The Acquired Language of Thought Hypothesis

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Thesis: Dual processes operate over a common representational basis which bridges them: the lexicon of our natural languages.

Claims:

Assuming RTM, thinking is a process of tokening mental symbols that stand in for something else.

The dual route model of vision suggests that the visual system must interface with mental operations, such as memories, inferences, emotions, and behaviours, in a very precise way that makes recognition possible.

Neural encodings of symbols project to these interfaces, acting as pointers to mental operations that would be activated by what the symbols stand in for.

Neural structures encoding symbols are themselves structured via connections to each other to form a network.

The symbols connected to form the network are the words of our natural languages.

Network activation constitutes one cognitive process; the language faculty's serial organization of activated lexical nodes to form sentences expressing propositions constitutes another.

The dual route model of vision:

There are two streams of visual processing.

The dorsal stream is for real time responses in a dynamic environment. Damage to this stream results in optic ataxia, a visuomotor disorder in which reaching to pick up objects and grasping them are difficult.

The ventral stream is for object recognition. Damage to this stream results in visual form agnosia, or the inability to recognize forms, objects, and even orientations.

Ventral stream processing's role is to extract "a viewpoint-independent description or coding of an object or scene" (Milner and Goodale 1995).

The point is to be able to interface with other systems that are not part of the visual system for recognition: memories, inferences, behaviours, emotions.

At the interface, information processed in the ventral stream and suitably transduced for use by other systems is made available to these systems.

Symbols and cognitive architecture:

Vervet monkeys and chimpanzees use conventional, public symbols that are normatively governed. After training the symbols are internalized, i.e. neurally encoded.

My view is that the neural encoding of a symbol projects to the interfaces identified above, so other systems can be activated by tokening the symbol, those that would be activated if what the symbol stands in for were sensed.

Once encoded, symbols are interconnected into a network, which is like a roadway through the mind, allowing activation of any symbol to at least in principle activate any other symbol and hence the operations with which it interfaces.

The interconnected lexical network is a constructed central superstructure which makes for easier travel amongst the modular cognitive operations embedded within this superstructure.

Network activation is a cognitive operation in which contents are processed in parallel: one of the dual processes.

The symbols are NL words:

1. Words are learned and so must be encoded somehow anyway. (Positing such a mechanism is not ad hoc.)

2. Symbol-symbol connections reflect contingencies in the world (cat/dog, salt/pepper) and so cannot be innate.

3. Conservativism; existing architecture is not compromised, just augmented.

4. Words interface; we can talk about anything we sense, remember, imagine, etc. and vice versa.

5. Phonological and orthographic priming shows associations sensitive to the spelling and pronunciation of NL words.

Many different modular systems can operate on the lexical network, including those identified by linguists as comprising the operations of the language faculty, which are serial: the other of the dual processes.

The Acquired Language of Thought Hypothesis (ALOT):

The lexicon is not internal to a language faculty. Words encoded at special interface sites between modules, are the nodes of a central cognitive network. Many different mechanisms, both parallel and serial, operate on the lexicon, each being sensitive to special features of lexical entries.

Since the lexical network provides the framework for higher cognition, I call this model the acquired language of thought hypothesis (ALOT).

Parallel processing provides novel content to a serial processing system that is compositional. The lexicon is the representational basis for both kinds of processing, binding them into a single mind.