Review of Arnold Cusmariu, *Logic for Kids*, Jenny Sanford Publishing, 2023

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Have you ever thought that you can make friends with a logical symbol? I, for sure, haven't. Until I read *Logic for Kids*, by Arnold Cusmariu. Some background about my academic journey will help explain why I think so highly of this book.

I discovered logic in the 9th grade (as all the students in my country, Romania, do) and it was then when my journey started. At that moment, I took the most important decision in life: that I would to go to college and study philosophy. And I did. Four years later, I was a student in the Philosophy department of the second most important university in Romania, located in the city of Iaşi. I was one of the only 7 young women, which was 10% of all the students in my generation; it was very harsh (i.e. misogynistic) environment. Our first class began with a renowned professor in Ancient Philosophy explaining to us, girls, that it was not our place there; that we would never be philosophers (i.e. that a woman philosopher was a logical and ontological impossibility); the best we could get was to become good high school teachers. But my passion for logic and the mental discipline I got from studying it allowed me to go through college successfully; I then graduated, I got my Ph.D. with a thesis on Bertrand Russell's ontological pluralism. I started teaching at the same university; General Logic was my first course. I realized from the start how intimidating logic seemed for the first-year students, but I will always remember their faces when I managed to explain all the formulae that they couldn't even read at first. It was that moment when they smiled and even said it out loud: "Wait, this is easy! So easy!"

Then I began to wonder what it would be like for people to study logic as a subject in its own right earlier in life: what if logic could change our lives for the better, as it did for me? Of course, not every kid goes to college and becomes an academic; but what if logic could make our lives easier? Because it does. I thought about writing a logic book for kids, too. But my professional and parenting responsibilities never allowed me the time to start such a project. I did my best, though: ever since my daughter has been able to utter complex sentences, I explained to her that logic would be her lifetime companion and did my best to develop her ability to correctly argue points; however, it was not always easy and I often felt the need of a book that would help me teach her logic in a fun and easy way. Last year I found out that such a book existed and I read it with my 11-year-old daughter. It was fun for the both of us to immerse in a playful but rigorous universe from which we learned a lot.

The book I am talking about, *Logic for Kids*, by Arnold Cusmariu, suggests an interesting thought experiment on page xx that explains why the book is a

'must have.' Dr. Cusmariu asks the reader to "imagine the impact of culture and society worldwide if generations of children grew up to become rational adults as a result of early training in logic." That is the main reason I decided to write in support of this critically important book.

The author implies (as I always thought myself) that the education establishment has failed to provide training in logic at a level suitable for the special needs of young children. This may well be an understatement because on the following page (xxi), we are told something I think is true based, again, on my own experience: there is a need to "correct a glaring omission in math and science books, which assume but do not explain how logic is used to derive results." A quote from a geometry textbook admitting "we don't know how to explain [logical reasoning] in advance" should motivate parents to get this book and see how it's done.

Logic for Kids is in two sections, one for parents and one for kids.

The section for parents is written in standard paragraph format and provides an overview of the book's contents, pages xiii-xxxvi. Subsections cover home schooling, math and science applications, test anxiety, reading comprehension, writing formats, and critical thinking. The last subsection provides technical information that links the book to standard approaches to teaching logic.

The writing style changes dramatically in the section for kids, which consists of 22 chapters totaling 372 pages. There are no paragraphs here, only one-liners, each expressing a different thought, building slowly and patiently to get across key concepts of logic in ways young people can grasp and apply. This innovative approach is unlike every book on the subject currently available and makes it significantly easier for kids to grasp and apply the many abstractions of logic, as I myself can testify based on my experience of working through the book with my daughter. Humor breaks lighten the mood, including photos of the author's sculptures (p. 227).

The presentation in the 22 chapters is simple and intuitive. The book explains logical reasoning in the propositional calculus as a sort of train ride, traveling on safe tracks. A charming cartoon on the cover sums it up nicely. The idea of calling logical symbols 'friends' is brilliant: kids get to play fun games with 'Switchy,' 'Gridley,' 'Lefty,' 'Righty,' 'Dotty,' 'Curly,' 'Ampy,' 'Wedgy,' 'Pointy,' 'Triply,' 'Super Pointy,' 'Dashy'; learn about forms associated with the logical connectives 'Curly,' 'Ampy,' 'Wedgy,' 'Pointy,' 'Triply,' and 'Super Pointy'; and take trips on safe tracks built out of these connectives. Readers are eventually able to go on trips in Math and Science and, in the end, discover new safe tracks in logical reasoning that are useful in understanding how inference works in the predicate calculus. I hope Dr. Cusmariu will consider writing a follow-up volume explaining this component of formal logic in ways that kids can grasp and apply. I can't wait to see the result.

There is a lot to learn (and I do mean a lot, for a kid, at least) before it becomes clear just what are 'safe tracks,' how they are built, out of what components, and how exactly logical reasoning means traveling on 'safe tracks.' Patience, perseverance and attention to detail are required to understand what's going on. These attributes are essential to learning generally.

The book also explains logical reasoning as involving the correct use of 'therefore' words. The meaning of 'therefore' words is explained by reference to what logic textbooks call 'rules of inference' – though they are not called that in sections addressed to children, which avoid jargon and use a friendly, often humorous tone. Rules of inference are illustrated by means of color diagrams whose components are aligned in a special way (see page xvi), helping kids visualize the process of applying rules to examples. Logical reasoning turns out to be a kind of plug-and-play, applying rules of inference one at a time until the final destination (the conclusion of an argument) has been reached.

The book is full of pedagogical innovations that make abstract concepts of logic accessible to children, listed and explained on pages xxx-xxxvi. Parents and children can easily work through the material together in a home-schooling environment. I am glad that I got this instrument to teach my daughter at home, complementing the subjects she studies in school and making her understanding of those subjects easier.

Logic for Kids is the perfect tool for parents to help their kids develop critical thinking as a vital part of a comprehensive education, while patiently guiding them into growing more reflective and less impulsive, so they are able to channel their creativity in constructive directions.

Logic for Kids is an event in the history of education. I urge my colleagues in academia worldwide, at any level, to work through this book and find ways of applying its innovative methodology to the courses they teach. They and their students will be amply rewarded.