

TCS ON THE WEB

BY

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*Polylog*¹ is a YouTube channel devoted to high-quality, broadly accessible videos about theoretical computer science. The channel is run by Václav Rozhoň², Václav Volhejn³, Richard Hladík⁴, and Tomáš Sláma⁵. Its videos cover topics ranging from zero-knowledge proofs and pseudorandomness to radix sort and A^* search.

At the time of our conversation, *Polylog* had published only 19 videos since 2021, yet had more than 119,000 subscribers and roughly seven million views. This makes it an interesting example of a channel that has grown through a small number of videos with very high production values.

Today I am very happy to talk to Tomáš Sláma and Richard Hladík about how the channel started, how they choose and produce their videos, and what advice they have for others who want to start their own YouTube channels.

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POLYLOG: WIDELY ACCESSIBLE VIDEOS ABOUT TCS

A Conversation with Tomáš Sláma and Richard Hladík

Can you describe what motivated you to start the Polylog¹ YouTube channel?

Richard: We make videos about computer science, and especially theoretical computer science. The channel originally grew out of 3Blue1Brown's Summer of Math Exposition², which encourages people to make mathematical explainer videos. Václav Rozhoň and Václav Volhejn decided to give it a try. Their first video did not really take off, but they tried again the next year and that video eventually blew up. I joined later, and Tomáš, who already had his own YouTube channel, joined after that.

Tomáš: For me, joining forces simply made sense. None of us has unlimited time, and different people enjoy different parts of the process. I like making animations; others enjoy writing the script or working out the theory. Instead of each of us making a complete video from start to finish, we can focus on the parts we are best at and enjoy most.

Who is your intended audience?

Richard: It is hard to pinpoint exactly. For me, I often think of myself five years ago, when I was an undergraduate student. We want the videos to be accessible, but we also have to satisfy our own urge to go down technical rabbit holes. Václav Rozhoň, who often writes the scripts, would happily add another long technical section at the end, and then we have to cut things back.

Tomáš: The target audience varies somewhat from video to video, but I agree that an undergraduate is a good mental model. When I was at university, I liked videos that gave me an accessible way into a topic I did not know well yet, but still let me get my teeth into something substantial. There is usually a fair amount we would like to include and eventually cut. The back-and-forth hopefully leaves us with something that is both understandable and fun to watch.

How did the four of you come together, and how do your different backgrounds fit into the channel?

¹<https://polylog.cc> and <https://www.youtube.com/@PolylogCS>

²<https://some.3b1b.co>

Richard: We mostly knew each other through the Czech community around high-school mathematics and programming competitions and the camps associated with them. It is a fairly small community, so people get to know one another quickly. I later lived with one member of the group and did research with another, so those connections became quite close.

Tomáš: I came in somewhat differently. I had my own YouTube channel, and we had already been in contact through a pair of related videos. At some point Václav Rozhoň asked whether I wanted to join. I did not really have enough time to keep producing full videos on my own, so joining *Polylog* meant that I could concentrate on the parts I enjoy most, especially animation. That combination of strong theory on one side and technical or visual skills on the other works very well for us.

You started the channel in 2021 and have made only 19 videos, yet you now have more than 119,000 subscribers and roughly seven million views. What do you think is the recipe for that success?

Richard: The first thing I should say is that I often still feel that I do not really know what I am doing. I am not sure that we have a precise formula. But there is clearly a niche for creators who make one high-effort video every few months, or even one per year, and have an audience that is willing to wait for it. We seem to have ended up in that niche, even if that was not a deliberate strategy.

Tomáš: Over time, you do learn which kinds of topics people find interesting. The Rubik's Cube video³ is a good example: the starting point is immediately accessible, but the same topic also lets us explain how to break DES ciphers using bidirectional search. We try to find subjects that have not already been covered from exactly the same angle, where we feel that we can add our own perspective. There are many computer-science videos on YouTube, so having an angle that distinguishes you matters.

How important are the high production values and the YouTube recommendation algorithm?

