

# **Journal end of 2023**

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# This Journal

As of December 2023 I am writing my thoughts in the Journal in Author (cmd-J in Author to instantly access) which is one single long Author document. I write a new entry with the heading level 1 and when ready to post I copy the heading, select the body of the post/ thought and use Liquid to post to Wordpress, which is quick and simple, since the body text is automatically posted and I just have to paste or type the title. I then set the Category to 'Journal' and off I go.

For those who might wonder, PDF does not enter into this, though I might produce quarterly PDF Journals or maybe keep it included annually in the Book.

I am also considering starting a document similar to the Journal for transcripts of our Monday meetings and posting them in a similar way. We'll see...

Online at <https://thefutureoftext.org/2023/12/31/journal-end-2023/>

# A vision of near future Extended Reality

You are sitting at your desk and put on your XR glasses, then you make a fist and move your hand up, as though you are pulling up a sheet, and a map of the earth appears out of the ground, centred on your location. You pull it up further and it shapes to comfortably fit on your desk where you can scale it and move around with intuitive gestures.

This is an idea for gestures as ‘shortcuts’, similarly to how we can use keyboard shortcuts or gestures on our computers to do specific things instantly, instead of going through menus.

Imagine further that if you stand up, the map covers your room, and if you gesture in a circle, your room disappears and the map stretches to the horizon. You use your hands to move anywhere on earth and if you like, you can scale the earth to fit in your hand so you can then look around the solar system, our galaxy and perhaps beyond, eventually holding Laniakea in your hands.

Picture this as a default you get from your preferred vendor of XR glasses but at any scale of looking at the world you can open your hand, palm face towards you, and have access to choose any other model for that scale, time or location. In other words, your virtual desktop is infinite but you can always choose to view a different version of anywhere, any time.

## Ears and Eyes

I think that in the same way that if someone wears headphones and talks to someone today and people will understand that they are likely not in Noise Cancellation mode, that they are likely in a Transparency mode and that the headphones do not necessarily fully block out sound, soon it will be the case with AR glasses that they will only augment when required.

# AI to augment Libraries in a mundane way

An approach for AI to augment Libraries of documents in a more mundane and controlled way:

<https://youtu.be/WRuzuNknKCc>

# Proposal for Metadata transmission standard between XR and traditional computer/laptop

I propose that we need a simple way to transfer whatever is in a document's metadata, as well as the document itself, irrespective of contents. I further propose that this simply be Visual-Meta wrapped in JSON.

- Traditional computer host application reads all Visual-Meta from a document and wraps it in JSON for transmission.
- webXR receives information and parses Visual-Meta, same as the traditional computer application would (code available for this).

This removes the need for transcoding. An additional dummy file (PDF) acts as Library, storing all Library view and layout information, also in the format of Visual-Meta and is transferred in the same way. It will simply be called Library.PDF Information is to be designed as a group. This file will include list data for 2D devices and 3D information for XR.

User's laptop needs to be online with WebDAV running in the Library software (in the case of our basic implementation that is Reader) to synch with the webXR system. Once done the user can put laptop to sleep. Synch should be continuously attempted in order to automatically reconnect to receive data from the headset to the laptop.



## Notes with Bjørn

Updimension: <https://borud.no/blog/2022/up-dimensioning-for-vr/>  
5 dimension, including interactive=ity. Use AI generate graph views.

Tana

What to transmit from Reader macOS to Reader XR.

# Bjørn on Reader to XR Server

## User Story:

User is using their Library in macOS Reader (this is our test environment, any others should work soon too)

User puts on a headset to continue working in their Library.

The user accesses 'Reader XR' (through web page or app) and their Document Metadata and Library Metadata is downloaded.

The user can interact with their Library and choose to open any document for reading, changing layout of and annotating.

When done they can put down their headset and return to their traditional computer.

## Data Flow:

The data in Reader is in the form of Visual-Meta at the end of all documents and when writing any new Visual-Meta to a document it is also saved in a Document Metadata database.

This Document Metadata database will be stored in the form of JSON.

All the user's metadata will be syncing with a server.

When done, the Library Metadata is transmitted back to Reader macOS (or equivalent), as well as any changes to Document Metadata (such as annotations being added or removed).

## Definitions:

'Computer' means desktop or laptop computer, in other words computer in the traditional sense.

'Headset' means VR/AR/XR headset running webXR Reader software.

'Server' means software which provides continual access to data, via HTTP.

'Storage' means software which stored document metadata (in List format) documents and library context metadata on physical storage.

'Document Metadata' includes core visual-meta, highlighted text and AI and XR generated temporary Visual-Meta.

'Documents' means initially PDF but will support any format.

'Context Metadata' means data which describes a use and/or display of the collection of

documents and their associated metadata. This can be a single headset in a single real or virtual environment where documents are assigned positions etc., and it can mean the same headset in a different virtual environment or Augmented Reality environment etc.

‘Reader XR’ is the software to be developed for XR headsets.

Bjorn’s notes

If we think of the data store as the authoritative source of user’s data, what we are faced with is essentially a replication problem. That is, whenever an application that uses data from the datastore starts up, it wants to know “what has happened since the last time I was connected to this store? What’s new, what’s gone, and possibly what has changed. Of course this can be refined to “what has happened with the subset of data that this application on this device is interested in”.

