

The Parallel Brain: The Cognitive Neuroscience of the Corpus Callosum. Edited by Eran Zaidel and Marco Iacoboni. The MIT Press, Cambridge, MA. (2003). 551 pages. \$95, £63.50.

Contents:

Preface. Introduction: Poffenberger's simple reaction time paradigm for measuring interhemispheric transfer time (Eran Zaidel and Marco Iacoboni).

I. Anatomy and morphometry of the corpus callosum. Anatomy: Animal studies. 1. Callosal axons and their development (Giorgio M. Innocenti and Raymond Bressoud). 1.1. The effects of early injury to the cortical plate on callosal connectivity (Glenn D. Rosen). 1.2. Binocular input elimination and the reshaping of callosal connection (Maurice Ptito and Denis Boire). Anatomy: Human studies. 2. Corpus callosum morphology in relation to cerebral asymmetries in the postmortem human (Francisco Aboitiz, Andrés Ide, and Ricardo Olivares). 2.1. Complexity of human interhemispheric connections (Stephanie Clarke). Morphometry. 3. Brain size: A possible source of interindividual variability in corpus callosum morphology (Lutz Jäncke and Helmuth Steinmetz). 3.1. Size differences in the callosum: Analysis beyond the main effects (Patricia E. Cowell). 3.2. Individual differences in corpus callosum morphometry: To normalize or not to normalize for brain size (Jeffrey M. Clarke). 4. Morphometrics for callosal shape studies (Fred L. Bookstein). 5. Mapping structural alterations of the corpus callosum during brain development and degeneration (Paul M. Thompson, Katherine L. Narr, Rebecca E. Blanton, and Arthur W. Toga). Editorial Commentary I. New insights in callosal anatomy and morphometry (Eran Zaidel and Marco Iacoboni).

II. Physiological aspects of callosal sensorimotor integration. Physiology: Animal studies. 6. Functions of the corpus callosum as derived from split-chiasm studies in cats (Maurice Ptito). 6.1. The midline fusion hypothesis is all right but cannot explain all callosal functions (Giovanni Berlucchi). Physiology: Human studies. 8. Interhemispheric visuomotor activation: Spatiotemporal electrophysiology related to reaction time (Clifford D. Saron, John J. Foxe, Gregory V. Simpson, and Herbert G. Vaughan, Jr.). 8.1. Interhemispheric transfer of visual information as a function of retinal eccentricity: Evidence from event-related potentials (Carlo Miniussi, Angelo Maravita, and Carlo Marzi). 8.2. Neuroimaging patterns of intra- and interhemispheric connectivity (Marco Iacoboni and Eran Zaidel). 8.3. The use of event-related potentials for measuring interhemispheric transfer time (Steven Berman). Editorial commentary 2. Current directions in physiological studies of callosal functions (Marco Iacoboni and Eran Zaidel).

III. Interhemispheric sensorimotor integration: Behavioral studies. The normal brain. 9. The evolution of the concept of interhemispheric relay time (Claude M.J. Braun, André Achim, and Caroline Larocque). 9.1. Does the CUD in SRT measure IHTT? Or: Is the crossed-uncrossed difference in the simple reaction time task a pure measure of interhemispheric transfer time (Eran Zaidel and Marco Iacoboni)? 9.2. Interacting hemispheres: A means of modulating attention (Marie T. Banich). 10. The corpus callosum equilibrates hemispheric activation (Marcel Kinsbourne). 10.1. A plan for the empirical evaluation of the coactivation/equilibration model of callosal function (Jacqueline Liederman). The split brain. Callosal channels: Insights from partial callosotomy. 11. Effects of partial callosal and unilateral cortical lesions on interhemispheric transfer (Carlo A. Marzi, L.G. Bongiovanni, Carlo Miniussi, and Nicola Smania). 11.1. Interhemispheric transfer of visuomotor inputs in a split-brain patient: Electrophysiological and behavioral indexes (Alice Mado Proverbio and Alberto Zani). 12. Stable and variable aspects of callosal channels: Lessons from partial disconnection (Marco Iacoboni and Eran Zaidel). 12.1. Attentional modulation of interhemispheric transfer: A two-channel threshold model (Kenneth Hugdahl). Complete callosotomy and commissurotomy. 13. Sensorimotor integration in the split brain (Eran Zaidel and Marco Iacoboni). 13.1. Water under the bridge: Interhemispheric visuomotor integration in a split-brain man (Michael C. Corballis and Bettina Forster). 14. Parallel processing in the bisected brain: Implications for callosal function (Patricia A. Reuter-Lorenz). 14.1. In search of lost time: Functional significance of crossed-uncrossed differences in callosal patients (Marco Iacoboni and Eran Zaidel). Callosal Agenesis. 15. Agenesis of the corpus callosum (Maryse C. Lassonde, Hannelore C. Sauerwein, and Franco Lepore). 15.1. Sensorimotor interaction in agenesis of the corpus callosum (Marco Iacoboni, Mayim H. Bialik, and Eran Zaidel). 15.2. Cerebral plasticity in callosal agenesis versus callosotomy (Jeffrey M. Clarke). 15.3. Interhemispheric and intrahemispheric mechanisms of visuomotor integration in callosal agenesis (Marirosa DiStefano and Carlo Salvadori). Editorial commentary 3. Current directions in behavioral studies of callosal functions (Eran Zaidel and Marco Iacoboni).

