Bringing Good Maths Books to Children

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This article is about the *Sputnik Bookcase*, a project that I founded with some colleagues to bring inspirational, high-quality, educational books in mathematics and other subjects to children in Vietnam (with an idea to expand internationally). From February 2015 to October 2016, we printed 25 books, totalling about 100,000 copies, with many more books in the pipeline.

Why do children and adults hate maths?

Vietnam is a poor country with a GDP per capita of just 2,000 USD (PPP) but it often ranks in the top 10 in International Mathematical Olympiads (IMOs), higher than France and Germany, for example. This result does not mean that Vietnam has a better mathematical education system than Europe but, somehow, reflects the fact that the education system in Vietnam is too exam-oriented: children waste a lot of time on learning by rote, trying to memorise formulas and solutions to typical problems in order to get high scores in exams and competitions. They often go to additional private classes many times a week and repeat lessons until very late in the night.

While exam-oriented learning may be good for getting high scores in exams, it is very expensive in terms of time and money and has detrimental long-term consequences: students become passive, lack creativity and critical thinking, do not really understand what they learn and even risk depression due to lack of sleep and physical activity.

Since this kind of maths education is mostly disconnected from the real world and does not show children how joyful and useful mathematics really is, a majority of them naturally come to hate mathematics. When asked, most adults would say that high school mathematics is useless for them, especially the more advanced topics like integrals and complex numbers, and many people think that such topics should be deleted from the programme. This opinion about the uselessness of maths is widespread not only in Vietnam but probably in many other countries as well, including France.

Maths books to make learning joyful and useful

In their exam-oriented learning, most children and students in Vietnam only use textbooks and exercise books. Maths notions in these books are often introduced in a formal, unintuitive and even dogmatic way. For example, instead of saying that a rational number is the quotient of two integers, they give the following definition: a rational number is a decimal number whose expression is either finite or infinite periodic.

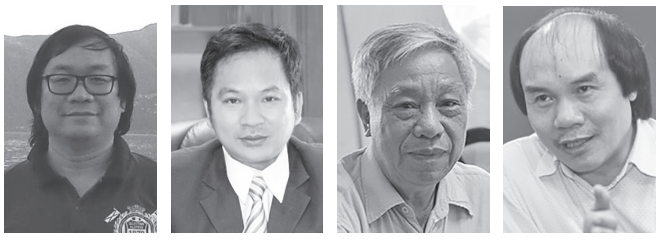
One notorious professor who had a lot of influence in Vietnam bragged that he could teach higher mathematics to young schoolchildren. How did he do it? As an example, he taught group theory by making children learn by heart all the axioms of a group and then check that these axioms are satisfied on some finite sets with given tables of multiplication, claiming that the children "knew group theory" after these formal lessons. Needless to say, education reforms proposed by such professors were a disaster.

In our opinion, maths notions should not be introduced *formally* but *naturally* and *intuitively*, with a lot of motivation and explanation about how and why they were invented and what they were invented for. And it's not enough to have textbooks and exercise books; children also need other kinds of interesting maths books, e.g. maths novels, history of maths, applications of maths, recreational maths, etc., books that can inspire and show them how natural, joyful and useful maths really is.

The birth of Sputnik Education

I live in France but am very worried about the situation in my native country. I have written numerous articles advocating political and educational reforms in Vietnam but, as usual, they have fallen on deaf ears. I also wanted to do more concrete things and so I founded a small education company in Vietnam in 2014 together with five friends, two of whom were business-oriented (Phan Thanh Do and Hoang Thi Thai Thanh) and three of whom were reputed mathematicians: Professor Ha Huy Khoai (formerly Director of the Hanoi Institute of Mathematics), Professor Do Duc Thai (Head of the Department of Mathematics at Hanoi National University of Education) and Dr Tran Nam Dung (a famous trainer of mathematical Olympiad teams).

Later on, some other key members joined, who now form the new management of the company (I'm not an official manager, just a founder and the informal 'Editor-in-Chief').



Nguyen Tien Zung, Tran Nam Dung, Ha Huy Khoai & Do Duc Thai.

