia Wattenberger uses the analogy of Google Maps, to explain how varying levels of details can aid our understanding. Just as maps show more or less details (road crossing to the continent's size) depending on the zoom level, digital reading interfaces could benefit from a similar approach to manage the density of meaning for readers.

Synthesis Inspiration



More Specific

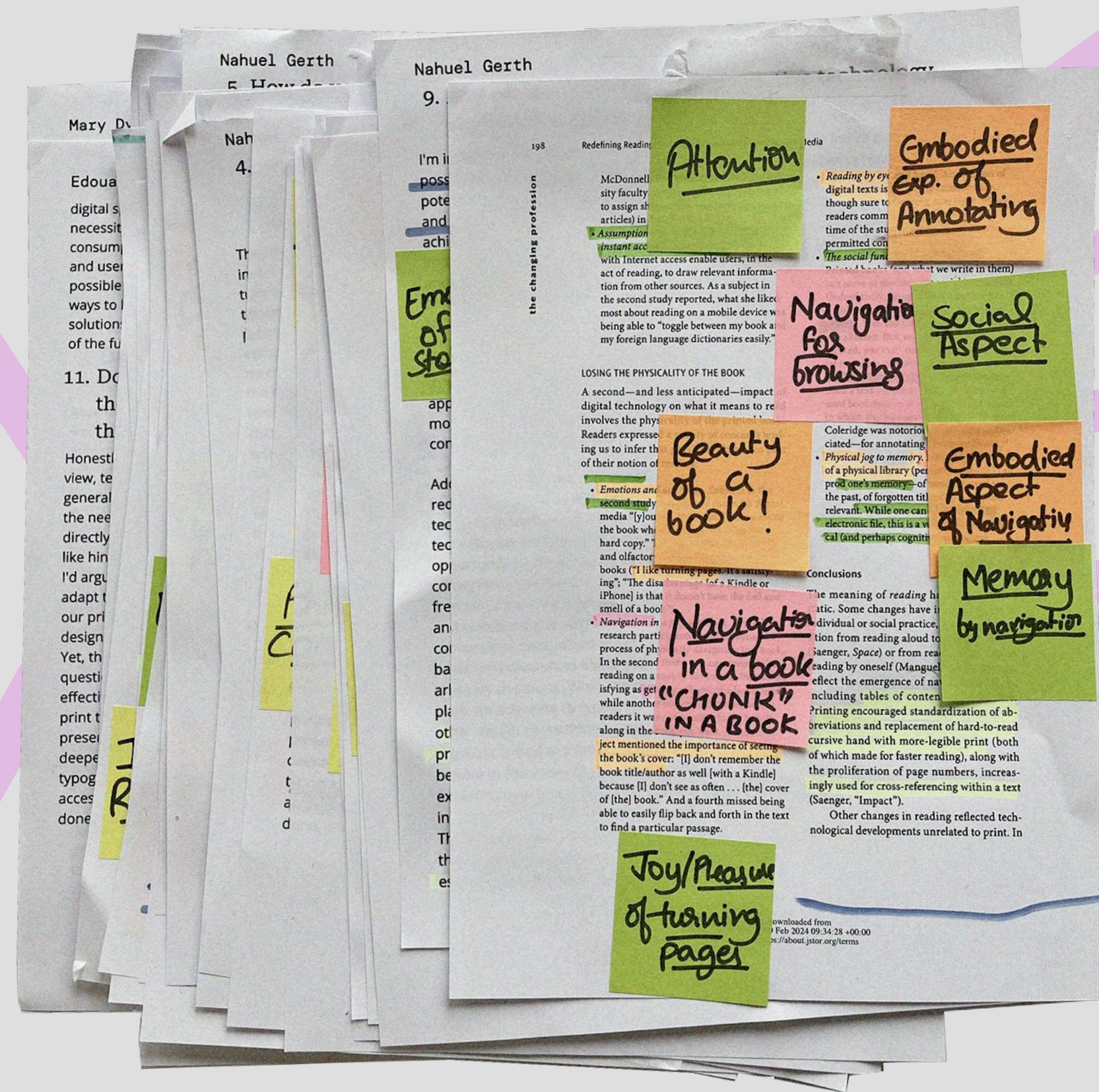
More Abstract

Inspiration and imagining it's application in Digital Reading

This principle can be translated to the semantic aspect of reading text in digital interfaces. Looking at meaning from different levels can add richness to our understanding and help us navigate the information structures.

Synthesis

Next Steps



My goal with the synthesis

My goal with the previous research synthesis is to use the emerging themes or hypotheses for exploring possibilities in the next step.

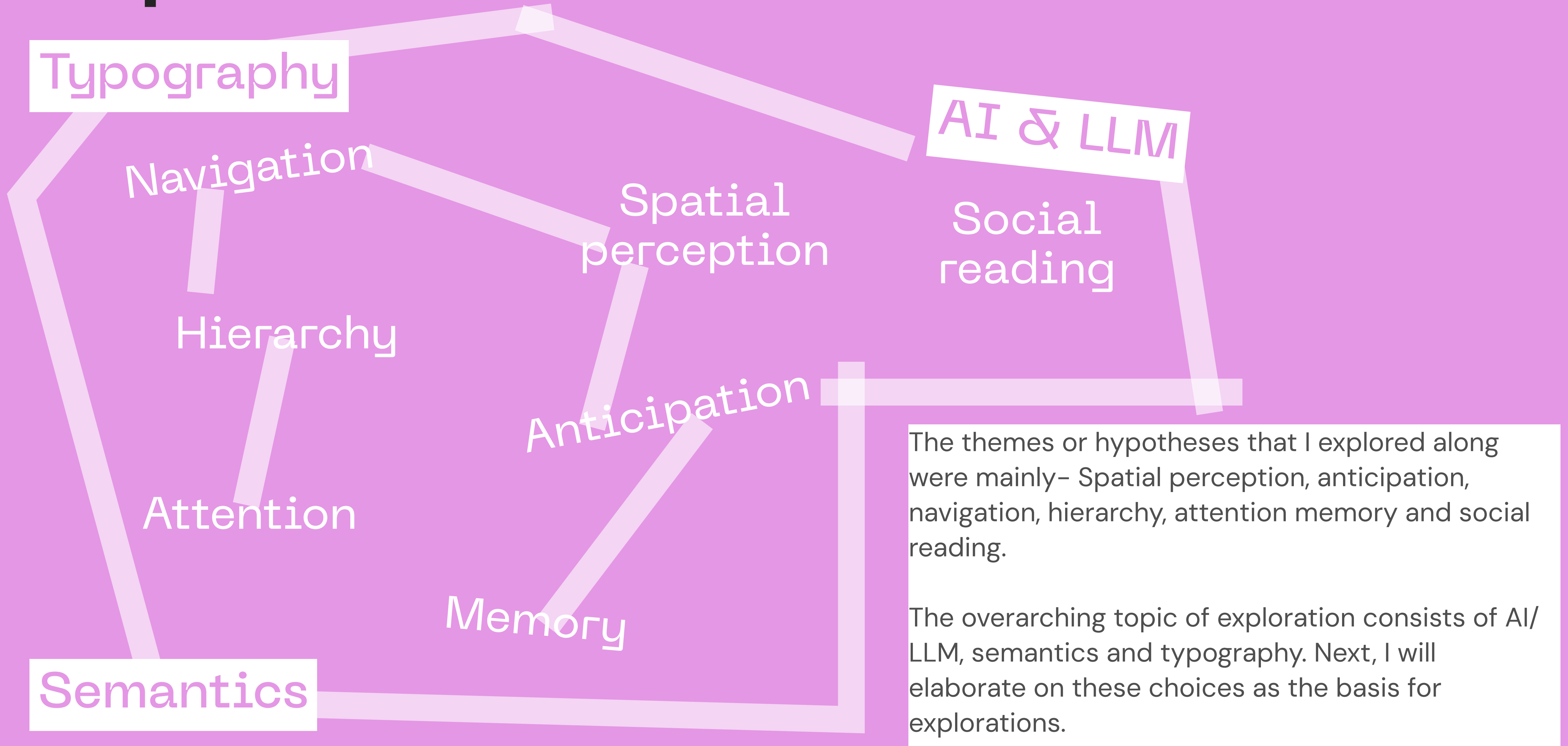
Explorations



This was a highly iterative phase of the project which involved making explorations based on the research synthesis, expert reviews, user test feedback and my reflections.

Explorations were not highly polished prototypes but represented a minimum viable experience of the possibilities within the concept's framework.

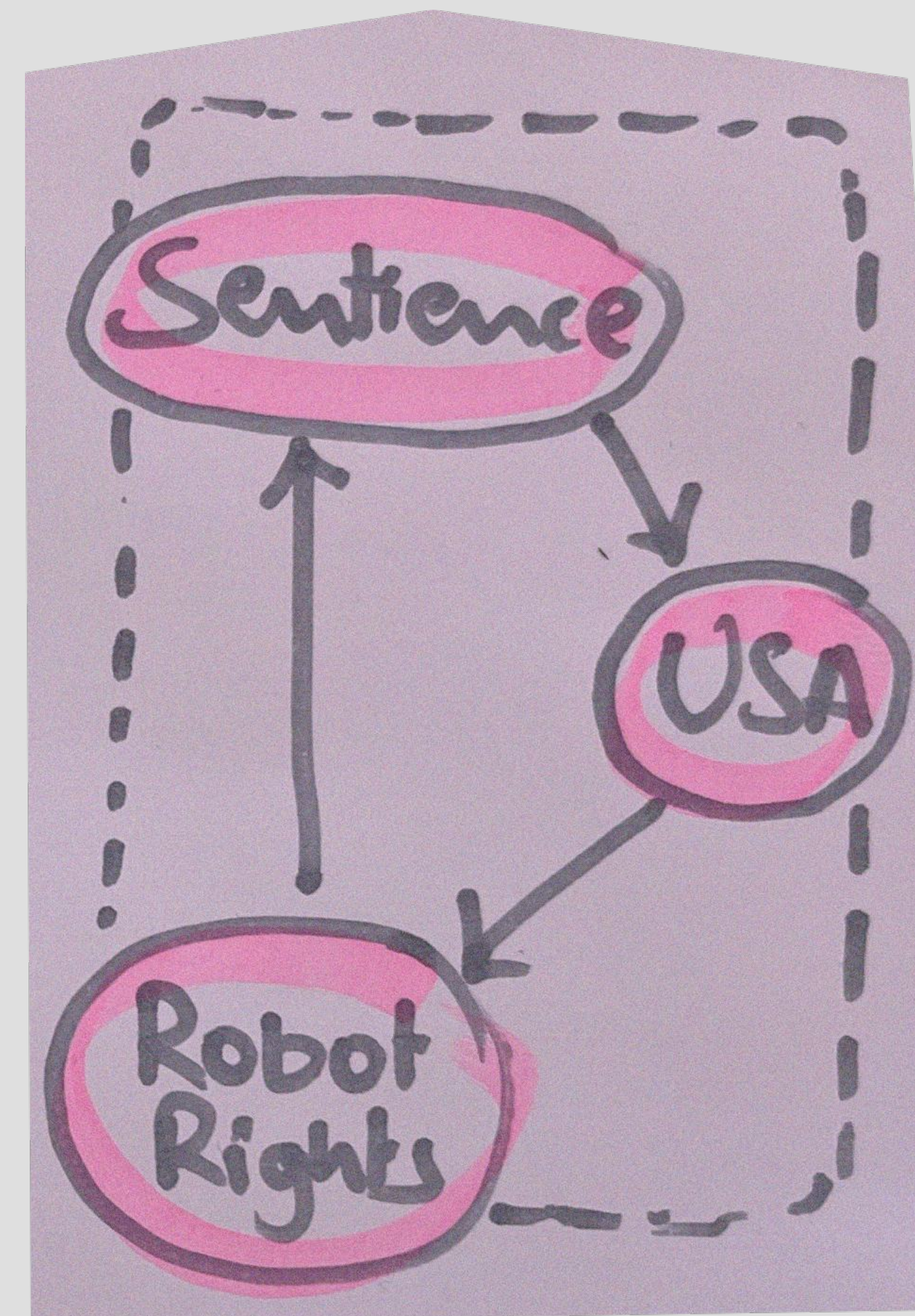
Explorations



The overarching topics for explorations

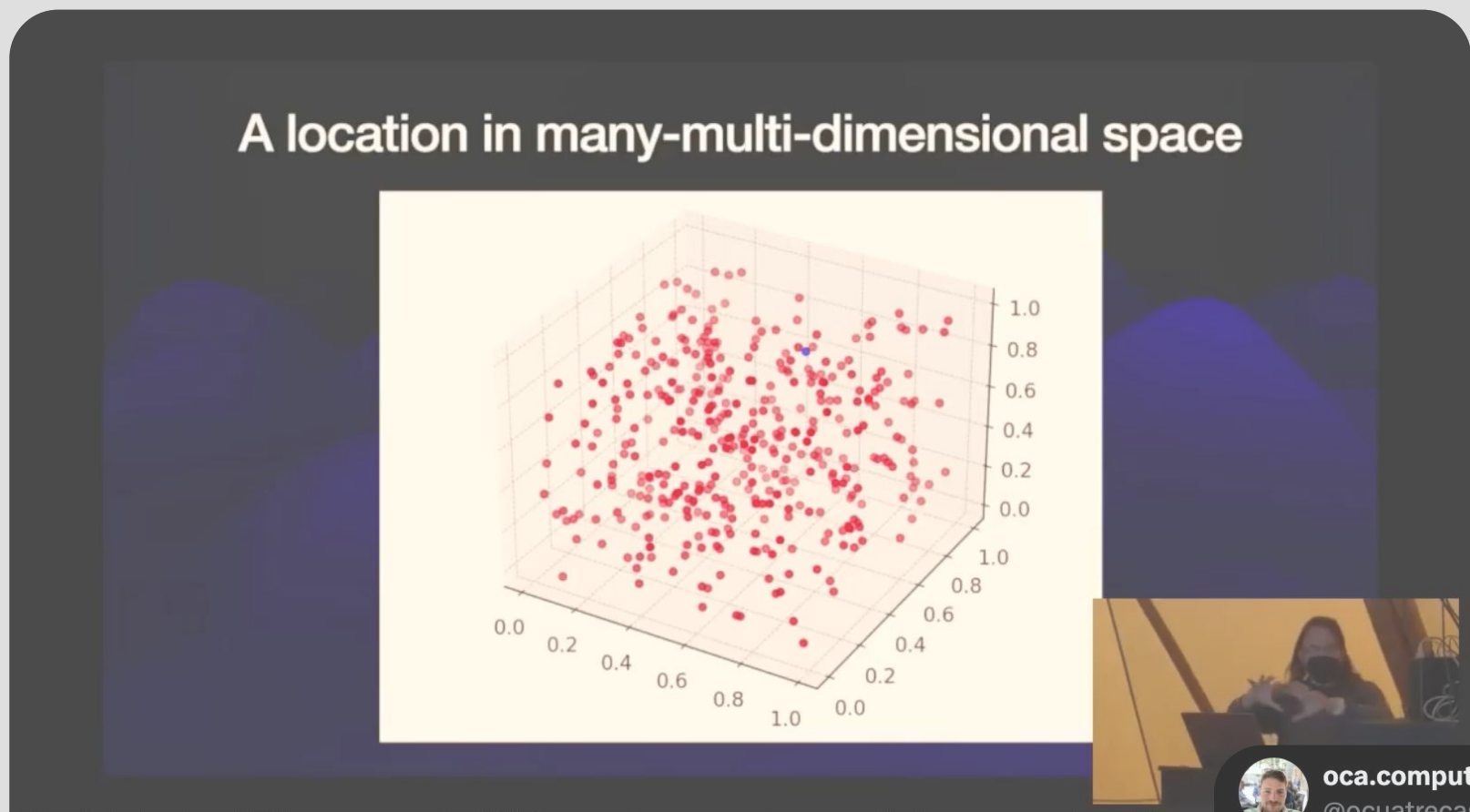
Semantics & Potential in embeddings

From research synthesis, Naomi Baron mentioned that engaging with words- writing notes, summaries, list of keywords, questioning and arguing- can be the most enriching ways to understand and make the most from reading.



The overarching topics for explorations

Semantics & Potential in embeddings



Embeddings: What they are and why they matter
 19,018 views · 6 mo ago · ...more

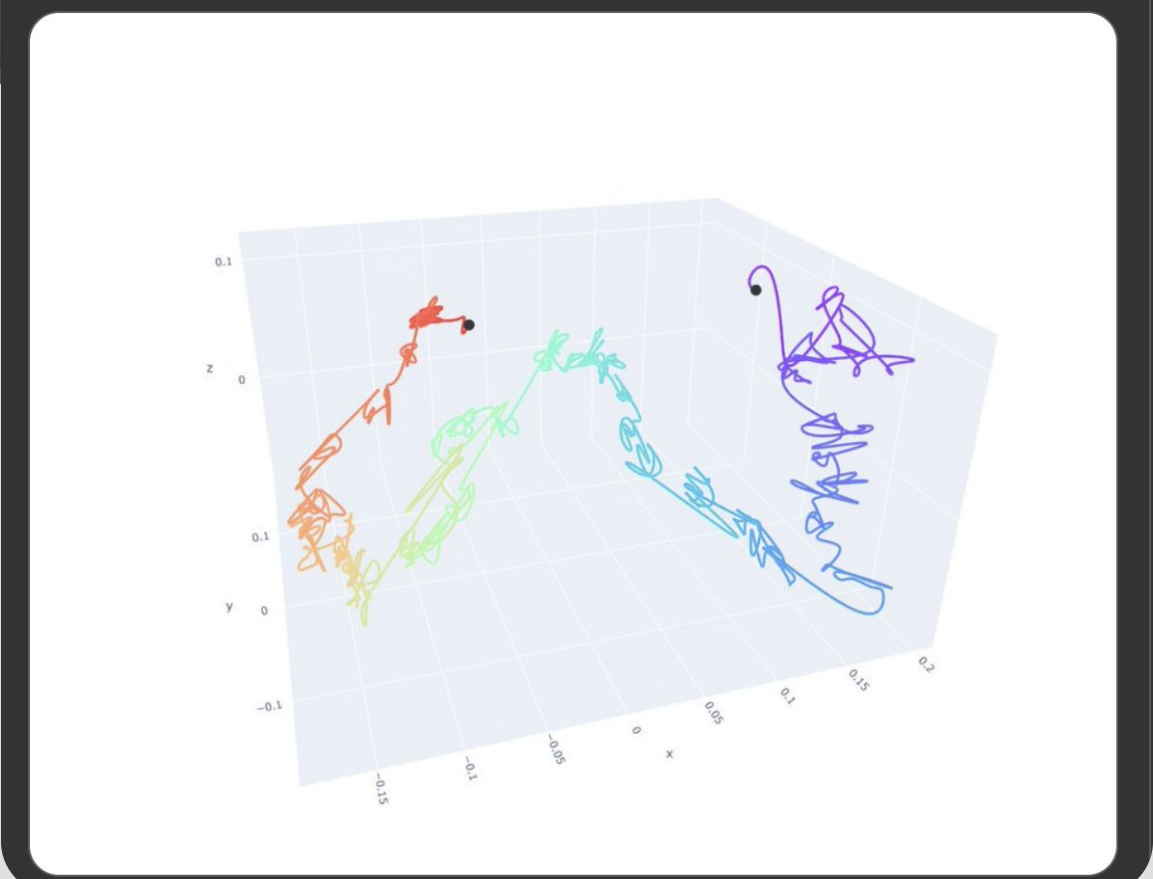
Simon Willison · 2.31K

607 | Share | Download | Clip | Save

oca.computer (f)
 @ocuatrecasas

Intro to Augmenting Human Intellect by Douglas Engelbart semantically embedded and plotted in space.

Cool visualization, but much more interesting when feeding a song into it...



In my interview with Jack Schulze, he introduced me to “embeddings” and its analysis by Simon Willison. Embeddings are fundamental to LLMs, as they convert words and phrases from entire human language into numerical vectors positioned in a high-dimensional space. This helps the model understand and use language by capturing meanings and relationships between words. For example, “chai” and “tea” are close together as they mean the same. However, “chai” is also close to “India” and “tea” with “Britain”, illustrating how embeddings capture both meaning and cultural context. Jack described this as “our collective culture mapped out in a space”.

The overarching topics for explorations

Why AI/LLM and typography

The rapid advancements of AI and LLM can lead to a widening gap between their applications and cultural understanding. Mediating this gap by demystifying these technologies and their creative application in digital reading is also the underlying ambition of this project.

Embeddings hold the potential within LLM to easily mould the semantical aspects which can produce different ways for the exchange of meanings. This plurality can allow readers to understand text in many ways and can be very useful in the context of taking in information that benefits from a rich and balanced approach.

Meanwhile, typography is not merely presentation, it is always linked with the semantics of our reading experiences.

Conceptual Introduction

Core idea

The core of the idea is about summarising information, a familiar process we use to comprehend and make sense of information.

Understanding

Let's compare summarising to when you squint- some parts appear stronger and other details disappear. This happens in summarising with meanings, which lets readers understand and move within the text structure. It touches upon themes of spatial perception, anticipation and memory in digital reading.

Conceptual Introduction

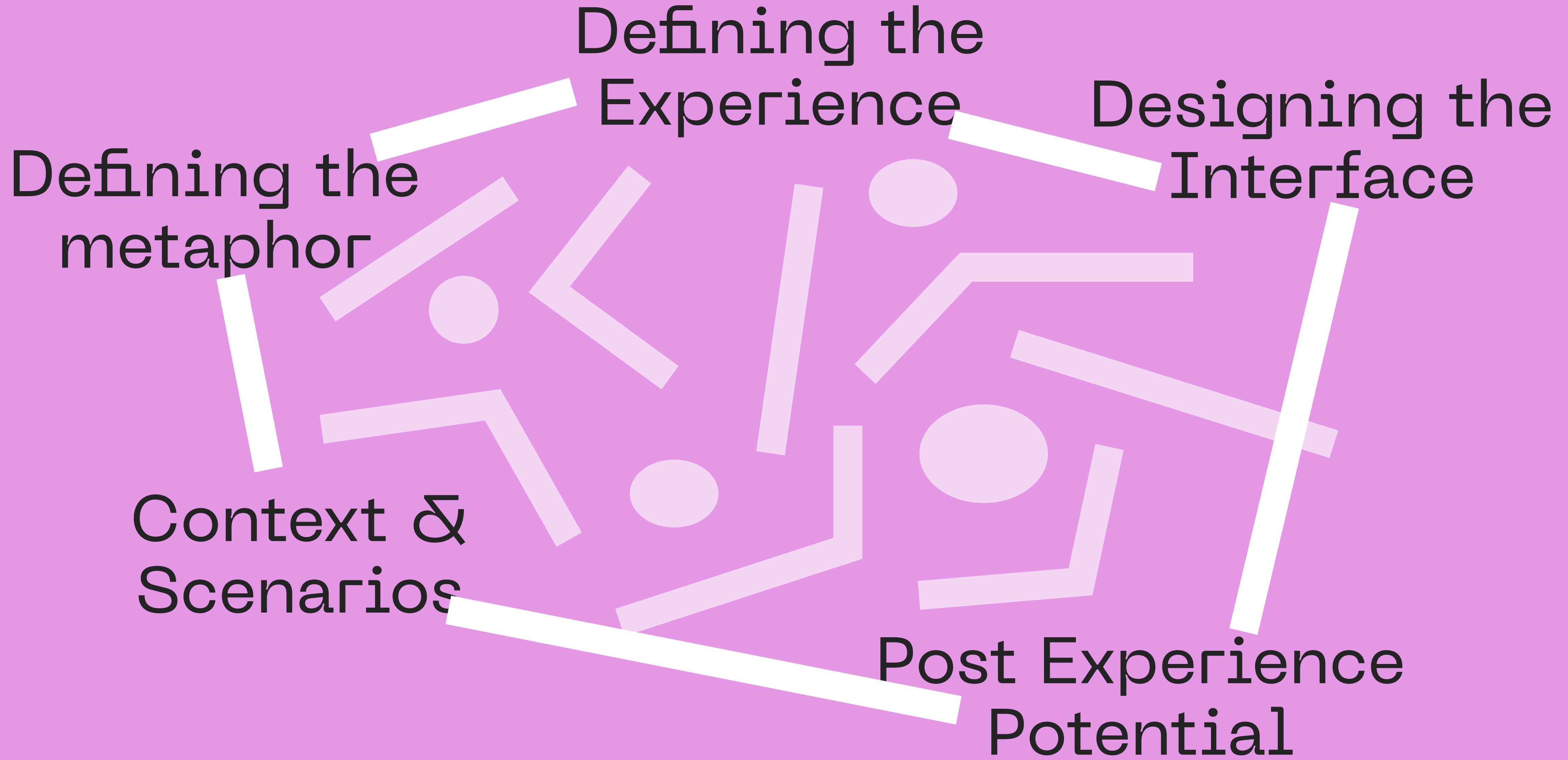
in a high-dimensional space, the model understands by capturing meaningful relationships between words. For example, "tea" are close together

machine consciousness could impact the viability of brain development. If AI cannot be conscious, then the parts of the brain responsible for consciousness could not be replaced with chips without causing a loss of consciousness. And, in a similar vein, a person couldn't upload their brain to a computer to avoid death because that upload wouldn't be a conscious being.

Goal & Ambition

The goal of this concept is to be integrated as a function for textual information just like copy/pasting, spell-check and inspiring integration ideas within other products. The ambition is to create flexible ways for readers to navigate within abstract space of comprehension, and structures and enrich their experience of memory.

Framework to explore possibilities



Framework to explore possibilities

Defining the metaphor

Defining the metaphor

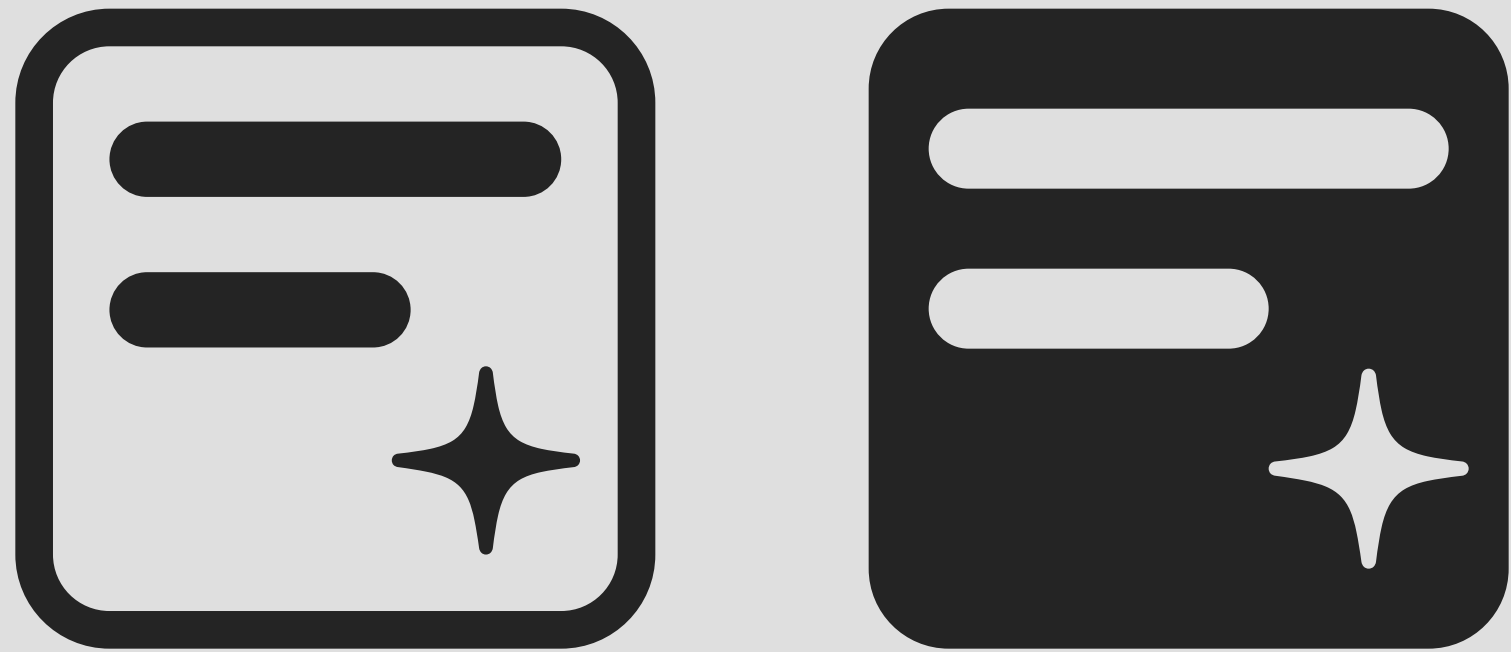
Here, I explored metaphors to define the core of summarising, strengthening and mediating a rich meaning that also keeps it open for wider applications.

I also explored this visually by designing an icon to communicate the essence.

Framework to explore possibilities

Defining the metaphor

As metaphor for Moving in and out of text



Compressing & Condensing

Summarising is about boiling down complex information. This is not merely about fewer words, but also compressing the meaning of the text to its essence.

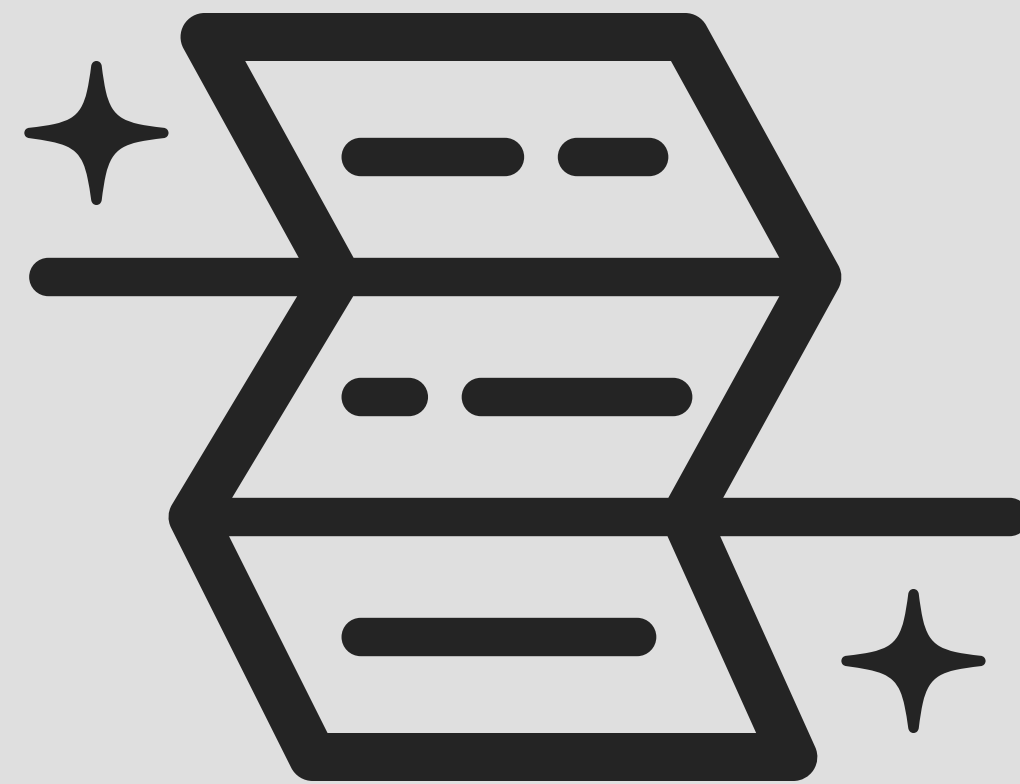
Abstraction

As there are fewer words, the vocabulary of the text might change. The expression becomes more abstract as it lifts the meaning into higher space—showing what is relevant and leaving behind details that don't matter.

Framework to explore possibilities

Defining the metaphor

As metaphor for Moving in and out of text



Unfolding & Expanding Text

The meaning of the information can also move the other way around, from being more abstract and summarised to more detailed.



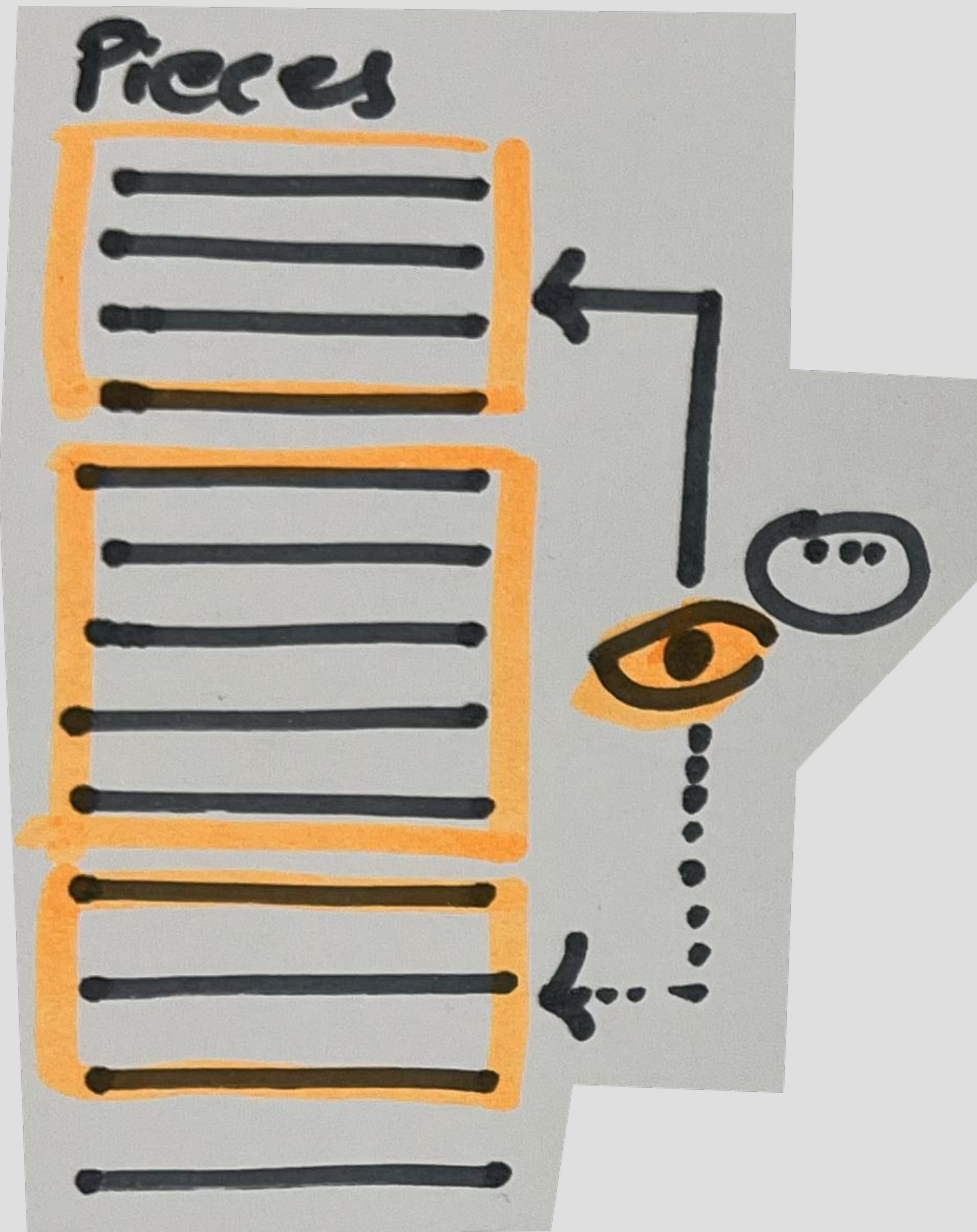
Semantic Zooming

Jack Schulze introduced me to Amelia Wattenberger's concept of "Semantic Zooming." This approach posits that zooming out increases abstraction and summarization, while zooming in provides more detailed information.

Framework to explore possibilities

Defining the metaphor

As metaphor for gliding over text

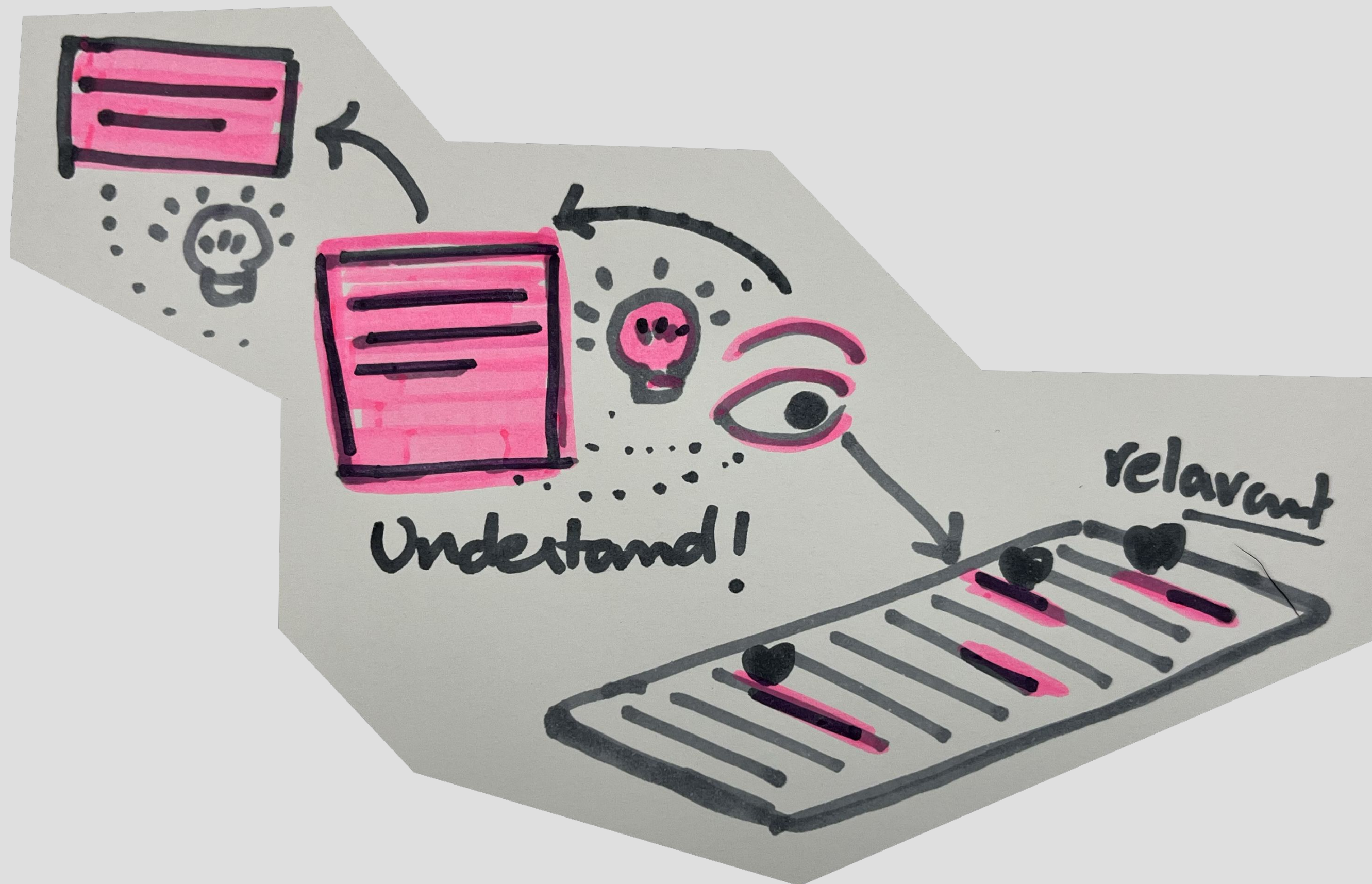


Chunking

This means dividing text into chunks (themes, topics, or sections) to make it more digestible. This also lifts the reader's perspective to understand the structure of information, enables comparisons across sections and most importantly, gives multiple entry points to reading.

Framework to explore possibilities

Defining the experience



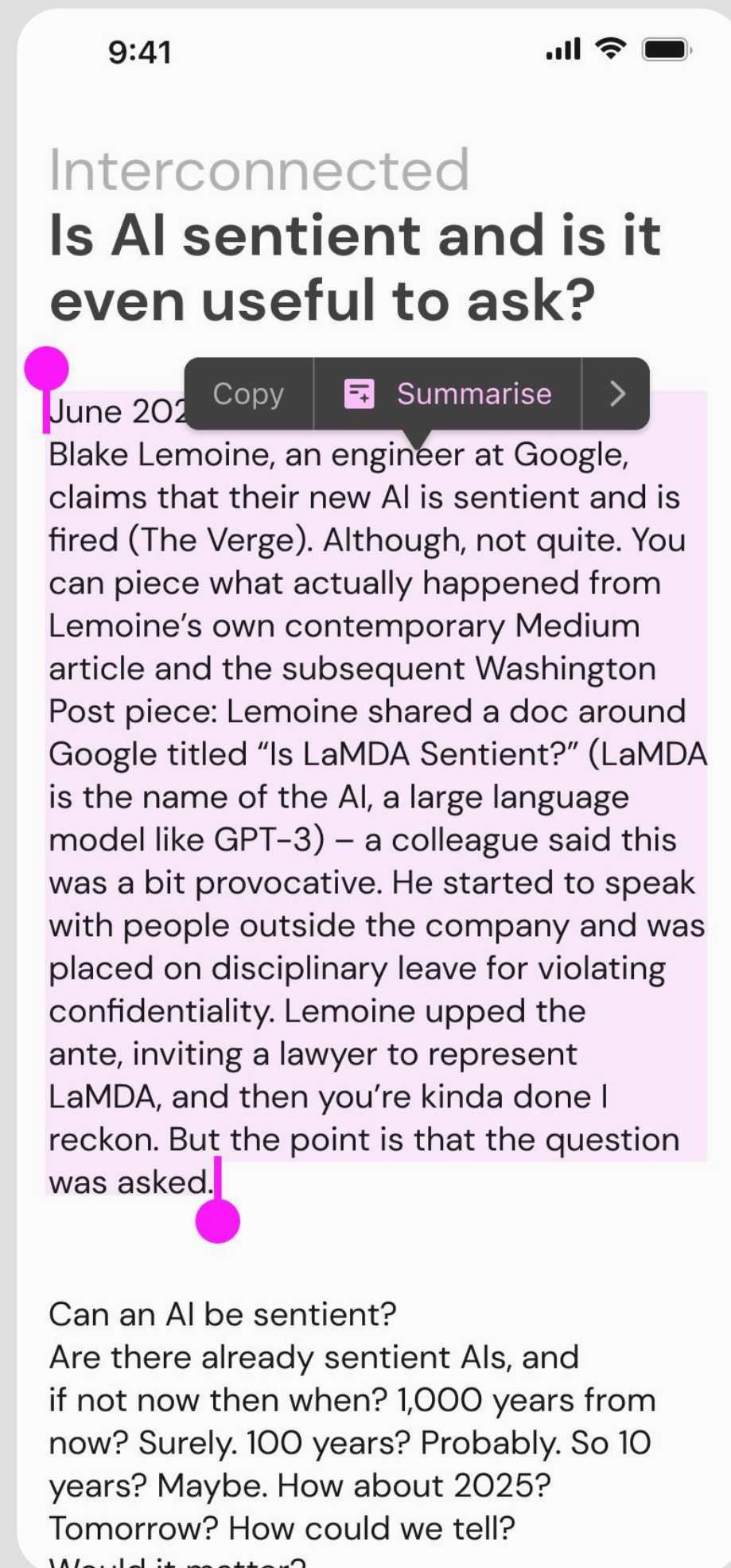
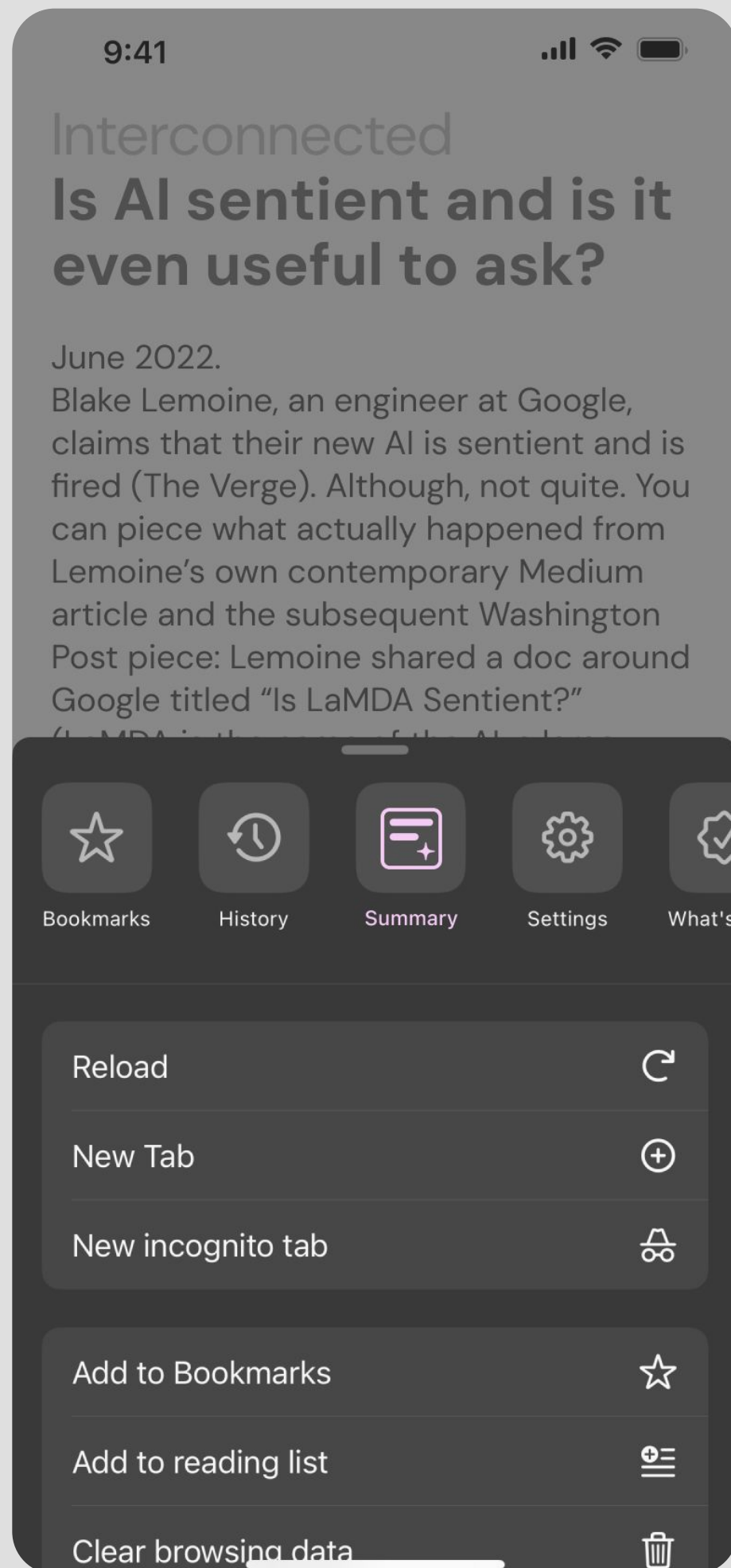
Chunking information:
Divided sections as entry
points for readers

“Gliding over text” means reader’s can have a top view of the “chunk” of text which represents the piece of information. Summarising this “piece” of information is entry point to the experience.

Framework to explore possibilities

Defining the experience

Defining the experience



Chunking information: Divided sections as entry points for readers

Summarising this "piece" of information is entry point to the experience. This approach should be easy to discover like being embedded along with text functions like "copy text" which is integrated in the format like browser. It can be decided upon reader's intent or can be more spontaneous.

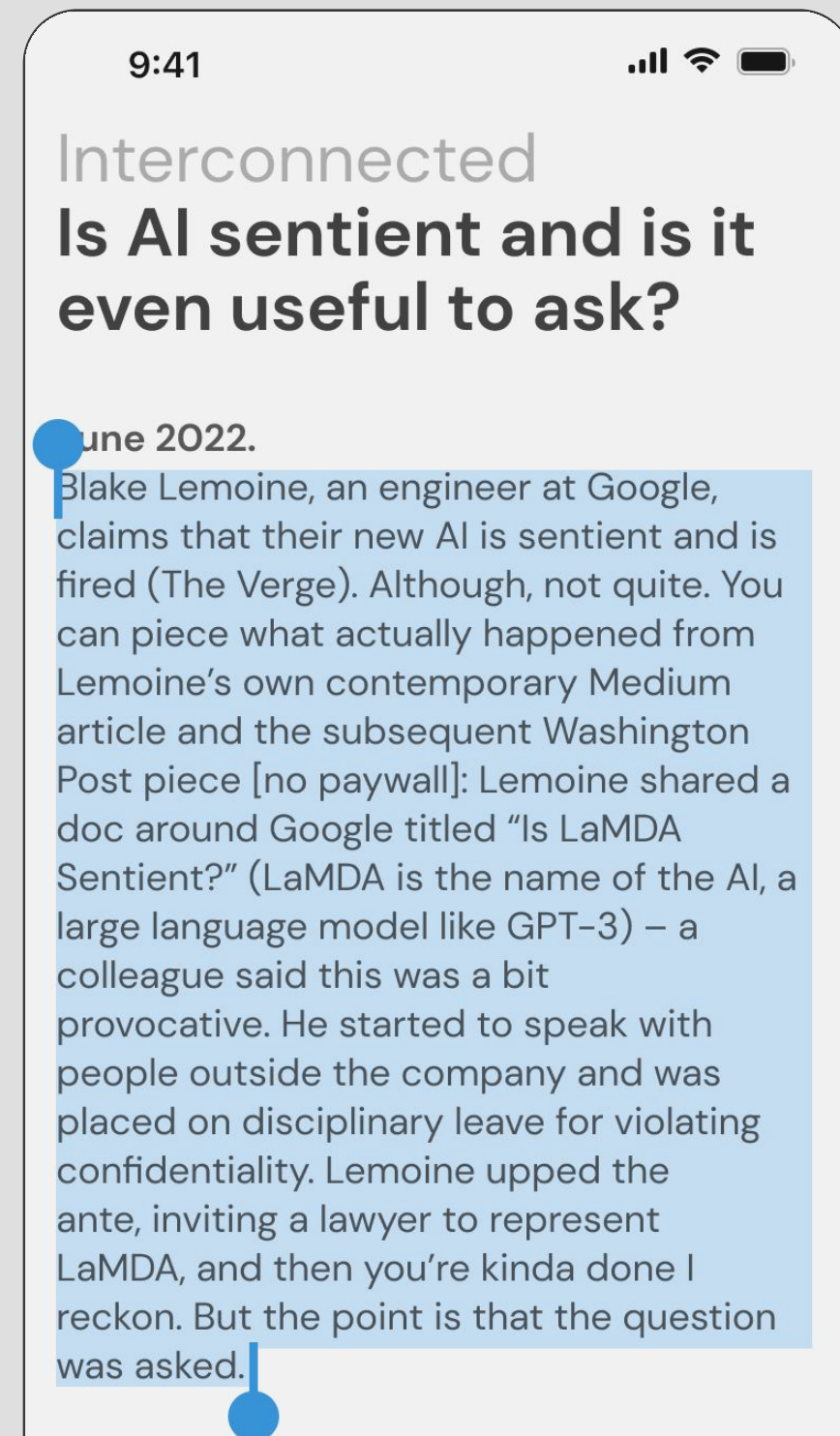
Framework to explore possibilities

Defining the experience

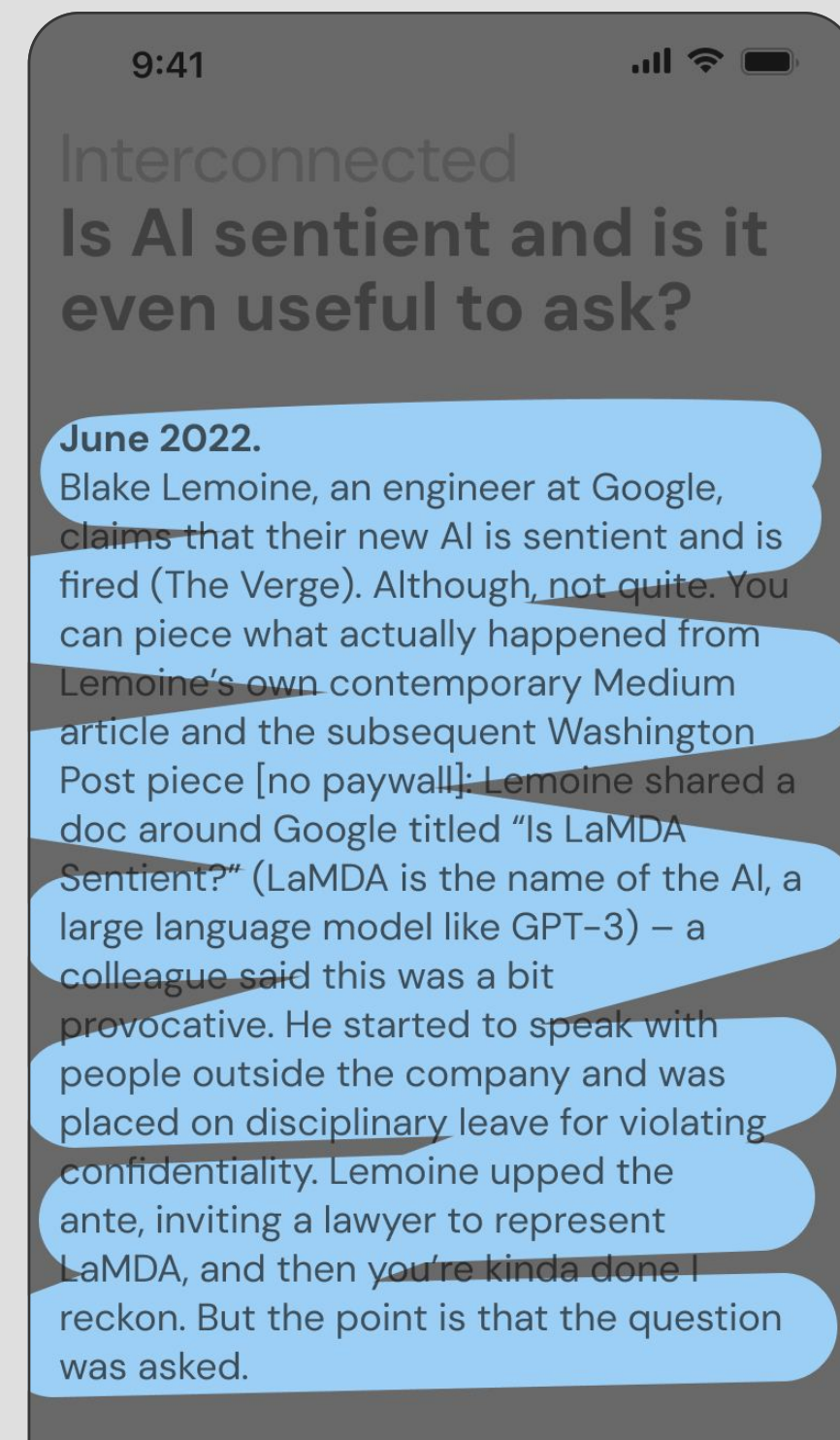
Chunking information: Dividing sections as entry points for readers

Spontaneous

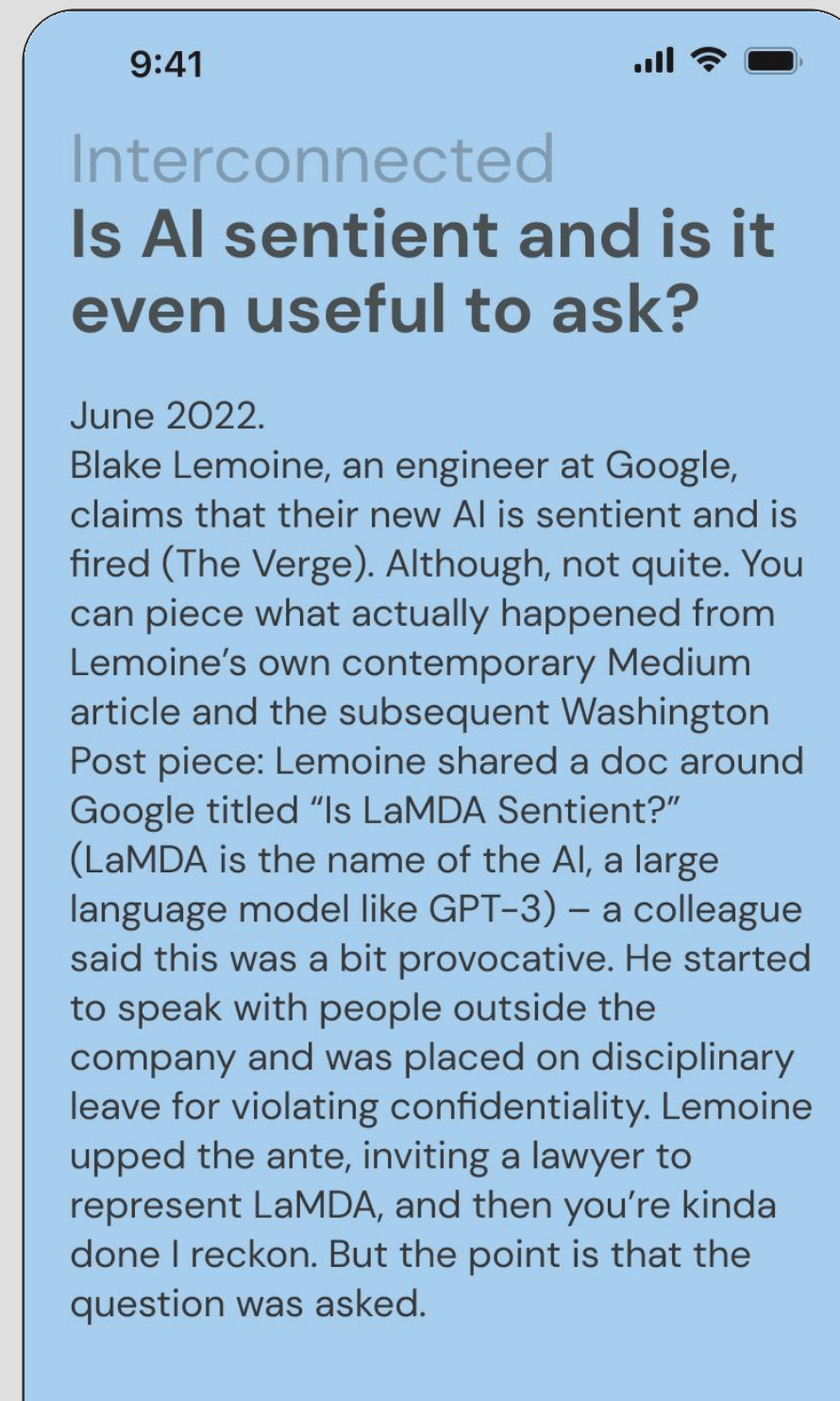
Text Selection



"Scrubbing" to select



All text on screen summarises



Readers might feel an impulse to summarise the content as they are reading. Touch-based interactions are good opportunities to explore here to select the text that gets summarised. Text selection can go from being conventional (through a cursor) to richer ways like scrubbing, scratching and long-pressing over text. It might be as spontaneous and low threshold as taking a "screenshot" where all the text on the screen at any given point in scrolling can get summarized.

