



**Arthur Perret, Université Jean Moulin Lyon 3**

FOSDEM – February 2, 2024

**1. Architecture**  
**interactive publications**

**2. Features**  
**information management**

**Arthur Perret**

Design, documentation

**Olivier Le Deuff,  
Clément Borel**

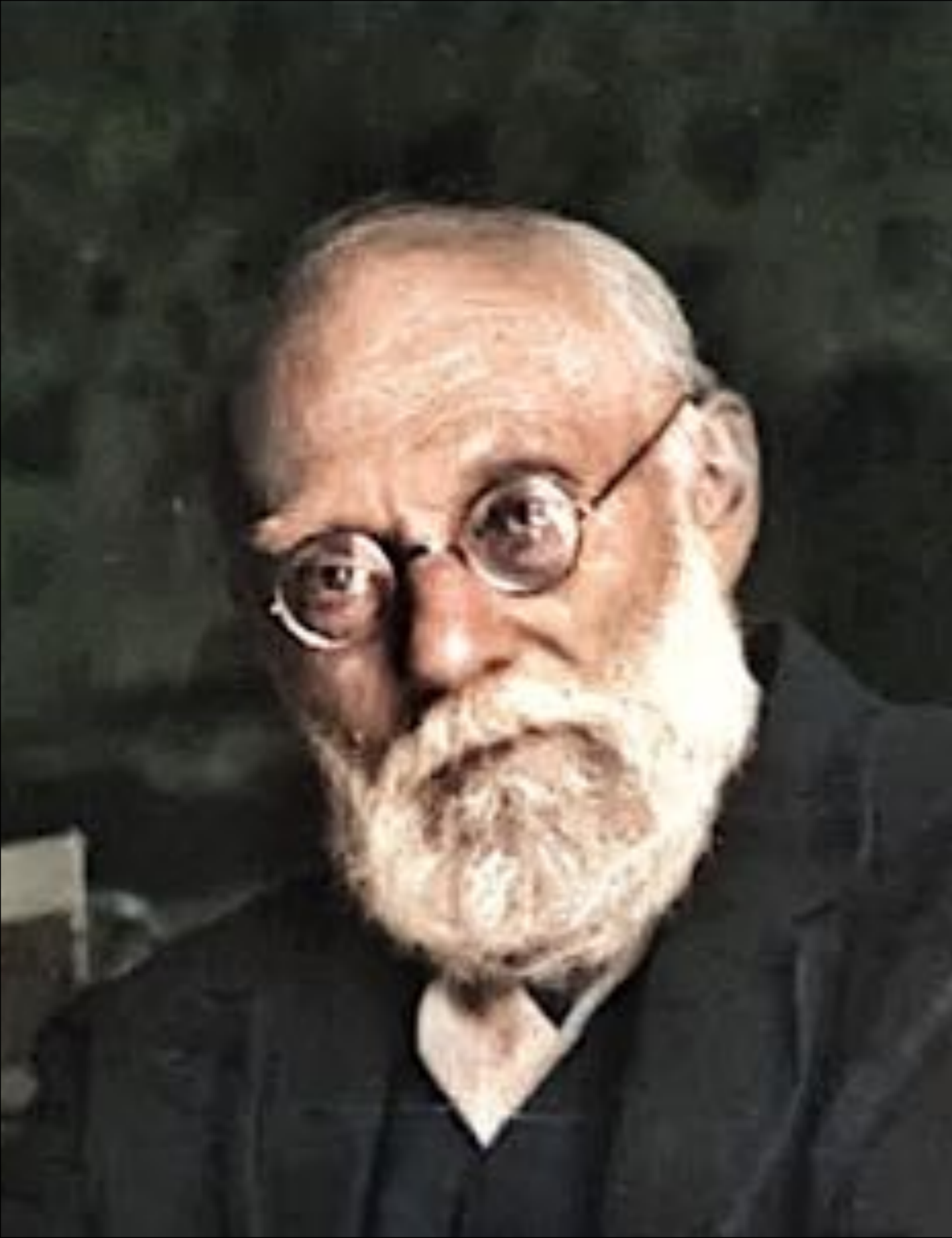
Design

**Guillaume Brioude**

Development

**David Pucheu,  
Rayya Roumanos**

Design (v2)

