

Evolving Thoughts on Thought and its Evolution

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It is unlikely that you would be reading this journal if you weren't interested in at least some questions concerning the nature of thought. There is a good chance then that you will be interested in Ian Glynn's book which aims to discuss a whole range of related questions concerning the nature of our thoughts, minds and brains. Many of these questions are old and hard, such as those underlying the mind-body problem, and we are warned not to expect definitive answers to them. But leading up to these hard questions, we necessarily come up against many others, such as how signals get conducted along nerve fibers, for which over the years we have built up remarkably detailed answers. And, of course, now that few of us believe we were designed and created by a God, we also need to question how the various brain structures and thought processes could have arisen as a result of natural selection. Glynn's book not only provides a careful study of our current understanding of how the brain works, but also of how and why it has evolved to be like it is, and indeed, how our understanding of it has evolved during the course of the history of its study.

Unlike some books in this area, we get a considered exposition of the whole field, not just a lead-up to the author's own views on consciousness or the other big problems. The first section "clears the ground" with a survey of the essential underlying ideas: problems with the common sense and epiphenomena views of the mind, brains as machines, evolution by natural selection, the human evolutionary tree, and the origin of life. We then have a section covering nerves and the nervous system, with details of the transmission of information along nerve fibers, the sense organs that provide information input into the nervous system, and the layout and interaction of nerve cells in the central nervous system itself. This provides the necessary framework for sections on the application areas of seeing, talking and thinking respectively. The section on seeing considers in turn the psychophysical, neurological, neurophysiological and computational approaches to understanding vision and how they can combine to provide a consistent account of information processing in the visual parts of the brain. The section on talking actually covers language more generally, with chapters on language disorders, the structure of language, and the evolution of language. The thinking section discusses memory, emotion, planning and attention. Clearly, given that virtually all these are still major active research areas, there remain numerous gaps in our understanding of all them, and much room for controversy as well, but Glynn still manages to weave a remarkably coherent picture from it all. Moreover, judging from the areas with which I am familiar, we are presented with a fair account of what is known and what is not known, and a sense of the competing viewpoints where appropriate.

The final section of the book is devoted to the more philosophical issues – the mind-body problem, qualia, consciousness, free-will and morality. As warned at the beginning, we don't get definitive answers to all these big questions (we'll be arguing about them for a long time to come yet), but we do get a good sense of the pros and cons of the various views currently on the market. I must admit that I entered this last section with some trepidation, as,

apparently like most of Glynn's scientific and medical colleagues, I tend to be rather dismissive of philosophy. However, I should have guessed from the earlier parts of the book that our guide had the skill and knowledge to navigate us through this minefield unscathed. (Lessons in "philosopherspeak" are provided when necessary.) I still found this section a bit disconcerting in places though. Having read about a viewpoint that made eminent sense to me and led to my self-diagnosis as a "functional-state identity theorist", the next paragraph started with the words "you may be thinking that this is all nonsense" and went on to explain why some philosophers would agree that it is. I was later relieved to find out that my viewpoint *was* tenable after all, but learnt two important lessons along the way: (1) never jump to hasty conclusions on these issues, and (2) whatever your views on the mind-body problem and consciousness, some philosopher has probably had them before and given them an impressive sounding name, and another will have claimed to have found innumerable problems with them.

Obviously, given the book's subject area, virtually every chapter could easily be expanded to fill a whole book in its own right, and one has to draw the line somewhere. Fortunately, Glynn has an excellent sense of how much detail is interesting and useful and when it is best to gloss over the technical details and move to the conclusions. There is just one additional theme that I might have made more explicit if I were clever enough to write such a book. Throughout the book we see how evolution and learning are both important factors in determining how the brain works. The fact that the Lamarckian idea of inheriting learned characteristics has been shown not to be viable is often mistakenly taken to imply that these factors operate independently. Yet lifetime learning and evolution do interact by the synergy that has become known as the Baldwin effect (Baldwin, 1896). Thanks largely to Hinton & Nowlan (1987) and the power of modern computer simulations, this idea has resurfaced and shown how learning can facilitate evolution by turning otherwise useless mutations into enhanced fitness, and natural selection can result in the assimilation of learnt behaviour into the genotype to reduce the cost of learning. Like many others, Glynn seems not to share my enthusiasm for the importance of this effect in understanding how the brain has evolved to be what it is today. However, I think it is something the reader may profit from bearing in mind as they read through the book.

So, should you read this book? Certainly if you know little of this subject area and want to know more, then I can think of nothing better to recommend. However, Glynn's book is essentially a popular account, deliberately aimed to be "accessible to the non-scientist", and as a result I suspect much of the material will already be familiar to many readers of *Perception*. Having said that, such a clear, concise and up-to-date overview of the field makes an excellent source for filling in the gaps of knowledge for those of us who may have followed the road of specialization further than we would have liked.

References

Baldwin J M, 1896, "A New Factor In Evolution" *The American Naturalist* **30** 441-451

Hinton G E & Nowlan S J, 1987, "How Learning Can Guide Evolution" *Complex Systems* **1** 495-502