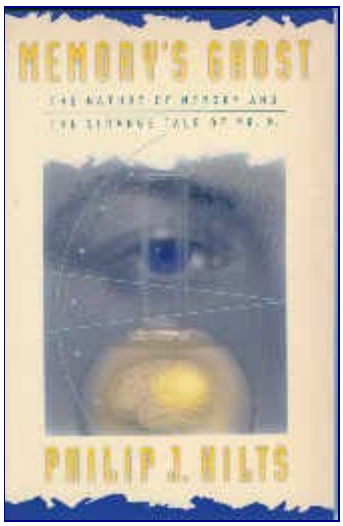
Site Map: *MAIN* / *A Reader's Journal, Vol. 2* *Webpage* *Printer Ready*

A READER'S JOURNAL



Memory's Ghost
by
Philip J. Hilts
The Nature of Memory and the Strange Tale of Mr. M.
Published by Simon & Schuster in 1996
A Book Review by Bobby Matherne ©1998

Hilts devotes this book to the study of memory and to do this he uses as a central figure Henry M., who has no memory, but is otherwise normal in every way. After being run down by a bicycle as a child, Henry began having seizures. These seizures worsened until as a young adult he was operated on by a brain surgeon who sucked away his hippocampal regions through a silver straw. From that time on, Henry had no memories of any events that occurred to him, and continues to live in the eternal world of the present. Henry can read the same newspaper again and again, and each time it will be new to him.

Henry's case, together with those of other patients that have had an assault to their hippocampal regions, make it clear that the hippocampus is essential for the storage of conceptual or cognitive memories. All conceptual memories pass through the hippocampus on the way to storage in the area known as the *associative cortex*, which is a region of the neocortex. If the hippocampus is gone, these memories do not reach the neocortex and the result is a lack of creation of new memories exactly as in Henry M.

Yet Henry has several types of memory. He can remember his father and mother from before his accident, but doesn't know if they're alive. This seems to indicate that the hippocampus is not involved with retrieving conceptual memories, only in storing them.

Henry also has some primitive body knowing or pattern recognition ability as illustrated in this story:

> **[page 154] On that spring day, Dr. Teuber relates that Henry jumped up in the middle of his work at the Hartford Regional Center, a state rehabilitation clinic populated chiefly by the mentally retarded, at which Henry's work was to test balloons and then mount them on a card. Someone apparently had taken Henry's materials, perhaps wondering if Henry would notice or remember it.**
>
> **Henry stood, shouting "that he was no good to anyone, that he was going to do away with himself, that he was merely in the way, that he had no memory."**

This story shows that Henry can experience emotions, such as anger, which are very likely stored in the amygdaline region adjacent to the hippocampus. [See ARJ: *The Emotional Brain*.] But the story also indicates that Henry was in a state of readiness to perform an activity, that the materials he needed were not there, and that Henry knew at some level that something was wrong. He couldn't say what was wrong because he lacked the conceptual

memory to remember the balloon materials. His entire reason for living had been taken away to Henry's way of thinking, and he got appropriately angry. This episode indicates that Henry knew at a process level, at the level of bodily knowing, that he had a task to do and that he was being thwarted. Thus there is some mechanism that is *not* conceptual memory, that is *not* mediated by the hippocampus, that must store this kind of bodily knowing.

Another type of memory that Henry used in his daily life where possible was other people's memory. The author described how Henry asked him almost daily such questions as, "What went on before?" and "Did I say something?" To the extent Henry is surrounded by researchers studying his memory deficiency rather than friends, these other people do not answer Henry's requests for memory data, but simply make notes in their notebooks or ask further questions of Henry.

When Henry was asked to help out in the machine shop by fetching tools, he demonstrated another usage of exogenous memory. Henry would never return to the machine because he would go off in search of the tool and forget what errand he was on. The head of the shop began drawing pictures of the tool Henry was to fetch and Henry would eventually return with the requested tool. The scrap of paper with the picture on it served as a long-term conceptual memory, and Henry was able to use it successfully.