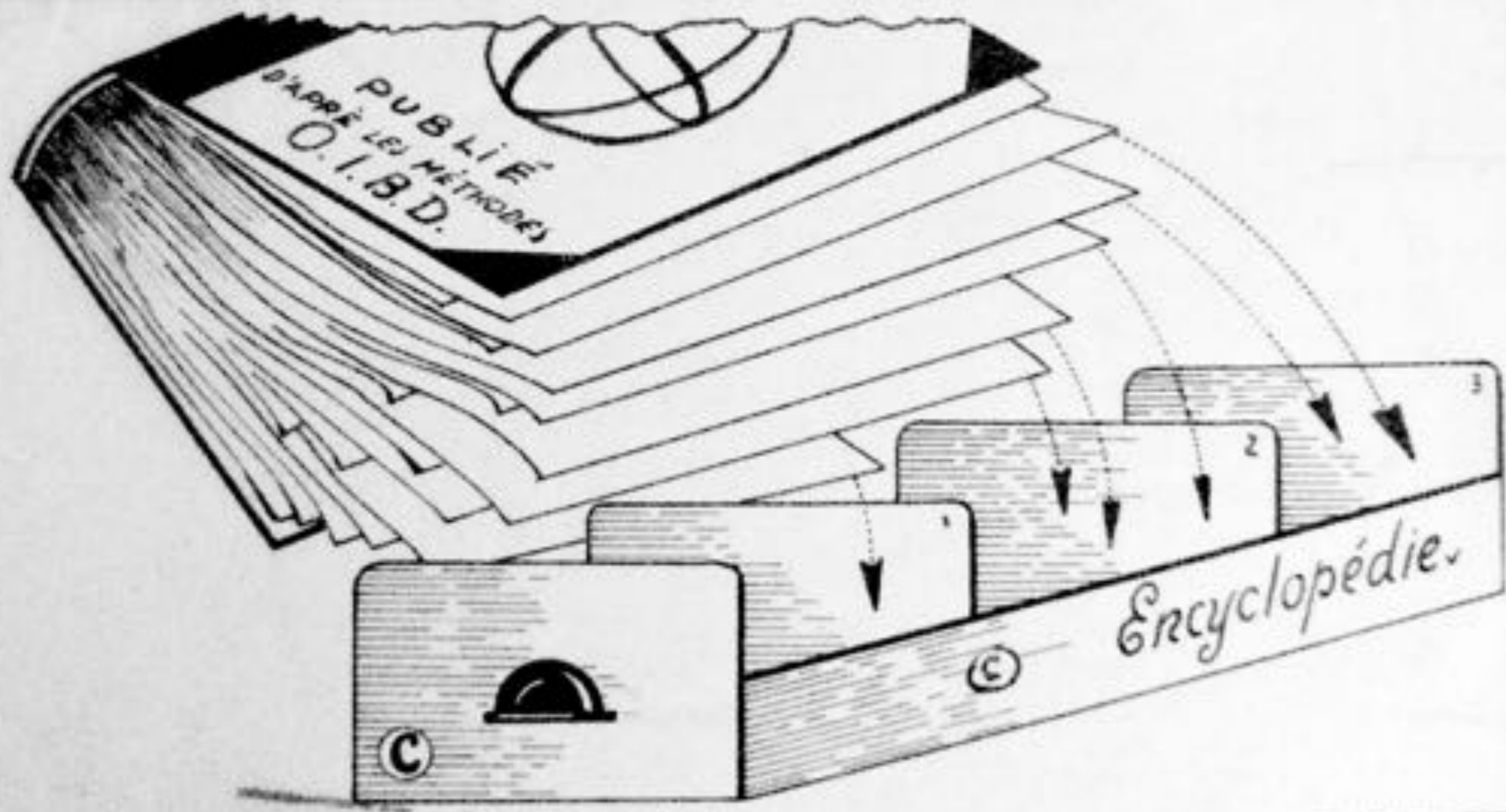


**Paul Otlet**

**(1868-1944)**

**HyperOtlet**

**(2017)**



PUBLIÉ  
D'APRÈS LES MÉTHODES  
O. I. B. D.

