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Mathematician at War

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Synopsis

An assistant professor of mathematics mobilized as a member of the National Guard and deployed to Iraq finds mathematics and teaching skills surprisingly useful.

Three days after the birth of my first child in 2007, my National Guard unit mobilized for Operation Iraqi Freedom. So three years into my assistant professorship, I began a one year sabbatical in Baghdad with travel and lodging provided at government expense. Similar opportunities remain available; recruiters are standing by. However, be warned that the Army has transportation officers, not travel agents.

Before moving all the way to Iraq, I should explain the origins of my dual identity. In the late '80s, The United States Military Academy at West Point had outstanding recruiting brochures, well tailored to young men of even a mildly patriotic ilk. When I applied, I planned to attend, graduate, serve the obligatory five years on active duty in the Army, and return to civilian life. The plan almost worked. I graduated in 1993 with a degree in Middle Eastern studies and a commission as a field artillery officer. After five years, I left active duty and began graduate school in mathematics.

However, I had developed a passion for field artillery. The second best job in the world, after math professor, is cannon battalion fire direction officer. It is a challenging job to synchronize the activities of hundreds of people to fire dozens of ninety-six pound projectiles at targets up to fifteen miles away. Performance objectives do not get any more measurable. When the job is done right, the earth literally moves and shock waves figuratively pierce ones soul.

There are very few towns in the U.S. with both a mathematics Ph.D. program and a vacant fire direction officer job, but Lexington, Kentucky met

these criteria in 1998. Minutes from my classroom, I could keep my hand in the part of the military I loved, almost without being in the Army.

The key word there is “almost.” I mobilized for the first time a few weeks after passing my qualifying exam in 2003. I spent nearly a year commanding soldiers guarding Fort Campbell, KY while the 101st Airborne Division was deployed. At the end of that mission, I was halfway to retirement eligibility. I returned to school, finished my Ph.D., found a job, got married, and moved to my new school, but I remained in the Guard.

My deployment to Iraq in 2007 was with a detachment from a fires brigade headquarters. Our mission was to augment the headquarters of the division responsible for Baghdad, and among us were artillerymen, attorneys, multi-function logisticians, IT folks, human resource specialists, intelligence personnel, and a physician assistant. These were only some of the military specialties, and many of my colleagues had quite different jobs as civilians.

We trained for about two months in Oklahoma and Texas before leaving for Iraq. We learned to conduct convoys, fire weapons, administer first aid, and to be miserable. Pre-deployment training aims to make soldiers so miserable that they look forward to eventual movement to a combat zone. Our training achieved this objective, but someone did not get the memo. Thus our destination when leaving Oklahoma was not Iraq, but Kuwait, where we stayed for two additional weeks, all the while increasing our eagerness to be anywhere else, even Baghdad.

While in Baghdad, I worked twelve hour shifts in a large room resembling the classic Mission Control, workstations in tiers with screens at the front. I lived in a containerized housing unit or CHU, one-third of a shipping container outfitted with doors, electrical outlets, and an air conditioner. The air conditioner worked great except the day each week when generators were shut down for maintenance. Since I worked nights, those were miserable days.

I was able to purchase internet access in my CHU. Sixty dollars per month provided a connection so slow that I believe individual zeros and ones were processed by hand somewhere between me and the rest of the world. My room was a quarter mile from work, and a half-mile walk from either of these locations would take me to the post exchange, or shopping center. One could buy any manner of toiletries, electronic gadgets, cleaning supplies, fine Asian rugs, or jewelry. As incongruous as it sounds, there was also a Burger King[®] and a Harley-Davidson[®] dealership. I bought a Whopper[®] a couple times, but I did not get a hog.

At the beginning of my deployment, I expected to shelve my teaching skills for the year, but I was surprised to find them relevant. My background first came into play during our training at Fort Hood, Texas. We had the opportunity to train with some software the entire unit would use in Iraq, but no one was available to run the class. I had had about ten more minutes of experience with the software than anyone else in our group, and my boss knew that I was a teacher. I was given four hours notice to prepare a three hour class. I gave a lecture, directed group work, and concluded with an in-class assessment to ensure that my colleagues had understood the material. Years in the classroom definitely paid off that day.

Mathematics experience was helpful in Iraq, too. One feature of serving as a Guardsman is earning the respect of active duty soldiers. The respect is easier to earn than it was a decade ago, but initial doubts about our qualifications are still a fact of life. One evening my first sergeant answered a call from a sergeant major wanting to talk to “one of his guys,” meaning the active duty soldiers with whom we worked. None were available at the time, and the sergeant major would not talk with us. Two days later, we learned that what he needed was a math tutor for a junior non-commissioned officer taking an on line college algebra course. My first sergeant took great pleasure informing him that I was available.

I was able to help the young man with his course. During our first session, he came to me with his book opened to a particular example. I felt a twinge of shock, and I flipped a few pages, eventually turning to the cover. The text was Robert Blitzer’s *College Algebra*, the same edition that I had been using in my civilian life. For the next few weeks, lulls in the battle were filled with ten to thirty minute sessions of algebra that transported me back to the hallowed halls of academia. Word got out, and I wound up helping another soldier and an airman with their algebra courses, too.

Beyond tutoring, I found mathematics useful in my job. The immediate group with which I worked dealt with both friendly and enemy artillery and mortars. Basic geometry skills were critical to understand angles of fire and ranges of these weapons on maps. Experience with linear algebra helped to visualize three-dimensional space. This skill was important when planning the airspace de-confliction necessary to ensure that we did not shoot our own aircraft. We used radar cross sections daily. I had no experience with these before the deployment but adapted to them quickly from having covered earthquake and sound intensity as applications of logarithm functions.

My university was good to me during my absence. Federal law obligated

them to hold my job, but they went beyond that. They continued to pay my health insurance premiums, allowing my wife and our new child to see the doctors she already knew. The school also put my tenure timeline on hold, lowering the pressure on me to conduct research while exposed to rocket fire.

I am happy to report that my entire unit returned unscathed. I do not look forward to other deployments, but I expect at least one more before I retire from the National Guard. I have made fun of some of the misery I experienced, but I believe the U.S. Army is a noble institution. Like the mildly patriotic seventeen-year old that I once was, I still believe that the U.S. Constitution is worth supporting and defending. Recall the first-born child with whom I began this essay; his name is Cannon.