Extremist Engineers

Why are so many jihadis engineers?

WHICH ACADEMIC pursuit has been the most prevalent among Islamic jihadis?

It's not the oddest question to come up at a dinner party, especially at the University of Oxford. But when it comes up between a Middle East expert and a sociologist, idle talk yields to a quest for data. That's how political scientist Steffen Hertog and sociology professor Diego Gambetta soon found themselves poring through records of 404 people from 30 countries engaged in political violence between 2005 and 2007. Their answer? Engineering.

Of the 178 whose academic focus could be ascertained, 44 percent of those were engineers—most of them in electrical engineering, civil engineering, and computer studies. The next-largest group, Islamic studies, had fewer than *half as many, at 19 percent* [see table, "Fields of Study"].

The authors acknowledge that the data underrepresent groups in South Asia, Southeast Asia, North Africa, and Iraq. They claim, though, that the sample population is "disparate enough—there are individuals from 30 nationalities, nine larger groups, and no fewer than a dozen smaller groups—to allow us to establish whether the puzzle holds true."

FIELDS OF STUDY	
Engineering	78
Islamic studies	34
Medicine	14
Business/economics	12
Sciences	7
Education	5
Other	28
Subject unknown	18
Total	**196**

Source: "Engineers of Jihad," by Diego Gambetta and Steffen Hertog, Sociology Working Papers, paper number 2007-10, University of Oxford.

The findings garnered worldwide attention when they were published online last fall in a 90-page working paper. A catchy title didn't hurt: "Engineers of Jihad."

Hertog, now a lecturer in political economy at the University of Durham, in England, says that though he and Gambetta expected the paper to get noticed, they were surprised by accusations of "ethnic profiling."

"After all, the anecdote that engineers were overrepresented *in radical Islamic movements* in the Middle East has been around for decades," Hertog says. "But there was never a systematic study about how many were involved in political violence or radical Islam."

Curiously, the two have not heard from Islamists themselves. "Frankly, we hope we don't, after what the engineers said," Hertog adds. "Some of them were generally curious. But most had knee-jerk reactions. Look, we did not say engineers have a terrorist mind-set—please write that. We said that engineers tend to be politically to the right and more conservative than other graduates. You can therefore infer that their radical fringe is closer to those of religious groups."

Hertog and Gambetta believe that a combination of social conditions and an engineering mind-set make engineers susceptible to radicalization.

The paper cites evidence that engineering graduates are much more religious and politically conservative than *those pursuing other courses*

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WHO CHOOSES ENGINEERING?

I HAD HOPED to find more data in "Extremist Engineers" [Careers, September]. Without knowing how many college-educated people there are in the pool of people who become jihadis, how can one reach any conclusion? My suspicion is that many of the college-bound from the Middle East select engineering because it is a profession where a bachelor's degree can get you a decent job in a Western democracy based on your skill, knowledge, and intelligence. Those who major in religion, psychology, and similar fields where cultural differences, connections, and prejudices make it more difficult to find employment don't migrate or otherwise acquire the skills and knowledge to function in the West. And while contact with the West and advanced technology directly or through academia may allow one to acquire the skills to become an effective jihadi, I believe that only a very small percentage of engineers who migrate to Western countries become jihadis.

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IS IT really so surprising to find engineering so well represented in extremist organizations? What other profession would we expect? If the researchers did a survey of the U.S. defense industry, my guess is that they would get similar results. Would that surprise anyone? I don't think so. Isn't the primary purpose of every militia to apply technology to defeat the perceived enemy? So why is it so surprising when a so-called extremist organization requires technology? And what is it that makes an organization extremist? *IEEE Spectrum* and the researchers may call them extremist, but I'd say they see themselves as freedom fighters or even liberators and see the cause as righteous. By the way, isn't liberation one of the many justifications we in the United States were given for our invasion of Iraq? The war has applied a massive amount of technology attempting to defeat our perceived enemy. It's not so surprising that groups who see us as the enemy would do the same. Extremists, terrorists, freedom fighters, defenders of democracy—whatever tag you hang on them—require applied technical skills, and who better to supply that than engineers?

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SCAT, CAT! BEGONE, BOMB!

HAVING READ "Countering IEDs" [September], I remember that in 1958 Varian Associates had a project to perfect a microwave device to find plastic land mines. They tested this system in a wooden shed containing a large sandbox and an apparatus that moved the microwave antenna at a constant height. The results showed that the system was able to find plastic land mines. However, stray cats had found a hole in the shed, gone in, and used the sandbox. The system could not tell land mines from cat scat!

A physicist at Varian told of being asked to evaluate an experiment in which trained dogs were to find land mines. The dogs were confined in a wooden pen while men buried the mines in an adjacent plowed field. The dogs would find the mines and be rewarded with a nice piece of meat. When the experiment was performed, other observers watched the men burying mines, but my friend watched the dogs. The dogs were watching the mines being buried through holes in the fence!

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CORRECTIONS

In "Battery Czar" [August], we wrote that "the software algorithm that controlled the firing of the spark plugs had to 'know' the position of every cylinder to fire at the optimal time." The algorithm had to know the position of every *piston*.

In "Energy-Efficient Ethernet" [Update, May] we stated, "In 2005, all the network-interface controllers in the United States—computers, switches, and routers all have them—burned through 5.3 terawatt-hours of energy, enough to keep 6 billion 100-watt lightbulbs shining all year." The figure should have been 6 million.