Tomáš: To me, putting more effort into a video is a bit like getting another roll of the die with the YouTube algorithm. If the video is pleasant to watch, has good graphics, and is carefully made, perhaps the chance that it gets picked up is higher. But there is a lot of survivorship bias here: I know channels that make very good videos and still do not get much attention. I do not think there is a magic formula. You make good videos consistently, keep rolling the dice, and sometimes one lands.

³<https://www.youtube.com/watch?v=wL3uW0-KLUE>

Richard: I agree that the production quality helps, but I think a lot of the magic is in the topic and the script. The animations are nice, but the topic has to work at two levels: it should be accessible enough that somebody can enter without much background, while still having enough depth later on to keep people who already know the basics interested. That balance is very important for us.

What future projects do you have planned for Polylog?

Richard: We have a beta version of our next video, which is about the Busy Beaver function. Václav Rozhoň met Scott Aaronson at a conference and asked whether he would do an interview. They talked about Busy Beaver and related topics, and we decided to build a video around that conversation.

Tomáš: We have also started to like the format of combining our explanation with an interview with somebody who really knows the topic. Veritasium⁴ does this very well: instead of one narrator speaking throughout, an expert can come in for a short segment and add another perspective before the explanation continues. We tried that in the previous video, we are doing it again now, and I think it makes the videos more interesting.

If some of our readers wanted to get started on YouTube, what advice would you give them?

Tomáš: Your first videos are probably going to be bad, and that is fine. Looking back at the first videos on my own channel, there are many things I would do differently now. You improve at the script, the voice-over, the animations, and everything else by actually making videos. It can be discouraging when the first few get little attention, but if you care about it, I think the important thing is to keep going.

Richard: It is useful to have some kind of feedback loop, but do not over-focus on views. Our Rubik's Cube video sat there for months without much happening and then suddenly got picked up by the recommendation algorithm and gained a huge number of views. So "this did not get views immediately" is not necessarily useful feedback. Reflect on what you would improve, ask other people, and keep making things. There is that startup advice that if your first product is not bad, you launched it too late. I think something similar applies here.

People are talking a lot about the possible impact of AI on theoretical computer science, and in particular about the growing importance of exposition and building understanding as a community. Do you think channels like Polylog could play a role there?

⁴<https://www.youtube.com/@veritasium>

Tomáš: I have a somewhat biased perspective because I do not enjoy consuming AI-generated content very much. I use AI for programming, and it can be very useful there, but I do not particularly want to read or watch material that was generated by an LLM. I suspect there are many people who feel similarly. So there is still something valuable about hearing people explain a topic they genuinely find interesting.

Richard: If AI eventually produces a lot of new mathematics, then it depends on what those results look like. If the result is something where a human can still understand the main idea—say, a new construction or counterexample—then a channel like ours could be a very good medium for explaining the intuition. If the mathematics becomes so exotic that people themselves struggle to understand it, then of course exposition becomes much harder. Our advantage is that we try to build intuition visually, and good animations can sometimes make quite difficult ideas much easier to grasp.

What are you currently most excited about, in your own work and for the future of Polylog?

Richard: On the research side, I am currently excited about some work Václav Rozhoň and I are doing on data structures, in particular splay trees. For *Polylog*, I am looking forward to seeing how the interview-based format develops.

Tomáš: I am not in academia, so I do not really have a research answer. For *Polylog*, I am mostly excited about continuing to make fun animations.

Finally, is there anything else you want our readers to know?

Tomáš: I would encourage more people in the research community to make this kind of material. It is rare to find somebody who both knows a technical subject very deeply and also has all the skills needed to make a polished video. But you do not have to do everything yourself. An academic who knows the theory can team up with somebody who enjoys animation, editing, or visual communication. I think that is very fertile ground for high-quality educational content.

Richard: And if somebody likes the idea but does not know where to start, the Summer of Math Exposition community is worth looking at. It has a Discord server⁵ where people discuss projects, learn from one another, and can potentially find collaborators. The exposition is also broader than just traditional videos, so there are ways to experiment with other explanatory formats as well.

Thank you for this interview, Tomáš and Richard!

⁵See the Discord server linked on <https://some.3b1b.co/contact>.