IV. The corpus callosum and clinical investigations. 16. Clinical neuropsychological assessment of callosal dysfunction: Multiple sclerosis and dyslexia (Warren S. Brown). 16.1. Interhemispheric conduction delay in multiple sclerosis (Francesco Tomaiuolo, Marco Iacoboni, M. Altieri, Vittorio DiPiero, Carlo Pozzilli, Gian L. Lenzi, and Carlo A. Marzi). 16.2. Redundancy gain as a measure of implicit sensorimotor integration (Marco Iacoboni and Eran Zaidel). 17. Alexithymia as a consequence of impaired callosal function: Evidence from multiple sclerosis patients and normal individuals (Michel Habib, Géraldine Daquin, Jean Pelletier, Michele Montreuil, and Fabrice Robichon). 18. Functional consequences of changes in callosal area in Tourette's syndrome and attention deficit/hyperactivity disorder (M. Yanki Yazgan and Marcel Kinsbourne). 19. Using the corpus callosum as an effective anatomical probe in the study of schizophrenia (Patricia E. Cowell, Victor Denenberg, Gary Boehm, Andrew Kertesz, and Henry Nasrallah). 20. Interhemispheric abnormalities in schizophrenia and their possible etiology (Robert W. Doty). Editorial commentary 4. Current directions in clinical studies of callosal functions (Eran Zaidel and Marco Iacoboni).

V. From anatomy to behavior: The case of pure alexia. 21. The role of homotopic and heterotopic callosal connections in humans (Stephanie Clarke). 21.1. Learning to read and write shapes the anatomy and function of the corpus callosum (Alexandre Castro-Caldas, Alexandra Reis, Pedro Cavaleiro Miranda, and Eduardo Ducla-

Soares). 22. Optic aphasia and pure alexia: Contribution of callosal disconnection syndromes to the study of lexical and semantic representation in the right hemisphere (Claudio G. Luzzatti). 22.1. Right hemisphere contributions to word recognition in pure alexia (Elisabetta Làdavas). 22.2. Right hemisphere contributions to residual reading in pure alexia: Evidence from a patient with consecutive bilateral strokes (Paolo Bartolomeo, Anne-Catherine Bachoud-Lévi, Jean-Denis Degos, and François Boller). 22.3. Letter-by-letter reading: Regional cerebral blood flow correlates (Marco Iacoboni, Patrizia Pantano, and Vittoria Di Piero). Editorial commentary 5. The case study of pure alexia: Sensorimotor integration in the split brain (Eran Zaidel and Marco Iacoboni). About the authors. Contributors. Author index. Subject index.

Parallel Computing on Heterogeneous Networks. By Alexey Lastovetsky. Wiley-Interscience, Hoboken, NJ. (2003). 423 pages. \$89.95.

Contents:

Acknowledgments. Introduction.

I. Evolution of parallel computing. 1. Serial scalar processor. 1.1. Serial scalar processor and programming model. 1.2. Basic program properties. 2. Vector and superscalar processors. 2.1. Vector processor. 2.2. Superscalar processor. 2.3. Programming model. 2.4. Optimizing compilers. 2.5. Array libraries. 2.5.1. Level 1 BLAS. 2.5.2. Level 2 BLAS. 2.5.3. Level 3 BLAS. 2.5.4. Sparse BLAS. 2.6. Parallel languages. 2.6.1. Fortran 90. 2.6.2. The C[] language. 2.7. Memory hierarchy and parallel programming tools. 2.8. Summary. 3. Shared memory multiprocessors. 3.1. Shared memory multiprocessor architecture and programming models. 3.2. Optimizing compilers. 3.3. Thread libraries. 3.3.1. Operations on threads. 3.3.2. Operations on mutexes. 3.3.3. Operations on condition variables. 3.3.4. Example of MT application: Multithreaded dot product. 3.4. Parallel languages. 3.4.1. Fortran 95. 3.4.2. OpenMP. 3.5. Summary. 4. Distributed memory multiprocessors. 4.1.1. Distributed memory multiprocessor architecture: Programming model and performance models. 4.2. Message-passing libraries. 4.2.1. Basic MPI programming model. 4.2.2. Groups and communicators. 4.2.3. Point-to-point communication. 4.2.4. Collective communication. 4.2.5. Environmental management. 4.2.6. Example of an MPI application: Parallel matrix-matrix multiplication. 4.3. Parallel languages. 4.4. Summary. 5. Networks of computers: Architecture and programming challenges. 5.1. Processors heterogeneity. 5.1.1. Different processor spreads. 5.1.2. Heterogeneity of machine arithmetic. 5.2. Ad hoc communication network. 5.3. Multiple-user decentralized computer system. 5.3.1. Unstable performance characteristics. 5.3.2. High probability of resource failures. 5.4. Summary.

