

Mathematics on TV? Yes, We Can!

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Abstract

At first glance mathematics and television could be seen as pertaining to opposite worlds, the former is usually seen as abstract, elitist and technical, the latter, popular, objective and non-technical. I will show you some of the tricks we use, and what we learned so far, writing and presenting the TV show 'Isto é Matemática,' broadcast on SIC Notícias, the leading news channel in Portugal. One episode will be submitted to the 2016 Short Movie Festival.

Introduction

Mathematics and TV may appear to be things that do not go together. Mathematics is abstract, actually we can almost say that mathematics and abstraction are precisely the same thing. On the other hand, television is made of the concrete, there is no place in television for ideas without images. In this paper I will tell you how we manage to survive this kind of suicide project.

The facts were that about four years ago the president of the Portuguese Mathematical Society invited me to write and present a TV show on mathematics, to be broadcast on SIC Notícias, the leading news channel in Portugal. There was funding for seven seasons of thirteen five-minutes episodes, from a national call for partnerships between scientific institutions and mass media. The 91 episodes went to air weekly between October of 2012 and July 2014, and it was broadcast on SIC Notícias, with repetitions in two other channels of the group, SIC Internacional and SIC Kids. By the end of 2014 the TV group was asking for more. Right now we are again on air, for one more year of emission, with funding from the Fundação Vodafone Portugal. All the episodes can be seen on our YouTube channel (www.youtube.com/user/istoematematica) and Facebook page (www.facebook.com/istoematematica). The first season was dubbed to English by the European Mathematical Society, supported by Munich Re and can be seen at www.mathematics-in-europe.eu/component/content/article?id=1048.

This TV show received several honors, including a nomination for the Prémio da Sociedade Portuguesa de Autores, Portugal, as the best entertaining TV show in 2013, award from the festival Ver Ciência 2013, Brasil, and the award Ciência Viva – Montepio, 2013, Portugal.

Each episode has its own theme and focus on some mathematical object or idea. Some examples are: the parabola, the prisoner's dilemma, or the concept of independent events in probability. During the last years of production, we developed some strategies and gained some experience conveying mathematics for a large general audience. Below I will point out some of the key points that, in my opinion, make this possible.

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Strategies Used on this TV Show

Mathematics and humor. This is a happy mix. A good mood helps to break the ice and send the message that this is to be seen in a relaxed manner. People tend to get stressed with mathematics. When someone is watching a wildlife documentary on television, that person can easily relax on the couch, even without understanding every single detail. However, give the same person a mathematics documentary with formulas and stress is sure to show up. The humor conveys the idea that this is just for fun, there will be no exam in the end.

Target the show for a general audience and not for educational purposes. When I started to write the show and prior to the premiere, whenever I told someone that I was preparing a TV show on mathematics, the first reaction was that the target were the youngsters. For the average person, mathematics is connected with school. When the theme of mathematics pops up in the middle of a chat, for example in a restaurant or a bar, among a group not professionally connected with the subject, the conversation falls almost invariably to the school: how they dealt with their math courses, the teacher that, positively or negatively, made the difference, and so on. This is not the case with other subjects! When people talk about economics or history, do not always fall in the teaching of the subject. In this show we purposely avoid following the 'school agenda,' and school connections, working toward the construction of popular imagery on mathematics among the general public.

Avoid generic themes. In my opinion, one of the bad practices in math popularization is the tendency to turn to rather generic subjects, say: chaos theory, the history of mathematics, celestial mechanics. We tried to focus on very specific topics and ideas, and whenever possible we try to narrow the subject in order to give an example that goes down to the base computation or argument. For example, in the episode about the Euromillions (European loto-style game) we present the complete argument that gives the probability that a given set of numbers is drawn. Mathematics is something complex made of many simple parts. One of the reasons people struggle with mathematics is because we tend to be too ambitious.

Choose a real mathematician as a host. In general, it is much easier to find a twinkle in the eyes in someone that spent years studying a subject. This twinkle is precious because it expresses passion that is contagious. One can only communicate in a proficient way when we can emotionally embrace our interlocutor. On the other hand, it is essential for a professor to understand much more mathematics than the part that he/she is supposed to teach. This is even more true in the popularization of mathematics: Much of what is said, is said in a certain way because there is so much more beyond that was not said.

Connect the mathematical ideas to the real and concrete. Poincaré said that mathematics is the art of giving the same name to different things. This is, in my opinion, one of the best definitions of mathematics. He is saying that mathematics comprises the ideas that are common to different things, so necessarily mathematics is abstraction. Even though, almost every part of mathematics is inspired by some real or concrete phenomena or problem. There is no betrayal in associating mathematics to the real, and this does not imply that we are talking exclusively about applied math. Actually, most of our mathematical intuition is grounded in something concrete. Moreover, this is a great way to emotionally involve the public.

Present this as an actual and usual television language. There is nothing that prevents mathematics from being presented as an actual and dynamic television product. We must be confident with the product we have in order to convey it with no less quality than any other subject. To present mathematics in a paternal and shy way is like proposing to someone with apologies. Clearly the biggest challenge here is to find the right television production team; it is not easy to find math enthusiasts among the television professionals.