The user's place: an example of undone computer science

Pierre Beust Pr. Université de Rennes

Maryvonne Holzem MCF Emérite Université de Rouen Normandie

Jacques Labiche Pr. Honoraire Université de Rouen Normandie

overview

I. Présentation

I.a. Group New Uses : v

I.b. A critique of cognitive orthodoxy

I.c. The place of the user: an epistemological question

I.d. Technology as a symbolic form

II Our work

II.a. Knowledge appropriation

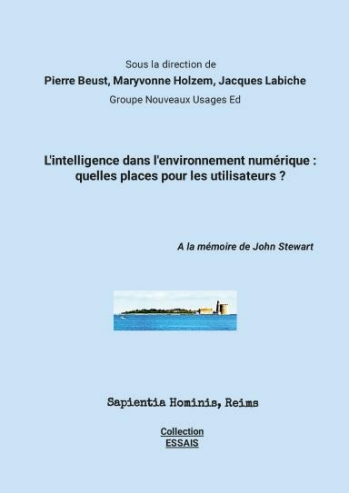
II.b. Document mapping

III. The undone

- IA générative
- Prompt engineering

I.a. Groupe NU

- Normandy indisciplinary group
- Engineering sciences, computer science, linguistics, cognitive sciences, semantics,…
- What place for users, texts and cultures in digital work environments?
- Intelligence report – Tatihou 2016 (ed. 2023)
  - Science in the making
  - Text structure :
    - the chronological order of our exchanges
    - Conclusion with four cleavage points



http://www.revue-texto.net/docannexe/file/4831/texto_tatihou_l_intelligence_dans_l_environnement_numerique_vuct.pdf

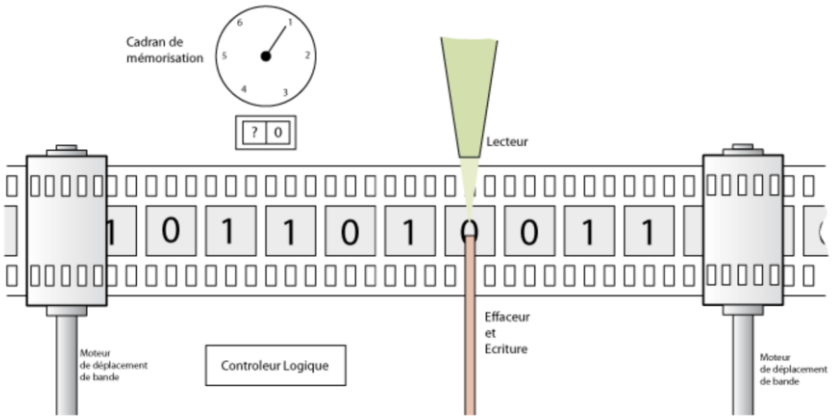
I. b. critique of cognitive orthodoxy

- Brain computer metaphor as spontaneous ideology
  - software / hardware
  - computer coding
  - Discrete/continuous
  - What about meaning

- real-life experience
  - The machine - place for data
  - Human beings can acquire knowledge

I.b. Brain computer metaphor

Software separate from hardware



Digital platform

- Computer science – information
  - Separation of program and machine.
    - Program implemented by the machine unintelligible to the user

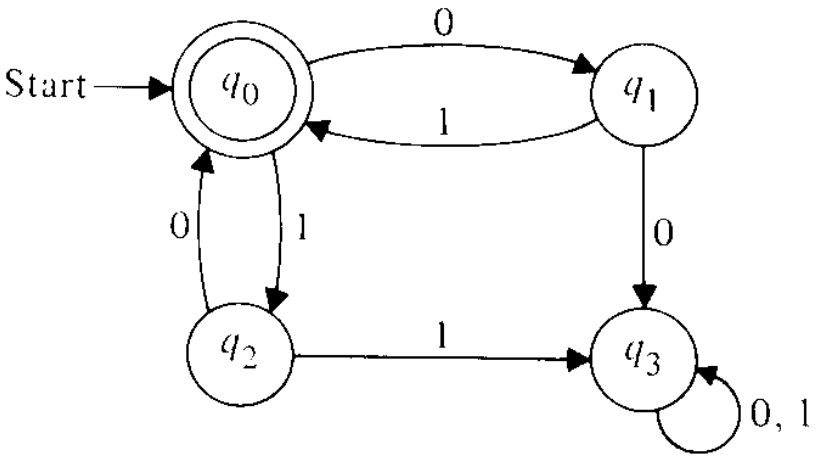
User

- No separation: they cannot exist without each other
- Body/mind relationship: duality