What strikes me about the way Henry was treated is that no attempts were made to rehabilitate him, only to study his defects. One cannot do both — if one is successful at rehabilitation, one loses the object of observation. One method of rehabilitation would have been to develop detailed procedures that Henry could follow to perform the actions he needs outside help to do otherwise. The procedures could provide the external memory to replace his missing internal memory. His ability to test balloons indicates an ability to follow simple instructions. Unfortunately, there is no evidence that such procedures were tried.

Two interesting quotes headline Chapter 19:

> **[page 161] "He is indebted to his memory for his jests, and to his imagination for his facts." — Richard Brinsley Sheridan.**

What makes this witty is its inversion — one should be in debt to one's memory for facts and to one's imagination for one's jests. So the person referred to in Sheridan's imaginative jest is too dumb to create an original jest and they use their creative facility only for recounting factual events. Sheridan's quote may be considered as referring to the Marketing and Sales department of a large corporation in which the salesmen and the marketeers have a repertoire of funny stories to regale clients and use their creative imagination on presenting the facts of the new product in an enticing way. In its inversion, the quote would apply to the Research and Development department whose engineers must begin with the facts of the current product line and use their imagination to create improved product lines (which some will call *jokes*).

> **[page 161] "It's a poor sort of memory that only works backwards." — Lewis Carroll**

What seems to be a statement of fact by Lewis Carroll is in reality an imaginative jest, one that points to this hitherto unconscious capability for remembering the future. This is a process I have discussed in this review: *The Magical Approach*. [See also Matherne's Rule #36]

> [Quoted from my Review above] Creativity has its own kind of time, a free-flowing time in which past, present, and future co-exist like in a dream where we can "rummage through the days of the future to find precisely the data required to

> make a specific point." Seth contrasts this magical approach with the rational approach which says "that to solve a problem you worry about it."

In this next passage, Hilts describes how our brain evolved from an exterior sensory cover to an internal processing organ:

> **[page 161-162] The brain was once, in primordial form, an expanse of sensitive skin. It was like the skin of the jellyfish, across which signals from the environment were received as if by antennae, then conveyed to other cells. This suggests something important in philosophy — that the mind is dependent upon sensation for its material to work on.**
>
> **Unfurled, the brain would be about the size of an opened newspaper and not very firm (indeed, the sheet can melt or leak from its vault). This wet sheet is infused throughout with jelly-like threads, the neurons. In embryo, its evolution is replayed: first neural cells grow in a sheet, then bulge out like a bladder atop the spinal cord, and this bladder grows into the brain's outer layer, the cortex, a word which means "rind" in Latin.**

If one imagines an early jellyfish with no localized brain, one sees only long neuronic cells reaching from one end of the jellyfish to the other end, and spread all over the surface of the jellyfish. Now imagine the evolution of the jellyfish going along the lines that Rudolf Steiner lays down in *The Riddle of Humanity*[See ARJ.]: the structure of the body in a previous incarnation forms the head in the new incarnation. The new jellyfish will have the beginnings of a primitive brain located in an area near the top of the jellyfish, its head. With eons of evolutionary progress the human brain can be seen as a neuron-filled jellyfish that sits atop the long tube of neurons (spinal cord) that provides connections to every part of the human body. Rightly understood, this simple evolutionary process of body becoming head in succeeding incarnations gives birth to the human brain. [Note: Goethe was the originator of this concept of body becoming head.] This means that the carrier of our body's evolution is not only the genetic material in our DNA, but also the plans made by our I and astral body for the etheric and physical body of our next incarnation.

Much ado has been made about apes learning hand-signs in recent years. This passage by Hilts shows dramatically the futility of training apes to speak as humans do — a futility that resides in their lack of an ego body or I:

> **[page 186] The reason apes can be trained to learn hand signs and other symbols, writes Canadian psychologist Merlin Donald, is "they are using episodic memory to remember how to use the sign; the best they can manage is a virtual 'flashback' of previous performances." They do not use language inventively, creating expressions needed for any situation, in a fluid expression. Rather, they always sign as if they are referring to some unseen picture of things and actions, "Koko-banana-eat" or "Roger-tickle-Washoe."**

In the following quote, Hilts makes some statements about childhood memories that bear a deeper investigation.

