

When Tools Become Cognitive Structures

Cognitive Artifacts, External Memory, and Co-Cognition

Cognitive Drift Papers — Mechanism Brief #8

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Core Pattern

external record → cognitive organization → cognitive dependence → Co-Cognition

Human beings rarely think without external structures.

Writing preserves ideas beyond memory.

Diagrams make relationships visible.

Maps guide action.

Notebooks allow thoughts to be separated, compared, and revised.

These objects are often described as aids to cognition. In many cases, that description is too weak. The artifact becomes part of the process through which the thought is formed.

A cognitive artifact does not merely hold information.

It helps determine what can be remembered, compared, noticed, and understood.

What Is Actually Changing

An ordinary tool makes a task easier.

A cognitive artifact provides structure that the reasoning process begins to depend upon.

A notebook does not only record completed ideas. Its pages allow ideas to be grouped, rearranged, and compared.

A diagram does not only display a known relationship. Its spatial arrangement may reveal a pattern that had not previously been visible.

Writing does not always express a fully formed thought. The act of externalizing the thought can produce the idea itself.

The important transition occurs when the artifact stops being a container for cognition and becomes part of its architecture.

Cognitive Artifacts

A **cognitive artifact** is an external object or system that preserves, organizes, or transforms information in ways that become functionally integrated into thought.

Examples include:

- notebooks
- diagrams
- maps
- calendars
- databases
- knowledge graphs
- shared documents
- artificial intelligence systems

These artifacts reduce the amount of information that must be held internally.

They also create new possibilities for reasoning by stabilizing representations outside the mind.

The person can return to an earlier idea, inspect it from a distance, compare it with another representation, and continue thinking across time.

The Hidden Mechanism

Every artifact organizes reality through a particular form.

Writing divides experience into language.

Notes separate ideas into entries.

Categories group some things together and keep others apart.

Diagrams convert relationships into spatial arrangements.

Databases require information to fit fields and classifications.

These structures make cognition possible at greater scale.

They also influence which parts of reality become easiest to think about.

What is easy to record becomes easier to remember.

What is easy to retrieve becomes easier to treat as important.

What fits the artifact becomes easier to recognize as real.

The artifact does not passively preserve thought.

It quietly selects the forms thought can take.

When the Artifact Becomes Active

Traditional cognitive artifacts are mostly static.

A notebook does not rewrite its own entries.

A map does not generate new routes unless a person interprets it.

A diagram does not independently rearrange its structure.

Artificial intelligence changes this relationship.

AI can summarize notes, identify patterns, reorganize categories, compare interpretations, extend diagrams, and generate new representations in response to the user.

The artifact begins responding to thought.

It no longer simply preserves the cognitive environment.

It actively modifies that environment while reasoning unfolds.

This is the transition from cognitive artifact to **Co-Cognition**.

Co-Cognition

Co-Cognition emerges when human judgment and external representational systems jointly construct understanding.

The person contributes experience, intention, interpretation, and evaluation.

The artifact contributes persistence, structure, visibility, retrieval, and transformation.

With AI, the external system also contributes alternatives, comparisons, and reorganized representations.

The resulting thought may not have existed fully inside the person before it was written, diagrammed, arranged, or discussed with the system.

Understanding develops through the interaction.

Semantic Fidelity and Cognitive Drift

Every cognitive artifact simplifies.

A diagram may clarify one pattern while obscuring another.

A summary may preserve a conclusion while removing the reasoning that justified it.

A note-taking system may contain all the original material while making some categories much easier to retrieve than others.

Semantic Fidelity asks whether the artifact preserves the distinctions, context, and relationships needed for reliable reasoning.

Cognitive Drift begins when the artifact remains useful while the structure it imposes gradually replaces direct contact with the reality it was created to represent.

The notes remain available.

The diagram remains coherent.

The database remains operational.

The person increasingly understands the world through the artifact's structure rather than through the conditions from which that structure was derived.

Reality Drift Interpretation

Within the **Reality Drift framework**, cognitive artifacts are representational environments.

They do not merely transmit information between reality and the mind.

They transform experience into forms that can be stored, manipulated, shared, and reused.

Reality Drift begins when these representations become more cognitively available than the realities beneath them.

The artifact becomes the stable object.

The original experience becomes difficult to recover.

The system continues supporting thought while quietly determining what thought can see.

Recognition Questions

- Is the artifact storing an idea or helping produce it?
- Which distinctions become clearer because of its structure?
- Which parts of the original experience no longer fit?
- Does retrieval reflect importance or merely ease of access?
- Could I reconstruct the underlying reality without the artifact?
- Is the AI extending my representation or replacing it with its own organization?
- What external evidence can still correct the structure?

Core Principle

A tool becomes a cognitive structure when reasoning depends on the way the tool organizes representation.

Cognitive artifacts extend intelligence by making thought stable, visible, and manipulable outside the mind.

Their power and their danger come from the same source: the artifact does not merely preserve what can be thought. It helps determine what becomes thinkable.