

EPISODE NINE OF "ARMED WITH SCIENCE: RESEARCH APPLICATIONS FOR THE MODERN MILITARY," A DEPARTMENT OF DEFENSE WEBCAST HOST: JOHN OHAB GUEST: DR. MARK DRAPEAU, ASSOCIATE RESEARCH FELLOW, THE NATIONAL DEFENSE UNIVERSITY'S CENTER FOR TECHNOLOGY AND NATIONAL SECURITY POLICY DATE: WEDNESDAY, APRIL 1, 2009

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ANNOUNCER: "Armed with Science: Research and Applications for the Modern Military" is a weekly webcast that discusses cutting-edge science and technology and how they apply to military operations. Each week we will interview scientists, administrators and operators to educate and inform our listeners about the importance of science and technology to the modern military.

DR. OHAB: Good afternoon and welcome to Episode 9 of "Armed with Science: Research and Applications for the Modern Military," on Wednesday, April 1st, 2009. I'm your host, Dr. John Ohab. We're joined today by Dr. Mark Drapeau, associate research fellow at the National Defense University's Center for Technology and National Security Policy. Mark will be talking about how emerging social technologies are impacting information sharing, collaboration and engagement within the government and with the public. Along this theme we'll be taking questions live during the show via the mircoblogging service, Twitter, so if you have questions for Mark, you can go ahead and post those questions to our handle at @armed.science. I'm going to do my best to choose a few of these questions along the way, so go easy on me. In addition, you also have the option of posting questions on our blog talk radio page, which is blogtalkradio.com/armedwithscience, and Mark can answer those questions after the show.

So, Mark, I'd like to introduce you, and thank you for taking the time to be here on April Fools' Day.

DR. DRAPEAU: Hi, Dr. John Ohab. It's really good to be with you. Happy April Fools' Day.

DR. OHAB: Yeah, I wish I could come up with some association between social software security and April Fools' but I'm just not going to be able to.

DR. DRAPEAU: Yeah, we've got nothing. We're probably two of the least funny people we know, unfortunately.

DR. OHAB: (Chuckles.) All right, Mark, at National Defense University you've initiated a project called Social Software and Security. Before we get into that a little further, can you get us all on the same page? Define social software and then tell us a little bit about how this project came to be.

DR. DRAPEAU: Well, there is a whole world of, you know, web- based tools, and people call them Web 2.0 and social media and social tools and social

technologies, and we chose to define the realm as social software -- and that's not a term that we came up with, but "social software" is a term that really encompasses the whole world of different software applications, whether they live on your computer or live out in the cloud somewhere on the Web that inherently are about connecting people and allowing them to share information.

And so, you know, we felt that especially for a government audience, that we largely serve, that people generally understand what software is -- you know, it's stuff like Microsoft Office that you use every day -- and people understand what social means, and so really I think you put these two terms together and it's software that allows you to be social.

DR. OHAB: Okay, so social software is connecting people and sharing information.

Mark, prior to your work at National Defense University you received a doctorate in ecology evolution and animal behavior at UC Irvine and then you received -- you later did your post-doctoral work at NYU in the field of neurogenomics. So a question you probably get a lot -- and I'm going to ask it again -- why is a biological scientist researching social software? DR. DRAPEAU: Well, part of the reason I came to Washington was because of a wonderful fellowship, that you're familiar with because you also received it --

DR. OHAB: Right.

DR. DRAPEAU: -- and it's called the AAAS Science & Technology Policy Fellowships. And when I was at NYU I was doing some really great research but I wanted to do more with my skills and think about how I could apply my scientific training outside the laboratory, and so, like you, I applied for this fellowship and ended up doing policy work at the Department of Defense.

And so my background in animal behavior really dovetails nicely with the idea of social software because the way I come at trying to understand the topic matter is as a big animal behavior problem. This is about individuals interacting within an ecosystem. It's about people sending signals to each other. It's about emergent properties of social networks that are very complex. And a lot of these are topics that people study in the realm of biology for various reasons.

