definitely minor criticism, I feel that a few pages on visually guided movements in other species, especially invertebrates, where there have been recent major advances, might have significantly broadened the perspective of the book.

Finally, I have some comments about the style of theoretical thinking and modelling that is reflected in Carpenter’s monograph. Traditional modelling of the oculomotor system is heavily based on linear systems analysis and concepts like filters, transfer functions, gain, and phase. Notwithstanding its merits and its deep influence on contemporary oculomotor research, it may well be that the “classical” control system language has already provided its most important contributions to motor research. The future role of this kind of analysis is, indeed, severely restricted because of three of its main features: the basic role of linearity, its one input–one output structure, and its analog-like character. As a consequence, system theoretical models may be inadequate to describe concisely a system that performs a complex information processing task as several motor control systems do. Carpenter says (p. 342) that “practically everything the nervous system does by way of information processing can be thought of as filtering of one sort or another.” This is certainly true in principle, but essentially nobody now describes complex computer programs in terms of filters, transfer functions, and the like. At some point in the scale of complexity, another theoretical language, based on nonlinear functional analysis and concepts like procedural algorithms, symbolic representations, and data structures, is needed to complement traditional systems analysis.

Since, as Carpenter writes at the very end of this book (p. 308), the study of the oculomotor system has made clear that “nothing in the brain is ever as simple as it seems,” such a new, more computational approach may play an important role in future research on the mammalian oculomotor system.

T. Poggio, Max-Planck-Institut für biologische Kybernetik, Tübingen