Framework to explore possibilities

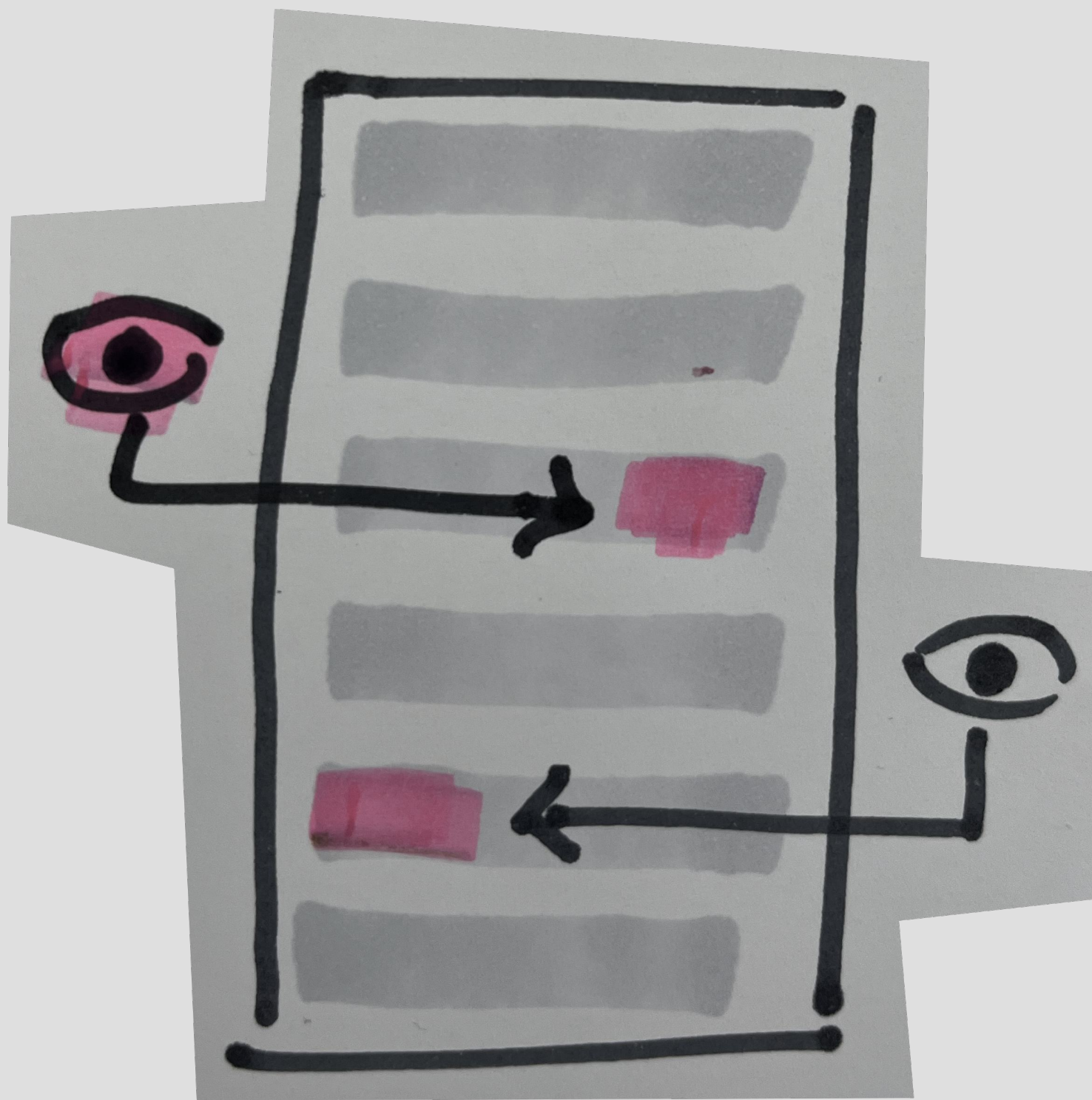
Defining the experience

Chunking information: Dividing sections as entry points for readers

Intent-driven:

Introduction & Inspiration

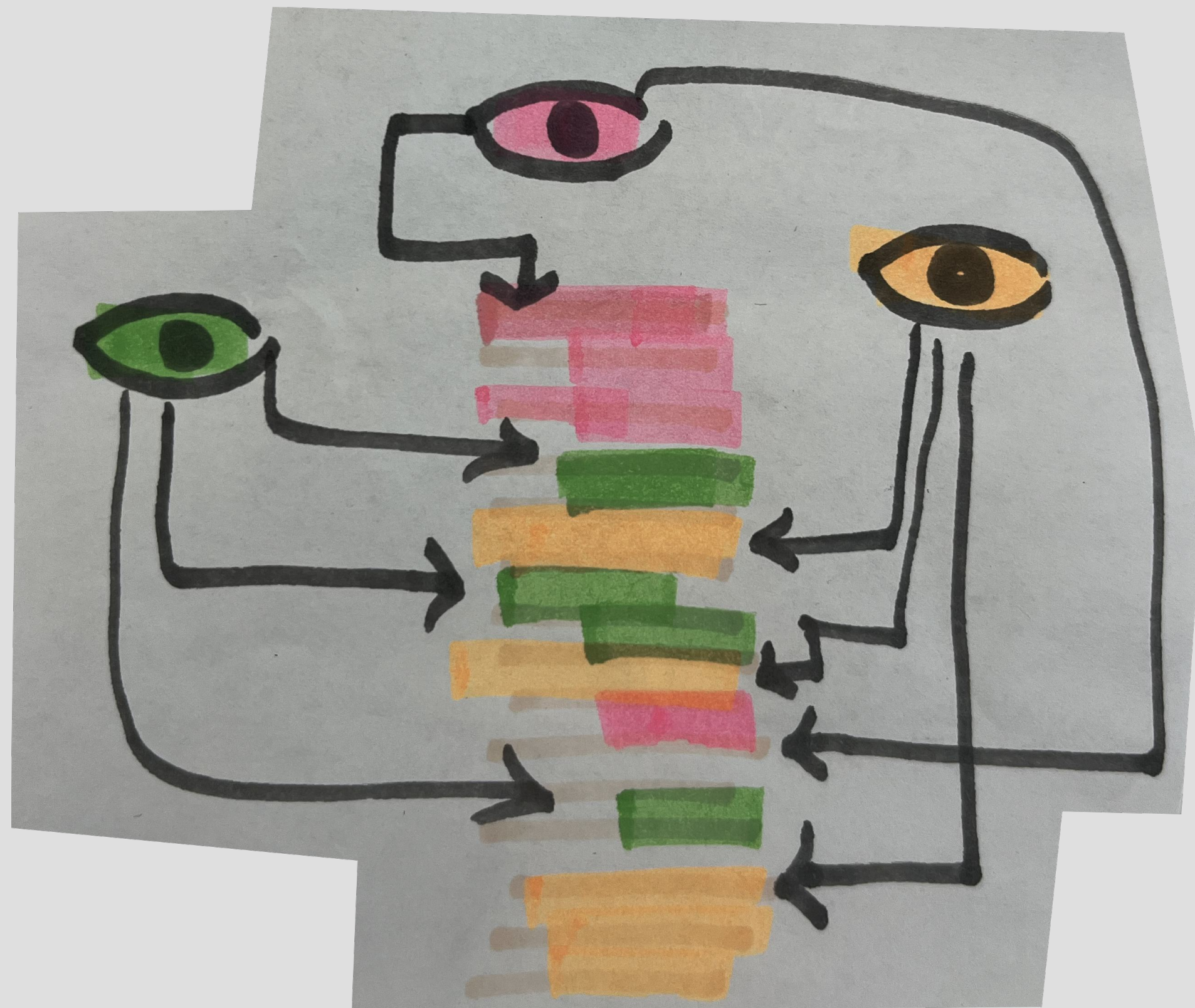
Some readers may not want to read through the whole text structure but are instead looking for specific insight based on their interests or intent. Lev Manovich, in "The Language of New Media," references Louis Althusser's notion of "interpellation" to critique digital media structures. He equates linking digital media to interpellation, describing it as "Interactive media ask us to identify with someone else's mental structure"—a form of "cognitive labour." Reflecting on this, in the context of reading, readers also have no choice but to navigate through the writer's organisational logic for information.



Framework to explore possibilities

Defining the experience

Chunking information: Dividing sections as entry points for readers



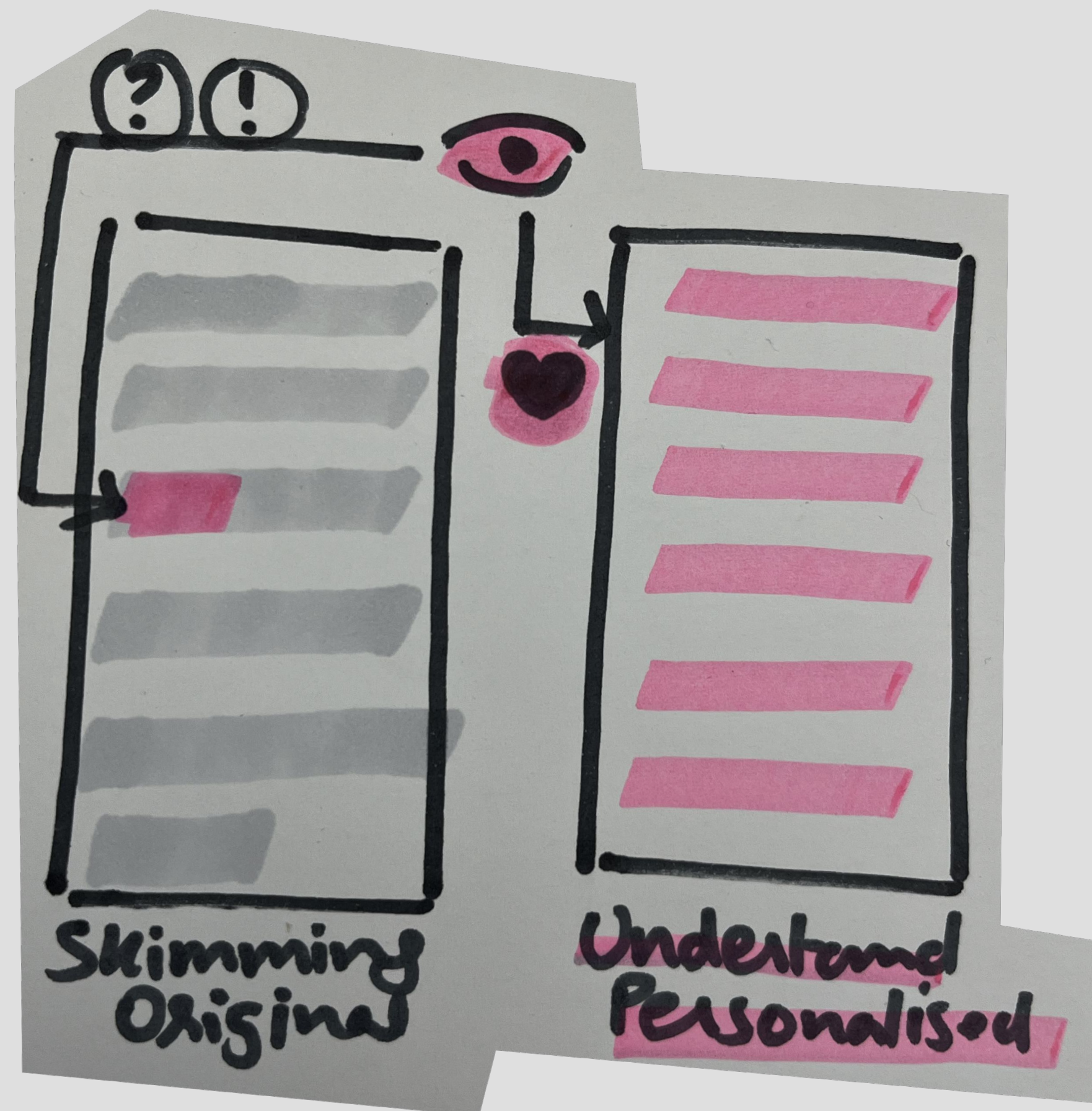
Intent-driven:
Introduction & Inspiration

This led to an exploration of personalising summaries which can help readers construct their mental structures from the information.

Framework to explore possibilities

Defining the experience

Chunking information: Dividing sections as entry points for readers



Intent-driven: Context of personalisation

Personalising in this context, is summarising and reinterpreting the original text based on a keyword which is an entry points to the text for readers based on their interest. It offers a choice for a non-linear reading paths.

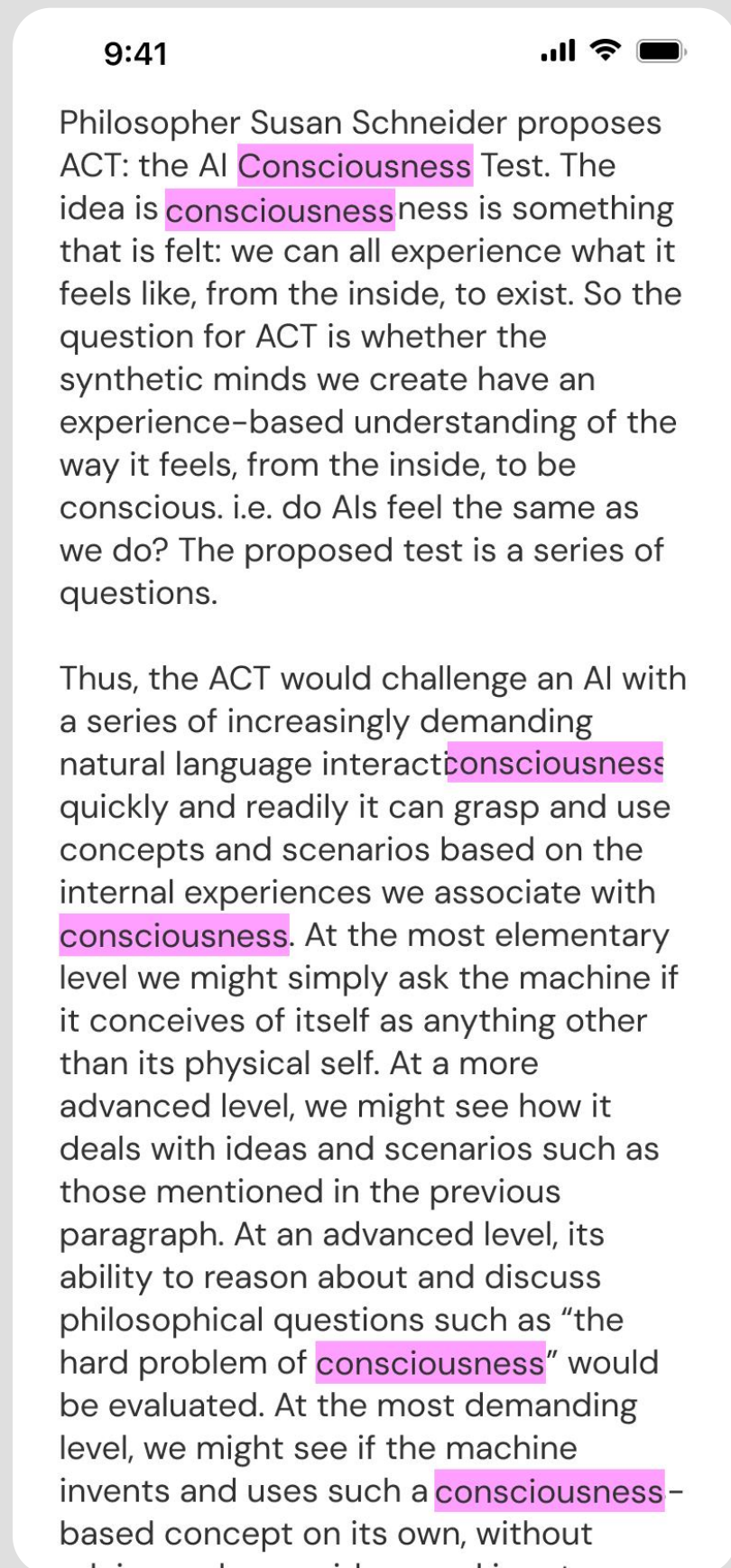
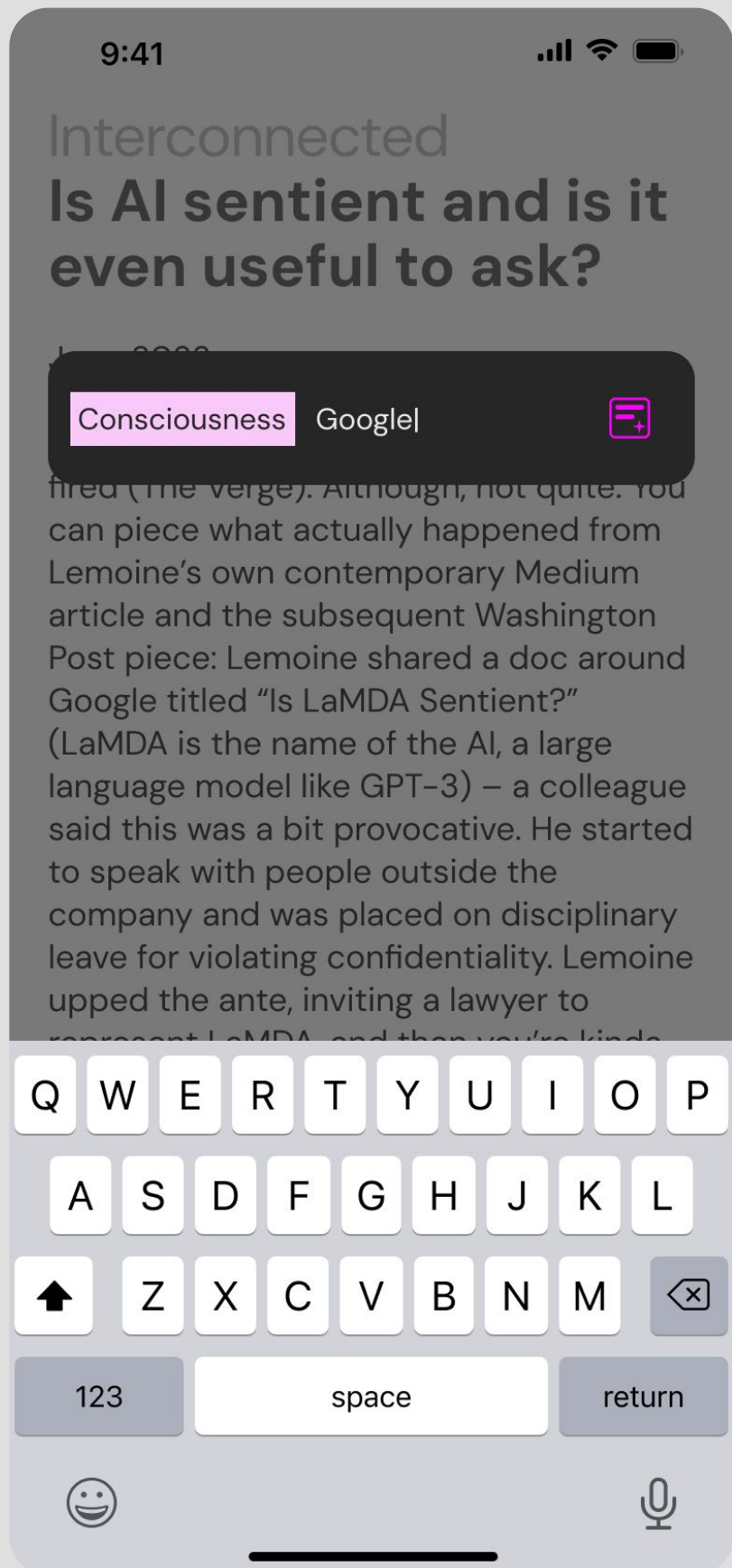
Unlike linking text, which can confuse and reset comprehension—as previously noted—keywords function differently and as they ground readers to conclude on the original text.

Framework to explore possibilities

Defining the experience

Chunking information: Dividing sections as entry points for readers

Reader inputs the keyword → Picks up the keyword → Summary based on the keyword



Intent-driven: Define the keyword

Keywords can be entered in an input field which then scan the original text to pick the exact word or connected meaning.

Readers can also be given the freedom to enter any word but that will require immense heavy lifting for the LLM.

Framework to explore possibilities

Defining the experience

Chunking information: Dividing sections as entry points for readers

9:41 There's a solid critique of ACT in this paper by David Udell and Eric Schwitzgebel, Susan Schneider's Proposed Tests for AI Consciousness: Promising but Flawed (PDF at that link). The challenge is that there's always going to be a lower-level explanation of how the AI is answering questions on the silicon substrate (a giant lookup table, matrix maths, whatever), and that no series of questions is going to be sufficient to convince people that there is genuine machine consciousness at a higher level too. One for the philosophers. But Udell & Schwitzgebel are articulate on the urgency of finessing ACT or something ACT-like: AI consciousness, despite its present science-fictional air, may soon become an urgent practical issue. Within the next few decades, engineers might develop AI systems that some people, rightly or wrongly, claim have conscious experiences like ours. We will then face the question of whether such AI systems would deserve moral consideration akin to that we give to people. There is already an emerging **robot rights** movement which would surely be energized by plausible claims of robot consciousness (Schwitzgebel and Garza 2015; Gunkel 2018; Ziesche and Yampolskiy 2019). So we need to think seriously in advance about how to test for consciousness among apparently conscious machines... – David Billy Udell and Eric Schwitzgebel, Susan

9:41 American piece above, broadens the urgency to brain implants: machine consciousness could impact the viability of brain-implant technologies, like those to be developed by Elon Musk's new company, **Neuralink**. If AI cannot be conscious, then the parts of the brain responsible for consciousness could not be replaced with chips without causing a loss of consciousness. And, in a similar vein, a person couldn't upload their brain to a computer to avoid death because that upload wouldn't be a conscious being.

Consciousness is hard hey. Consciousness is weird. Let's say that we agree that a silicon substrate can host consciousness. Or that a group of organic cells, properly arranged etc, can host consciousness. There is a slippery slope... Eric Schwitzgebel again: The **United States** is literally, like you, phenomenally conscious. That is, the United States literally possesses a stream of experiences over and above the experiences of its members considered individually. If you're a **materialist**, you probably think that rabbits have conscious experiences. And you ought to think that. After all, rabbits are a lot like us, biologically and neurophysiologically. If you're a

Intent-driven: Define the keyword

Keywords can also be extracted from the original or summarised versions of text without any user input. It can be more than one keyword, but should not be overwhelming for readers.

Framework to explore possibilities

Defining the experience

Chunking information: Dividing sections as entry points for readers

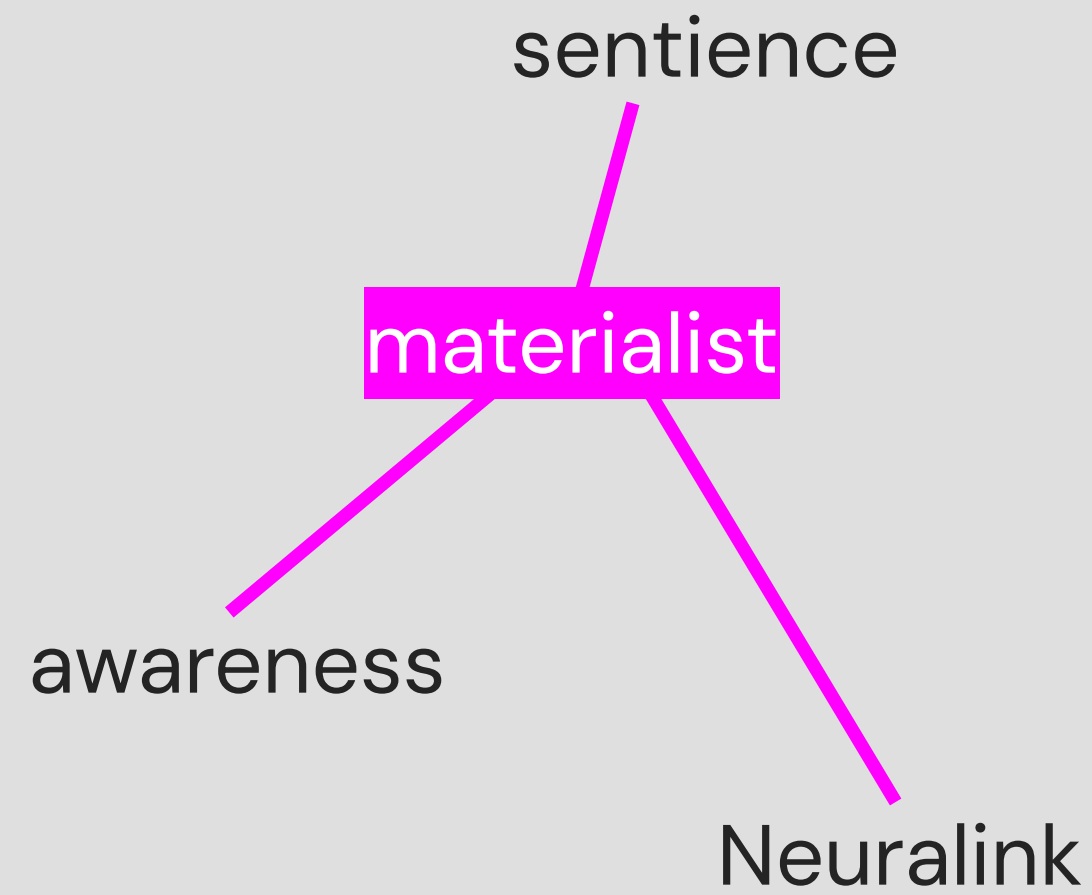
9:41

Philosopher Susan Schneider proposes ACT: the AI Consciousness Test. The idea is consciousness is something that is felt: we can all experience what it feels like, from the inside, to exist. So the question for ACT is whether the synthetic minds we create have an experience-based understanding of the way it feels, from the inside, to be conscious. i.e. do AIs feel the same as we do? The proposed test is a series of questions.

Thus, the ACT would challenge an AI with a series of increasingly demanding natural language interactions quickly and readily it can grasp and use concepts and scenarios based on the internal experiences we associate with consciousness. At the most elementary level we might simply ask the machine if it conceives of itself as anything other than its physical self. At a more advanced level, we might see how it deals with ideas and scenarios such as those mentioned in the previous paragraph. At an advanced level, its ability to reason about and discuss philosophical questions such as "the hard problem of consciousness" would be evaluated. At the most demanding level, we might see if the machine invents and uses such a consciousness-based concept on its own, without relying on human ideas and inputs.

9:41

Let's say that we agree that a silicon substrate can host consciousness. Or that a group of organic cells, properly arranged etc, can host consciousness. There is a slippery slope... Eric Schwitzgebel again: The United States is literally, like you, phenomenally conscious. That is, the United States literally possesses a stream of experiences over and above the experiences of its members considered individually. If you're a materialist you probably think that rabbits have conscious experiences. And you ought to think that. After all, rabbits are a lot like us, biologically and neurophysiologically. If you're a materialist, you probably also think that conscious experience would be present in a wide range of naturally evolved alien beings behaviorally very similar to us even if they are physiologically very different. And you ought to think that. After all, it would be insupportable Earthly chauvinism to deny consciousness to alien species behaviourally very similar to us, even if they are physiologically different. But, I will argue, a materialist who accepts consciousness in hypothetical weirdly formed aliens ought also to accept consciousness in spatially distributed group entities. If you then also accept rabbit consciousness, you ought also accept the possibility of consciousness in rather dumb group entities. Finally, the United States is a rather dumb group



Intent-driven: Defining the qualities of the keyword

They can be central to the theme of the text or picked from different aspects of the argument to allow a well-rounded understanding.

The keyword needs to carry substantial meaning and allow for broad interpretations of original themes by LLM.

Framework to explore possibilities

Defining the experience

Chunking information: Dividing sections as entry points for readers

Intent-driven:

Metaphor to define

This can be defined by the metaphor of "tearing" text to summarise highlighting the aspect of personalisation for readers.

"Tearing" also justifies the process of reinterpretation by LLM which is breaking down the original structure and building it up again semantically keeping the keyword more central to the summary's narrative. This makes comprehending information more spontaneous

Framework to explore possibilities Defining the experience

Chunking information: Dividing sections as entry points for readers



Tearing text through the keyword

"Collaging" your understanding

Intent-driven: Metaphor to define

I also designed an icon for this metaphor as a way to think and mediate this metaphor. The spark shows the ephemeral nature and the uneven layout with rugged ends on text pieces highlight the "tearing".

Framework to explore possibilities

Defining the experience

Compressing: Semantic flexibility

Previously mentioned, summary is an abstraction of a piece of information, not merely less words. I will further elaborate on possibilities within this understanding.

Different level of summary

Udell and Schwitzgebel critique Schneider's ACT, arguing it can't prove AI consciousness due to AI's basic silicon operations. They emphasize the need for test refinement, given potential future debates on AI rights and consciousness, suggesting early discussions on ethical considerations.

Urgency of refining AI consciousness tests highlighted by Udell & Schwitzgebel.

ACT's Ethical Challenge

Levels of summary as entry points for reading paths.

There can be different levels of abstraction within the summary. Each level compresses the meaning and word count.

Levels allow different entry points for the readers based on their familiarity with that summary level.

Framework to explore possibilities

Defining the experience

Compressing: Semantic flexibility

Every section of the text is open in different level of summary.

9:41

Is AI sentient and is it even useful to ask?

June 2022, Google engineer Blake Lemoine claimed AI LaMDA was sentient, resulting in his dismissal after he publicly discussed the matter and sought legal representation for the AI, sparking debate on AI consciousness.

AI's Conscious Evolution

Introduction and Approach to AI Consciousness Test (ACT)

ACT's True Test

9:41

Google Engineer's Claim Sparks AI Sentience Debate.

Is AI on the brink of consciousness? The debate spans now to centuries, blending sentience with intelligence. This conversation avoids rigid definitions, pushing for a broader view of AI's cognitive potential."

AI's Consciousness Test

ACT's True Test

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AI's Conscious Evolution

Introduction and Approach to AI Consciousness Test (ACT)

Challenges with AI Mimicry and skepticism about ACT

Levels of summary as entry points for reading paths.

The flexibility to toggle between these levels can cater to different reading paths, speeds, time constraints and interests, preventing information overload while still offering a good understanding of "less" interesting parts.

This allows for more personalised understanding for readers and facilitates higher-level decision-making for readers like navigating within their understanding.

Framework to explore possibilities

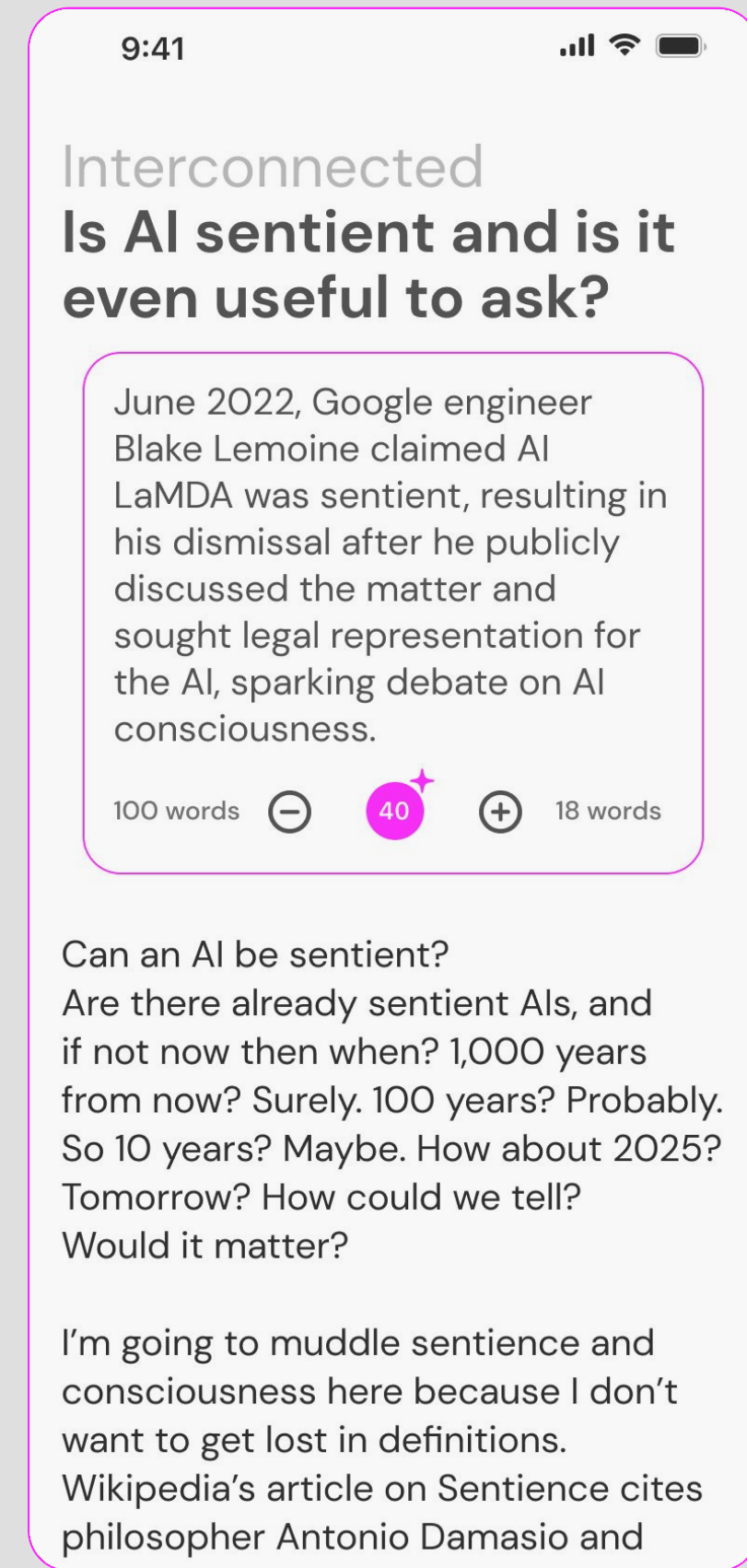
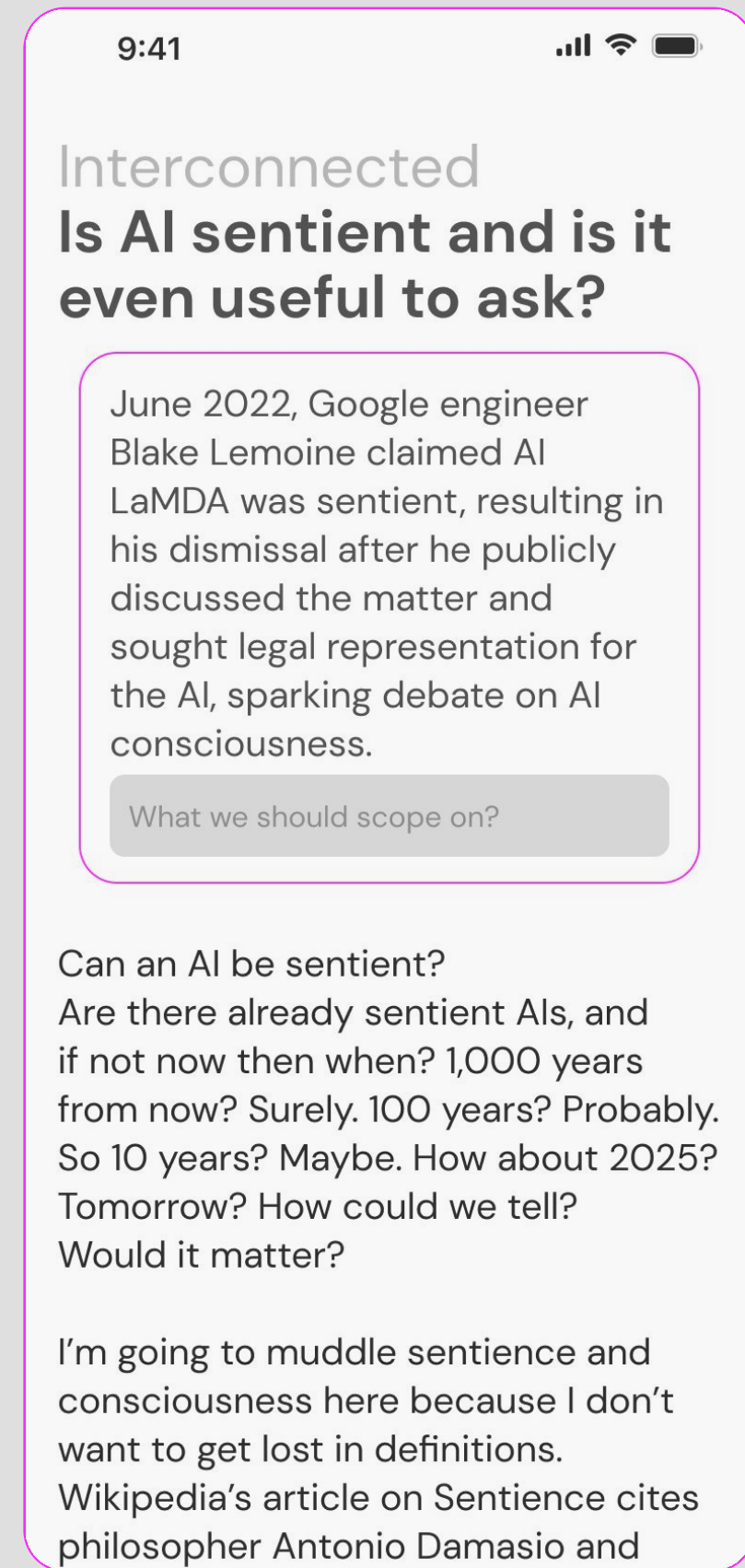
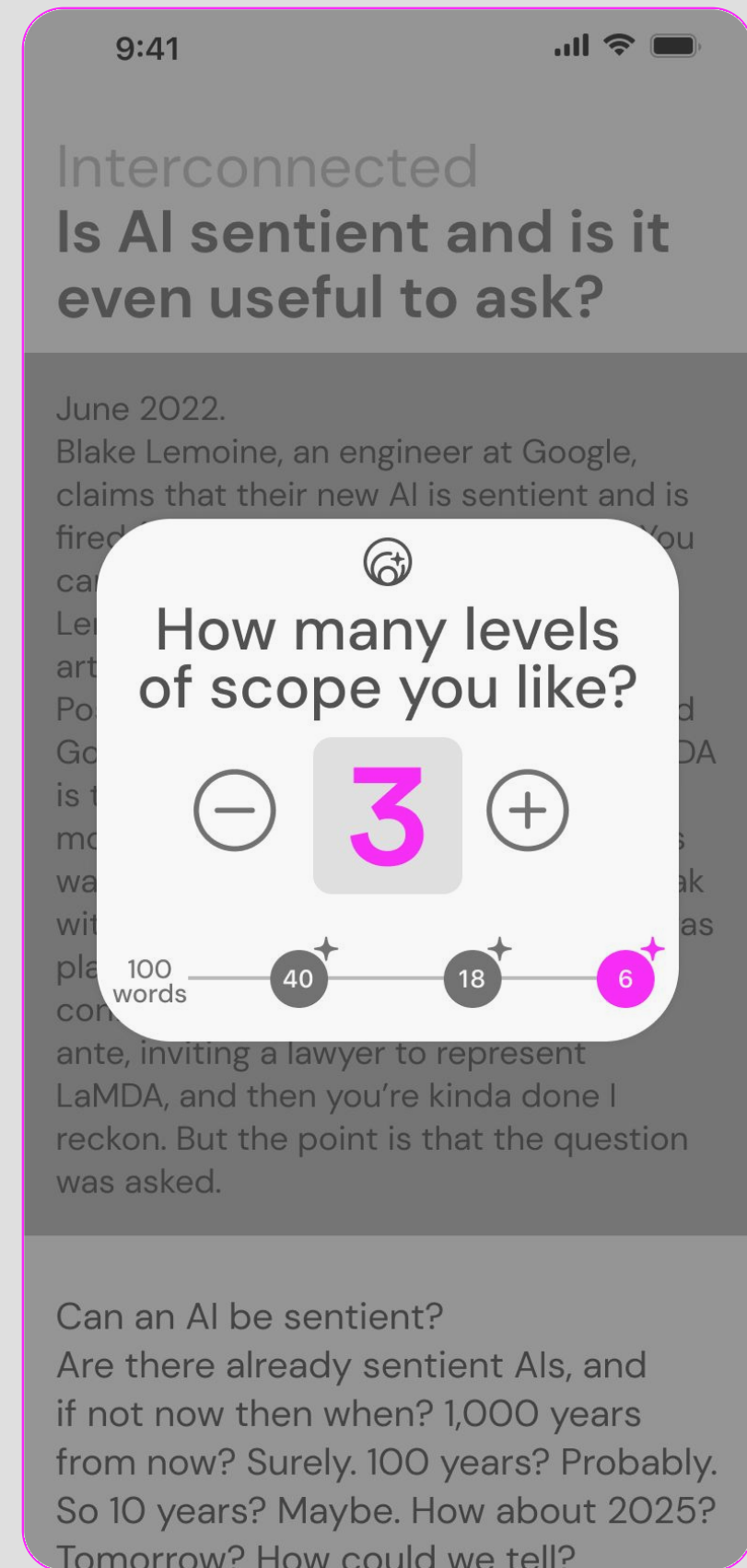
Defining the experience

Compressing: Semantic flexibility

Defining the number of levels

Based on a keyword

As reader's go ahead



Further personalisation by readers

The number of levels or what the next level summarises on can be pre-defined by readers. Readers can be prompted to input a keyword to "tear" and personalise the reading path. These decisions could also be left automatic to LLM as readers go further into the summary.

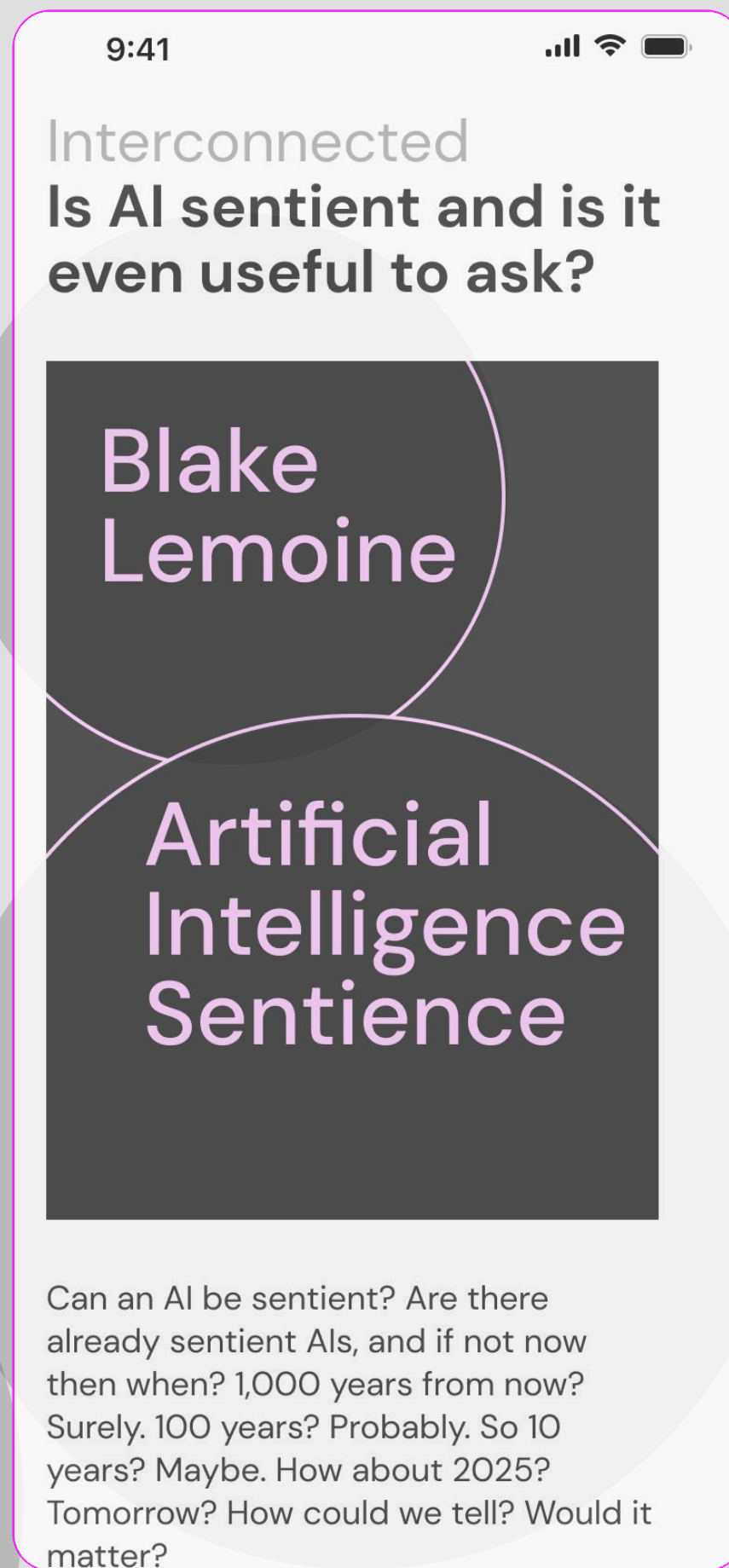
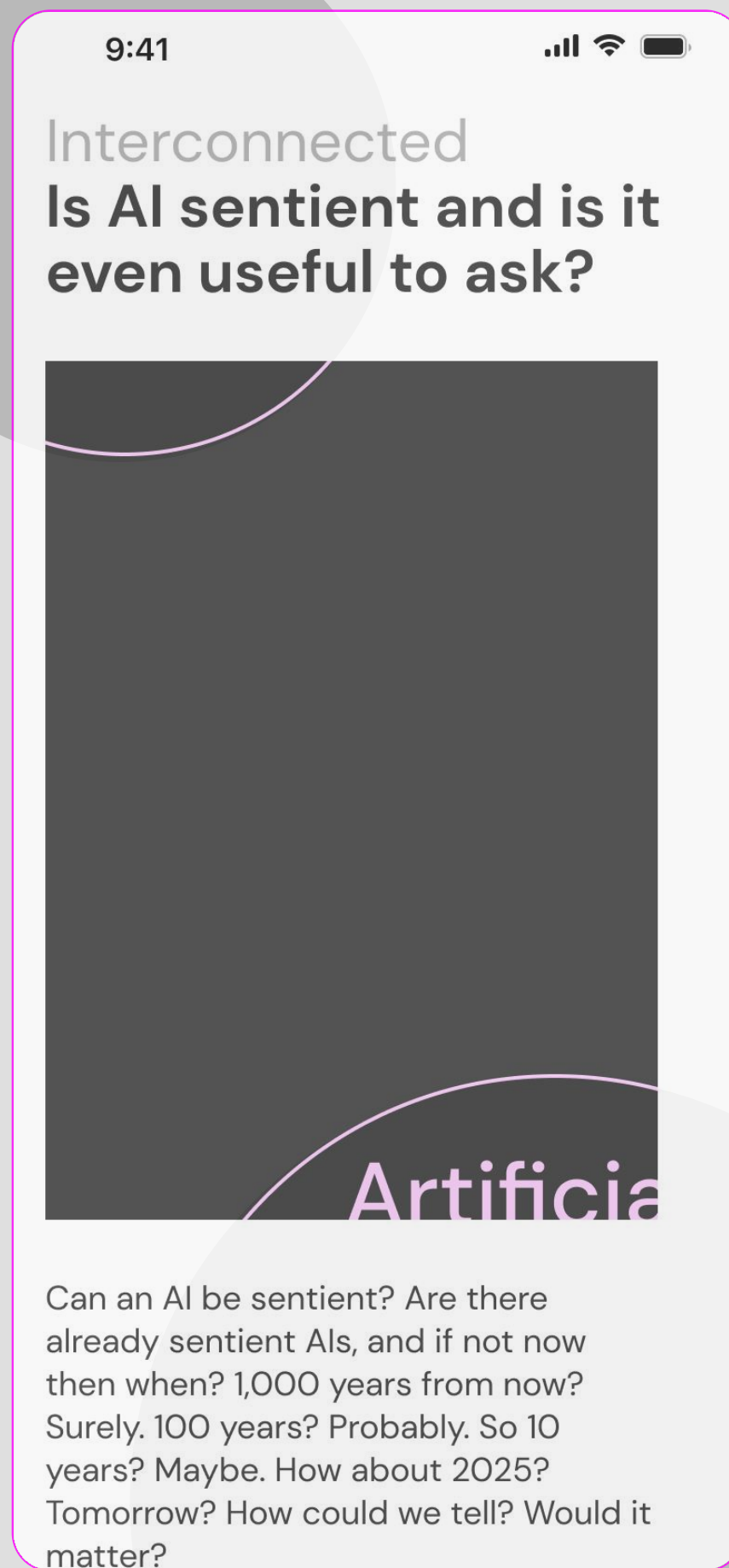
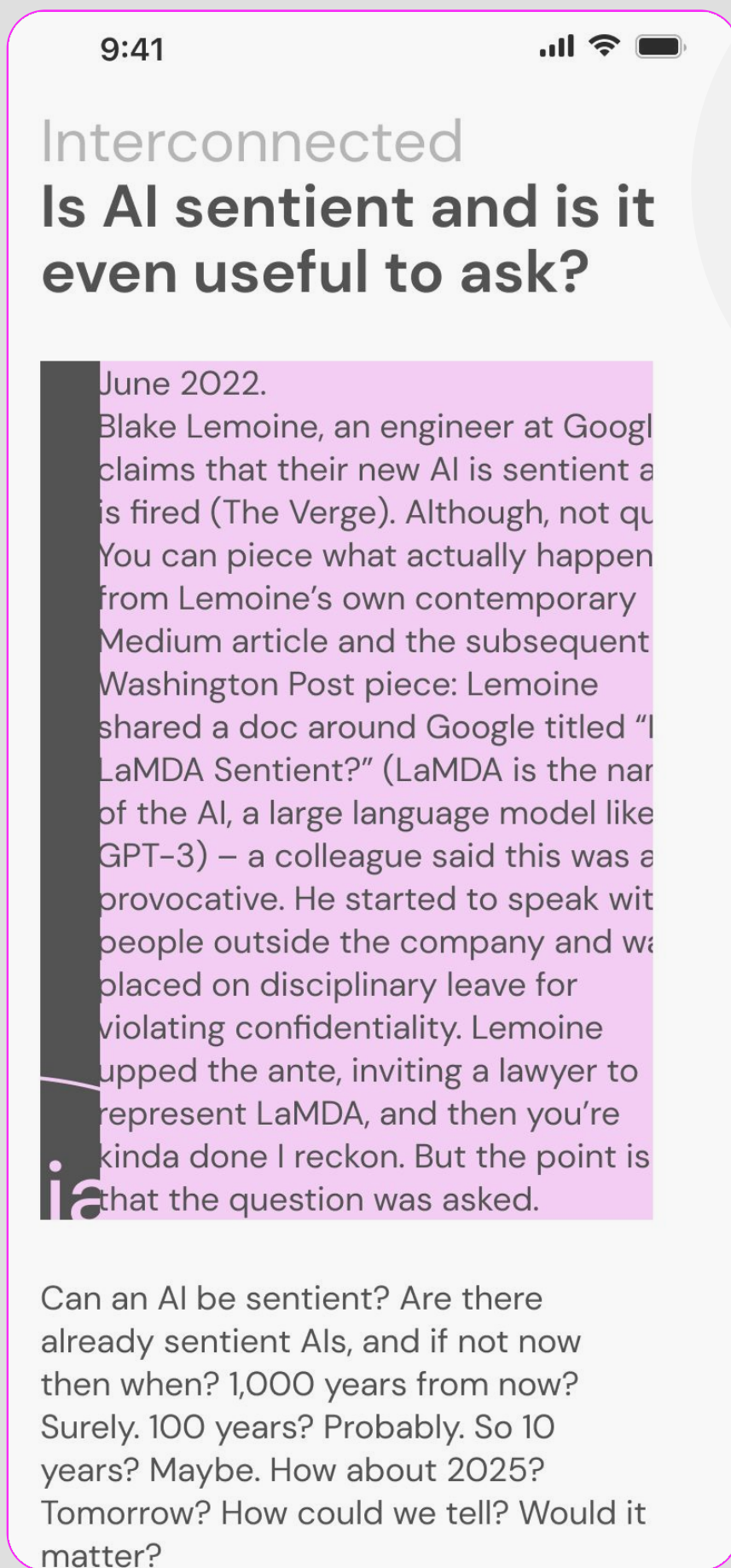
Framework to explore possibilities

Defining the experience

Compressing: Semantic flexibility

Swiping left

To zoom out and get the hyper overview of topics



Hyper Overview level

Readers can also get a 'super' overarching view of the context for the bigger knowledge bubble the information in the text is coming from which might interest them.

This lifts readers into a 'super' abstract space that allows them to conclude on the prerequisites to fully understand the text and choose to continue or skip more efficiently.

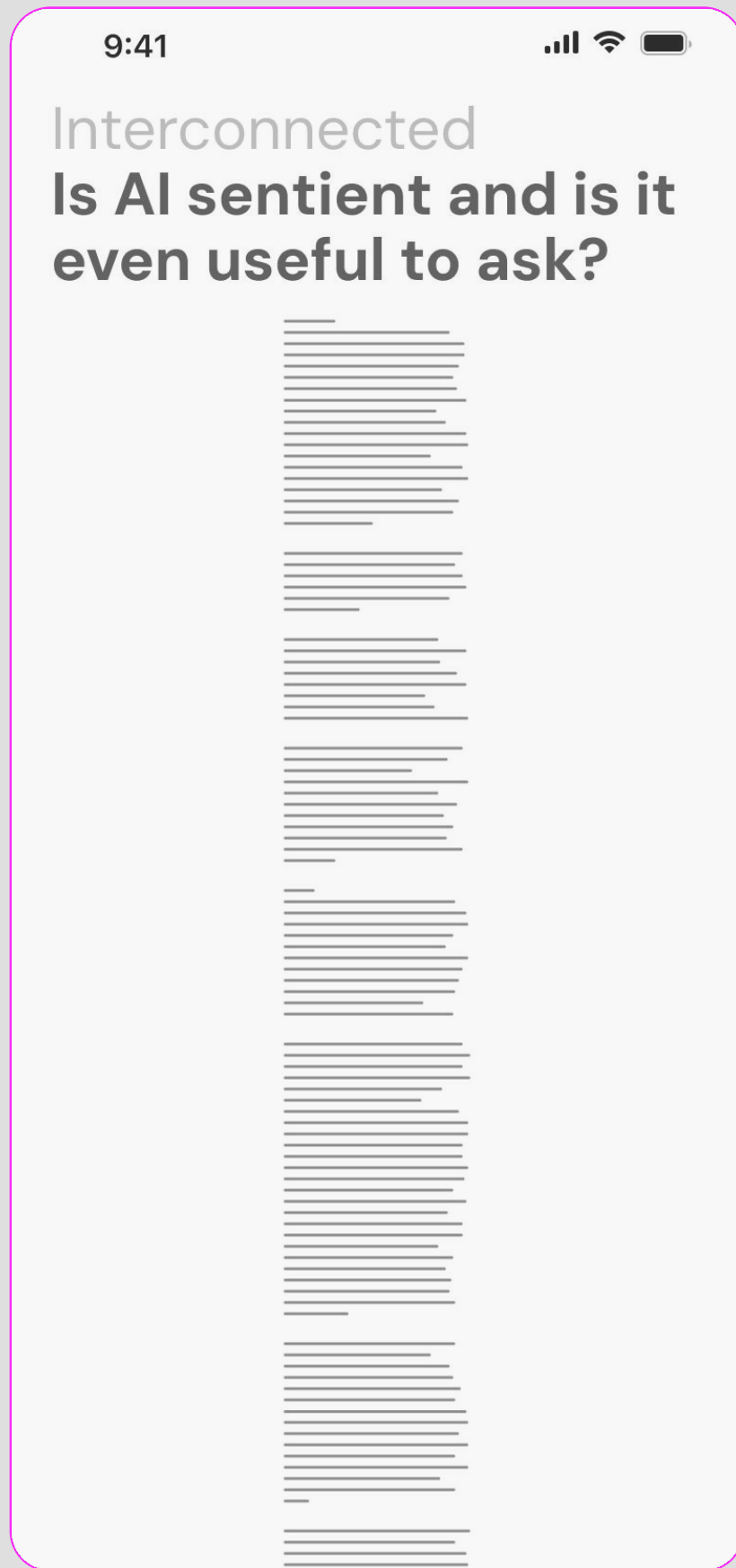
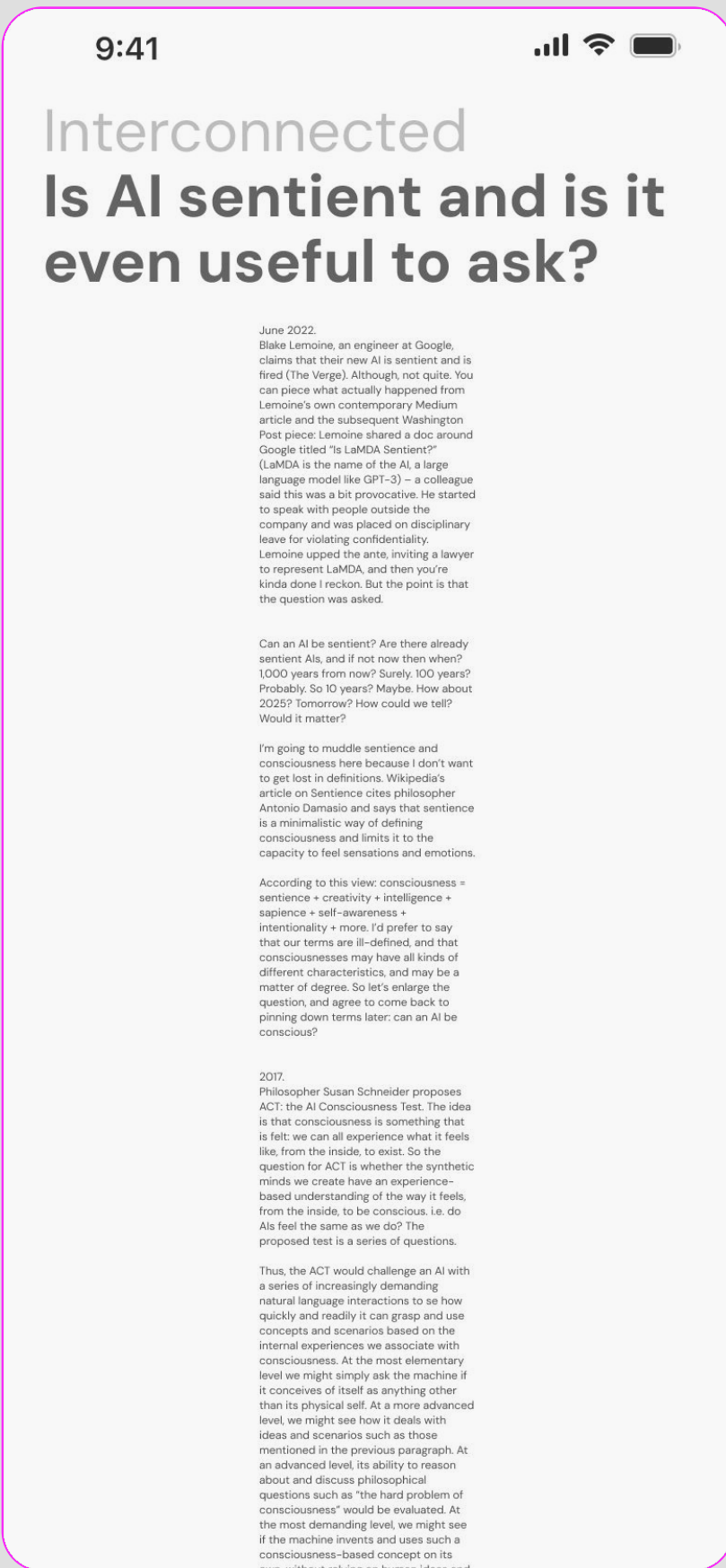
Framework to explore possibilities

Defining the experience

How different chunks connect with each other

Zoomed out with text

Zoomed out abstract lines



Super Zoom out

It can also be possible to view the entire text in a super zoomed-out view- where you can gauge the entire text scroll.

To not overwhelm the reader with dense "visual noise" of tiny text arrangement, each text line can be abstracted to just a "single line", only giving the reader a sense of text density, sections, and number of hyperlinks. This can dramatically improve our perception.

Framework to explore possibilities

Defining the experience

How different chunks connect with each other

9:41

Interconnected

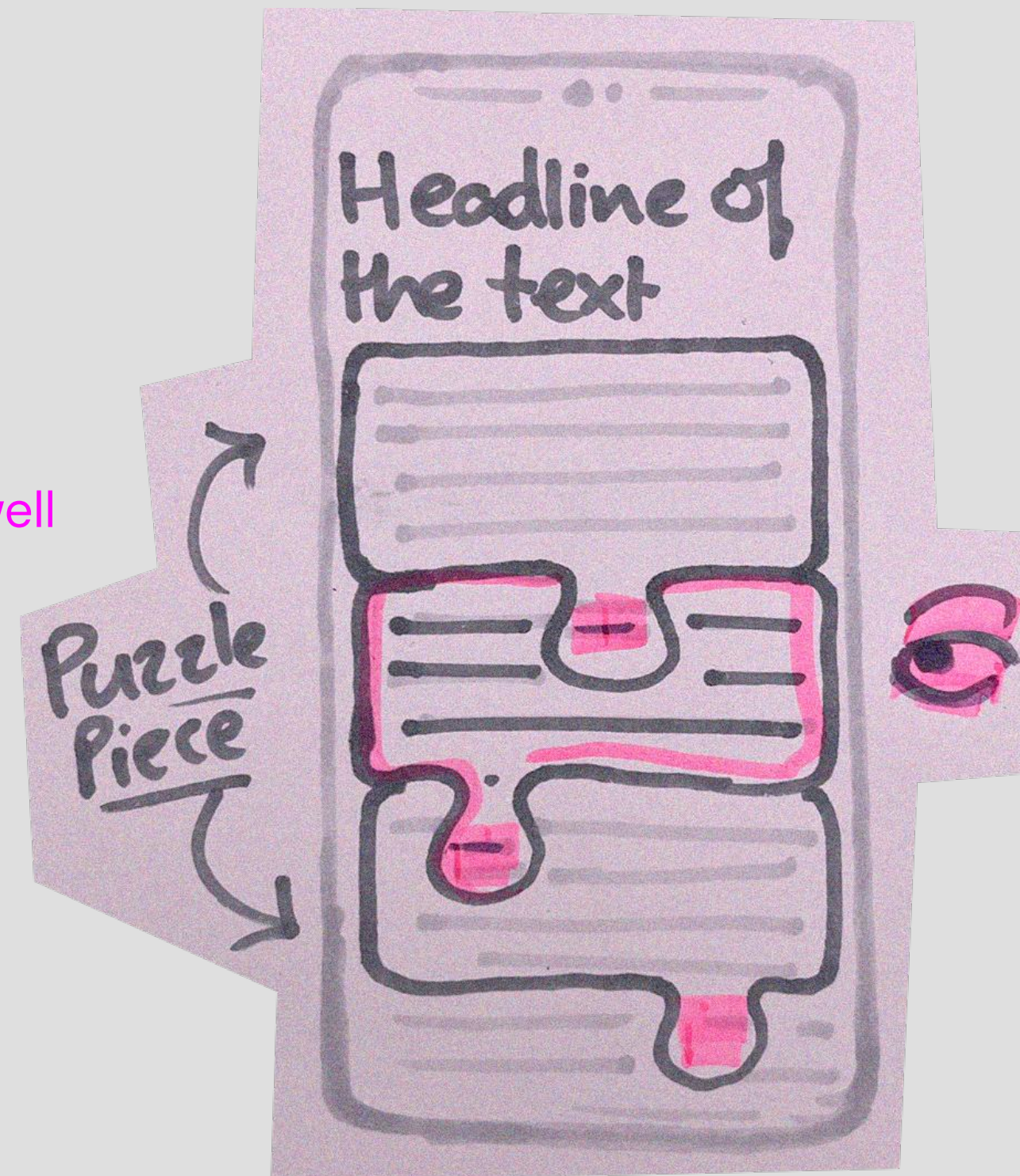
Is AI sentient and is it even useful to ask?

