

Hard Disk Cafe Toastmasters, Calgary

CTM-??-2nd "Mind and Brain: this debate is back in fashion"

Bill Howell, 17Jan07

Introduction

Probably since the time that humans could first speak, they have been arguing about how our minds work, or in some cases how why some people's minds don't function in strange ways, often because they have suffered from disease or brain damage. But a big debate for thousands of years has raged over how we can account for the mind - and this has had religious implications.

Many of you may be much better placed than me to discuss psychology and the current theories about the mind, the brain and behaviour. But I have been dragged into the surge in recent interest in this subject, as the IEEE-Computational Intelligence Society (IEEE-CIS) is putting together a task force on the mind and brain. So, without too much explanation, let me introduce some of my radical thinking, of which I will present three key concepts.

Three Key Concepts underlying my thinking

1. Mindcode - the pre-packaged brain and mind: My own personal interest is in pursuing what I call "MindCode", which in simple terms is the assumption that most of your brain, including the mind, are substantially pre-programmed. By Brain and mind I include all capabilities in an abstract sense up to and including belief systems, consciousness and attention. I also mean that Mindcode provides almost all behaviors and functions, and a huge amount of raw data as well, although these may be coded in anything from an extremely precise form, to very approximate and incomplete forms, and it would also include huge numbers of "small-world universal function approximation" components.

This doesn't mean that you are completely pre-programmed and "robotic-deterministic" in the classical sense - in fact it really means just the opposite. The pre-programmed data, functions, behaviours, beliefs and consciousness provide an exceedingly powerful basis for your learning, growth, creativity and vision.

2. Blowing apart the central dogma of all biology - genetics: A key concept is that Mindcode likely uses non-protein-coding DNA, or the so-called "junk" DNA, along with epigenetics and possibly other inter-generational storage mechanisms (**prions**, glial or otherwise). For example - are prion diseases most characteristic of the brain, because they may be related to "memory or process molecules" - shreds of code for the mind?

3. Lamarckian heredity revival?: During the time of Alfred Russel and Charles Darwin, great debates raged as to the mechanisms. Mendellian heredity (cast your genetic die at birth) won out in the 20th century, leaving Lamarckian heredity (your DNA can evolve during your lifetime) in the dust. This has no experimental basis, but scientists are looking at it. The implications for information processing in the brain, and the social effectiveness of populations and families would be huge.

Conclusion

Based on what I see, and based on statements by people that I trust, I think that whatever models arise during the current period of fashionable debate concerning the mind, the brain, behavior and consciousness, these will be mostly discarded with each new generation of scientist. Only a few core concepts will be retained and evolved into the future, and we won't really be able to tell which, as revolutions in math and brain science will require radically new concepts to succeed.

John Taylor, author of the book "The Mind: a user's manual" says that it will take a few hundred years before we may really understand how the brain works, and what and how consciousness arises. I like this estimate, as it is realistic and yet still optimistic. Robert Hecht-Nielsen, also a key figure in modelling brain function, has similarly said that it will take something like 200 years before we will be able to build robots with intelligence comparable to our own. But these advances will be essential before we can truly begin to understand our brains and our minds. I also feel that being able to read and change Mindcode will be a necessary, but insufficient, step in that process.

You may be right, I may be crazy, but it just may be a lunatic you're looking for!

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