Encyclopédie.

©

©

1

2

3

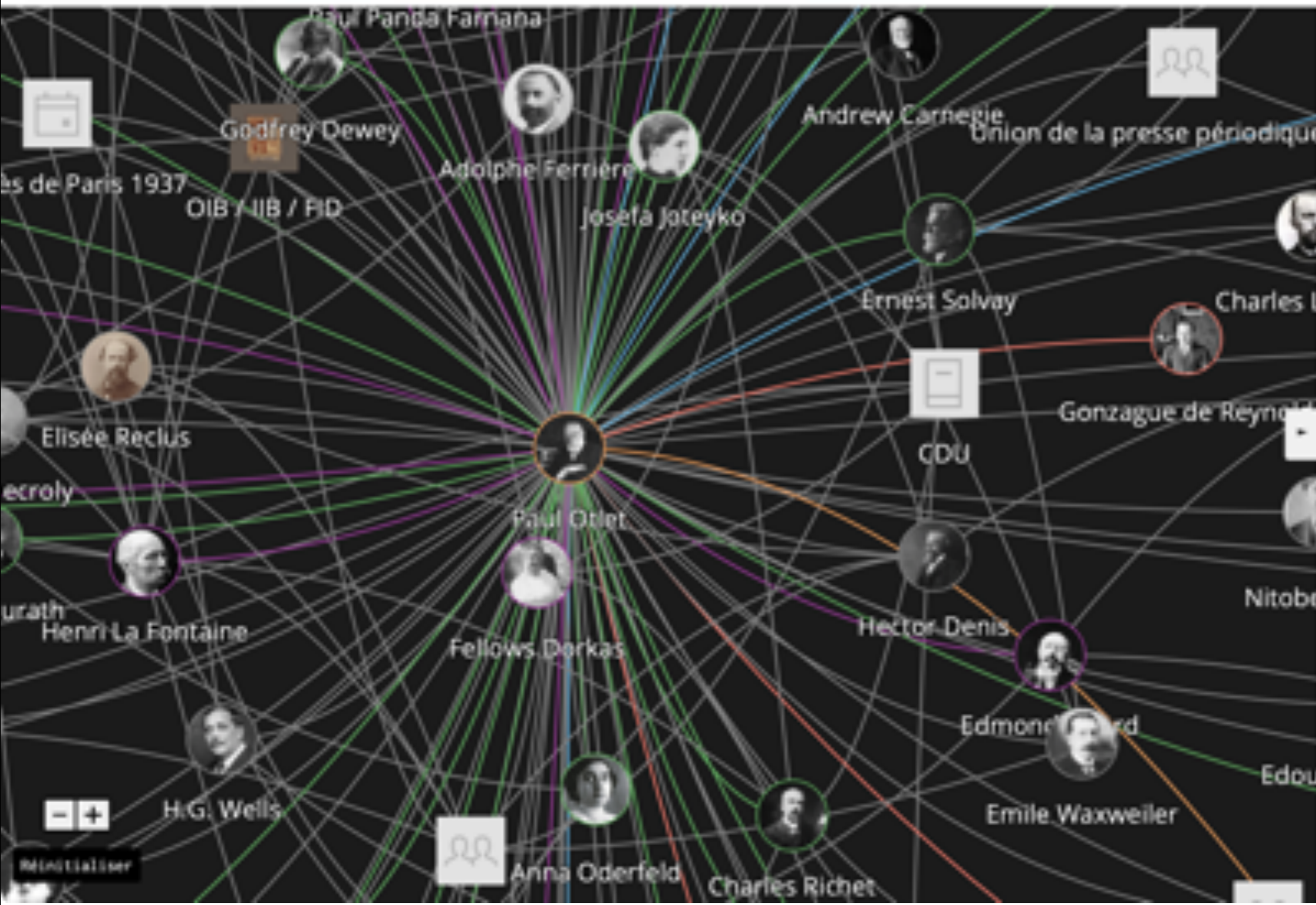




# Mundaneum

Mons, Belgium





Paul Otlet  
1868 - 1944

Fondateur du Mundaneum

W [Profil](#)

pays Belgique  
 domaine Bibliographie

Paul Otlet est la tête pensante du Mundaneum, qui est le lieu de rassemblement de la connaissance qui héberge notamment le Répertoire Bibliographique Universel. Il a consacré toute sa vie à développer cet organisme ainsi que le réseau de personnalités et d'institutions qui l'entourent.