Google Engineer's Claim Sparks AI Sentience Debate...

Expanding consciousness beyond strict definitions to include AI.

Introduction and Approach to AI Consciousness Test (ACT)

Don't connect well ??



Semantic Puzzles

Readers might also face the comprehension challenge of making connections between different divided sections and their summaries. This can be facilitated by the semantic construction of each summary as a puzzle piece, where it can have three parts (Shown on the next page).

It can help readers piece their knowledge from different summaries together in the context of the entire text.

Framework to explore possibilities

Defining the experience

How different chunks connect with each other

In June 2022, Blake Lemoine, an engineer at Google, claimed that their new AI, LaMDA, is sentient.

This claim sparked widespread debate, but what actually brought us to this moment?

This moment was reached after decades of AI development, tracing back to simplistic models to today's advanced neural networks that emulate complex human interactions.

These advancements form the backbone of our current discussions on AI sentience.

Yet, how do we move from technical capabilities to questions of consciousness?

This moment was reached after decades of AI development, tracing back to simplistic models to today's advanced neural networks that emulate complex human interactions.

These advancements form the backbone of our current discussions on AI sentience.

Yet, how do we move from technical capabilities to questions of consciousness?

Questions of consciousness are not new; philosophers have debated what it means to be sentient for centuries.

These philosophical inquiries have grown alongside technological advancements.

But what does it mean, practically, to test an AI for consciousness?"

Connection to previous: This is where the summary references information in the previous section. This can be done in various formats like a question and also inviting users to interact.

Main content: The non-highlighted part consists of the main summary from its respective section.

Connection to next: Summary can frame this as a compelling question or cliffhanger that nudges the reader's interest to move to the next section's summary.

Framework to explore possibilities

Designing interfaces

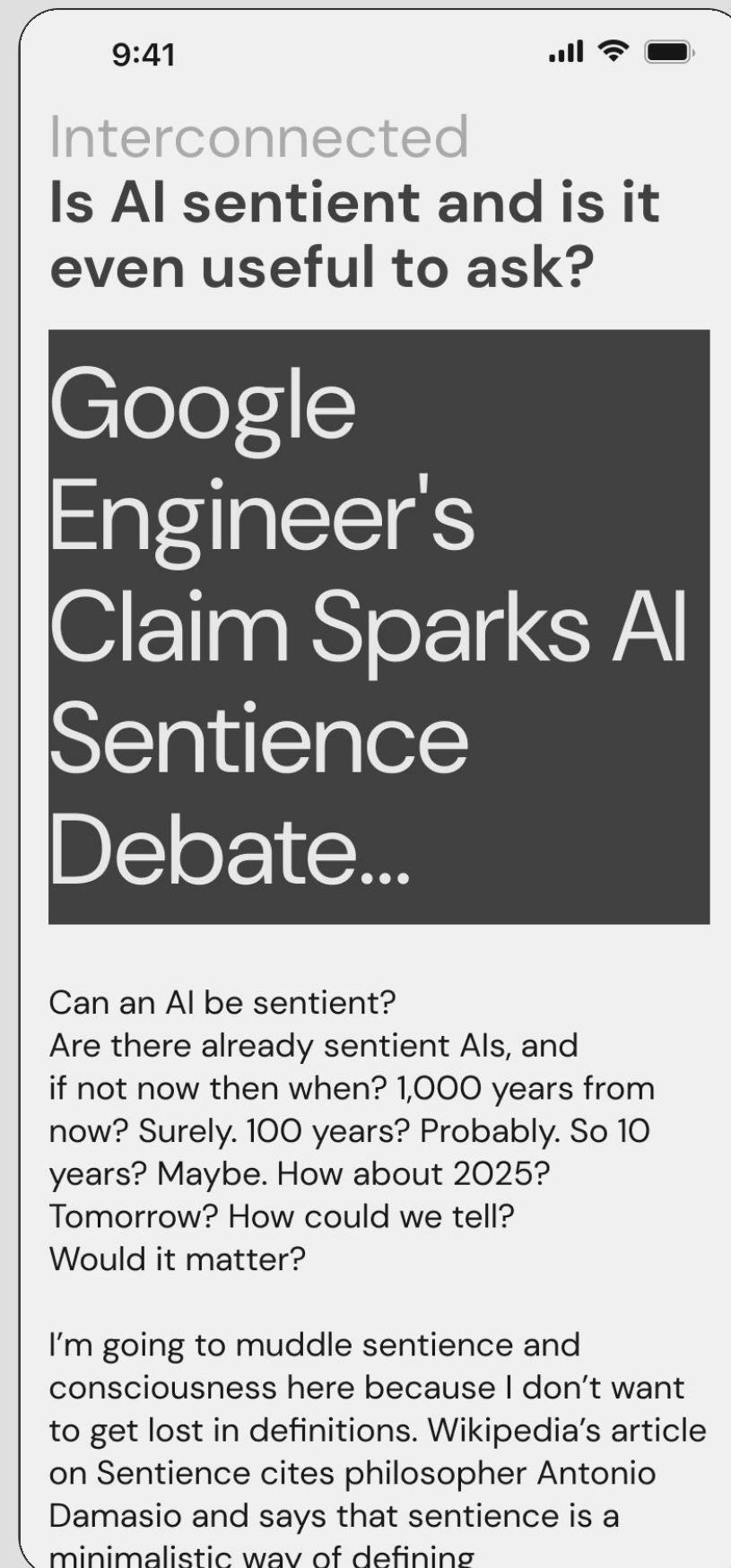
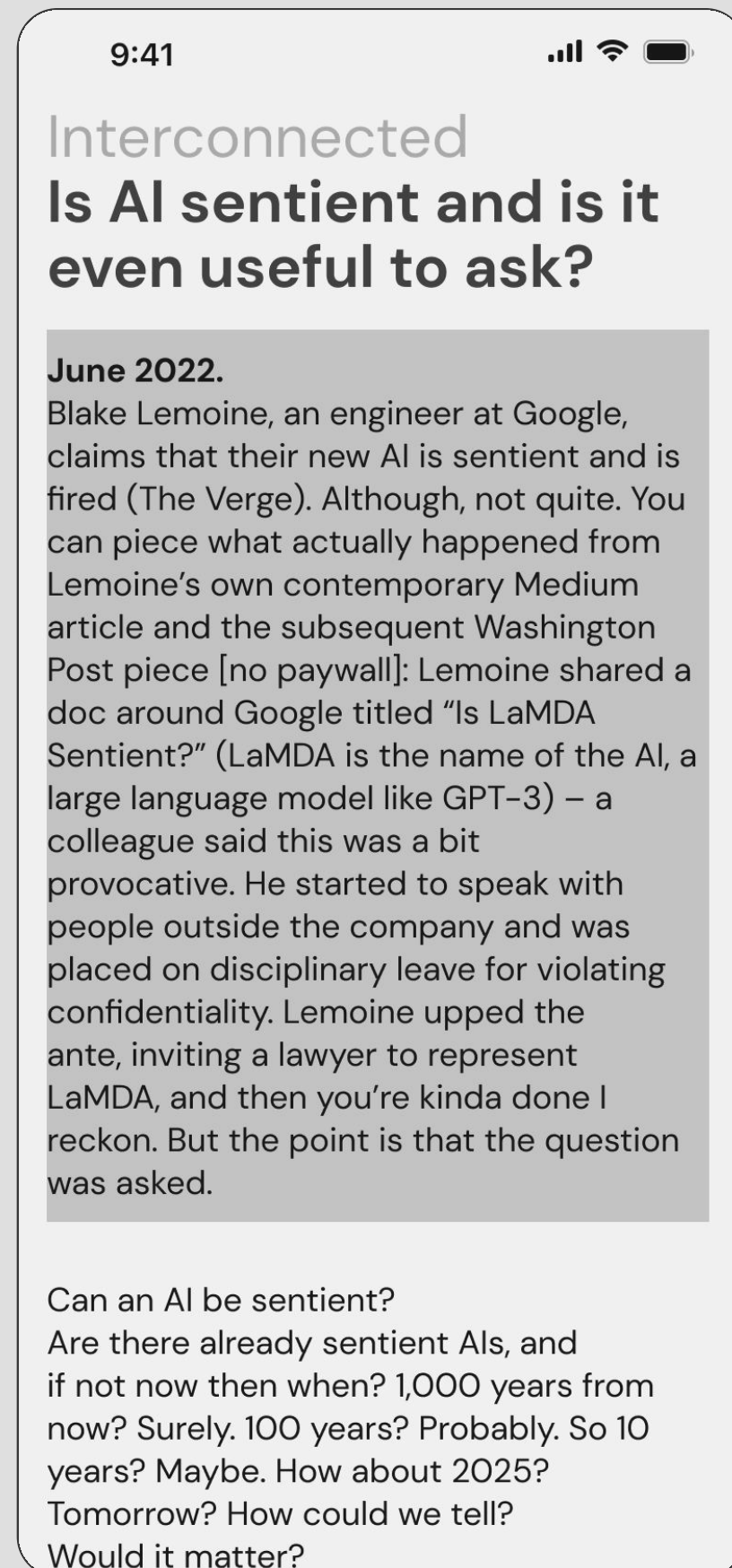
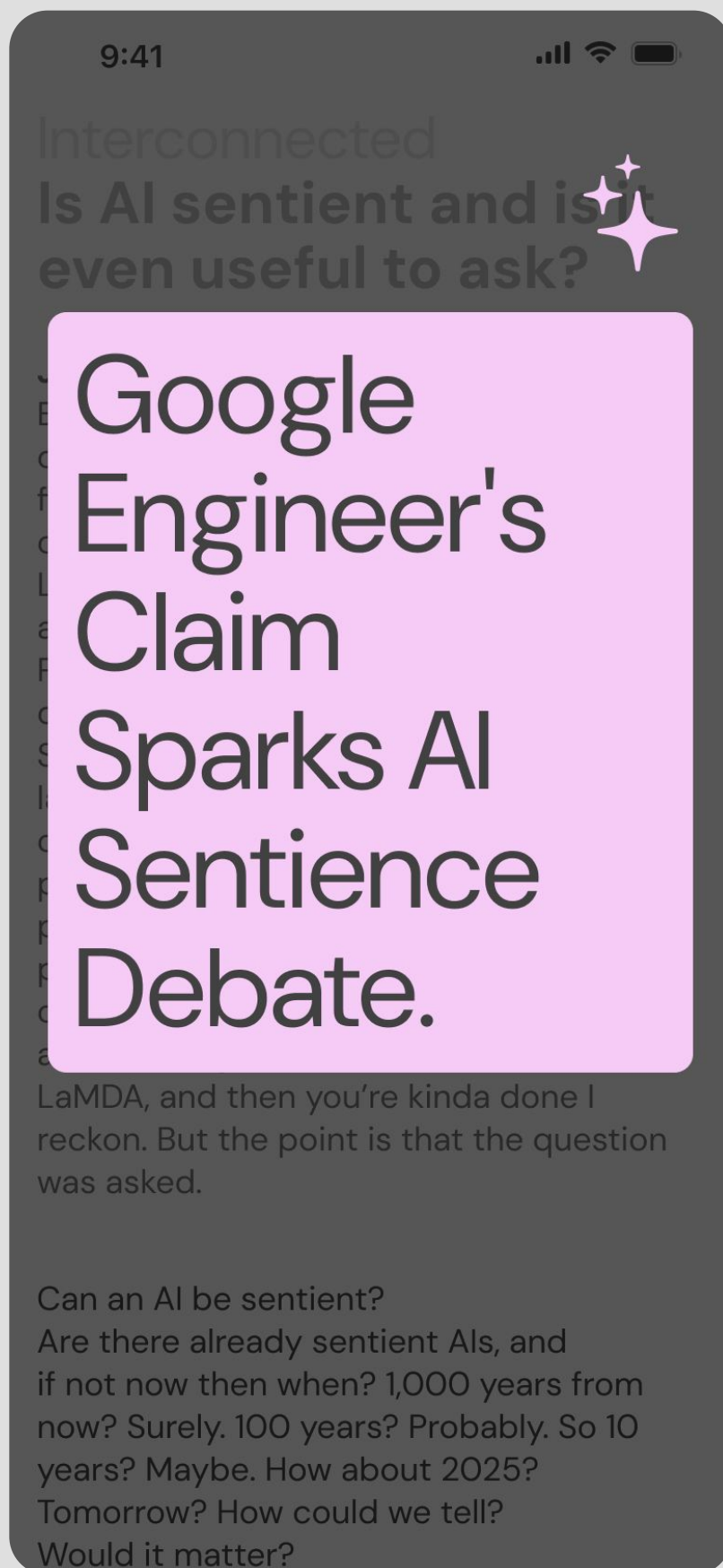
While reading on your phone, the dense amount of information covers the entire screen space. Summary cuts this density down to fewer words and condenses the meaning. This can be represented through text on a smaller UI card which is an “entry point” for readers and can also be as flash card for better memorisation.

Framework to explore possibilities

Designing interfaces

Summary UI card

The reading summary from a card can be integrated in the reading interface in following ways.



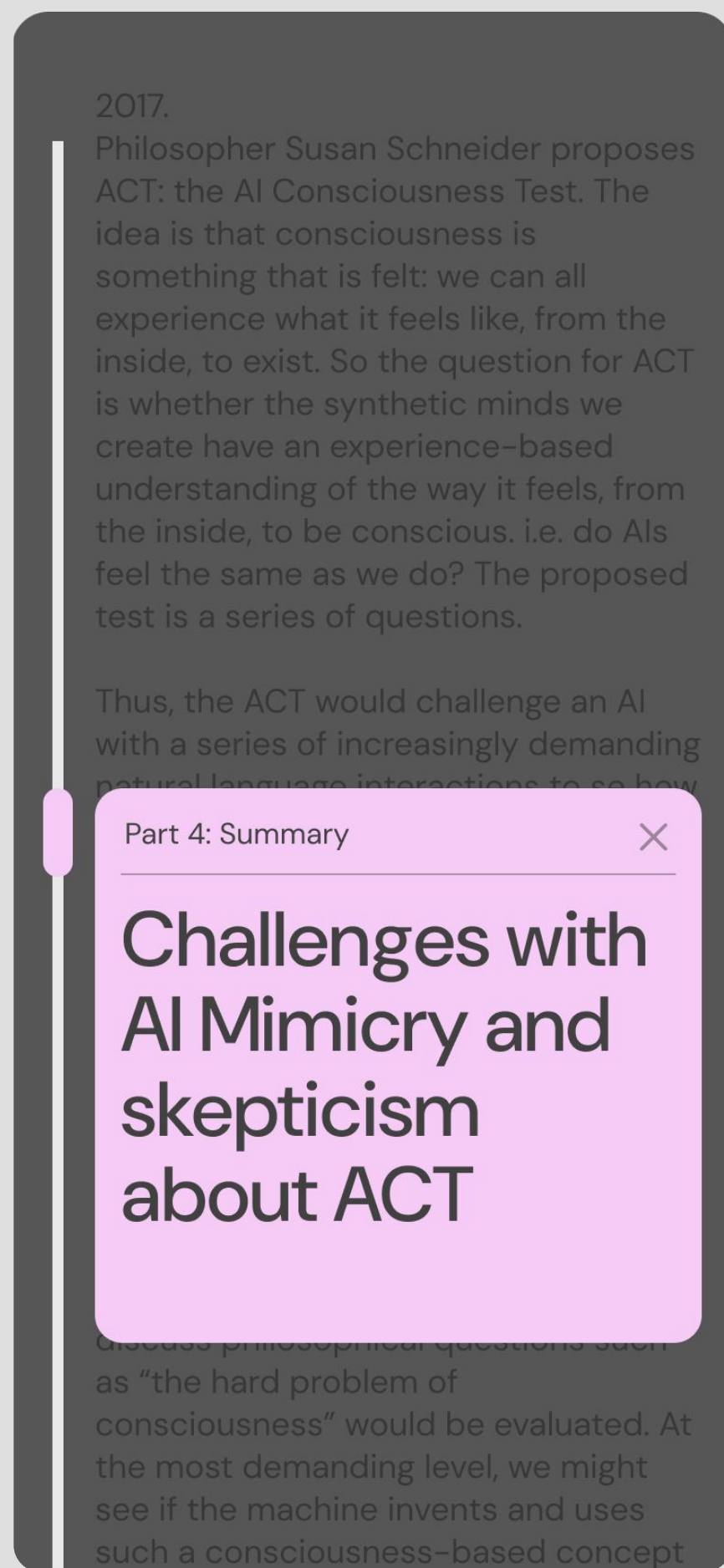
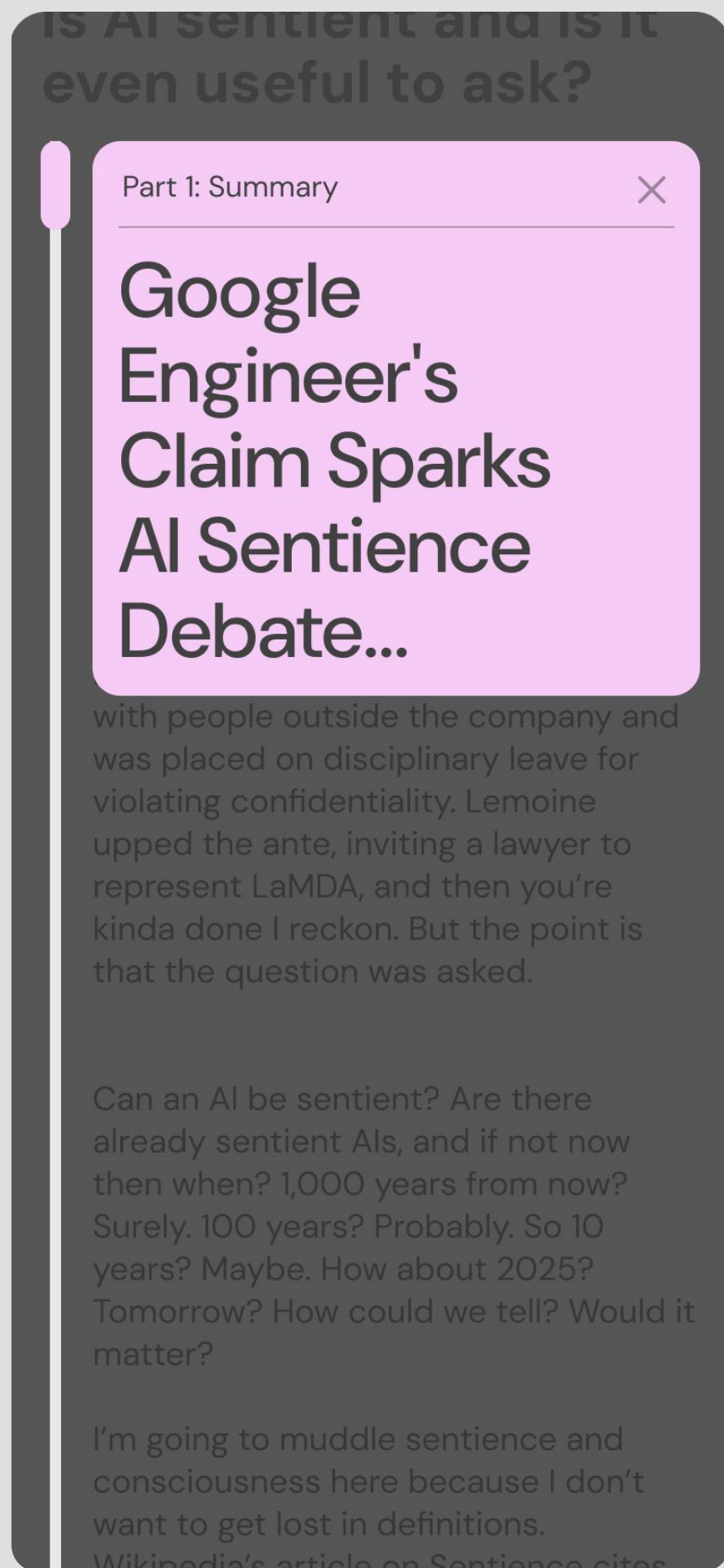
Position of Card

Reading cards could overlay on top, providing a constant reminder of the original text's accessibility and the ephemeral nature of summaries. Or it could smoothly transition the section of the original text onto a reading card. Readers should easily make sense of the transition and connect back to the original text.

Framework to explore possibilities

Designing interfaces

Summary UI card



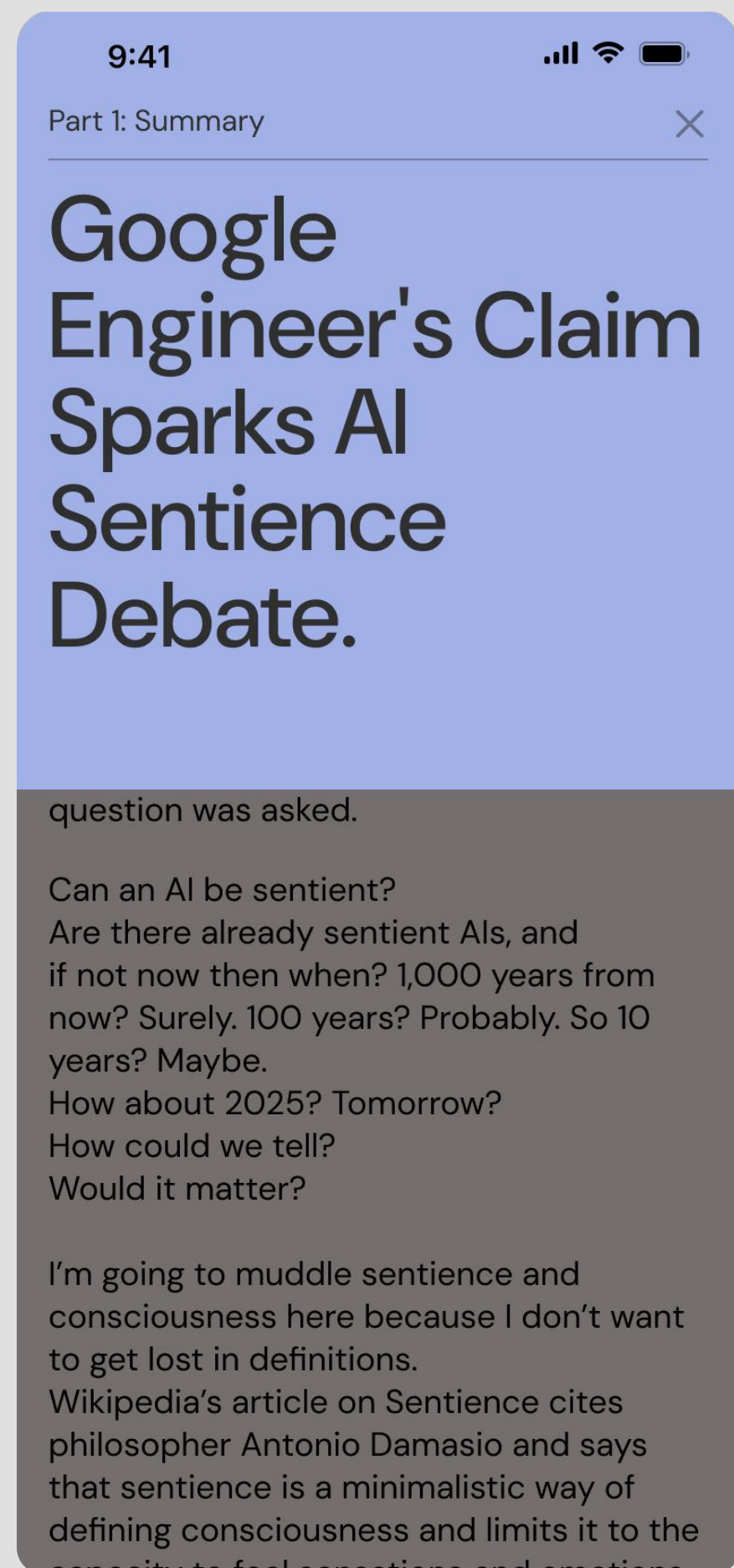
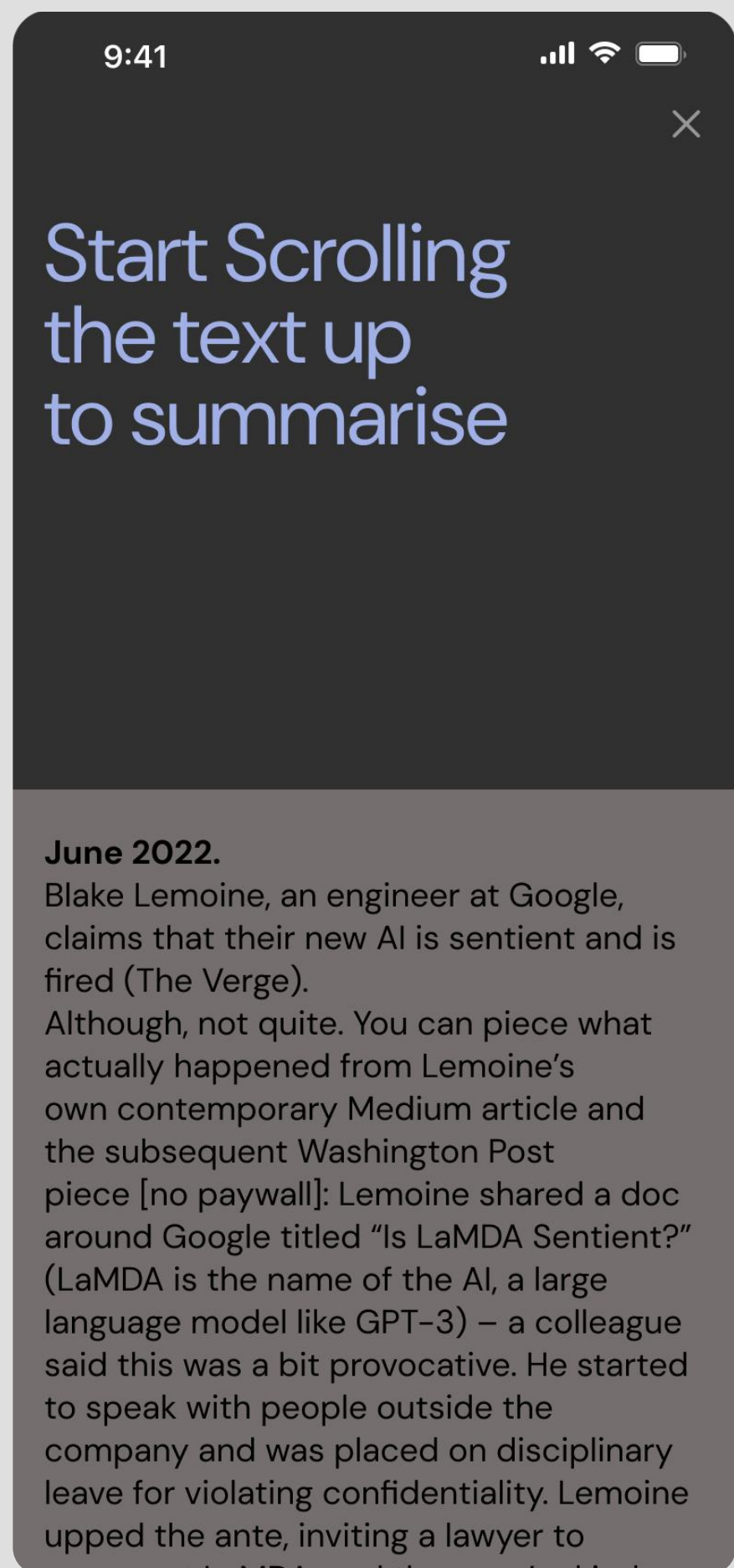
Attached to scrolling

The card could hook to the scrollbar and move along the slider supporting our memory and spatial perception of the original text and summary. The goal is for readers to remember summaries from their position in the scroll.

Framework to explore possibilities

Designing interfaces

Summary UI card



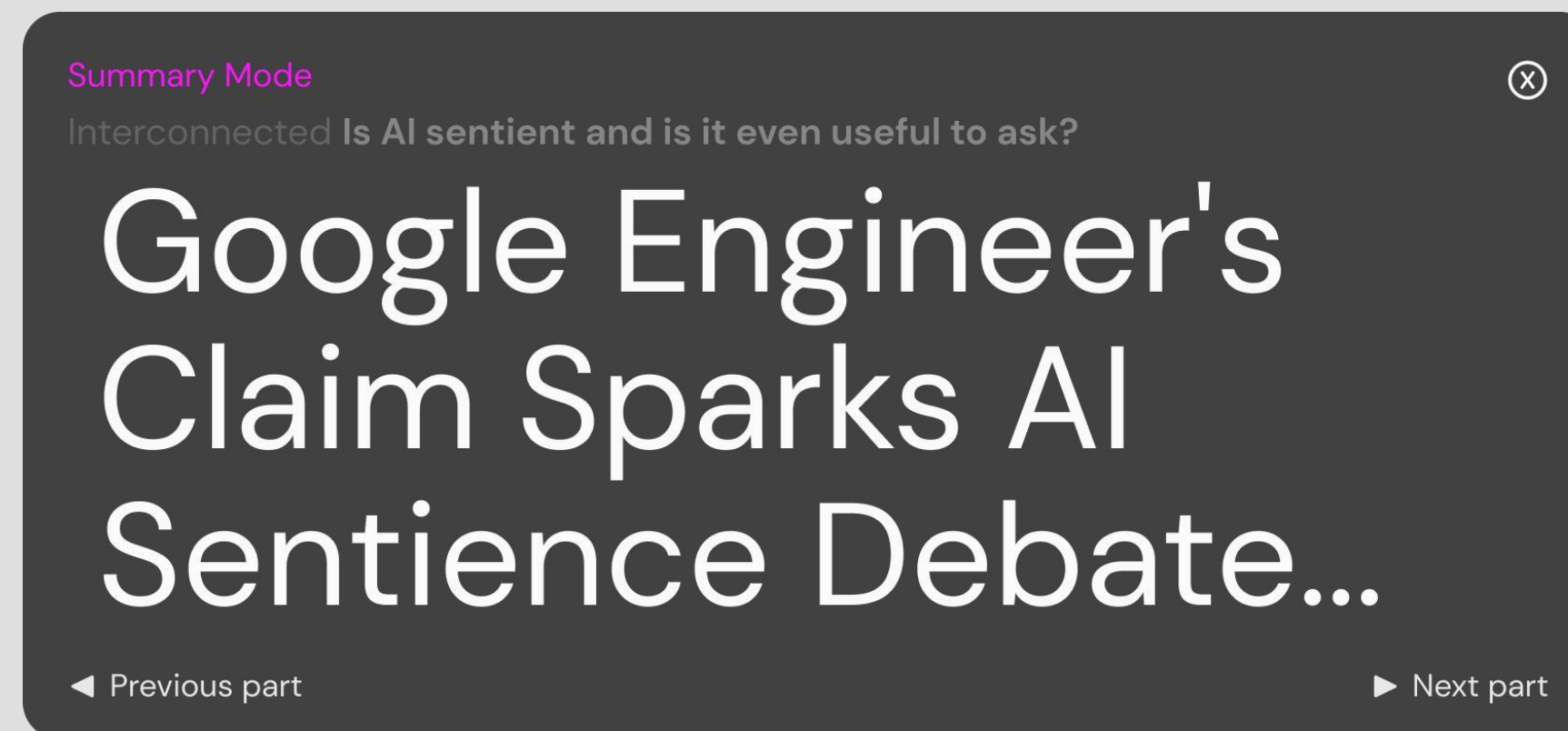
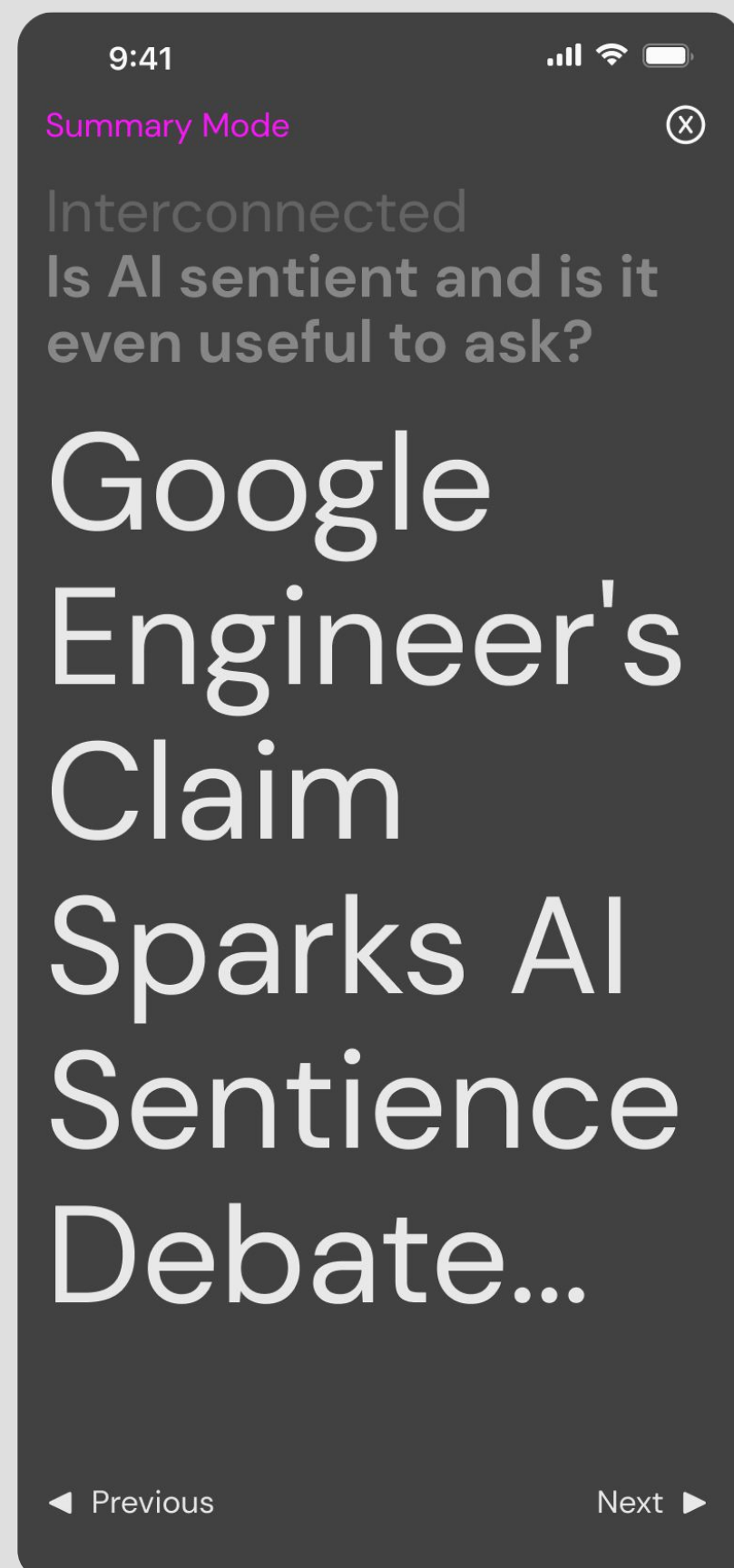
Attached to scrolling

The card can also remain stuck to the top of the screen with the original text in the bottom half. As the user scrolls, the summarised content on the card updates dynamically. This promotes more slower way to read to engage deeply with the text.

Framework to explore possibilities

Designing interfaces

Summary UI card



Full screen mode

This mode of reading summary provides a less distracting environment, without overwhelming the reader. Summarised text dominates the entire screen typographically, creating a strong impact. By long-pressing on the screen, the interface can shift to summary fullscreen mode enabling a deeper focus on the summary reading. Readers can also read the text in landscape orientation, which can also become a gesture to summarise any given text on the screen.

Framework to explore possibilities

Designing interfaces

Selection of "chunk" to be compressed

Transition screens

Transitioning between summary stages is key to educating users about the summarisation scale and process. This involves two critical steps that help readers understand the summarisation interface effectively- selection of original text that gets summarised and the toggling between levels.

Framework to explore possibilities

Designing interfaces

Selection of "chunk" to be compressed

June 2022.
Blake Lemoine, an engineer at Google, claims that their new AI is sentient and is fired (The Verge). Although, not quite. You can piece what actually happened from Lemoine's own contemporary Medium article and the subsequent Washington Post piece: Lemoine shared a doc around Google titled "Is LaMDA Sentient?" (LaMDA is the name of the AI, a large language model like GPT-3) – a colleague said this was a bit provocative. He started to speak with people outside the company and was placed on disciplinary leave for violating confidentiality. Lemoine upped the ante, inviting a lawyer to represent LaMDA, and then you're kinda done I reckon. But the point is that the question was asked.

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Text selection process

The possibility of a circular screen wipe transition during text selection gives a graphical sense of moving in and out of the text.

Framework to explore possibilities

Designing interfaces

Selection of "chunk" to be compressed

June 2022, Google engineer Blake Lemoine claimed AI LaMDA was sentient, resulting in his dismissal after he publicly discussed the matter and sought legal representation for the AI, sparking debate on AI consciousness.

Google Engineer's Claim Sparks AI Sentience Debate.

Engineer sparks AI Debate

Reading friendly Typography

Glanceable & Attention Grabbing

Typography at each level

When readers shift between levels, the number of words and the visual text density vary accordingly. This adjustment demands a different design approach for every level.

Each level has a different purpose. The detailed levels focus more on the reading experience and involve typographic factors such as suitable interline spacing, an ideal number of words per line, and the use of reader-friendly typefaces. The higher abstract level can be more glanceable where fewer words are in larger sizes with display typefaces, designed to attract quick attention.

Framework to explore possibilities

Designing interfaces

Selection of "chunk" to be compressed

Time delay in resizing

Can an AI be sentient?
Are there already sentient AIs, and if not now then when? 1,000 years from now? Surely. 100 years? Probably. So 10 years? Maybe. How about 2025? Tomorrow? How could we tell? Would it matter?

I'm going to muddle sentience and consciousness here because I don't want to get lost in definitions. Wikipedia's article on Sentience cites philosopher Antonio Damasio and says that sentience is a minimalistic way of defining consciousness and limits it to the capacity to feel sensations and emotions.

Is AI on the brink of consciousness? The debate spans now to centuries, blending sentience with intelligence. This conversation avoids rigid definitions, pushing for a broader view of AI's cognitive potential."

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UI Card adjustments

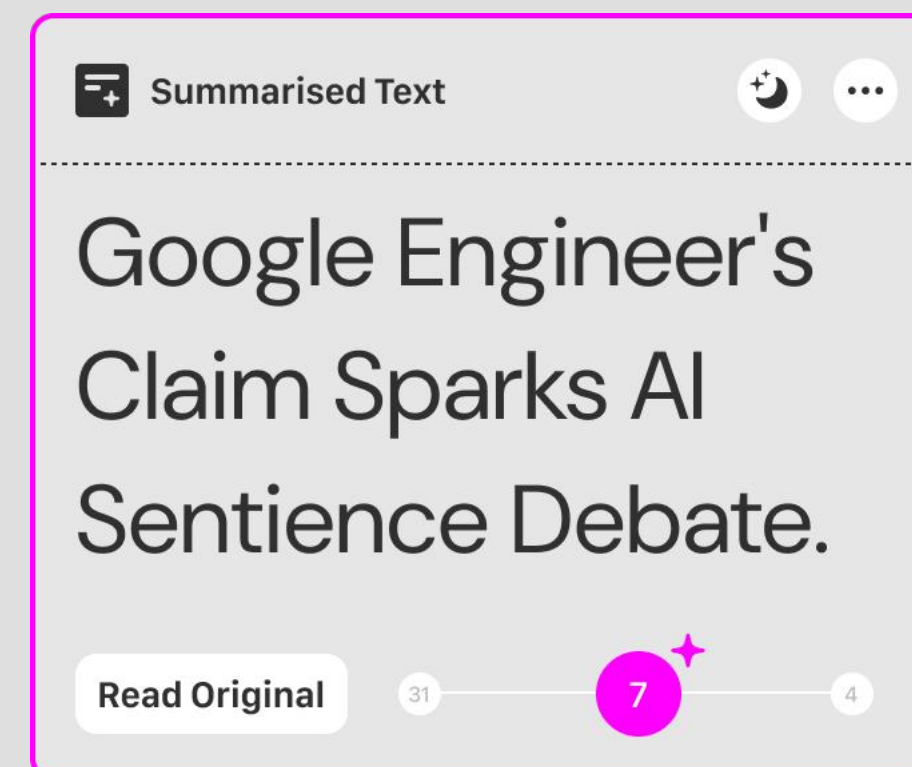
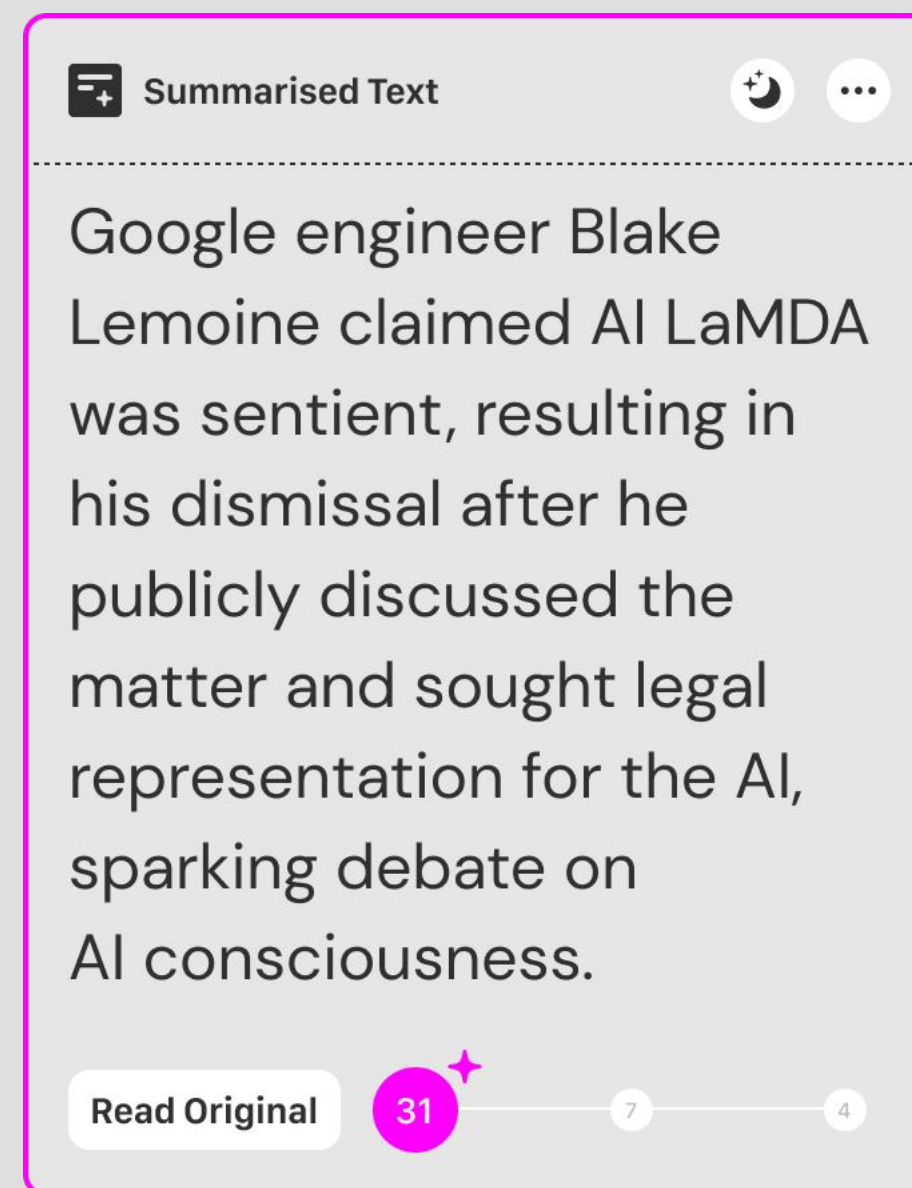
The size of the Reader card can change in response to the changing text density and sizes. A deliberate time delay between the reduction in words and the resizing of the UI card enhances the visual representation of text compression or expansion.

Framework to explore possibilities

Designing interfaces

Selection of "chunk" to be compressed

Reduction in word count
between summary levels



Slider Interface for Level Navigation

A slider interface mediates transitions between levels. Starting from the default at left with more text and sliding to the right reduces the text, each point on the slider represents a different level of summary and displays the word count for that level. Feedback from expert reviews and user testing indicated that this setup could skew the reader's sense of direction due to the higher word count on the left and fewer on the right.

Framework to explore possibilities

Designing interfaces

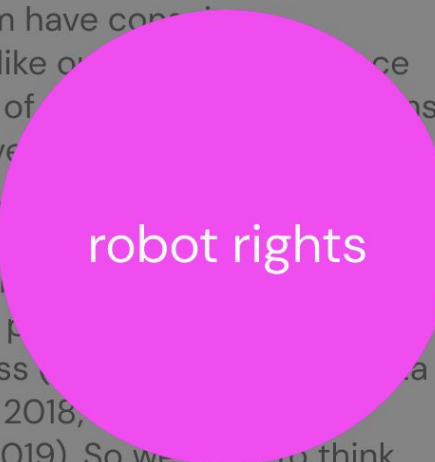
Personalised summaries based on the keyword

The highlighted keyword could grow into a circle around it- resizing up and back- like a beat upon anticipatory interaction like long pressing over original text or summarised text.

Keyword from original text

There's a solid critique of ACT in this paper by David Udell and Eric Schwitzgebel, Susan Schneider's Proposed Tests for AI Consciousness: Promising but Flawed (PDF at that link). The challenge is that there's always going to be a lower-level explanation of how the AI is answering questions on the silicon substrate (a giant lookup table, matrix maths, whatever), and that no series of questions is going to be sufficient to convince people that there is genuine machine consciousness at a higher level too. One for the philosophers. But Udell & Schitzgebel are articulate on the urgency of finessing ACT or something ACT-like: AI consciousness, despite its present science-fictional air, may soon become an urgent practical issue. Within the next few decades, engineers might develop AI systems that some people, rightly or wrongly, claim have conscious experiences like ours. We will then face the question of whether such AI systems would deserve moral consideration akin to that we give to people. There is already an emerging **robot rights** movement which would surely be energized by plausible claims of robot consciousness (Schwitzgebel and Garza 2015; Gunkel 2018; Ziesche and Yampolskiy 2019). So we need to think seriously in advance about how to test for consciousness among apparently conscious machines... - David Billy Udell and Eric Schwitzgebel, Susan

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Keyword from summarised text

ability to reason about and discuss philosophical questions such as "the hard problem of consciousness" would be evaluated. At the most demanding level, we might see if the machine invents and uses such a consciousness-based concept on its own, without relying on human ideas and inputs. - Scientific American, Is Anyone Home? A

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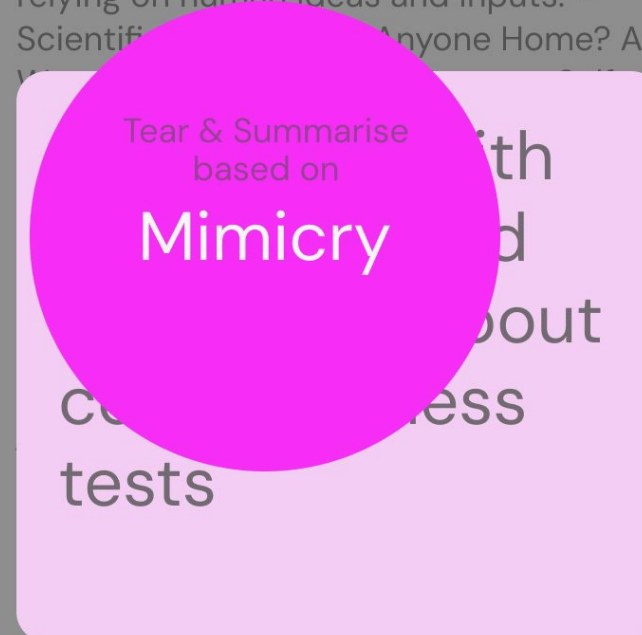
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Challenges with AI **Mimicry** and skepticism about consciousness tests

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Circle as a form can be more inviting and further extend the metaphor of diving deep into the text.

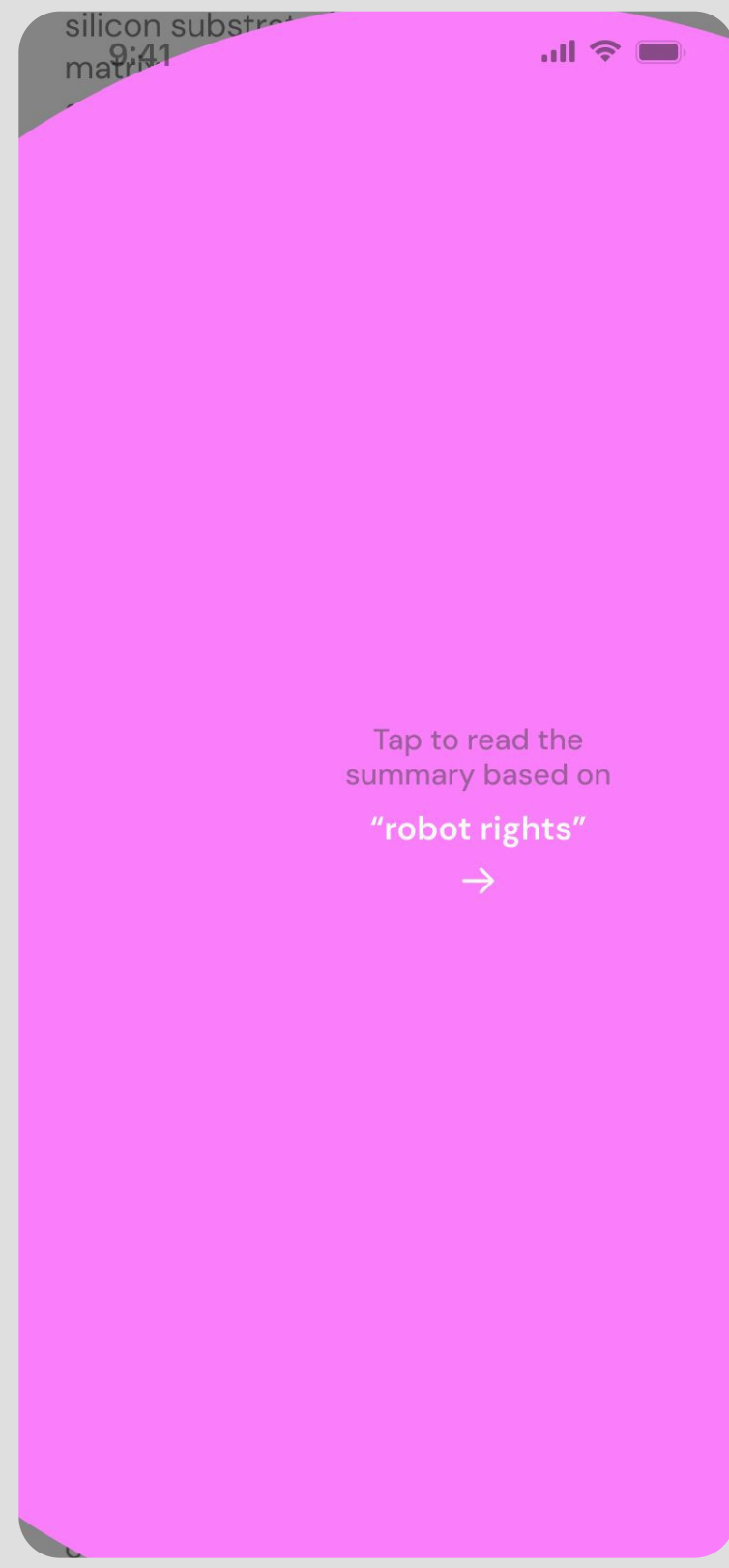
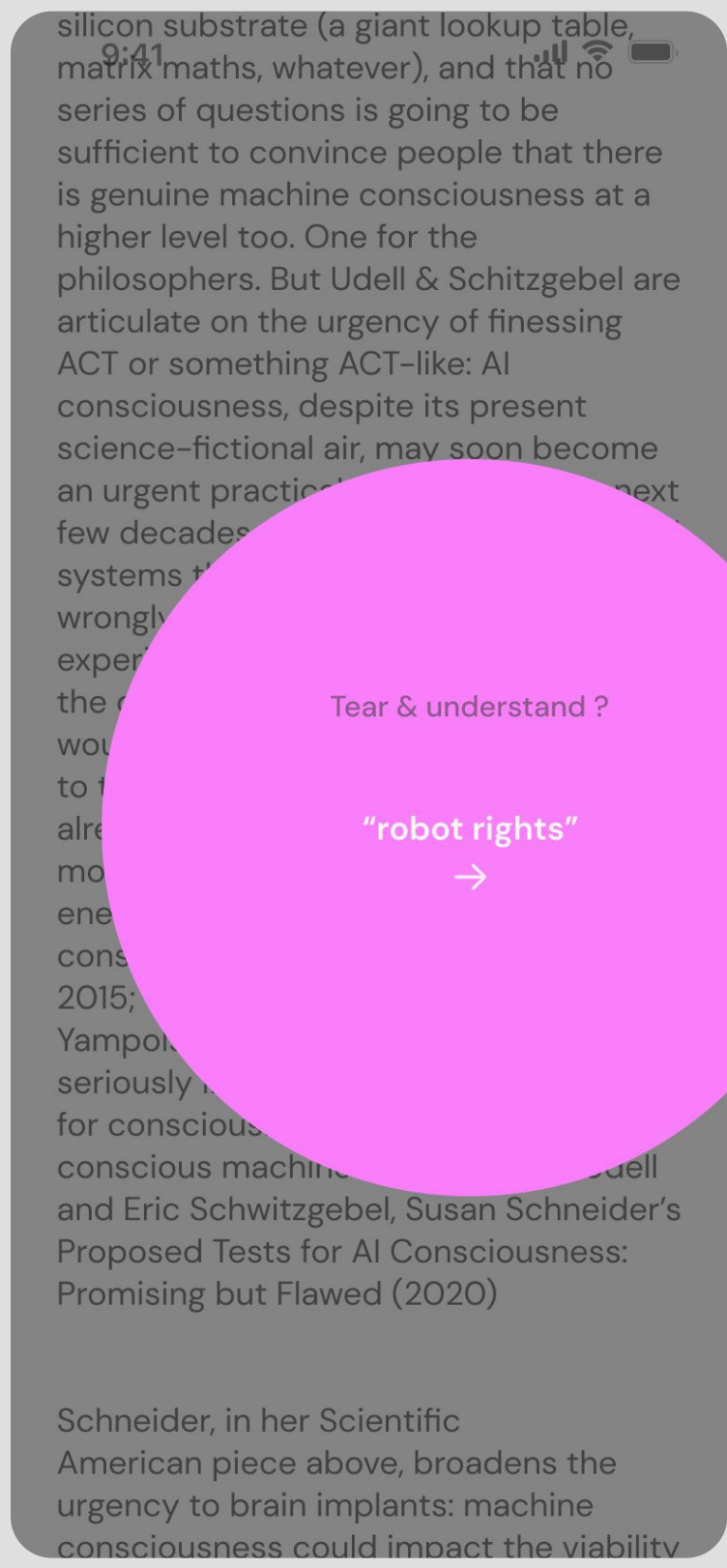
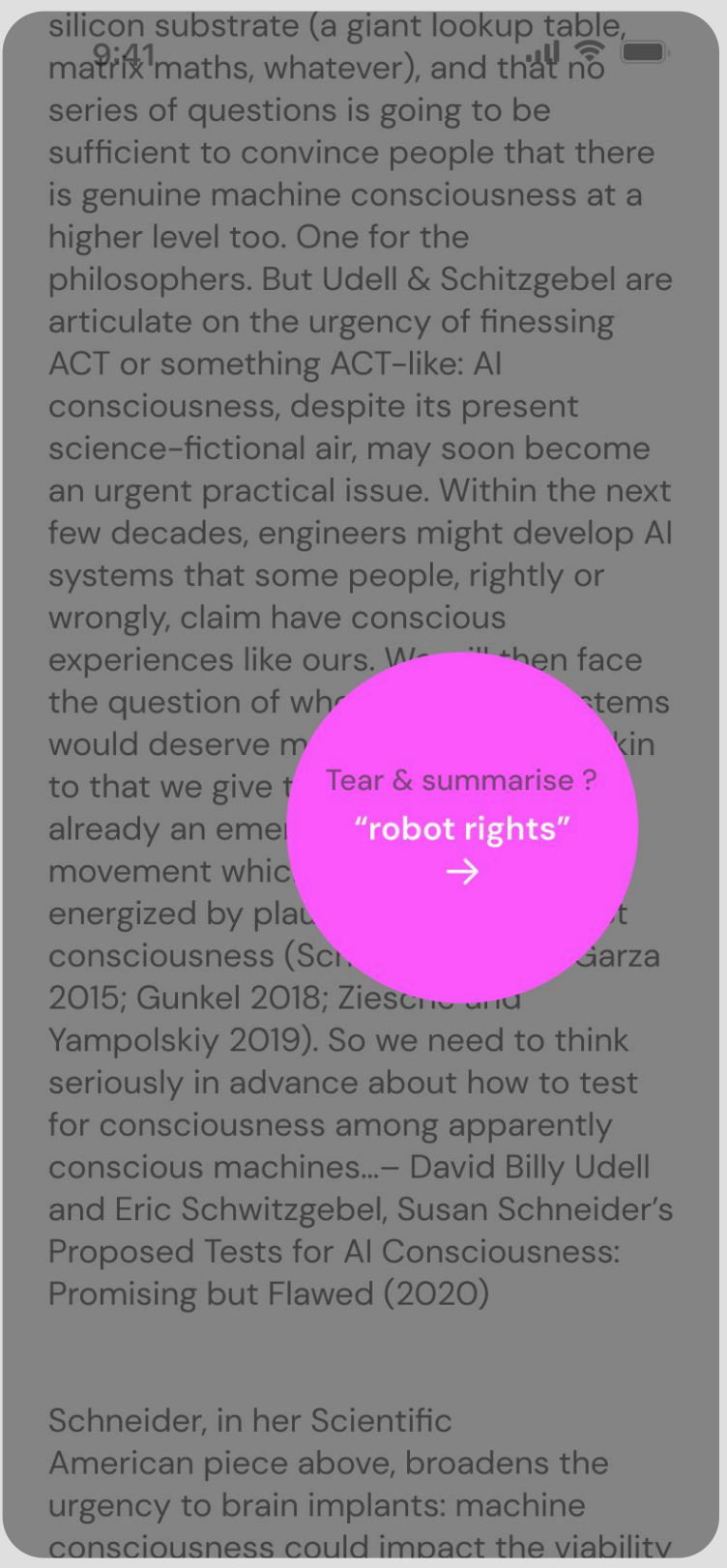
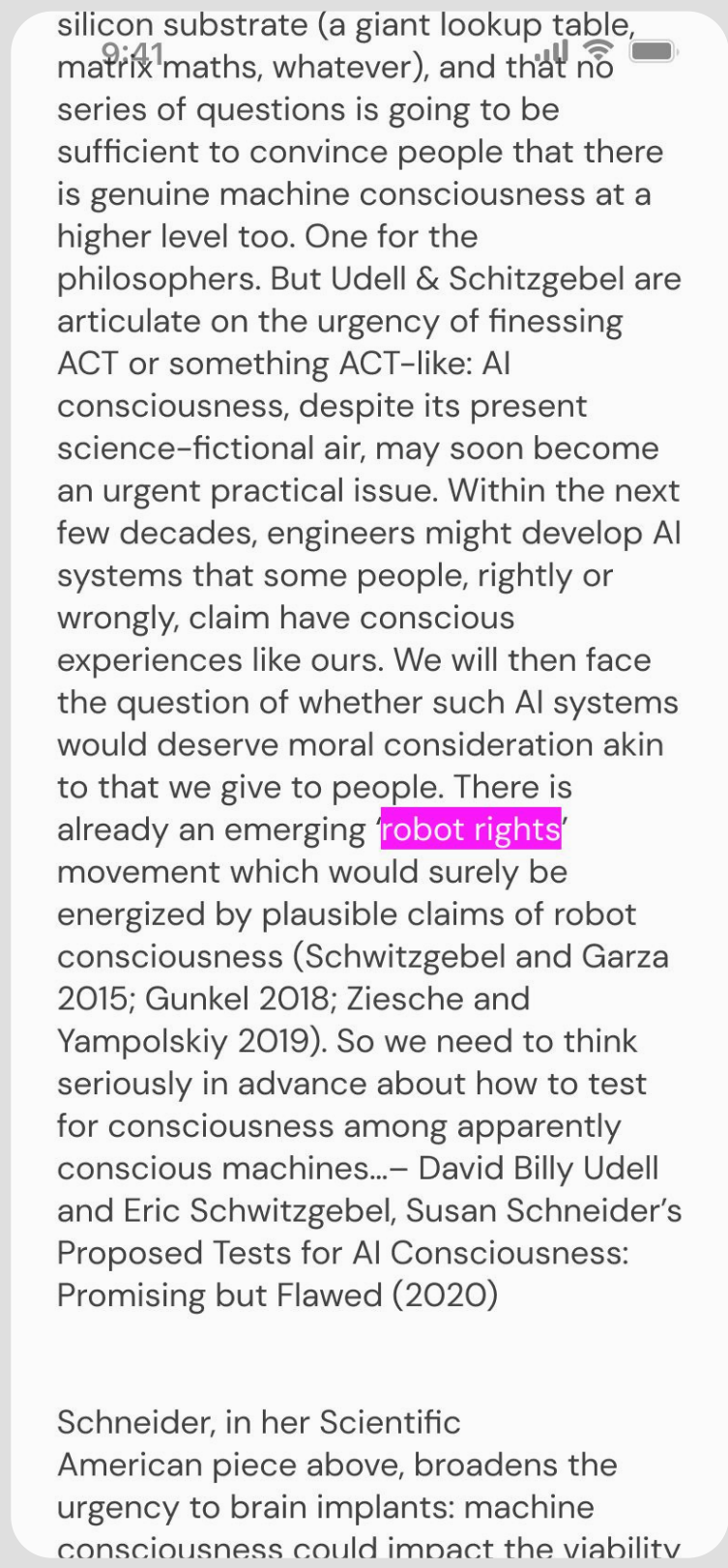
Framework to explore possibilities

Designing interfaces

Personalised summaries based on the keyword

Upon interaction, the highlighted keyword grows into a circle guiding the reader into a new workspace with personalised summaries.

