

The late twentieth century saw a revolution in our understanding of children's minds. Freud and Piaget, who had dominated the study of childhood in the earlier part of the century, turned out to be wrong in fundamental ways. New methods allowed scientists to explore the thought and experience of children in a new way. We discovered that even the youngest infants knew more and learnt more than we would ever have thought. At the same time, we discovered that children's minds are stranger, and more different from the minds of adults, than we would ever have thought, either.

Developmental psychology has been one of the greatest successes in psychological science. Indeed, while psychological science seems often either to tell us something familiar about things we care about, like love, or else something new about things we don't care much about, like visual attention or fine motor control, developmental psychology has been both surprising and fascinating. Of course, there were, and still are, areas of vigorous debate. There were, for example, deep disagreements between nativists who, following Noam Chomsky, stressed the innate character of human nature, and empiricists who emphasized our powerful abilities for learning and change. But there are very few areas of psychology where we could list more real discoveries.

So you would think that an *Encyclopedic Companion to the Child* would relate these discoveries. But you would be wrong. The general editor, Richard A. Shweder, is an anthropologist and cultural psychologist who has done illuminating and important studies of cultural differences in morality and child-rearing. But among the over 600 contributors there is a bare handful, less than a dozen, who would even be recognizable to psychological scientists. Reading through the entries themselves confirms this. There are two pages, out of over a thousand, for the entry on "cognitive development", and much of that is taken up with a discussion of cultural differences in mathematics. There is no entry for Chomsky. Indeed, the nativist tradition in developmental psychology is almost entirely absent – no references to Elizabeth Spelke or Rene Baillargeon, for example. The empiricists don't fare much better – the entry on "learning" contains nothing about any of the major approaches to the subject in developmental psychology – nothing about the groundbreaking work on statistical learning by scientists such as Jenny Saffran, Richard Aslin and Rebecca Gomez, nothing about the influential connectionist computational learning theories. The entry on "animism" doesn't refer to the seminal work of Susan Carey, which upended Piaget. The entry on "theory" begins by informing us that theories are merely metaphors, and then is silent on all of the most significant theories in developmental science.

How could this be? When the intellectual historians of the future come to consider the late twentieth century they will face a profound conundrum. In those years, there were two great academic movements that tried to understand human thought, experience and action. And they were utterly separate not only in intellectual content but in sociology. One was a set of ideas that came to dominate much of the humanities and social sciences, including anthropology, literature, art his-

Sleeping alone

ALISON GOPNIK

Richard A. Shweder, editor

THE CHILD

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tory, psychotherapy and education. This set of ideas was often called "postmodernism" (or "critical theory" or just "theory"). The central claim was that the mind is "socially constructed". The thoughts and experiences of people in different cultural traditions or historical periods are incommensurable. The methods of science – systematic argumentation, experimentation and evidence-gathering – all often described as "positivism", were to be rejected.

The other, equally significant, movement emerged in psychology, linguistics, neuroscience and computer science. This movement came to be known as "cognitive science". However, the central ideas and method extended far beyond cognition ("psychological science" might be a better term) – the same general approach was also applied to studies of social and emotional life. The fundamental idea of cognitive science was

that the brain is a kind of computer designed by evolution, though very different from any computer we currently know. By using the methods of science we could reveal the computational and neurological structures that allow people to think, experience and act in the way that they do.

Within each of these very large movements there were, of course, deep disagreements and sometimes acrimonious debates. Within the postmodern tradition there were arguments between those who relied more heavily on political theory, and those who were more influenced by psychoanalysis (which had been abandoned in scientific psychology). Within cognitive science there was the great debate between nativism and empiricism. But across the two intellectual currents there was largely incomprehension, disconnection and caricature rather than engagement.

This was particularly curious because the subject matter of the two movements often overlapped. Earlier in the century, before the rise of postmodernism and cognitive science, there had often been fruitful connections between psychological science and the humanities and social sciences. In the mid-twentieth century writers such as E. H. Gombrich and Rudolf Arnheim related art history to the scientific study of visual perception. Similarly, Roman Jakobson had seen linguis-

tics and literature as intimately connected.