Connexions

- Adolphe Ferrière
- Adolphe Quetelet
- Albert Thomas
- Aleksandr Nikolaevich Briantcharinoff de Starys Lipy
- Alfred Hermann Fried
- André Colet

```

1 ---
2 title: Evergreen notes
3 type: concept
4 ---
5
6 Evergreen notes are written and organized
7 to evolve, contribute, and accumulate over
8 time, across projects. This is an unusual
9 way to think about writing notes: most
10 people take only transient notes. That's
11 because these practices aren't about
12 writing notes; they're about effectively
13 developing insight: "Better note-taking"
14 misses the point: what matters is "better
15 thinking". When done well, these notes can
16 be quite valuable.
17
18 Evergreen notes can be created with
19 [[adjacent concept:tools for thought]].

```

```

---
title: Evergreen notes should be atomic
type: insight
---

[[Evergreen notes]] should be atomic. It's
best to create notes which are only about
one thing-but which, as much as possible,
capture the entirety of that thing.

```

```

---
title: Evergreen notes should be densely
linked
type: insight
---

```

If we push ourselves to add lots of links between our notes, that makes us think expansively about what other concepts might be related to what we're thinking about. It creates pressure to think carefully about how ideas relate to each other (see [[Evergreen notes should be concept-oriented]]). It'll also help you internalize the ideas more deeply.

```

---
title: Evergreen notes should be
concept-oriented
type: insight
---

It's best to factor [[evergreen notes]] by
concept (rather than by author, book,
event, project, topic, etc). This way, you
discover connections across books and
domains as you update and link to the note
over time.

```

```

---
title: Evergreen note titles are like APIs
type: insight
---

```

When [[Evergreen notes]] are factored and titled well, those titles become an abstraction for the note itself. The entire note's ideas can then be referenced using that handle.

```

---
title: Tools for thought
type: concept
---

« Tools to augment human intelligence »
[@engelbart1962; quoted by @matuschak2019].

```



**(example adapted from Andy Matuschak's public notes)**

```
evergreen-notes.md
main
504 100% 1
1 ---
2 title: Evergreen notes
3 type: concept
4 ---
5
6 Evergreen notes are written and organized
7 to evolve, contribute, and accumulate over
8 time, across projects. This is an unusual
9 way to think about writing notes: most
10 people take only transient notes. That's
11 because these practices aren't about
12 writing notes; they're about effectively
13 developing insight: "Better note-taking"
14 misses the point: what matters is "better
15 thinking". When done well, these notes can
16 be quite valuable.
17
18 Evergreen notes can be created with
19 - - -
20 [[adjacent concept:tools for thought]].
```

```
evergreen-notes-should-be-atomic.md
main 100% 1
1 ---
2 title: Evergreen notes should be atomic
3 type: insight
4 ---
5
6 [[Evergreen notes]] should be atomic. It's
7 best to create notes which are only about
8 one thing-but which, as much as possible,
9 capture the entirety of that thing.
```

```
evergreen-notes-should-be-concept-oriented.md
main 100% 1
1 ---
2 title: Evergreen notes should be
3 concept-oriented
4 type: insight
5 ---
6
7 It's best to factor [[evergreen notes]] by
8 concept (rather than by author, book,
9 event, project, topic, etc). This way, you
10 discover connections across books and
11 domains as you update and link to the note
12 over time.
```

```
evergreen-notes-should-be-densely-linked.md
main 100% 1
1 ---
2 title: Evergreen notes should be densely
3 linked
4 type: insight
5 ---
6
7 If we push ourselves to add lots of links
8 between our notes, that makes us think
9 expansively about what other concepts might
10 be related to what we're thinking about. It
11 creates pressure to think carefully about
12 how ideas relate to each other (see
13 [[Evergreen notes should be
14 concept-oriented]]). It'll also help you
15 internalize the ideas more deeply.
```

```
evergreen-note-titles-are-like-APIs.md
main 100% 1
1 ---
2 title: Evergreen note titles are like APIs
3 type: insight
4 ---
5
6 when [[Evergreen notes]] are factored and
7 titled well, those titles become an
8 abstraction for the note itself. The entire
9 note's ideas can then be referenced using
10 that handle.
```

```
tools-for-thought.md
main 100% 1
1 ---
2 title: Tools for thought
3 type: concept
4 ---
5
6 « Tools to augment human intelligence »
7 - - -
8 [@engelbart1962; quoted by @matuschak2019].
```