And so I try to work in biological metaphors or scientific analysis into my studying and experimenting and understanding of social software and how that fits into the government, and more specifically, for DOD, how it fits into the realm of national security writ large, which nowadays includes not only what we traditionally called defense but also diplomacy and development.

DR. OHAB: Okay, so let's talk a little bit more about the Department of Defense. Why is it important for the Department of Defense to understand these social technologies and to be able to harness them?

DR. DRAPEAU: Well, the Department of Defense is simply the largest organization in the world. It has millions of people that work in it and with it, and it is based all over the globe, you know, over 150 countries, countless bases and small units, and people who have just a multitude of jobs. And we have so much human capital and yet at the same time we as an organization and the U.S. government in general, and large organizations in general, are not very good at sharing information within offices or between different units of the

organization or with other organizations or groups outside the organization that can help as partners in one way or another.

And so social tools, because at their essence are about connecting people and information, can, in principal, be very, very helpful for giving people platforms to share information with each other in ways that you really can't do with email or some more traditional forms of communication.

DR. OHAB: Right, and I think you've described an important point, which is that as these organizations are getting larger and larger, especially the size of the Department of Defense, there are going to be all these different conduits through which information can be shared. I'd like you to talk a little bit about how information sharing would work in and out of the government and maybe then provide some examples of these in the Department of Defense and maybe the military, or otherwise.

DR. DRAPEAU: Right. So I've been working with a wonderful colleague, Dr. Linton Wells II here at National Defense University, and we're ready to come out with, very shortly, a big DOD research paper called "Social Software and Security: An Initial Net Assessment," and in that paper we come up with a framework for government social software functions, and this includes four very broad functions of social software that are relevant to national security. And this might sound a little confusing over the radio with no diagram, but we call them inward, outward, inbound and outbound. And I can -- if we have time I can briefly describe these --

DR. OHAB: Yeah.

DR. DRAPEAU: -- and try to give you some examples.

DR. OHAB: That's a good idea. Do it.

DR. DRAPEAU: Inward -- what we call inward sharing is sharing within whatever your organization is, whether that's an entire agency or department or perhaps just your office.

So inward sharing is about individual people talking to individual people within offices and sharing information that isn't necessarily known to be important a priori but may be important, whether now or down the line.

Outward sharing is about your organization or department sharing information with other organizations or departments. So in the government that might be called the interagency process. It also includes networking with nongovernmental organizations, NGOs. It might include sharing information with local governments during an emergency situation. So communicating with people that are outside your organization and may not use the same tools or computer software, or you might have BlackBerries, they might have RAZR phones, so connecting across these different barriers.

Inbound sharing is about really interacting with the cloud out there. There's a whole cloud of people outside your organization that maybe have bits of knowledge but perhaps you don't know who those specific people are, and it's about doing things like what the White House did with Open for Questions. It's about doing things like crowd sourcing. It's about mainly getting lots of information inbound to you from unknown people to solve some kind of problem or answer some kind of question.

And, finally, outbound is about you largely sending information out to a group of people that are largely unknown to you. So that is in the realm of public affairs and things like public diplomacy. So there are many examples I could point to. I think, you know, with regard to inward sharing, there is a real need, to some extent, for tools like Twitter within organizations and for people to interact in that sort of way. One really great example from inside the government is something that the Transportation and Security Administration called Idea Factory, which is really just like an electronic Web-based suggestion box, and anyone within TSA can suggest things, and there is a process by which people vote on those ideas and then a process by which some of the best ideas become implemented. And within about a year of them doing Idea Factory, over 4,500 ideas are submitted and about 20 were actually implemented. And it's my understanding that the idea of TSA Idea Factory is planned to spread throughout the Department of Homeland Security. So that's a good example of inward sharing. There are so many examples I'm not sure -- maybe -- what do you want to concentrate on?

