

“In the USA I was a target for terrorists”

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The mathematician Jonathan Farley, who spent two years at the University of Linz, explains the uses of mathematical methods in the fight against terrorism and tells about his own problems with the Ku-Klux-Klan.

*Wiener Zeitung: Dr. Farley, you are a mathematician cooperating with others in the fight against terrorism. As a mathematician what can you do against terrorism?*

**Jonathan Farley:** I design models for terrorist cells. I try to document the typical structure of such cells in the form of graphs. They show that there are relationships between the individual points. In practice, this could mean that two individual points are communicating directly with another. The deciding question therefore is, how many of such points must we remove in order to destroy terrorist networks or at the very least to interrupt their connections? Initially, efforts were only to blow up terrorist cells without knowing their structures. However, these structures can give us useful information.

There is a mathematical theory called “partially ordered sets”. In terrorist cells there are commands - and others carry them out, and that affects my view on how we can destroy a cell. I find the question of how to structure the perfect terrorist cell even more interesting, especially those who still exist and have had some of their members, more or less by chance, randomly taken. This could help the prosecution, who know nothing of the structure of such cells.

Such knowledge can be useful, especially to the USA, which plays a crucial role in ground security. Those who want to illegally cross a border, will naturally choose a route that they expect the most success from. This is based on mathematical psychology called “reflexive control”.

However, some critics feel that knowledge of the terrorist cells benefits the terrorists more than those who are fighting them and unfortunately I have no good argument against this view.

*How can a terrorist cell be characterized? How do they arise and why can they be so powerful?*

It comes down to how you present them. I prefer to go from the simplest possible definition, namely the aforementioned “partially ordered set”.

I work together with people, who do know about terrorist cells, but have little knowledge about mathematics and in my own way I can help to make their work better. These experts have used my work and that makes me happy. I have, for example, worked together with the US Air Force Academy. The Pacific Northwest National Laboratory even offered me a job, but the contact stopped when I reported the attacks against me which were caused by those associated with the Ku-Klux-Klan.

In Jamaica I had a meeting with the Minister for National Security. From him, I learned of a police officer who applied my ideas to uncover a drug and weapons smuggling network. Other theories can be

read in the book *Mathematical Methods in Counter Terrorism* which I co-edited.

In addition, every year with other colleagues, I organize a conference on this topic. My ideas, though accepted, do not always get the support that I would prefer.

*Why is that?*

One reason is certainly that I'm African American. As mentioned, I have attacked members of the Ku-Klux-Klan even before I was dealing with the fight against terrorism. I was more or less forced to flee Tennessee. There were death threats against me and other intimidation. In the United States I was a target for terrorists who tried to destroy my reputation, which had the aforementioned restraint on my success.

*You have worked for two years at the University of Linz Institute for Algebra. What goals did you set for your research?*

I have continued my research on Lattice Theory in Linz, but I also deal with the fight against terrorism. Recently, I've taken part in a Canadian project that deals with social networks. From here I'm going to the University of Maine.

*Will you be returning to the United States with mixed feelings?*

Yes, because I like the life I have here and because I know what to expect. When I offer my knowledge in the USA, ironically I arouse anxiety and fear, except in the people I have known for many years. To take one example; in 2005 I was invited to dinner by the Austrian Ambassador to the United States. There I met the chairman of the American Academy's Behavioral and Social Sciences Division. He asked me how mathematical psychology could be used in the fight against terrorism? I explained it to him. At that time, I was active at Stanford University and I invited him to a meeting in Stanford.

After a week, he sent me an email with a link to an article that I had written for the British *Guardian* about the fight against terrorism. Within the article I also described the racism in the United States. The chairman asked me if I was the author of this article. He added extra question marks to express his surprise at the contents of the article. Because I did not want to mix politics and academics, I made a joke and said, "It was written by my doppelganger". I never heard from the man again and the meeting never took place. It got me to thinking and therefore, I'm going back with mixed feelings.

*What are your plans at the University of Maine?*

I would like to continue my efforts to establish an institute for mathematical methods of combating terrorism. I proposed this in the US in 2003 and in Austria in 2005, though it did not work due to the fact that Austria is neutral. In the past year however, a "Counter Terrorism Research Lab" opened in Denmark. I was one of the opening speakers.

Also in the last year, the "International Institute for Applied Systems Analysis" received a new director, Detlof von Winterfeldt, who formerly led a research institute for counter-terrorism in Los Angeles. So there is interest in the mathematical methods for fighting terrorism, even in Austria.

*Speaking of Networks, to what extent and in which way are terrorist cells using the internet?*

Naturally, terrorists are utilizing the internet. In a conference in Canada, a researcher spoke about his experiences with terrorist websites and attempted to categorize them. The risk mathematician Gordon Woo, who works in London, has proposed to study websites and their links to other websites, in order to determine the many links and which exactly are the most important pages on the net. This way the executive who runs these sites could be found.