> **[page 211] Other notions about memory have also been radically changed with research — for example, that childhood memories are important to present psychological states. Childhood memories, in fact, don't really exist at all until after age three or four, and are for some time after that quite sketchy.**

Hilts raises two separate points: 1) Childhood memories are important to present psychological states (emotions) and 2) Childhood (conceptual) memories don't really exist at all until after age three or four. Biology teaches us that ontogeny recapitulates phylogeny. Simply stated this means that the growth of a single human re-traces the evolutionary growth through the species. This process is seen in the fish-brain, reptile-brain, bird-brain, and primate-brain portions of the human brain. Each primitive portion of the brain was kept as the species evolved - our brain was formed by adding new structures with each new evolutionary jump, the most recent of which is the neocortex, which is an expansion of the cortex of the primates.

The magnificent jump in evolution that distinguished humans from apes was the addition of the complex neo-cortex layer that covers the human brain. This layer is where conceptual or cognitive memories are stored after they are mediated (transferred to the neocortex) by the hippocampus region. If you remove just the hippocampal regions of the brain, all conceptual memories cease to be formed. This is what happened to H. M., who has continued to live an otherwise normal life for over 50 years, a life continually in the present. He can, e. g., read the same newspaper over and over again with the same interest.

Before the advent of the neocortex, all humans were like Mr. H. M. — they lived in an eternal present and the only form of memories they had was spiritual voices of the Gods that they listened to for guidance in areas that you and I would use our conceptual memory for guidance. In fact, part of our descent into the material world was made possible by such a neocortex that made each person a God, in effect. This process is described by Julian Jaynes in *The Origin of Consciousness in the Breakdown of the Bicameral Mind*.

With the availability of the neocortex, humans became able to store these conceptual memories. When did this happen? Most likely it happened sometime shortly preceding our historical records. One has no ability to record anything, nor any reason to do so, if one lives like H. M., does one? That gives us an approximate date of -10,000 to -6,000 years ago that the neocortex expanded to its current size (and it's still expanding on the average yet today, but not perceptibly).

Since ontogeny recaps phylogeny, the age of evolution in a single human (ontogeny) can be mapped onto the age of evolution of the species (phylogeny). What age of the single human do we get when we try to pinpoint the development of the neocortex? Well, it must correspond to -10,000 to -6,000 years ago in our evolutionary history, a near pre-historic epoch. To do the mapping one would have to pick the point at which the human stops evolving and starts just growing. That would be the age at which all of our adult capacities are full grown, even though their use is just beginning. I'd guess that to be about five to seven years old. Seven being when the teeth change occurs. But the scales are not linear, so this mapping approach won't work.

So let's look for some developmental event in the single human that would correspond to a developmental event in the human race, and that can be our time or epoch marker. The one prominent physical marker is the age at which the neocortex reaches full size. The fact is that the human brain doubles in mass from birth to three years old and then stops growing. So three years old would be the individual age marker of the evolutionary human epoch in which the neocortex reached approximately modern size.

In this distant (-10k to -6k) time period, humans began to develop conceptual memories to the same extent as a three-year-old child does today. They could remember things that happened days before, or weeks before, and with each generation concentrating on this new capability, soon they began to remember things from years and decades before. This capability increased until it is as we find ourselves today. So in those 10k years or so, we humans progressed in

evolutionary time and that jump in evolution mirrors exactly the jump in evolution that happens in a single human individual today between the age of three and five years old!

A five year old child's memory is as good as it will ever get in terms of physical apparatus (size of brain) — it only needs usage and training to realize its full potential.

During that evolutionary period that corresponds to ages 3 to 5, another process is winding down as this one builds up, and this other process corresponds to childhood memories associated with present psychological states or emotions.

