

CHAPTER XV

Aristocratic Tutoring, Reimagined

“At the age of eleven, I began Euclid, with my brother as my tutor. This was one of the great events of my life, as dazzling as first love.”

Bertrand Russell, *Autobiography*

🍷 The Weekly Dinner

In Munich in the late 1880s, a poor medical student named Max Talmud ate with a family of electrical engineers once a week. The family had a boy of ten. Talmud started bringing him books: popular science, then a geometry textbook. The boy worked through the geometry on his own, ahead of his classes, and showed Talmud his solutions over dinner. Within a couple of years the student couldn't keep up with him. The boy was Albert Einstein, and he later called that geometry book his “holy” one.

Talmud was unpaid and no expert: a young man who knew more than the boy, came back every week, and took the boy's mind seriously. That combination is the subject of this chapter.

This chapter answers who does the teaching, and shows what the teaching looks like at its best. The arrangement that raised many past polymaths joined two things. One was instruction fitted to a single learner. The other was a relationship with adults who took that learner seriously. Mass schooling pulled the two apart and kept neither. Erik Hoel's count of geniuses is contested, but the mechanism under it holds up: one-to-one work with an expert is among the best-evidenced interventions in education.

The chapter reimagines the arrangement for ordinary families. It splits the tutor's role into two value sets and spreads them across a team of tutors, human, AI, or both, with the parent as conductor. At its center are **care and craft**: capable people who care for the child and have mastered their subjects, around a child who grows both. Then it shows a single morning in which a tutor team delivers every idea in this book.

Chapter 17 turns the model into a method a family runs day to day.¹ This chapter covers who carries it out, and what that looks like on its best morning.

📖 Hoel's Argument

The Essay

The neuroscientist and writer Erik Hoel published “Why we stopped making Einsteins” on his newsletter, *The Intrinsic Perspective*, on March 16, 2022. Population, schooling, and access to information have all exploded, he notes. You carry more text in your pocket than the Library of Alexandria held. Yet the world seems to produce fewer world-historic geniuses per person. His explanation is the loss of one educational arrangement.

The Arrangement

In Hoel's words, aristocratic tutoring “usually involved a paid adult tutor, who was an expert in the field, spending significant time with a young child or teenager, instructing them but also engaging them in discussions, often in a live-in capacity, fostering both knowledge but also engagement with intellectual subjects and fields.”

The key words are the last ones. These tutors didn’t show up for fifty minutes and leave. They lived in the house, argued over breakfast, and walked the grounds in the afternoon.

The Roster

Hoel builds his case from biographies, including these:

FIGURE	THE TUTORING HOEL DESCRIBES
Marcus Aurelius	Seventeen tutors in childhood, among them the rhetorician Fronto
John Stuart Mill	Raised by his father as a deliberate project; Greek at three
Bertrand Russell	Private tutors; geometry from his brother at eleven, “as dazzling as first love”
Ludwig Wittgenstein	Privately tutored until fourteen
John von Neumann	Governesses for languages, then tutors
Albert Einstein	Algebra from his uncle Jakob; geometry at twelve with Max Talmud, a family friend
Ada Lovelace	Tutored by the mathematician Mary Somerville
Virginia Woolf	Taught at home by tutors and by her father

Aimed at a Mind

Hoel separates the old arrangement from today’s tutoring: “Contemporary tutoring, the most effective method of education, is overwhelmingly targeted at a small set of measurables that look good on a college resume.” When a parent hears “tutor” now, the picture is a high school junior in a strip-mall learning center, grinding practice tests for fifty more points on the math section. The aristocratic kind aimed at the mind itself: how a young person reasons, argues, and takes hold of a hard subject.

Respect for the Schools

Hoel calls mass education “a superbly democratic system that made the majority of people, and the world as a whole, much better off. It was the right decision.” The loss he describes is a trade of depth for scale, made for good

reasons. He ends on a hope this book shares: AI tutors might bring the lost depth back at scale.²

What the Book Takes From Hoel

Hoel's arrangement already holds two things. The expert instructs. And the expert also lives alongside, talks in the evenings, and shows a child what a serious adult life looks like. Hoel names the arrangement as one thing. This book separates the two parts, because they can now be supplied by different people and tools.

✿ The Objections, and What Survives

The claim that tutoring explains the decline of genius doesn't hold up well. The mechanism underneath it does.