I.b. Brain computer metaphor

Discret / continu

- Non-linearity: divergent trends in discretized dynamics
- Discrete state machines:



- Living : the brain is constantly being restructured

  continuous deformation of neurons

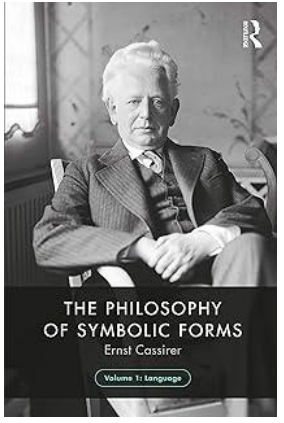
  An umwelt, a world, a culture, is continually emerging from our experiences

I.c.The place of the user: an epistemological question

- the two meanings of epistemology
  - Critical study of a particular discipline in terms of its evolution, values, scientific and philosophical significance.
  - Theory of knowledge
    - The philosophy of symbolic forms

- *Philosophie der symbolischen Formen*. 1 : *Die Sprache*. Berlin: Bruno Cassirer, 1923.
- *Philosophie der symbolischen Formen*. 2 *: Das mythische Denken.* Berlin: Bruno Cassirer, 1925
- *Philosophie der symbolischen Formen*. 3: *Phänomenologie der Erkenntnis*. Berlin, Bruno Cassirer, 1929

Form as organization, gestalt is symbolic in the sense that it produces signs, i.e. it depends on institutions and norms

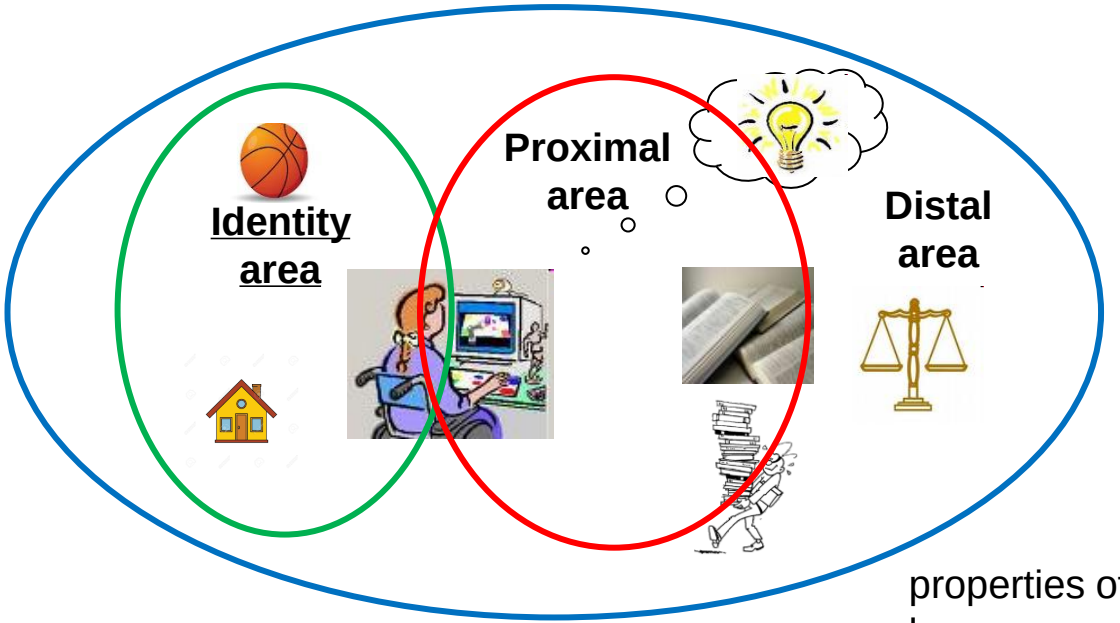


I.c. The place of the user: the contribution of the philosophy of symbolic forms as a theory of knowledge.

- Symbolic forms must be understood as :
  - Stabilized mediating forms that emerge from socialized structures of collective interaction (institutions and techniques, ritualizations and semiotics) and which in turn constrain human protagonists, in the sense that they introduce obligatory passages between cognitive agents who are already interacting.
  - From this point of view, symbolic forms orient the main directions of human action.
    - Jean Lassègue *Note sur l'actualité de la notion de forme symbolique* https://doi.org/10.4000/methodos.88

I.c. The place of the user: cultural science perspective

- What makes sense to us humans but from a metastabilization of values enduring through different contexts of activity.
- Our triple semantic situation



properties of all languages

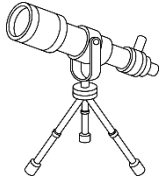
1. We are born in a historical and cultural context.
2. We evolve in fields and practices that we interpret.
3. We are immersed in a situation that is constantly evolving.