DR. OHAB: Well, how about this? We just got a question that relates exactly to this topic --

DR. DRAPEAU: Okay.

DR. OHAB: -- over Twitter. So it's @jesspalmer and she asks, "Pew finds 51 percent of Wired Obama voters expect to hear from him/his team directly. Are public expectations for Government 2.0 unrealistic?" So that's inbound.

DR. DRAPEAU: Yeah. You know, I've -- yeah, that's very much inbound. Yeah, so, you know, I've been looking at this topic for about a year and gradually, over the course of that year, to some degree because of President Obama -- now-President Obama's campaign and the excitement surrounding his use of social tools, the larger Web 2.0 community was very excited, and I do feel like their expectations have been and probably continue to be very, very high. You know, one thing I remember was I think the first day of the Obama administration, immediately after the inauguration people were complaining that his new blog wasn't Web 2.0 enough. And that's a terribly realistic understanding of how government works, even when government works at its best.

So, is it unrealistic for individual people to expect to hear directly from the Obama White House? Probably. It's a very complicated topic because, frankly, the White House staff itself is very, very small and there are millions of people that work for the government. Something like 90 percent of them are not even in Washington, D.C. And, really, people shouldn't be looking so much at the White House per se for direction or communication but perhaps to individual, specific offices within specific agencies that are working on things in a micro niche of interest to an average citizen. And so one thing I've been looking at in terms of my research is how relatively small offices within the government can create personal brands, if you will, and market those brands to citizens that are interested in the micro niche that is their responsibility or mission, and how a two-way communication can come about where people -- maybe there is a hundred people that are interested in one specific USDA office -- how those 100 people can interact better and be heard by that office and how the office can communicate better to the citizens most interested in that topic.

So there's a lot of focus on the White House because of the excitement about the president and the excitement about the campaign, but the reality of the government is very different than the reality of the campaign.

DR. OHAB: Right, and you've mentioned one obstacle, for instance the White House, perhaps their sheer manpower is going to limit their ability to utilize all these tools in the way that people might want. What other kinds of obstacles will hinder getting these tools into the DOD workforce?

DR. DRAPEAU: Sure. I'm certainly not an expert in it, but there are all kinds of policies and rules and regulations that deal with government paperwork and record-keeping and, you know, accessibility and things like that that limit what we can do with Web pages, so I won't elaborate on that because it's been spoken to by people much better informed than I am. But just more generally regarding the entire DOD and the entire government, you know, we have a very complex system, by design to some extent, of interagency interactions, overlapping responsibilities, large bureaucracy, political appointees, elections every two years in Congress and every four years in the White House, and all these things lead to various impediments to really implementing, you know, social software government-wide or DOD- wide.

We also have interesting employee demographics within the government that largely differ from the private sector, and so that, again, it can be very difficult to attract and retain younger people who may be more familiar with these tools inside the government, for example, and people tend to stay employed by the government for a long time once they get past, say, five years. And so we tend to have many older and experienced people in the government that largely are not digital natives and to some degree are less familiar with the tools.

So all of these different things sort of combine into a very complicated system within which the evangelists are trying to incorporate a very sophisticated new set of tools, and it is a great challenge to try to do that, as important as it might be.

DR. OHAB: So let's get back to security because we actually have a couple of questions that are coming in on Twitter related to this topic. AFPAdude -- @AFPAdude -- I'm assuming that's Air Force Public Affairs.

DR. DRAPEAU: That is indeed.

DR. OHAB: "If the Public Affairs needs to be on Twitter outward social media, how do we overcome the risk to network security? Is risk overstated?"

