

Creative Mathematical Sciences Communication is a Two-Way Street

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Abstract. How can we present, in hands-on concrete-activity manner, the core mathematical ideas of public-key cryptography (PKCS) to 10-year-olds? This is not a frivolous question, because if you want to communicate about mathematical science to people in government, people in industry, people in other fields, and the general public, this is the universal meeting point. If you can't explain some of the main intuitions and questions of your field to bright and curious 10-year-olds, do you truly understand your area of research? And how could you not care about this vital functionality in science research and its political and social ecology?

The general project of presenting the deep topics of modern mathematical sciences to 10-year-olds requires creative ideas in itself, some theatrical and some mathematical. This is fun to think about! And also nontrivial in both dimensions.

The creative dynamic is bi-directional! If you challenge yourself to communicate your stuff to 10-year-olds, you will inevitably confront fresh mathematical questions that will renew your own research, and your field.

The talk will describe a good example of this, after mostly giving an annotated demo of how to concretely present PKCS to 10-year-olds.

Biography. Prof. Fellows, a native of San Diego, who spent a lot of time in Alaska, received his PhD from UCSD in 1985 and has since taught in the USA, Canada, New Zealand and Australia. In 2006 he received a Humboldt Research Prize for his foundational work on Parameterized Complexity. He is an Associate Editor for the *ACM Transactions on Algorithms* and the *Journal of Computer and System Sciences*. Elected one of the ten Inaugural Fellows of the EATCS in 2014, and an Honorary Fellow of the Royal Society of New Zealand (one of 230 since 1870; the first computer scientist on that list). In 2014 he also received the International Medal of Honor in Computer Science Education, awarded by ETH, Zurich, for his work on popularizing the mathematical foundations of computing (e.g., the book *Computer Science Unplugged!* and its predecessor *This is MEGA-Mathematics!*). Mike is accompanied by his wife and collaborator, Prof. Frances Rosamond (PhD from Cornell), who is the main organizer of the conference series *International Conference on Creative Mathematical Sciences Communication* — the First was in Darwin in 2013; the Second was at IMSc in Chennai in 2014; the Third will be in Tel Aviv. Eventually it will be in Bergen!