	Zone identitaire	*Zone proximale*	*Zone distale*
Personne	JE, NOUS	TU, VOUS	IL, ON, ÇA
Temps	MAINTENANT	NAGUÈRE	PASSÉ
		BIENTÔT	FUTUR
Espace	ICI	LÀ	LÀ-BAS
			AILLEURS
Mode	CERTAIN	PROBABLE	POSSIBLE
			IRRÉEL

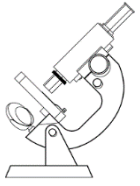
I.d. Technology as a symbolic form: its anthropological significance

- technical action (activity, action, act)
  - magical behavior / technical behavior
  - the technical tool is a vector for expanding the sphere of action.
    - the tool is introduced between the desire and its realization, without necessarily appearing as a mediator.

- why do we seek to help the user in his interpretation ?
  - because technology must be judged by its readiness to serve, not to drive.
  - what are digital corpora for?
    - an instrumented experimental approach
    - Contrast it corpus with a reference corpus



Telescope and microscope combined



II. Our work

II.a. Knowledge appropriation

- Terminology – linguistics
- Platform in transport law

II.b. Document mapping

- Light semantics
- Interactive visualizations

II.a. A praxological approach to knowledge appropriation

Praxeology. - A theory of action (as opposed to ontology), it is necessary to describe the genesis and interpretation of cultural objects,
the evolution of individuals (ontogeny) and that of cultures.

object: what the term affects

action: what it was used for

function: what it can do in a process

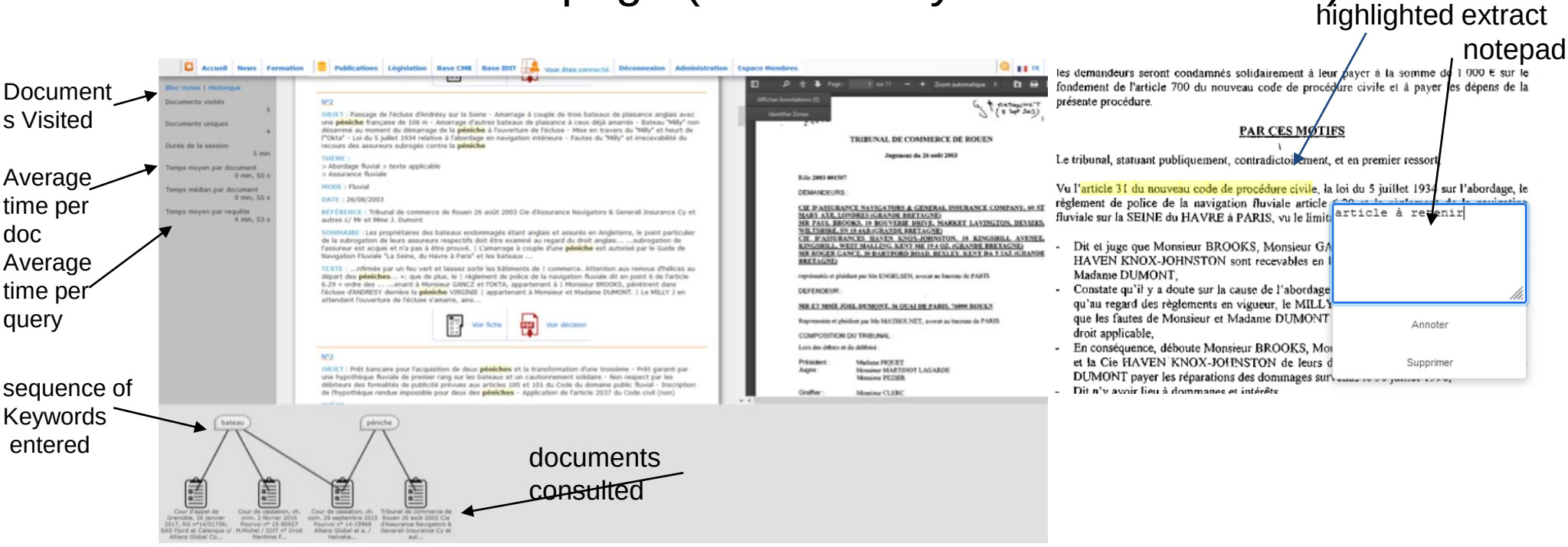
Telic : purpose and function of the Object. It expresses goal-directed action (Τέλος or end point).