DR. DRAPEAU: Well, I think that's a great question and I think it's one of the right questions to be asking. And my colleague, Linton Wells, who I wrote the paper with, is the former acting CIO, chief information officer, of the Department of Defense, and so this is something he has dealt with at a very high and personal level. And to some extent, we're trying to get across in our paper the idea that it has to be -- the focus has to be not so much on information assurance, which is largely overlapping with information security and computer security -- so it shouldn't be so much information assurance but it should be mission assurance. And, you know, it should be about completing the mission and taking on a certain amount of risk, if need be, to get the job done. And so, while cyber security is a very serious and important issue, completing your mission is a more serious and important issue, if you will. And Lin often uses the example of a submarine or a boat. You don't build a boat never expecting water to get into it. You build it with certain safety features and contraptions and, you know, bays that you can lock off or shut down because you expect some degree of water to get into the hull. And, similarly, you need to

think a little bit more about information security like a ship where some water can be allowed into the hull as long as the ship stays afloat.

DR. OHAB: Okay, and so obviously some of these social software tools have played a role in a number of foreign national security events. We can name a variety -- the terrorist attacks in Mumbai, the current Israeli military action in Gaza. From the U.S. perspective, how can the social software be used for intelligence and security purposes? And we actually have a question that relates to that by Drew Conway (sp) on Twitter: "How can the intelligence community best reconcile the need for secrecy with the push for transparency by the Obama administration?"

DR. DRAPEAU: Yeah. You know, again, these are really great questions, and the deputy CIO of DOD once compared the balance between security and sharing to the balance between inhaling and exhaling. And this is -- we need both of these things. And so certainly there is information that must be kept very private. At the same time, as secret as an organization may be, there still is a real need for sharing within the organization and also, you know, listening to conversations that are going on online and not online and perhaps communicating with those entities.

And so, again this goes back to the idea of mission assurance.

If the mission is to be aware of rumors that are spreading about the United States that may have potential consequences, or if the mission is to be aware of people trying to overthrow the government of Egypt, if those conversations are happening on Twitter or if the groups are organizing on Facebook and these are things that have already happened, then people need to have access to Twitter and Facebook and anything else that's relevant.

And so there are lots and lots of examples. People using Facebook to rebel against the oppressive Egyptian government is one. People reporting the terrorist attacks in Mumbai in real time is another. The Israeli consulate in New York talking about their incursion into Gaza is yet another. And very, very recently the coup d'etat in Madagascar was a very interesting situation because there was a rumor on Twitter -- I believe in French -- that the deposed president was hiding in the U.S. embassy. And the State Department needs to be given a lot of credit for having an official Twitter account already going that people trust, that they were monitoring the conversation, and that they put down the rumor, certainly within an hour, on Twitter and then later sent out a press release to the mainstream media to explain the series of events, and that prevented a potential siege of the embassy or something of that nature.

So in terms of intelligence, people simply need access to tools that can help them accomplish their mission.

DR. OHAB: So I've heard you refer to yourself not as a social software, social media advocate or user or evangelist but as a social software experimenter. Can you tell us what that means?

DR. DRAPEAU: Sure. You know, I think this goes back to my training in history as a laboratory scientist. And if you are a geneticist or a genomicist or an animal behaviorist and you want to find something out, you get in the lab and you experiment, you make predictions, you manipulate the system and you look at the outcome and see if that fits with your original worldview and your hypothesis and predictions. And if it does, then you take the next step and try

to figure out more about the system, and if it doesn't you go back and reassess and form a new hypothesis about the way you think the world works.

And so I never really call myself a social software consultant or expert or anything. Perhaps I call myself a maven because I'm enthusiastic about it, but I think social software experimentalist really sums up the way I approach studying the topic because I have strongly felt that you need street smarts to understand this kind of stuff and not book smarts. And I tell people, when I occasionally talk about this, that, you know, you can go find a book at Barnes and Noble about social software or about Twitter, and you can read that entire book about Twitter and you still don't know anything about Twitter, because if you've never used it you really, truly don't understand.

And so I'm a strong advocate for people, in their personal lives, using personal blogs, having a Facebook account, experimenting with mircosharing on Twitter and doing any number of other interesting things that might suit their lifestyle, their hobbies, their family, their personal time. And if you experiment in that realm, you have a much better understanding of what people are doing with it, what you can do with it, and what these tools are capable of that can then influence what you might take into work with you. Not all --

(Cross talk.)