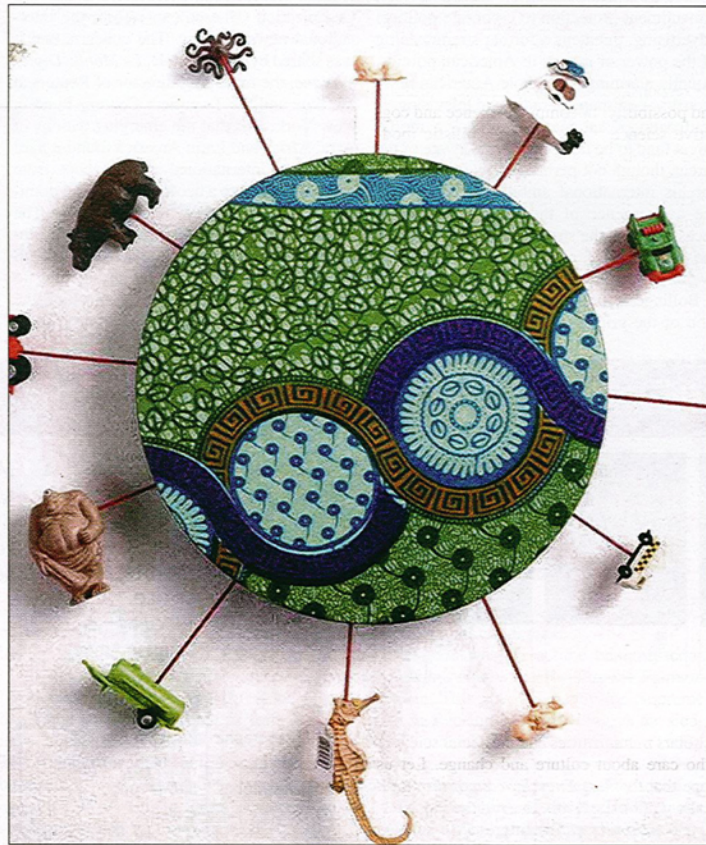
The study of childhood was another area where the sciences and humanities and social sciences initially made contact. Jérôme Bruner, for example, was one of the founders of cognitive science and also argued strongly for social and cultural influences on children's development.

But later in the century, there was a growing divide between different ways of studying childhood, echoing the deeper divides in the two traditions. The postmodernists in anthropology, psychotherapy and education emphasized the differences in the ways that children and childhood were understood at different historical periods and in different cultures, and the processes by which children became part of their particular cultures. The psychological science tradition emphasized the basic cognitive processes that underlay development. Still, they were, after all, studying the same thing. Moreover, there is a certain sweetness of academic temper that is correlated with studying children, either through selection or adaptation. Developmental psychologists, like Canadians, tend to be nice to a fault, and, also like Canadians, they might be just the right people to play the role of peacekeepers.

The Child: An encyclopedic companion would have been an occasion to bring the warring sides together, and the introduction to this book suggests that it might have been intended to do so. Unfortunately, though, the book has ended up mostly as an *Encyclopedic Companion to the PostModern View of the Child in the Humanities and the Social Sciences*. It contains a familiar mixture. There are important and rich descriptions of the many ways that children have functioned, and have been understood, in different cultures and historical periods. Much of this material, especially the history, is not only fascinating in itself but is a rich vein of data that has been sadly neglected in psychological science. There is also a great deal of tendentious politicizing and gobbledygook.

The omission of psychological science becomes less surprising when you read in the introduction that the charge to contributors was that they "make comparisons to other societies, cultural traditions and historical periods" and "consider ethnic, gender, racial and socioeconomic variation in this topic". Most cognitive scientists would be bewildered by such a request. It would be like asking a molecular biologist who studies mitosis or gene expression to "consider variation in this topic in fish, birds, plants and bacteria". Of course, the biologist thinks that the basic processes that she studies will be reflected in the structure of all these kinds of organisms. She may think that the comparative study of different organisms could be very illuminating, depending on the research question at hand. But it is hardly what you would expect an encyclopedia article on mitosis or gene expression to include, let alone require.

Similarly, to a developmental scientist cultural variation can be illuminating but it isn't an end in itself. In fact, the obviously political character of the categories of "ethnic, gender, race and socioeconomic variation" makes this requirement more like asking the molecular biologist to talk about mitosis in endangered species versus invasive ones. These categories may be very important for social action or political progress but they are largely irrele-



"Toy Painting 11", 2003; from *Yinka Shonibare MBE* by Rachel Kent et al (224pp. Prestel. £35 (US \$55). 978 3 7913 4123 1

vant to scientists who are trying to understand fundamental biological mechanisms.

Nevertheless, it is genuinely sad that this first twenty-first-century encyclopedia perpetuates the Great Divide of the twentieth. And it has the particular poignancy of missed opportunity. This is because the study of children is just the place where, in the twenty-first century, advances in psychological science might finally make real contact with the concerns of humanists and social scientists. For the intellectual historian of the late twentieth would undoubtedly ask, "Why did it happen?" Why did the humanities and social sciences and psychological and biological sciences stop talking to each other, just when psychological science was flourishing? Part of it was the usual problem of crossing disciplinary boundaries. Part of it, perhaps, was the old "two cultures" divide. But I think there was a deeper reason, too.

The truth is, that all scholars and scientists, regardless of their theoretical or philosophical or methodological stance, start out by just loving their subject matter. To sustain any intellectual career you need to think that, say, the inner workings of the visual system, the complexities of the syntax of subordinate clauses, the kinship system of the !Kung of the Kalahari Desert, the rise of mannerism in the sixteenth century, or even causal inference in three-year-olds, is, intrinsically, just about the most interesting thing in the world. And a good scholar or scientist can convey this fascination to others.