Physical body states are stored less and less as the conceptual memory capability stores the unique events as a combination of sounds, feelings, sights, tastes, and smells. By feelings above I mean only *pointers* to associated physical body states or *doyles*. In building data bases, designers learn to store pointers to big things that are already stored elsewhere to conserve space — that's what our neocortex does with doyles - the doyles themselves are stored in the amygdala and pointers to them are kept in the neocortex — the pointers are simply the stimuli that tickle the doyles forth from the amygdala. [For the evidence of the amygdala as storage medium for emotions and other doyles, see ARJ: *The Emotional Brain*].

Our human conceptual or cognitive memory is so much more efficient than doyles that the brain, by age three, has reached a capacity to use conceptual memory in the neocortex in place of the by now cramped doylic memory storage in the amygdala. Evolutionarily, the brain switched from doylic memory to conceptual memory storage — that much is clear — so individually that must happen at some point in an individual's growth today from birth to adulthood. Doyle Henderson's work illuminates this process and predicts when to expect that point in the life cycle of a human being: at about the age of five years old. The science of doyletics gives excellent reasons for why it should be so, and also predicts the kinds of experimentation that will prove this to be the case.

It was these and many other considerations that first led me to be convinced that PANACEA! is an invention based on a hitherto unknown and un-described science, the science of the acquisition and transmission of feelings, emotions, and organized physical body states including internal organ functioning and motor operations. So I named the science in honor of the creator of PANACEA!, Doyle Philip Henderson.

Doyletics is the science of doyles, just like genetics is the science of genes. At least the founder of the science is given credit in its name, not ignored, as was Gregor Mendel.

I hope this exposition helps the reader to see why it is so that a child of three is just beginning to articulate his experiences. Let's separate *articulate* into two parts: process and content. The process of articulating is the ability to speak. By three the child has learned to speak and has stored as doyles the speaking organs dynamic patterning, so that the word pops out as a complete sound structure without need for thought to be given to the formation of the word.

The content of articulating is the selection of the words to be spoken. Here the conceptual memory plays a crucial part. Conceptual memory gives content to what the child talks about when it grows past the Mama, Dada, balloon, stage of one-word, here-and-now pronouncements. The child sees its mother get into car and says, "Mama go to store?" which requires some conceptual memory of the store.

From three to five children are in two worlds: the world of storing doylic memories and the world of creating conceptual memories. As Doyle points out, it is during this time period a care-giver can easily remove an unwanted doylic memory by converting it immediately into a conceptual memory.

For a detailed examination of the how childhood memory evolution mirrors humankind's memory evolution, see my essay The Childhood of Humanity.

There is truth in the question, "Is it not possible that conceptual memory advances as the mind becomes better able to articulate the experiences?" The answer is the reverse of your question: The mind becomes better able to articulate experiences as the conceptual memory capability advances during the period from age three to five. The brain at three has reached full size and the little human learns from scratch at age three how to use its full conceptual memory capability until at age five as it has reached the goal of the conceptual memory capability of a full size human being.

To summarize Hilts's two points:

1) *Childhood memories are important to present psychological states* (emotions) — yes, the physical body states stored in the amygdala before the age of five are the basis for all emotions, feelings, moods, and organized motions and homeostasis of internal organs.

2) *Childhood* (conceptual) *memories don't really exist at all until after age three or four* — yes, these conceptual memories require the neocortex to be full-size and that doesn't happen until three years of age in the human child.

In his investigation of *Memory's Ghost*, Philip Hilts unearthed many interesting issues that modern science is only now learning to deal with. The issues raised in this book will infuse many studies of human capabilities in the next century. Henry M. didn't have a memory, but when asked where they were going, he always thought on this one thing, "That we're going to a clinic and they're going to examine me to find out different things about me that will also help them with other people." Henry has dedicated his life to helping us find out things about how our memories work and we owe him an eternal debt of gratitude for that.

See also:
The Remembered Present by Gerald M. Edelman
The Anatomy of Memory by James McConkey