DR. OHAB: I'm sorry.

DR. DRAPEAU: Not all these tools are useful for every single office and every single work situation but some of them are. And so I've spent a lot of time experimenting with attending Web 2.0 events outside of D.C., experimenting by doing long-form blog writing, experimenting on my Twitter account, which is @cheeky_geeky, and doing a number of other things to try to understand how people are using these tools so that when someone inside the government asks me how they might use podcasting to promote some aspect of the organization, I feel like I'm genuinely, firsthand, well informed rather than having merely read about how to do it.

DR. OHAB: Now, how do we take that and apply it to people who aren't necessarily inclined for these technologies to create kind of a culture of social software experimentation in the government, or in DOD?

DR. DRAPEAU: Yeah, well, you know, I mean, some people aren't great to talk to on the phone, some people aren't great at running a meeting, some people don't write great emails, and I think similarly with social software. It's not that every single person needs to be great at it or even using it, but I do think there needs to be more education about what social software is and how you can use it to make your office or your mission better. And I think it really requires a lot of strong leadership from the top. It requires a commitment from people that are in charge of personnel, readiness, human resources to make sure that people have training, just as we have training about cybersecurity and any number of other things around the office and within the government, and it requires that people have access to these tools so that they can actually experiment with them. And I don't want to call out the exact agency, but the most egregious example I'm aware of is an office involved in public affairs, part of whose mission is to put videos about the government on YouTube and in their office they don't have access to YouTube. And so, you know, these kinds of situations are confusing, they're inconsistent, and in the end they really hurt the mission. And so I hope that through education and through education and through research papers like Dr. Wells and I have produced, and through more

events like the recent Government 2.0 camp, that gradually people come to understand more about the benefits of the software and the risks and try to incorporate that into their daily work.

DR. OHAB: And I think you've raised another parallel between science and social media in that there's a lot of people who just don't get it, so to speak, and let's apply this to science. How can we use social software to improve the scientific process, to start to involve the general public and promote public participation in science?

DR. DRAPEAU: Right. You know, this is something I'm actually increasingly passionate about, having come from science and now looked at social software a lot. You know, in science there are many labs that often work on very similar topics, and you experiment and you make a lot of mistakes, despite best intentions, and those mistakes are hardly ever reported. They don't show up in the published literature; they're not blogged about; people usually don't bring them up in talks. And so what you have are people in all different labs, really around the world now, trying the same experiments, spending the same amount of money on the same equipment, and making the same mistakes and never telling each other about it. And so really it's a lot of wasted effort.

And people -- scientists as a group who are working on the same topic would genuinely be a lot better off as a group if they all shared their mistakes. Now, that's sort of a complicated topic because there's a lot of incentive to keep that information private -- individual incentive to professors and laboratories. And so that goes sort of beyond the realm here. But I think science is one of these terrific examples where more information sharing would genuinely benefit everyone but you need to get over some kind of barrier, a mental barrier, that keeps you from sharing information with potential competitors.

DR. OHAB: I'm going to encourage everybody who's listening, if they have questions that they want to offer over Twitter, now is the time. I've got about one or two more questions left for Mark and then the show is going to be done, so take advantage of this opportunity.

So, during the course of this discussion, Mark, we've heard you use a lot of terms -- social software, social media, new media, Web 2.0, Web 1.0 -- and this whole idea of Web 1.0 and 2.0 suggests that there's some kind of incremental step in the way these softwares or the Internet is going to develop into the future. Is that assumption correct, that it's an incremental development, evolution, and what's next? What's next with social software in the future?

DR. DRAPEAU: Well, Web 2.0 was a term coined by Tim O'Reilly, who is a Silicon Valley guru -- a longtime guru in, you know, Internet technology, publishing and events, and it's borrowed from the fact that, you know, software producers often version their software and they say, this is Windows 3.0, this is Windows 3.1, and 3.1 is incrementally better than 3.0.

