

Using Multiple Ontologies;

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In everyday life we use structured and semi-structured information collections.

These are in our head and have no obvious or even discernable shape or structure.  
(at least while in our heads)

Some of us see words in our mind's eye when we think, many people 'see' no words yet are able to pull (usually correct) lexical items (like words) out of mental thin air, on demand , assemble an (often complete) thought which may be the result of some thinking.

We end up, as a result of thinking, with a collection of concepts (in our mind/immediate memory) which, if we attend to them as words, (magically / mundanely) mentally occur as lexical or word based things.

If we should attend to the very same collection of concepts (in our mind/immediate memory) as pictures or diagrams of some sort, (magically / mundanely) mentally occur as pictures or diagrams based things.

This attention translation as X processing feels instantaneous and effortless to us.

We are able to comfortably conceptualize things without doing so according to consciously followed rules or prescriptions, not even something as simple as a recipe. No discernable deliberation is required to do so.

To some readers the preceding depiction may be sufficiently in agreement with their own thoughts on this that they may shrug shoulders and say, ok, what's the point? (Others may violently disagree, and perhaps laugh out loud.)

The cognitive or mental processing which I have described above occurs constantly / daily and we take it for granted, it constitutes our mental life.

<external reference>

I call this processing mental finessing or cognitive finessing and talk about it in some detail elsewhere.

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Some salient aspects of such finessing of note to the discussion of this poster is that when we think rarely do we have a sense of time passing as a result of thinking-processing nor of any particular mental (or otherwise) effort being personally expended to perform this finessing.

Jay Ingram, in his book *Theatre of the Mind*, discusses elements of this as does Antonio Damasio, in his book *The Feeling of What Happens*, and Roger Schank in his books *Dynamic Memory : A Theory of Reminding and Learning in Computers and People*; and *Dynamic Memory Revisited*.

These books give formal, semi-formal and anecdotal discussion to mental and cognitive processing which bring finessing to human thinking as a built-in matter of course.

One concept common to all of this literature is the notion of reminding.

One example given about reminding was that of the doorknob on one's front door.

One expects that that doorknob, unique to your door, will be in the same place when you return home in the evening as where it was when you left earlier in the day.

Because it is in the same place when you return home you don't particularly notice it, and since it has the same shape and dimensions as when you left you don't notice that either as you operate it.

You don't pause to consider how to operate the doorknob or search the door for the knob itself, it's all the same, same place same action to open the door.

Unless somebody painted your door while you were away you probably didn't notice the colour (and any pattern or decoration) on the door.

We all go through life like that, finessing very large number of cognitive events, effortlessly, subconsciously.

The expectancy of the doorknob being in the same place, and operating the same way and the colour of the door being the same is all a result of active cognitive processing.

The difference is, that like any well-learned muscle or cognitive skill, having once mastered the skill through conscious learning we are able to relegate those actions to our subconscious.

Mastered actions or skills can be executed or performed via the subconscious mind.

The conscious mind is only necessary to initiate the action, and to provide guidance, see parameters, to its unfolding / execution.

The 'reminding' is a constantly occurring function of the human cognitive system, input from the senses is fused and cognized and put into long-term memory.

Almost always there is no conscious participation in the prodigious processing that goes on to perform the transformation of torrents of sense data into these cognitive nuggets of reminding.

'Reminding' is the basis for an impressively powerful system of expectation, one which operates entirely in the realms of the subconscious mind, until !

Until one or more expectations is not met by what is sensed in the outer so-called real world.

If the doorknob was in a different location on the door, or the knob was now a latch lever, or the paint was a different colour this would be an unmet expectation and we would suddenly become conscious ('aware') of having just entered into an unexpected event, our subconscious supercomputing monitor (of change) would now activate our attention and we would 'do something about' the unexpected event, such as deliberate upon a new motor program to operate the doorknob according to whatever the change encountered was.

Clearly our brain is not / does not use a database system, nothing that pathetically simplistic.

Nor is it as simple as any of the formalisms which one uses in computers such as arrays, vectors, matrices, xml files, taxonomies or ontologies.

And here we return to obvious use of the title of this poster: Using Multiple Ontologies.

Probably not anytime soon will we be in the position where we can use either the content nor the processing of our brain directly in a computer, and therefore for the short term at least we will have to continue as best we can using formalisms to represent data and actions in the computer.

Formalisms are, to use a mathematician's terminology, stiff, whereas the apparent real world is soft and squishy and has folds. Have you ever looked at the mathematics of folds!!

That cognitive stuff whizzing about in our heads is not partitioned into neat formalized units such as taxonomies and (computer type) ontologies.

Our brain doesn't 'throw an exception' or halt-and-catch-fire (x6F) and we have the greatest tolerance for overlapping things and missing semicolons, and 'type coercion' is always done subconsciously as well as frequently and so it doesn't register on our effort radar at all.

Our gooey computer in our noggin has mastered interworking between the equivalent of multiple ontologies AND type casting, and almost all that prodigious 'processing' is done seemingly effortlessly, instantly in the subconscious.

Our consciousness is like a sidewalk-superintendent gazing through the knot-hole of attention into a scene of that which the subconscious 'passes up' to it.

Almost all of our real thinking, exemplified by 'reminding', is performed in the subconscious, it is only meta-thinking, or thinking about thinking that seems to be present in our consciousness.

An analogy: a steam shovel has a power bucket which can dig out / scoop up a bucket of dirt.

An operator sits in the cab and pulls levers.

The machine digs the hole, in response to the lever pulling, but it is the lever puller who decides where the hole will be, its size, shape depth etc.

The shovel is the program, the verb, the doer of the action; while the lever puller is the meta-programmer, the instigator and controller of the action, the planner of the activity of the action.

In computing science we are just now being able to merge and align two ontologies so as to get (functional) synergy from them both.

It is not an effortless endeavour and there is yet to be a system intrinsic annotation leverager, non-human beneficiary of annotation in xml files and ontologies.

There are some experimental programs now that are able to infer semantics and some of them use techniques reminiscent of discovery in the web services world, such as SOAP WSDL.

How useful is it to contemplate mechanisms for achieving (cognitive) finessing in computers!?

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