Change is difficult to deal with, which is why immutability is a great approach: rather than allow data records to change, you just add new versions of them. A given version of something is never allowed to change. This will ensure you keep any references to previous versions intact, while providing a mechanism for discovering that the version you have has been superseded by one or more newer versions. It also means replication is simple - you either have the document with id **abc123** version **1** or you don’t. There is no need to compare it to anything to determine which version it is.

It makes sense to make the version part of the ID you use whenever referring to a piece of data. So for instance `abc123@1`, `abc123@2` etc. (This is essentially how some software systems manage dependencies: you use both the unique name of the dependency and its version). You can also create shorthands whenever you are interacting with the user. For instance `abc123@latest` to instruct the system to “figure out what the greatest version number of `abc123` is and then use that when we store the reference”.

When the Headset connects for the first time it will of course want to download all the metadata. On successive connects you want to know “what has changed since the last time” and then only download the changes. You could do this by timestamp, for instance. The response can either be all the metadata or just the IDs of the versioned metadata items (allowing the Headset to determine what it actually needs to download) [1]

Also: Reader can announce itself on local network using Zero-configuration networking.

[https://en.wikipedia.org/wiki/Zero-configuration\\_networking](https://en.wikipedia.org/wiki/Zero-configuration_networking)

## Status Pre-Start

At this start of this wondrous project I have only one concern and that is based on two preferences which I think are crucial:

- The text in XR needs to be the user's own, after a brief introduction to general text and after a brief process of setting up a connection between the webXR system and their own PDF Library
- In the Library, it is not enough to have the citation metadata at available (title, author names and dates etc.) but also to be able to use entities in the document (AI entity extraction and highlighted text). This is what can make XR truly useful: To map different aspects of documents in a rich way

The concern is about the complexity of setting up the system which will be able to transmit the metadata to the headset software. I am not too worried about the AI entity extraction to metadata since I'm getting my Augmented Text Company team to work on this, at my own cost. I had a productive meeting with Bjørn Borud in Bergen, Norway, which has been recorded.

Part 1: <https://youtu.be/PxbmTfVYERQ>

Part 2: <https://youtu.be/PxbmTfVYERQ>

# Thoughts on a metadata and dialog first approach

We have thought about thinking about metadata and documents separately, to simplify the development work, including in the dialog with ACM.

Along with how to treat our own dialog I had this chain of thought:

## **Dialog**

- What if, instead of using the little toy windows in Twitter/X, we could have a threaded dialog using RSS? Let me elaborate:
- We use WordPress as the back end.
- The view is the threaded conversation (not comments, just blog posts which ping/reply).
- The interface we write into is a nice sized text dialog box.
- The user can decide what their writing and reading environments will be.

Note: This is not to replace Twitter/X for public discussions, it's more for a specific community, like Slack might serve.

How about combining the Dialog with Library metadata?

## **Library**

Imagine if each document in the user's Library was stored in two ways: Visual-Meta appended and HTML snippet, including not only citation metadata (who wrote the document, title, date etc.) but also internal metadata (as exported from Author as well as AI entity extractions such as names and any highlighted text).

This would mean that we would have a threaded lego approach to documents and dialog statements in HTML which we can chose to view any way we want. Even an RSS server could do the List command for this.

In summary: Build a basic dialog service using WordPress blogs where the main interface is the RSS feed so we are always in a chain, unless the user chooses to change the view. Encode the document metadata in a similar way. This may enable some of the interactions discussed but Adam and Alan below,

# Twitter chat 17 December 2023

Adam Wern

And what would good real Offline First discussions be like. We have email, newsgroups, group texting, but most are very linear or lightly threaded.

Alan Laidlaw

Offline is a great topic but I think it is very important to delineate the goals. as near as I can tell, there are several objectives running in parallel. Here is my attempt to define, working backwards:

- 1) in XR, I want to interact with a PDF (with my hands) so I can more comprehend the material more easily and intuitively than I can with a flat screen and a keyboard.
- 2) in XR, I want to synthesize other people's material with my own impressions (even if just highlighting) and have the ability to restructure particles of content in a way that is more useful for me.
- 3) in XR, I want to be able to easily capture various particles and compositions and export them out of XR into an external medium (ex send to email).
- 4) in XR, I want to access a library of material and open one or more documents at a time.
- 5) in XR, I want to last state stored or someway to remind me what I was doing in my last session.
- 6) i want to be able to add material into a library that I can then access in XR. I want changes I make in XR to be stored in the library.
- 7) I want to be able to access an XR space without having to connect to external services.
- 8) I want to access CR while being offline.

This is not a complete list and probably wrong in several ways, but it is an attempt to break the big goal down. Several of these use cases overlap. They share themes. It would be a good exercise to clear up these overlaps so that we can start to speak with more precision about each part.

Adam Wern

So multiplayer, multidocument, embodied active reading, cross device reading, offline

The XR Reading Room

Multi-document is a significant change from the ordinary desktop paradigm – each pdf

trapped inside a window

Alan Laidlaw

And each of those sections are very broad strokes. I would guess that each has 5-20 stories.

Adam Wern

And the current reading experience is very much a page/scroll view at a time – what if we could fork-read a document – keeping multiple reading locations open at the same time  
Or liberally ripping out interesting sections along the way

Alan Laidlaw

Yes. Love it. I personally want to focus on these aspects. The interaction rather than the logistics.

This is the kind of architecture I would like to pin down before Jan. And it'll be wrong in many ways. But it's how we get to experiments over sentiments.

But it's important to get the blueprint down. This is what I did for clients btw. So let's do a session and get the stories and goals and everything down. If it helps, we can do it one person at a time.

