What Babies Know and We Don't

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The Philosophical Baby: What Children's Minds Tell Us About Truth, Love, and the Meaning of Life
by Alison Gopnik
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The most elusive period of our lives occurs from birth to about the age of five. Mysterious and otherworldly, infancy and early childhood are surrounded later in life by a curious amnesia, broken by flashes of memory that come upon us unbidden, for the most part, with no coherent or reliable context. With their sensorial, almost cellular evocations, these memories seem to reside more in the body than the mind; yet they are central to our sense of who we are to ourselves.

Part of the appeal of psychoanalysis may be that, in its quest to locate the faded child in the adult, it turns the adult into a kind of child at a play date with his analyst. The date is structured along the lines of imaginary play, complete with free association and open-ended conversation that can wind up anywhere; but like imaginary play, the date with the analyst follows a series of strict rules. The aim is to articulate what has been repressed, to fill in a blank in the narrative about ourselves. But as Alison Gopnik and her fellow cognitive psychologists have discovered, those years are so difficult to recapture not because of repression but because the states of consciousness and memory in early childhood are so different from those we experience later on.

"Children and adults are different forms of *Homo sapiens*," writes Gopnik in *The Philosophical Baby*, a tour through the recent findings of cognitive science about the minds of young children. For one thing, the prefrontal lobe, which has a major part in blocking out stimuli from other parts of the brain and fostering internally driven attention, is undeveloped in young children, and doesn't fully form in most people until they are in their twenties. Internally driven attention, cognitive research suggests, isn't a capacity that children fully acquire until at least the age of five. What arouses them is what is in front of

their eyes, the first burst of information about cause and effect in the physical world.
Highly active in the brains of infants are the occipital cortex, in the rear of the brain, which guides attention to the visual world, and the parietal cortex, which helps one adjust to new events. It's not surprising to learn that magnetic imaging shows both these cortices light up in adults while they are engrossed in watching a movie (at the same time, the prefrontal lobe goes dormant). The suspension of disbelief and the swift orientation to a passively received bombardment of unexpected visual stimuli may approximate aspects of the infant's state of being.

Gopnik speculates that early childhood prepares us for both the appreciation and creation of art: imaginary play among children hones the ability to entertain counterfactuals—the alternative worlds out of which art, and invention of any sort, are primarily made. It requires discipline to stay in the imaginary role one has assumed, to project psychologically what it means to be a mother, a firefighter, a soldier, a prisoner. If it doesn't feel real, the game falls apart. Imaginary play is a rehearsal for understanding the minds and intentions of others, a basic survival skill.

These are far-reaching claims, but Gopnik makes a good, and sometimes impassioned, case for them. Almost all of the 100 billion neurons in a human being's nervous system are in place at birth, and in early childhood the synapses—the points of contact between neurons that fire memory and sensation—are vastly overproduced. To a large extent, maturity is a neural pruning process, an uncluttering of consciousness so that what is most useful for getting through a day—driving to work, for instance, or negotiating the supermarket—is readily, and unconsciously, available. Our lives are far more organized around repetition than novelty. Less useful neurons weaken and die, a form of forgetting.

Gopnik reminds us that, to accommodate their rapidly shifting attention, babies' brains generate enormous amounts of cholinergic neurotransmitters, which are released to different parts of the brain as they process specific information. For anesthetics to be effective they must act on these transmitters, which may explain the relatively high concentration of anesthesia babies require to be knocked out before surgery. Gopnik offers the captivating idea that children are

more conscious than adults but also less unconscious, because they have fewer automatic behaviors.

This heightened state of absorption is emblematic of what Gopnik calls “the evolutionary division of labor between children and adults.” In this collaboration, the child’s protracted period of immaturity is indulged because it allows him to perform uninhibitedly the sorts of experiments that will eventually enable the more plodding and deliberate adult to alter—or at least to manipulate—the reality of his world. In this formulation, the child is not “limited to the here and now.” The Aristotelian view had it that the child wasn’t important for himself, but rather for his potential. Gopnik reverses this view. She finds that the child is a full partner, with a different brain than that of the adult, more capacious, with a greater plasticity, and a more highly attuned ability to drink in new information. The child is the auteur, the adult the producer.

The core idea of cognitive science, in Gopnik’s words, “is that our brains are a kind of computer, though far more powerful than any of the actual computers.” Gopnik infers that, like some computers, young children have innate causal maps that supply them with an accurate understanding of how the world works. As a result of this map

children have everyday theories of the world—everyday ideas about psychology, biology, and physics. These theories are like scientific theories but they are largely unconscious rather than conscious, and they are coded in children’s brains, instead of being written down on paper or presented at scientific conferences.

Even infants are sensitive to statistical patterns. The learning of language in its earliest stages involves the statistical prediction of which sounds are most likely to follow one another—an unconscious exercise in probability theory. Gopnik argues that this ability to detect probability patterns extends beyond language—to musical tones in eight-month-olds, for instance—and isn’t limited to a specialized part of the brain as Noam Chomsky and others believe.

