

Collective Intelligence

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PART I
THE BIG PICTURE

Collective Intelligence Exists Already

- Feature of all animal societies: cognitive process at the scale of the society itself
 - Schools of fishes, beehives, anthills, flocks of birds, herds of mammals, primate societies...
- Human collective intelligence is special
 - Language and symbolic systems
 - Complex social institutions
 - Complex technological systems
 - Personal reflexive thought
 - **Cultural evolution**: the growth of human collective intelligence follows the improvement of media

Media, Cultural Evolution and Knowledge

Algorithmic Knowledge

Info. econ., reflexive CI, scientific humanities

Algorithmic medium – ubiquity of data and processors - automates manipulation

Typographic Knowledge

Nation-states, industry, global market, natural sciences

Typographic medium – mass media - automates reproduction and diffusion

Literate Knowledge

Empires, universal religions, commerce, money, philosophy

Literate medium – lighter symbols (code or medium) - augments manipulation

Scribal Knowledge

Palace-temples, agriculture, hermeneutics, systematic knowledge

Scribal medium – lasting symbols - augments memory

Oral Knowledge

Tribes, chamanism, hunting-gathering, narratives, rituals

Oral medium – transient symbols - supports thought and symbolic knowledge

Research Program: *Augmenting* Collective Intelligence by Using the Algorithmic Medium

- *Competing projects*: Artificial Intelligence, Singularity, Post-humanism, etc.
- *Goal*: to augment personal and collective cognitive processes: perception, memory, learning, problem solving, etc.
- *Strategy*: Using the algorithmic medium to make human collective intelligence **reflexive**

COLLECTIVE INTELLIGENCE

INTERDEPENDENCE

	Networks of SIGNS	Networks of BEINGS	Networks of THINGS
VIRTUAL Human development	Knowledge S Sciences B Arts T Wisdoms	Ethics S Governance B Values T Rights/obligations	Empowerment S Competences B Resolve T Finance
ACTUAL Human development	Messages S Content B Communication T Media	People S Social Roles B Trust T Social networks	Equipments S Technology B Health T Bio-phys. environ ^t

What Is an Idea?

[Concept + Affect + Percept] + Social context

Translation in the algorithmic

[Category + Value + Data] + Social context

What is Cognition?

Self-reference, growth, reproduction,
evolution, cross-pollination
of ecosystems of ideas

Reflexive Collective Intelligence

- **Ecosystems of ideas** emerging from collective intelligence in a new generation of social media
- Displayed around each people, community, thing, place, work of the mind...
- Interaction through holograms in VR or AR, by Google glasses or tablet
- Embedded powerful tools for selection, exploration, analysis, synthesis, semantic distances measurement
- Symbiosis communities / ecosystems of ideas
- Symbiosis individual / collective learning

Layers of the Algorithmic Medium

Semantic Sphere (2020)
Reflexive collective intelligence

Universal addressing of metadata (concepts)

World Wide Web (2000)
Global hypermedia public sphere

Universal addressing of data

Internet (1980)
Computer networks

Universal addressing of operators

Digital computers (1950)
Electronic circuits

Local addressing of data and operators

PART II
TRAINING FOR COLLECTIVE
INTELLIGENCE

Network Awareness

- Indirect self-organized communication: Individuals communicate by modifying their data-environment (stimergy).
- Awareness of situations, contexts, communities, local memories
- Don't waste the time of others : ignorance, redundance, irrelevance

Personal responsibility of collective memory

- Actions in the digital medium: subscribe, buy, comment, record, broadcast, hyperlink, tag, approve/like, participate to a group, communicate, etc.
- Every digital action sculpts the collective memory.
- We are all potentially readers, spectators, authors, critiques, editors, publishers, curators, librarian and co-responsible of the collective memory.
- Knowledge society citizenship: help / orient others.

Critical Evaluation of Sources

- There is no objectivity
 1. **Orientation:** problems, questions, agendas
 2. **Frame:** breadth and cutting of the context
 3. **Narrative:** who are the actors, the « victims », the beneficiaries...? The same event can be told in many different ways.
 4. **Norms:** tacit, explicit
- Multiply and cross-check the sources

Six Questions on Transparency

1. Who?

Identify the source (people, institutions, schools of thought...)

2. Where does the money come from?

How many, from what sources?

3. Why?

What are the questions / problems / agendas (political, economic, theoretical, religious, etc.) of the source?

4. References?

Are the sources of the source clearly identified?

5. When

Find the origin in time of an idea or information. What are the « temporal lines » of ideas or events.

6. Is the source transparent on 1, 2, 3, 4, 5?

Personal Knowledge Management 1 (PKM)

1. Attention management

- Define interests, priorities, areas of expertise (acquired and aimed).