Adam Wern

I read this today in a Hacker News thread:

"If a device that could record and replay audio was somehow invented prior to the printing press, it seems highly likely to me that we'd live in a audio-based world, not a text one."

It triggered a recurring thought about what symbolic documentation could be. Even just what Text could be if it was truly digital. What we ideally would want it to do. Within current tech, but outside current imagination.

Many things we have with digital text seem so path-dependent. Query keyboards, teletype. Cursors. Text selection. Copy paste. Hundreds of small accidents.

<https://t.co/n98xYujtb4>

Alan Laidlaw

It reminds of Galileo's Error. In order to progress, science had to focus on quantification vs

qualia. We got progress but elided consciousness. It's an attempt at pragmatic panpsychism. Totally agree w your comments. Lately I've been using a new syntax `||split||` inline to indicate a branch that has two branches rather than a single nested block hierarchy.

It's been really great for sidenotes and trains of thought that can be `||resolved ||`. Goes w a handful of other verbs, mirroring git in some ways.

Meant as a syntax for ml so I can write in various directions without leaving my flow.

(I'm laying out a demo in keynote before attempting to code it. In my imagination, it's a new kind of digital writing. The "split" verb changes the layout, so it's kind of like mermaid but for writing, not logic. )

### Adam Wern

XR is a good place for visualising things that has been invisible with text too. Examples:

- A deleted sentence could just fly too the bin, and be there if you really needed it. Would help aggressive editing, knowing that nothing is really lost.
- CutCopyPaste is replaced by Collect on a plate. Preserved between sessions. You can have many plates in space or on body (like the XR wrist palettes). Multiple items on a plate.

### Alan Laidlaw

<http://bbycroft.net> - is in the same spirit. it shows various LLMs inner workings but imagine it as a synoptic view of an article or library in vr. In particular, there is a standard vertical flow from start to finish, but there are correlates that sit on an adjacent plane. they flow horizontally (from north to south or east to west, you might say.) For reading, this is an impossible interface. But for scanning, or for looking at a pdf as an engine w multiple inputs and outputs, it could be pretty intuitive.



**Massimo**  @Rainmaker1973 · Dec 15

Digital effects are no match for designer Tomohiro Okazaki: this animation uses stop-motion techniques to animate paint, strips paper, and other household objects under the matchsticks' control



<https://twitter.com/Rainmaker1973/status/1735574161719021965>

Adam Wern

Getting text selection from pdfs to work in WebXR will not be easy. Much further work needed; fixing right fonts, adjusting glyph widths, etc. And then the task of stitching those broken pdf lines together, forming sentences. Thankful browsers/OSes doing that heavy text selection lifting automatically for us with PDFs in our ordinary life. Have distant memories from how it was before that.

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Fabien Benetou

<https://github.com/protectwise/troika/blob/main/packages/troika-three-text/src/selectionUtils.js> might help, I didn't have the chance to dig in there yet but I also need it for direct selection (versus moving the caret to a relative position, e.g start a beginning/middle/end then move left or right)

<https://github.com/lojjic/aframe-troika-text/issues/71>

I did implement some of that on my own though and it's kind of working, not reliable or precise yet still helps navigating through text.

Anyway there is also the possibility to ask

@lojjic

for contracting work, either directly or via their recommendation, as this would be IMHO a

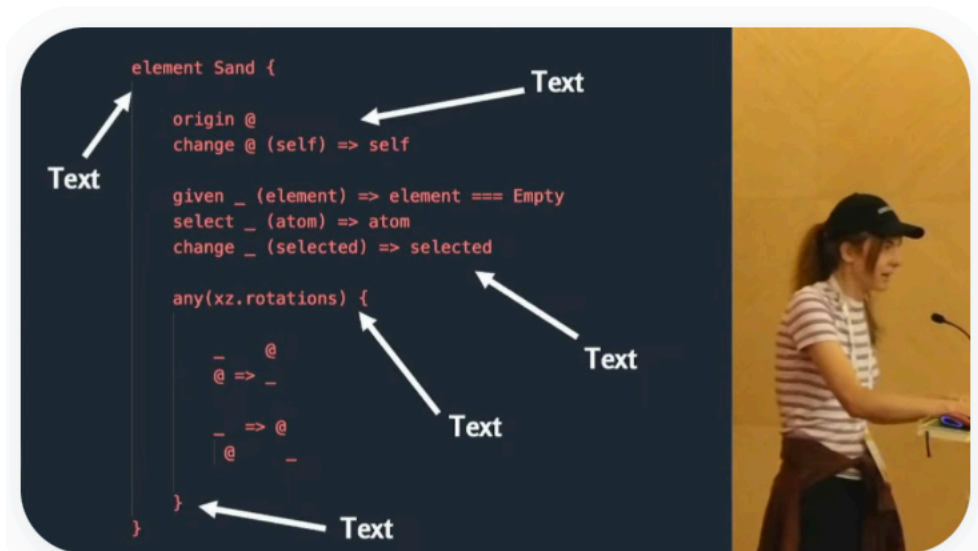
great way to support the mission and the ecosystem.

## Brandel Zachernuk

Oh I also grabbed the line breaks and character offsets in a Troika block as well, so you can manage the character ranges for line highlighting etc - it looks like the font metrics changes from three values per character to four at some point recently but it's pretty easy to extract from the character geometry data

## Fabien Benetou

interesting in general <https://twitter.com/utopiah/status/1736271859555914147> but even more so with a big of provocation against text for spatial programming



# Truth

To make it clear, to me, truth is not a location, it's not a thing, it's the result of interactions.