Terrorist-racist groups in the USA like the “The League of the South” or “The sons of the Confederate Veterans” use the internet quite intensely. In one of their newsletters, the “Confederate Society of America” announced to proceed against all of those who did not share their views. In a chapter of his book critiquing the media, *Hot, Fat, and Clouded: The Amazing and Amusing Failures of America's Chattering Class*, Barrett Brown reports on the terrorism that I myself have experienced. Robert Stacy McCain, editor of the Washington Times, says Barrett Brown, had pleaded under a pseudonym for the supremacy of the whites. Also, there were people in prominent positions, belonging to such organizations as the US Senate, associated with the “Council of Conservative Citizens” who spoke out. In their Newsletters, they once called out for a crowd to come and chase after me. They work with intimidation and murder threats.

*Which geographical differences in terrorism have you actually seen? What differentiates the terrorists in the US from the ones in Europe?*

One difference, is that in the US these groups always persist. I had a permanent position at the Vanderbilt University that I had to give up. Although I would go to some lengths combating terrorism in the US, outside the US I have not had any personal experience with terrorism.

*What does September 11, 2001 mean for you today?*

Nothing, other than what it's always meant. I'm an American, who was attacked by supporters of the Ku-Klux-Klan and racist groups. September 11 didn't surprise me. I do not want tears shed over 9/11 so long as no one cries over Tulsa, Oklahoma, where the white majority eliminated the black minority only because of their financial success.

*In general, why are you interested in terrorism?*

Like I said, I had to flee Tennessee because the racist groups were succeeding in slandering me, which incidentally, still continues into the present. I do not like the Ku-Klux-Klan and I have said that publicly. In Nashville, when a statue in honor of the Klan founder was erected using public funds, I motioned for its removal. I was then accused of hating white people, which is obviously not true. It was claimed that I would call for a genocide against white people, that I was a communist, - such things were written about me.

I thought fatally, that I would have to find contrary evidence in order to compete and that I would have to do something to restore my reputation. Because people in the US like money, I founded a company called “Phoenix Mathematics”, whose task would be to provide mathematical solutions to strengthen internal security. I thought that I could receive public funding for it and that I would no longer have to rely on Universities. However, “Phoenix Mathematics” was not as successful as I had hoped it would be.

*During your stay in Austria you probably formed opinions on the local university system or the Austrian education policies. What do you think about them?*

In the United States there is no free access to University, that is probably the biggest difference. Considering that, the system in Austria is better than those in the US. In Harvard you pay 50,000 dollars a year to be able to study. Apart from that, I have found no profound differences. In my opinion, England is one example where people have gone the wrong way when they tried to encourage more young people to study by raising tuition. The result is, a young man who completes his study has 20,000 pounds of debt.

*Suppose you could do it all over again; would you be a mathematician again?*

I love mathematics and even if I were a lawyer, I would deal with mathematical problems. Mathematics is the only thing that makes me completely happy. It does not necessarily need to be Mathematics and counter-terrorism but in my case that combination was justified. In spite of this, I will continue my efforts to describe the perfect terrorist cell, even when the US shows no interest at the moment. On the other hand, no one would be able to complain then that my work could play into the hands of terrorists.

#### **About:**

**Jonathan David Farley** born in 1970 in Rochester, NY has had a brilliant career as a mathematician. He was a visiting professor of mathematics in the California Institute of Technology (Caltech) and the Massachusetts Institute for Technology (MIT). He was a Science Fellow at the Center for International Security and Cooperation at Stanford University and until recently, a research fellow at the Johannes Kepler Research University Linz. The science magazine *Seed* ranked Farley among the “15 people who have shaped the global conversation about science in 2005”. In 2004 he was awarded “Distinguished Scientist of the Year” by the Harvard Foundation.

Farley's specialty is Lattice Theory. His most important contribution to this field is the solution of a mathematical problem that the MIT professor Richard Stanley formulated in 1981. This problem had remained unsolved, until Farley succeeded in constructing a bijection showing that the h-vector of a naturally labeled finite ordered set is symmetric.

Farley regularly takes positions on political issues, though sometimes not to his advantage. In 2003 he had to give up his position at the Vanderbilt University in Nashville, Tennessee due to death threats from those associated with the Ku-Klux-Klan. Aside from the purely technical issues, he is also working on mathematical methods appropriate to use in the fight against terrorism.

Currently, Jonathan Farley is an associate professor of computer science at the University of Maine. He received this one year temporary position due to his association with the director of the institute. He expects that he will not receive any further jobs in the US. Therefore, he studies only German and hopes to be able to return to Austria.

**Ernst Grabovszki** born in 1970 works for a scientific publisher and is a lecturer at the Institute for European and Comparative Linguistics and Literature at the University of Vienna.