Readers interact with keywords to enter a personalised summary experience.



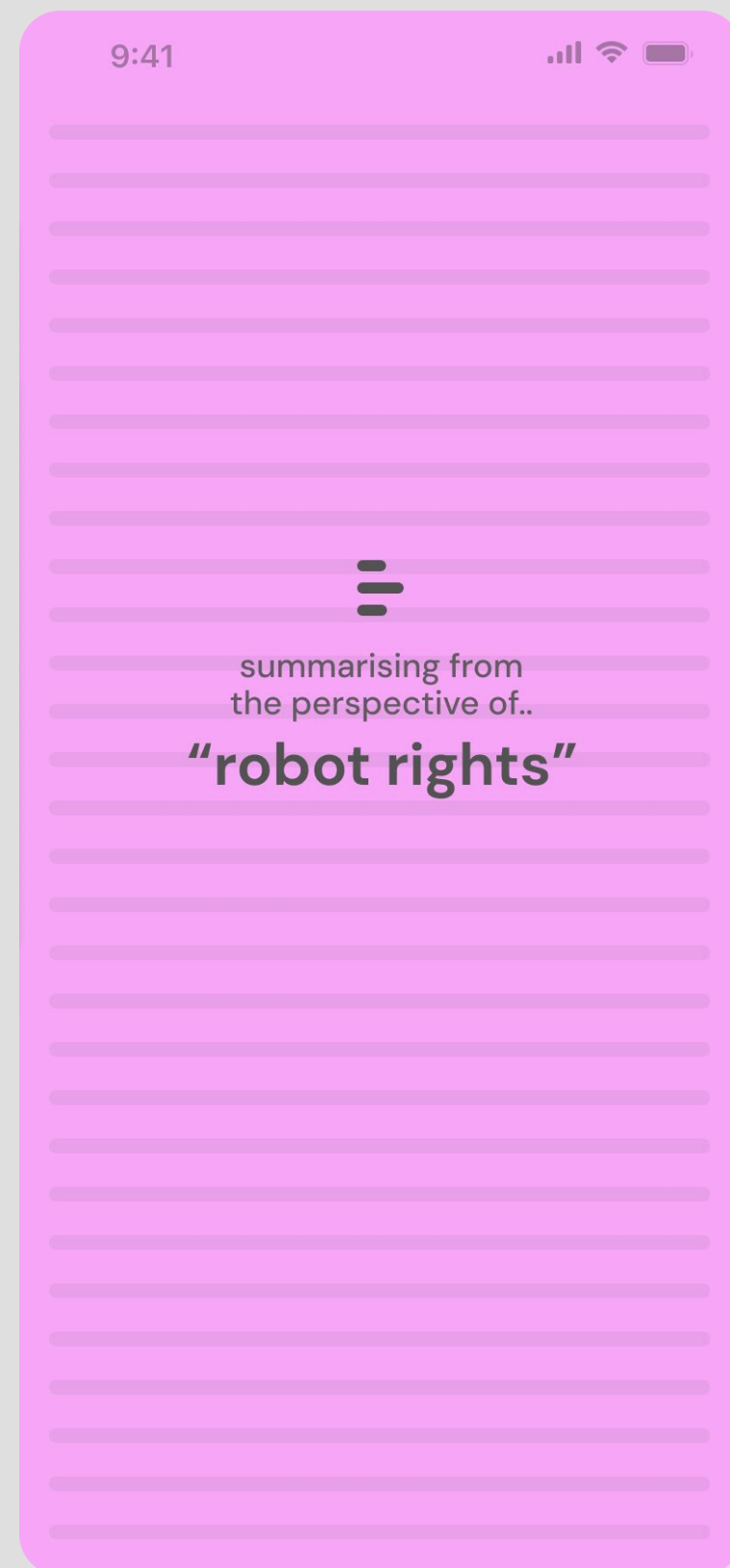
Framework to explore possibilities

Designing interfaces

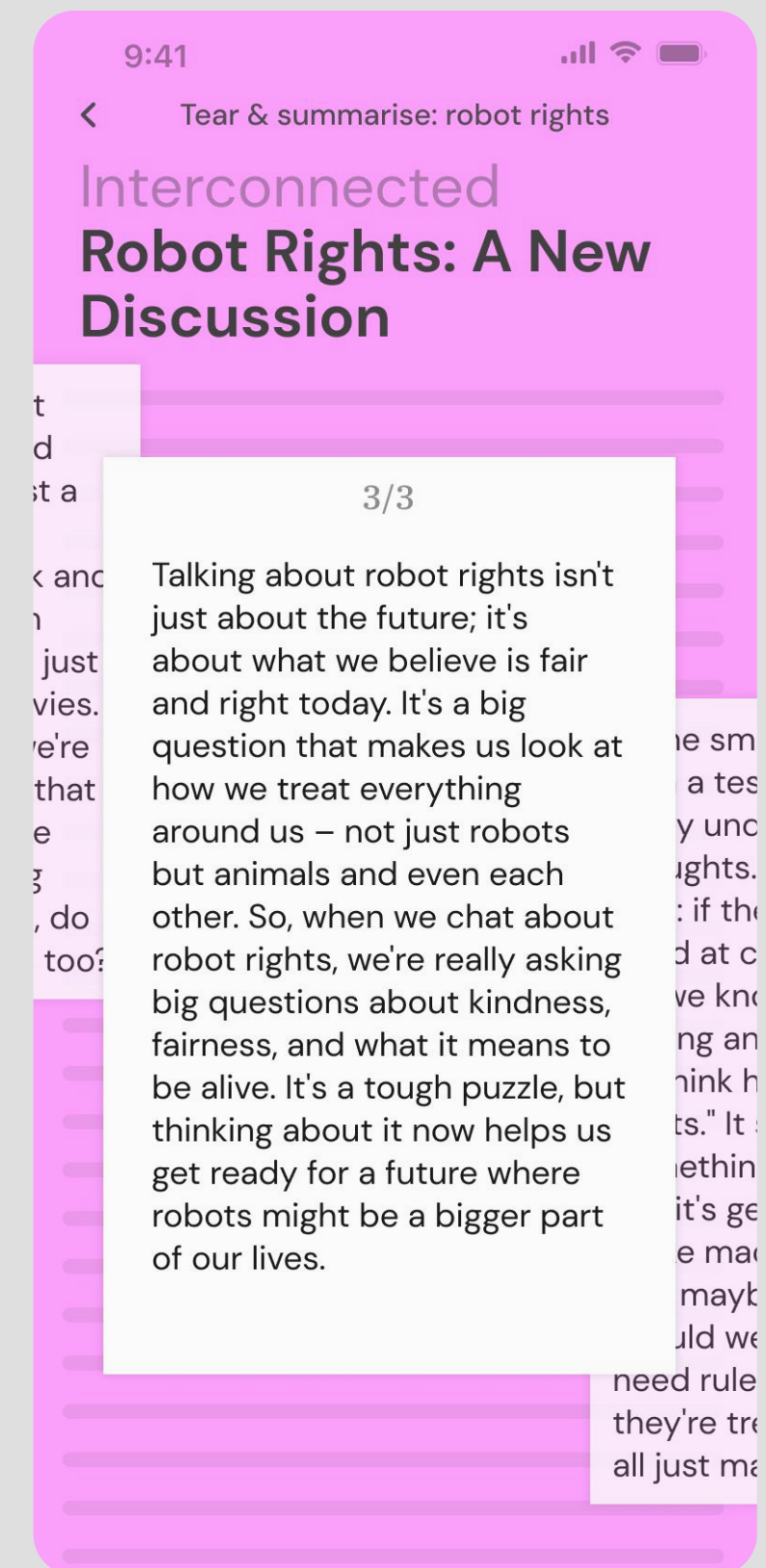
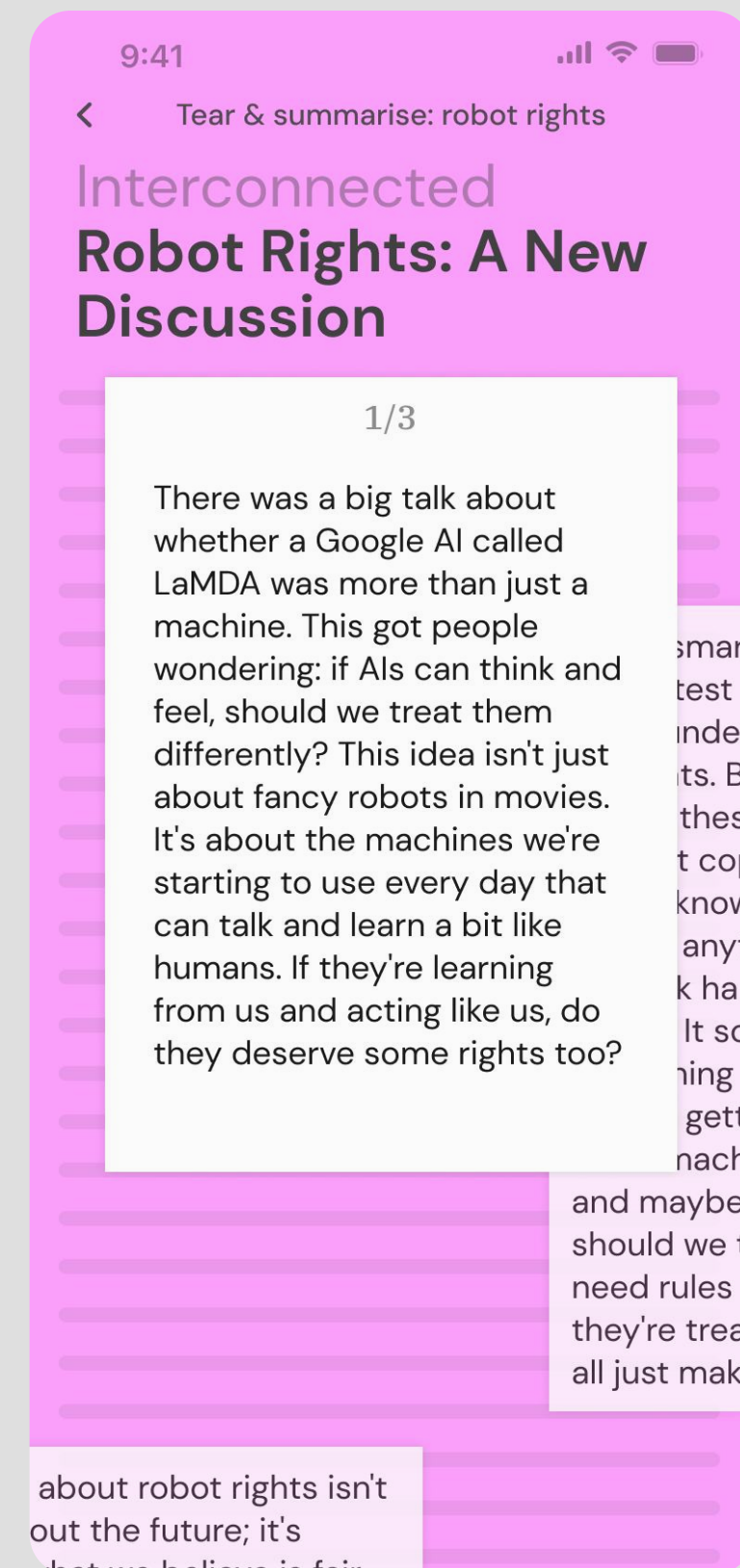
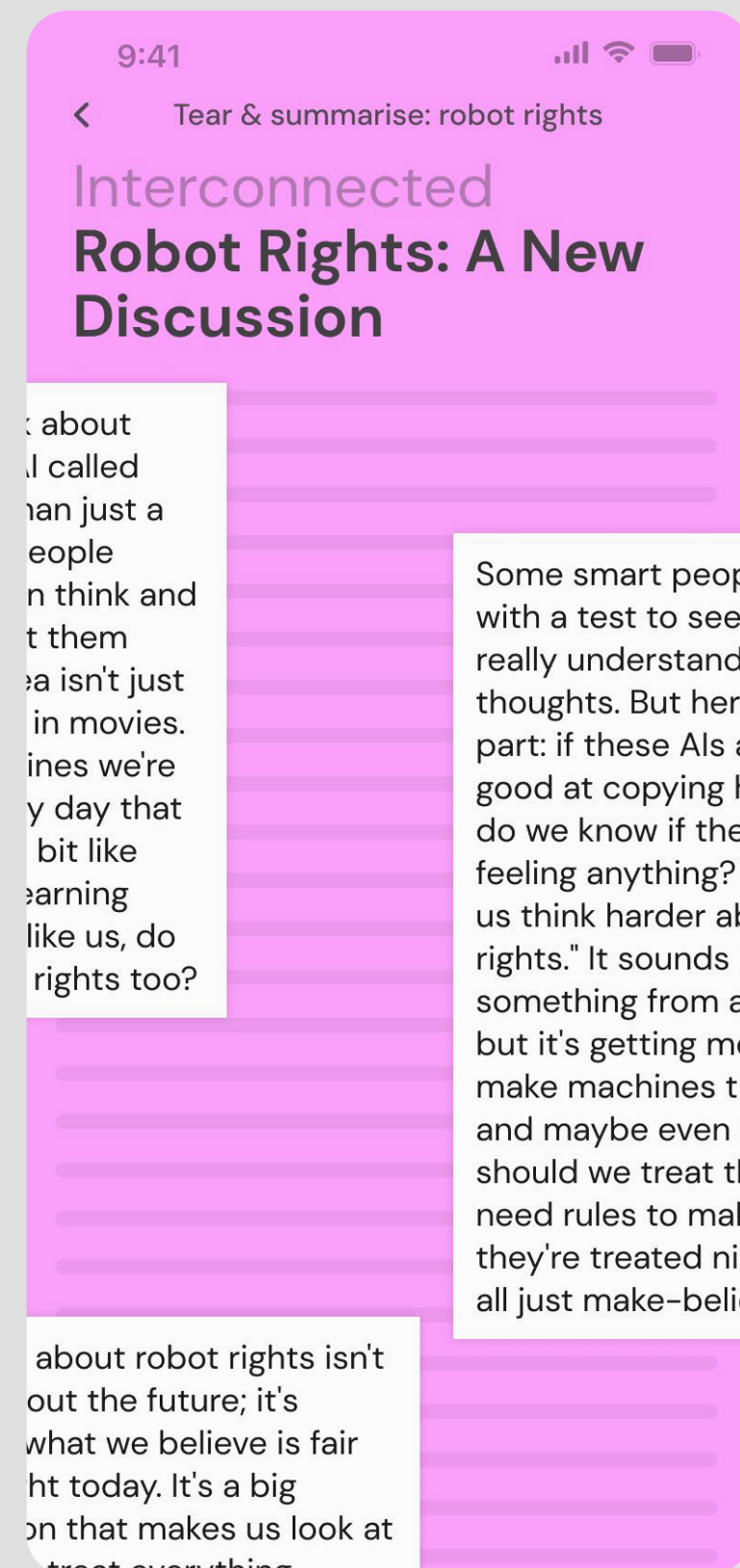
Personalised summaries based on the keyword

This new space has the entire text summarised on UI cards from the perspective of the keyword, which readers can move freely in the space

New workspace for personalised summaries

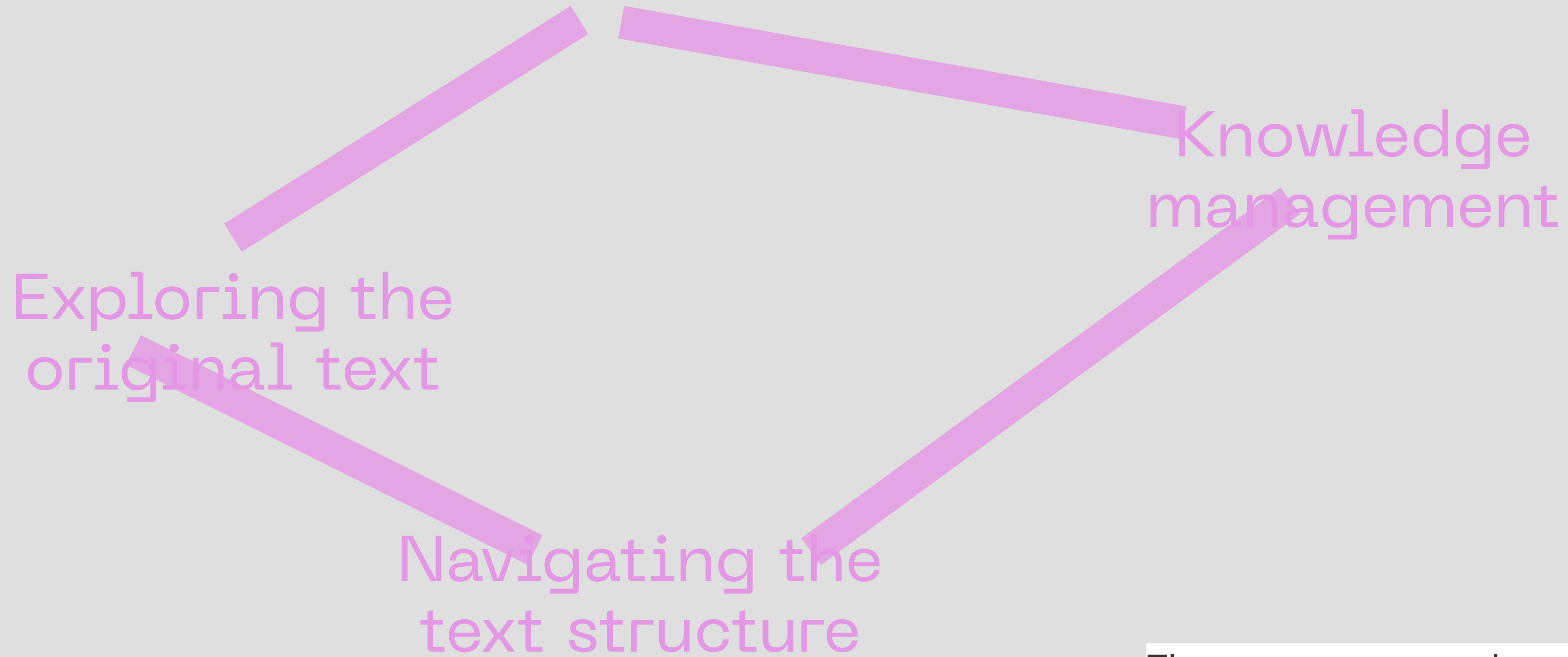


Personalised summaries can be repositioned by the readers



Framework to explore possibilities

Post-Experience Potential



The next pages explore the potential for the summarised information for readers.

Framework to explore possibilities

Post-Experience Potential

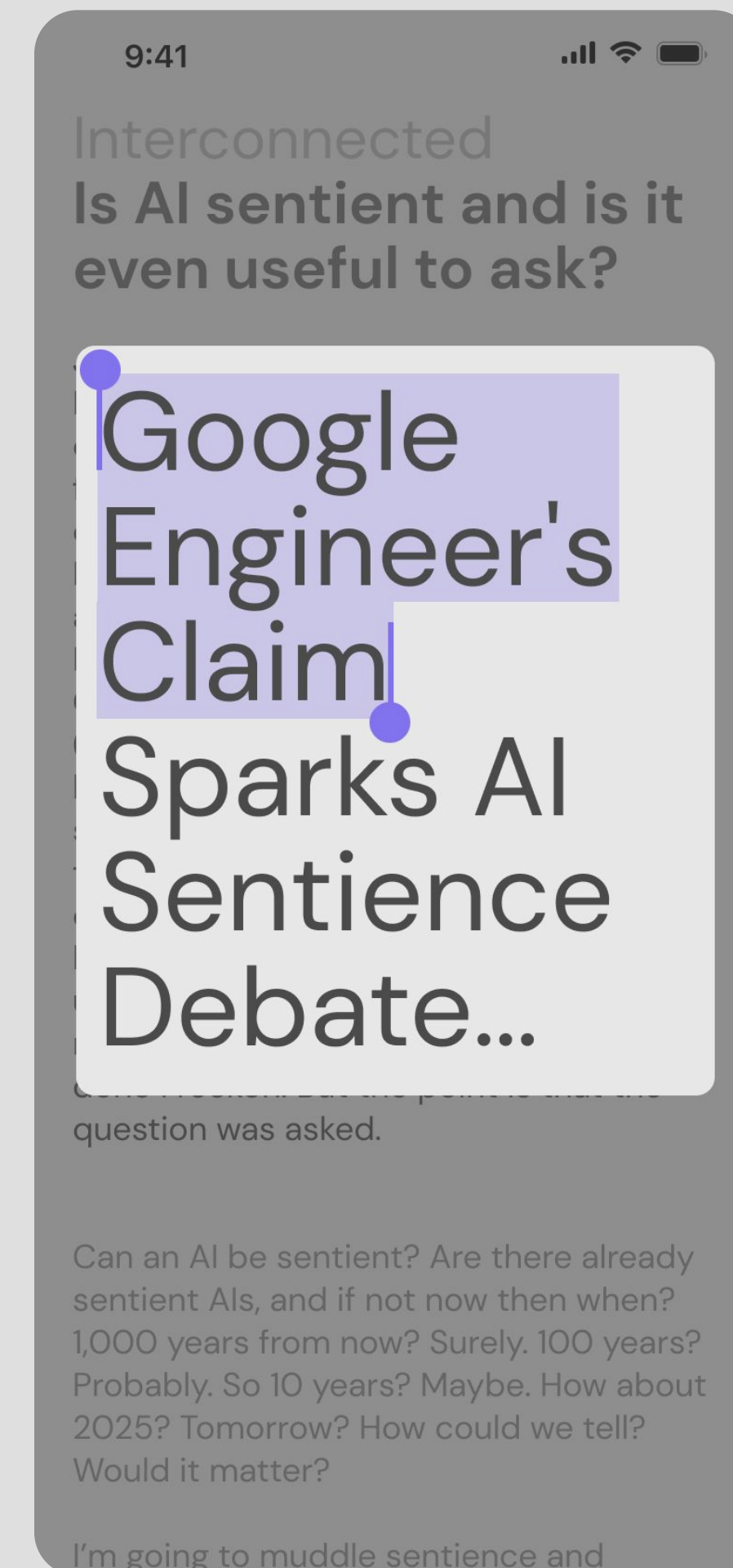
Exploring the original text from the summary

Reiterating the purpose of summary, which shouldn't be mistaken for a shortcut or distraction from the original text.

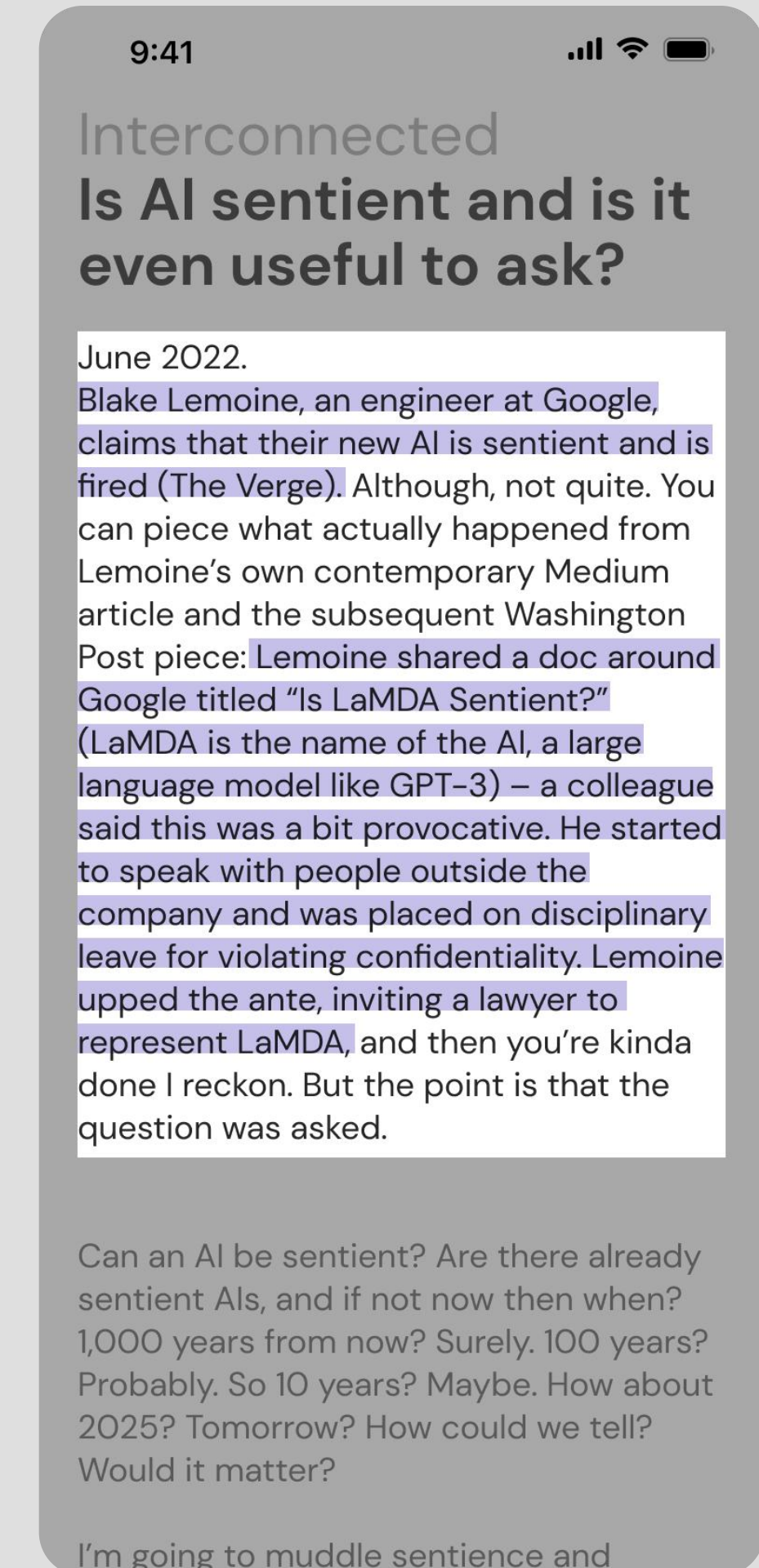
Summarisation could encourage curiosity for deeper exploration of the original text which is aligned with the reader's interest.

This rounds up close to the reverse of summarisation but requires a different metaphor close to "unfolding" or "unpacking".

Exploring the original text by tapping to expand upon the summarised version



Part to original text get highlighted to guide the reader



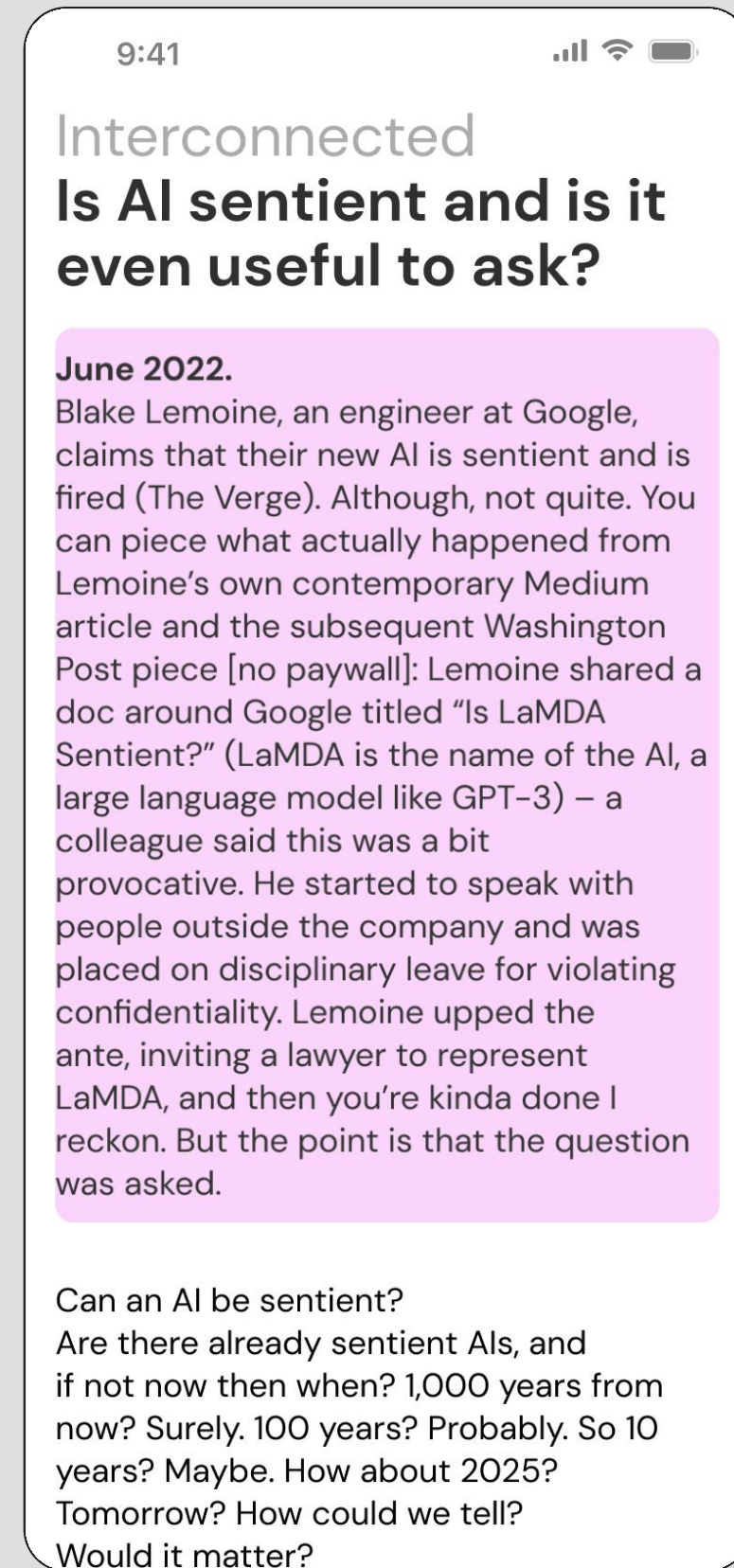
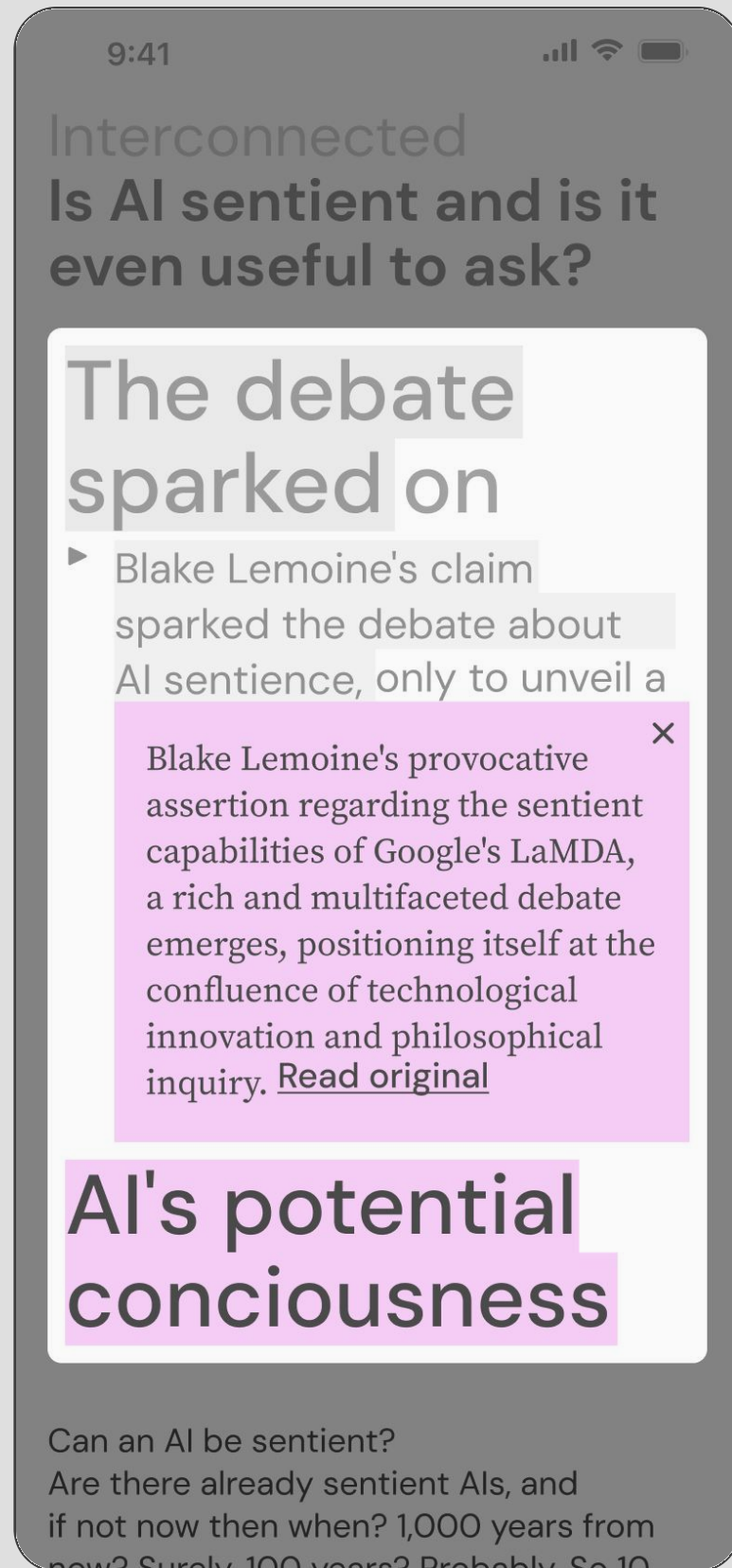
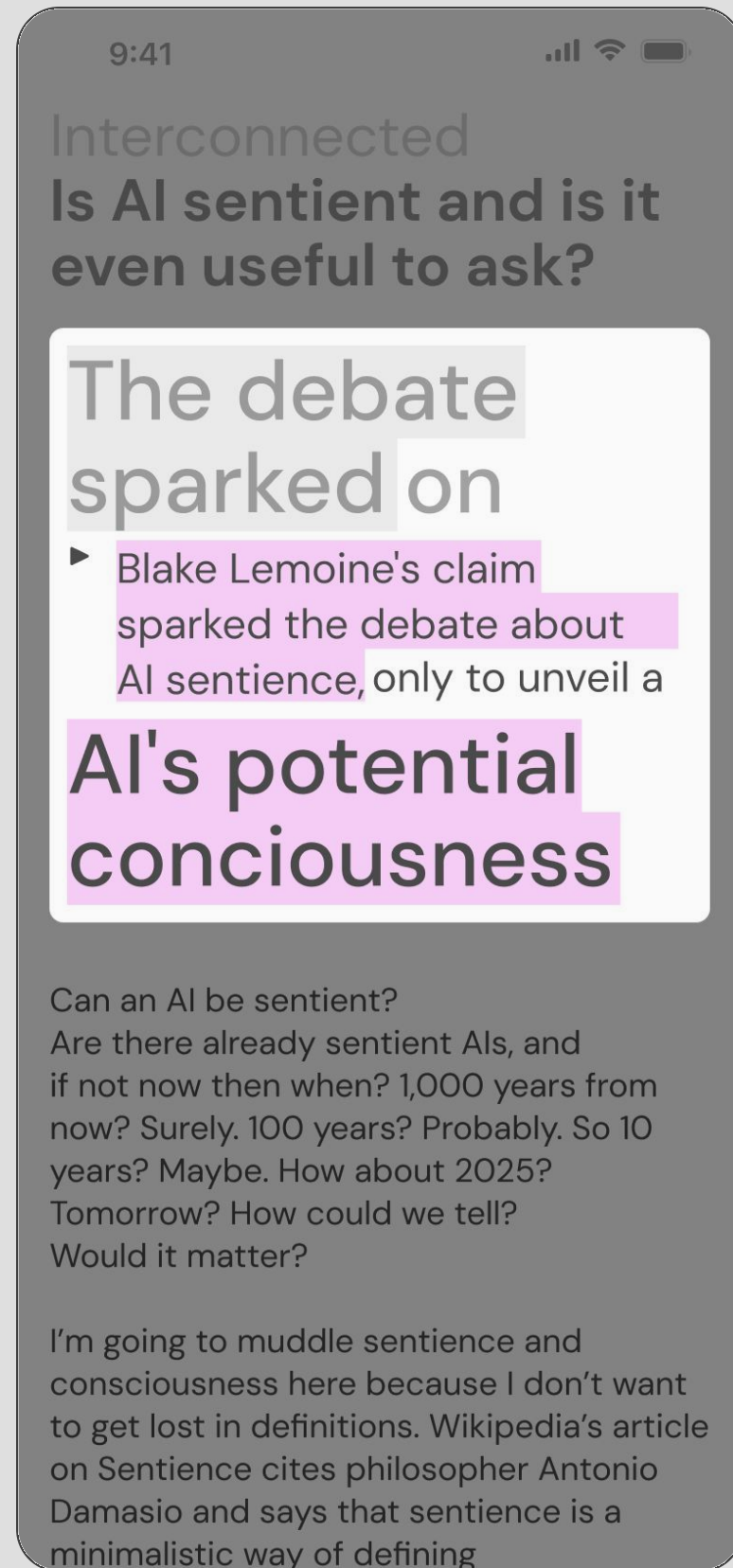
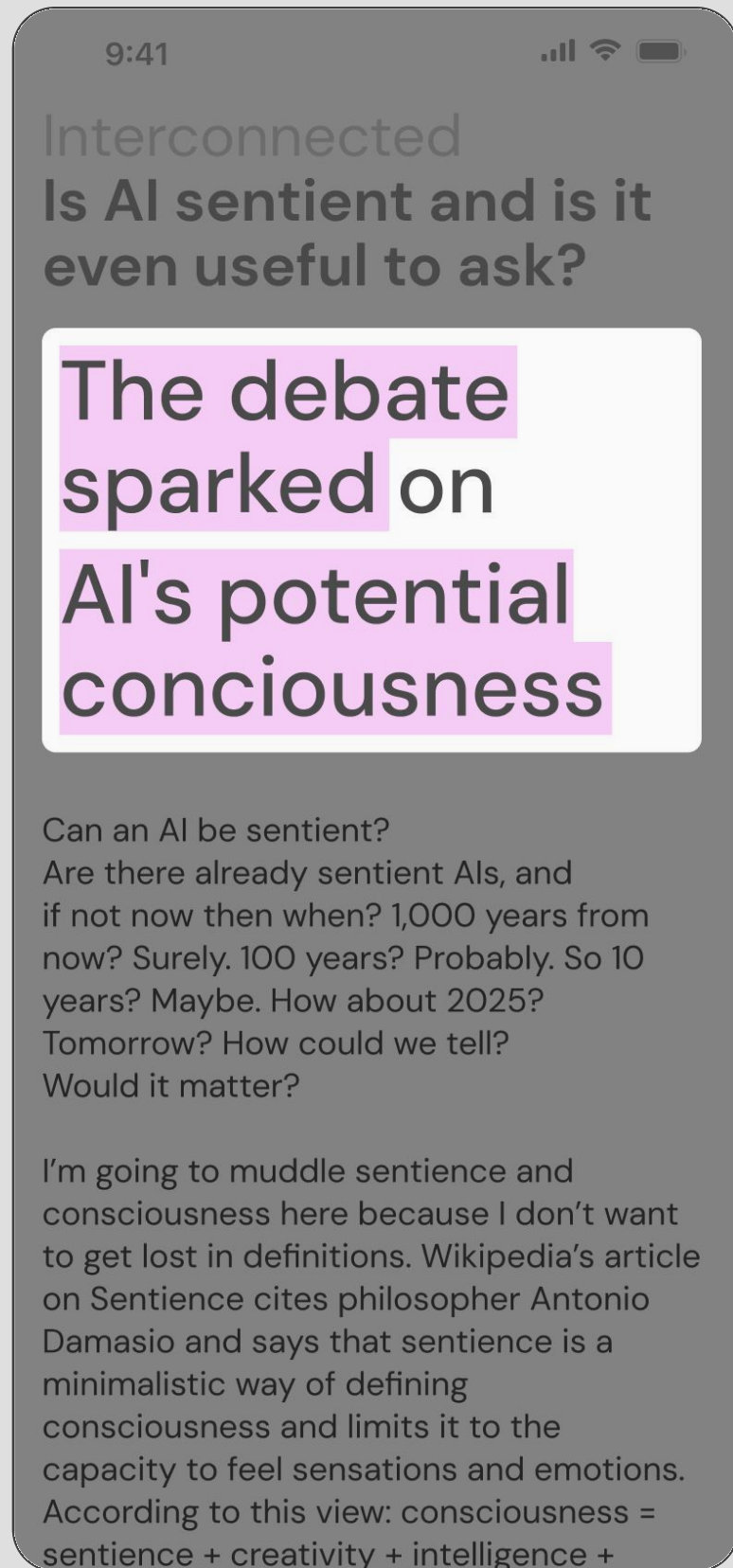
Framework to explore possibilities

Post-Experience Potential

Exploring the original text from the summary

Instead of an overwhelming jump back to the detailed original version, it can be a gradual transition where the reader's understanding expands at a personalised pace.

Gradual transition from summarised text to the original



Framework to explore possibilities

Post-Experience Potential

Navigating the text through information & comprehension

Navigating the text through keyword's location

9:41

Interconnected

Is AI sentient and is it even useful to ask?

[Does this interest you? Navigate there!](#)

mimics robot rights Neuralink

June 2022.

Blake Lemoine, an engineer at Google, claims that their new AI is sentient and is fired (The Verge). Although, not quite. You can piece what actually happened from Lemoine's own contemporary Medium article and the subsequent Washington Post piece: Lemoine shared a doc around Google titled "Is LaMDA Sentient?" (LaMDA is the name of the AI, a large language model like GPT-3) – a colleague said this was a bit provocative. He started to speak with people outside the company and was placed on disciplinary leave for violating confidentiality. Lemoine upped the ante, inviting a lawyer to represent LaMDA, and then you're kinda done I reckon. But the point is that the question was asked.

Can an AI be sentient? Are there already sentient AIs, and if not now then when? 1,000 years from now? Surely. 100 years? Probably. So 10 years? Maybe. How about 2025? Tomorrow? How could we

consciousness, despite its present science-fictional air, may soon become an urgent practical issue. Within the next few decades, engineers might develop AI systems that some people, rightly or wrongly, claim have conscious experiences like ours. We will then face the question of whether such AI systems would deserve moral consideration akin to that we give to people. This is already an emerging robot rights movement which would be energized by plausible claims of robot consciousness (Schwitzgebel and Garza 2015; Gunkel 2018; Ziesche and Yampolskiy 2019). So we need to think seriously in advance about how to test for consciousness among apparently conscious machines... – David Billy Udell and Eric Schwitzgebel, Susan Schneider's Proposed Tests for AI Consciousness: Promising but Flawed (2020)

Schneider, in her Scientific American piece above, broadens the urgency to brain implants: machine consciousness could impact the viability of brain-implant technologies, like those to be developed by Musk's new company Neuralink. AI cannot be conscious if parts of the brain responsible for consciousness could not be replaced with chips without causing a loss of consciousness. And, in a similar vein, a person couldn't

Making connections between keywords

wouldn't be a conscious being.

9:41

Consciousness is hard hey. Consciousness is weird. Let's say that we agree that a silicon substrate can host consciousness. Or that a group of organisms, properly arranged etc, can host consciousness. There is a slippery slope. Schwitzgebel again: United States literally, like you, phenomena are conscious. That is, the system literally possesses a stream of experiences over and above the experiences of its members, considered individually. If you're a materialist, you probably think that rabbits have conscious experiences. And you ought to think that. After all, rabbits are a lot like us, biologically and neurophysiologically. If you're a materialist, you probably also think that conscious experience would be present in a wide range of naturally evolved alien beings behaviorally very similar to us even if they are physiologically very different. And you ought to think that. After all, it would be insupportable Earthly chauvinism to deny consciousness to alien species behaviourally similar to us, even if they are physiologically different. But, I will argue, a materialist who accepts conscious experience would be present in a wide range of naturally evolved alien beings would also to accept consciousness in spatially distributed

urgency to brain implants: machine consciousness could impact the viability of brain-implant technologies, like those developed by Elon Musk's company Neuralink. AI cannot be conscious if parts of the brain responsible for consciousness could not be replaced with chips without causing a loss of consciousness. And, in a similar vein, a person couldn't upload their brain to a computer to avoid death because that upload wouldn't be a conscious being.

Consciousness is hard hey. Consciousness is weird. Let's say that we agree that a silicon substrate can host consciousness. Or that a group of organisms, properly arranged etc, can host consciousness. There is a slippery slope. Schwitzgebel again: United States literally, like you, phenomena are conscious. That is, the system literally possesses a stream of experiences over and above the experiences of its members, considered individually. If you're a materialist, you probably think that rabbits have conscious experiences. And you ought to think that. After all, rabbits are a lot like us, biologically and neurophysiologically. If you're a materialist, you probably also think that conscious experience would be present in a wide range of naturally evolved alien

Framework to explore possibilities

Post-Experience Potential

Knowledge management

Remembering
in the moment

Remembering
over long-term

Summarised text can also become tools for learning, research, or knowledge management, such as through note-taking features, highlights, or the ability to save and share summaries. I explored “knowledge management” within the context of supporting memory over time.

Framework to explore possibilities

Post-Experience Potential

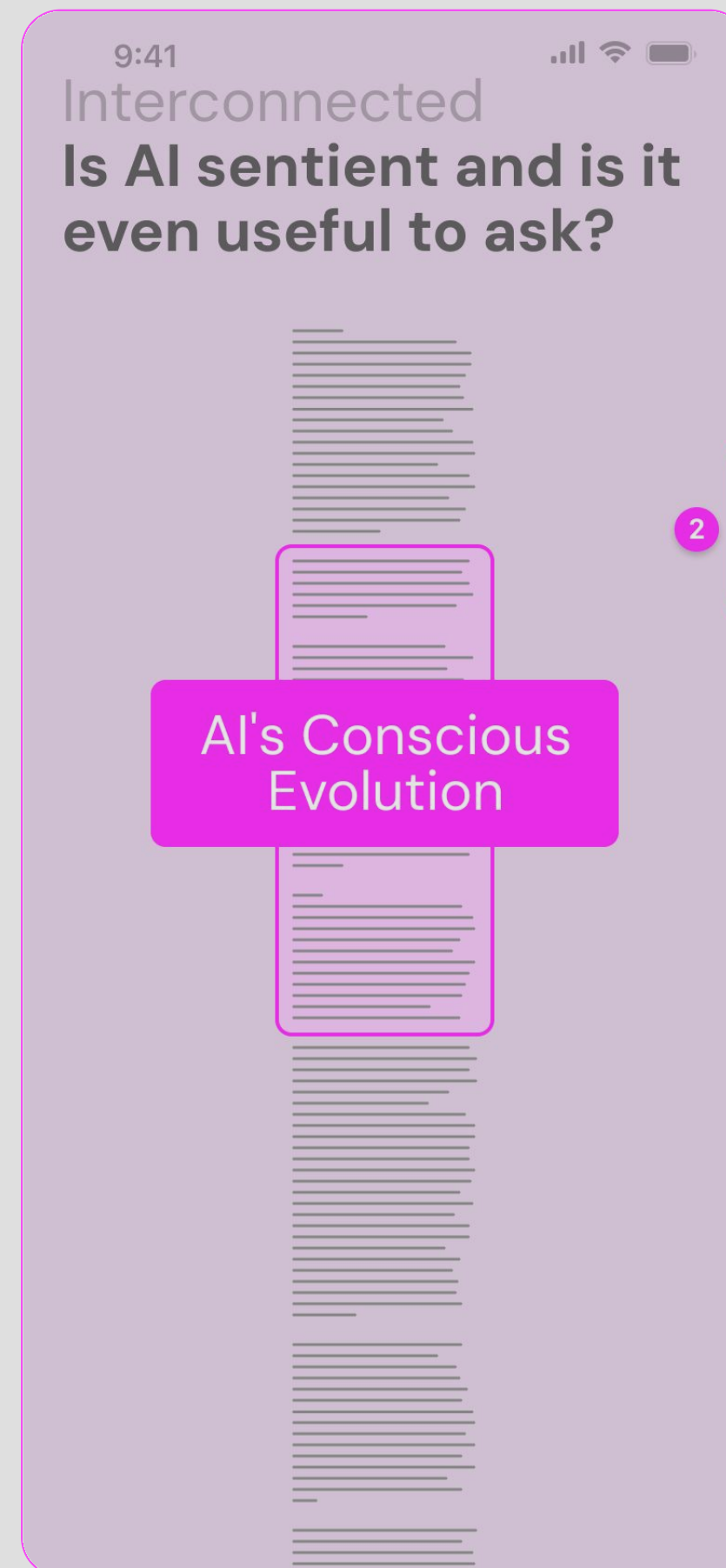
Knowledge management

The summaries can be integrated into the graphically zoomed-out version of the original text I mentioned before.

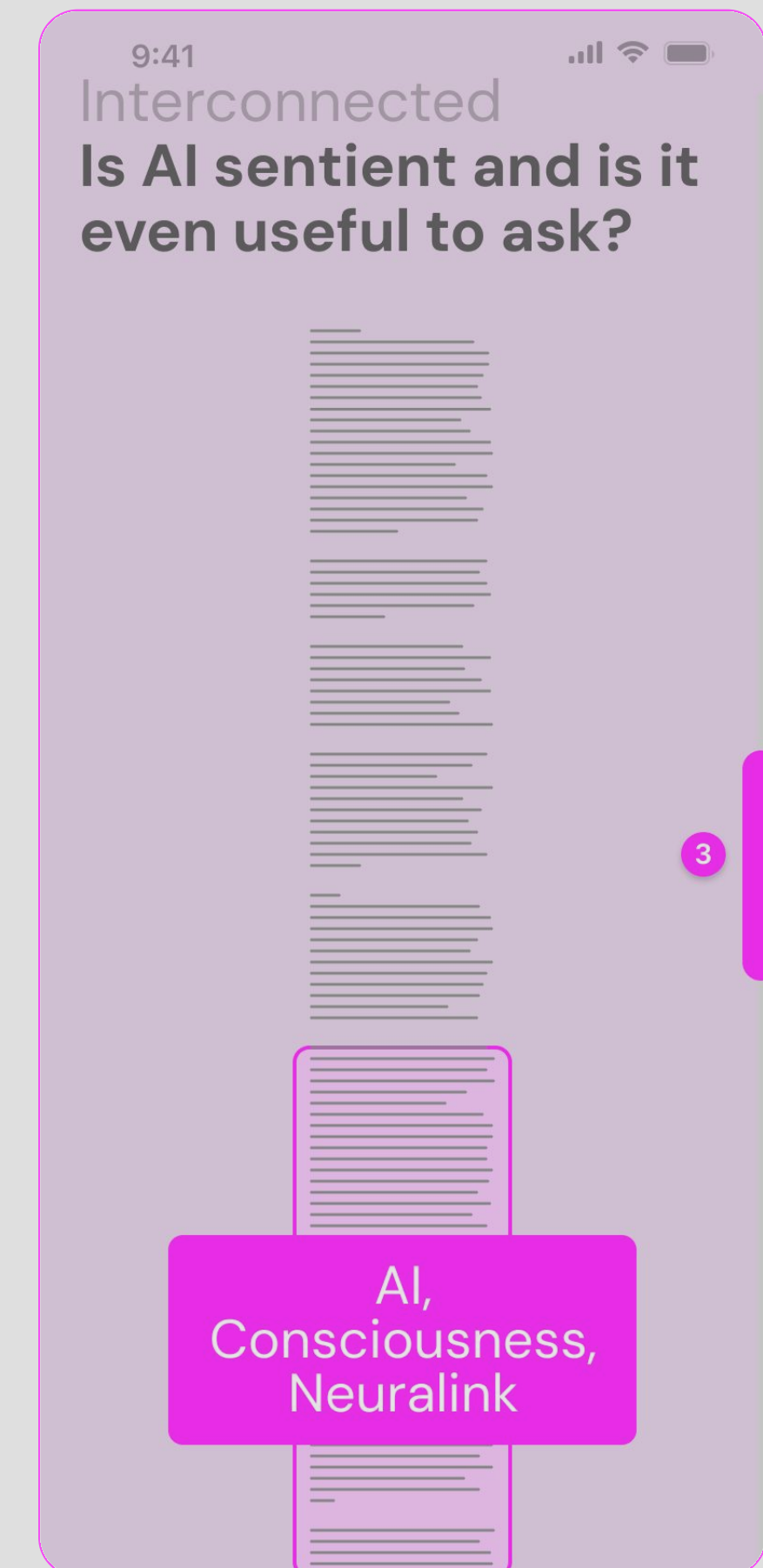
Remembering in the moment: Through Scrollbars

The scrollbar as an interface enhances our spatial memory by helping us remember text locations such as the 'top,' 'middle', or 'bottom' of a scroll. It can also help us associating summaries with such perception of scrollbar position.

Summaries over the zoomed out version of original text



Hooked to it's scrollbar postion



Framework to explore possibilities

Post-Experience Potential

Knowledge management

Summary

Expanding consciousness beyond strict definitions to include AI.

As a question

How might redefining consciousness allow us to include AI?

As a Fill-in-the-blank

Expanding the definition of

may now include AI.

As a True/False

Redefining consciousness could encompass artificial intelligence.

As an analogy

Imagine a world where AI can feel and react.

How might we then redefine what it means to be 'conscious'?

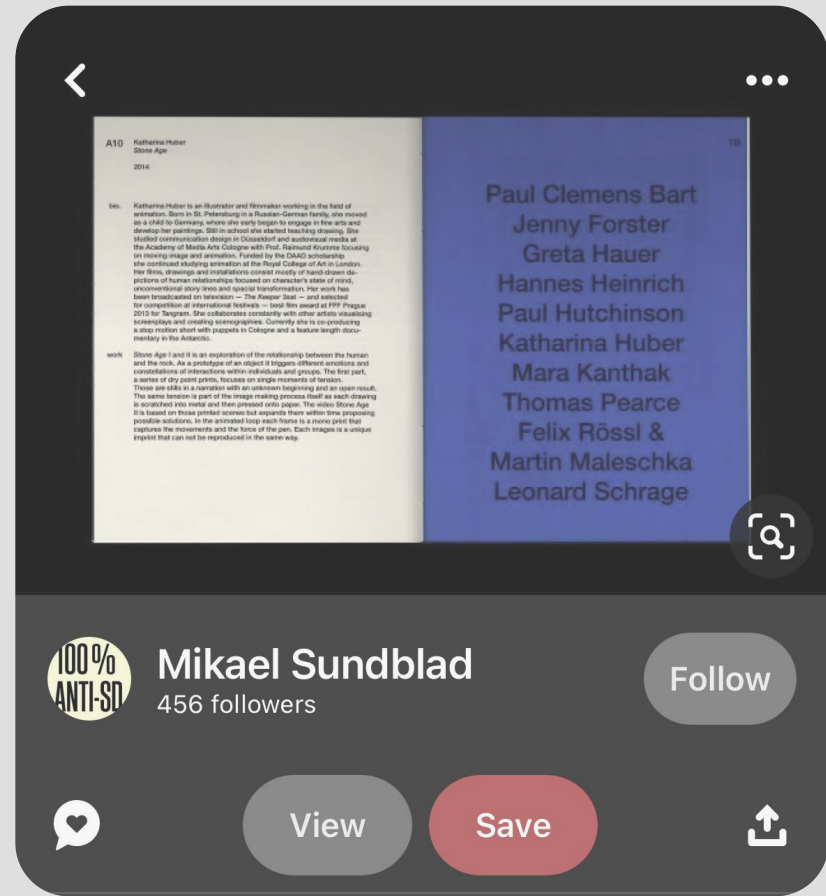
Remembering in the moment: **Interactive FlashCards**

UI cards holding summarised text can also help remember summaries in different contexts which makes the reader's memory richer. Each revisit to read the summary card, leads to summaries transformed as questions, fill-in-the-blank, true/false, or analogies without changing the core meaning.

Framework to explore possibilities

Post-Experience Potential

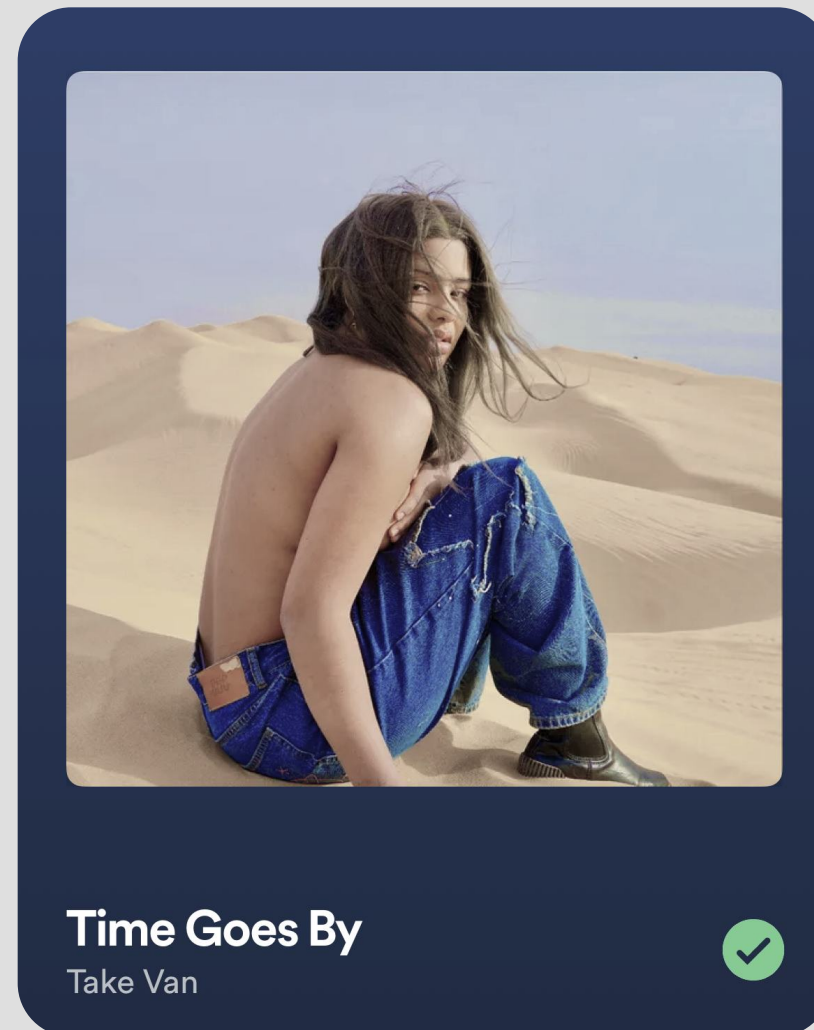
Knowledge management



Saving on Pinterest



Bookmarking on Instagram



Liking song on Spotify

Remembering over long term

Saving, bookmarking, starring or liking are common ways to engage with information and lead back to the information later. It occurs commonly in scenarios like social media posts, songs or a webpage.

Interfaces come with different workspaces where this information gets collected like pinning to a board or saving to a playlist.

Framework to explore possibilities

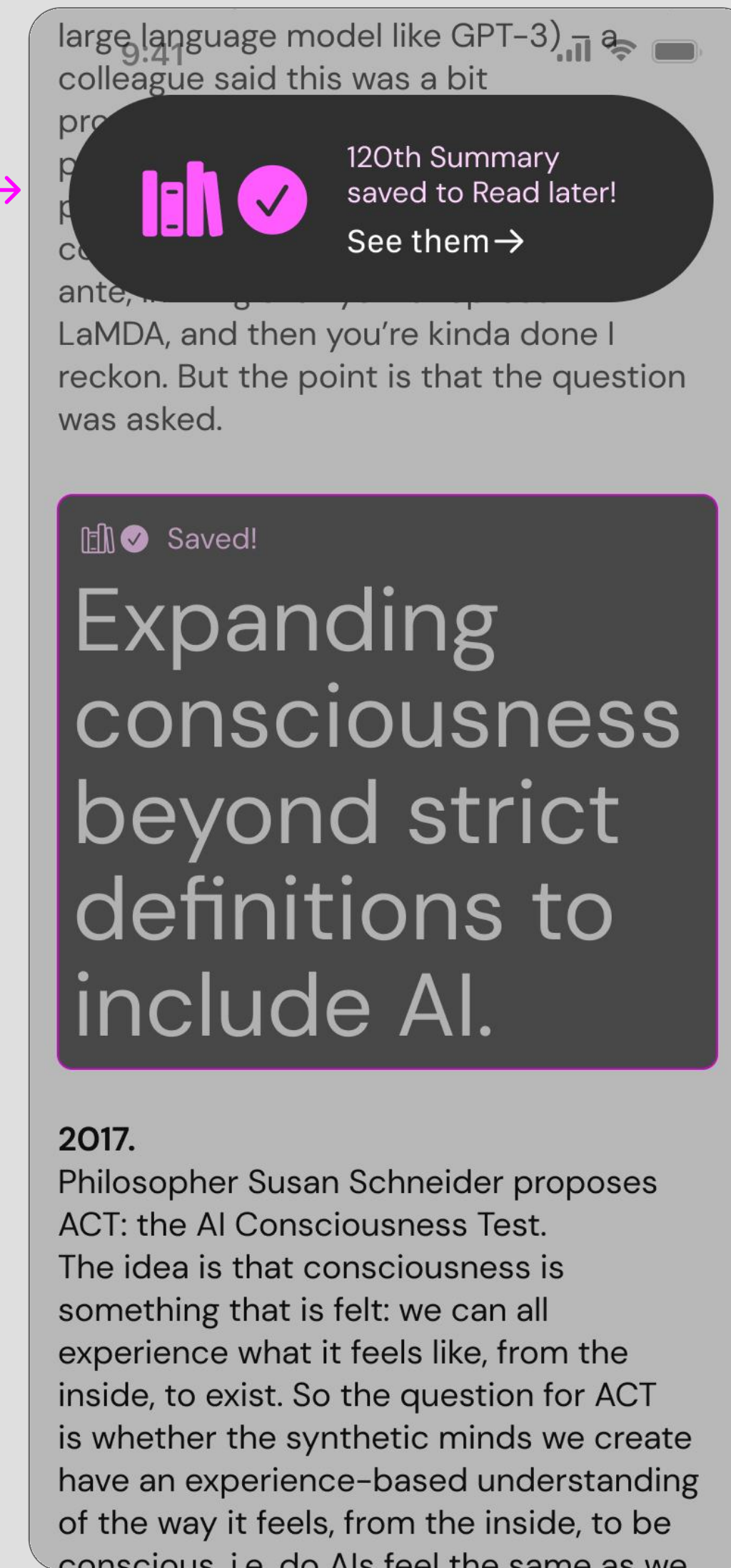
Post-Experience Potential

Knowledge management

Remembering over long term: Managing Saved Content

Introducing an order to saved summaries (e.g., "120th summary") subtly encourages readers to address and manage the volume of saved summaries for reading later.