## Driving in XR

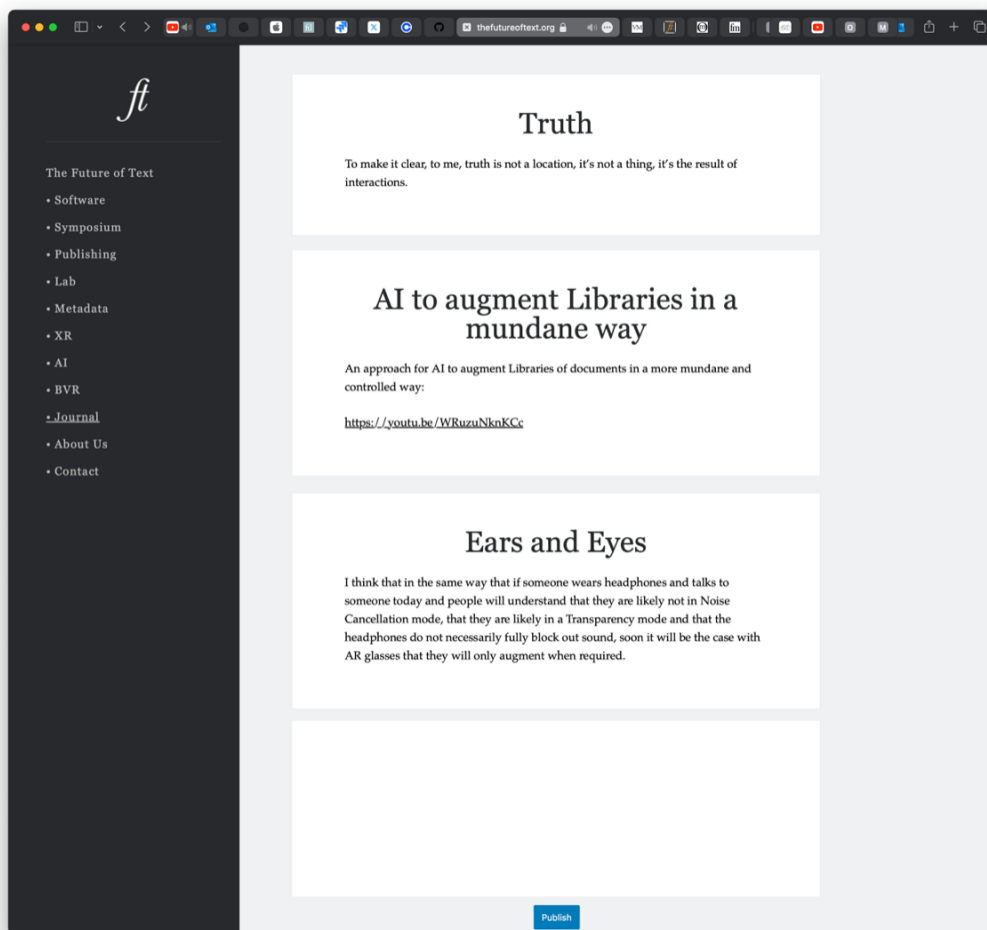
‘Driving’, navigating work in XR should be much like driving in real life, where you feel the road, not disembodied.

# Using A Blog for our Dialog

This is simply what I envision: A normal blog, but no comments, only full posts, but you read a stream of posts (from one single blog or using RSS to combine several) and your post shows on top (or bottom, pending pref) as a full post. You can of course click on a post and choose to 'cite' it or reference it.

**The key is that there is no comment field.** What looks like a comment field starts a new blog post, in context of all other posts.

The user can choose to cite/link a post for instant action and threading. Just a thought.



# Exactly how Adding AI metadata to Visual-Meta should work

## Adding

User does ctrl-click without selecting text (or with selecting text if they prefer) and run a command from Ask AI (a prompt).

The results appear in the current dialog style, including the ability to edit this text, so as to remove results which are not interesting.

New: A button is at the bottom of the results screen with 'Save Metadata'

When actioned, the entire contents of the Ask AI dialog is saved in a new Visual-Meta appendix, as described at <https://visual-meta.info/visual-meta-ai/>

This metadata will at the same time be stored in the same way as highlighted text in the document is, allowing the user to perform Find commands in the Library for this metadata.

## Parsing

When parsing for this metadata it is important to note that the regular Visual-Meta starts (when parsing from the last page of the document) with `@{visual-meta-end}` so when looking for temporary Visual-Meta it is important to look for `@{ai-` since that will be the last section of Visual-Meta AI appendices.

Of note, `@{xr-` will be used for XR data, which will not be developed now.

## In use: macOS

The Reader software will make this metadata available for Find operations in the Library.

## In use: WebXR

This metadata will be packaged, along with the regular Visual-Meta, into JSON for

transmitting to a headset for use in WebXR.

## Further Metadata

User can perform further Ask AI and Save Metadata functions and each time a new Visual-Meta will be added.



## The Story of The Brain in 10 ½ Cells

Writing about how he was photographing brain cells, not drawing freehand: "...I was being more mechanical, more objective. My bet to myself was that if I was to repeat the process I had come up with, using the same set of negative images of the same cell, I could draw an identical picture again and again.

But that is not the way it worked out. Several times I found that I had unintentionally reconstructed the same brain cell twice. The same multiple negatives, the same pool of light, but two drawings that were subtly different.

