

# Symbol minded

Relationships with others have helped to shape our ability to learn language.

## The First Idea: How Symbols, Language, and Intelligence Evolved From Our Primate Ancestors to Modern Humans

by Stanley I. Greenspan & Stuart G. Shanker

Da Capo: 2004. 512 pp. \$25, £18.99

Peter Hobson

What are the bases for human symbolic thinking and language? This is a question that prompts fierce confrontation between those who defend what is distinctively interpersonal about human social engagement, and those who aspire to computational reductionism in modelling cognitive development. *The First Idea* joins the attack on the side of the interpersonal camp (rather like a Sherman tank, in fact), to shake if not destroy the forces of nativism and individualism.

The impetus behind the intellectual assault comes from a conviction that the origins of symbolizing, both in human pre-history and in the early development of young children, lie in emotionally patterned interpersonal relations. It will not do to pivot an account of the origins of thought and language around cognitive constraints that are hard-wired into the brain. In *The First Idea*, Stanley Greenspan and Stuart Shanker insist that we have radically underestimated the developmental role played by emotions that link humans together. They consider that “successively more complex interactive emotional signals”, and the cultural practices that are founded on and exploit such communication, both structure and integrate the psychological abilities required for thinking.

It takes many pages for Greenspan and Shanker to lay out their theory as they range over the domains of child development, primate social and communicative abilities, autism, the origins of culture, and even the future evolution of humanity. Modesty is not an obstacle to their forthrightness: again and again we are told how, largely through their own observations, the authors have enjoyed flashes of insight denied to others. Yet for all their expansiveness, the authors are justified in thinking that they challenge some widely held presumptions about the nature and development of thinking. Notwithstanding the contributions of Lev Vygotsky and his followers, who have stressed the social origins of higher forms of cognition, it is still radical to situate communication between people not at the periphery of human thinking and language, but at its core. The clinical experience of Greenspan



Play school: interactions between children help them to improve their symbolic thinking.

(a child psychiatrist and psychoanalyst) and the thoughtfulness of Shanker (a philosopher and psychologist) allow them to elaborate a distinctive view of human development and psychopathology.

It is this viewpoint that sets this book apart. Although I found myself resisting the sweep of the authors' 16 developmental stages of emotional and intellectual growth, the book's cumulative effect is to give the reader a deeper appreciation of the power and formative potential of human emotional interaction. It contains enough provocative ideas about the kinds of social and developmental processes at work in various aspects of intellectual and cultural life to set the framework for new theoretical and empirical investigations.

Regarding human evolution, for example, it is highly plausible that it was the increased ability to communicate and coordinate subjective states with others, together with concurrent changes in cultural practices, that led to a revolution in cognitive functioning through the acquisition of symbolic thinking. In the field of developmental psychopathology, the authors have good reasons to view the primary deficit in autism as the child's difficulty in engaging with others on an emotional level. There is something theoretically, as well as therapeutically, compelling in observations that these children's cognitive functioning may improve substantially when it proves possible to enhance their relationships with other people. Just as *The First Idea* expounds how patterns of mutual emotional and communicative exchange with others are vital

for typical development, so too its authors point out that where there is no mutuality, the repercussions are profound.

The devil is in the detail. Often the authors make statements with little more support than their personal observations. For example, they state that the human capacity for engaging in longer and more continuous chains of emotional signals is what allows us “to negotiate and solve problems, and, thereby, more fully separate perceptions or images from their fixed actions and construct higher and higher levels of internal symbols”. They tell us how “emotional recognition that one's actions can have an impact on someone else is the foundation for sequencing, that is, the ability to carry out many steps in a row where each one is related to the previous one”. These are interesting possibilities, but is there evidence to convince us one way or the other? The authors often cite studies in child development, anthropology or neuroscience that seem to be congruent with their position. But do not expect to find detailed or critical analyses of scientific evidence. In flourishing a broad brush, the authors seem intent to impress the general reader rather than engage the mind of the scientific sceptic.

Apart from matters of evidence, does this book really explain how interpersonal engagement yields symbolic thinking? Here the authors chide Piaget for failing to come up with the goods but, other than correcting the one-sidedness of his theory, do they really do better? Take their account of how symbolizing is achieved by separating perception from action. Piaget identified

the critical property of symbolizing as the emancipation of thought from action, and of meanings from the objects to which those meanings usually apply. What seems to be missing from *The First Idea* is an account of the mechanisms by which social influences allow children to ascribe alternative perspectives, recognized as such, to and through symbols. There are candidate explanations — my own view is that the emotionally grounded process of identification between a young child and others does the trick — but the authors seem to feel that their arguments suffice.