So it's borrowed from that but I don't think necessarily that the Web -- or sometimes the term is used Government 2.0 -- really should be versioned in that way because it's not like we're going to have a Web 2.3 and then a Web 2.7 and then eventually we will get to Web 3.0. It's really just a nickname to describe the difference between, you know -- well, the thing that Web 2.0 is all about is people, at the end of the day, effortlessly shifting between being the author and being the audience, and everyone can sort of participate on everyone

else's website. It used to be that the New York Times would publish their website and that would be it, and no one could touch that website, but now anyone can go on there and leave a comment and alter their website. And that's a very profound difference.

So the definition of Web 2.0 and Government 2.0 goes beyond that but that's the essence of it. So it's a nickname some people, including me, have tried to get away from it to some extent, but it's very catchy and so I think it's here to stay. But Government 2.0 is really part of a larger movement that people call open government, which encompasses a lot more than merely incorporating social software in the government, but it means the government being more accountable to the people, being more transparent to the people, and working better with the people. DR. OHAB: And what is the Web 3, 4, 5.0 going to look like, whatever that terminology is?

DR. DRAPEAU: Well, I think what commonly is described as Web 3.0 incorporates what people commonly call the semantic Web, which is making everything on the Web machine-readable, meaning you can go to a website perhaps and pull up a database or a pdf file or -- you know, you can pull up information in various ways but some of those file formats are readable by machines automatically, that can take that data and do something else with it, and some are not. And so, in the future we will have a more semantic Web where we can invent software that can take information from all different parts of the Web and automatically do other things with it and make better use of it than it merely sitting in a government database somewhere. And that's going to influence everything.

It's going to influence how we geographically mash up data, how we share health care data, how we use search engines. The search engines, quite frankly, will be better because if you search for Arnold Schwarzenegger health drink on Wikipedia you get the Arnold Schwarzenegger Web page.

DR. OHAB: I do that every morning.

DR. DRAPEAU: Yeah, no doubt. And instead what you can have is a customized search engine result that combines things that seem to be relevant to exactly what you typed in, meaning Arnold Schwarzenegger and how he uses health drinks or endorses health drinks, or controversies with health drinks and things of that nature, which is probably what you're really after, and instead what we have now is an Arnold Schwarzenegger page that may or may not even mention health drinks in it. And so the semantic Web will start to help with that.

DR. OHAB: All right, we're going to hold you to it.

DR. DRAPEAU: That's a very high standard. (Chuckles.)

DR. OHAB: Dr. Mark Drapeau, we really do appreciate you taking the time to be here today on "Armed with Science." Is there anything else you'd like to add -- websites, handles, anything else? DR. DRAPEAU: Well, first I'd just like to apologize for not having enough time to really play an April Fools' joke on your audience. John and I, I think we meant very well but we just didn't have time to think of one.

DR. OHAB: You can still announce you run for the presidency if you want.

DR. DRAPEAU: That's right. (Chuckles.) I'm going to put that off a few years I think.

DR. OHAB: All right.

DR. DRAPEAU: I think it's the Senate and then the presidency. But I will tout MarkDrapeau.com, and actually I have a very nice satire in there for April Fools' Day about Michael Phelps and some of his recent controversies, so I welcome you to listen to that. And I welcome you to follow me on Twitter, if you don't already, and you can find me there @cheeky_geeky.

DR. OHAB: All right, Mark, thanks a lot.

DR. DRAPEAU: Thank you very much.

DR. OHAB: Listeners, please tune in next week, Wednesday, April 8th, when we are joined by Captain Jeff Currer. He is the head of the U.S. Navy's Undersea Surveillance Branch. Captain Currer is going to help us demystify sonar, and then we're going to discuss how the Navy uses underwater sound for navigation, localization and classification.

Thank you again for joining us. I'm Dr. John Ohab, and you've been scienteced.

END.