## A TEST OF COSMA

Search... (5)

## ▼ TYPES 2

 insight 3 concept 1

## ▼ INDEX 4

A-2 

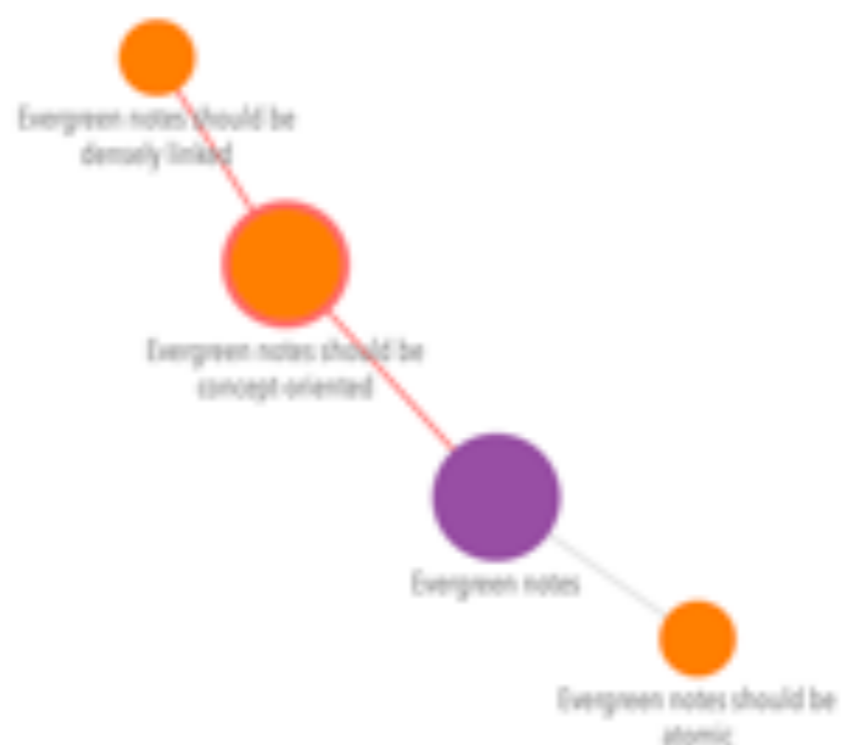
- Evergreen notes
- Evergreen notes should be atomic
- Evergreen notes should be concept-oriented
- Evergreen notes should be densely linked

## ► VIEWS 2

## ► GRAPH PARAMETERS

Help

Made with Cosma - About



- Reset (R) +

 Focus (F) Chronological

Close (Escape)

## Evergreen notes should be concept-oriented

TYPES: insight

It's best to factor [Evergreen notes](#) by concept (rather than by author, book, event, project, topic, etc). This way, you discover connections across books and domains as you update and link to the note over time.