In the shifting of the paper, the flick of the pen, the guesses that bridged two sharp dots separated by a blur, in the incremental flow of the thickening branches and the finest of spines, something subjective crept into my method.

Imagination was an essential ingredient to the way I was working. Which was the 'right' drawing? With practice, my drawings became more compelling, and more true to life. I realised they exhibited not just a modicum of artistic licence but also an artistic style.

What is artistic style when you are essentially tracing an outline? Something seeps into the way your hand moves after you have drawn brain cells again and again. Something about the energy of the way in which they have grown transfers into the drawings to give them life. I can tell immediately if a drawing is second-hand, penned by a professional illustrator copying from another source. There is something lifeless in the execution and the intention of the lines. The intuitive sympathy with the form is gone. To draw is to know. And for this reason, drawing became central to the development of brain cell theory. There is art at the heart of this science."

**Richard Wingate [2]**

# The Impossible E

In the book by our friend Tim who is in *The Future of Text*, he writes about manuscript handwriting VS. print:

“When I'm giving talks about the Alphabets, especially if I'm speaking to a class, I often call for a volunteer and, when someone puts a hand up, I hold out a marker and ask, ‘Will you come up here and draw a capital E?’

They come up to the whiteboard, a little warily, sensing a trick, and do it.

I say, ‘That's great, but the three horizontals are not quite parallel. Could you just fix that?’

When they've erased the lines and drawn them again much more carefully, I say,

‘Well, actually this one's a bit longer than the other one...’

So they correct that, and then I say, “And the vertical isn't quite vertica...” And maybe I go on to ask for serifs, and get more and more annoying in my polite demands.

The point is, it can't be done. What they are attempting to “write” is a mechanically-reproduced image derived from letters on monuments that were created using stonemason tools - squares, straight-edges, agents of geometry. The human body is not designed to do that.

Then I show the class the E from the Eastern Cham script of Vietnam, and I say,

‘Okay, I want you to write this, with your fingertip, in the air.’

They're a little self-conscious about being so demonstrative in public, but they do it, and I tell them to keep doing it, writing in the air, until the motion starts to feel natural. Then I say, “Okay, without stopping, just look around at everyone else.

Look at their wrists, their hands, their fingers. That is the hand of a Thai dancer.” I'm making two points here, I hope. One is the difference between a script, something written by hand, and a typeface, something designed to be printed.

The first is an extension of the natural, graceful movements of the human body; the other is not.

The other point has to do with geometry, and with the values that are embedded in writing. The Latin alphabet as we use it today descended not from everyday Roman handwriting but from monuments to emperors. The letterforms themselves represent the virtues of a military empire: stability, balance, longevity. Almost any Latin uppercase letter stands on its own feet, as if bestriding the known world. What's more, every Roman emperor was by definition a god, so graphically, these qualities had to be represented not by ordinary, everyday vernacular

shapes but by ideal Euclidean forms: symmetry, parallelism, rectangularity, perfect circles. Shapes not found in nature.

The Cham script doesn't care about those values. There's a grace, and an implied balance but no symmetry. It is still a human script rather than a divine one or a mechanical one”

**Tim Brooks** [3]

# Learn to Dance

This week I watched my son Edgar wave about his magic Harry Potter wand and dance to the music of Jungle and thought:

“If you are young,  
learn to dance.

Interactions in XR  
will use much more  
of our bodies than  
fingers on keyboard  
and trackpad.”

That is to say, if we do our job right...

I'm writing this at the end of 2023 when the world is in turmoil with major wars, a climate emergency, and so much more of what Doug Englebart would most likely describe as urgent complex problems. He introduced this notion—and what we should do about it—in his seminal 1962 paper:

*“By "augmenting human intellect" we mean increasing the capability of a man to approach a complex problem situation, to gain comprehension to suit his particular needs, and to derive solutions to problems. Increased capability in this respect is taken to mean a mixture of the following: more-rapid comprehension, better comprehension, the possibility of gaining a useful degree of comprehension in a situation that previously was too complex, speedier solutions, better solutions, and the possibility of finding solutions to problems that before seemed insoluble. And by "complex situations" we include the professional problems of diplomats, executives, social scientists, life scientists, physical scientists, attorneys, designers- -whether the problem situation exists for twenty minutes or twenty years. We do not speak of isolated clever tricks that help in particular situations. We refer to a way of life in an integrated domain where hunches, cut-and-try, intangibles, and the human "feel for a situation" usefully co-exist with powerful concepts, streamlined terminology and notation, sophisticated methods, and high-powered electronic aids. Man's population and gross*

*product are increasing at a considerable rate, but the complexity of his problems grows still faster, and the urgency with which solutions must be found becomes steadily greater in response to the increased rate of activity and the increasingly global nature of that activity. Augmenting man's intellect, in the sense defined above, would warrant full pursuit by an enlightened society if there could be shown a reasonable approach and some plausible benefits.” [4]*

As I have written in *The Future of Text 4*, we must nurture our imagination [5]. Doug invented much of what we consider personal computing and then the world felt it knew what's what and innovation with how we interact with text slowed to a crawl... We now have a once-in-a-species opportunity to dream anew, upon entering XR. We must not squander this.

As we stand on the threshold of 2024 **we have a focused mission in the Lab:** To develop powerfully useful systems to interact with and view textual knowledge in XR, powered by robust, accessible, low-cost metadata and informed by wide and deep dialog and much testing of prototypes.