A study that fascinates with its mystery of instinctual comprehension found that five-year-olds from distinct cultures share a vitalist theory of life, similar to that of traditional Chinese and Japanese medicine:

These children seem to think that there is a single vital force, like the Chinese chi, that keeps us alive. They predict that if you don't eat enough, for example, this force will wane and you'll get sick. They think that death is the irreversible loss of this force, and predict that animals that die won't come back to life.

There is a complicated interplay between rules and morality in young children, a sophisticated sensitivity to intention when rules are broken, and a subtle appreciation that some rules are important, others less so. Moral knowledge, Gopnik argues, is imaginative knowledge, a direct outgrowth of empathy, which babies seem to experience in some form or another from almost the moment they are born. Gopnik cites a study conducted by the developmental psychologist Judith Smetana in the 1980s that contradicted the Swiss psychologist Jean Piaget's argument that true moral knowledge doesn't develop until adolescence because children lack the capacity to imagine the perspective of others.

Smetana presented two-and-a-half-year-olds with a variety of stories. In some stories a preschool rule is violated—not putting one's clothes away or talking during quiet time. In other stories a child is hit or harassed or something is stolen. Gopnik reports:

Even the youngest children differentiated between rules and harm…. They…said that the rules could be changed or might not apply at a different school, but they insisted that causing harm would always be wrong, no matter what the rules said or where you were.

Moreover, the studies show

that children understand the nature of rules themselves. Children…understand [that] when rules specify obligations, then you have to act the way the rule says. When they specify prohibitions, you can't ever act that way. When they give you permission, you can decide on independent grounds whether you will act that way.

Nine-month-old babies already show a sensitivity to intention: they respond more impatiently to a toy being withheld from them for no apparent reason than if the adult is prevented from giving them the toy for reasons beyond his control.

Babies imitate, and imitation is a way of taking on an emotion as one's own. Joy reflects joy, sorrow provokes sorrow, not only as a facial expression but as a state of feeling between caregiver and baby. Allowing herself a touch of unscientific projection, Gopnik writes:

> It's possible that babies literally don't see a difference between their own pain and the pain of others. Maybe babies want to end all suffering, no matter where it happens to be located. For them, pain is pain and joy is joy. Moral thinkers from Buddha to David Hume to Martin Buber have suggested that erasing the boundaries between yourself and others in this way can underpin morality. We know that children's conception of a continuous separate self develops slowly in the first five years.

Thus attachment, empathy, and morality are inseparable, though none is inevitable. Although empathy does seem to be innate, and spontaneous acts of altruism on the part of babies are common (eighteen-month-olds will instinctively try to help a stranger in need though they haven't been taught to do so), the flourishing of empathy is not guaranteed. It can be enhanced or quashed as a result of specific relations and experience. Secure attachment during the first six months is essential. Within hours of birth babies learn the features of their mother's face, and prefer looking at her face over looking at a stranger's. In this exchange, being the caregiver reinforces—and in some cases reawakens—ethical behavior in adults. Gopnik remarks on the "moral intensity to the love between parents and children," an intensity that flows in both directions. The relationship between caregiver and child, she suggests, is our most effective initiation to ethics. The major ethical theories of philosophy and law arise from the fundamental understanding in childhood that, emotionally, other people operate more or less the way we do.

Imitation, of course, is not only a path to empathy, it is also a way of excluding others, of forming what sociologists call "minimal groups" where a tiny, arbitrary distinction becomes a reason for enmity. In some experiments "three-year-olds said they would prefer to play with a child who had the same color of hair and the same color of T-shirt that they did, rather then one with a different color." For the child with the wrong T-shirt, empathy and moral concern are withheld. To follow the logic of early childhood as a blueprint for subsequent behavior, this in-group, out-group dynamic extends to the playground, to

neighborhood streets in the form of gang violence, and to the wider world in the form of “ethnic cleansing.”

Not surprisingly, the ability to lie effectively doesn’t come to most of us before the age of five, when the sense of an internal self has begun to take root. Lying in this context becomes a measure of sophistication: to make a lie believable the liar must understand the mind of the person he is deceiving. In an experiment that Gopnik cites, children are shown a closed box and told that there is a toy inside. But they mustn’t look for themselves. The experimenter leaves the room and naturally the children peek in the box. When the experimenter returns the three-year-olds insist that they haven’t looked in the box and in the same breath tell the experimenter what was in it. Five-year-olds, however, are able to carry off the deception.

Children, of course, are notoriously susceptible to being lied to, mainly because of what Gopnik calls their “source amnesia.” They forget where their beliefs come from. In her lab, Gopnik showed children a cabinet with nine drawers, each containing a different object. The children were told or shown what was in each drawer, and had no trouble remembering this. But the three-year-olds “often said they had seen the egg in the drawer when they had been told about it or vice versa. The five-year-olds, on the other hand, could tell you both about what they knew and about the particular experiences that led to that knowledge.”

This chasm between the perceptions of three-year-olds and five-year-olds reveals a great deal about how children’s consciousness changes as they develop a sense of personal, autobiographical memory and consecutive time. Prior to the age of five, children appear to experience time in a different manner. They are perfectly capable of “forgetting” events that they experienced a minute ago, as well as their mental state when the experience occurred. They seem to think associatively, closer perhaps to the hypnagogic state that one drifts into just before falling asleep, than to one that is ordered around a timeline with a past, present, and future.