## ▼ LINKS 1

 Evergreen notes

## ▼ BACKLINKS 1

 Evergreen notes should be densely linked



# 1. Architecture

```
~  
% cosma modelize --project f --custom-css --citeproc  
[Cosma v.2.4.0] Fiches /Users/arthurperret/Library/Application Support/cosma-cli/f.yml  
Building cosmoscope... (source type: directory; settings: citeproc, css_custom)  
Cosmoscope generated (987 records)
```

```
~  
% █
```

Otletosphere

Search: [ ]

Types: [ ]

- Otlet 1
- Person 17
- Organization 26
- Event 1
- Work 1

Keywords: [ ]

Index: [ ]

- Ottavio Misson
- Ottavio Van Rysselberghe
- OS / OS / FID
- Otto Neurath
- Ovide Decroly
- Patrick Geddes
- Paul Inger
- Paul Otlet
- Paul Frenck-Karnava
- Pia Huber
- Raphael Dewille
- Rand Storm
- République fédérale de Belgique
- Robert Goldschmidt

View (Expand)

Paul Otlet

Types: Otlet

Keywords: Bibliography

```
% cooma modelize --project otletosphere
[Cooma v.2.4.40] Otletosphere /Users/anthurpernet/Library/Application
Support/cooma-c31191/otletosphere.gml
Building coomscape... (source type: csv)
Coomscape generated (128 records)

% cooma modelize --project glossaire-innovation
[Cooma v.2.4.40] Glossaire de l'Innovation /Users/anthurpernet/Library
ApplicationSupport/cooma-c31191/glossaire-innovation.gml
Building coomscape... (source type: directory)
Coomscape generated (174 records)

% cooma modelize --project algoj
[Cooma v.2.4.40] algoj Algorithmes et Journalisme /Users/anthurpernet/
Library/ApplicationSupport/cooma-c31191/algobj.gml
Building coomscape... (source type: directory)
Coomscape generated (120 records)
```

Search: [ ]

Termes

Type: objet

Mot ou locution qui, dans un **contexte de recherche d'informations**, désigne de façon condensée le contenu d'une **unité documentaire** ou d'une question. Synonymes : mot-clé, descripteur, **anglais** : term, keyword.

AlgoJ  
Algorithmes et  
journalisme

Search: [ ]

Types: [ ]

- technique 14
- organisation 17
- professionnel 17
- méthodes 24
- concept 16
- algorithmes 16

Prédiction

Types: concept

Mots-clés: prédiction, intelligence artificielle, statistique

machine learning

**Prédiction** : estimation → statistiques d'un événement futur : les résultats d'une élection, le résultat d'un film, la valeur d'une entreprise en bourse etc. La prédiction statistique compare deux corps de → données : T → algorithmes apprennent un modèle et l'applique dans un autre corps pour prédire un événement. Les → technologies de spécialisation reposent sur ces mécanismes prédictifs.





## 2. Features



## Tools for thought

TYPES : concept

« Tools to augment human intelligence » ([Engelbart, 1962](#) ; [quoted by Mataschak, Nielsen, 2020](#)).

### Bibliographie

ENGELBART, Douglas-C, 1962. AFOSR-3222. *Augmenting Human Intellect: A Conceptual Framework* [en ligne]. SRI Summary Report, Stanford : Stanford Research Institute. Disponible à l'adresse : <https://www.douglasengelbart.org/content/idea/196/>

MATASCHAK, Andy et NIELSEN, Michael, 2020. *How can we develop transformative tools for thought?* [en ligne]. Disponible à l'adresse : <https://austinn.com/productions/202/>

► LIENS 2

▼ RÉTROLIENS 1

● (adjacent concept) Evergreen notes

Evergreen notes can be created with **Tools for thought**.

↳ Réinitialiser (R) ◀

☐ Focus (F)



## TEST

Rechercher... (0)

### TYPES

- insight
- concept 2
- reference 2

### INDEX

A-Z

- Augmenting Human Intellect: A Conceptual Framework
- Evergreen notes
- How can we develop transformative tools for thought?
- Tools for thought

### VUE

### PARAMÈTRES DU GRAPHE



Reinitialiser (R)

Focus (F)





## Tools for thought

TYPES : concept

« Tools to augment human intelligence » ([Engelbart, 1962](#) ; [quoted by Mataschak, Nielsen, 2020](#)).