We needed a name for our company and, after much thought, chose "Sputnik Education". Why Sputnik? Firstly because this is the name of the celebrated artificial satellite that marked the beginning of a new era of

humanity. Secondly, the Russian word "sputnik" means "companion" and our company is a "companion for joyful learning". Thirdly, the Russian maths education system is one of the best in the world and five of the six founders of Sputnik Education happened to have studied in Russia.

The first purpose of our company is to produce the *Sputnik Bookcase*, a series of high-quality educational books. When the company was formed, we had five books ready. They are (Vietnamese translations of) *The man who counted* by Malba Tahan, *Three days in Karlikania* by Vladimir Levshin, *Combinatorics and induction* by N. Ia. Vilenkin, *169 interesting maths problems* by Tran Nam Dung and my book *Maths lessons for Mirella*.

The current laws of Vietnam prohibit private publishing houses and we need to make contracts with state-controlled publishing houses (who charge us a fee) in order to print our books. After many months of looking around, our first five books finally appeared in early 2015.

Living on a shoestring

Since none of us were rich, our "garage-based business" started with less than 40,000 euros of capital and we used a room in one of our houses as an office and warehouse. In theory, we could raise more capital but then we would risk losing control of the company to get-rich-quick people who do more harm than good to the education system.

That small amount of money was enough to print about 10 books (3,000 copies per book) and we had to employ a few people (even though most of the work was originally unpaid and carried out by ourselves) and operate in a very bleak market. Looking at official figures, the whole book market of Vietnam was only 90 million euros in 2015, i.e. about 1 euro per person. Add to that the very low book prices (equivalent to about a fifth of the international prices), widespread pirating, closures of bookstores, etc., and many book companies end up losing money. We needed profit in order to survive whilst maintaining high quality so we had to follow a set of criteria for choosing books:

- *Correctness*. The book should be scientifically sound, without serious errors or inaccuracies.
- *Attractiveness*. The book should be clearly written, easy to understand, attractive and inspirational for the reader.
- *Diversity*. Besides textbooks and exercise books, we also want maths novels, maths in real life, maths modelling, recreational maths, maths and logic puzzles, history of maths, etc.
- *Profitability*. Our books should be easy to sell and not too expensive to make. We have to avoid, for example, very good university-level books because most students in Vietnam have other priorities and don't buy books –they just make photocopies of the books that they need.

Other barriers to be overcome

The language barrier. "Traduire, c'est trahir." With ridiculously low book prices, publishers in Vietnam cannot afford to pay translators well enough. As a consequence, it is very difficult to find good translators and too many translated books contain serious errors on every page. It often happens that after someone translates a book, we have to re-translate it to correct the errors. For some "difficult" books, it is not possible to find a translator at all. For example, over two years we gave Abbott's *Flatland* to four different translators and they all gave up after a few months.

The copyright barrier. Copyright fees themselves are not *the* problem; instead, it is more about making contracts with foreign authors. This is because no one is experienced in this matter in our company and we can't afford to hire someone just for that. Therefore, we are losing a lot of time and energy on it. For example, after more than a year, we could not finalise a contract for the Vietnamese version of Wendy Lichtman's book *Secrets, Lies and Algebra*. We wish we could buy the publishing rights as easily as buying food from a grocery store. We are also in contact with some other authors, e.g. Ian Stewart for his popular maths books, and hope that things will go more smoothly. In some lucky cases, when the authors don't ask for royalties, things are easier for us and, in those cases, we give books to charities instead of royalties.

Accounting mess. Even with a small company like ours, accounting can be a serious problem. We had a part-time accountant from the beginning but things were not done properly and so we recently had to hire an external expert and pay him well to help us with accounting and tax filing.

Bestsellers to the rescue

Fortunately, we had some (international) bestsellers that kept us afloat, despite all the troubles we had faced. Here are a few of these bestsellers:

The Man Who Counted (in Portuguese: O Homen Que Calculava) by Talba Mahan (real name: Júlio César de Mello e Souza (1895–1974), "the only Brazilian mathematician who was as famous as a soccer star") is a maths novel for children that sold more than 2 million copies in Brasil alone. We printed it twice and sold about 5,000 copies.