Expert	Terme	Objet (sur quoi agit le terme)	Action (ce à quoi il a été utilisé)	Fonction (ce qu'il permet de faire dans le modèle de scénario)
Expert A (LORIA)	**Polygonalisation**	Une **chaîne de points**	**Approximer** au mieux la chaîne de points par un ensemble de **droites**	**Extraire** l'information utile de l'image
Expert B (LORIA)		Une **chaîne de pixels**	**Convertir** une chaîne de pixels en un ensemble de **vecteurs**	**Obtenir** des objets mathématiques de plus haut niveau
Expert France Télécom(FT R&D)		Une **image**	**Arranger** l'image sous forme de **polygone** connexe	1- **Découper** une image en zones homogènes ; 2- **compresser** une image

Expression de la variation fonctionnelle (Source Baudouin, Holzem, Saidali, Labiche (2003) [102]

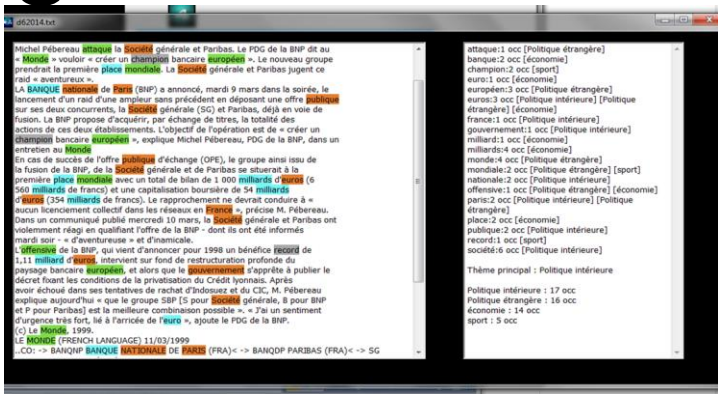
II.a. **Historicity and reflexivity: ethical use of digital traces.**

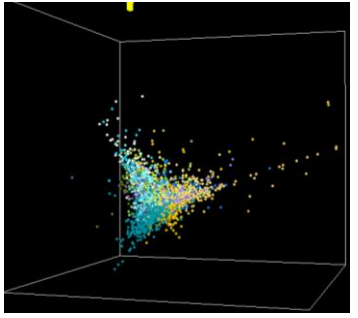
- A platform equipped with a system of traces voluntarily left by the user, a boc notes, with a dynamic action graph displayed at the bottom of the page ("involuntary" but visible trace).



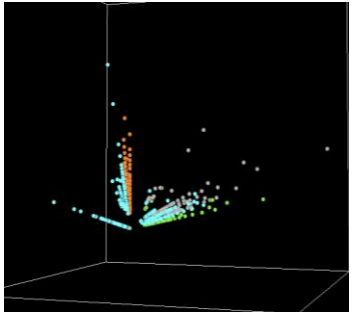
II.b. documents mapping

- Defended PhD :
  - « Sémantique légère pour le document - Assistance personnalisée pour l'accès au document et l'exploration de son contenu », Vincent Perlerin, U. Caen, 2004
  - « Visualisations interactives pour l'aide personnalisée à l'interprétation d'ensembles documentaires », Thibault Roy, U. Caen, 2007
- industrial collaboration
  - eXo maKina (Paris), Canopée project since 2013





AFP news



Tweets

III the undone

III.a. Generative AI and User-Centered approach

III.b. Prompt engineering

III.c. Some proposals

III.a Generative AI and User-Centered approach

Luc Julia,
cf. https://iaconference.education/ 31'10

- Generative but not creative
  - Only the user has the power of creation ->
  - Only the user has the power of interpretation
  - The user can customize the interaction step by step

- AI : not “Artificial Intelligence” but “Augmented Intelligence”, the user’s one

III.a. Generative AI and User-Centered approach

- Multiple use bypasses
  - A use bypassable tool provide an added value in interpretation tasks
  - This makes some creative environnements

- Examples of LLM use bypass
  - Coding
  - Using a LLM to instantiate the classes and properties of an ontology an ontology (populating task) : Sahbi & al., EGC 2024

III.b. Prompt engineering

- Generative AI ≠ a search engine ; Prompt ≠ a query
- Need to contextualize (be careful what you give).
- It's not so much the answer as the question that's important
- The prompt is built through interaction (trials and “errors”) ; it’s an activity

III.c. Some proposals

- Undone Science ? :
  - The user’s creativity in AI applications
    - Creativity not seen as an individual skill
    - Creativity as emerging from an activity in a technical, social and cultural environment
  - Enaction and serendipity in generative AI applications
  - Computer Sciences as both
    - a Formal Science
    - a Humanities and Social Science

Thank you for your attention