Scott Alexander's Reply

Six days after Hoel's essay, Scott Alexander published "Contra Hoel on Aristocratic Tutoring" (March 22, 2022). He made three points.

Counterexamples. Newton went to ordinary schools. Pasteur was a tanner's son. Dickens largely taught himself, and Edison was taught by his mother. "Aristocratic tutoring isn't that One Thing: there are too many counterexamples."

The music test. Wealthy families still hire music tutors in large numbers, often from age four. If tutoring were the engine of genius, classical music should be full of new Mozarts. It shows the same fall in world-historic figures as other fields.

Better explanations. Good ideas get harder to find as a field matures. More researchers spread the credit thinner. And modern culture plays down the lone genius. A field is "easy to stand out in when you're small and new, harder when you're big and old." A physicist in 1920 could nearly trip over a discovery. A physicist today works in a crowded, mature field.

Confounds the Roster Can't Escape

Look at the roster again and you'll notice the money. Tutored children also had wealth, libraries, leisure, connections, and parents intensely invested in them. Crediting the tutor is like walking through a billionaire's kitchen and deciding the oven made him a great cook. The roster also counts the tutored children who became famous, and skips the many who didn't, who rode horses and faded from the record. And acclaim is itself shaped by the era that gives it. No biography can separate the tutor from everything else.

What Survives

The book doesn't need the genius-decline thesis. Look again at the counterexamples. Edison was taught at home by his mother, and Mozart by his father. Einstein's algebra came from an uncle and his geometry from a medical student who came to dinner. Paid aristocrats had little to do with it. The working mechanism is wider than the aristocracy: **sustained one-to-one engagement with a knowing adult who is also in a relationship with the child.** That claim has to stand on the evidence in the next section, and biographies can't carry it.

A Warning From the Roster

Mill had the most deliberately engineered education on record. His father set out to build a mind, and by the usual measures he succeeded: Greek at three, Latin at eight, political economy in his early teens. In the autumn of 1826, at twenty, Mill fell into what he called "a dull state of nerves." His later diagnosis: "The habit of analysis has a tendency to wear away the feelings: as indeed it has, when no other mental habit is cultivated." Wordsworth's poems became, in his words, "a medicine for my state of mind."

Picture someone who trains one arm at the gym every day for twenty years, and nothing else. The arm is magnificent. The rest of him can barely stand. One brilliant tutor raised one line superbly and left the others to starve. That's Chapter 13's point about untended lines, made by a single life.³ It's

why the reimagined arrangement has many tutors and a map of the whole person.

• The Evidence for Tutoring

Tutoring is among the best-evidenced interventions in education. Well-designed programs typically raise achievement by about a third of a standard deviation. Bloom's famous two sigmas is an overestimate.

The Effect Sizes

SOURCE	WHAT WAS COMPARED	EFFECT
Benjamin Bloom (1984), from Joanne Anania's and Arthur Burke's dissertations	Tutoring with mastery learning vs. a conventional class, over about three weeks	About 2 SD. Paul von Hippel (2024) shows the tutored condition also included frequent testing, correction and retesting, trained tutors, and narrow tests, and attributes roughly half the gain to testing and feedback.
Kurt VanLehn (2011), <i>Educational Psychologist</i>	Human tutoring vs. no tutoring	0.79 SD
Andre Nickow, Philip Oreopoulos, and Vincent Quan (2024), <i>AERJ</i>	Randomized trials of preK–12 tutoring	Pooled 0.29 SD. Larger with teachers or paraprofessionals than with volunteers or parents, in earlier grades, at three or more sessions a week, and during the school day.

Two standard deviations would move a student at the 50th percentile to about the 98th. It's a seductive number, because it suggests universal mastery is only a matter of hiring enough tutors. Von Hippel's summary is the fair one: "About one-third of a standard deviation seems to be the typical effect of an intense, well-designed program evaluated against broad tests." If you were hoping for two, a third sounds like a letdown. By the standards of education research it's a large effect, and on broad tests over a school year it means a whole group of students moving up together.

What Expert Tutors Actually Do

The effect sizes say tutoring works. Two lines of research say why.

