Not so very long ago, infants were thought to be inert, unresponsive, basically vegetative creatures unworthy of being studied when there was so much else to learn about human behaviour. Concern with infancy remained insubstantial until Sigmund Freud announced the world by suggesting that a seemingly pure and innocent baby was a veritable lustful machine that soon after birth developed the psychic apparatus to guide the passionate quest for instinctual gratification. While his speculations were made without any study of babies, they were heard and not forgotten, and remain in the background of any probing and penetrating examination of early childhood.

When psychology became a separate, if thinly staffed, discipline about a century ago, thinking about human development was (and still is to a considerable extent) dominated by already existing debates over the heredity-environment issue. Child-study stations were formed at a handful of state universities in the United States and became preoccupied with studies that revolved around the basic questions of whether development was mainly biologically driven, in the form of maturation, or whether environmentally mediated experience was the more powerful determinant of psychological growth. Most noteworthy, or at least most visible, was the work of a Yale paediatrician, Arnold Gesell, who conducted voluminous observational studies of different age groups, wrote book after book, and appeared in most of the family magazines of the 1930s and 40s, in which he reported his painstaking studies of young children's bi-monthly changes in development, which he attributed almost entirely to the process of maturation.

The major breakthrough in the field came with the work of Jean Piaget, a Swiss biologist and epistemologist. He posed highly original questions to children of all ages about their ideas and knowledge of the world around them, as well as producing a detailed observational study of the infancy of his own three children, for which he devised a set of tasks to determine whether and how they thought during their babbling stage. He thus established a theory of different stages of cognitive development from birth onwards. Piaget's work was ignored for decades, because inquiries about thought and inner life were proscribed by the doctrine of behaviourism, which limited serious scientific study of psychology to behaviour that was directly observable. Incredible as it may seem, the concept of cognition, indeed, the very word, was excluded from psychology until about 1960, about the time when Alison Gopnik, the author of The Philosophical Baby, was born.

Once the strictures against the study of cognition were overcome, and with Piaget's seminal writings and research methods as a point of departure, a group of inventive and resourceful researchers devised new methods for evoking and recording the behavioural repertoires of babies. As a result, babies have become capable of mastering learning and thinking tasks at an earlier age than previously found. Some wags have suggested that babies are becoming smarter, but it is really their researchers who are becoming smarter, and who also have strong shoulders to stand on, as well as advances in technology to facilitate their heavy reliance on the recording of babies' behaviour.

Professor Gopnik has been a leading member of this group of researchers, and the widely acclaimed book that she co-authored a decade ago, The Scientist and The Statesman (2000), provided a definitive and scholarly synthesis of what is known about cognitive functioning during the first three years of life. In The Philosophical Baby, Gopnik aims to describe the important features of cognition in infancy that she and others have uncovered; she examines the influence of the earliest stages of later psychological development; and, finally, she explores the affective significance of mothering, both as it is broadly viewed and studied, and as she has personally experienced it.

Gopnik begins by calling attention to the extraordinary openness to experience of babies by virtue of their immense learning capacity and their affinity for imaginative thinking, a trait she attributes to their readiness to entertain counterfactuals. According to Gopnik, the vigour and scope of babies' explorations, unfettered by the inhibitions and distractions of later life, give them a freedom and fluidity that render them as truly exceptional beings. She describes the remarkably inventive procedures that were devised to demonstrate how very young babies have been shown able to engage in such complex cognitive processes as causal thinking and to demonstrate awareness of the ramifications of statistical probability. Accompanying these reports of pathbreaking knowledge is a reconsidering meditation and elegiac portrait of early intellectual life improbably described from a hi-tech perspective. Gopnik is clearly fascinated with the idea that there is a machine-like quality to babies' reasoning and thinking skills, reminiscent of the workings of a computer. Here, she offers an important distillation of information along with original ideas about babies' conceptual awareness and scope of thinking that not so long ago was considered to be beyond their capabilities, a time, also, when information processing analogies were not applied to describe such skills and mind sets.

It may seem to be a pointless quibble for one investigator to claim that a particular ability can be detected at the age of seven months as opposed to a previously observed ten-month time of onset, but it is the charge of developmental psychologists concerned with infancy to determine if, when, and how babies' basic sensory and reasoning capabilities appear, to identify origins, sequences and landmarks in the development of perception, language and logical functioning. As Gopnik as a basis for corroborating tentative findings, another reason for maximizing the accuracy of behavioural assessments of babies. In her enthusiastic portrayal of the intellectual abilities of babies, Gopnik appears to be describing the modal baby. It would be interesting to learn more about the range of variation she has observed among babies with regard to these remarkable abilities; marked levels of variability from child to child character a highly salient feature of early development that should never be overlooked. This is not, however, a book about particular babies she has known but about babies qua babies.

The importance that Gopnik attaches to early childhood extends beyond its boundaries. She proposes that not only are babies remarkable in and of themselves, but they have an inordinate influence on the psychological patterns of adaptation that succeed them. In assigning such potent formative influence to early environments and the psychological patterns to which they give rise, Gopnik recognizes that she must contend with new and competing claims from genetic studies of the origin of behaviour. Whereas most psychologists, by virtue of their interest in monitoring and inducing psychological change, have in the past been primarily invested in the role of environmental impact and have therefore come to attribute overriding influence to it, new data have caused many of them to re-examine this extreme environmentalist outlook. Recent more refined studies of identical twins reared apart, along with studies of adopted children, have shown that some psychological traits and abilities are substantially determined by genetic factors. Without discounting these findings, Gopnik remains a staunch believer in the potency of environmental influence pointing to the vastness of accomplishment and sophistication that has been cumulatively wrought by civilization over the ages.