We had a meeting this week, during the holidays, where we got much further with how to upload documents and metadata to XR, as outlined at <https://futuretextlab.info/headset-computer-transmission/> and next week we will kick off working out exactly how to make it all connect. Then it is up to developing interactions and more interactions and invite a wider range of people to contribute to *The Future of Text 5*.

That's all really, all there is to update at this point. Let's see how it goes. Happy New Year!

# Different Selective Pressures : Text in XR in 2024

*New Years Eve morning 2023 Letter to the Future of Text Community*

Us humans evolved the way we did because of the evolutionary pressures which shaped us throughout time. How might we have been different if our environment and thus evolutionary pressures were different, and how might we evolve now, now that we exist in a very different environment from our ancestors? *How The Mind Changed* [6] by Joseph Jebelli and Lewis Dartnell's *Origins* [7] (both of whom I plan to invite to contribute to *The Future of Text Vol V*) are wonderful at outlining how our bodies and minds changed over evolutionary time. Not only have we evolved arms and hands, we have also evolved mental circuits, such as the amygdala which helps us integrate perceptions to inform us of potential danger. We might now ask: how should we evolve now, considering we have the potential to shape the environment we live in and thus shape ourselves?

I would contend, to no-ones surprise, that text has been one of the most powerful augmentations of the human mind. Text allows for freezing of statements for communicating across time and space. I say 'statements' and not 'thought' since it is of course not pure thought which is frozen and communicated, but thoughts framed as text. The act of writing is an act of structuring, of shaping thought, from a single sentence to a paragraph and beyond. We might look at thought as being two dimensional with a vector in one direction; always pulling to the future and receding into the past. Writing thought down gives it a constraint which allows for multiple dimensions to occur; it remains in place for reference in a moment or in a thousand years. At the most basic, we can read and re-read a sentence for as long as we like. With speech, if we want to revisit what was said, we will at some point fatigue the speaker and every utterance will carry subtly different weights and tones. With text we can fill an index card, a Post-It, a page, a huge paper roll, a digital screen or projection with text and refer to different parts of our thought, greatly expanding our capacity to express ourselves and see how the different 'strings' of our thought connect—or don't connect, as the case may be. This is why writing of any length beyond the basic social media post coherently takes real mental effort, as does reading anything beyond basic complexity and novelty.

This is why I would say that vastly improving how text is written/recorded and read/extracted, bears a huge opportunity for how we can augment our minds by upgrading the mental environment we operate in. We definitely did not evolve to live through tiny

rectangles.

I believe firmly that we can extend how we interact with text to give us a mental environment where we can grow. I can vaguely imagine (and this is why we need to experiment to see what the realities will be) some way of shaping textual knowledge, using all the visual, tactile and auditory means at our disposal and all the interaction potential from a simple 'look' to using our hands as a sculptor might, on to a dancer who truly dances in the information. Imagine reading text where books and academic papers become transparent and display their contents in entirely new and intuitively visible ways. Imagine experimenting with extracts and connections to the point where we only see traditional sentences when we slow down to focus—the web of knowledge is truly spun. How will our minds develop, how far can we take this?

Our Lab's mission over the next year—as we have chosen to accept it—is to first make it practical and frictionless for an academic user (our initial use case) to access their own Library of documents in a headset, as well as the 'knowledge' of what the documents is and how they relate—the metadata. We hope to complete this soon. We are then tasked with working with expanding our minds through expanding how we can view and interact with this text. We hope you will join us in cyberspace, or the 'metaverse' to test what we build and be part of the process.

The avenues we choose to go down when looking at textual knowledge work in XR/ eXtended Reality, will have repercussions for generations—this is the first—and only time(!) us humans are stepping into a fully visually immersive world for the first time. I expect that just like early PC interactions (copy, paste etc.) got frozen into the culture of how we interact with our knowledge on traditional computers (in 'word processing software' 'spreadsheet', 'web browsers', 'email' and only a few other categories of software) so will our early interactions in XR be frozen. More than simply freezing interactions though, ambitions will also be frozen, once we think we know what working in XR will be, there will be little cultural movement to dream up what it might be. This is what happened to traditional computing, in my view.

This is why I ask you: If you are not already thinking about work in extended reality, please join us, as actively or passively as you would like to.

The wider the discourse around what working with textual knowledge in fully immersive visual environments can be, the deeper the insights and potential will be. If you have thoughts on this and if you know anyone who might be interested in contributing, please do tell me, whether is someone you know personally or just someone whose work you are familiar with.

Remember, the future of text is not yet written.

Here's to a 2024 where we can learn to extend our minds to better connect with our knowledge and each other.

Much love and gratitude,  
Frode Hegland





# Glossary

**ACM** From Wikipedia: “The Association for Computing Machinery (ACM) is a US-based international learned society for computing. It was founded in 1947 and is the world's largest scientific and educational computing society.”

[https://en.wikipedia.org/wiki/Association\\_for\\_Computing\\_Machinery](https://en.wikipedia.org/wiki/Association_for_Computing_Machinery)

ACM's 'Hypertext' Conference piloted Visual-Meta in 2021.

**AGI** (Artificial General Intelligence).

AI stage 2.

If we are to see a world like the movies with artificial intelligence, AGI will need to come into full fruition. AGI would mean a machine would be capable of understanding the world as well as any human. All while maintaining the same capacity to learn how to carry out a huge range of tasks. The reality? AGI is not yet among us. It is a hypothetical form of AI. The potential is there but some believe it to be decades away!