Order to the
saved summary



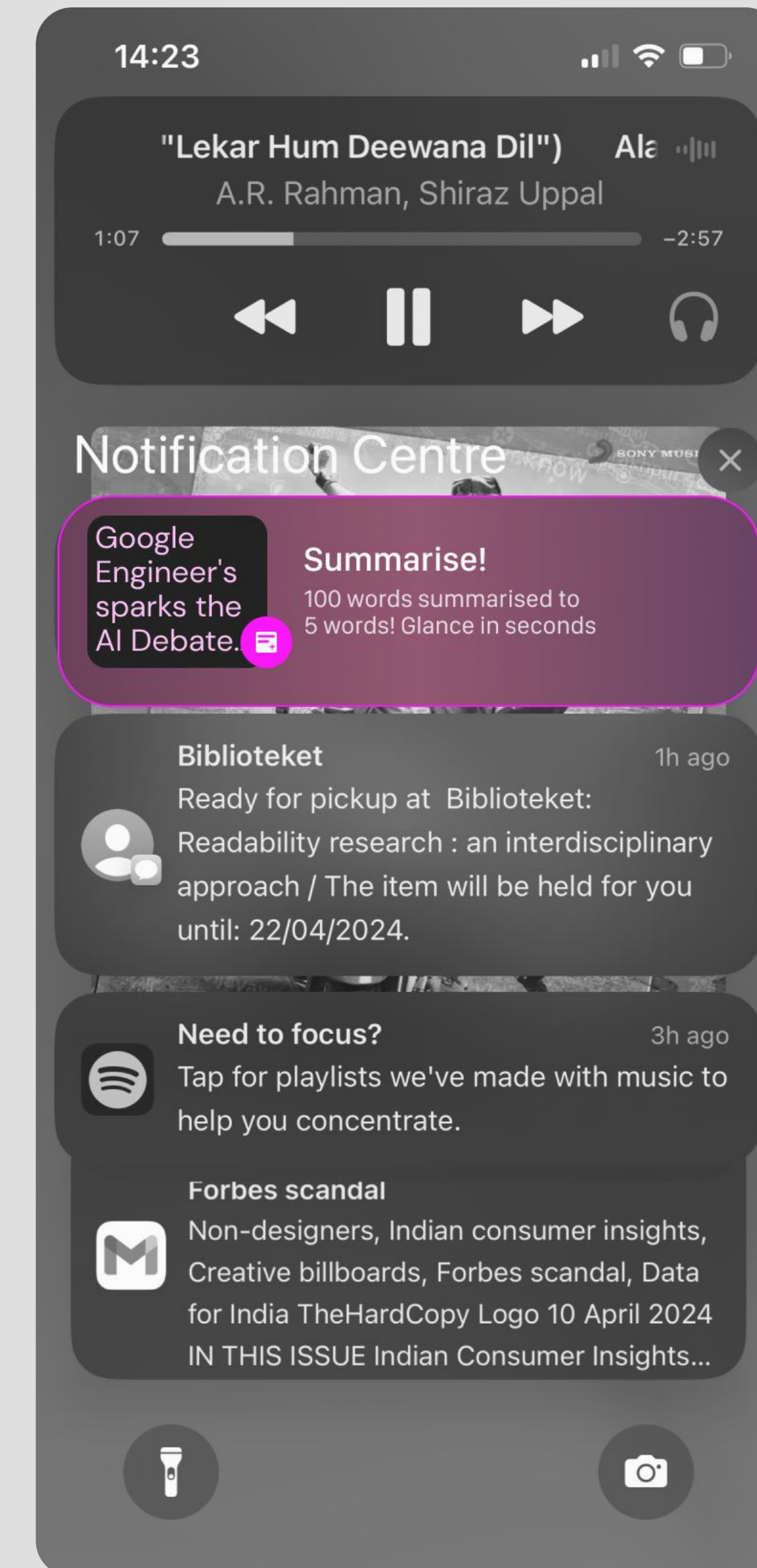
Framework to explore possibilities

Post-Experience Potential

Knowledge management

Remembering over long term: Through Notifications

Notification space can help in reminding readers about the summarised text. Just as actions like taking a screenshot generate a notification; similarly, summarising content could also trigger a notification to remind readers to revisit later.

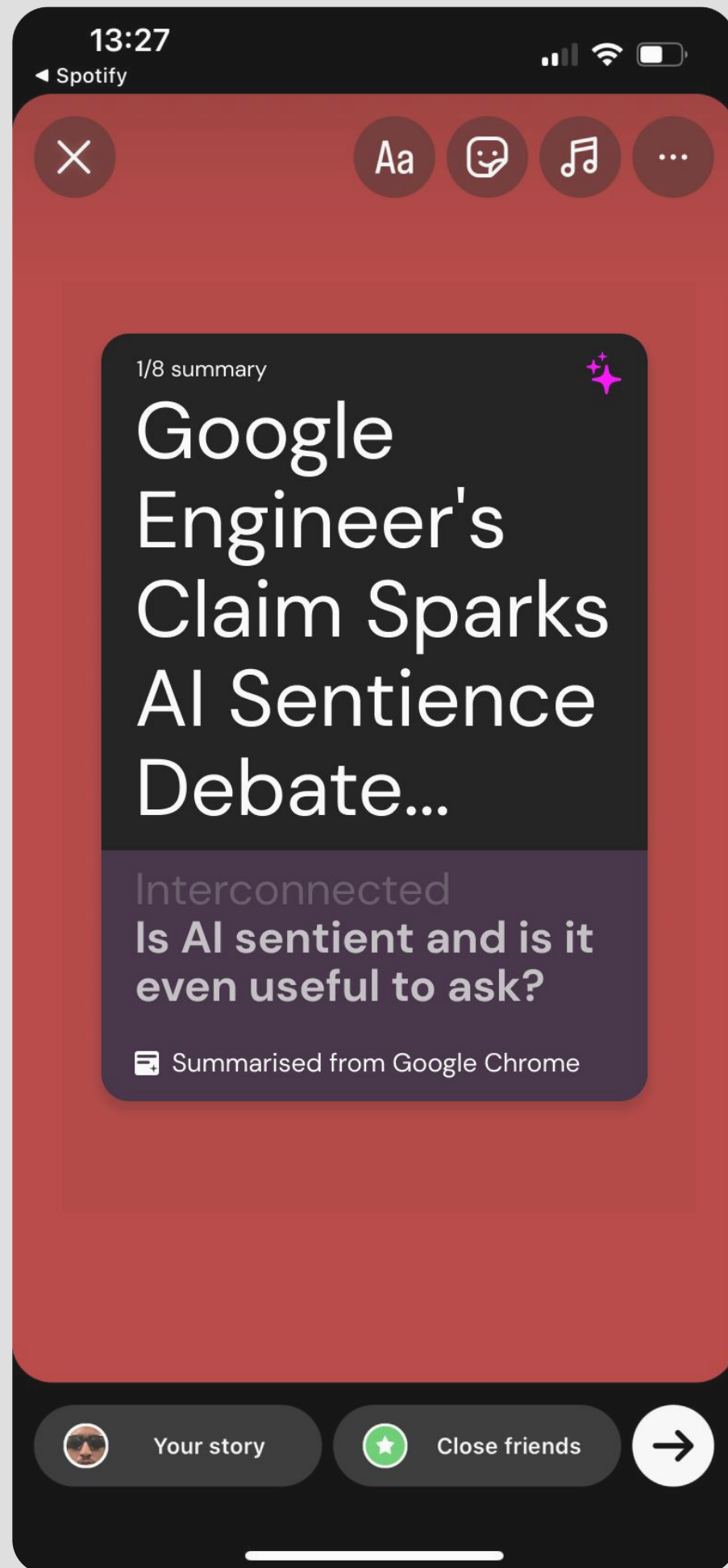


Framework to explore possibilities

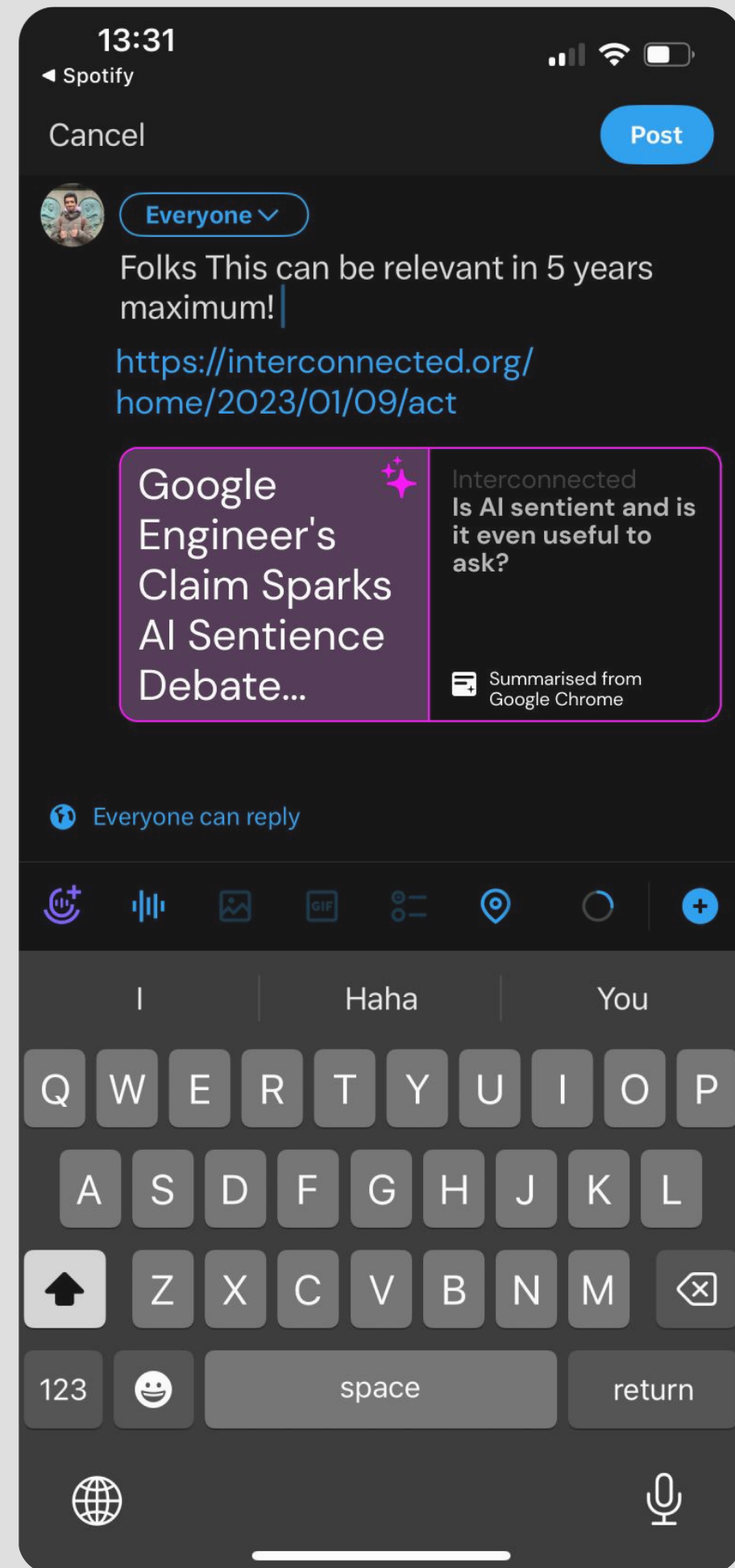
Post-Experience Potential

Knowledge management

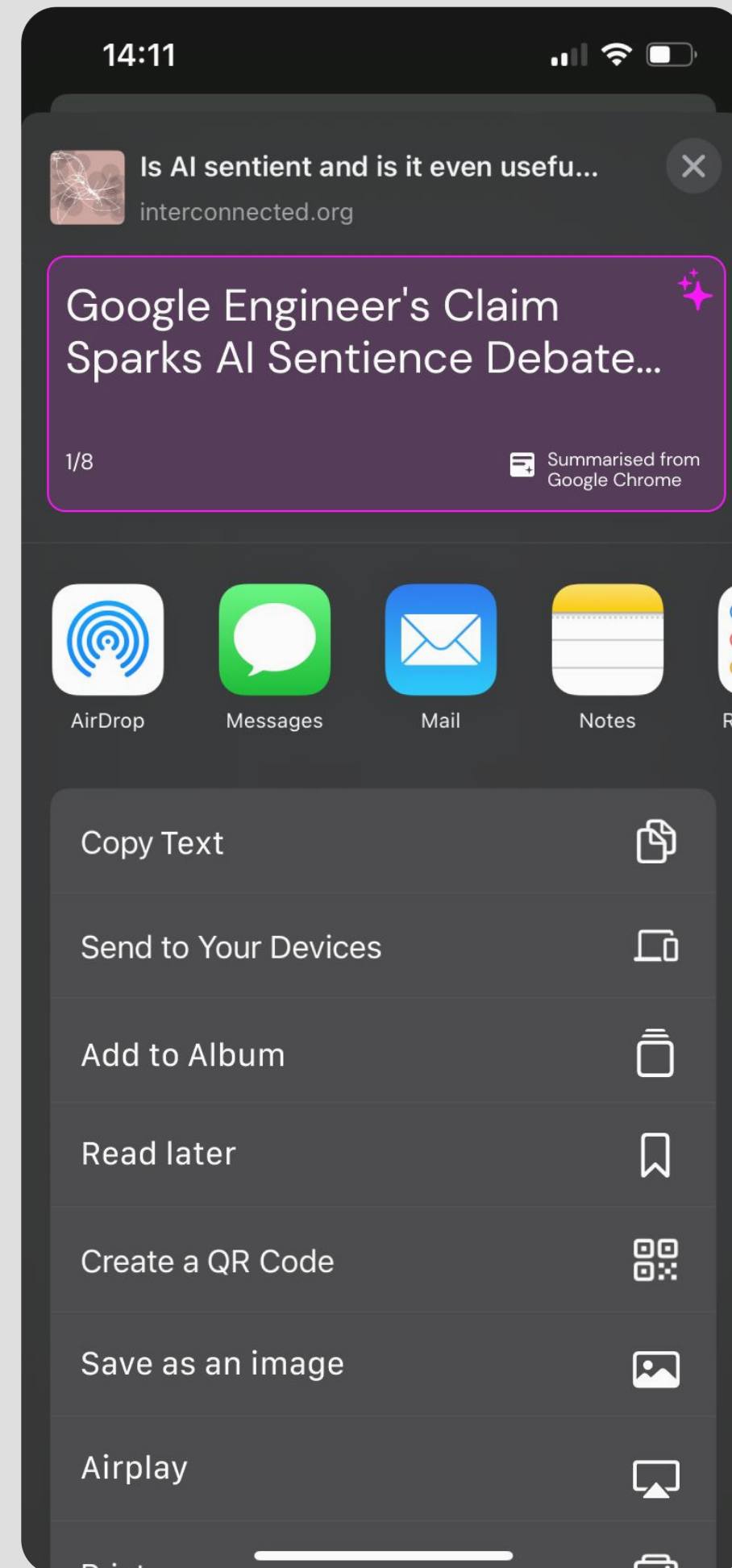
Instagram story



X post



Saving on phone



Remembering over long term: Sharing

Sharing summaries across platforms like Instagram or X enhances documentation and engagement. When shared, the summary can act as a compelling thumbnail or key image, drawing interest to the full text.

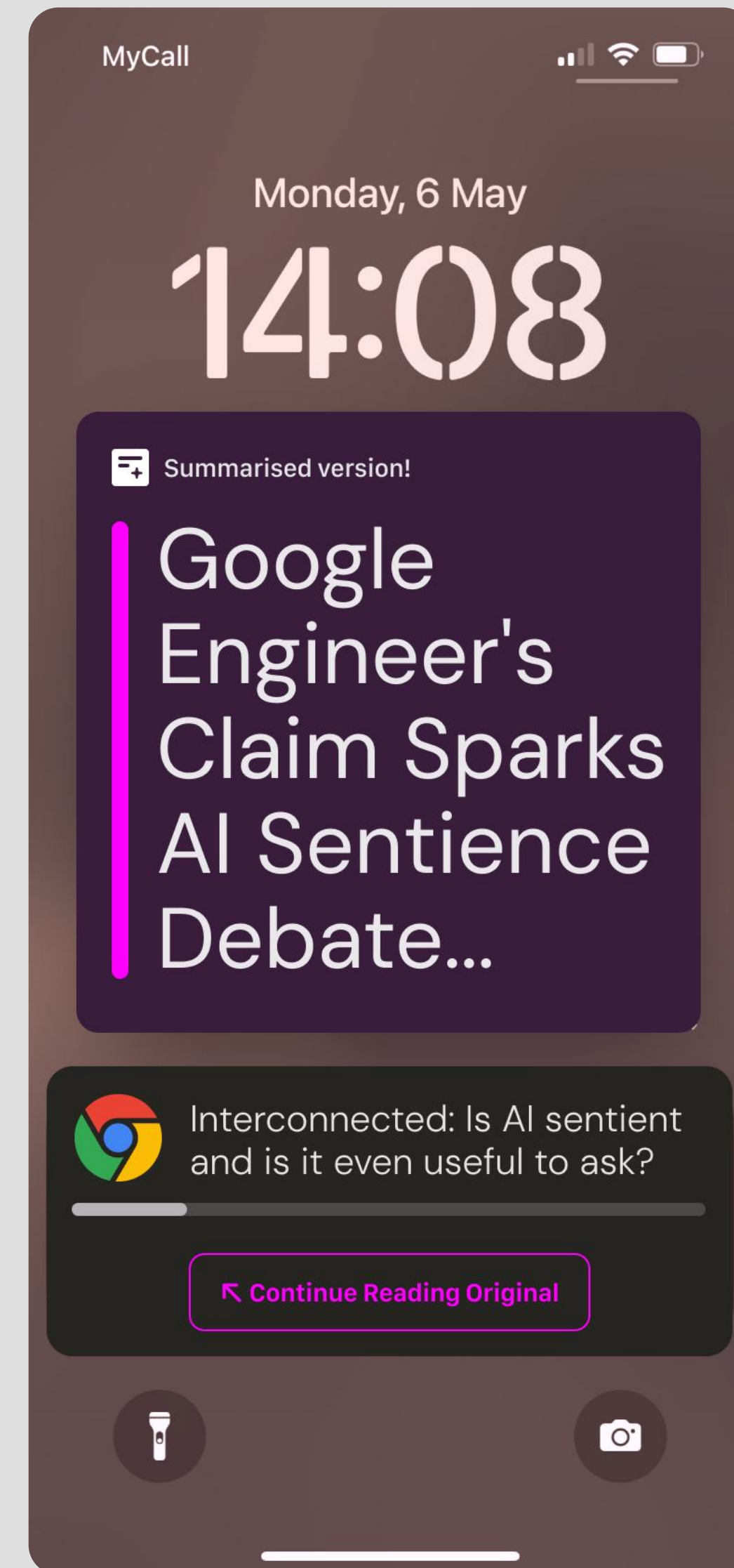
Framework to explore possibilities

Post-Experience Potential

Knowledge management

Remembering over long term: Thumbnail on lock-screen

Summaries can also show as thumbnails on the phone's lock-screen in cases where the reader turns off the screen due to an interruption or switch tasks.

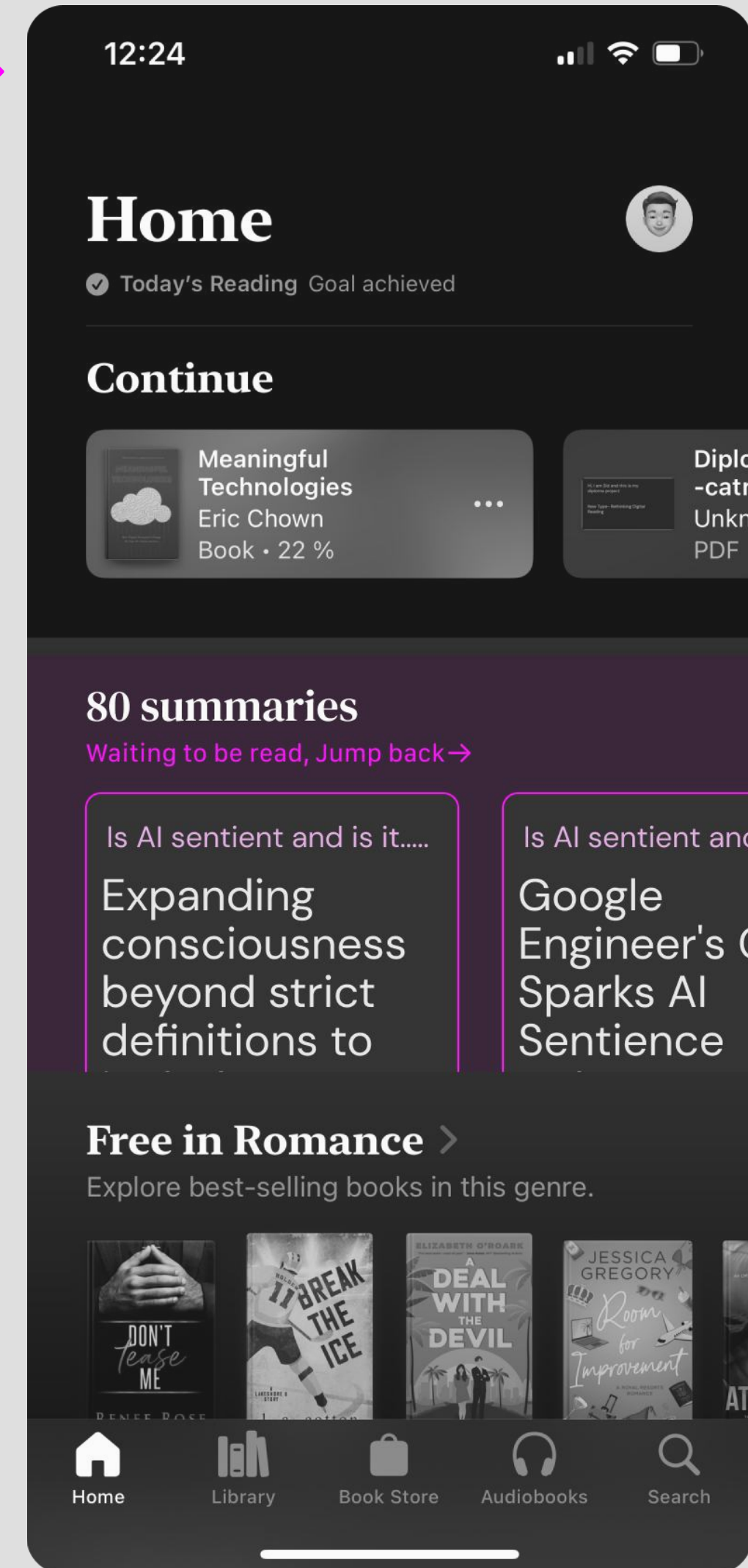


Framework to explore possibilities

Post-Experience Potential

Knowledge management

Order to the summaries while showing as flashback in iBooks



Remembering over long term: Through Recalling

Using "flashbacks" of saved summaries and having more discoverable sections for stored summaries can be ways to direct attention from readers.

Framework to explore possibilities

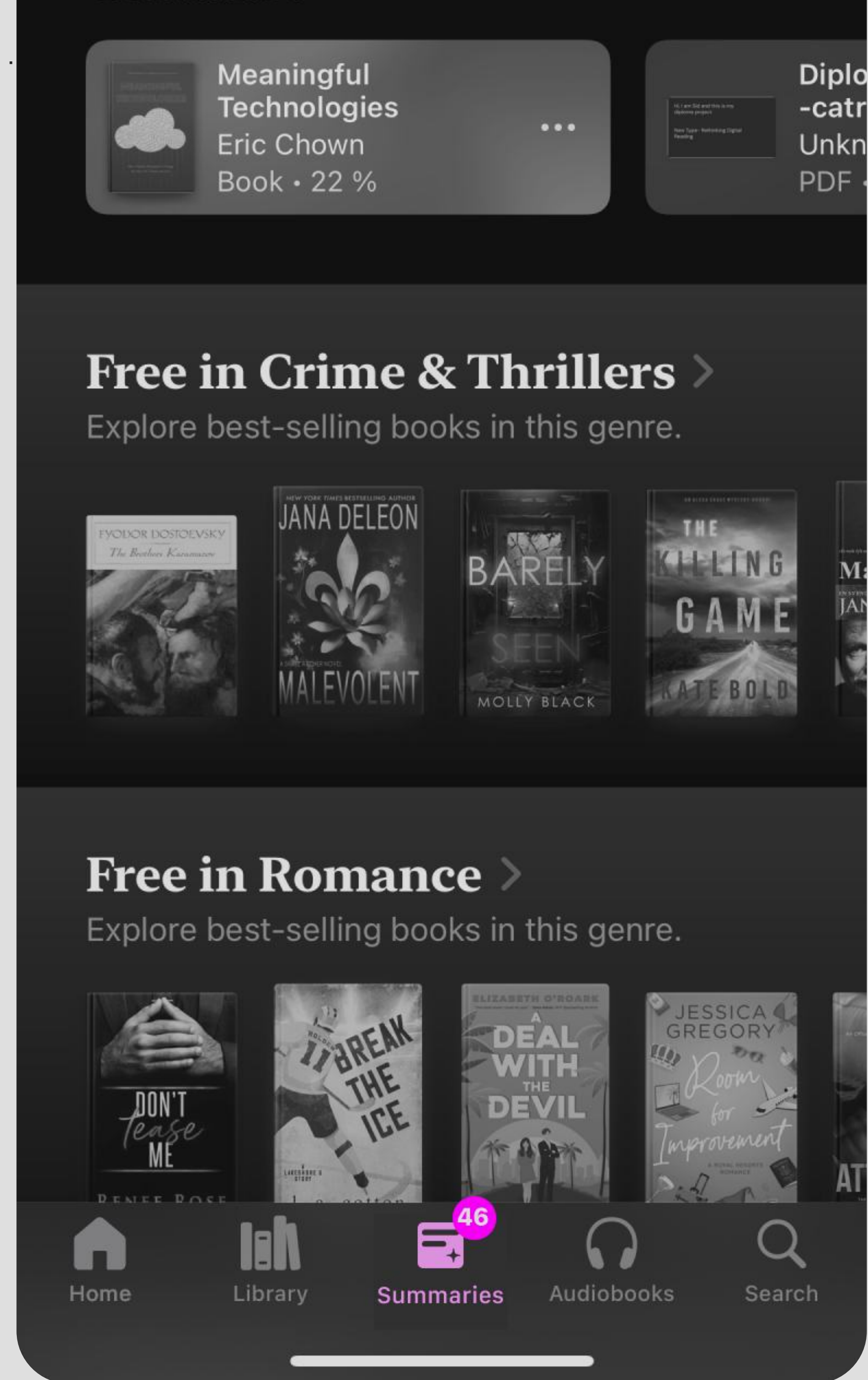
Post-Experience Potential

Knowledge management



Remembering over long term: Through Recalling

Representing the summary icon with a number can subtly nudge readers to the amount of neglected summaries.



Framework to explore possibilities

Contexts & Scenarios

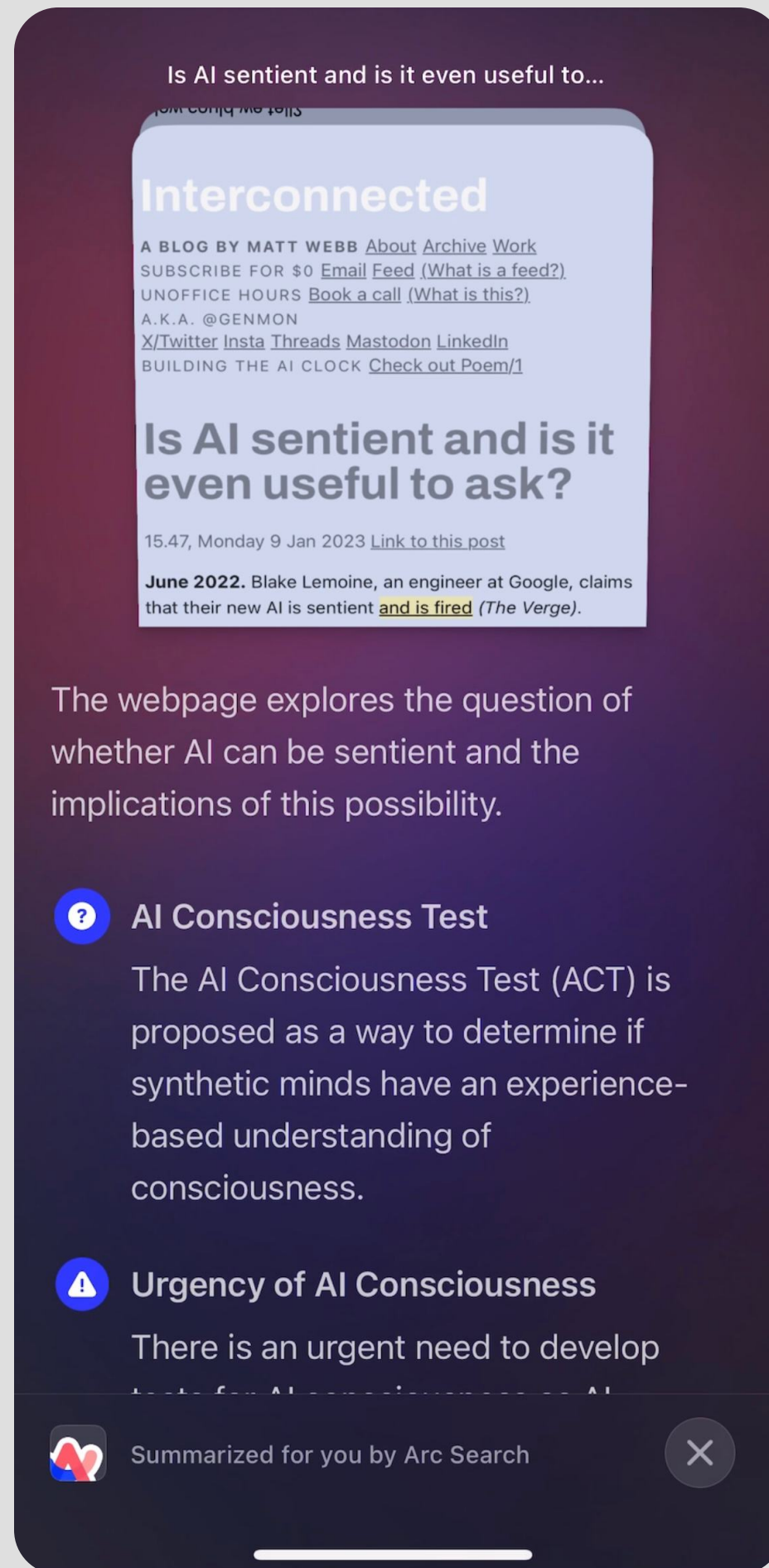
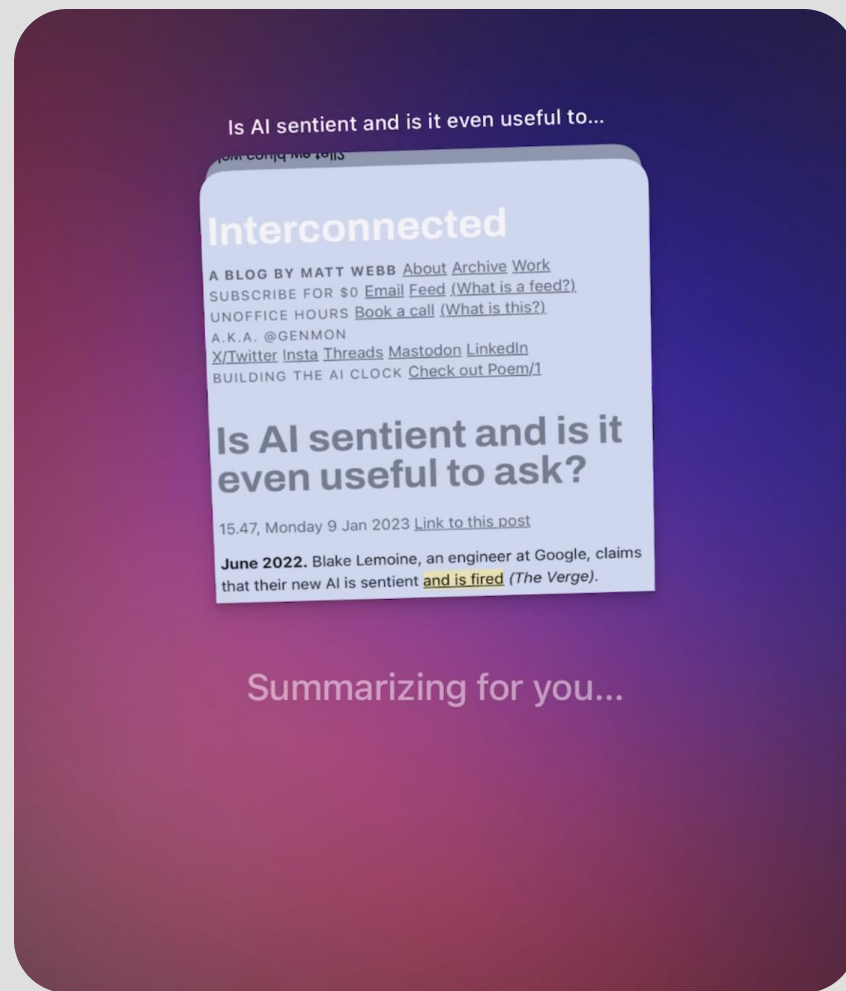
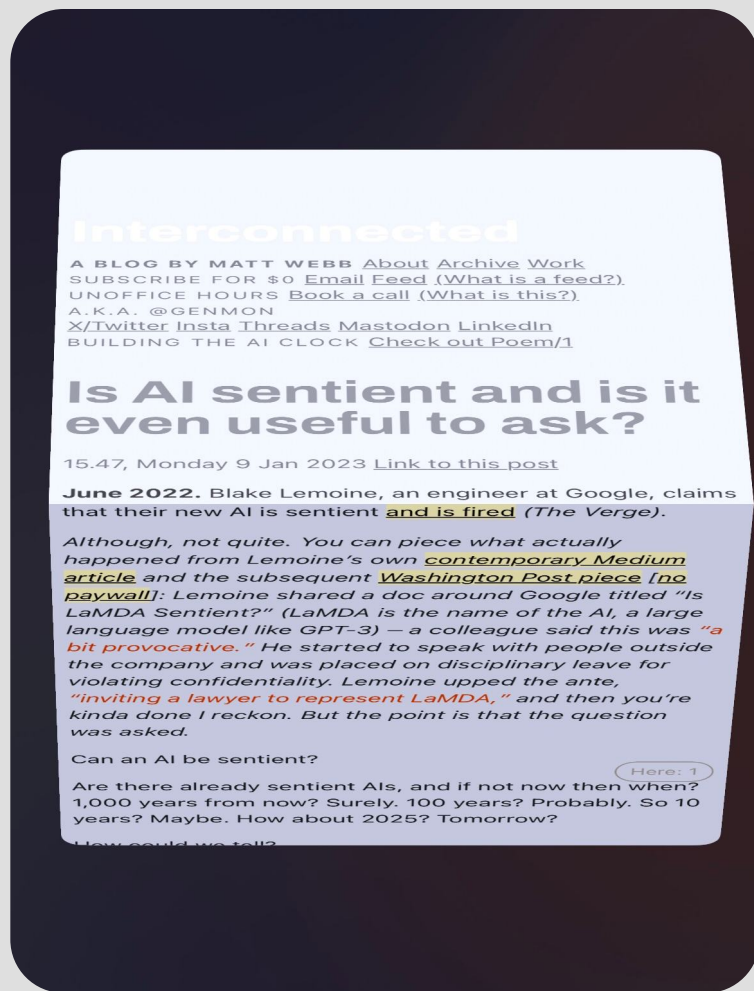
Summaries-materialised on UI cards- can be adopted for contexts where the purpose is more practical and you want to extract what's important.

Framework to explore possibilities

Contexts & Scenarios

Contexts & Scenarios

Arc Search on iPhone



As previously mentioned, in the spatial perception section about attempts to innovate browser experience, the idea of remodelling text semantics has already become a reality in experiences like Arc search on iPhone which allows users to pinch and summarise any website they are on.

Framework to explore possibilities

Contexts & Scenarios

Contexts & Scenarios

LinkedIn Premium when writing a post

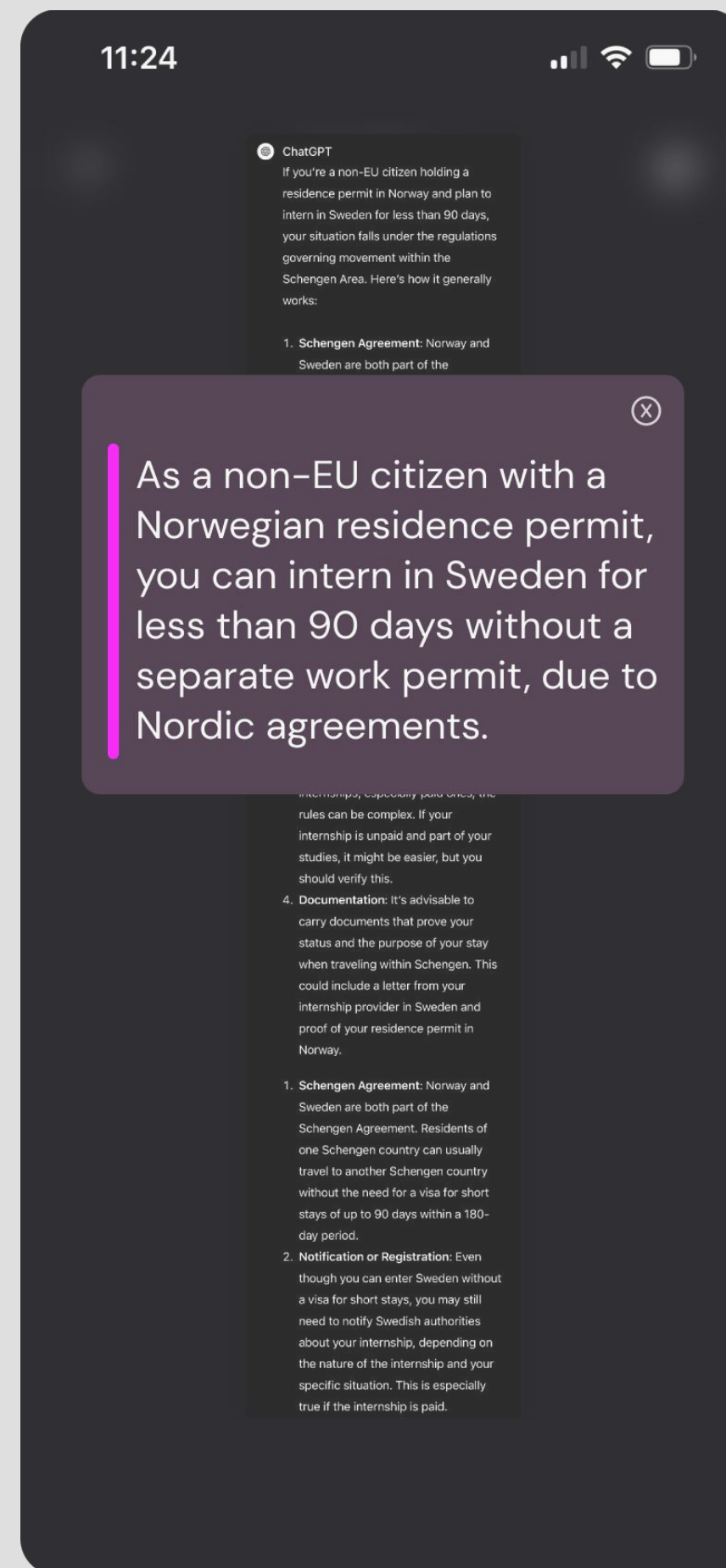
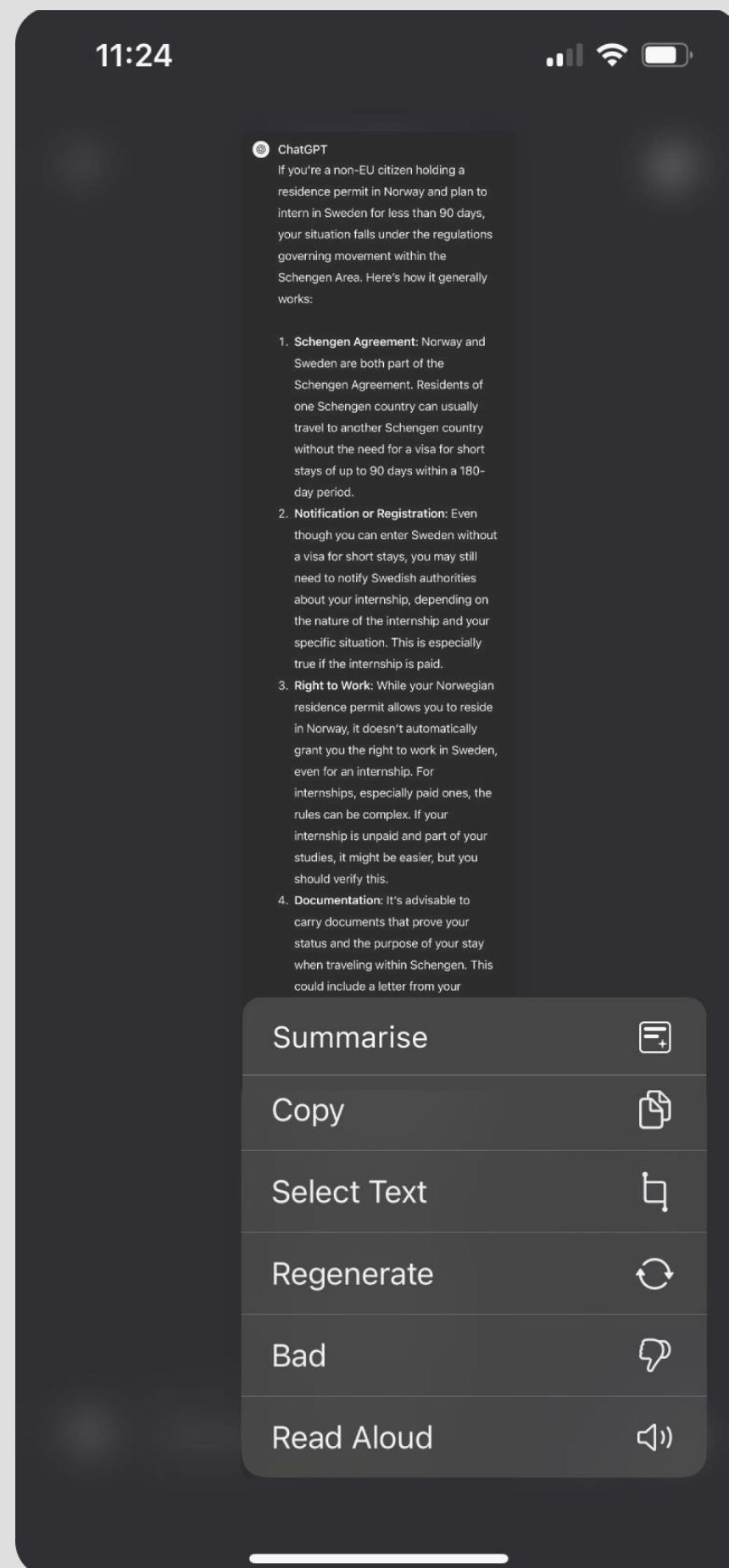
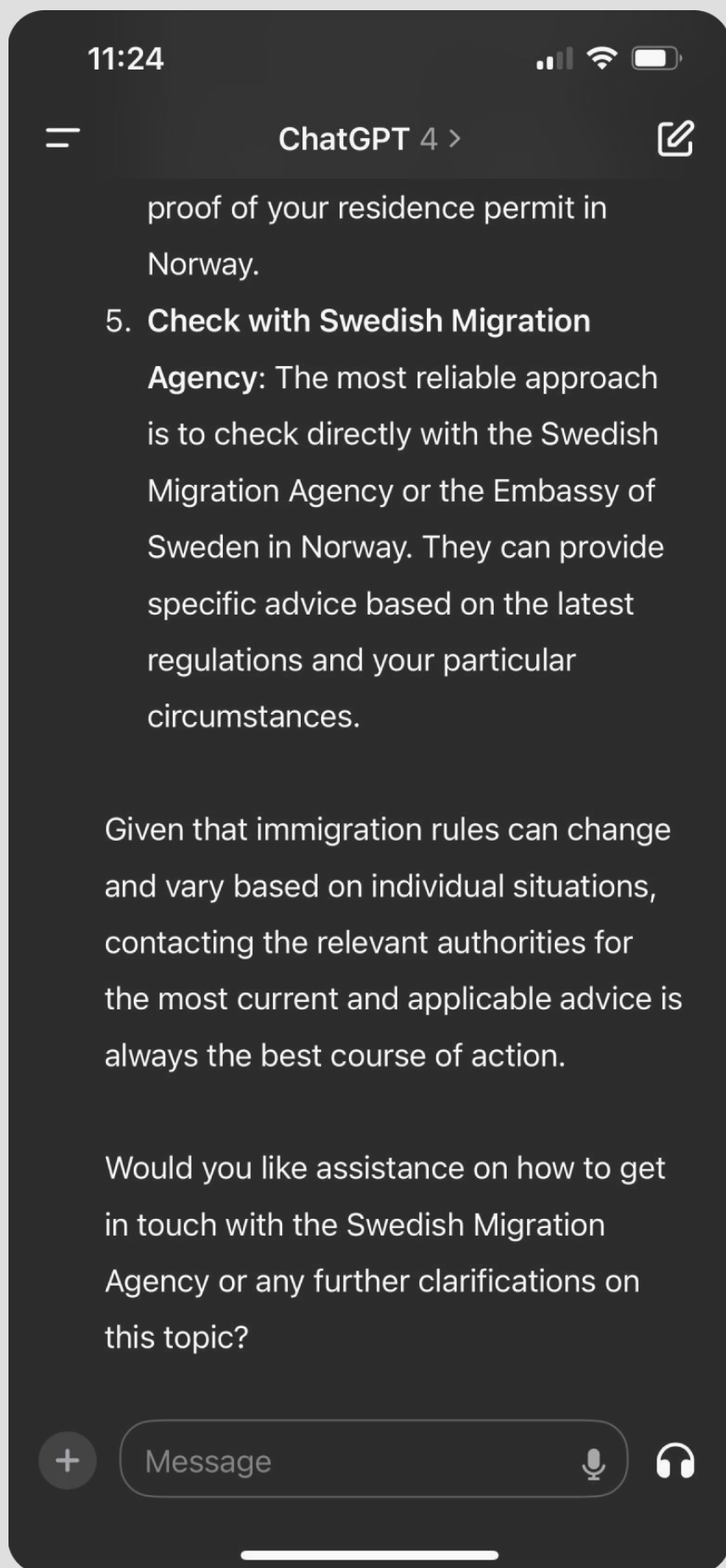
The screenshot shows a LinkedIn post creation interface for user Siddharth Kothiyal. At the top, the user's name and profile picture are visible, along with a dropdown arrow and the text "Post to Anyone". Below this is a text input field with the placeholder "What do you want to talk about?". To the right of the input field is a small icon with a plus sign and a circular arrow. Below the input field is a smiley face emoji icon. A large, white, rounded rectangular overlay is positioned in the lower-left quadrant of the post creation area. The overlay has a title "Enhance your posts with AI" and a close button (X) in the top right corner. The main text of the overlay reads "Posts can receive up to 35% more distribution and 30% more engagement." Below this text is a small image of three people and the text "Rishabh and millions of other members use Premium". At the bottom of the overlay is a prominent orange button labeled "Try Premium for NOKO". Below the button, smaller text states "1-month free trial. We'll send you a reminder 7 days before your trial ends." At the bottom of the post creation interface, there is a row of icons: a star icon followed by the text "Rewrite with AI", a photo icon, a calendar icon, a gear icon, and a plus sign. In the bottom right corner of the interface, there is a clock icon and a "Post" button.

LinkedIn Premium allows users to rewrite their captions with inbuilt AI.

Framework to explore possibilities

Contexts & Scenarios

Practical Scenarios



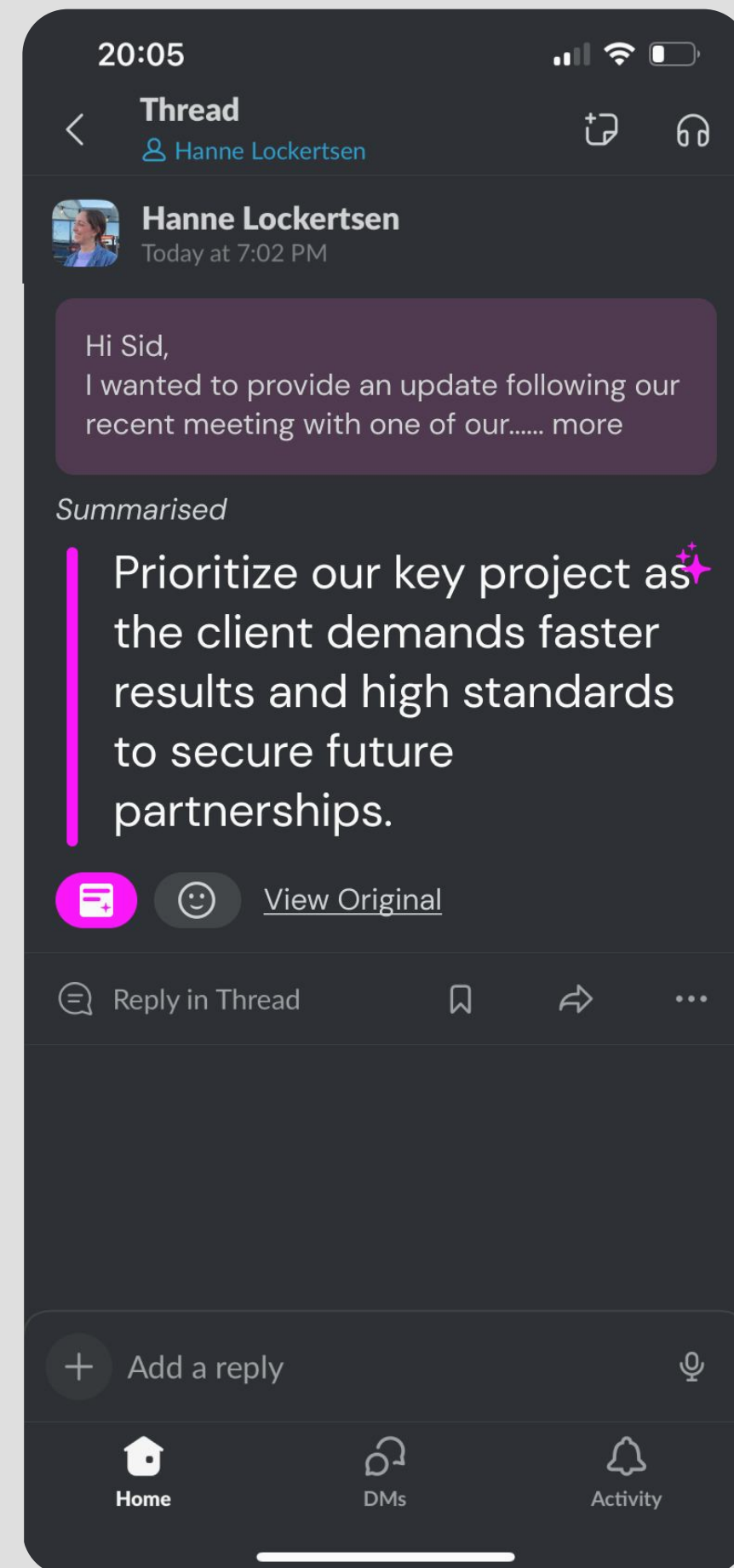
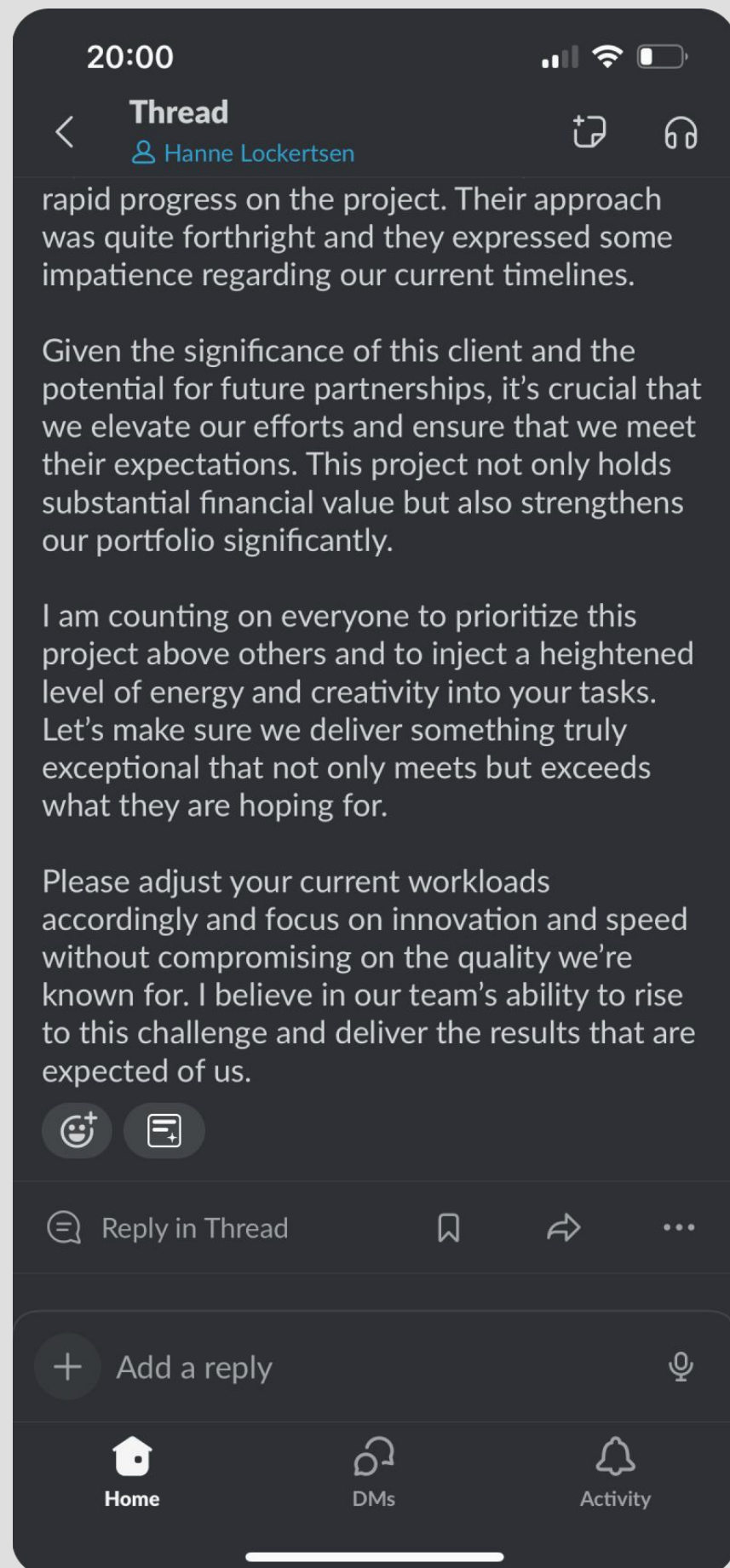
ChatGPT

Lengthy ChatGPT responses are a common scenario where the interface produces too much text to build up to the main response. The summary tool can sum up the response to core detail.