They run two models at once. Mark Lepper and Maria Woolverton studied highly effective tutors and summarized them as INSPIRE: intelligent, nurturant, Socratic, progressive, indirect, reflective, encouraging. Expert tutors keep a cognitive model and a motivational model of the learner at the same time, and the hardest calls come when the two point different ways. A student has spent twenty minutes on a long algebra problem and reached the end, and the tutor sees a conceptual error back in step two. The cognitive model says stop her and redo it. The motivational model says she's spent, and one more correction will teach her to hate algebra. The expert often lets it ride today and comes back to it tomorrow. That's the book's engagement reading, done by instinct.⁴

The learner does the work. Michelene Chi and colleagues (2001) barred tutors from explaining or giving feedback and told them to prompt instead: what do you think comes next, how does yesterday's rule apply here? "Surprisingly, students learned just as effectively." The students built more of the understanding themselves and took more control of their own learning. Watching a personal trainer lift won't make you stronger, however good his form. The power of tutoring lies less in the tutor's explanations than in what the learner is prompted to construct. That's ownership, in the tutoring room.

5

The Relational Half

The evidence here is thinner. Debora Roorda and colleagues (2011) pooled 99 studies of teacher–student relationships. Relationship quality was associated with engagement at a medium-to-large size, and with achievement at a small-to-medium size. The data are correlational. Their pattern still fits the model: relationship seems to act mostly through engagement, the book's central signal. Being prompted is tiring, and a child sits through the struggle more willingly beside an adult she trusts.

✦ Aristocratic Tutoring, Reimagined

The reimagining makes three moves. It splits the tutor’s role into two value sets. It gives each set to the people or tools best placed to supply it. And it puts the parent in charge of the whole.

Two Value Sets

	PEDAGOGICAL	RELATIONAL
What it supplies	Instruction fitted to one learner, built on a full model of that learner and kept where challenge meets skill	Adults who know the child and whom the child comes to care about: a milieu that shows what a serious adult life looks like
What it needs	Domain expertise, a running record of the learner, and time to adapt	Continuity over years, presence, and real stakes in the child
How it functions	As a service the child receives	As culture and extended family
Evidence	Strong: randomized trials	Thinner: correlational

Schools struggle to supply either one. One adult facing twenty-five children can’t hold twenty-five models of twenty-five learners and adapt to each. And a new teacher every September can’t build a relationship that lasts years, because the bell in June ends it.

An Old Description of the Relational Set

Whitehead’s account of what a university is for describes the relational set exactly. It “preserves the connection between knowledge and the zest of life, by uniting the young and the old in the imaginative consideration of learning.” He also listed what imagination needs: “some leisure, freedom from restraint, freedom from harassing worry, some variety of experiences, and the stimulation of other minds.” A tutor team exists to supply the last of these, and to protect the rest.

Many Tutors

Marcus Aurelius had seventeen. Chapter 13 maps thirteen lines of human development, and no single adult is expert in all of them.⁶ The reimaged arrangement gives a child a small team, each member strong in a different domain and ideally aligned to a line or a cluster of lines: a musician for the musical and aesthetic lines, a coach for the physical line and the will, a naturalist for the living world. Mill's single tutor is the warning against the alternative.

The Parent as Conductor

Someone has to hold the whole. A conductor plays no instrument on the podium. She sets the tempo, brings sections in and out, and listens to the whole.

The parent owns the goal, and the team and the learner own the method: commander's intent, from Chapter 8.⁷ The parent holds the psychograph, chooses and replaces tutors, protects the child's time and attention, and is the first relational tutor. Families always chose the aristocratic tutors, and Mill's father was both the conductor and the tutor. You don't need to remember how to balance a chemical equation. You need to notice when your child is ready for chemistry, and find who should bring it. This book is written for that conductor.

Many tutors, one conductor, one child

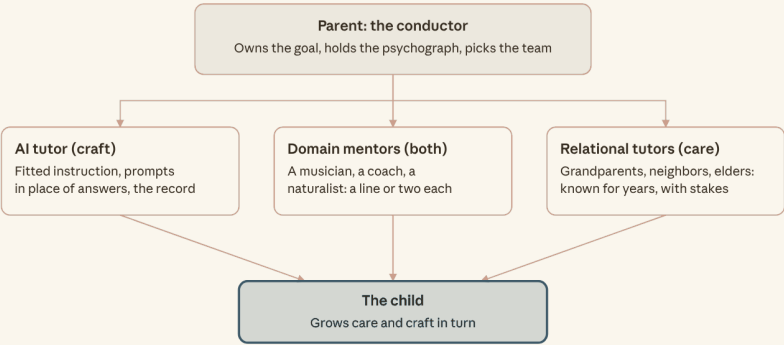


Figure 15.1 · the tutor team (schematic)

The parent conducts. Each tutor brings craft, care, or both, and every line of the arrangement ends at the child.