Shweder's own work on sleeping patterns is a good example. Shweder found that across cultures there was enormous variation in these patterns and, at the same time, that decisions about who sleeps with whom were always given a moral weight, even when those weights were reversed in different cultures. Indian families, for example, might find it far more morally acceptable for a father and mother to sleep separately than for a baby to sleep alone. If psychological science couldn't address fascinating phenomena like these it was not surprising that humanists and social scientists rejected it.

In fact, two visions of psychological science that gained particular traction in the late twentieth century could indeed be seen as intrinsically hostile to phenomena of variation and change. One was the vision of "evolutionary psychology". These psychologists emphasized the extent to which human thought, experience and action were governed by innate universal constraints that had evolved in our hunter-gatherer past. These constraints meant that the human mind remained largely constant across development, across historical time and across cultures. Variation and change were minor and uninteresting compared to universality and continuity.

The second vision, which came to prominence somewhat later, emphasized the neurological and genetic origins of the mind. With advances in brain imaging and genomic analysis there was a rash of studies claiming to have found that some particular brain area or gene was responsible for morality, or language, or spirituality, or some other profound aspect of the human mind. Often, these discoveries were interpreted as showing that the deepest human capacities were "hard-wired". If this were true then, again, cultural and historical change and variation would have to be

highly constrained and relatively uninteresting scientifically.

Both evolutionary psychology and imaging and genetics were especially emphasized in popularizations and journalism, which is, after all, where most academics find out what's happening in other fields. It is not hard to see why both these visions of psychological science would be inimical to scholars who have immersed themselves in the details of particular cultural practices, in the history of artistic or literary movements, or in the course of political progress and change. The moral of psychological science often seemed to be that those processes of variation and change were outside the scope of scientific explanation and interest. So no wonder the scholars gave up on science, or turned to theorists such as Marx and Freud who at least addressed those questions, however scientifically disreputable those theories had become.

Some especially naive forays by cognitive scientists into areas like evolutionary ethics or neuroaesthetics, didn't help. Approaches that essentially dismissed, for example, the revolutionary changes in art, literature, culture, politics and moral sensibility of the entire twentieth century itself, would hardly convince scholars of those developments that here were valuable new tools or ideas.

But perhaps the intellectual historian of the twenty-first century will have a happier story to tell. There were always scholars who stood outside the postmodernist tradition in the humanities and social sciences, and there is increasing dissatisfaction with those approaches. In parallel, across many areas of cognitive science, but especially in the study of development, there is a newly productive emphasis on the underlying principles that are responsible for human change, variation and possibility. In computer science and cognitive science, work in "probabilistic modeling", including work employing Bayesian inference or graphical networks, for example, describes mechanisms of learning and change that go far beyond the simpler associationist learning theories of the past.

The great burgeoning of work in "theory of mind", first, in developmental psychology and then more recently in "social neuroscience" shows how we gradually come to understand ourselves and others, and how we and others create, as well as discover, new ways of thinking and feeling. An important new line of work exploring "intuitive pedagogy" shows how children (or for that matter robots) can learn in special ways through their interactions with expert teachers and how cultural traditions can be formulated and transmitted. In neuroscience, there is increasing emphasis on plasticity, on the many and complex ways that the brain is shaped and changed by experience, particularly in childhood. In genetics, there is increasing recognition that the very process of gene expression may be influenced by an animal's social surroundings, especially early in development.

Perhaps this vision of psychological science will finally make contact with the scholars in humanities and the social sciences who care about culture and change. Let us hope that the next *Encyclopedia of the Child* really will be encyclopedic, and that the intellectual historians of the future will hail it as the first intimation that, by the start of the twenty-first century, the war between the disciplines was drawing to an end at last.

Midi/Minuit, Narbonne

*Le rue est plafonnée de bleu
Et nos projets sont sans limite – Pierre Reverdy*

The sound of a train is the sound of the wind
In the narrow streets, is nowhere, is a train
Not taken, though I see its swaying corridors
Framing the sun's flight second by second
And wake to a scattering of rain at the glass,
To streets I have been dreaming, still and wet,
From which the sound has only now
Yet therefore utterly departed, which is why
I go on listening anyway, until
The silence too exhausts itself and once again
The wind sings in the eaves and campaniles.
I know that when we lie at rest
You listen too, that you are not afraid
If clearly we shall have to live forever
In this state of perfect ignorance, new-born
To these familiar conditions that will once more
Exalt the heart in breaking it. Come close.
No atlas could describe the distances that sound –
The train, the gust among the tiles and attics –
Offers us for nothing as it fades, the wind
Into itself, the train into its schedule – an express
Importantly imagining the north for those
Who long to go or dare to stay or never
Think of going anywhere at all. Come close.
What business can it be of ours
To feel this way, as though both honoured
And arraigned, to have to give this sound
That might be nothing but the wind
Our tribute of attention till it's gone?

SEAN O'BRIEN

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