### Bibliographie

ENGELBART, Douglas-C, 1962. AFOSR-3202: *Augmenting Human Intellect: A Conceptual Framework* [en ligne]. SRI Summary Report, Stanford : Stanford Research Institute. Disponible à l'adresse : <https://www.douglasengelbart.org/content/idea/196/>

MATASCHAK, Andy et NIELSEN, Michael, 2020. *How can we develop transformative tools for thought?* [en ligne]. Disponible à l'adresse : <https://austinn.com/production/202/>

► LIENS 2

▼ RÉTROLIENS 1

● (adjacent concept) Evergreen notes

Evergreen notes can be created with **Tools for thought**.

↳ Réinitialiser (R) ◀

☐ Focus (F)



Réinitialiser (R)
  Focus (F)

## Tools for thought

TYPES : concept

« Tools to augment human intelligence » ([Engelbart, 1962](#) ; [quoted by Mataschak, Nielsen, 2020](#)).

### Bibliographie

ENGELBART, Douglas-C., 1962. AFOSR-3202. *Augmenting Human Intellect: A Conceptual Framework* [en ligne]. SRI Summary Report, Stanford : Stanford Research Institute. Disponible à l'adresse : <https://www.douglasengelbart.org/limited/idea/196/>

MATASCHAK, Andy et NIELSEN, Michael, 2020. *How can we develop transformative tools for thought?* [en ligne]. Disponible à l'adresse : <https://mattias.com/productions/2020/>

► LIENS 2

▼ RÉTROLIENS 1

● [adjacent concept] Evergreen notes

Evergreen notes can be created with **Tools for thought**.

The screenshot shows a web browser window with a mind map on the left and a sidebar on the right. The mind map has a central purple node labeled 'tools for thought'. It is connected to three other nodes: a black node 'Augmenting Human Intellect: A Conceptual Framework', a black node 'How can we develop transformative tools for thought?', and an orange node 'Evergreen notes should be densely linked'. The sidebar on the right has a section titled 'Tools for thought' with the type 'concept'. Below this, there is a quote: '« Tools to augment human intelligence » (Engelbart, 1962 ; quoted by Mataschak, Nielsen, 2020)'. Underneath is a 'Bibliographie' section with two entries: 'ENGELBART, Douglas C, 1962. AFOSR-3202. Augmenting Human Intellect: A Conceptual Framework [en ligne]. SRI Summary Report, Stanford : Stanford Research Institute. Disponible à l'adresse : https://www.douglasengelbart.org/content/view/full/156/' and 'MATASCHAK, Andy et NIELSEN, Michael, 2020. How can we develop transformative tools for thought? [en ligne]. Disponible à l'adresse : https://museimon.com/notes/156/'. A tooltip is overlaid on the mind map, showing a dropdown menu with the title 'RÉTROLIENS 1' and one item: '(adjacent concept) Evergreen notes'. Below the item is a text box containing the sentence: 'Evergreen notes can be created with tools for thought.' At the bottom left of the browser window, there are two buttons: 'Réinitialiser (R)' and 'Focus (F)'.

Tools for thought

TYPES : concept

« Tools to augment human intelligence » (Engelbart, 1962 ; quoted by Mataschak, Nielsen, 2020).

**Bibliographie**

ENGELBART, Douglas C, 1962. AFOSR-3202. Augmenting Human Intellect: A Conceptual Framework [en ligne]. SRI Summary Report, Stanford : Stanford Research Institute. Disponible à l'adresse : <https://www.douglasengelbart.org/content/view/full/156/>

MATASCHAK, Andy et NIELSEN, Michael, 2020. How can we develop transformative tools for thought? [en ligne]. Disponible à l'adresse : <https://museimon.com/notes/156/>

Augmenting Human Intellect: A Conceptual Framework

How can we develop transformative tools for thought?

tools for thought

Evergreen notes should be densely linked

Evergreen notes should be atomic

Réinitialiser (R)

Focus (F)

