

Summary of January 2008 Workshop Meeting

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Thoughts About Implicit And Explicit Mind/Brain Functions

February 4, 2008

The semantic problem and definitions of memory systems

Cognitive Neuroscience, p. 314, 315

Implicit or Nondeclarative Memory

The neurophysiological/psychological term implicit is a synonym for nondeclarative. Nondeclarative memory, a branch of long term memory, refers to knowledge we have no conscious access to.

“This memory is revealed when previous experiences facilitate performance on a task that does not require intentional recollection of the experiences.”

Implicit (nondeclarative) memory encompasses several forms of knowledge that are learned and retained as memory even when explicit memory for that knowledge does not exist.

Implicit memory consists of four memory systems, namely procedural memory, which involves motor skills like bike riding, and cognitive skills like learning to read; the perceptual representation system, which relies on priming; classical (Pavlovian) conditioning; and nonassociative learning, which relies on habituation and sensitization.

Like many of you, I go round and round about these memory systems and I think it will take infant researchers to delineate them empirically. I have attached Karlen’s discussion as well as her reference to infant memory research.

What has always struck me is that the memory researchers have left out the most important qualia of human experience, emotion. And that, after all, is what the infant mind/brain is growing and organizing in the first year of life.

By using the word implicit to describe the most basic non-conscious and conscious qualia of relating to the other the BCPSG use a word that has been claimed and defined by another discipline.

The BCPSG is using the term implicit in its psychological sense to designate the default or inherent mode of experiencing emotions, like love and hate. We are not necessarily conscious of how we love or hate. We just do it. And in the first year of life implicit relational knowing is something we learn to do, just like learning to sit and stand, and in a few years, read. Implicit relational knowing, just like “what emotions feel like” before we name them, is semi-hardwired into the brain. That is why it takes such a long time to recontextualize implicit relational knowing in treatment. In that sense the BCPSG’s use of the term implicit is, I believe, correct. And certainly, in the first year of life, in addition to

co-construction, we see conditioning, habituation, and sensitization, not just in the creation of implicit relational knowing. We also see the ways an infant learns to protect herself defensively as a result of her experience of implicit relational knowing. However, once the infant matures to the point of having a theory of mind and narrative memory, implicit relational knowing can also become explicit.

Explicit or Declarative Memory

The other branch of long term memory is declarative or explicit memory. Declarative memory refers to knowledge we have conscious access to, including personal and world knowledge.

This is broken into two areas. The first is episodic memory, which involves conscious awareness of past events. It is our personal, autobiographical memory. Psychoanalysis calls it narrative memory, memory of the self and its intentions (Modell). (In the evolution of our species language was central to the creation of our type of consciousness). The process of co-construction is vital to the building of narrative memory capacity from simple representations to multiple, complex representations, from simple recognition memory to recall memory. Current thinking states that episodic memory can be recontextualized.

The second area of declarative memory is semantic memory, memory of facts. It is world knowledge that we remember in the absence of any recollection of the specific circumstances surrounding its learning. I think it is stored in the cortex from an early age on and cannot be recontextualized. Karlen, however, believes that “No human memory system lacks the potential for continual recontextualization in the light of further experience.”

Anything that can become conscious at anytime in the life span as an emotion, sensation, perception, thought, fantasy, or memory is mental or psychological and belongs to the conscious or potentially conscious domain. Psychoanalysts would, of course, also admit all these mental events as well as implicit relational knowing into the domain of the dynamic unconscious. And of course, implicit relational knowing can become conscious when we attain narrative memory and look at our selves. The concept of implicit relational knowing may redefine our understanding of the dynamic unconscious.

Should we expand the concept of procedural memory to include any “how to” function, especially emotional/relational functions as manifest in implicit relational knowing?

Psychoanalysts are accustomed to thinking about the domain of feelings as mental events, part of episodic or autobiographical memory. The BCPSG is demonstrating that implicit relational knowing certainly begins as an implicit, procedural function.

There is no doubt that “how to” functions of the brain/mind, like implicit relational knowing, motoric “knowing” of movement, balance, and language or the “knowing” cognitive processes are the foundational, dynamic constituents or schemas of all beings. These neural networks are created in infancy and then manifest different degrees of plasticity throughout the life span. All these procedural schemas, including the physicality of emotional habits, emotion-laden action (Karlen) manifest themselves physically, i.e. procedurally.

But they also manifest themselves mentally when we attend to them. We understand that automatically about emotions (how to love), fantasies (how to yearn for something), and thoughts (how to think). And this is certainly true about how we attach ourselves to another being.

[And, conversely, how should we think about the interface where motoric and perceptual functions are intimately intertwined with mental action?](#)

Animals learn their motoric skills in infancy and then don't change them. For thousands of years we have been entertained by animals that we have conditioned to perform some human-like skill. These animals have undergone years of training for minimal results.

However, when mature humans learn dances or play musical instruments, they initially use their minds to help them attain implicit procedural competence more quickly. And they can use their self reflective function to imagine embodied motions. Using focused attention, they can envision themselves in action in order to promote change.

Most memory investigators have created strict divisions between procedural schemas or implicit memory and mental schemas or explicit memory. However, some researchers, such as Howard Shevrin, feel that in the more mature child, this separation may not be so pure. Is there a way that implicit and explicit can influence one another deeply and in such a manner that there may be confluence? I wonder if the BCPSG might agree with this unorthodox view point?

Change and the Necessity of Language

Change

The BCSG is exploring the domain of implicit (inherent) relational knowing as it evolves in infancy. There is no deeper non-conscious or conscious psychological domain of being.