According to a study by Muller and Vincent C., the top-cited 100 AI researchers have a collective 90% confidence that AGI will be among us by 2070. To determine if a machine is truly AGI, it has to pass the tests:

**Turing Test**

In this test, 2 humans and a machine look at something they haven't seen and converse about it. The conversation is recorded and an evaluator determines which descriptor is the machine. The machine is only disqualified if the evaluator is positive it can identify it. (check out Turing Test on Wikipedia )

**The Coffee Test (Wozniak)**

If AGI machines need to understand the world as well as humans do, they must know how to make a good coffee. In this test an ai robot is required to go into an average home and figure out how to make coffee. It involves finding the coffee machine and adding coffee, as well as sourcing a mug and correctly brewing the hot drink.

### Robot College Student Test

A literal test! the machine would take the same university classes as humans and complete the exam. Some may argue that the machine is cheating with its built-in search engines but who is going to argue with a robot...

### Employment Test

This is where we should begin to worry about an I-Robot world. This test determines whether a machine can perform at least as well as humans in the same jobs!

### ANI (Artificial Narrow Intelligence)

#### AI Stage 1.

Often called Weak AI, this is the AI already embedded in our daily lives. A nice way to describe it is that ANI is super-human at specific singular tasks. Like teaching an AI machine to play chess! and it will master it beyond human potential with incredible consistency. Challenge it in draughts though? and you'll get a much needed ego boost. This machine can only play chess. Without prior training and programming in draughts, it doesn't stand a chance. Think of AI as hundreds of interns capable of highly specific tasks more efficiently than humans.

ANI has already transformed the way we live, but it has its limitations. A lot of you will already interact with ANI on a daily basis. Think of talking with Siri or Alexa on your smart devices, or facial recognition when opening your phone!

**Appended** is any metadata which was added at the point of exporting/publishing the document or during authoring with the purpose of providing metadata on export.

**AR** 'Augmented Reality' is an interactive experience that combines the real world and computer-generated content. The content can span multiple sensory modalities, including visual, auditory, haptic, somatosensory and olfactory. (Wikipedia).

Included in the term XR.

**ARC** Engelbart Concept: Augmentation Research Center, The name of Doug's lab at SRI where he proposed a system called H-LAM/T in 1962 and developed and in 1968 demonstrated NLS: oNLine System, his platform for shared knowledge work research, later renamed Augment and from which I decided on the name Author, since Author and Augment share etymological roots.

**Article** A published paper, in a Journal, for academic workflows.

**ASI** (Artificial Super Intelligence)

Stage 3 AI.

Just when you think AI has reached its limit, we bring you the AI of all AI. Super-Intelligence is quite self-explanatory. Oxford Philosopher Nick Bostrom describes ASI as “any intellect that greatly exceeds the cognitive performance of humans in virtually all domains of interest”. Again, this is a hypothetical agent and one which is decades away.

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The reality is that AI is a tool for humans to better our existence. Advancements in artificial intelligence mean the sky's the limit! The question is – will the limit bring more positives or negatives? We must tread carefully with AI whilst simultaneously embracing it.

**Augmented Text Company** The company which produces these tools.

<https://www.augmentedtext.info>

**Author** a word processor from the Augmented Text company.

<https://www.augmentedtext.info/reader>

**concept, defined concept, defined concepts** means, in this context, a useful unit of thought or knowledge, which can be defined in Author, hopefully soon in Reader. Stored as text.

The Map view uses the definition to draw lines where text from a definition is also present on the Map.

When a document is exported to PDF the Defined Concepts become Glossary Terms.

This is as opposed to inferred concept.

Also aView in Author and in Reader (with Visual-Meta) to show all named entities (and headings).

**Definition** when it comes to glossaries, it is the user's stated meaning of a term.

**Document** Can be any type of encapsulated information on a computer.

**DOI** Document Object Identifiers. An effort to make addressing academic documents via the web more robust.

Used in Author to let the user paste a DOI to cite an academic document which is then sent to CrossRef to be parsed into BibTeX which is then used to create a full citation.

**Find** View in Author and in Reader (with Visual-Meta) where the user can see only the sentences with keyword.

**Frode Hegland** A PhD student at the University of Southampton at the WAIS group.

Supervisors Wendy Hall, Les Carr and David Millard.

Influenced by Doug Engelbart and Ted Nelson.

I run an independent software development company called The Augmented Text Company.

Editor of 'The Future of Text' series of books: <https://futuretextpublishing.com>

Organizer of 'The Future of Text' annual symposia, founded 2011.

Is a fan of the musical Hamilton. Lives in London. (the previous sentence is often used to demonstrate

how the Map view works since there will be a line from me to Hamilton, since I have a relationship with Hamilton, but there is no line from Hamilton to me since Hamilton is not 'aware' of a relationship with me.

Designed Visual-Meta.

**Gesture** Interaction through hands and body.

**Journal** A collection of articles. For academic use, usually the record of the work of society, such as any of the many special interest groups at ACM.

**JSON** (JavaScript Object Notation,) An open standard file format and data interchange format that uses human-readable text to store and transmit data objects consisting of attribute–value pairs and arrays (or other serializable values).

<https://en.wikipedia.org/wiki/JSON>

**Lab I** host an hour on Zoom every Monday at 4pm UK time for a community of people who are interested in The Future of Text. They have so far really helped polish Visual-Meta and provide thoughtful dialogue.

**Liquid** is a text interaction tool from the Augmented Text company. It can be used in Author, Reader and most macOS applications.