The Tutor's Job Inside the Model

Every chapter of the book becomes something a tutor does.

THE MODEL	WHAT THE TUTOR DOES
Two systems (Ch. 2–3)	Alternates Inquiry and Practice, and turns one into the other when either stalls
Engagement (Ch. 4)	Reads cognitive engagement moment to moment, as the main signal
Fit (Ch. 5)	Keeps the task at the edge of reach, narrowing or widening the step
Fidelity (Ch. 6)	Brings the real thing, so the world answers back
Worth (Ch. 7)	Finds who the work matters to
Ownership (Ch. 8)	Reads agency, follows or leads, and hands the work back
Outside drivers (Ch. 9–11)	Uses social, story, and structural drivers to capture attention, then turns capture into engagement
Mastery and spacing (Ch. 12)	Holds the depth gate, and brings skills back on schedule

THE MODEL	WHAT THE TUTOR DOES
The whole person (Ch. 13)	Picks today's cells from the grid, and watches for lagging and stale lines
Kinds of understanding (Ch. 14)	Delivers in the cognitive tools the learner holds now

The INSPIRE tutors and Chi's prompting tutors already do much of this by instinct. The model makes it explicit, teachable, and divisible among a team.

 Care and Craft

The tutor's two value sets have plain names. **Care** is the relational set: knowing the child, wanting their good, staying. **Craft** is the pedagogical set: mastery of a domain, and of teaching it.

The same two words describe what the child grows into. Care is what makes a question the child's own, the root of Inquiry. Craft is what repetition builds into a skill the child holds to their own standard, the fruit of Practice. The goal, stated plainly: a child surrounded by capable people who bring care and craft, and who grows both in turn.

Care and Craft, on Both Sides

	CARE	CRAFT
In the tutor	Knows the child, remembers last week, wants the child's good more than the child's results, and stays for years	Knows the domain deeply, teaches it well, and visibly enjoys it
In the child	Questions carried for weeks, returns unasked, work that matters to someone (Chapter 7)	Their own standards, fluency, and in time style (Chapter 12)
Why it matters	A child explores from a secure base, and Inquiry needs one. Relationship moves engagement, the book's signal.	Enjoyment is caught. In 71 middle school math classes, teachers' enjoyment predicted students' enjoyment, carried by visible enthusiasm (Anne Frenzel and colleagues, 2009).

Care First, Then Craft

Benjamin Bloom's *Developing Talent in Young People* (1985) studied 120 people who reached world-class levels in fields such as piano, swimming, and mathematics. You'd guess they started early with the most demanding teachers available. Mostly they didn't. The early years were playful, and the first teachers made the field a pleasure. Exacting teachers and rigor came later.

Whitehead had already named the rhythm in 1922: romance, then precision, then generalization (Chapter 3, "The Rhythm: From Loop to Spiral"). "A stage of precision is barren without a previous stage of romance." Lock a twelve-year-old in a room with scales and sheet music, and you'll get a twelve-year-old who hates the guitar. Take her to a loud concert first, and teach her the three chords to a song she loves. Once she wants to be a guitarist, the scales have a reason.

For the tutor team this sets an order. A line is usually opened by someone who cares about it and about the child. The exacting instruction follows once the child cares too.

Regard That Holds Steady

Regard that rises and falls with performance has a cost. Avi Assor, Guy Roth, and Edward Deci (2004) studied parents who gave affection only when children performed. Their children did what was wanted, but out of "a sense of internal compulsion." Success brought short-lived satisfaction, failure brought shame, self-esteem swung, and the children resented their parents. The authors call these "significant affective costs." A tutor's conditional regard turns ownership into compliance. Steady regard is the guard against the child as a project.

Choosing Tutors

The conductor has two tests. Does this person light up about the subject? Does this person light up about this child? Craft without care is a service. Care without craft is good company. A tutor needs both.