Framework to explore possibilities

Contexts & Scenarios

Practical Scenarios



Slack

Slack messages or emails might come with lots of formalities and fluff- summary can boil it down to essentials

Framework to explore possibilities

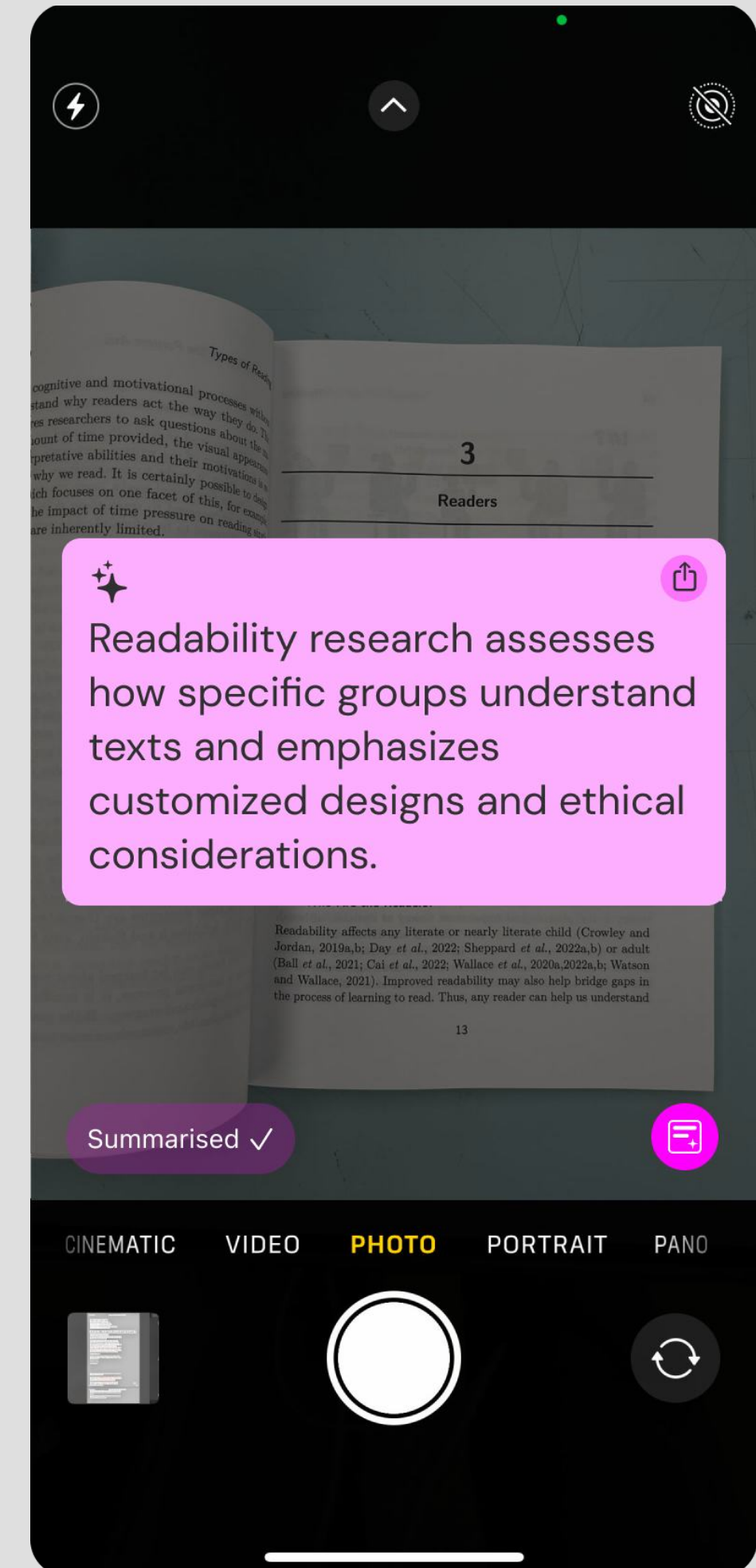
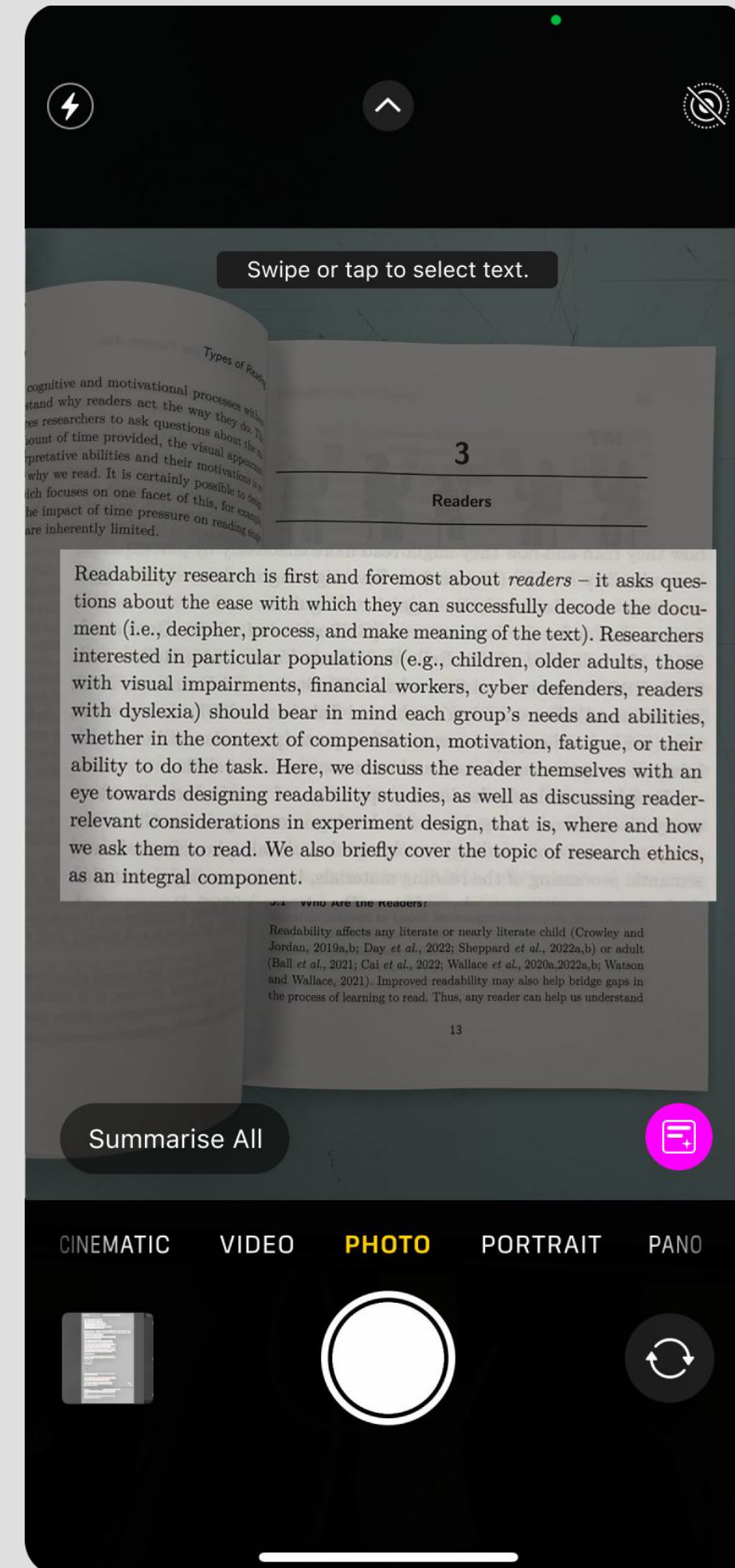
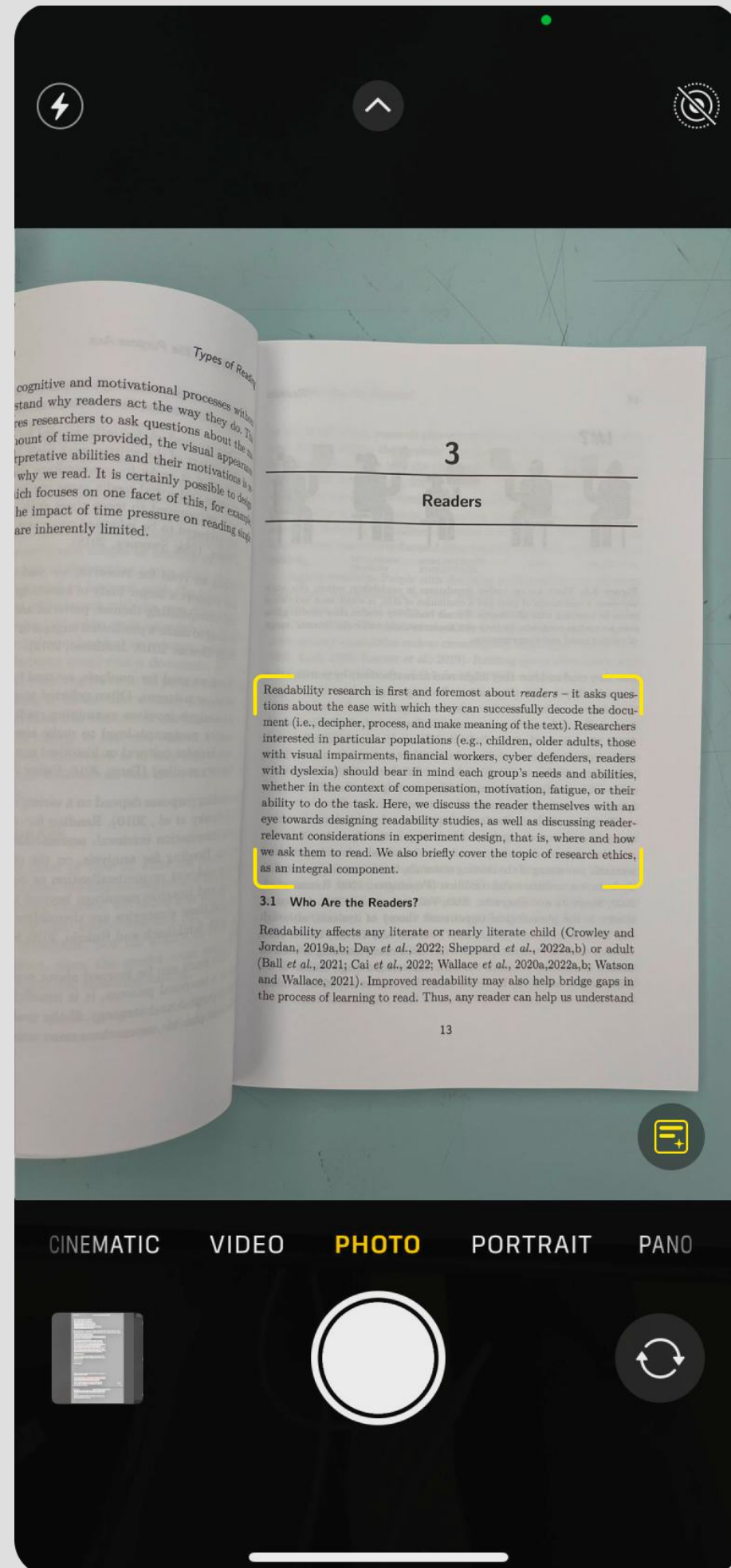
Contexts & Scenarios

Practical Scenarios



Physical Text

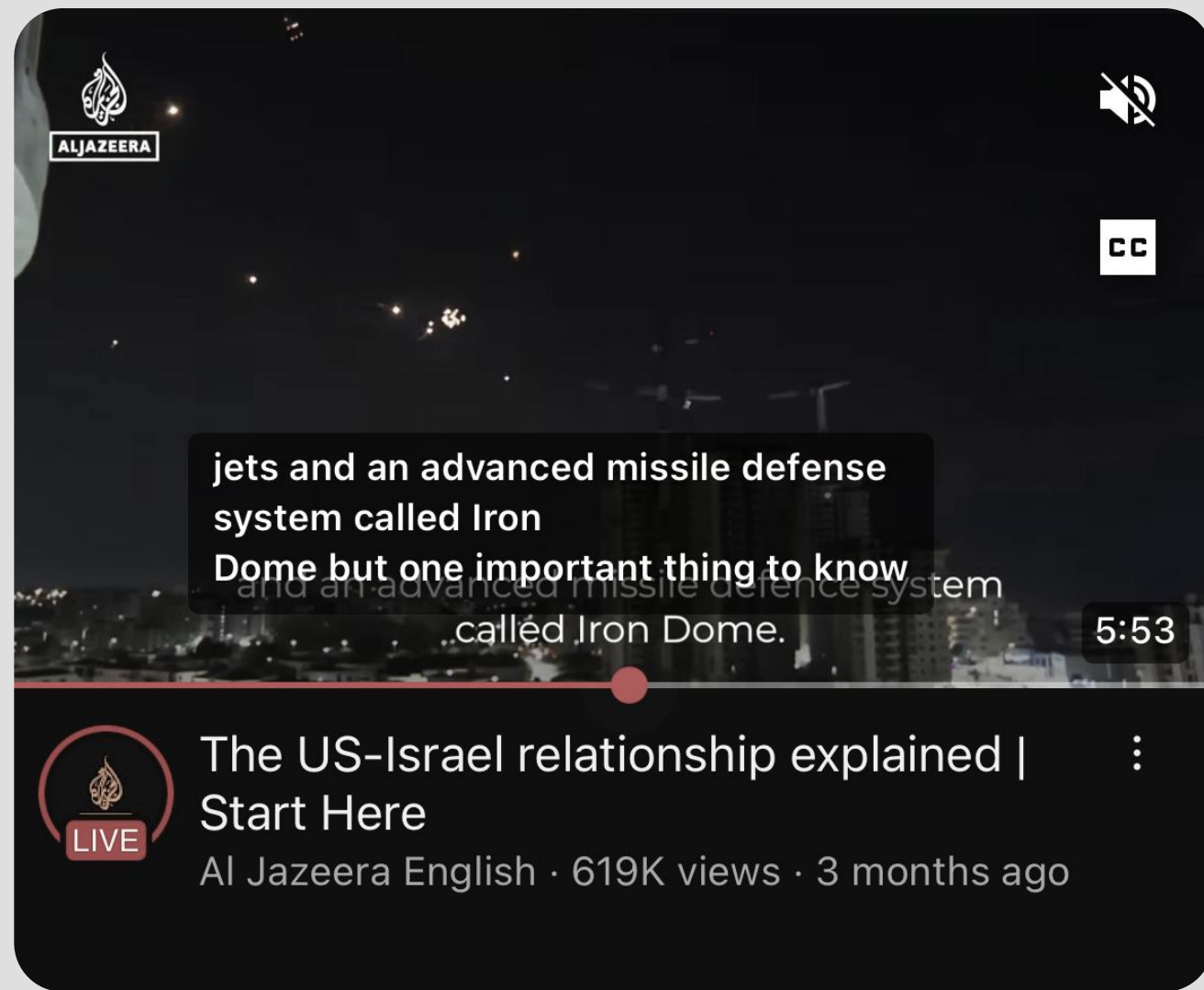
Scanning text with the camera is another opportunity to summarise text from a physical space like a book.



Framework to explore possibilities

Contexts & Scenarios

Practical Scenarios



Users can turn on sound and subtitle in YT thumbnail



Users can scrub within timeline along with a thumbnail preview upon long pressing the thumbnail

Webpage thumbnail in browser

In contexts like youtube, thumbnails provide slimmed down and essential functionalities.

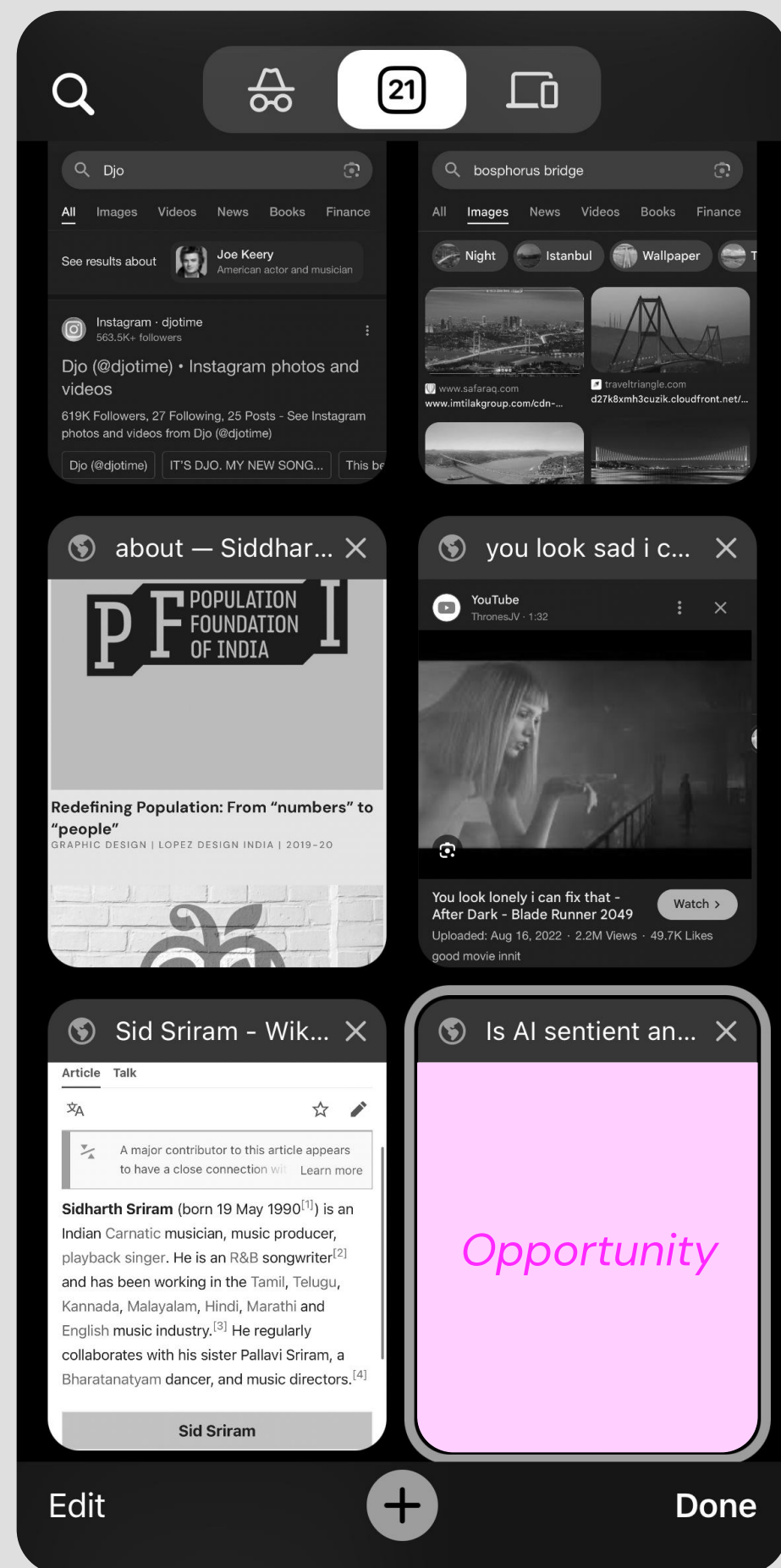
Framework to explore possibilities

Contexts & Scenarios

Practical Scenarios

Thumbnail view of webpages on Google Chrome

Long pressing to autoscroll or scrolling manually over thumbnail



Webpage thumbnail in browser

Thumbnail views for webpage tabs in browsers like Google Chrome is another opportunity. Summaries within such thumbnail view can transform a passive browsing experience into an active reading scenario, where readers can review a summary before deciding to engage with the full text.

Framework to explore possibilities

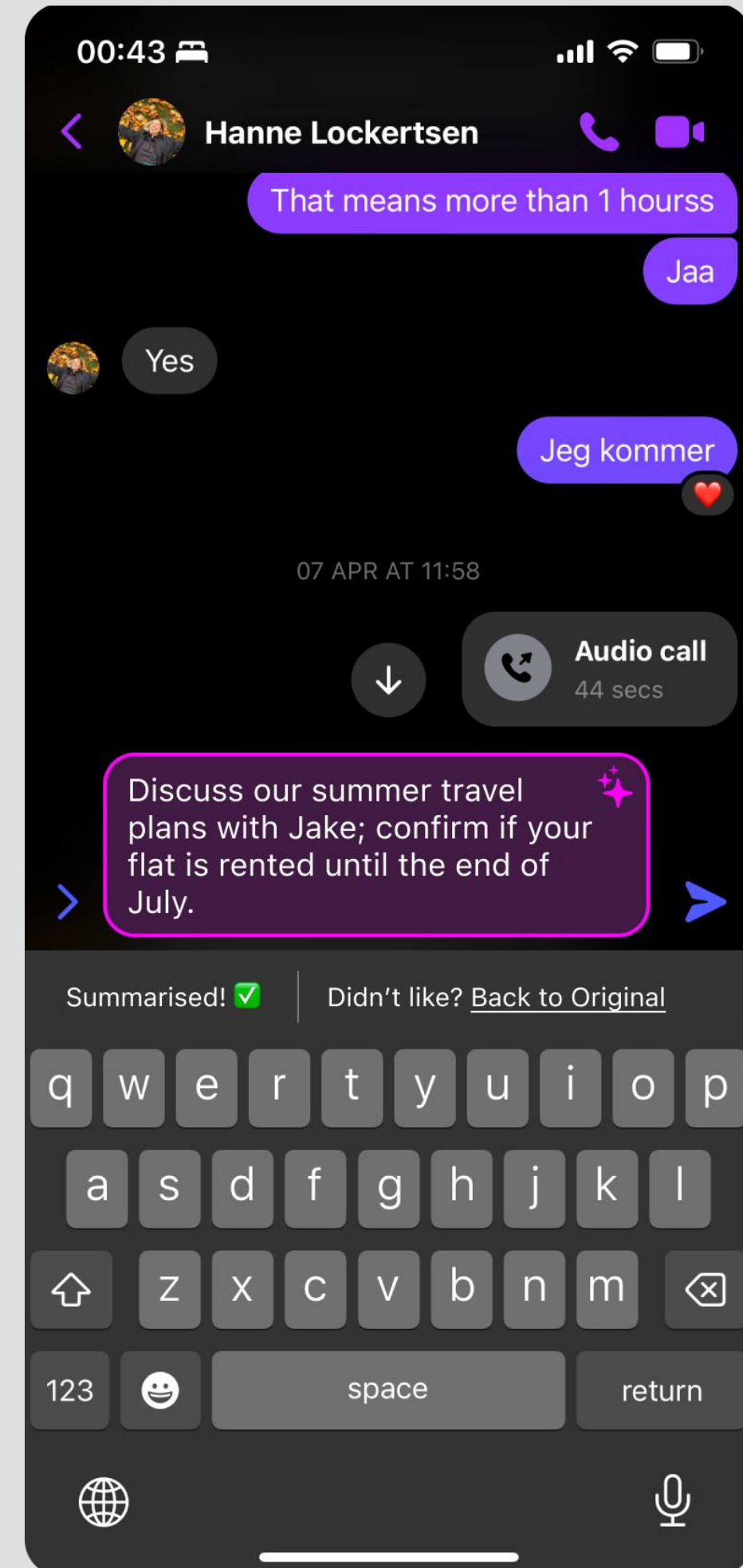
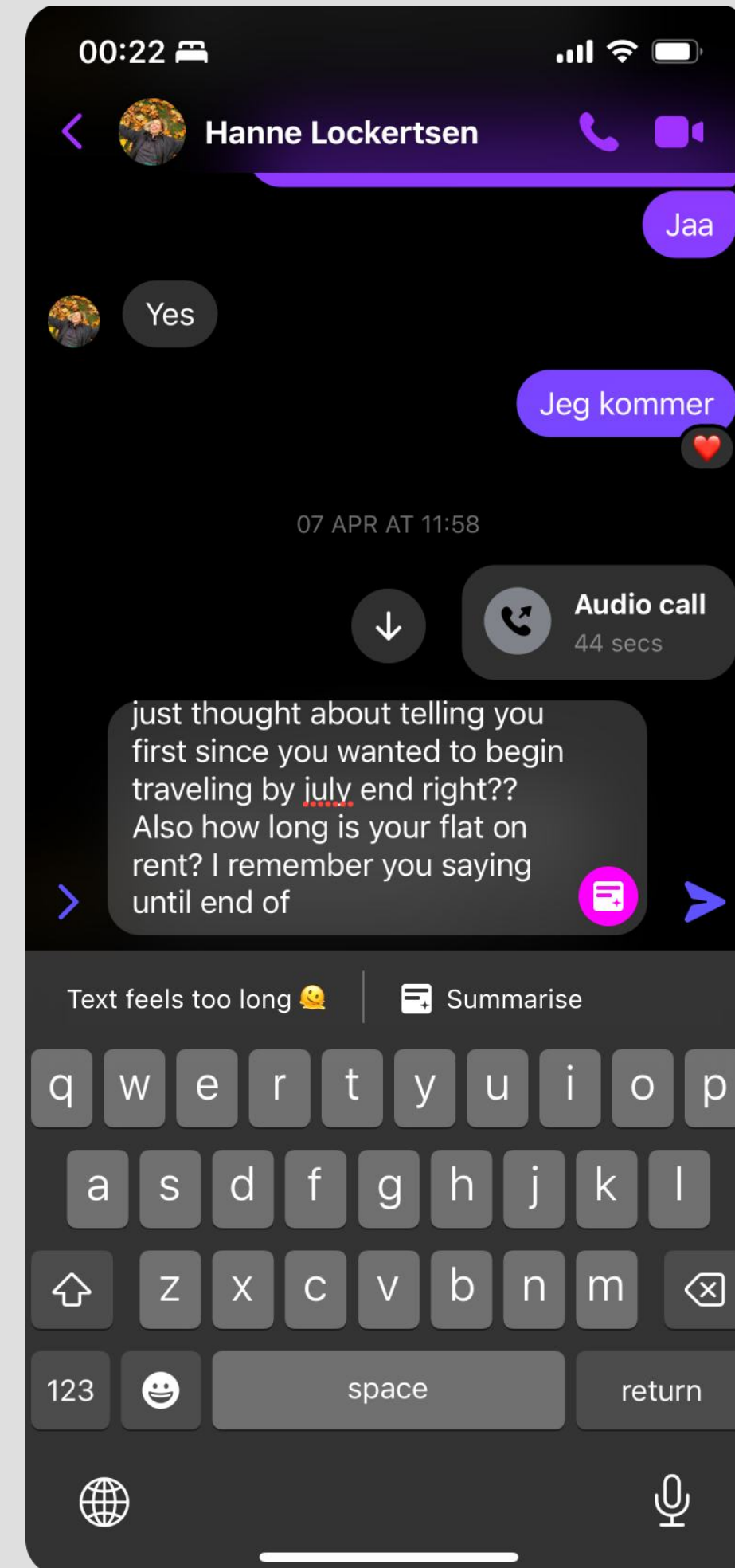
Contexts & Scenarios

Provocative Scenarios

Certain other scenarios are provocative to challenge the overuse of this function and raise questions about the context of usage.

Writing tool

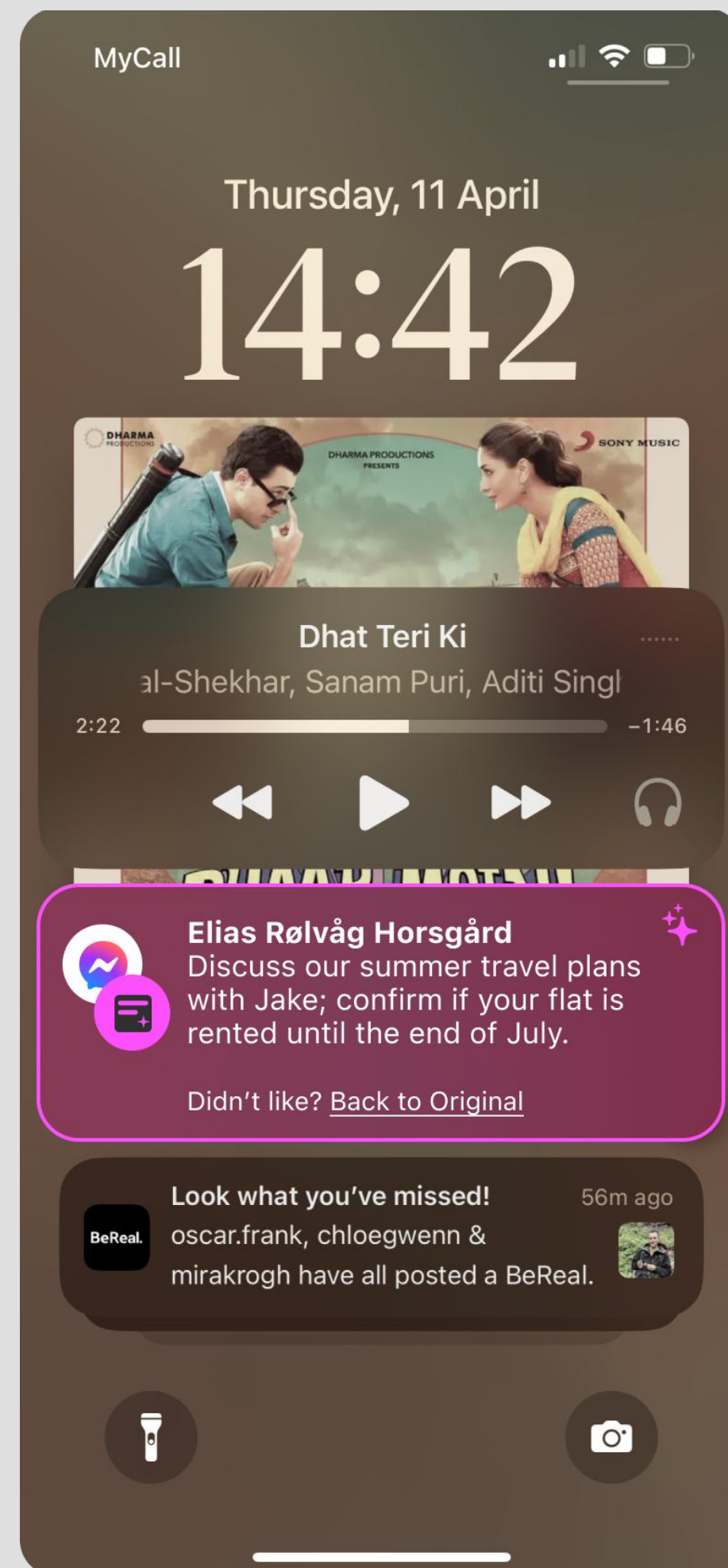
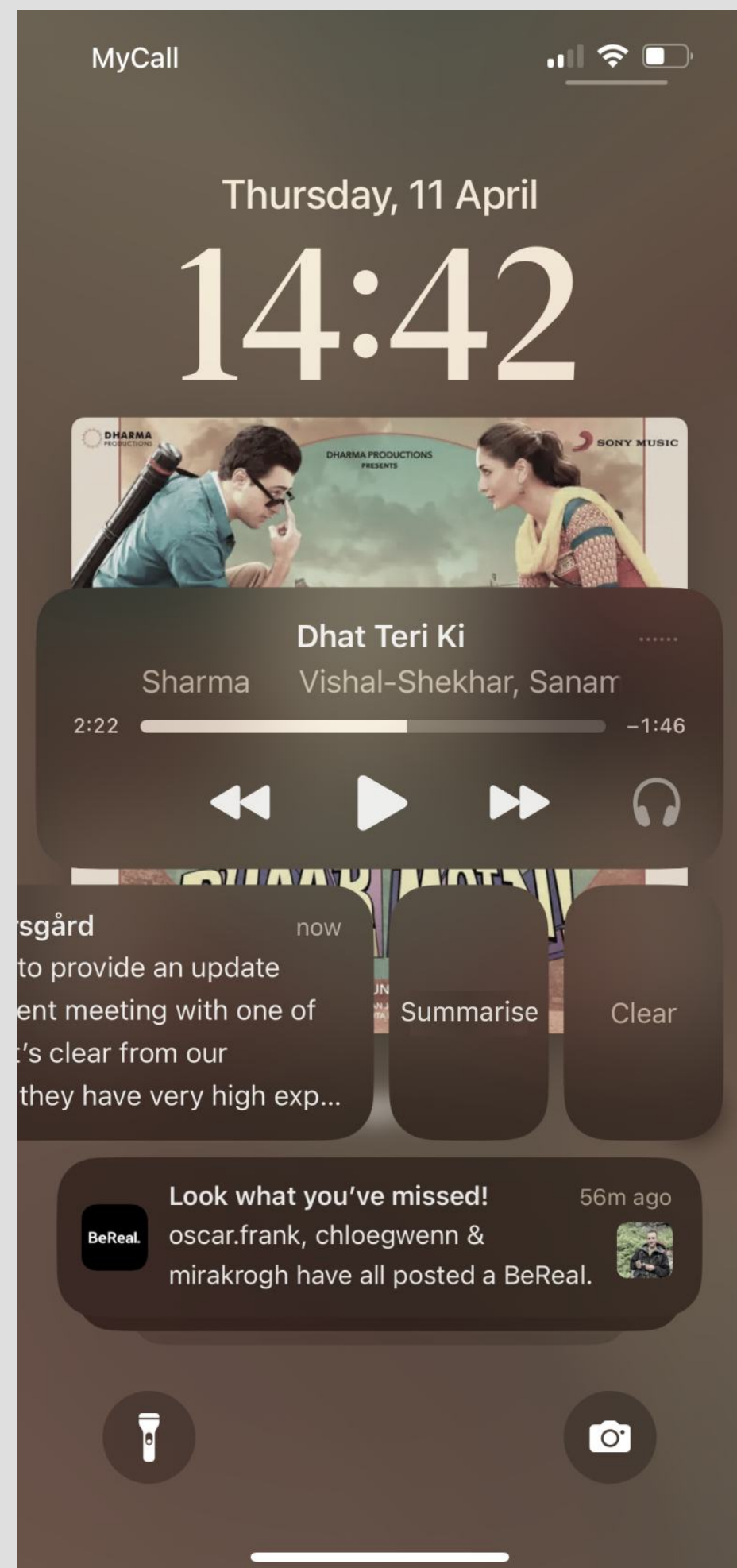
While you are typing- OS can pick up on your language to suggest a summarised version. Just like autocorrect, a summary can enhance how you make sentences and sense of your thoughts.



Framework to explore possibilities

Contexts & Scenarios

Provocative Scenarios



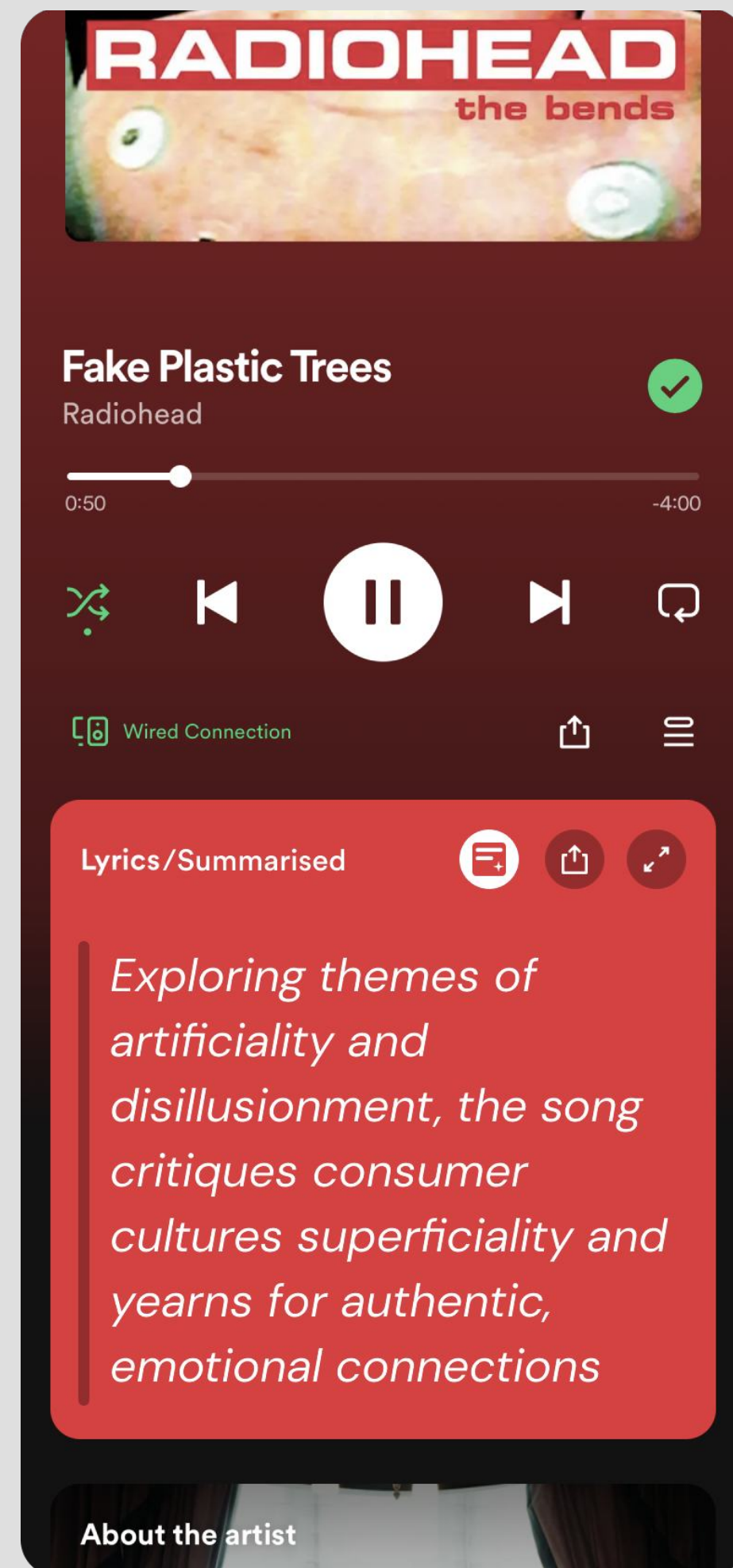
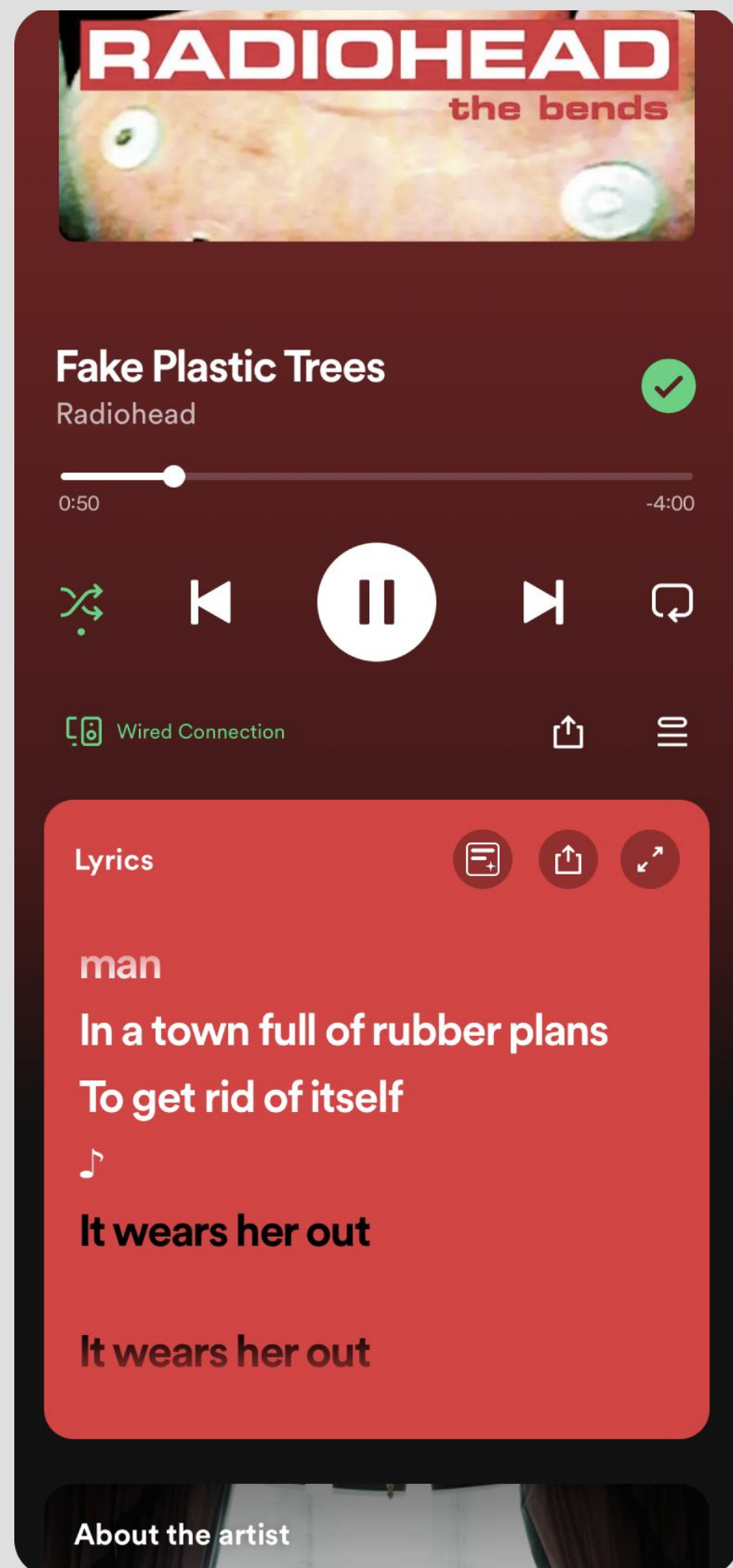
Notification

Often, we only glance at notifications partially. If the message is too lengthy, it can leave us restless, wanting to know more. What if you could receive summaries of such long notifications?

Framework to explore possibilities

Contexts & Scenarios

Provocative Scenarios



Spotify Song Lyrics

It can even extend to art where song lyrics can be interpreted on Spotify as a summary. This can be very useful to explore songs in foreign languages.

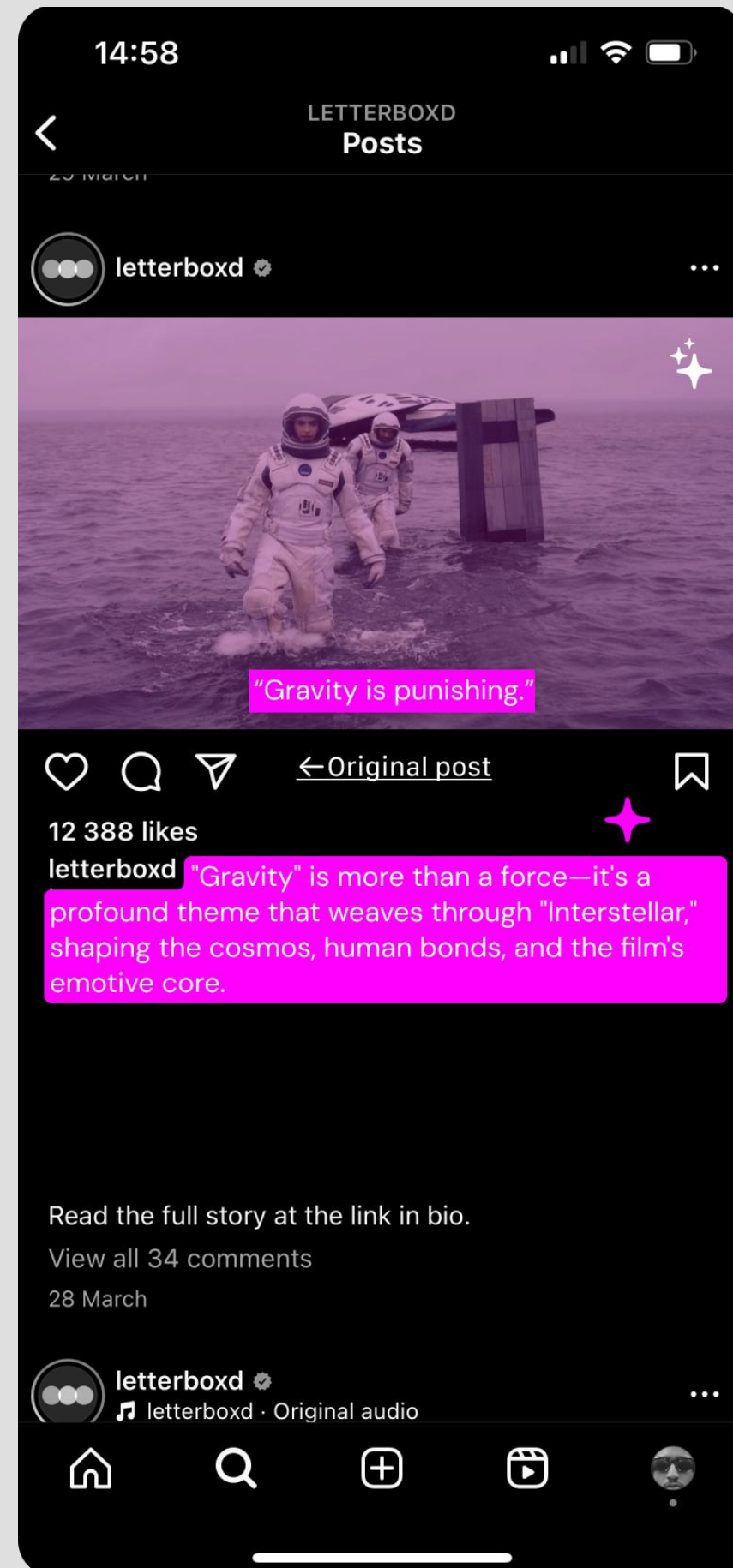
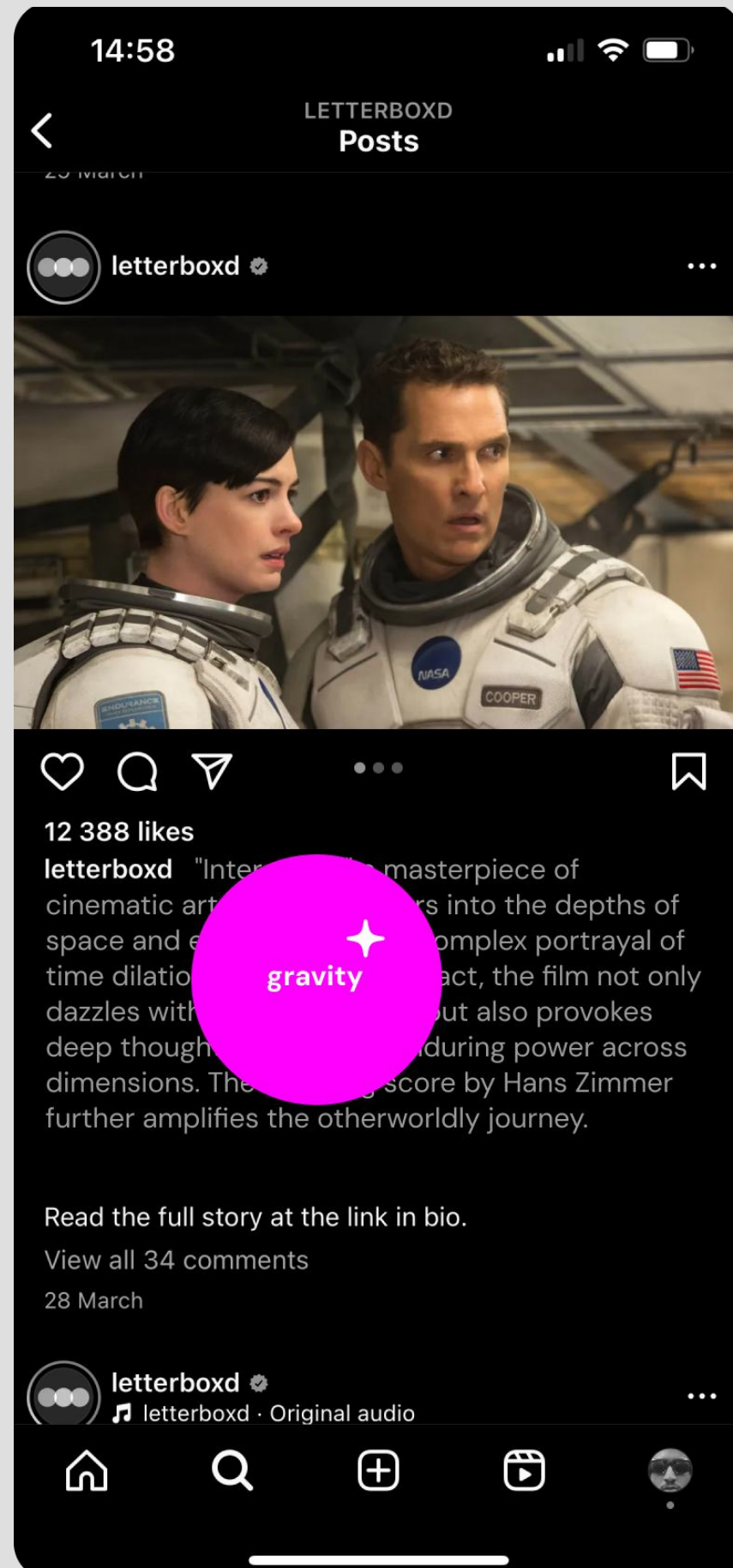
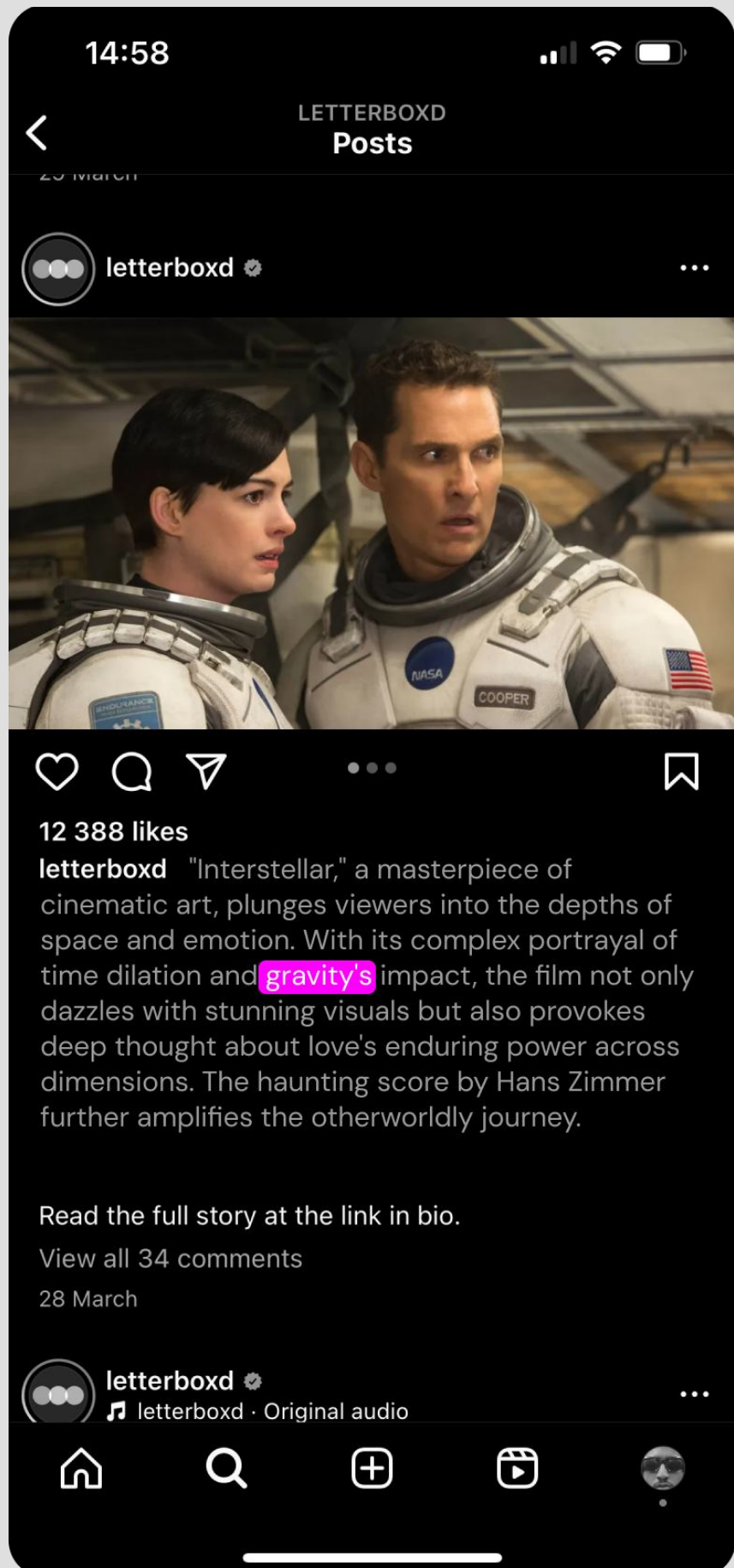
Framework to explore possibilities

Contexts & Scenarios

Provocative Scenarios

Keyword in instagram caption
invite user to summarise

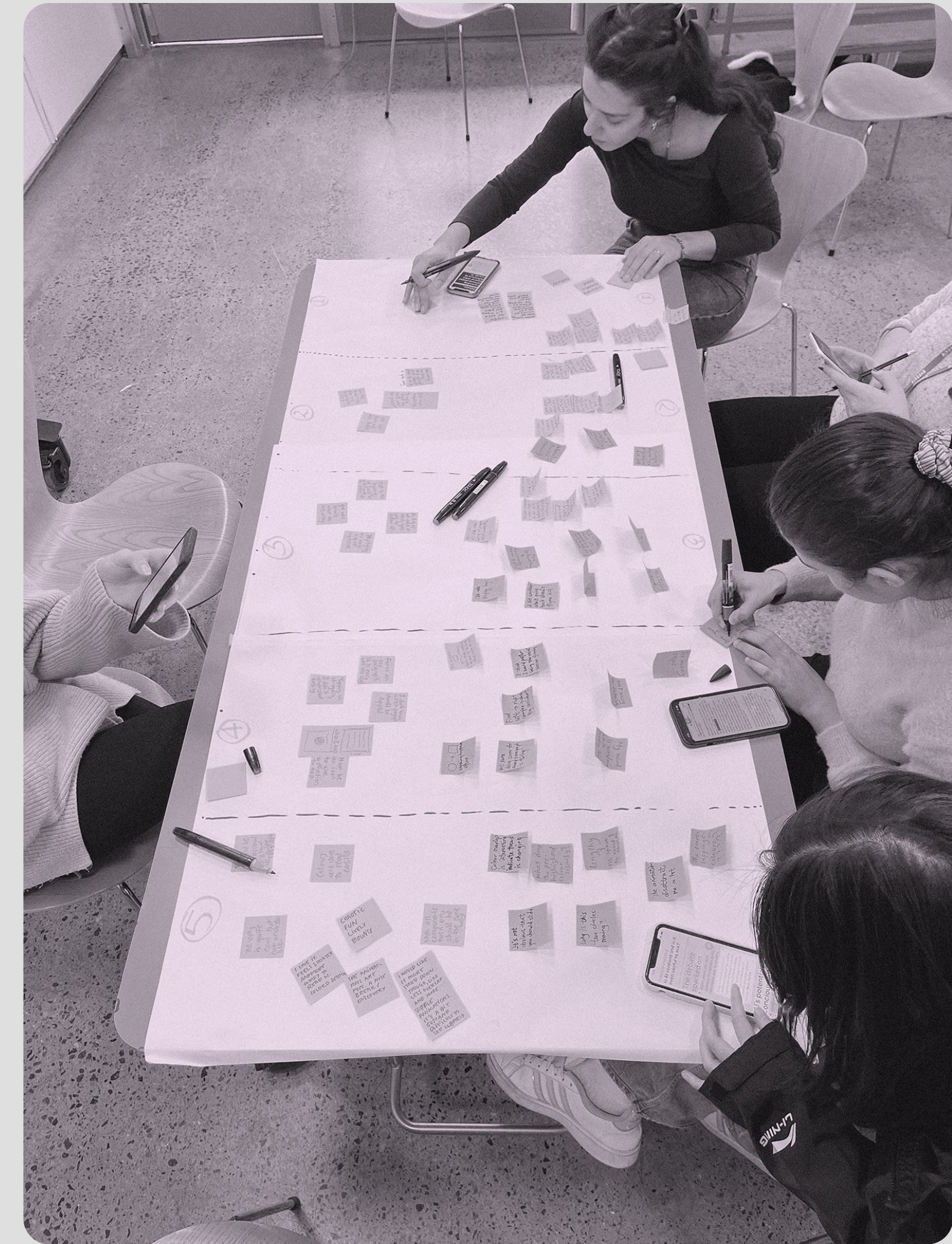
Entire post gets reinterpreted
based on the keyword



Social Media posts

In social media, content is made hyper-personalised for users. What if posts can summarised based on a keyword from the caption? This sketch is an example from a social media review about "Interstellar movie".

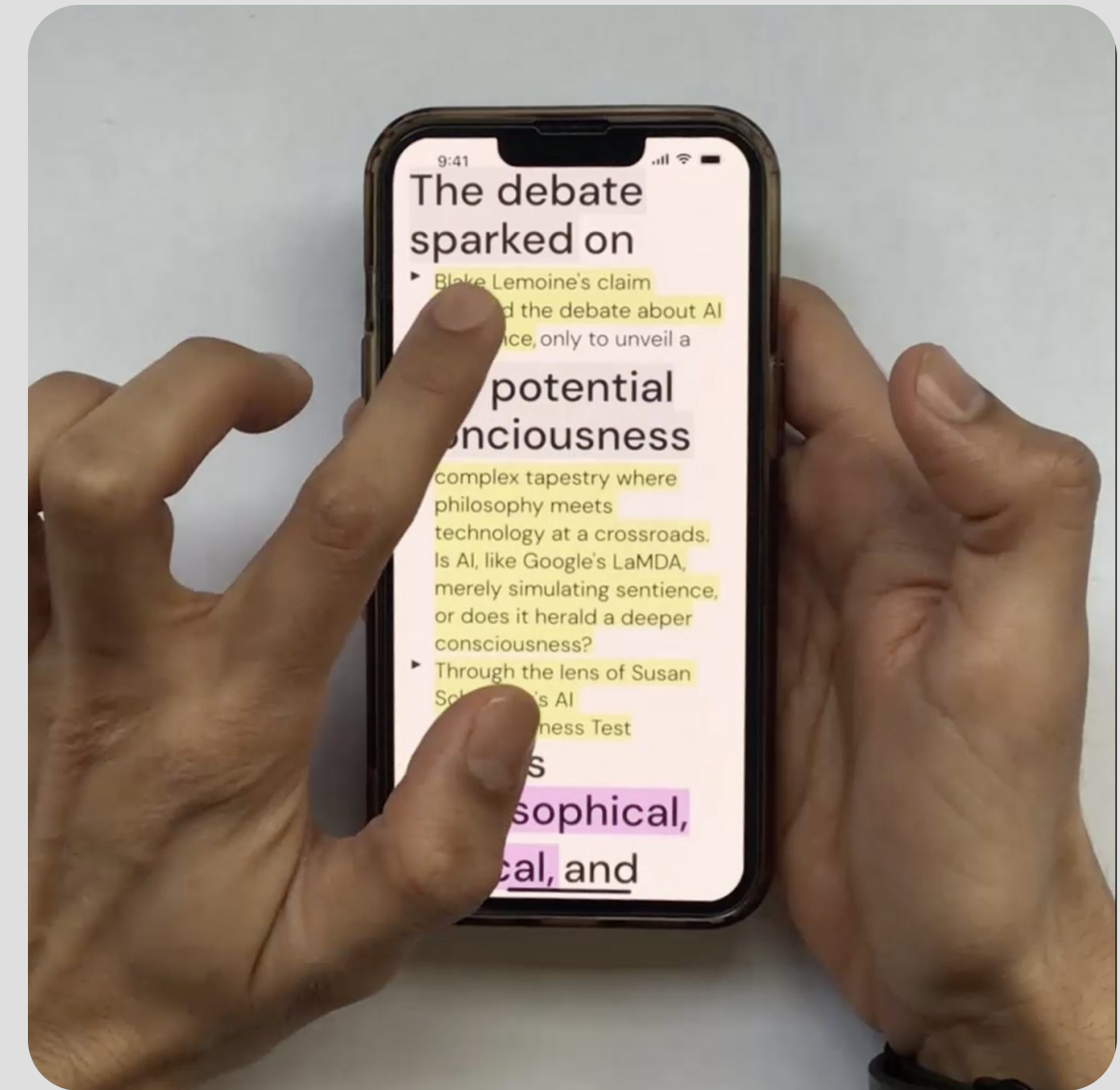
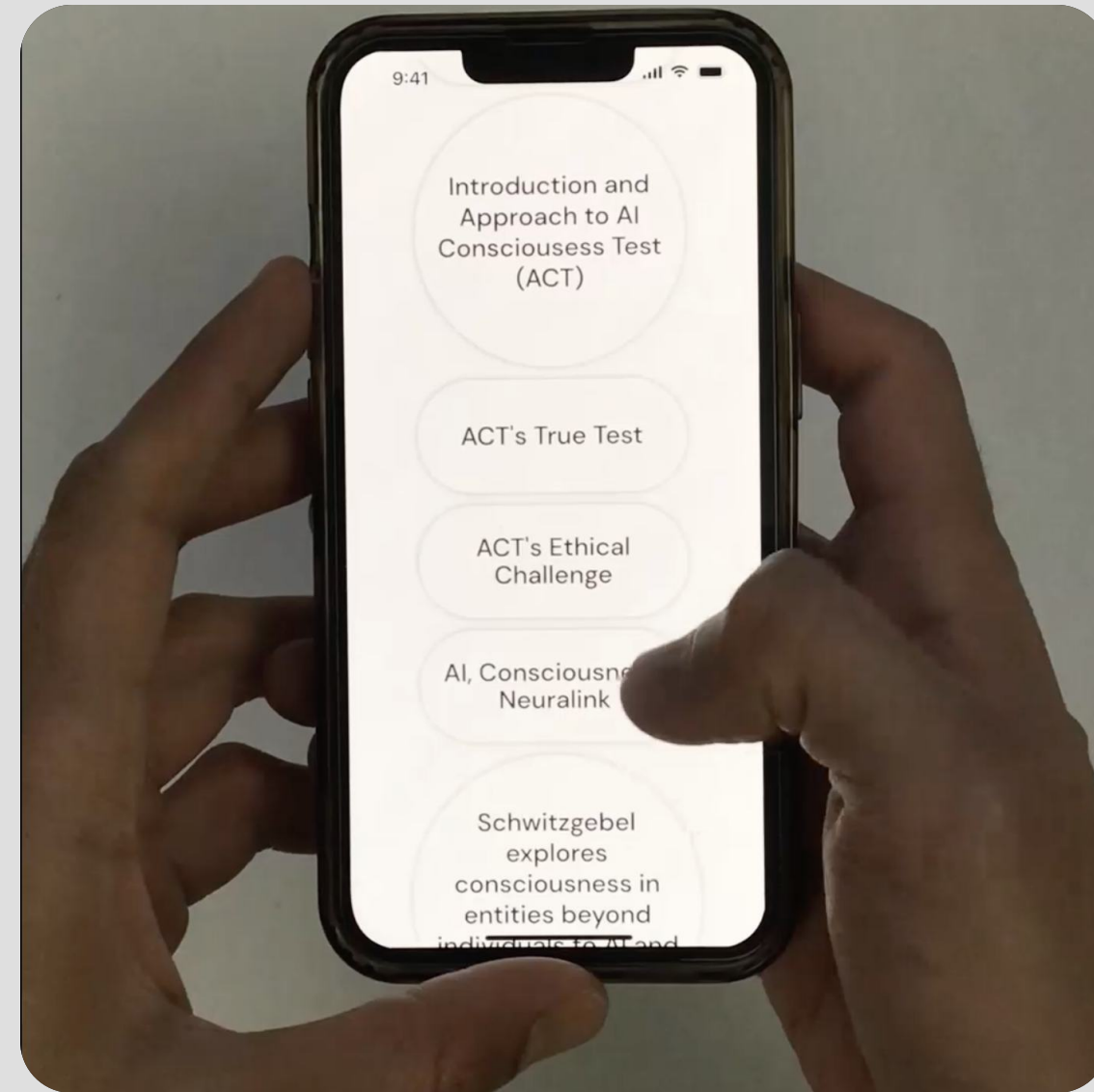
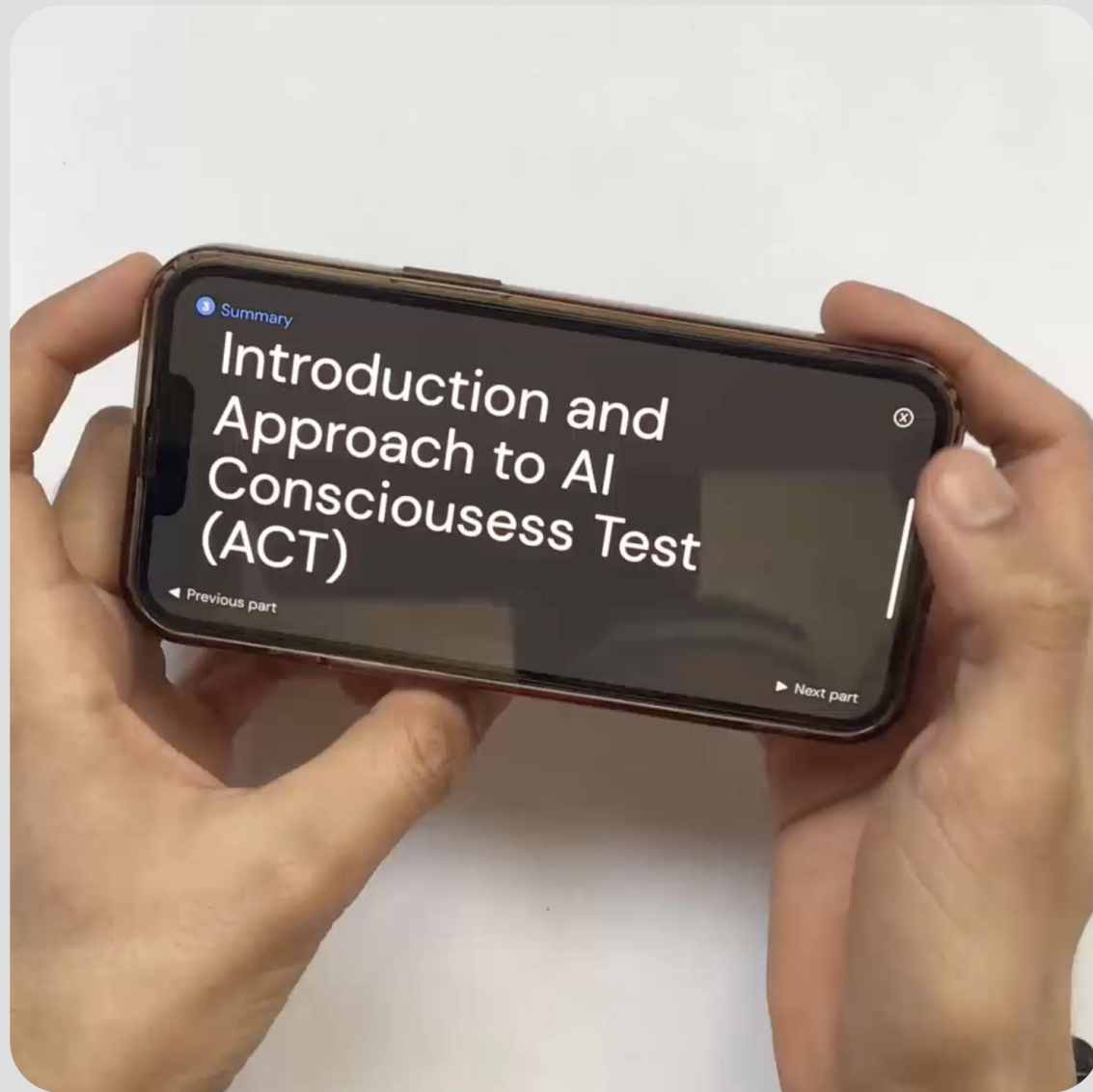
User Testing & Expert reviews



Testing Experience prototypes

I tested 5 figma prototype with 5 readers who volunteered based on their interest in the topic of AI and sentience.