<https://www.augmentedtext.info/liquid>

**Manuscript** the authoring format which is used when writing, such as Microsoft Word.

It is then either shared as-is, and stays editable, or is exported to be published in a published 'Document' format, such as PDF.

**map** View in Author.

Here the user can place text anywhere they want and any defined concepts will automatically appear

here. If there are defined concepts on the map, the user can click on them and lines will emanate to any text on the map which is in that text's definition.

**METADATA** is information about other information, in the case of documents, this can include structural information (headings for example), how they connect to other documents (References) and who created the document (self-citing)

**NIC** Engelbart Concept: Networked Improvement Community "Consider an "Improvement Community" (IC) as collectively engaged in improving an agreed-upon set either of individual capabilities, or of collective group capabilities-e.g. a professional society. Let's introduce a new category, a "Networked Improvement Community" (NIC): an IC that is consciously and effectively employing best-possible DKR (Dynamic Knowledge Repository) development and usage." (augmenting society's collective IQ).

**Paper** is a general term for a student or academic document in general.

Primarily in PDF when published or handed in.

In manuscript/editable/personal form it is generally in the Microsoft Word format.

**PDA** 'Personal Digital Assistant'. This was before smartphones.

**PDF** 'Portable Digital Format' developed by Adobe, now free with no license restrictions. It is a print to digital medium with few digital affordances which my work on Visual-Meta expands to allow for users to interact with the document in useful ways, while staying compatible with the basic PDF format.

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It is an export format rather than a manuscript/working format.

**Reader** a PDF viewer from the Augmented Text company.

<https://www.augmentedtext.info/reader>

**References** is a list of all the citations a document uses, in an Appendix. In-Body citation, point to these References. This language is not fixed, it is sometimes used interchangeably with Bibliography but in my context a Bibliography is a list of work not expressly cited but which are relevant.

in this context 'Reference' with uppercase 'R' refers to the appendix in an academic document which lists cites sources. In contrast, the citation in the body of the document is referred to as in-body citation.

**robust** is defined as the metadata being available for as long as the document is readable, even if the reader software changes or the data format of the document changes.

**Text** is the basic 'stuff' of this work.

**The Future of Text** Annual Symposium and Book Series (first volume published 2020) as well as community for fostering dialogue around the future of text which I started over a decade ago and which is often co-hosted or presented by Vint Cerf.

<https://futuretextpublishing.com>

**Visual-Meta** A open and robust way to augment flat PDF documents to make them more interactive, by The Augmented Text Company people.

<http://visual-meta.info>

**Visual-Meta** is my approach for embedding metadata in documents, initially PDF, to allow viewer software to provide rich interactions. The Visual-Meta is added as an appendix to the end of the



document in a format inspired by BibTex.

<http://visual-meta.info>

**VR** 'Virtual Reality' is a simulated experience that employs pose tracking and 3D near-eye displays to give the user an immersive feel of a virtual world (Wikipedia).

Included in the term XR.

**XR** 'eXtended Reality', a term including both Virtual Reality (VR) and Augmented Reality (AR).

This is a useful term since headsets increasingly feature passthrough video, allowing the user to toggle between VR and AR modes.

## References

- [1] Anderson, M. & Millard, D., *Seven Hypertexts*.  
DOI: 10.1145/3603163.3609048.
- [2] Wingate, R. 2023. *The Story of the Brain in 101/2 Cells*. Profile Books.
- [3] Brookes, T. 2024. *An Atlas of Endangered Alphabets*. Hachette UK.
- [4] Engelbart, D., 1962. *AUGMENTING HUMAN INTELLECT: A Conceptual Framework (text)*.  
<http://csis.pace.edu/~marchese/CS835/Lec3/DougEngelbart.pdf>. [Accessed 28 12 2023].
- [5] 2023. *The Future of Text IV*.
- [6] Jebelli, J. 2022. *How the Mind Changed*. Hachette UK.
- [7] Dartnell, L. 2019. *Origins*. Random House.

# Visual-Meta Appendix

**This is where your document comes alive.** The information in very small type below allows software to provide rich interactions with this document.  
See [Visual-Meta.info](https://visual-meta.info) for more information.

This is what we call Visual-Meta. It is an approach to add information about a document to the document itself on the same level of the content. The same as would be necessary on a physically printed page, as opposed to a data layer, since this data layer can be lost and it makes it harder for a user to take advantage of this data. ¶ Important notes are primarily about the encoding of the author information to allow people to cite this document. When listing the names of the authors, they should be in the format "last name" "first name" "middle name" whilst delimiting discrete authors with "(and)" between author names, like this: Shakespeare, William and Engelbart, Douglas C. ¶ Dates should be ISO 8601 compliant. ¶ The way reader software looks for Visual-Meta in a PDF is to parse it from the end of the document and look for @ [visual-meta-end]. If this is found, the software then looks for @ [visual-meta-start] and uses the data found between these marker tags. ¶ It is very important to make clear that Visual-Meta is an approach more than a specific format and that it is based on wrappers. Anyone can make a custom wrapper for custom metadata and append it by specifying what it contains: For example @ [dublin-core] or @ [rdflib]. ¶ This was written Summer 2021. More information is available from <https://visual-meta.info> or from emailing [franke@hglund.com](mailto:franke@hglund.com) for as long as we can maintain these domains.

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Supervisors Wendy Hall, Les Carr and David Millard.
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I run an independent software development company called The Augmented Text Company.
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