Reading Care and Craft

Neither can be assigned. Both can be read. In the child, care shows in what they ask about, return to unasked, and bring to others. Craft shows in the standards they set for themselves. The psychograph already records both (Chapter 13). In a tutor, care shows in what they remember and notice, and in whether they stay. Craft shows in how the child's skill grows with them. When either is missing, the conductor changes the tutor, and the child stays as she is.

Care, Craft, and the AI Tutor

An AI can bring craft: instruction fitted to the child, and a memory of everything. Whether it can bring care, in the sense this section means, is the sharpest form of the open question in the next section. The book's position is that the care surrounding a child should come from people. An AI can help the human tutors care well, by keeping them close to what the child did this week.

Who Fills the Roles

AI tutors designed as tutors are the natural candidates for much of the pedagogical value set. The relational set should default to humans. Pods of families can supply both where AI is unaffordable or unwelcome. The book leaves the final mix open on purpose.

Why No AI Trials Here

Early trials of AI tutors exist. The newest models, though, haven't yet been tested in tutoring environments designed well enough to judge them. So the book doesn't rest its case on those trials. It rests on the tutoring evidence above, and on what that evidence says makes tutoring work.

What an AI Tutor Has to Do

It has to reproduce the expert tutor: keep a cognitive and a motivational model of the learner (INSPIRE), and prompt instead of explaining (Chi). Ask a general-purpose chatbot to solve a calculus problem and it will hand you a flawless answer in a second. In a tutoring room, that's a crutch. An AI that answers does the learner's work for them. That's the proxy agency of Chapter 8, crowding out the learner's own.⁸

What AI Can't Do

Be present. It can't be at the kneading, or on the trail spotting a child on a climb.⁹

Have stakes. A human tutor's care costs them something: an hour they could have spent elsewhere, attention they chose to give. When a neighbor spends an afternoon hearing a ten-year-old out on dinosaur taxonomy, the child knows the hour was given.

Be known over years the way a person is known. Whether an AI can ever carry part of the relational set is the chapter's hardest open question. The book defaults that set to humans.

Pods

Where AI is unaffordable or unwelcome, several families pool adults, each tutoring in their strongest line.¹⁰ One caution from the evidence: teachers and paraprofessionals outperform volunteers and parents (Nickow and colleagues), and Bloom's tutors were trained. A pod's tutors need structure and some training, which is exactly what an AI can help supply. The tool drafts the plan and keeps the record. The neighbor brings the care.

What Can Go Wrong

- **The crutch.** A tutor, human or AI, that answers instead of prompting.
 - **The single line.** One brilliant tutor raising one line (Mill).
 - **The child as a project.** Pressure that turns ownership into compliance.
- The goal is the parent's, and the learning has to stay the child's.

- **The record.** A tutor team that observes a whole childhood produces intimate data. It must be designed with the family owning it.¹¹
- **The name.** “Aristocratic” describes the history. The goal is to make the arrangement ordinary.¹²

🍷 A Supernatural Lesson

One morning in September, one child, and one tutor team, with every ideal in the book at work at once. It’s an idealization on purpose: it shows the ceiling the rest of the book aims at.

The Child

Maya is ten. In science she reaches for romantic tools: extremes, heroes, the real thing.¹³ Her psychograph shows a strong cognitive line and a lagging will: she quits when stuck. Storms have frightened her since last season.

The Team

TUTOR	VALUE SET	ROLE THIS MORNING
Her mother	Conductor; relational	Owens the goal: Maya can explain and track a storm, and help someone else prepare for one
An AI tutor	Pedagogical	Holds the psychograph, lays out the grid, runs the Practice, keeps the record
Mr. Alvarez, a retired forecaster two doors down	Both	Has taught Maya about weather for two years, and still lights up at a pressure map
Her grandmother	Relational	Rode out Hurricane Andrew in 1992

The Morning

7:40. The pull. The morning forecast shows a storm’s cone curving north, away from Florida. Maya asks, “Why do they always turn?” She’s pulling, so her mother follows instead of leading, and texts the question to Mr. Alvarez. Inquiry opens on a question Maya owns.

8:00. Broad, then narrow. While Maya eats, the AI tutor lays out the storm's grid across all thirteen lines and four quadrants. It flags the will line, which is lagging, and the emotional line, because of last year's fear. It proposes three cells. Her mother picks two, and the rest wait for a later return.