II. Parallel programming for networks of computers with mpC and HMPI. 6. Introduction to mpC. 6.1. First mpC programs. 6.2. Networks. 6.3. Network type. 6.4. Network parent. 6.5. Synchronization of processes. 6.6. Network functions. 6.7. Subnetworks. 6.8. A simple heterogeneous algorithm solving an irregular problem. 6.9. The RECON statement: A language construct to control the accuracy of the underlying model of computer network. 6.10. A simple heterogeneous algorithm solving a regular problem. 6.11. Principles of implementation. 6.11.1. Model of a target message-passing program. 6.11.2. Mapping of the parallel algorithm to the processors of a heterogeneous network. 6.12. Summary. 7. Advanced heterogeneous parallel programming in mpC. 7.1. Interprocess communication. 7.2. Communication patterns. 7.3. Algorithmic patterns. 7.4. Underlying models and the mapping algorithm. 7.4.1. Model of a heterogeneous network of computers. 7.4.2. The mapping algorithm. 7.5. Summary. 8. Toward a message-passing library for heterogeneous networks of computers. 8.1. MPI and heterogeneous networks of computers. 8.2. HMPI: Heterogeneous MPI. 8.3. Summary.

III. Applications of heterogeneous parallel computing. 9. Scientific applications. 9.1. Linear Algebra. 9.1.1. Matrix multiplication. 9.1.2. Matrix factorization. 9.1.3. Heterogeneous distribution of data and heterogeneous distribution of processes compared. 9.2. *N*-body problem. 9.3. Numerical integration. 9.3.1. Basic quadrature rules. 9.3.2. Adaptive quadrature routines. 9.3.3. The *quanc8* adaptive quadrature routine. 9.3.4. Parallel adaptive quadrature routine for heterogeneous clusters. 9.4. Simulation of oil extraction. 9.5. Summary. 10. Business and software engineering applications. 10.1. Acceleration of distributed applications. 10.1.1. Introduction. 10.1.2. Distributed application of a "supermarket chain". 10.1.3. Parallel implementation of the remote operation *get-Distribution*. 10.1.4. Experimental results. 10.2. Parallel testing of distributed software. 10.2.1. Motivation. 10.2.2. Parallel execution of the orbix test suite on a cluster of multiprocessor workstations. 10.2.3. Experimental results. 10.3. Summary.

Appendixes. Appendix A. The mpC *N*-body application. A.1. Source code. A.2. User's guide. Appendix B. The block cyclic matrix multiplication routine for heterogeneous platforms. B.1. Source code. B.2. User's guide. Appendix C. The parallel adaptive quadrature routine. C.1. Source code. C.2. User's guide. Appendix D. The mpC user's guide. D.1. Definition of terms. D.2. Outline of the mpC programming environment. D.3. Supported systems. D.4. The mpC compiler. D.4.1. Options. D.4.2. Pragmas. D.5. How to start up. D.6. Virtual parallel machine. D.6.1. VPM description file. D.7. Environmental variables. D.7.1. WHICHMPI. D.7.3. MPIDIR. D.7.4. MP-CLOAD. D.7.5. MPCTOPO. D.8. How to run mpC applications. D.8.1. mpcreate. D.8.2. mpcopen. D.8.3. mpcbcast. D.8.4. mpload. D.8.5. mpscrun. D.8.6. mpctouch. D.8.7. mpcclose. D.8.8. mpcclean. D.8.9. mpcmach. D.8.10. Sample mpC sessions. D.9. How to debug mpC applications. D.10. Sample mpC sessions. D.10.1. A simple session. D.10.2. More complicated session. Bibliography. Index.

Monetary Theory and Policy. Second Edition. By Carl E. Walsh. The MIT Press, Cambridge, MA. (2003). 612 pages. \$70.

Contents:

Preface. Introduction. 1. Empirical evidence on money, prices, and output. 1.1. Introduction. 1.2. Some basic