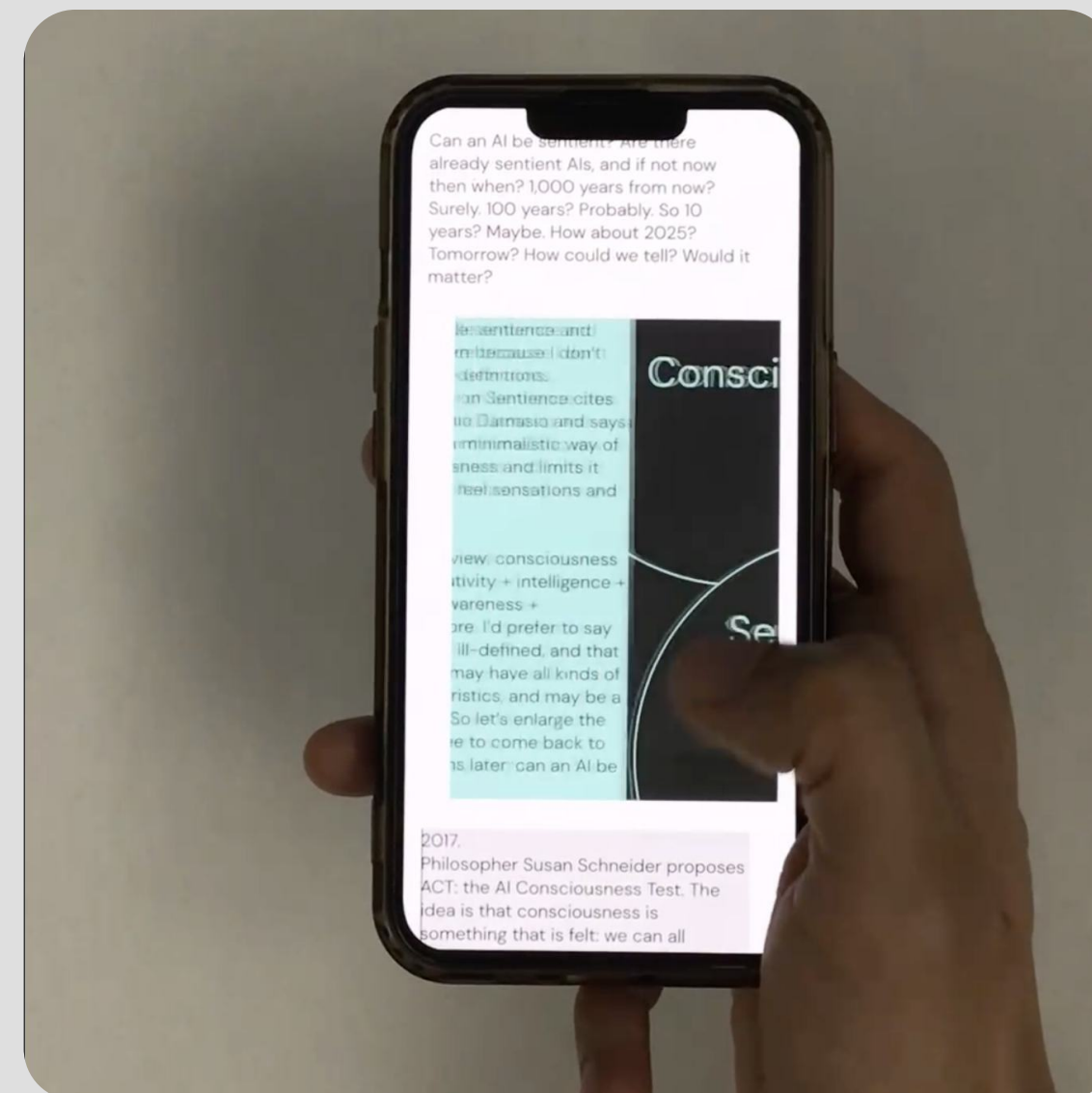
User Testing & Expert reviews



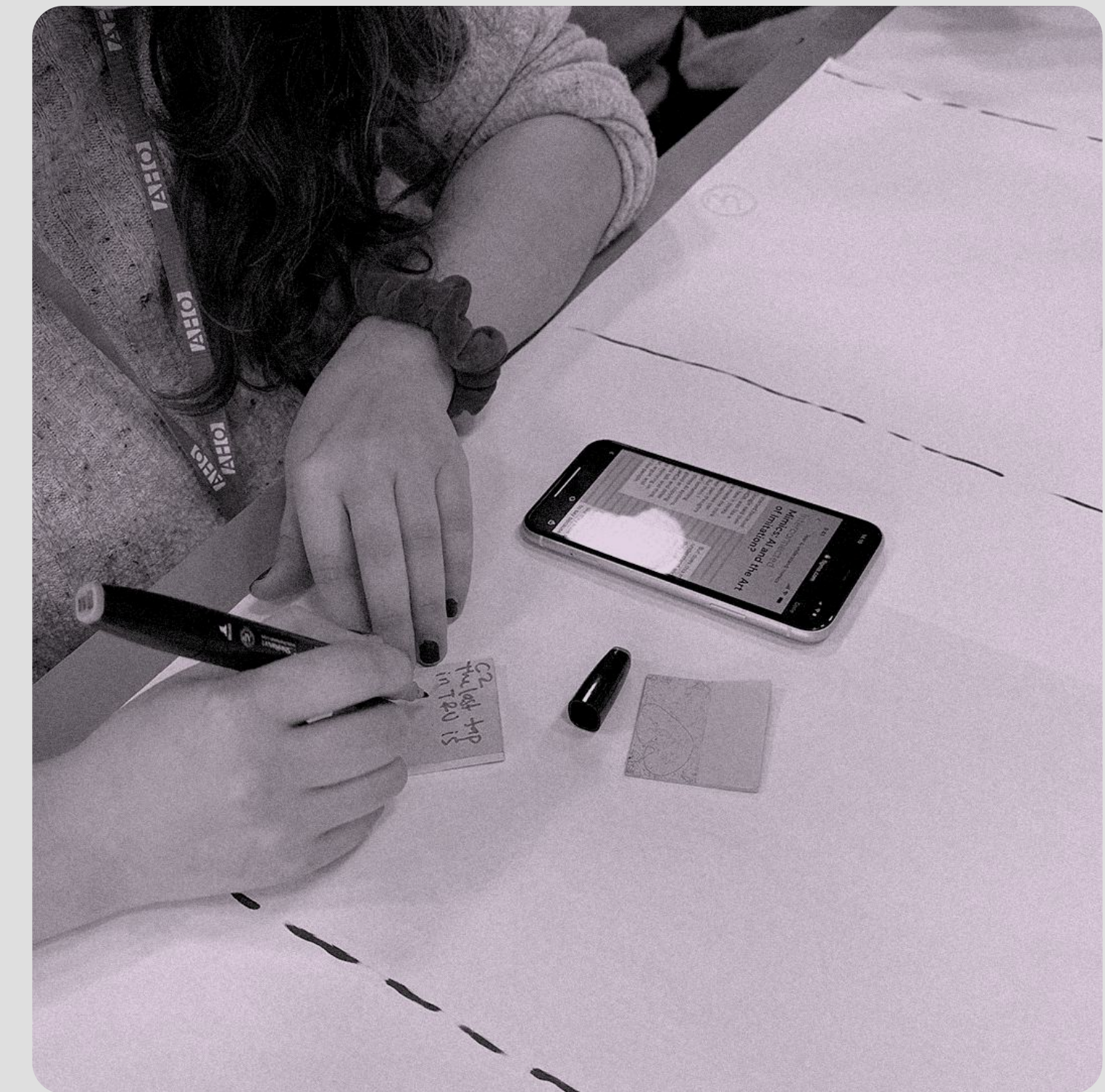
Testing Experience prototypes

The reading prototypes were based on content from Matt Webb's article titled "Is AI sentient and is it even useful to ask?" and were based on:

- Summarising
- Summarising with level
- Expanding/ Unfolding text
- Overarching view of topics



User Testing & Expert reviews



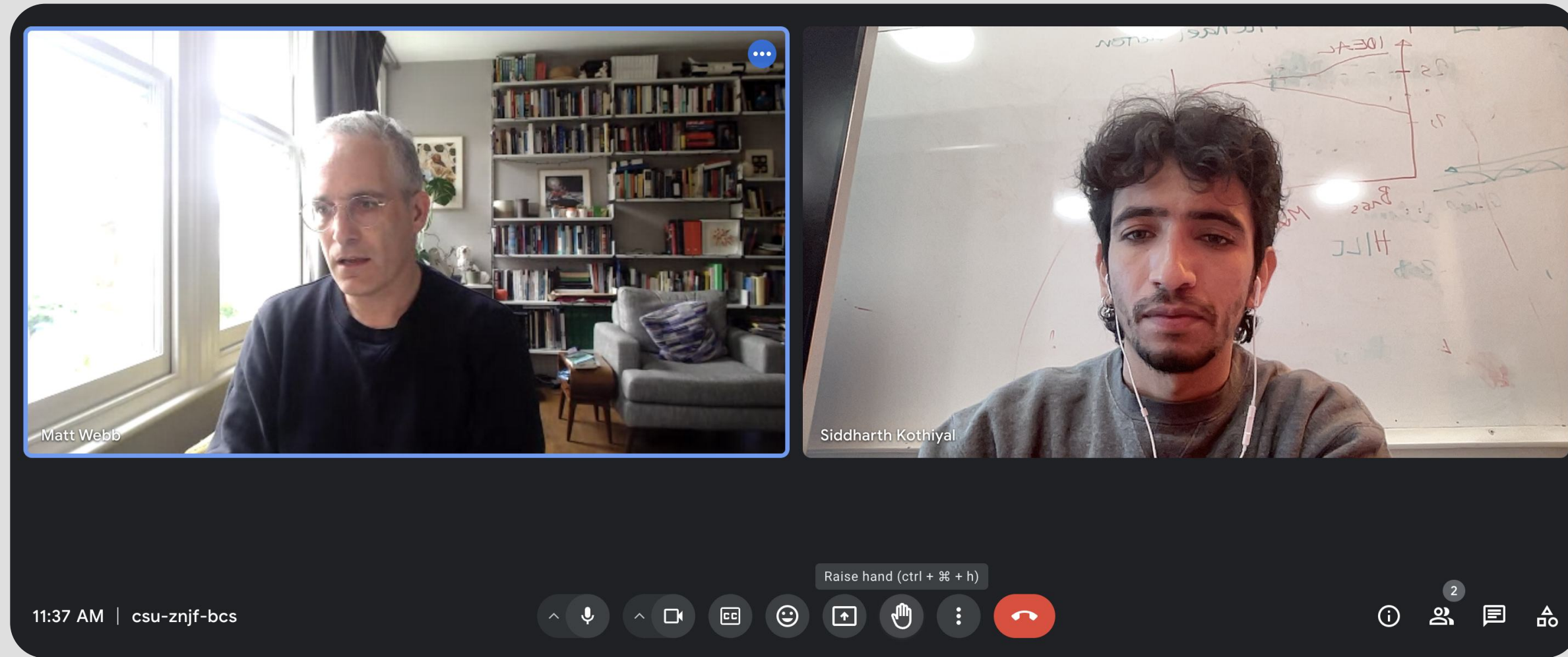
Each reader went through five reading prototypes based on the same article. They expressed their preferences and struggles for each. I also individually interviewed them ask them about their experience of comprehending the information in the text based using the prototypes.

User Testing & Expert reviews

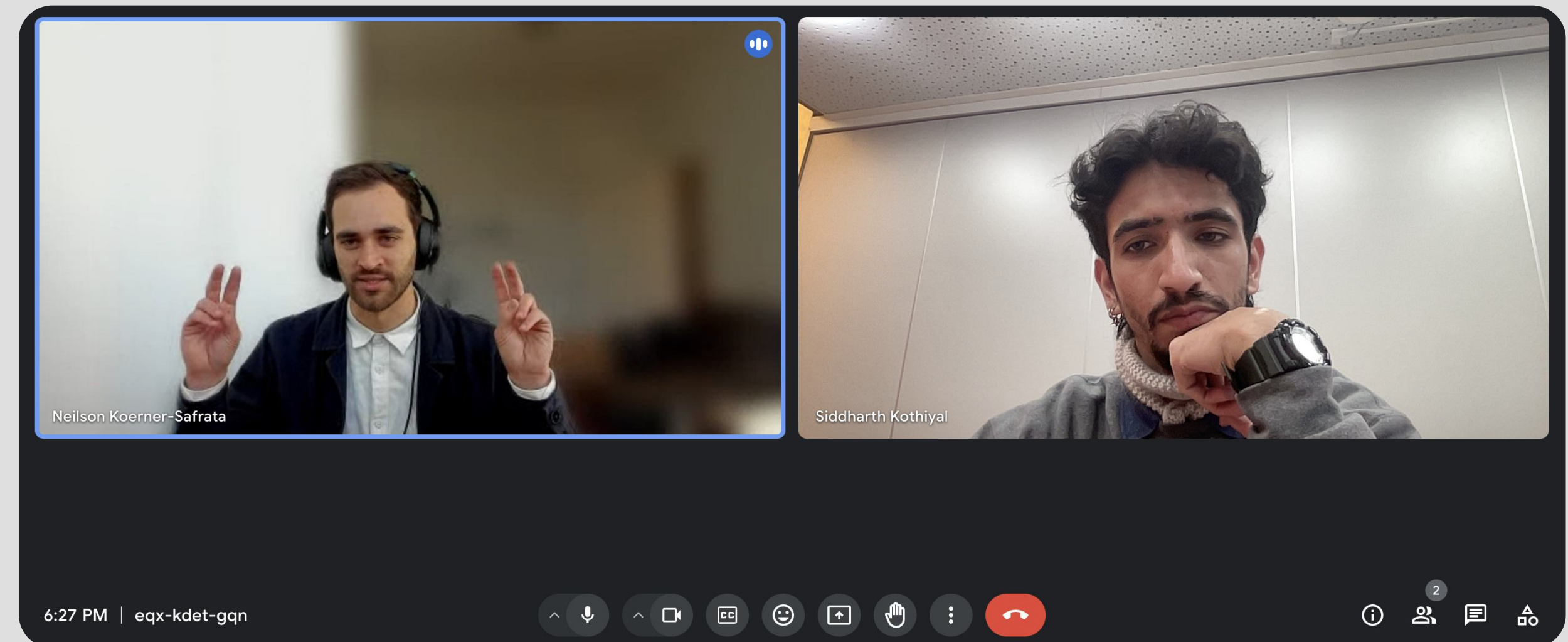
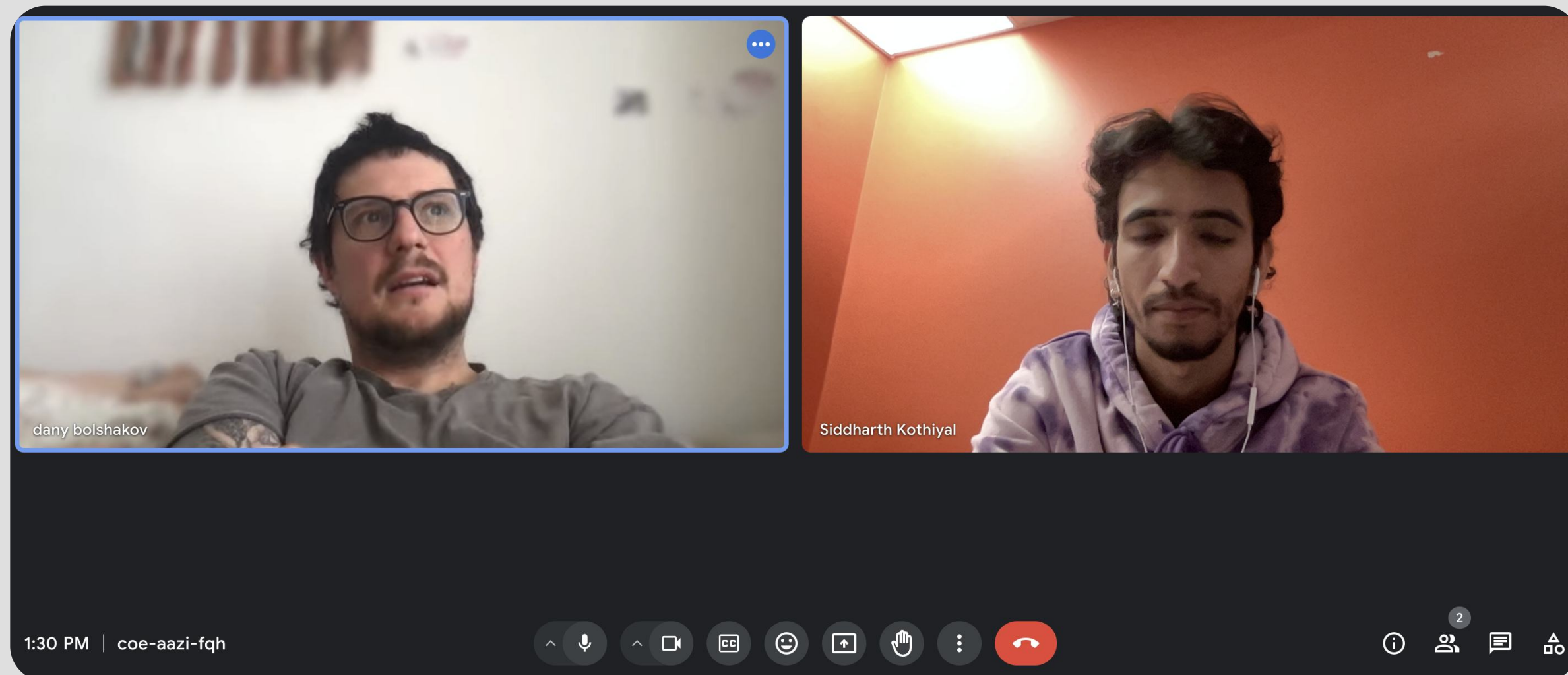


After collecting feedback, I went through them to annotate my observations and reflections which helped me build patterns from the raw experience that readers shared with me.

User feedback & Expert reviews



I consulted experts to gain a broader perspective on my observations and reflections from user testing. Their insights helped me connect the dots and provided guidance on how to proceed.



User feedback & Expert reviews

Experts namely, Caterina Forno Ríos and Theo Zamudio-Tveterås tested my prototypes in person, providing detailed feedback and broader reflections.



User feedback & Expert reviews

Matt Webb 🌸🌻🌺 @genmon · Apr 4
I love this!

Could you display it as an outline maybe, or use that kind of disclosure triangle affordance?

Looking at your demo reminds me of the procedural universe outliner/explorer Nested

orteil.dashnet.org/nested

Simon Archer Dreyer · 1st
Digital Product Designer @ Student at Oslo School of Architecture & ...

I love this! Now really curious to see how it would be the other way around, expanding outwards instead!

Insightful · 🧠 2 | Reply · 3 Replies

Fredrik Matheson (He/Him) · 1st
Leads design at Aneo :: Runs IxDA Oslo

Siddharth Kothiyal nice work! WRT showing more detail, check out Ted Nelson's "StretchText" concept from 1967.

<https://en.m.wikipedia.org/wiki/StretchText>



StretchText - Wikipedia
en.wikipedia.org

Insightful · 🧠 1 | Reply

Fwd: Sid-Reading Project Masters Thesis (followup request) Friday, 12 April 2024 at 12:39

SK Siddharth Kothiyal <Siddharth.Kothiyal@stud.aho.no>
To: Mosse Sjaastad

Looks great Sid! Nice work. My only critical response is in the graphical balance between UI language and typographic language. The material begins as typographic readable language and as you "zoom out" semantically, the text changes to fit the tappable buttons styles SwiftUI offers for user interface language. I wonder whether graphically more could be learned from the way typography handles pull quotes or abstracts in ambitious ways. It's a tricky balance as you want to communicate that the tapping will drive the zoom, but don't want to create something which isn't centred around words anymore.

There's some of that happening in the prototype you show in landscape mode, but because of the awkwardness of the rotation and the relationship between the large white on black and pink highlighted text that has been tapped is so abrupt, you don't gain the sense of zooming, it just switches abruptly.

Anyhow! Great work! looking forward to seeing more
Cheers
Jack

Some experts gave digital feedback on prototypes I personally shared, while others commented on prototype videos I posted on LinkedIn and X. Their observations, centred around design conventions, informed my concrete design decisions.

Conclusions

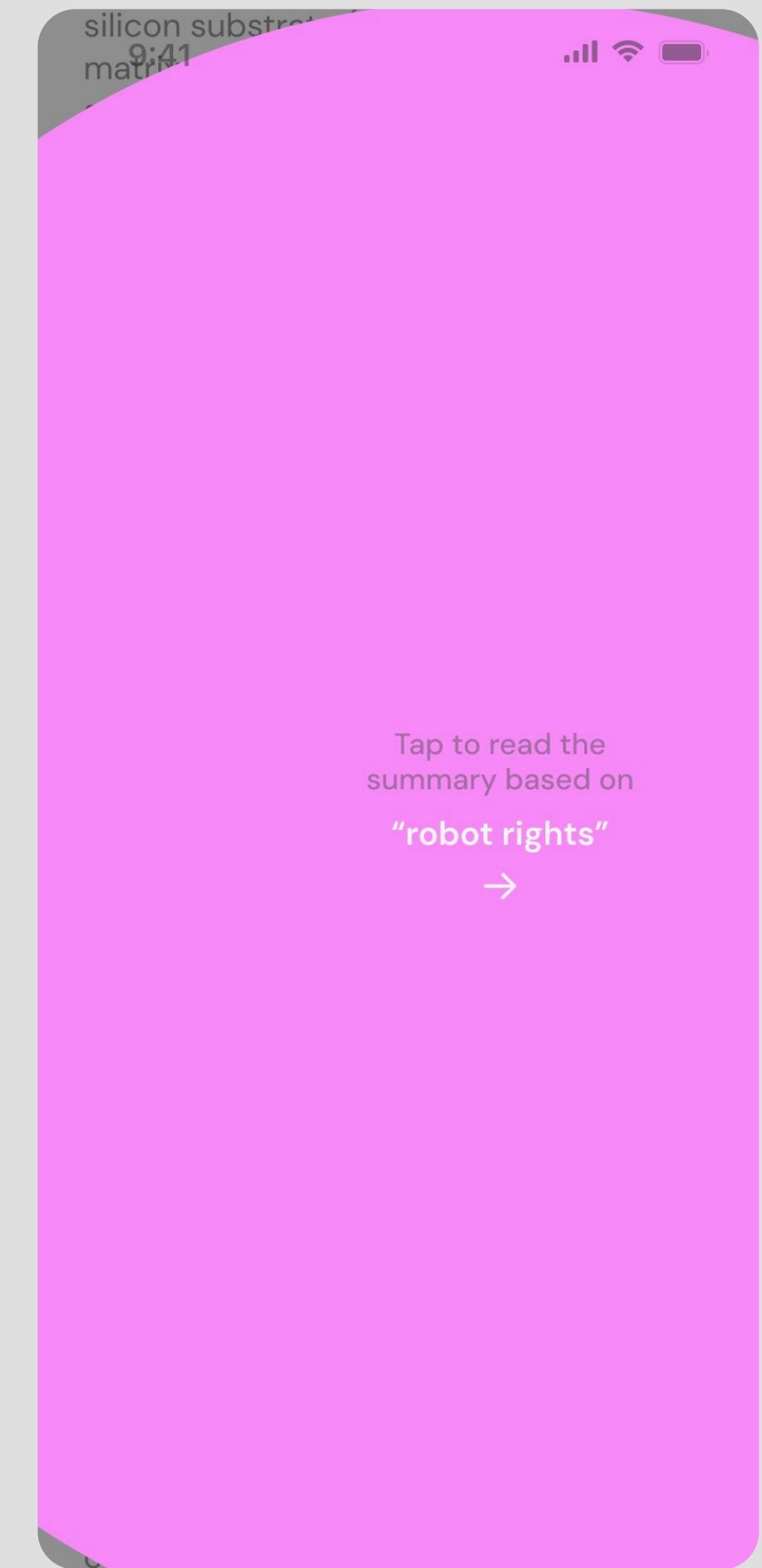
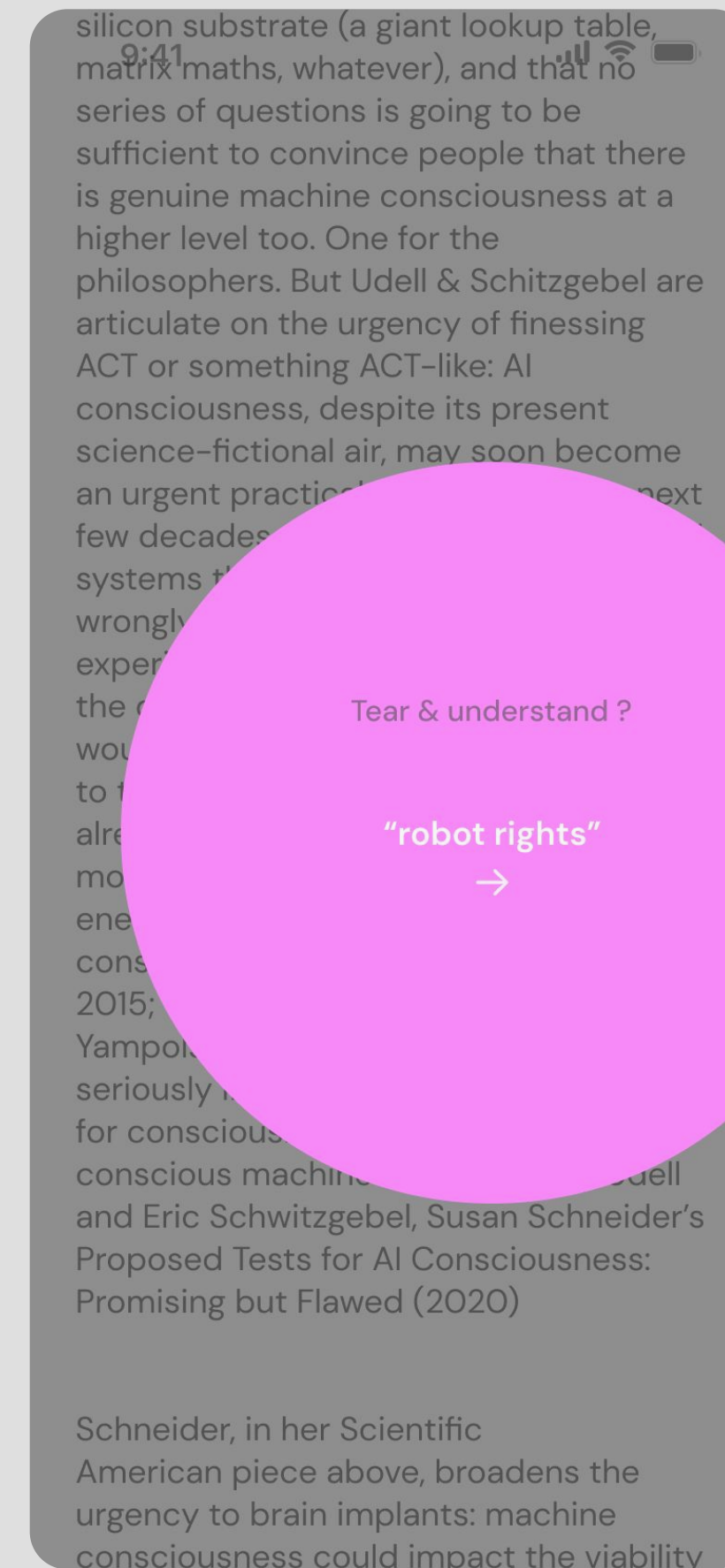
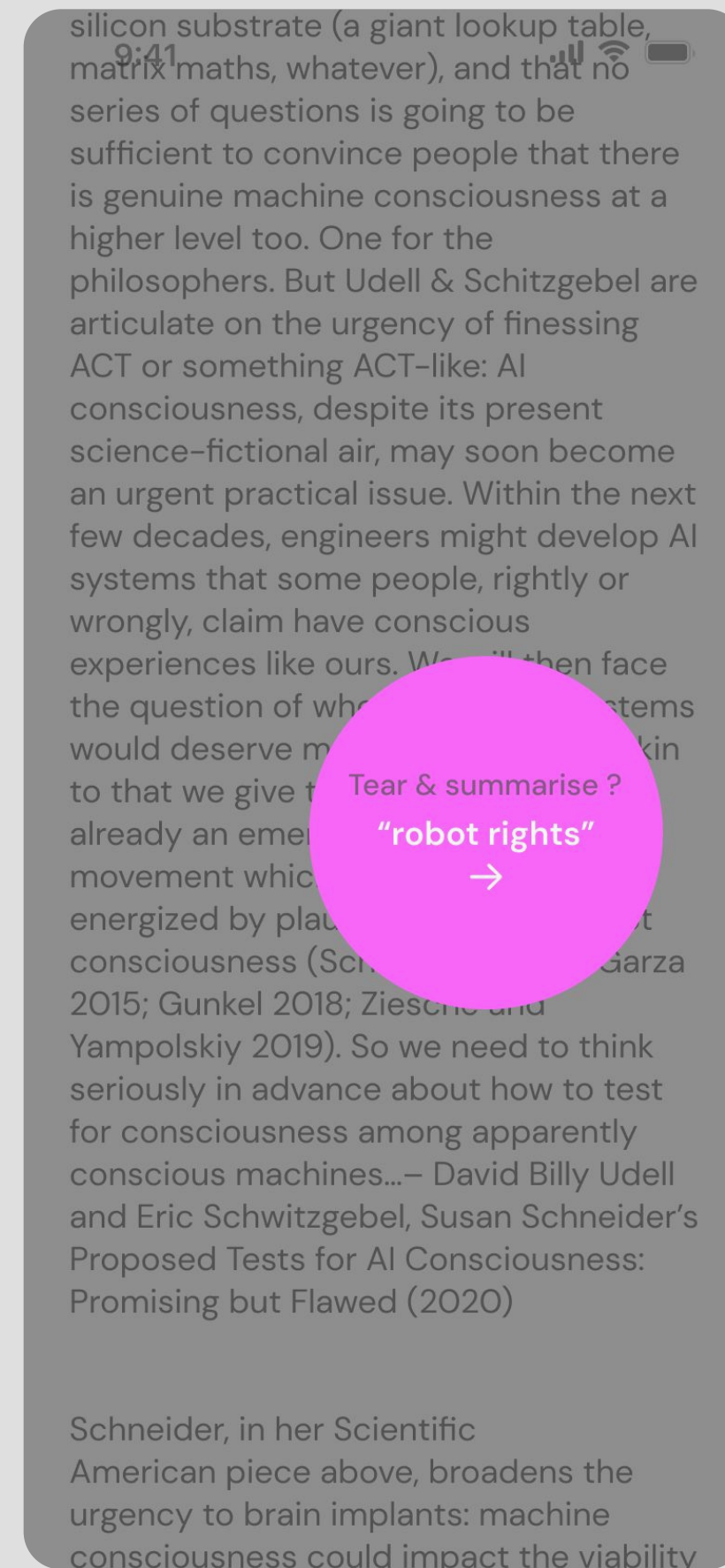


Synthesising feedbacks and making choices

Difficulty entering point the experience

Readers found the multiple steps to begin summarising disruptive to their understanding process. However, the highlighted text felt intuitive to readers.

Experts recommended communicating and entering the experience more conventionally, so readers can follow through with the novel aspects.



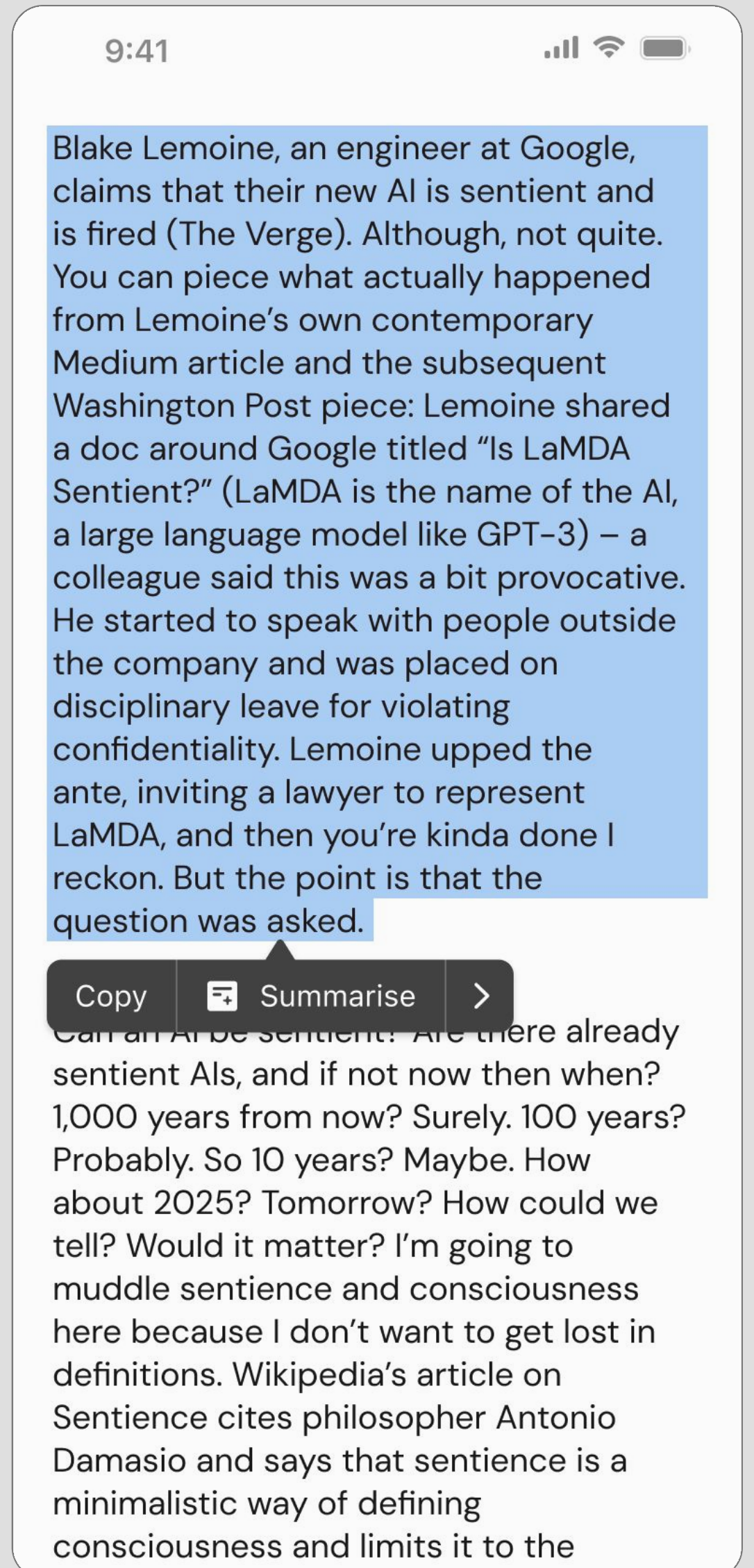
Synthesising feedbacks and making choices



Conventional entry

I decided to adopt the "Summarise" metaphor, which readers found more familiar and relatable for processing information.

The experience should be easy to find and enter- integrated with general text functions like copying.

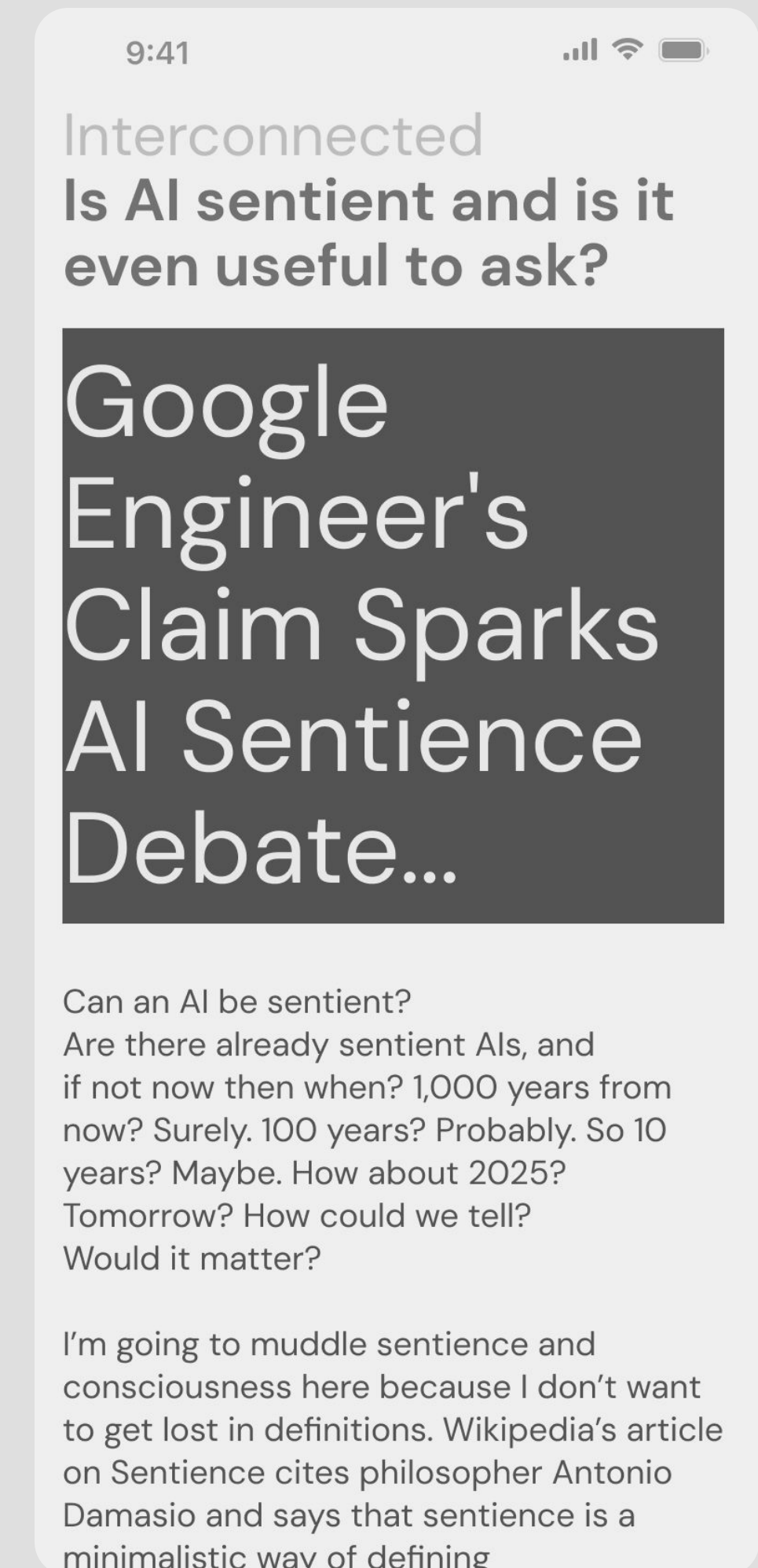
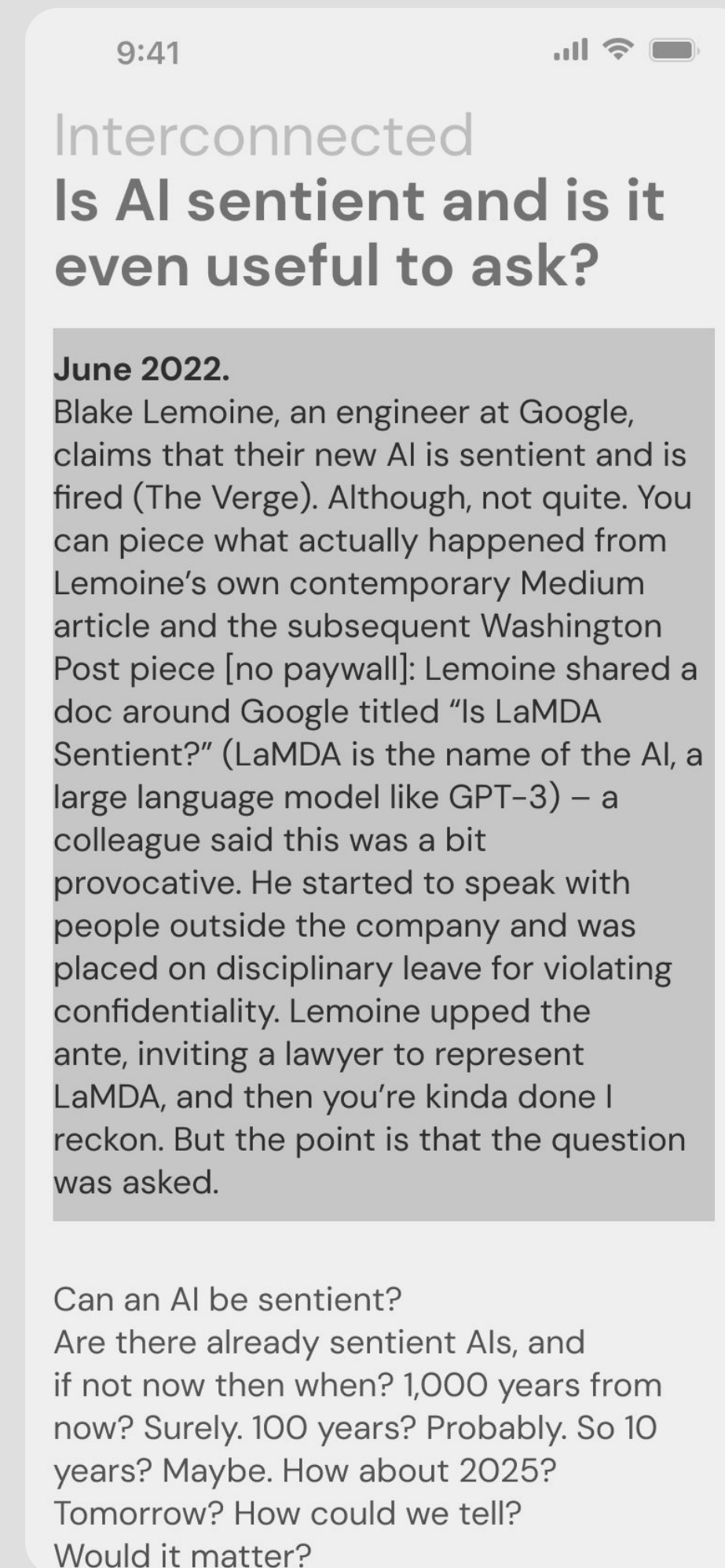


Synthesising feedbacks and making choices

Disconnect from the original

Readers got confused upon the sudden switch to the abstract summarised version and confused it for the headline to the original text. They lost touch with the original text without being reminded of the connection explicitly.

Two experts pointed out the bigger implication here, where this could seep into readers' misunderstanding the intention of the original text.



Synthesising feedbacks and making choices

Communicating Ephemerality

Summary cards should always be transparent about the ephemeral nature of the information it is generating. This demanded the summary cards be looked at from the perspective of communication design.

My goal here is to remind readers about the original text and how a summary is just an “AI’s interpretation” and not the “final truth”.

Synthesising feedbacks and making choices

User feedbacks & Expert reviews

Communicating Ephemerality

The card should be titled with the summary icon that says “summarised” further letting readers know.

Summary Cards should be overlayed on top of the original information- giving a visual hint to the readers.



Summarise



Summarised!

9:41



Interconnected
Is AI sentient and is it even useful to ask?

June 2022.

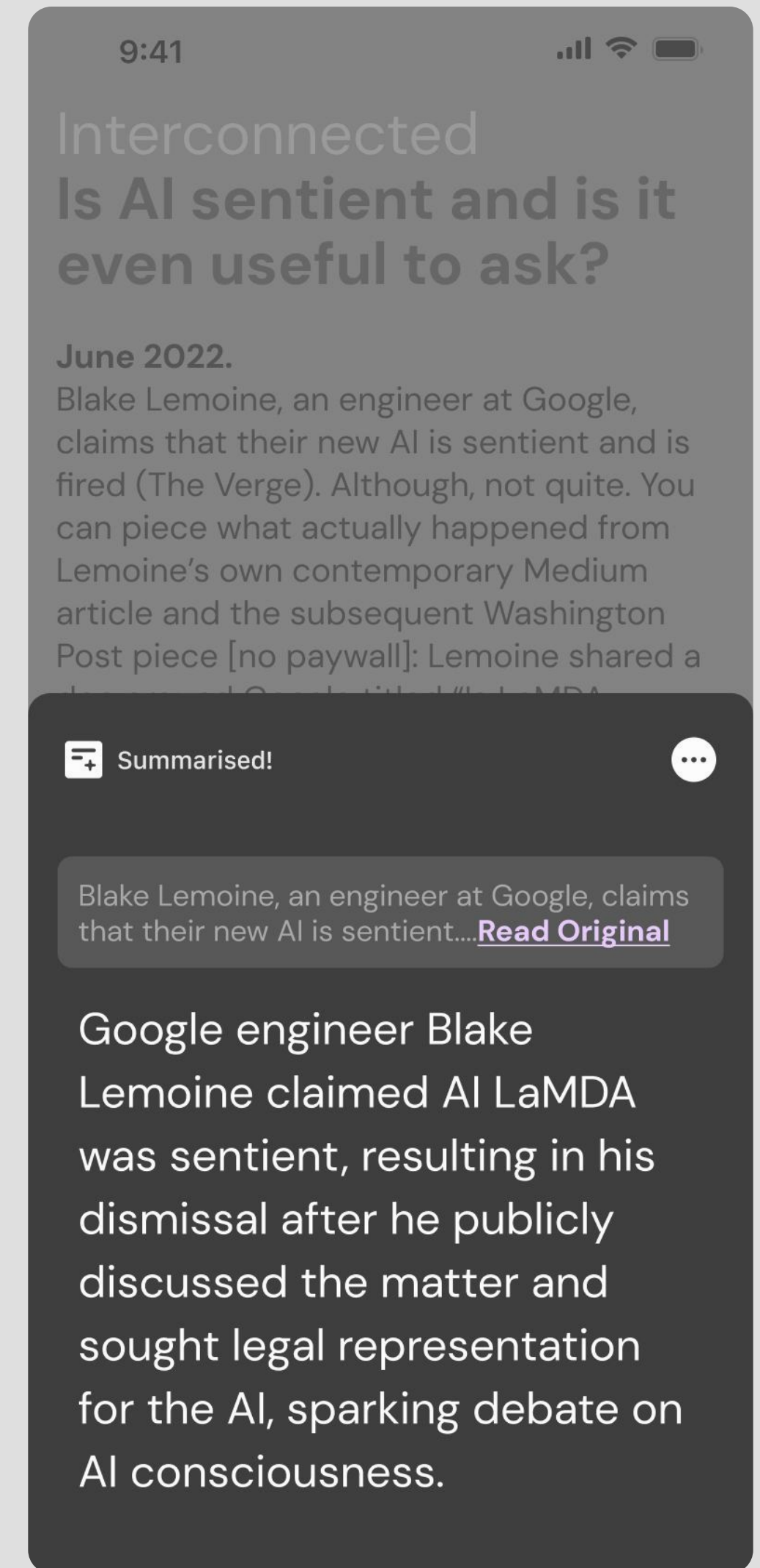
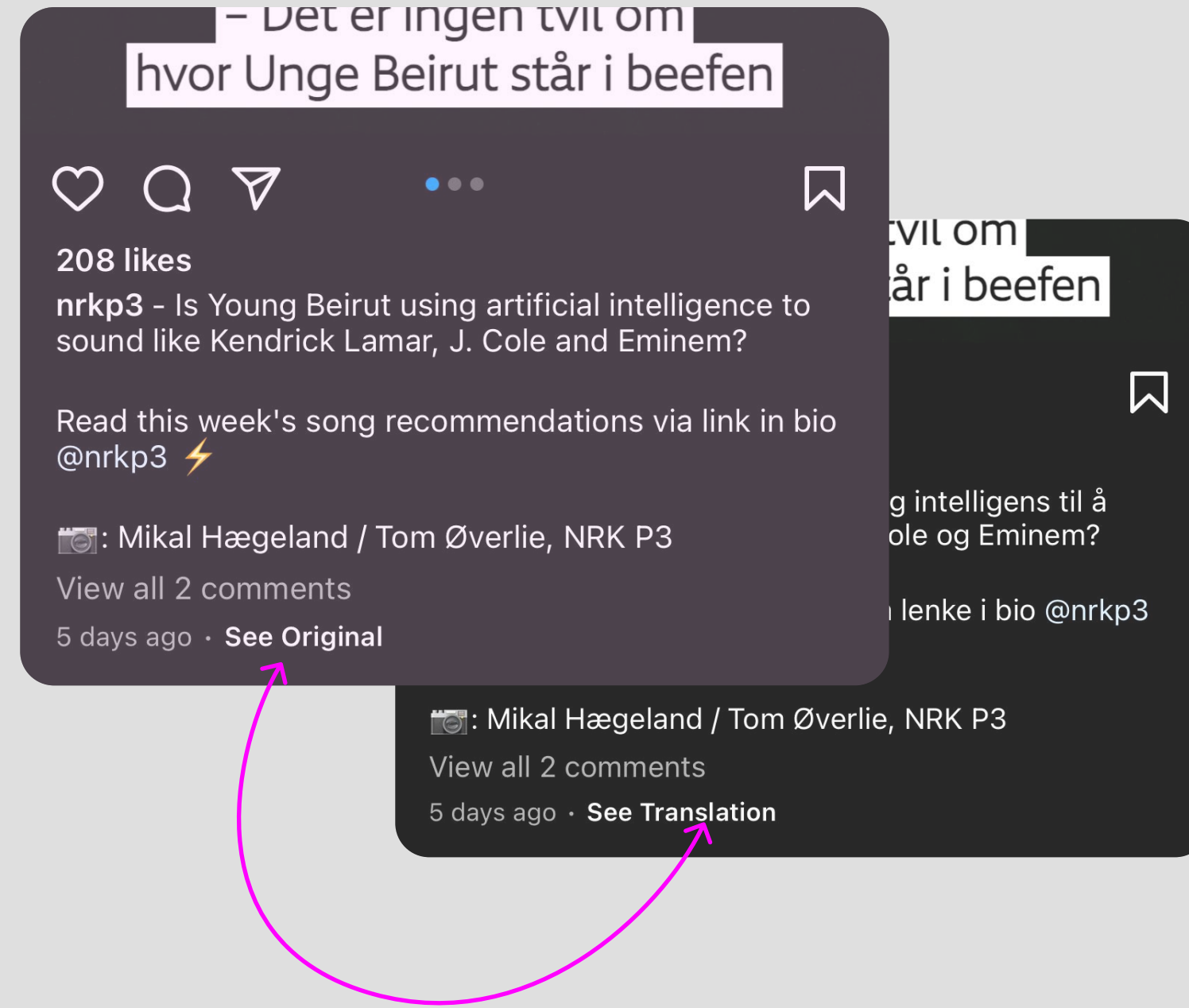
Blake Lemoine, an engineer at Google, claims that their new AI is sentient and is fired (The Verge). Although, not quite. You can piece what actually happened from Lemoine's own contemporary Medium article and the subsequent Washington Post piece [no paywall]: Lemoine shared a

 Summarised!



Google engineer Blake Lemoine claimed AI LaMDA was sentient, resulting in his dismissal after he publicly discussed the matter and sought legal representation for the AI, sparking debate on AI consciousness.

Synthesising feedbacks and making choices



Communicating Ephemerality

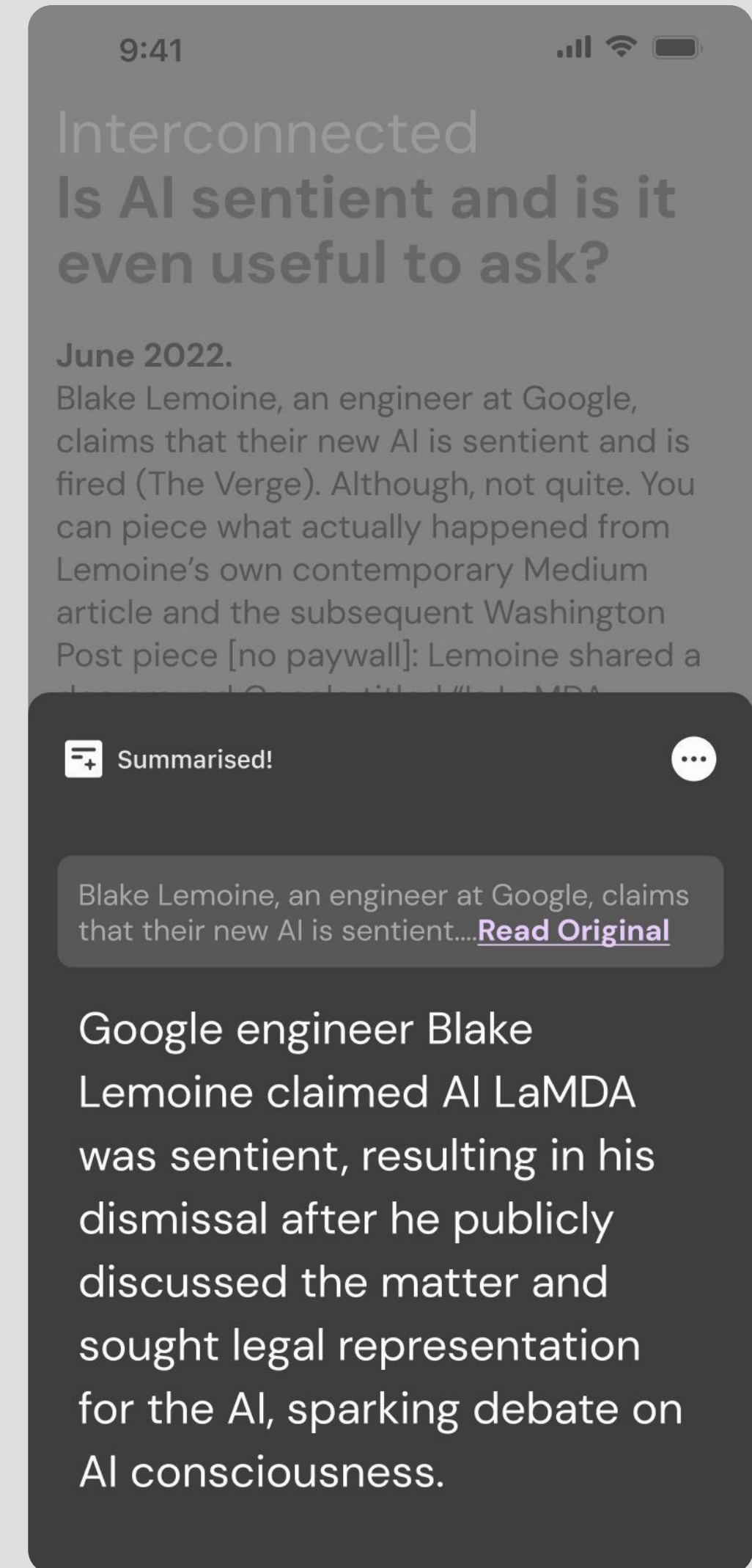
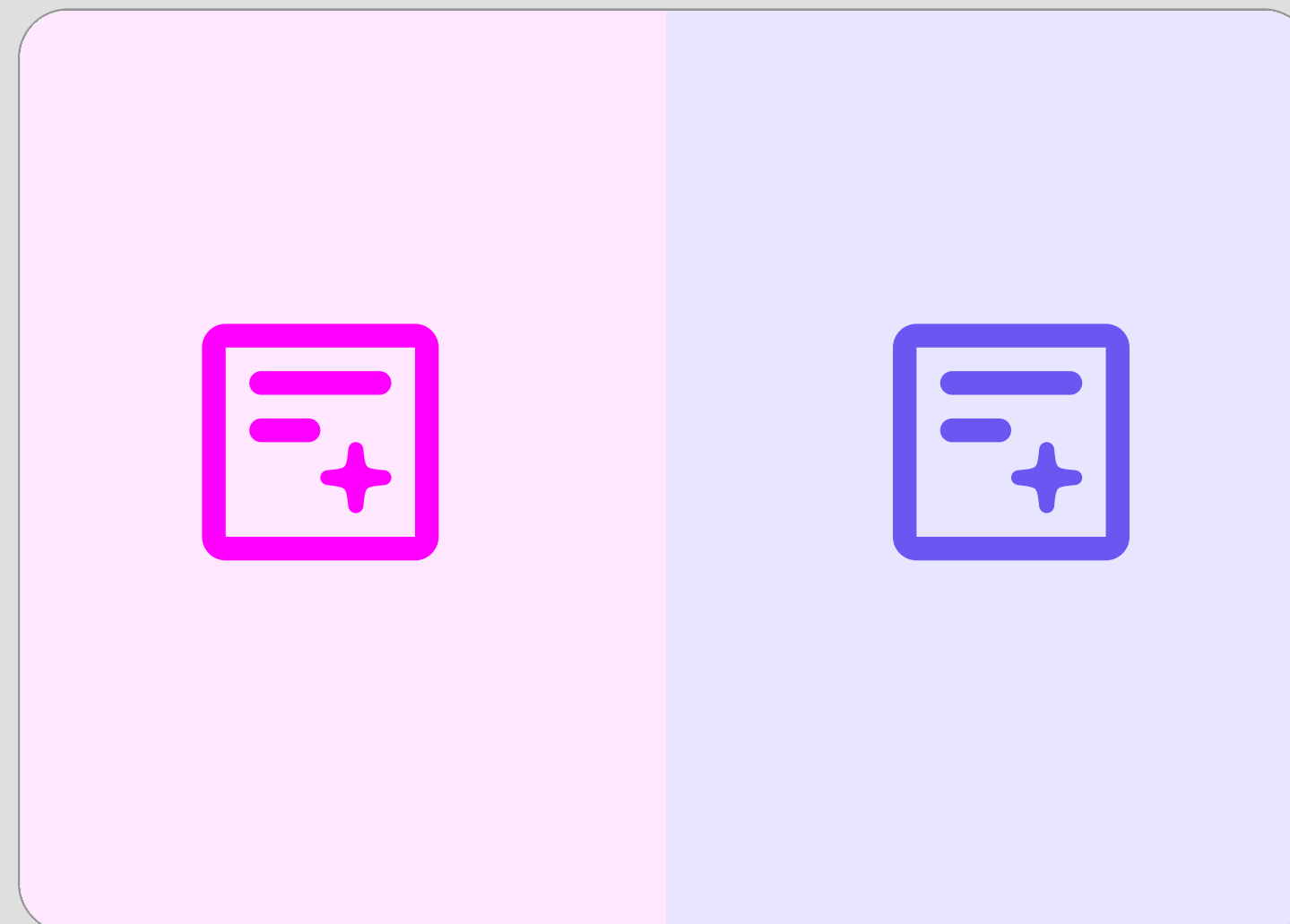
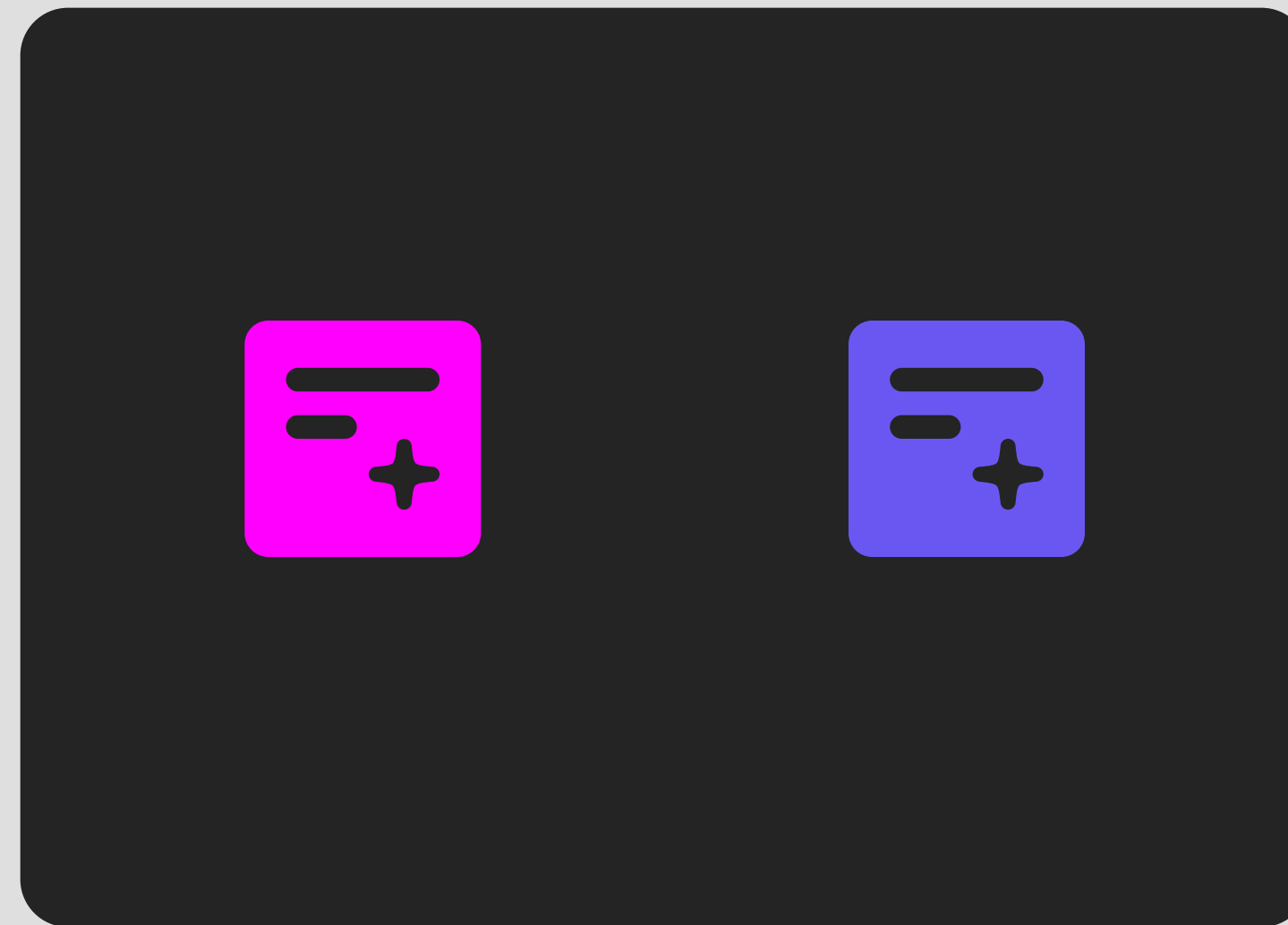
Summary Cards should also come with a button to go back to the "original text". The button can also give some hints and expectations of the original text content, so readers can make the connection when navigating. This is common when reading translated posts on Instagram.

