Beltline / Hard Disk Cafe Toastmasters, Calgary

"A Riddle by, for, of, on, and with the Mind"

31Jan07 http://www.billhowell.ca/Crazy ideas/A Riddle by, for, of, on, and with the Mind.pdf

Rules for the Riddle

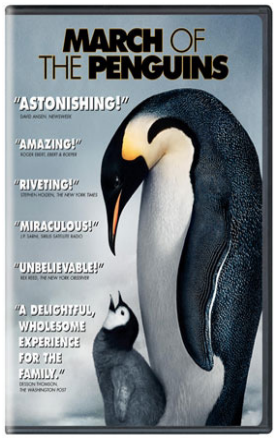
I am about to engage you in a riddle, but before I start, please agree that:

1. we don't want to ruin the fun for people who want to figure out the riddle on their own. So you won't tell the answer out loud.
2. you will write down your answer on the sheets that I handed out, hiding the answer from your neighbors. We will all reveal the answers at the same time, at the end of my presentation.
3. you will wait patiently and quietly for one minute at the end to give a chance to people to think of an answer if they don't have it by then.

Basis for the Riddle

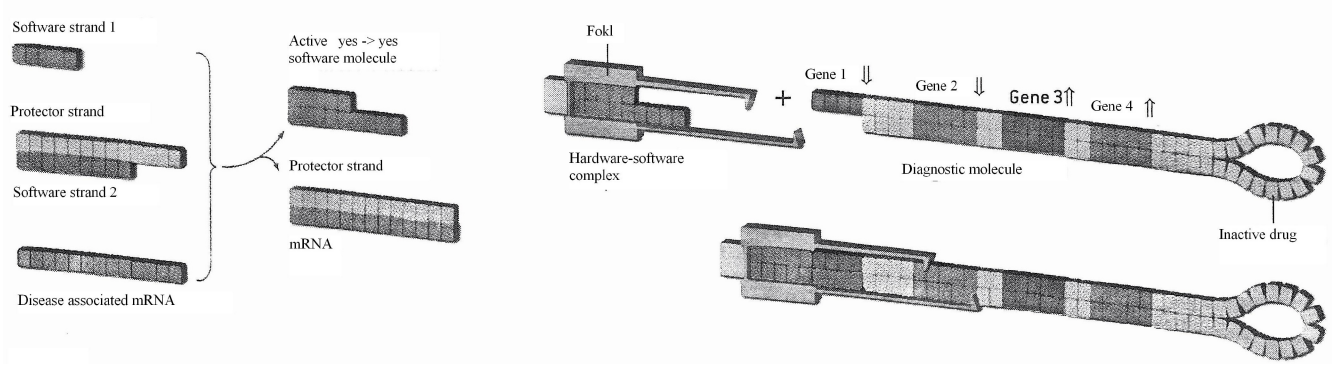
1. **MindCode** - Assume that our brains/ minds are substantially pre-programmed in a manner that allows the non-protein-coding DNA/RNA/epigenetics directly affect the processing of information by neurons. Instinct is the vastly under-appreciated example of this- organisms don't have to "learn" what they already "know" from birth.

   Example: March of the Penguins - in this film young penguins are born in the Antarctic winter, they are hatched in the spring. Their parents all leave before the youngsters make their way to the ocean. They then jump into the sea for the first time, and start their lives with a splash. Neither the parents nor the youngsters could have been taught all of the many, many details that are essential to the species survival - they simply "know what to do". Of course, there are a vast number of other examples - young sea turtles etc etc...



2. **Lamarckian heredity** - Assume that *Mindcode* can be modified during the life of an individual, and that this can be passed onto children. Furthermore, assume that the

   Example: A mother rat's nurturing behaviour during the first week of a baby rat's life will affect the baby's response to stress for the rest of its life. Michael Meaney's group at McGill University in Montreal has shown that this is "coded" by a very specific single site epigenetic modification (this is probably like single gene-site diseases - relatively rare as most diseases depend on huge numbers of genes). Epigenetic modifications can be passed on to the next generation, although I am not aware if Meaney's group has yet shown this conclusively for the rat behaviour..