8:15. The heroes first. The AI tutor opens with the Hurricane Hunters, the crews who fly aircraft into the eye. A story of people flying toward the thing she fears catches her. Maya wants to know how the pilots know where the center is. The answer is latitude and longitude. A story driver has captured her attention, and the question has turned it into engagement.

8:30. The world answers back. Mr. Alvarez comes over with a lazy Susan and a marker. Maya draws a straight line while he spins the board, and the line comes out curved. That's one part of the answer, the Earth's spin. He adds the second part: the storm is steered by winds around a great high-pressure system over the Atlantic, and it turns where that system ends. Maya predicts where today's storm will turn. That's functional fidelity: a real demonstration, and a real forecast she can check.

9:00. The practice turn. To check her prediction, Maya has to plot the storm's positions, which arrive as latitude and longitude every six hours. She can't plot yet. Inquiry has made a Practice skill worth having. The AI tutor runs short rounds of plotting with retrieval. The mastery gate: five positions plotted within half a degree, on two different days, before she becomes the family's storm tracker.

9:20. The stall. Decimal degrees trip her up. Engagement drops, and she pushes the chart away: the lagging will line, live. The AI tutor reads the drop as a problem of fit, and treats it as one. It shrinks the step to whole degrees on a grid Maya draws herself, then works back up. It never gives the answer; it prompts. She finishes the round, and the record logs a will-line moment: stuck, then persisted.

10:00. The story. On a video call, her grandmother tells her about the night of Andrew: the sound, the house afterward, the neighbor who arrived with a chainsaw, the block grilling everything in the thawing freezers. Maya interviews her with three questions she chose, drafted with the AI tutor's

help. That opens the emotional line in the inner-individual quadrant, and the interpersonal line in the inner-collective one. Last year's fear gets a story with an ending.

10:40. Work that matters. Mrs. Ortiz next door is eighty and lives alone. Maya builds her a hurricane-kit checklist from the county's official guide, walks it over, and goes through it with her. Together they look up Mrs. Ortiz's evacuation zone. That brings in the moral and interpersonal lines and the outer-collective quadrant: how a county organizes for a storm. The worth has a face.

Dinner. The briefing. Maya gives the family a three-minute briefing from her chart: where the storm is, where she thinks it will turn, and what Mrs. Ortiz still needs. The role is hers. The next advisory will test her prediction, and that's a real deadline.

The weeks after. Plotting returns with every advisory of the season, so the weather supplies the spacing and no flashcard is needed.¹⁴ Maya passes the mastery gate on the second storm. Her next return to the question will open a new quadrant: why some neighbors refuse to evacuate. By October she checks the advisories before anyone asks. Her mother reads the week's record every Sunday.

Every Ideal, Accounted For

IDEAL	WHERE IT SHOWED
Two systems, alternating (Ch. 2–3)	The question led to a skill; the skill tested the answer
Engagement as the signal (Ch. 4)	Every decision followed Maya's engagement; the clock set none of them
Fit (Ch. 5)	The stall was read as fit, and the step shrank
Fidelity (Ch. 6)	The lazy Susan, and a live forecast to check
Worth (Ch. 7)	Mrs. Ortiz's kit; the family briefing
Ownership (Ch. 8)	Her question, her prediction, her role as tracker
Outside drivers (Ch. 9–11)	Story (the Hurricane Hunters, Andrew), social (the team), structural (the advisory clock)

IDEAL	WHERE IT SHOWED
Mastery and spacing (Ch. 12)	The plotting gate; review spaced by the season
The whole person (Ch. 13)	Cognitive, visual-spatial, will, emotional, interpersonal, and moral lines, across all four quadrants; the lagging will line worked on directly
Kinds of understanding (Ch. 14)	Romantic tools: heroes, extremes, the real
Two value sets, many tutors	The AI carried the instruction; the grandmother carried the relationship; Mr. Alvarez carried both; the mother conducted
INSPIRE and Chi	Prompts instead of answers; the motivational reading came first at the stall
Care and craft	Mr. Alvarez's two years with Maya and his delight in weather; her grandmother's story; Maya checking the advisories unasked

What Made It Supernatural

Nothing in it is exotic: a neighbor, a grandmother, a checklist, a lazy Susan, and an AI tutor. No one needed a fortune. What's rare is that every piece pointed at the same child at the same time. Most mornings won't look like this and shouldn't try to. Chapter 17 covers ordinary days.