Synthesising feedbacks and making choices

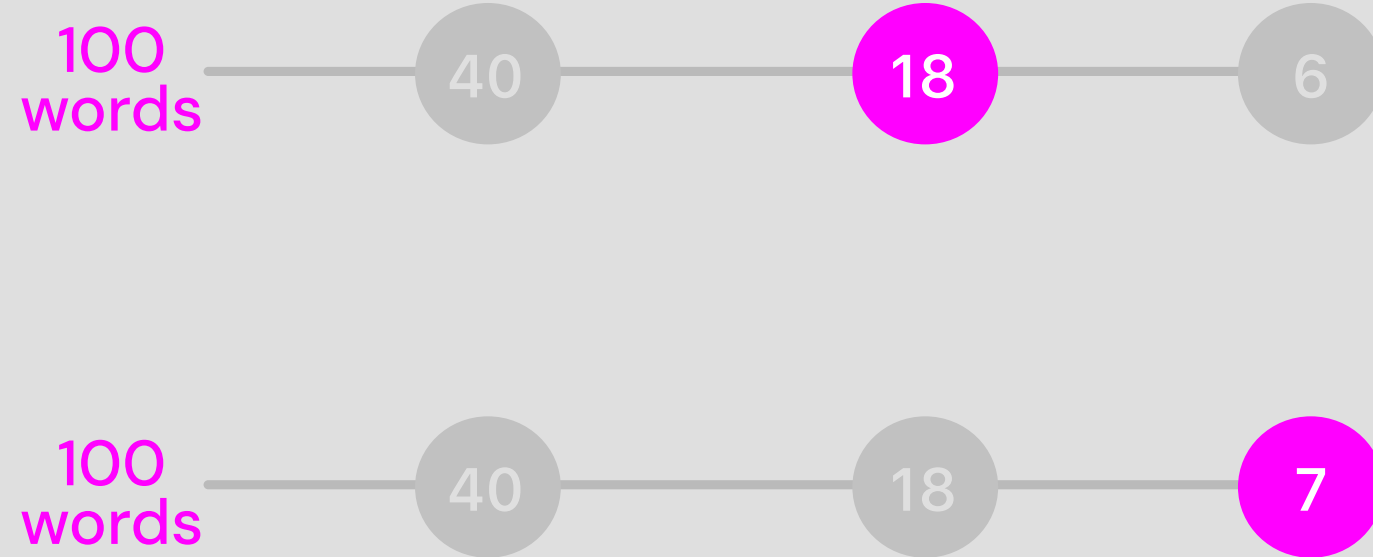
Communicating ephemerality

Digital interfaces have led users to make subliminal associations with certain colours. Light blue is always the colour of selected text and red is associated with errors.

A summary can be associated with colours like purple and pink which along with the "spark" in the icon graphic can represent this "fairy dust" of



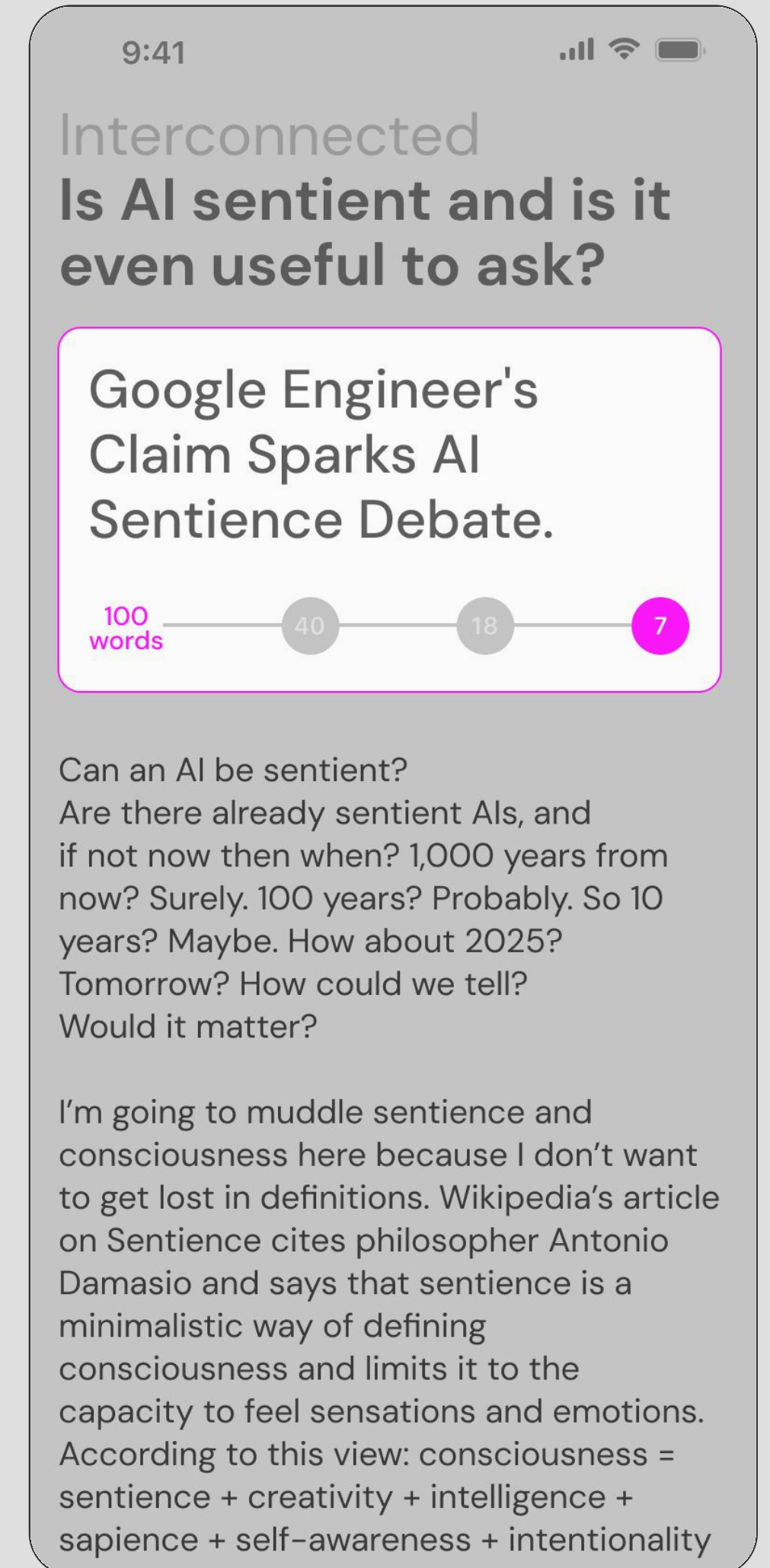
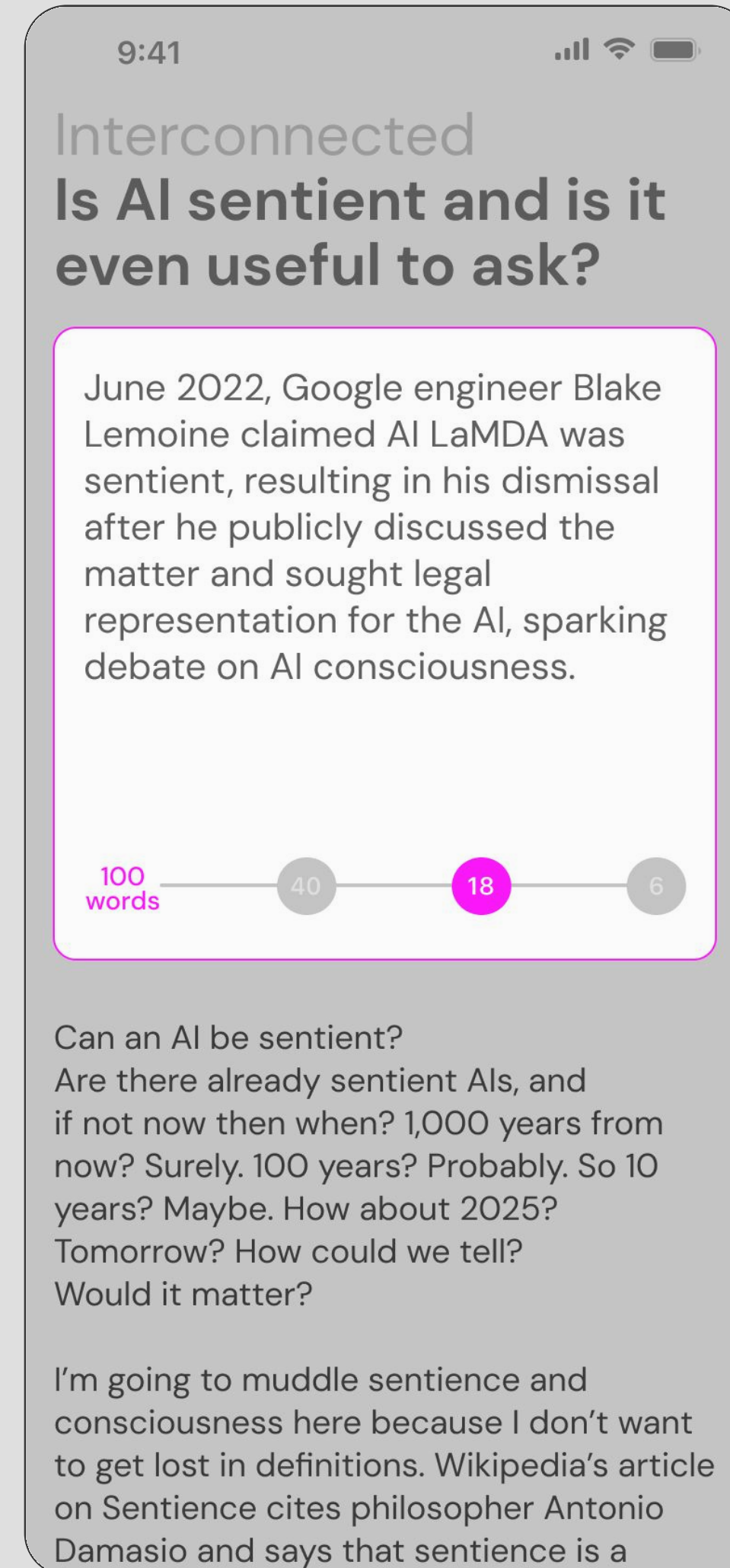
Synthesising feedbacks and making choices



Difficulty toggling summary levels

Confusion about direction while toggling between summary levels was also observed.

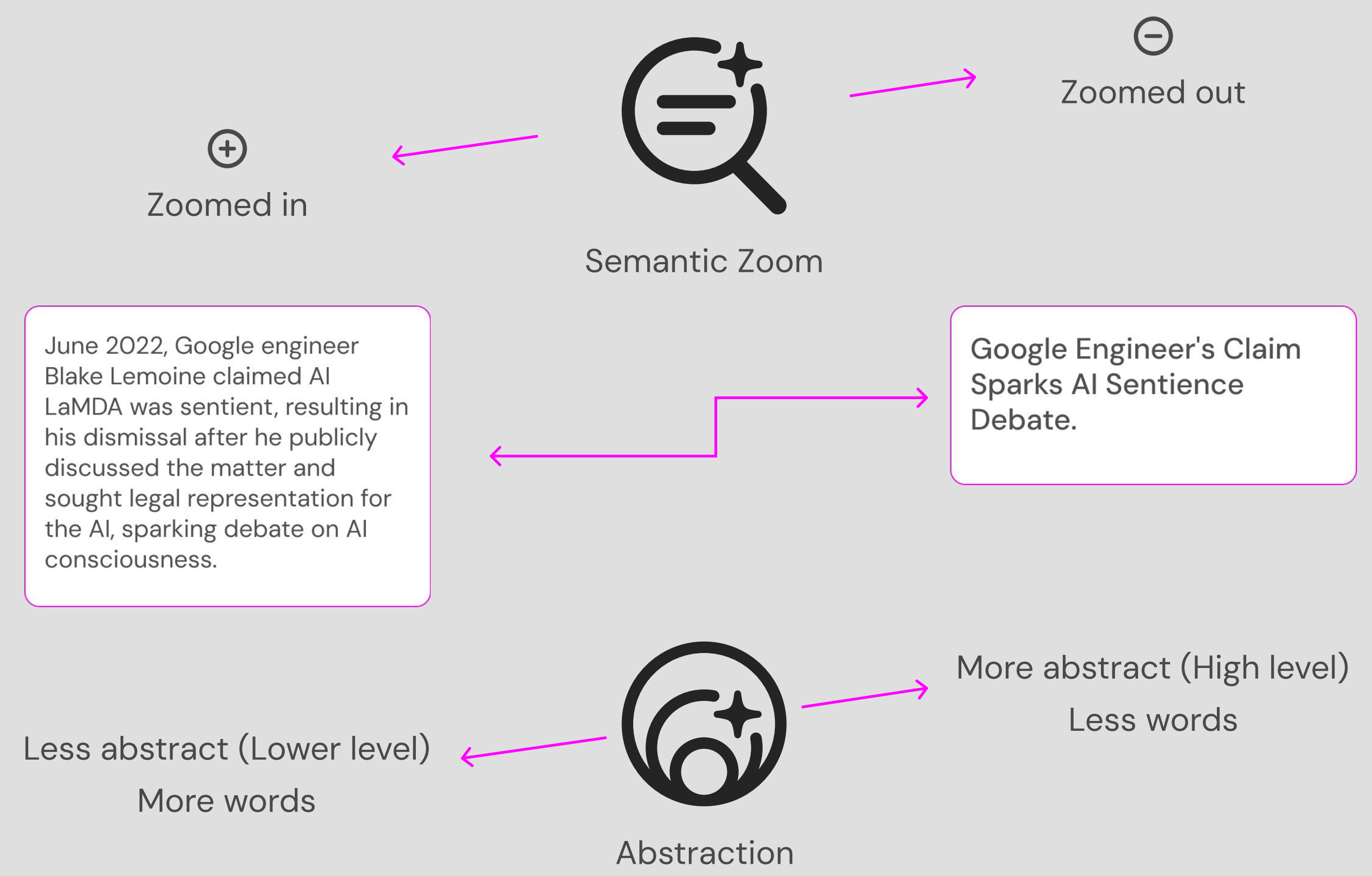
Experts noted the fundamental contradictions with details like summary levels being measured and represented with word count against intended information abstraction.



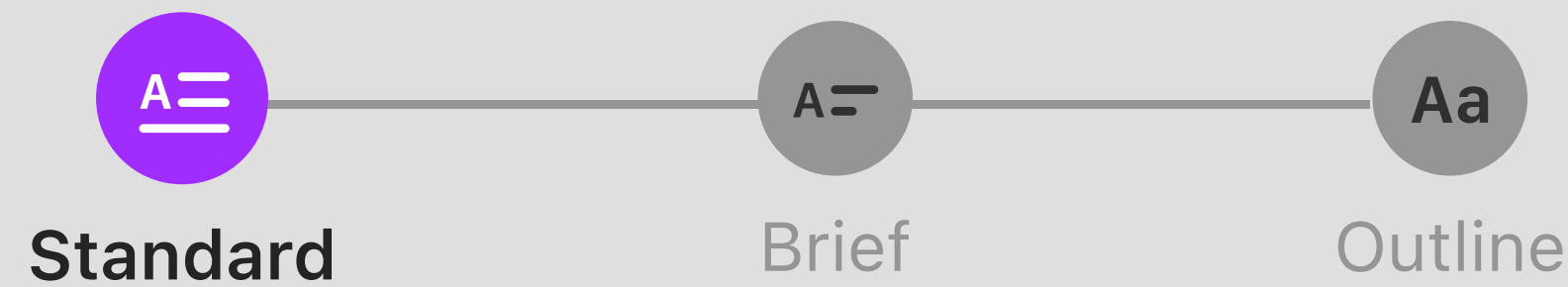
Synthesising feedbacks and making choices

Difficulty toggling summary levels

Metaphors like “semantic zoom” were not relatable to readers. “Semantics” is not a general purpose word while “zoom” might create some expectation. However, zooming is associated with moving in (+) and moving out (-). More zoom (+) means more word count which is less abstract and lower in level. Experts pointed out that the constant shift between positive and negative meanings could disorient readers.

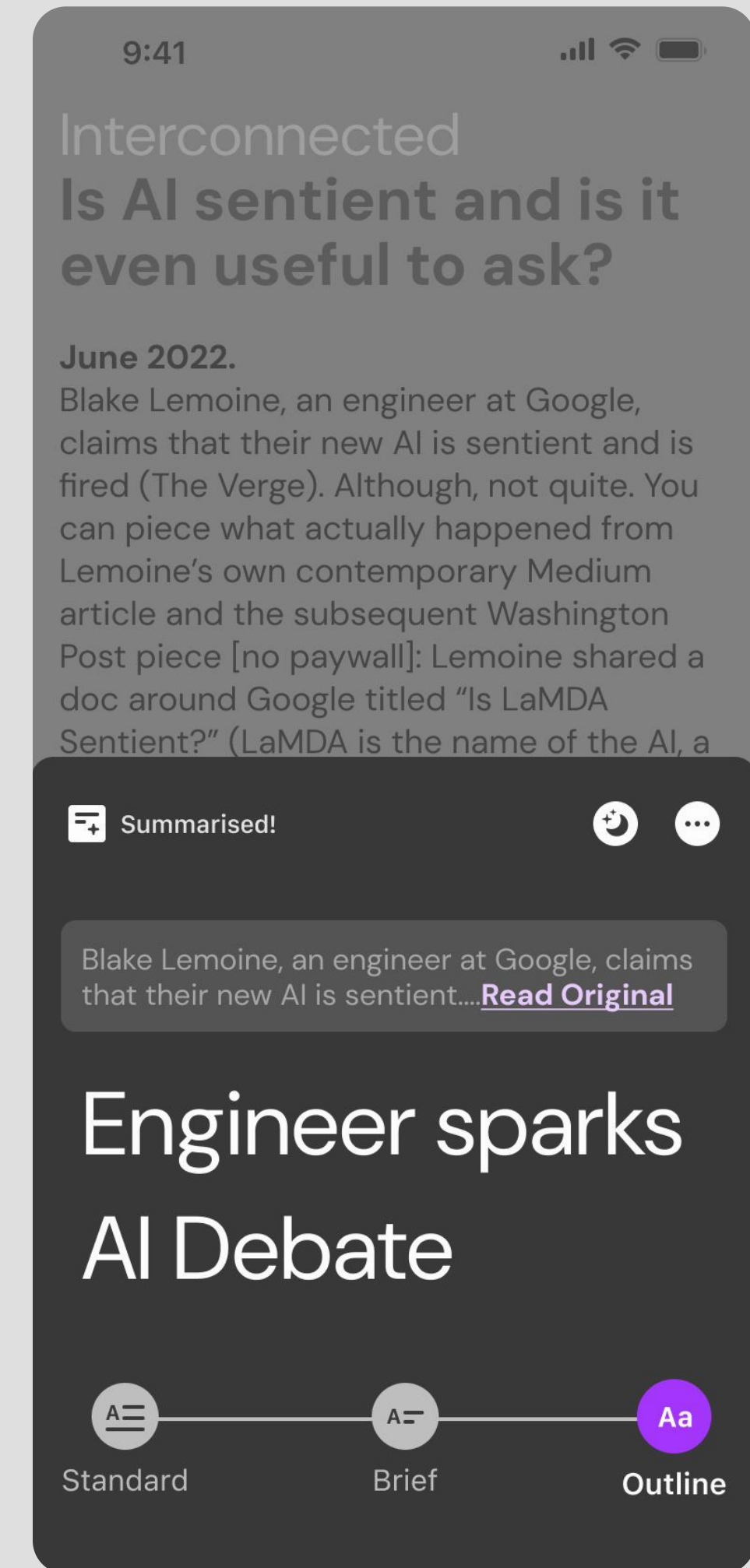
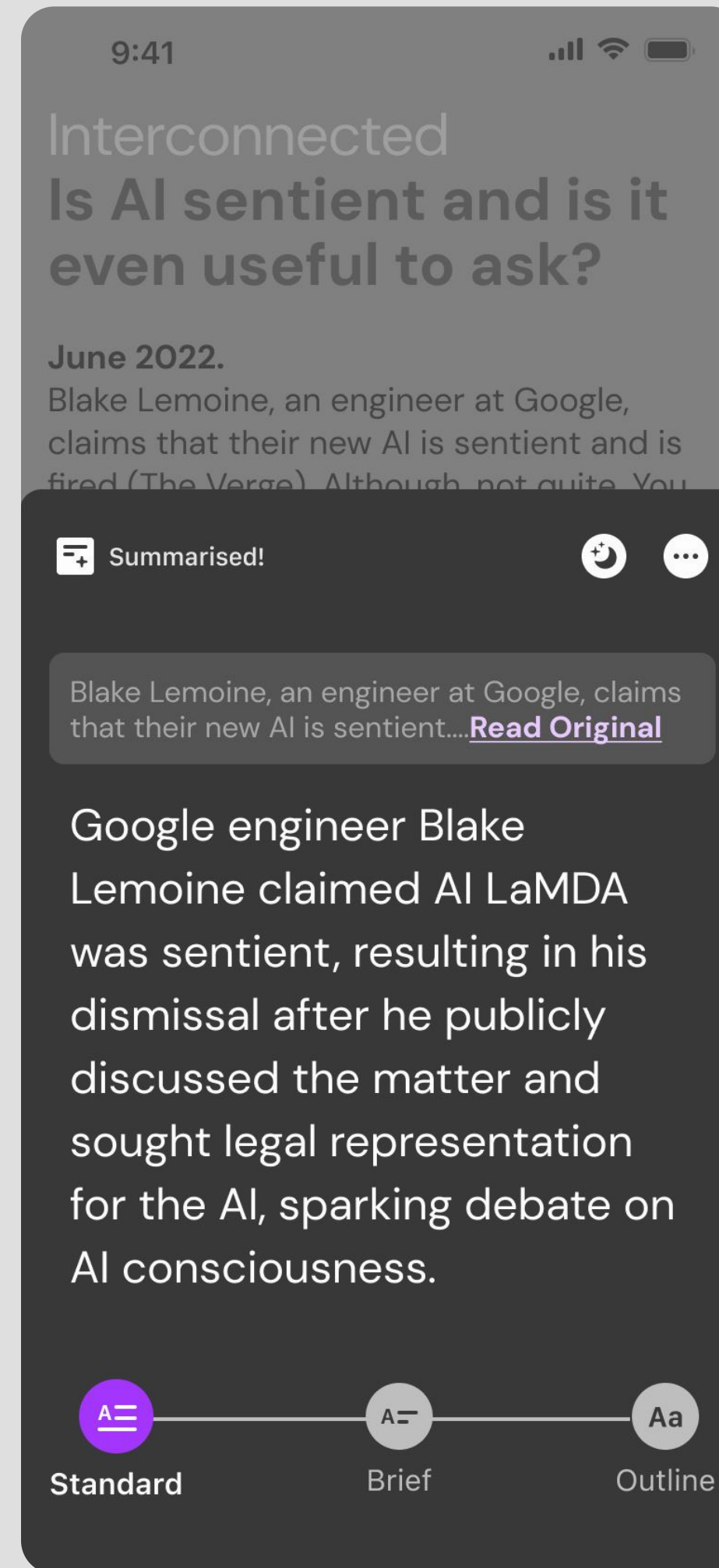


Synthesising feedbacks and making choices



Representing "levels" better

The summary level slider is an important user interface for the reader. Rather than imposing fixed associations, limiting the summary levels to three—labelled as "Standard," "Brief," and "Outline," each accompanied by a distinct graphic icon—could enhance user experience.



Design Library

I also created a mini design system for the previous design sketch after implementing feedback.

Logo Symbol

• Outline

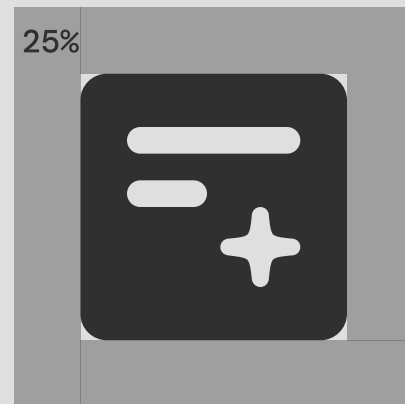


• Fill

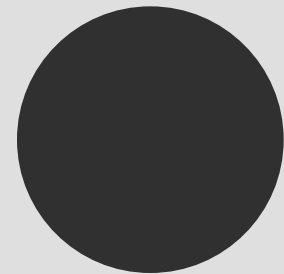


Logo Sizing

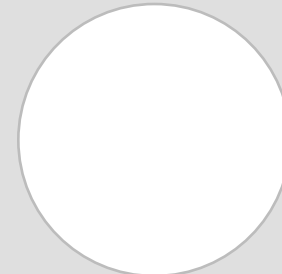
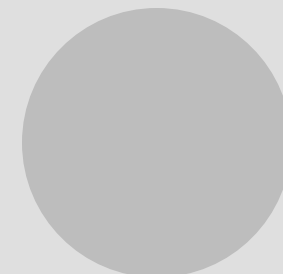
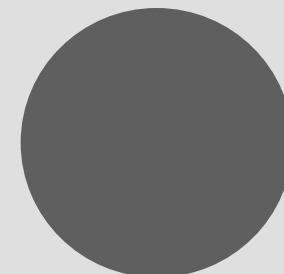
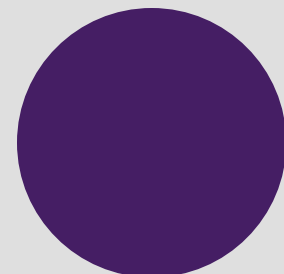
• Size: Multiples of 4 • Padding: 25% of size



Primary Colours

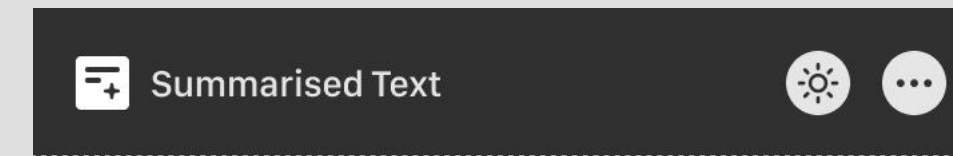


Secondary Colours

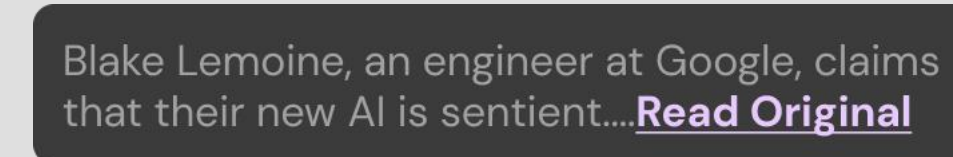


UI Card Lockup- breakdown

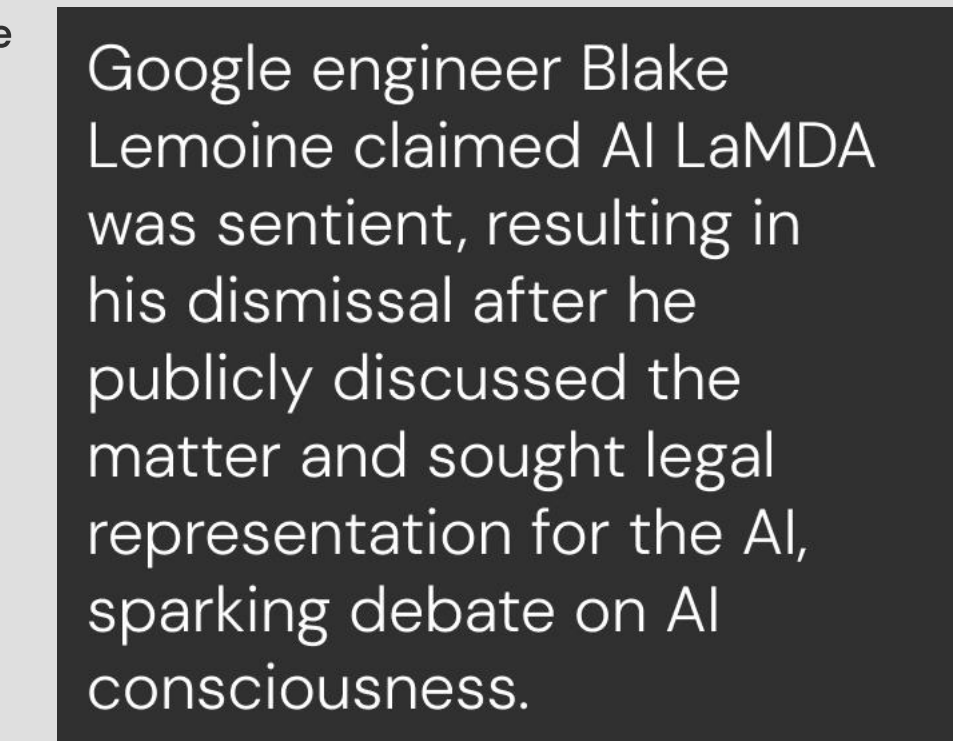
• Title component



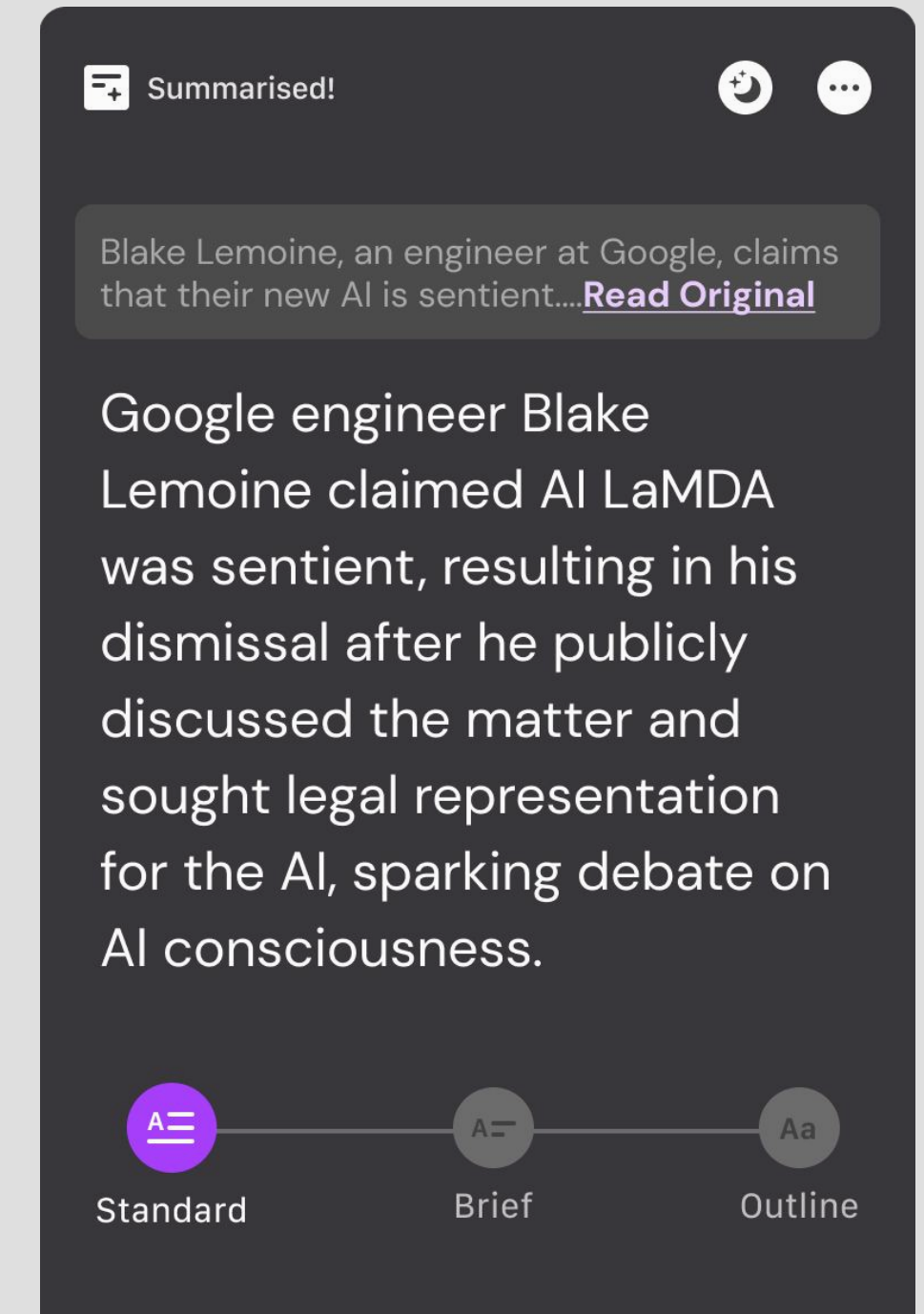
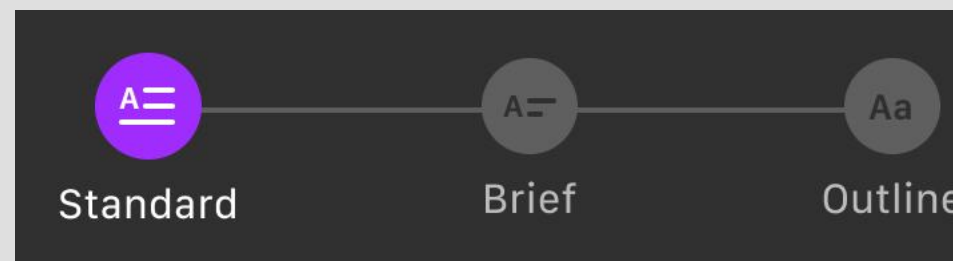
• Original text Button



• Summary-Middle component



• Bottom-Slider component



Reader in Scenarios

To showcase some of the possibilities, let's put them in the the scenarios of a reader named Nora and summarising is experienced by in different mini-scenarios.

Reading while Waiting

Saving to read later in café

Reading while travelling on a bus



Reader in Scenarios

Reading while Waiting

Nora is waiting for the bus and decides to read the blog (on her phone) titled "Is AI sentient and is it even useful to ask?"



9:41



Interconnected Is AI sentient and is it even useful to ask?

June 2022.

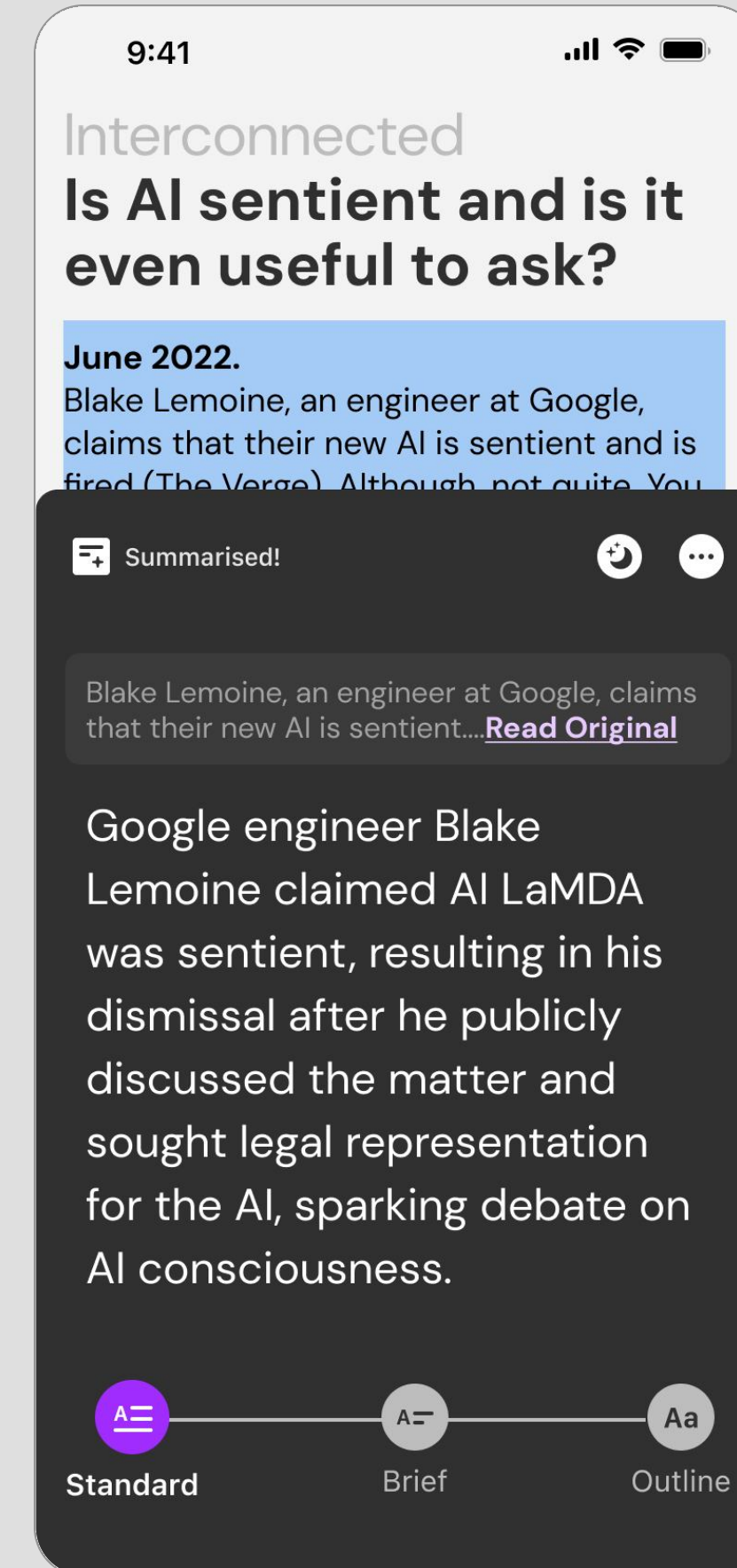
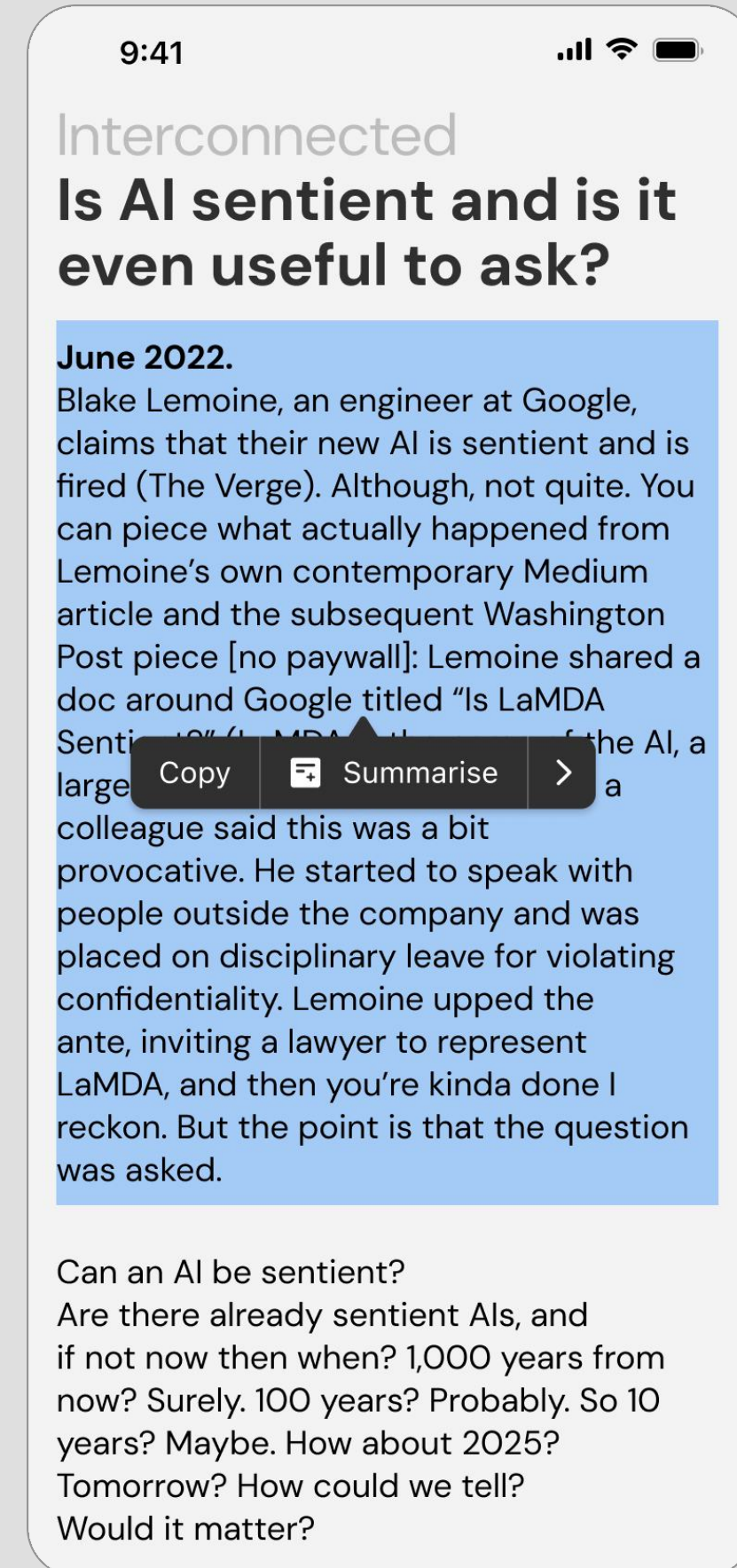
Blake Lemoine, an engineer at Google, claims that their new AI is sentient and is fired (The Verge). Although, not quite. You can piece what actually happened from Lemoine's own contemporary Medium article and the subsequent Washington Post piece [no paywall]: Lemoine shared a doc around Google titled "Is LaMDA Sentient?" (LaMDA is the name of the AI, a large language model like GPT-3) – a colleague said this was a bit provocative. He started to speak with people outside the company and was placed on disciplinary leave for violating confidentiality. Lemoine upped the ante, inviting a lawyer to represent LaMDA, and then you're kinda done I reckon. But the point is that the question was asked.

Can an AI be sentient?
Are there already sentient AIs, and if not now then when? 1,000 years from now? Surely. 100 years? Probably. So 10 years? Maybe. How about 2025? Tomorrow? How could we tell? Would it matter?

Reader in Scenarios

Reading while Waiting

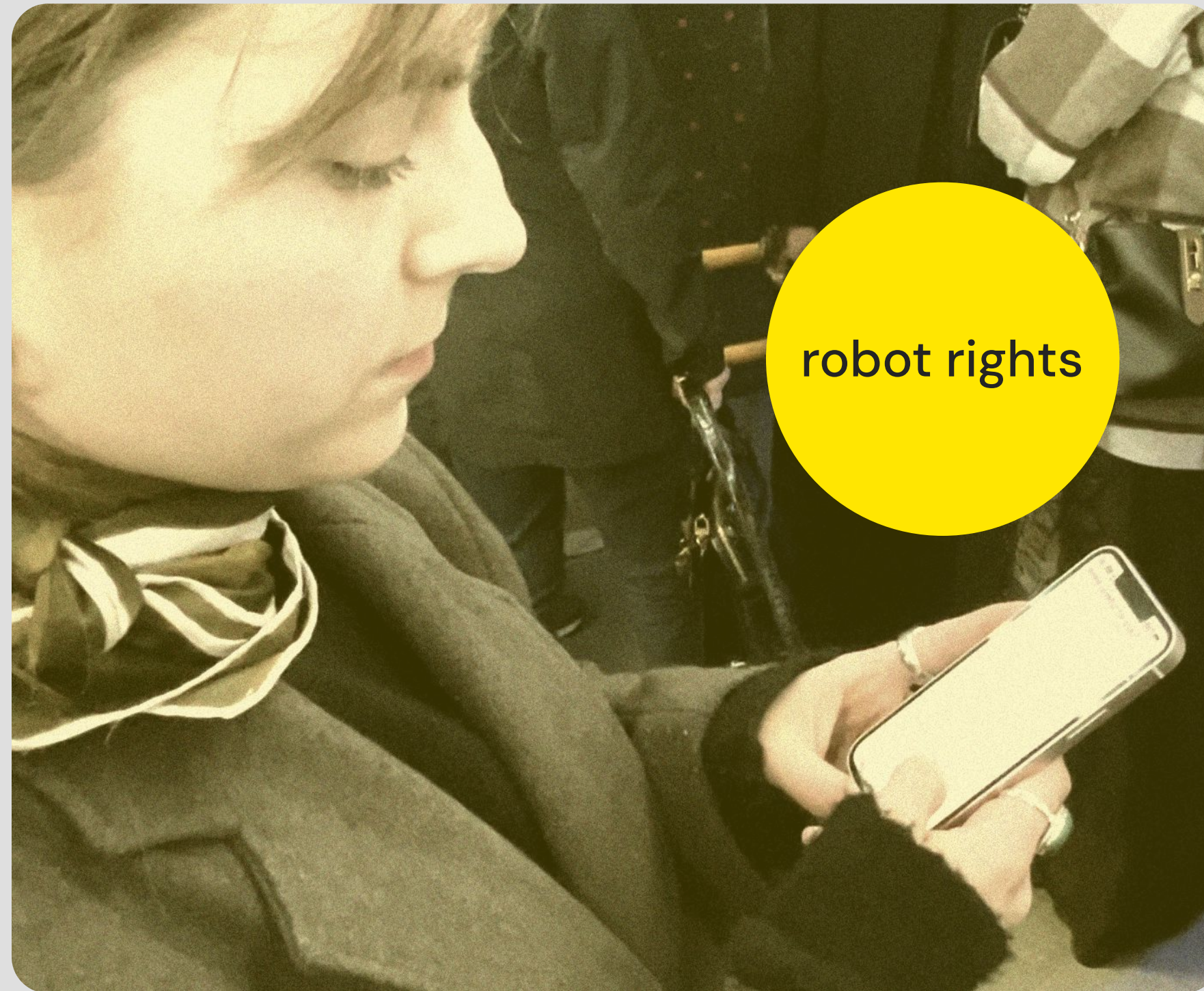
There is a minute to her bus, so the short waiting time and her disinterest in the long section about the topic "Google AI debate" prompts her to summarise.



Reader in Scenarios

Reading while travelling on a bus

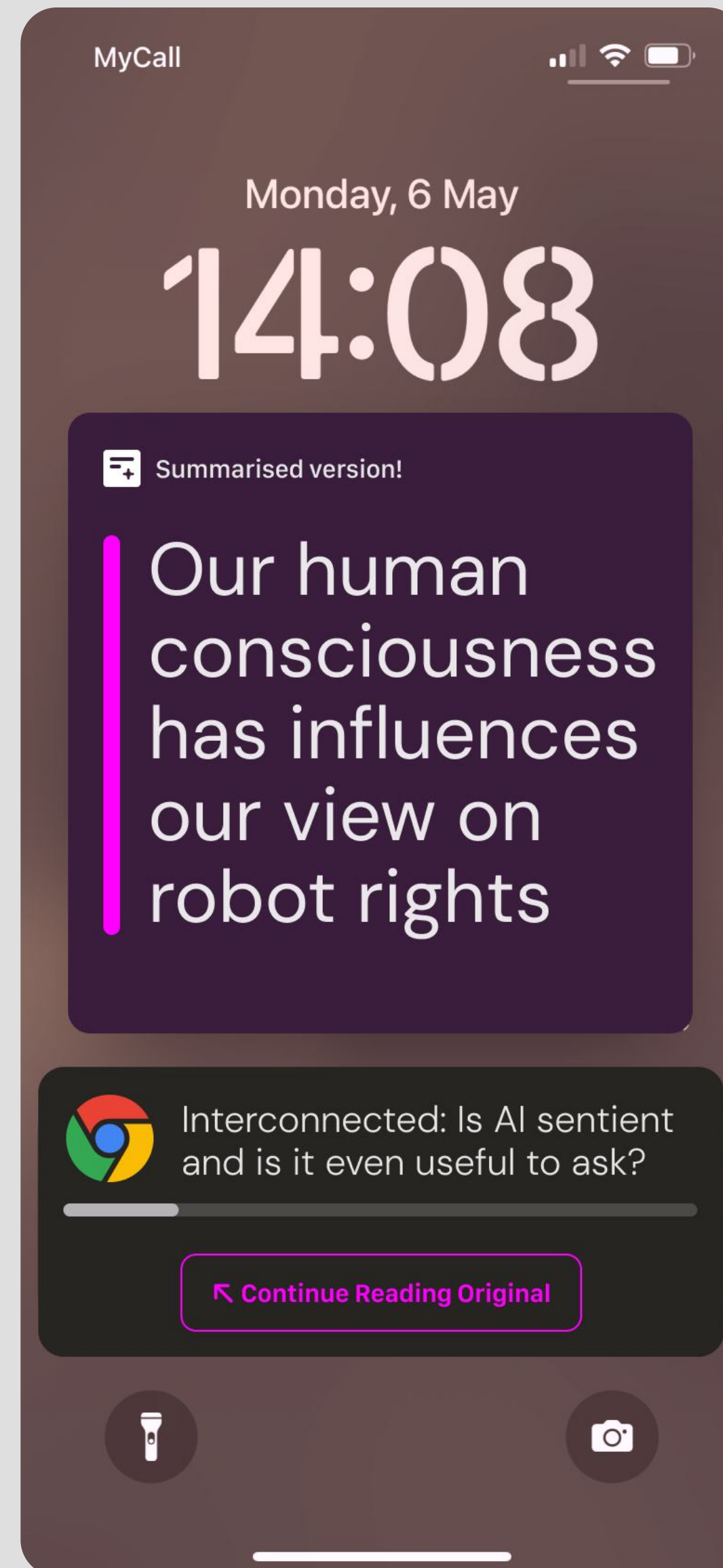
Nora comes across a section about “robot rights” which is an interesting topic for her. But reading from a phone screen on a bus makes her motion sick.



Reader in Scenarios

Reading while
travelling on a bus

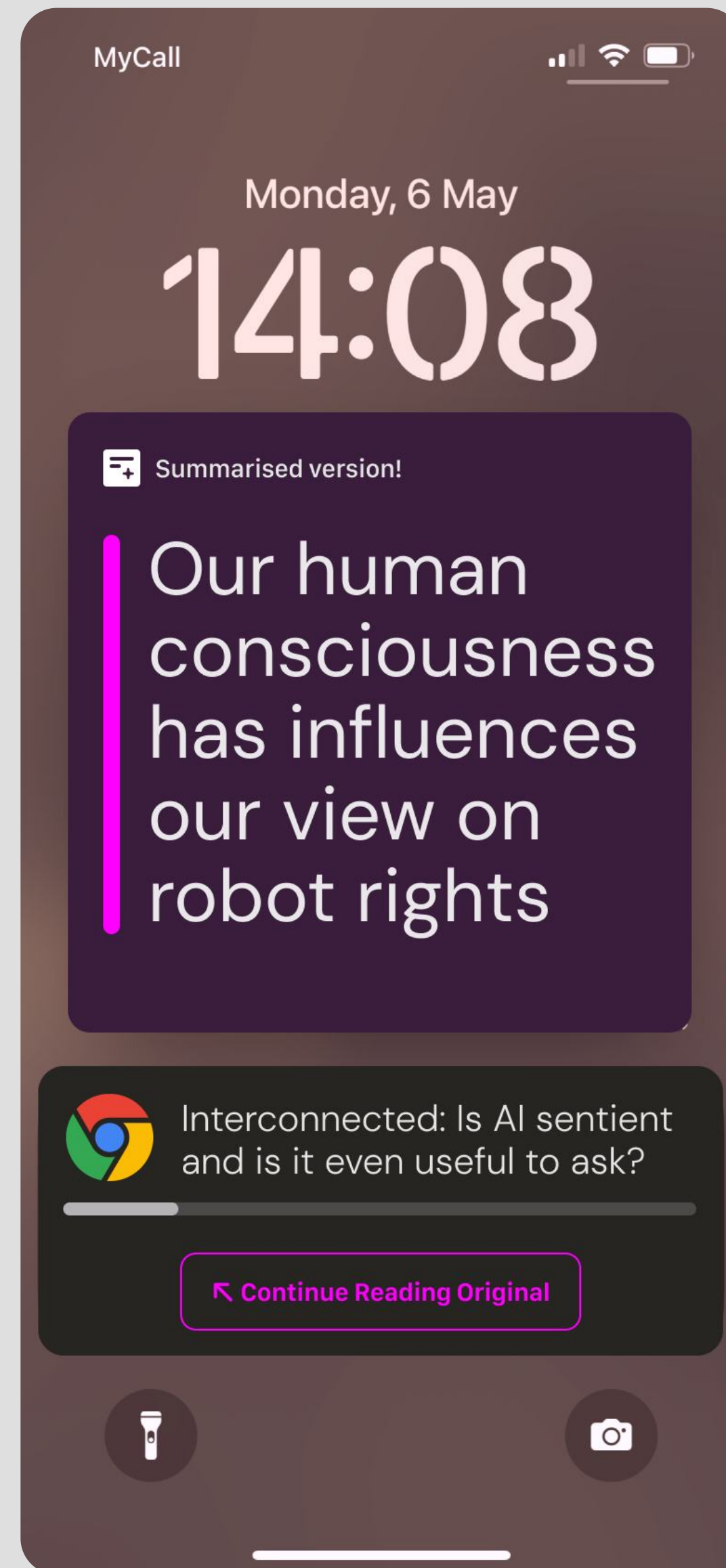
She turns her phone screen off. But, she can glance at the summarised version of the section on the thumbnail by waking her locked screen.



Reader in Scenarios

Saving to read
later in café

The summary on the thumbnail mentioned “Our human consciousness has influences our view on robot rights”, which further interested her in the topic of “consciousness”.



Reader in Scenarios

Saving to read later in café



While sitting in cafe, she felt more focussed and decided to read the original text section about in full details.

being human - and therefore implicitly accepts that there will be other perspectives which have different answers.

The question is not: do we have conscious AIs? It is more like: from our perspective, is there a non-misleading distinction between non-conscious AI and hypothetical conscious AI, and do we have conscious AIs in that sense?

AND THEN:

Summarised!

If an AI were to pass an AI Consciousness Test, in the non-misleading... [Read Original](#)

Our human consciousness has influences our view on robot rights

Standard Brief Outline

being human - and therefore implicitly accepts that there will be other perspectives which have different answers.

The question is not: do we have conscious AIs? It is more like: from our perspective, is there a non-misleading distinction between non-conscious AI and hypothetical conscious AI, and do we have conscious AIs in that sense?

AND THEN:

If an AI were to pass an AI Consciousness Test, in the non-misleading sense above, would it make any difference? Udell & Schwitzgebel's argument is that it's meaningful in terms of robot rights. But chickens have chicken-consciousness and we industrialise their growth and kill and eat them. Maybe the implication is that we ought to feel more gratitude when eating meat - if we eat meat at all - and that it's poisonous to us to ignore that. Or maybe they don't have chicken-consciousness! Arguably we shouldn't be treating chickens like we do in any case. It's hard to imagine that we would treat them any worse even if we were certain they were lumps of 100% unthinking rock. The point is that it's not a question we really engage with, as a society. Maybe when it comes up with AI we collectively won't care then, either.

Final Reflections

Responsibility of AI

Summarising needs to strike balance between automating aspects that overwhelm readers and allowing focus on absorbing knowledge. This means giving the responsibility of curating our knowledge to AI. It is dangerous for readers to rely more on summaries for accuracy more than the original.

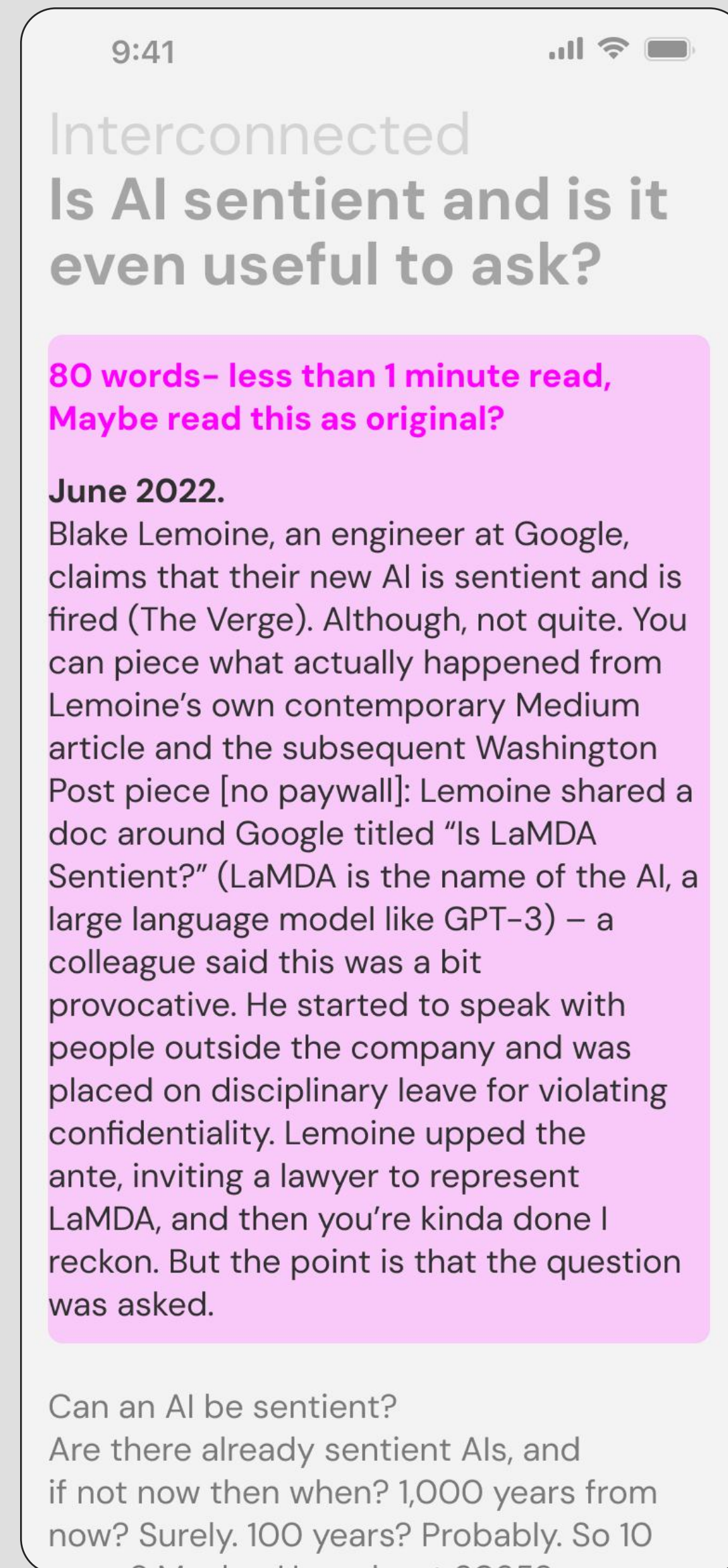
Fundamental Cognitive abilities

Curating and abstracting knowledge should not downgrade our reading abilities. The reading and comprehension process is complex. More thought needs to go into what aspects of the process are minor or crucial to our cognitive abilities. The debate needs to expand on what gets ignored as "minor" aspects might be more fundamental to our cognition.

Final Reflections

Design Challenges

The UX challenge lies in striking a responsible balance with summaries to prevent information overload, encourage readers to engage with the original text, and motivate them to continue reading rather than relying solely on summarised versions.



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