Through their creative thinking about emotional and interpersonal aspects of early human development, Greenspan and Shanker have helped us to find our bearings for the intellectual fight ahead. I just wish their map had been adjusted in scale, to something nearer pocket size. ■

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## Sizing up a growing field

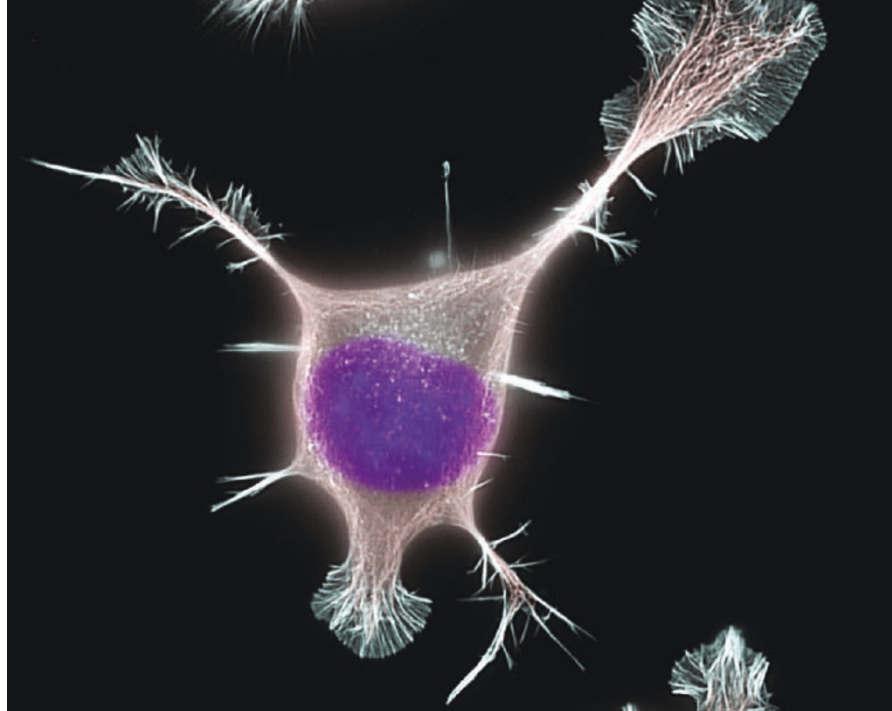
### Cell Growth: Control of Cell Size

edited by Michael N. Hall, Martin Raff & George Thomas  
Cold Spring Harbor Laboratory Press: 2004.  
652 pp. \$135, £95

### Brendan D. Manning and Lewis C. Cantley

The terms 'cell growth' and 'cell proliferation' are often used synonymously to mean an increase in cell number. Strictly, though, cell growth refers to an increase in cell size or mass, whereas cell proliferation is an increase in cell number due to cell division. The two processes together determine the ultimate size of cells, tissues, organs, even organisms. Cell proliferation is almost always accompanied by cell growth, except, for example, in the early stages of embryogenesis. But cell growth often occurs without cell division, for instance in terminally differentiated cells such as myocytes and neurons.

Cell growth underpins many critical cellular and developmental processes, yet studies on its regulation and mechanisms have lagged behind those on cell proliferation and cell-cycle progression. However, a flurry of genetic, cell biological and biochemical studies over the past ten years have made great strides towards discovering the signalling pathways and mechanisms that drive cell growth. *Cell Growth*, edited by three investigators at the forefront of this research, Michael Hall, Martin Raff and



**Growth factor:** neurons can increase their size dramatically by extending axons and dendrites.

George Thomas, details our current knowledge of this field.

The all-star cast of authors assembled for this work gives a clue to the book's likely impact. In the foreword, Paul Nurse sets the stage by defining perhaps the most perplexing question in the field: how does a proliferating cell double its mass and contents once per cell division, with near-perfect precision? Central to this question is whether or not a cell has the capacity to monitor its own size, and several chapters revisit this problem. Nurse's discussion of the growth patterns used to achieve a constant cell size is complemented by Patrick O'Farrell's opening chapter on the evolution of body size in metazoans. O'Farrell brilliantly delineates the constraints that all higher organisms face in

reaching their final size, and the enormous variety of developmental patterns used to overcome these constraints.

Pioneering studies on cell growth control by Nurse and Lee Hartwell in yeast, and by Anders Zetterberg and others in mammalian cells, have focused on the nature of the relationship between cell size and cell-cycle progression. Many proteins and pathways involved in cross-talk between these two processes have since been characterized in yeast, flies and mammals, and these are detailed in the early chapters. The main theme that emerges is the wide range of distinct mechanisms to coordinate growth and division that exist between different systems, even in different developmental stages of the same organism. The wiring of networks

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Elsevier, 334 pp. £29.95, \$45

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Sinauer, 776 pp. \$104.95, £37.99

### Gastrulation: From Cells to Embryos

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Cold Spring Harbor Laboratory Press, 731 pp.  
\$150, £100

### Introduction to Protein Science: Architecture, Function, and Genomics

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### Human Evolution: An Illustrated Introduction (5th edn)

by Roger Lewin  
Blackwell, 277 pp. \$44.95, £19.99