To explain her belief in the disproportionate influence of early childhood experience on later development, Gopnik reminds us that children participate in an ever-changing construction of reality on the basis of early perceptions and learnings, early established tastes and preferences, and dispositions to respond in particular ways. Later life experiences are an outgrowth of these earlier modes of perceiving and responding by virtue of their continuing influence on the formation of later age-related habits, interests and styles of being. Gopnik refers to the process of continuous revision of previous modes of
Psychology

Termites and penguins

The great pianist Leopold Godowsky is said to have observed that "When a child prodigy grows up, the prodigy vanishes and the child remains". Musicians often note with sadness - or sometimes with alarm - how few child prodigies manage to maintain their early brilliance. The pressure of performance, the glare of the spotlight, the vanity puffed up by audience adoration - it is factors like these, not some inevitable waning of musical talent, that so often destroy promising young talent.

Joan Freeman has been observing and documenting the lives of 210 gifted children since the mid-1970s. Her previous books provide the detailed and overall data of her research, research that earned her a lifetime achievement award from the British Psychological Society in Gifted Lives. Freeman has chosen to write in depth about twenty of the study's participants, charting their lives from childhood to middle age, and exploring the reasons for the diverse directions their lives took.

"Divorce" is an understatement. If you have just a hint that talent, like cream, inevitably rises to the top, this book will shock you and perhaps correct that misconception. Although Freeman chose to describe twenty of the study's participants, their family and personal histories are also described in the book. The study's participants are described in this book. The book describes the family and personal histories of the twenty participants, their family and personal histories. The study's participants are described in this book. The study's participants are described in this book. The study's participants are described in this book.

Freeman believes that the study's participants did not stay in touch with each other after the study ended.

Some of the children have fulfilled their childhood promise, living adult lives of exceptional accomplishment. In this book, the study's participants are described in this book. The study's participants are described in this book. The study's participants are described in this book. The study's participants are described in this book. The study's participants are described in this book.

Just as being gifted does not necessarily cause (or reflect) a mental illness, neither does it confer kindness, empathy, wisdom, or moral judgement. Morality, Freeman reminds us, is independent of high level achievement and of intelligence. Tor, which proponents of the view that intelligence is largely innate and that white men have more of the human qualities and ethnic minorities - such proponents include Francis Galton, the authors of The Bell Curve Richard J. Herrnstein and Charles Murray, and Arthur Jensen - have argued that it is mainly those with a low IQ who tend towards crime. This view conveniently overlooks the fact that all too many people with high IQs in positions of power are "inclined to crime" of other sorts, from Ponzi schemes, financial corruption and war crimes to genocide. Nor is IQ a predictor of great wealth. It increases the likelihood of having a fairly well-paid job, but only up to a point. As Freeman points out, there are not many Rolls-Royces in university car parks.

Freeman describes her twenty selected individual's over their lifetime trajectories to date. Although it is easy to lose sight of the fact, in the minutiae and occasional repetitive-ness of all these stories, the cumulative effect is to throw easy assumptions about the influence of childhood experiences on adult outcomes when those take an unpredictable turn at the age of thirty-five or forty-five. Taking the long perspective reminds the reader that "success" or "failure" is not a final destination at any given station of life, but can change with circumstances. A boy whom Freeman originally thought lost to childhood depression, a boy whose spirit had been crushed by his anxieties, overcoming a life-long speech disorder, or "breaking out of his chrysalis" when he left home, ending up with a life "crowded with friends and laughter, fun and sunshine" - running a bar in the south of Spain. A successful life indeed!

Though this book is not meant to be a review of research, it is surprising that Freeman has not even mention one of the most important and longest-running longitudinal studies of gifted children ever done. In 1921, Lewis Terman and his colleagues began following more than 1,500 children (nicknamed the "Termites") who had IQ scores in the top 1 per cent of the distribution. As Terman entered adulthood, most became successful in the traditional, gender-role confining ways of the times, men in careers and women as homemakers. Yet quite a number of the gifted men dropped out of school and ended up in low-level work. When later researchers compared the 100 most successful men in the Terman study with the 100 least successful, they found that the former were ambitious, socially active, had many interests, and had been encouraged by their parents. The least successful drifted casually through life. Just as Freeman found, there was no average difference in IQ between the two equally gifted groups.

Today, therefore, researchers have turned their attention to factors other than IQ that influence achievement. One of these, as Freeman's case studies exemplify and as many experiments confirm, perhaps the strongest is self-discipline. In a longitudinal study of ethnically diverse young teenagers in the US, researchers assigned each student a self-discipline score based on the students' teachers' reports, and questionnaires. They also included a behavioural measure of self-discipline, namely the teens' ability to delay gratification - getting a small amount of prize money right away or waiting a week and getting double the amount. Self-discipline counted for more than twice as much of the variation in the students' final grades and achievement-test scores as IQ did. Correlations between self-discipline and academic performance were much stronger than those between IQ and academic performance. That, ultimately, is the message of Joan Freeman's book: the gift of talent and intelligence is only the clay. Personality, cultural values, economic opportunities or obstacles all interact to determine whether that clay will be molded flat or shaped into a work of art.