Stay focused, avoid distraction, keep in mind the big picture

2. Connection to valuable sources

- Information streams from people and institutions

3. Gathering and aggregation of data streams

4. Filtering

- Manual and automatic (according to 1)

5. Categorization

- Tagging, folksonomies, classifications, ontologies

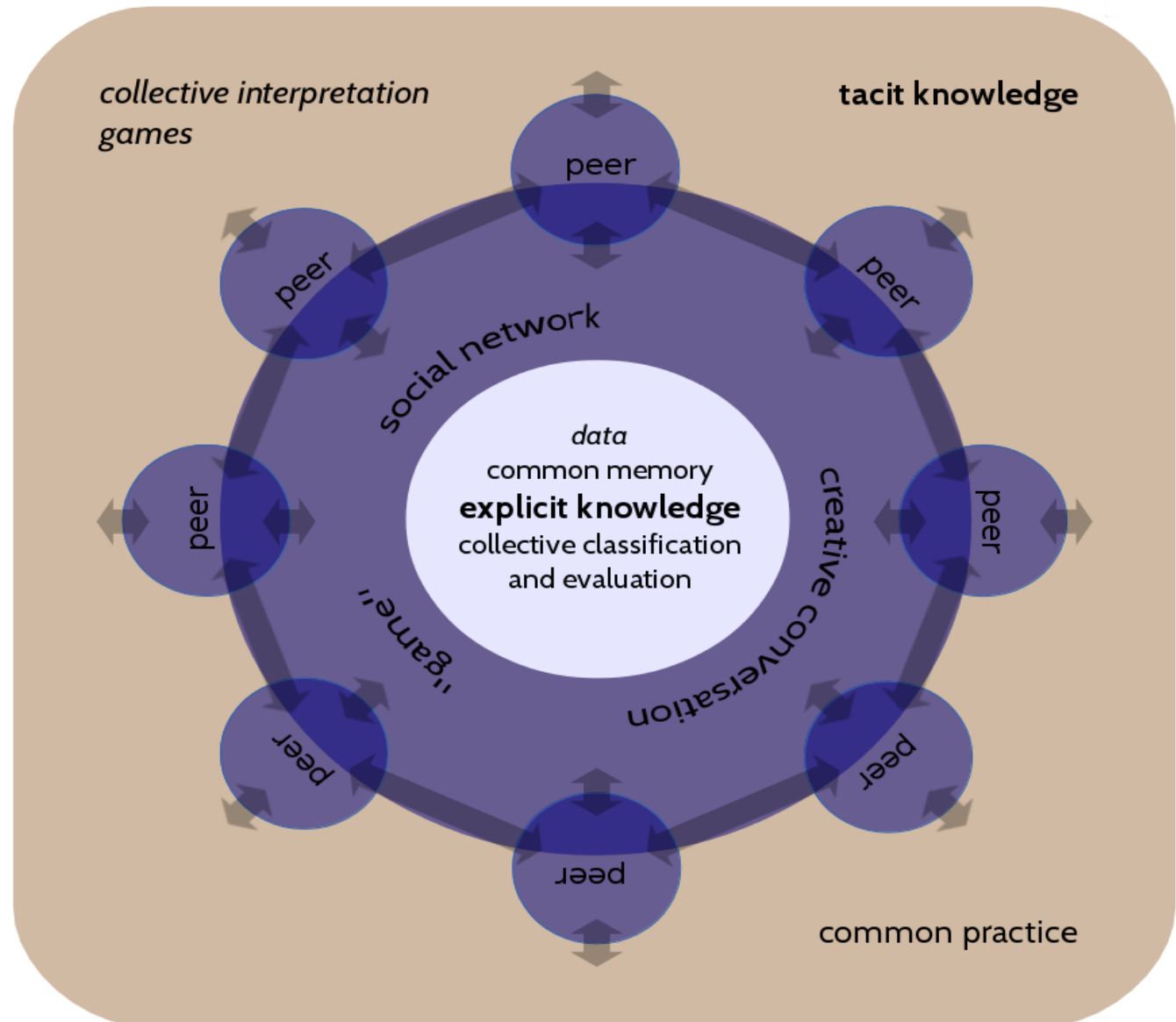
Personal Knowledge Management 2 (PKM)

1. Recording for long-term memory
 - Data curation, social bookmarking, articles, notes and library management tools, cloud memory
2. Synthesis
 - Blog posts, articles, wiki entries
3. Sharing, communication
 - Posting result of 4, 5, 6, 7 on social media. Replies, creative dialogue
4. Reassess: attention management, connections, categorization, PKM tools

The Collaborative Learning Cycle in the Public Hypersphere (Social Knowledge Management)

3 MOVEMENTS:

1. **centripetal:**
implicit → explicit
2. **centrifugal:**
explicit → implicit
3. **circular:**
networked socialisation



(Adapted from Pierre Lévy, 2013.)