Gopnik attempts to penetrate what this different form of consciousness is like. She describes a “false belief” experiment in which children see a closed candy box that, in fact, is filled with pencils:

The children are understandably both surprised and disappointed by this discovery. But then we asked what they thought was in the box when they first saw it. Although they had discovered the truth with great surprise only moments before, they still said that they had always known the box was full of pencils. They had entirely forgotten their earlier false belief.

This is why young children are so perilously suggestible, and their testimony, in most cases, should be inadmissible in court. They have excellent detailed memories when they are cued to remember a specific event with a leading question, but free recall is alien to them because it is dependent on an internal consciousness that they don't yet fully possess. One is put in mind of the hysteria about sexual abuse in day care centers during in the 1980s and 1990s when, after "expert" questioning of children, parents and day care workers in various cases were convicted of engaging in satanic rituals, rape, torture, and, in one instance, orgies with aliens. Gopnik points out that adults are also susceptible to prompting questions—in psychoanalysis, for instance, or during a lawyer's interrogation—with the result that false narratives are constructed that feel like real memory, complete with vivid sensorial details that the rememberer is convinced actually occurred.

A baffling aspect of children's minds is their failure to recognize that events they have directly experienced carry greater personal importance than events they have learned about in other ways:

While they remember that something happened, they don't seem to remember what they thought or felt about it…. They also don't seem to anticipate their future states. They don't project what they will think and feel later on.

When emphasis is put on the source of information, even four-year-olds are less likely to be manipulated or misled. However, the very concept of the source of information seems to elude three-year-olds altogether. Also foreign to them is the concept of logical, internally driven thought. Three-, four-, and even five-year-olds will deny that a person has anything on his mind if he isn't fixing his attention on some specific action or performing a visible task. A four-year-old provided an eloquent description of this consciousness when he told an experimenter:

Every time you think for a little while, something goes on and something goes off. Sometimes something goes on for a couple of minutes and then for a few minutes there is nothing going on.

In this state, Gopnik remarks, basic aspects of consciousness that we take for granted, such as “the idea that we know what we thought a few seconds ago, or that our consciousness is a single unbroken stream, or that we have a unified self, fall apart….”

By the time most people turn six, the young child recedes, becoming an alien, largely unremembered abstraction. Autobiographical memory sets in—memory from which we can fashion a coherent narrative of ourselves—an inner observer, a streaming “me” that remains intact, more or less, for the rest of our lives. Autobiographical memory and language seem to be intimately entwined. Without shared language we have no access to the psychology of others, and perhaps not even to the psychology of ourselves.

This was borne out by an unintentional “experiment” involving deaf children in Nicaragua. It wasn’t until the 1970s that Nicaragua established a school for deaf children. Before that time, the deaf were isolated from one another and, since most deaf children have parents who can hear and speak, most had no means of communication. When the school opened, the children invented their own sign language. The second generation of children took up this language as their own. If you asked a member of the first generation—the one that invented the language—

to describe a video of a man absentmindedly taking a teddy bear from a hat rack and putting it on his head instead of a hat, they never mentioned that maybe he had made a mistake. The other deaf people at the school commented on how hapless their older friends were at keeping secrets or manipulating other people.

Remarkably, though they had little grasp of the connection between thought and action, the first generation of deaf children still managed to create a functioning language from scratch that lasted.

The Philosophical Baby is both a scientific and romantic book, a result of Gopnik’s charming willingness to imagine herself inside the consciousness of

young children. She compares “the lantern consciousness of childhood…to the spotlight consciousness of ordinary adult attention.” With lantern consciousness

> you are vividly aware of everything without being focused on any one thing in particular. There is a kind of exaltation and a peculiar kind of happiness that goes with these experiences too.

Gopnik likens lantern consciousness to Romantic poetry, the uninhibited receptiveness that is the artist’s ideal, and the Zen ideal of “beginner’s mind” where the meditator relinquishes attachment to his inner “I.” “Babies, like Buddhas, are travelers in a little room,” she writes. Lantern consciousness provokes the feeling that “we have lost our sense of self…by becoming part of the world.”

Psychologists who emphasize the “relational” and feelings of “attachment” may find Gopnik’s experiments to be too controlled and spare, designed to decode computer-like patterns of thinking, and eschewing more open situations that would allow babies to follow more freely their inclinations.* But Gopnik’s claim that cognitive psychologists have begun to develop “a science of the imagination” holds up. She notes the astonishing fact that in the 1967 *Encyclopedia of Philosophy* there are hundreds of references to angels and the morning star, and none “to babies, infants, families, parents, mothers, or fathers, and only four to children at all.” During the past ten years cognitive science has painstakingly accumulated data about the most mysterious five years of human life, transforming the conventional vision of young children as “crying carrots” to one of highly skilled and sophisticated beings who exist in a state of heightened awareness.

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   Pat Cremens, an early childhood development expert, has provided me with invaluable insight about this wide-ranging field.