

## Preface

This thesis, presented for a PhD degree in cognitive science, consists of five independent articles. In addition to these articles, a general introduction presents the issues discussed in the thesis. Furthermore, each individual article is introduced with some background information. The following articles are included:

- 1 R. Pallbo, Mind as Evolution and Evolution as Such, in F. Heylighen (ed.) *The Evolution of Complexity*, Kluwer Academic Publishers, Dordrecht, 1997, in press.

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- 2 R. Pallbo, An Inquiry into Meno's Dilemma, submitted, 1997.

- 3 R. Pallbo, A New Scheme for Motion Detection, manuscript, 1997.

- 4 R. Pallbo, A One Step Motion Detection Circuitry, *Biosystems*, 40, pp. 141–148, 1997.

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- 5 R. Pallbo, Motion Detection – A Neural Model and its Implementation, technical report, LUCS Minor 1, ISSN 1104–1609, Lund University Cognitive Science, 1994.

Like the area of cognitive science itself, this thesis branches into several fields of science. The first paper borrows the evolutionary idea from biology. The second paper enters into a philosophical discussion about the growth of knowledge. The last three papers

address the field of neurophysiology with a neural model of motion detection. Finally, these last three papers also describe a computer simulation of that model.

The cognitive scientist is faced with a dilemma. To cover this many areas of research is both the cognitive scientist's strength and weakness. It is a strength because, with a broad interdisciplinary base, the cognitive scientist can make use of the effects that result when several areas are combined. The whole is greater than the sum of its parts. However, the cognitive scientist can never attain the same level of expertise in each individual field as the specialised researcher can. I believe, however, that the price of this limitation is well worth paying. The scientific community needs researchers with broad perspectives who can see beyond the paradigms of the individual areas. Furthermore, to add a more personal bias, I think research is more fun that way!

Even though I am the author of this work, I did not produce it in isolation but have gained from the collaboration with and support from colleagues, friends and institutes. These people and groups are worth mentioning.

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