▼ RÉTROLIENS 1

● (adjacent concept) Evergreen notes

Evergreen notes can be created with tools for thought.

```
references.json — cosma-test
main (no function selected)
1 [
2   {"id": "matuschak2019",
3     "author": [
4       {"family": "Matuschak", "given": "Andy"},
5       {"family": "Nielsen", "given": "Michael"}
6     ],
7     "citation-key": "matuschak2019",
8     "issued": {"date-parts": [[2019]]},
9     "language": "en",
10    "title": "How can we develop transformative tools for thought?",
11    "type": "webpage",
12    "URL": "https://numinous productions/ttft/"},
13   {"id": "engelbart1962",
14     "author": [{"family": "Engelbart", "given": "Douglas C"}],
15     "citation-key": "engelbart1962",
16     "event-place": "Stanford",
17     "genre": "SRI Summary Report",
18     "issued": {"date-parts": [[1962]]},
19     "language": "en",
20     "number": "AFOSR-3223",
21     "publisher": "Stanford Research Institute",
22     "publisher-place": "Stanford",
23     "title": "Augmenting Human Intellect: A Conceptual Framework",
24     "title-short": "Augmenting Human Intellect",
25     "type": "report",
26     "URL": "https://www.dougenelbart.org/content/view/138/"
27   ]
}
```

```
tools-for-thought.md
main type: concept
1 ---
2 title: Tools for thought
3 type: concept
4 ---
5
6 « Tools to augment human intelligence »
7 [ @engelbart1962; quoted by @matuschak2019 ].

Markdown Unicode (UTF-8) Unix (LF) 132 / 15 / 7
```





## How can we develop transformative tools for thought?

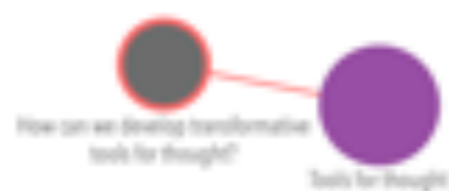
TYPES : reference

MATUSCHAK, Andy et NIELSEN, Michael, 2019. How can we develop transformative tools for thought? [en ligne]. Disponible à l'adresse : <https://sumitosis-productions.com/>

### ▼ RÉTROLIENS 1

● Tools for thought

« Tools to augment human intelligence » (Engelbart, 1962 ; quoted by Matuschak, Nielsen, 2019).



↳ Réinitialiser (R) ⌵

🔍 Focus (F)



**Linking is a knowledge  
organization process**

# Linking as a way to classify:

## Specific

```
---  
title: Annotated  
bibliography  
type: concept  
---
```

An annotated bibliography is a kind of `[[bibliography]]` where discursive annotations are added to traditional bibliographic metadata.

## Generic

```
---  
title: Bibliography  
type: concept  
---
```

Formerly the knowledge about books. Nowadays the art of presenting information describing documents.

## Using link types:

```
---  
title: Annotated bibliography  
type: concept  
---
```

An annotated bibliography is a kind of `[[generic:bibliography]]` where discursive annotations are added to traditional bibliographic metadata.



## Child

---

title: Dynamic medium

type: concept

---

The concept of dynamic medium was imagined by [[Alan Kay]].

## Parent

---

title: Alan Kay

type: person

---

Alan Kay is an American computer scientist.

# Linking as a way to index:

---

title: Bibliothécaires et documentalistes  
(Briet 1951)

type: publication

---

[[Suzanne Briet]] says [[Robert Pagès]]  
was ahead of his time when he wrote about  
[[documentation]].

# Linking as a way to compose ideas:

---

```
title: The epistemic status of a card  
evolves with time  
type: idea
```

---

```
The [[epistemic status]] of a [[card]]  
evolves with time.
```

## Idea

```
---  
title: The epistemic status of a  
card evolves with time  
type: idea  
---
```

The [[epistemic status]] of a  
[[card]] evolves with time.

## Components

```
---  
title: Epistemic status  
type: concept  
---
```

The epistemic status of an  
assertion reflects the strength of  
its justification, in accordance  
with the epistemic constraints  
with which it operates.

```
---  
title: Card  
type: concept  
---
```

A card is a small flexible unit of  
information.



# **Knowledge synthesis through network synthesis**