Kiselev's *Geometry* (*I: Planimetry*; *II: Stereometry*). Leonid Polterovich (Tel Aviv) and Alexander Goncharov (Chicago) recommended this book to us and Alexander Givental (UC Berkeley) gave us permission to use his English version (2006). People are probably right when they say that Kiselev's *Geometry* is still the best geometry textbook: the presentation in the book is extremely clear, precise and still very modern for a book written a century ago. Our first print of Kiselev's *Planimetry* sold out in four months.

Around The Rotations by Waldemar Pompe is another extremely interesting elementary geometry book. It shows how to use symmetries to arrive at very elegant solutions to many difficult problems in planar geometry. It has been recommended to us and translated from Polish to Vietnamese by Nguyen Hung Son and Nguyen Sinh Hoa, who are professors in Warsaw.

Vladimir Levshin's *Trilogy: Three days in Karlikania*, *Black Mask from Al-Jabr* and *Fregate of Captain Unit*. This trilogy is a wonderful and gentle introduction to elementary arithmetic, algebra, geometry and scientific thinking in general. As a child, I somehow got hold of the book *Black Mask from Al-Jabr* and it was because of it that I enjoyed learning equations. These books had been translated from Russian to Vietnamese before and sold very well in Vietnam. However, the old translation contained many inaccuracies so we decided to make a new one.

A Day's Adventure in Math Wonderland by Jin Akiyama and Mari-Jo Ruiz. Jin Akiyama is one of the most famous maths popularisers in the world and he has founded a mathematical museum in Hokkaido (Japan), called "Math Wonderland". This book is an exciting virtual excursion to his wonderland. It has been recommended to us and translated by Vuong Hoa, a young lady who happened to know Akiyama while studying at his university.

The first 20 books of Sputnik Bookcase; cover of "Maths and Arts"; journal "Buddhist Culture", which contains a review article of the book "Maths and Arts".

Maths and Arts (in Vietnamese: Toán học và nghệ thuật) by Nguyen Tien Zung. In May 2016, I gave a public lecture and then wanted to write a book about the relations between mathematics and the arts (including the visual arts, music, prose and poetry), in memory of my late father. The book came out in August 2016 and quickly sold about a thousand copies over the first month. Two newspapers/journals printed review articles about it (written by readers who liked the book), which was a first for Sputnik Bookcase.

Reputation and advertisements help

One of the challenges for us is to build up a good distribution network, which is still weak at the moment. Nevertheless, all of our books are doing well, thanks in part to our good reputation. Many readers like Sputnik Bookcase so much that they buy the whole series – every book in it.

Of course, good advertisements also help. Recently, we started buying advertisements on social networks and saw the number of customers (at least those buying books directly on http://shop.sputnikedu.com) increase significantly. We have also participated in many science popularisation activities (e.g. maths open days, STEM fests, public lectures and exhibitions) and charity programmes (e.g. the UNESCO-prizewinning programme "Books for the rural area" by Nguyen Quang Thach, where we donated hundreds of books), which of course helped the children and, at the same time, enhanced our reputation.

What next?

We have many ideas on how to grow Sputnik Education into a major education company. One of them is, of course, to continue to publish many books, not only in mathematics but in other subjects as well, keeping our high quality standards. Other ideas include: educational toys, online interactive education, international expansion, etc. For example, there are now many video lectures available online but they are often of low pedagogical quality. Whatever product or service we make, we want it to be of high educational value.

In the book market, textbooks form the most lucrative niche: they often sell by hundreds of thousands of copies. This niche has been the monopoly of the Ministry of Education but they have decided to open up the market next year. So, we will have the opportunity to publish modern maths textbooks, which fit our philosophy of joyful, meaningful and useful education.

Nguyen Tien Zung was born in Vietnam in 1970 and graduated from Moscow State University in 1991. He defended his PhD thesis in Strasbourg in 1994 on the topology of integrable Hamiltonian systems and worked as a "chargé de recherches CNRS" in Montpellier from 1995 to 2002 before becoming a professor at the University of Toulouse in 2002 and being promoted to "professeur de classe exceptionnelle" (distinguished professor) in 2015.