Limits

- The genius thesis is contested, and the book doesn't rest on it.
- The tutoring evidence measures what schools measure: mostly reading and math, one corner of one line. Tutoring's effects on the whole person are unmeasured.
- The relational value set rests on correlational evidence.
- AI tutoring with the newest models is untested in well-designed tutoring environments. The case for it rests on what makes tutoring work, and trials haven't yet tested it.
- The morning with Maya is an idealization. It shows the ceiling, and few days will reach it.

• Open Questions

- Can an AI tutor carry any part of the relational value set, and should it?
- How many tutors can a child hold real relationships with?
- How does a family without a forecaster next door find domain experts: pods, online mentors, or local elders?
- What minimum training does a pod's human tutor need?
- How is the record handed between AI and human tutors so the child's history follows the child?
- What does the child give back to the tutors? A relationship runs both ways.

That last one deserves more than a line. Mr. Alvarez has spent two years explaining pressure maps to a girl two doors down, and it's hard to believe he's the same man he was before. Anyone who has taught a child something they love knows the teaching changes the teacher. If you've been the tutor in a relationship like that, I'd like to hear what it gave you.

• Notes

1. See Chapter 17.
2. See Chapter 1, "Why Now."
3. See Chapter 13, "Why Each Line Must Be Raised on Purpose."
4. See Chapter 4.
5. See Chapter 8.
6. See Chapter 13, "The Lines: A Map of Humanness."
7. See Chapter 8, "Commander's Intent."
8. See Chapter 8, "Scales of Ownership and Modes of Agency."
9. See Chapter 13, "Navigating the Grid."
10. See Chapter 1, "Why Now."
11. See Chapter 16, "The Knowledge Graph and the Behavior Graph."
12. See Chapter 1, "Why Now."

13. See Chapter 14.

14. See Chapter 12, “The Two Together”: a project that uses a skill every few days reviews it without a flashcard.

Sources

SOURCE	USE
Erik Hoel, “Why we stopped making Einsteins,” <i>The Intrinsic Perspective</i> (2022)	The arrangement, the roster, the argument
Scott Alexander, “Contra Hoel on Aristocratic Tutoring” (2022)	The objections
John Stuart Mill, <i>Autobiography</i> (1873), chapter 5	The crisis of 1826
Bertrand Russell, <i>Autobiography</i>	Epigraph
Benjamin Bloom, “The 2 Sigma Problem,” <i>Educational Researcher</i> (1984)	The two-sigma claim
Paul von Hippel, “Two-Sigma Tutoring: Separating Science Fiction from Science Fact,” <i>Education Next</i> (2024)	What Bloom’s studies contained; realistic effects
Kurt VanLehn, <i>Educational Psychologist</i> (2011)	Human tutoring vs. no tutoring
Andre Nickow, Philip Oreopoulos, and Vincent Quan, <i>American Educational Research Journal</i> (2024)	Pooled effect of preK–12 tutoring; moderators
Mark Lepper and Maria Woolverton (2002), INSPIRE	What highly effective tutors do
Micheline Chi and colleagues, “Learning from Human Tutoring,” <i>Cognitive Science</i> (2001)	Prompting vs. explaining
Debora Roorda and colleagues, <i>Review of Educational Research</i> (2011)	Relationships, engagement, and achievement
Benjamin Bloom (ed.), <i>Developing Talent in Young People</i> (1985)	Care first: playful early years and warm first teachers
Alfred North Whitehead, “The Rhythm of Education” (1922)	Romance, precision, generalization
Anne Frenzel and colleagues, <i>Journal of Educational Psychology</i> (2009)	Teacher enjoyment transmitted to students through enthusiasm
Avi Assor, Guy Roth, and Edward Deci, <i>Journal of Personality</i> (2004)	The costs of conditional regard

SOURCE	USE
Whitehead, “Universities and Their Function,” in <i>The Aims of Education and Other Essays</i> (1929)	Uniting the young and the old; what imagination needs

From Inquiry and Practice, by Anatoly Lezben. Working draft, October 2026.