Shapiro & Benenson, Scientific American, ?May or June 2006?

3. **Inheritance at the appropriate levels of abstraction** - It is currently assumed in dominant theories of linguistics that we are born knowing the "hard" part of language - the rules of grammar, syntax, and semantics ("...an emergent property..."), while we learn the "easy" part - the individual word sounds and meanings. So assume for this riddle a more general requirement: that any species with a brain must pass on Mindcode at an appropriate level of abstraction: data, functions, processes, behaviours, beliefs, goals and visions. In general, there will be a mix between all levels of abstraction.

   - power of language - from symbolism
   - "static meanings" for words would imply a "dead language" lacking conceptual power for new ideas.

   But who's to say that the appropriate mix of abstraction levels for a concept that is being inherited have an iron-clad division? Maybe that is a variable?

The Riddle

- Assume that the three assumptions above are true.
- Next, assume that for some reason, the "mix of levels of abstraction" (data, functions, processes behaviours, beliefs, goals & visions) is somehow jumbled so that way too much low-level data and functions are passed on to a human child.
- Next, assume that the excess detail is a "recessive trait" that lies hidden for several generations (this is a stretch). It then reappears in a child who is in adolescence or adulthood today, when it begins to express itself clearly.
- **What do we call that psychological condition?**

Dictionary:

Mendelian Heredity

- the offspring's DNA is fixed at birth, with some degree of randomness affecting the mix & match of DNA from each parent. Mutations in DNA occur thereafter, and may affect the gametes as well as the rest of the organisms, but that is assumed to be a random process.
- It is this form of heredity that has been accepted scientifically since it "won out" against the Lamarckian viewpoint in the early 1900's, when Mendel's results from the mid-1800s were rediscovered.

Lamarckian Heredity

- While much of the DNA is fixed at birth, either the DNA or its "modifiers" (epigenetics) may change in a more directed fashion during the life of an organism.
- There IS NOT a scientific basis for, nor belief in, Lamarckian heredity. However, the first indications that this may occur have been accumulating over the last few years.
- Meaney's group at McGillU/ Douglas hospital in Montreal :
  I.C.G Weaver, N. Cervoni, F.A. Champagne, A.C. D'Alessio, S. Sharma, J.R. Seckl, S. Dymov, M. Szyf, M.J. Meaney, "Epigenetic programming by maternal behavior". Nature Neuroscience vol 7, no8, Aug. 2004, pp847-854

DNA and the brain - the coding of information

- Mindcode - includes at least genetic DNA, non-protein-coding DNA, RNA, epigenetics - These issues have been of great interest recently, although whether they will be substantiated is another question. An important part of MindCode is the assumption that there is an ongoing, real-time interaction between MindCode and neuron-brain information storage and processing.
- Higher-level functions for DNA/RNA profiled by Mattick's group at University of Queensland:
  - J.S. Mattick, "The hidden genetic program of complex organisms", Scientific American, pp60-67 Oct. 2004. See also http://imbuq.edu.au/groups/mattick
  - J.S. Mattick, "Challenging the dogma: the hidden layer of non-protein-coding RNAs in complex organisms" *BioEssays*, vol 25 pp930-939, Oct. 2003
- The ability to store / retrieve data, functions, processes, behaviours, strategies etc ACROSS generations is extremely powerful (think INSTINCT like the film "March of the Penguins").
- The importance of the level of abstraction is well illustrated by the theory of Universal Generative Grammar by Noam Chomsky.
- Even Francis Crick (co-discoverer of DNA), spent time looking for "memory molecules".
  F. Crick, "Memory and molecular turnover", *Nature*, vol312, p101, 1984.

Great read!!! (about genetics and the brain - not about Lamarckian heredity):

Gary Marcus, The birth of the mind: how a tiny number of genes creates the complexities of human thought, New York: Basic Books, 2004. This book (along with Pinker's "Blank slate") is an essential read, and its concepts and Marcus' current work are a basis for the current paper.

Answer: **Reincarnation**

enddoc