Furthermore, I do not believe we have explored and or explained the fundamental depth of psychological processes adequately in psychological and psychoanalytic investigations. Here is where I feel their great contribution lies. They have taken us deeper into the iceberg of mental existence than anyone I know.

I say that because of a handful of patients with whom I have traveled between two and four decades and with whom I have participated in the deepest, most fundamental change possible through the process of co-construction. And, of course, this change is in the domain of implicit relational knowing, the knowing of “how to be” with self and other. For decades analysts have argued about change and insight. It is now quite clear that change precedes insight, often by leagues. Child analysts have known this forever and feel that language centered insight is not necessary to create change. What child analysts have witnessed, however, is the great plasticity of the young brain. Those of us who have co-constructed with patients the deepest, most fundamental, most enduring changes that center on “how to be” affectively have witnessed the same evolution. And there is absolutely no doubt that this change occurs at a neurobiological as well as on a psychological level.

It does seem to me that when the mature mind looks at implicit relational phenomena, such as “how we love” they become explicit and the “unconscious becomes conscious.”

The necessity of language

In the realm of implicit relational knowing, language makes the implicit explicit. Patients who become co-adventurers in treatment are very talented and motivated. However, they are people who grew up with major psychological immaturities. For example, “No words for my feelings, no words for my body” are common phrases that describe early childhood dissociation. The search for words comes late in the treatment process when what we are calling the implicit relational processes are well on their way to changing.

Language based insight adds some powerful tools to implicit change. Insight refers to the self reflective function. In-sight refers to looking at and into oneself and the other with the potential to exercise responsibility for feelings, and ultimately to exercise agency.

Microprocesses of injury and repair occur in the implicit domain. Initially they take months to unfold in enactments. Every injury makes molecules of original implicit experience explicit and every repair adds molecules of implicit repair and potential change. These episodes are like microprocesses. They increase exponentially and become condensed into tighter and tighter little packets over time. This happens because we use words to explore each event and they become not just emotional packets but emotional-cognitive change packets.

And the talking process contributes to faster recall and understanding of the dynamic events. It allows for a symbolic integration and practice of the acquired relational knowing changes and for a stabilization of those changes. In my experience higher mentalization capacities rest on how to feel alive and connected and how to feel coherent over time. These capacities include agency, the experience of empathy (not just sympathy or contagion of affect), and how to love and be loved.

The Philosophical Dilemma of Mind and Matter

Philosophically we have evolved from Cartesian dualism of mind and matter to monistic positions that hope to correlate the psychological and physical.

Mark Solms and Oliver Turnbull offer the concept of “dual aspect monism”, which suggests not cause and effect, but correlation. They feel that psychological phenomena can be understood both through psychological observations (ideographically) and neurophysiological measurements (nomothetically), as for example, in a scanner.

Doug Watt’s skeptical, empirical stance eschews oversimplification of any kind, but particularly in the most complex system in the universe, the brain. He believes that explanatory frameworks of causation and even correlation should be viewed very skeptically. He feels there is currently no real knowledge of what happens in the brain or where it happens when behavioral change occurs. It is “not researchable and research will proceed in mini-steps with incremental progress.” And “when behavioral change does occur in the brain it will presumably take place in every axis of brain organization, including L-R, anterior-posterior”, neuronal, neural net, and neurochemical. Of course these changes would be experienced in mind, and in the musculo-skeletal and visceral body.

I think Doug is correct. Even as we have relinquished Cartesian dualism we have run smack into the divide between the neural networks and mental events. Even as Walter Freeman has isolated the circuitry of a few neurons in the rabbit’s olfactory system to demonstrate that the brain creates meaning, we become aware of the vast gulf between neural and mental. And what does this hypothesis really mean? Would we say that meaning is continually recontextualized in the olfactory bulb? Arnold Modell feels that, “an intent is the directing of action...”, that an “intent represents an unconscious selection of value”, and that “meaning is achieved through action in the world.” Does it refer to meaning created by implicit memory schemas? However, when talking about intent or motivation in the mind, we generally use Brentano’s definition that an intent is about something. Therefore, how do intent and meaning in the brain translate into something mental?

In the current philosophy of consciousness several alternative monistic positions have evolved, such as Donald Davidson’s “anomalous monism”. This states that we are unable to translate mental terms directly into physical terms, even while accepting that all mental states refer to what at base are physical states. It suggests a supervenience, meaning that each level depends on another contingent level, for example that a chair is composed of materials that are formed by molecules, atoms, subatomic particles etc.

When we attempt to apply this monistic position to the mind/matter dilemma we run into the problem of conflating the mental and physical domains. We all acknowledge

a barrier or boundary. It reminds me of the astrophysics dilemma of dark matter and dark energy, a feature of the universe no one predicted fifty years ago. Could we consider this gulf or this boundary as a supervenience problem? I would predict that the interface of mind and matter will be seen at worst as a semi-permeable boundary in the future or at best, as a continuum at the interface.

For that to happen we require not just more knowledge, but knowledge in a different domain. This may be similar to the quantum physics explorations of David Bohm (Aharonov-Bohm effect and implicit/explicit in physics). Bohm, with his student Yakir Aharonov, showed that an electromagnetic field could have effects in spatial regions otherwise fully shielded. This violates the core canons of classical physics. Bohm later advanced the thesis that the brain at the micro or quantum level is an informational system such that mental and physical merge.

Metaphorically, brain/mind research is still operating at the level of Newtonian physics. Although we are not able to approach, never mind close the divide between the physical and mental, we will continue to make correlations and perhaps make use of the supervenience hypothesis.