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ADDING FUEL TO THE WI-FIRE:
WHAT IS THE NEXUS BETWEEN SOCIAL MEDIA, EMERGING TECHNOLOGIES AND
DIGITAL RADICALIZATION?

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Featured Guest:

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P R O C E E D I N G S

MR. SINGER: Hello. I'm Peter Singer, Director of the 21st Century Defense Initiative and I am excited to welcome all of you to this session on "Adding Fuel to the Wi-Fire: What is the Nexus between Social Media, Emerging Technologies, and Digital Radicalization?"

Our program, the 21st Century Defense Initiative at Brookings, wrestles with how issues of politics, war, and technology are not only changing but also intertwining, bringing together both new possibilities, not imagined just a generation ago, but also new perils.

There's probably no one whose work better encapsulates this intertwining than our speaker today. Ben Hammersley has worked as a journalist for outlets like *The Times, The Guardian,* and for the last five years as an Editor-at-Large of *Wired UK Magazine*.

His reporting has crossed both war correspondents, from dangerous places like Afghanistan and Iran, to reporting on technological trends and innovations including even first coining the term "podcasting".

He's also engaged on the policy side, advising a variety of efforts in these spaces, including as a member of the European Commission's high level expert group on media freedom, as a consultant to the Foreign and Commonwealth Office on Modern Diplomacy, and finally as the UK Prime Minister's Ambassador to East London Tech City, which, for you Americans, is a hub of approximately 200 high tech firms modeled after Silicon Valley, having much worse weather right now than Silicon Valley is having. London is having some of the worst weather in history this summer.

And finally, he's a noted author of both technical and programmer's guides, but also more general audience fare including his upcoming book, *64 Things you*

Need to Know Now for Then, which attempts to demystify the Internet, decode cyberspace, and guide readers through the innovations of the revolution in technology that we're all living through today.

In short, Ben is a brilliant thinker and writer whose work captures what is so special but also so challenging about the 21st century, and thus, it's a great honor for us to welcome him. (Applause)

MR. HAMMERSLEY: Thank you very much. That made me sound much better than I am. Excuse me for a second whilst I pull out these notes.

As has just been said, we're having an extremely bad summer in London and so I'm not used to this heat, even in the air conditioned room, this is still warmer than I can remember, so please excuse me as I disrobe gently over here.

As has been said, I do lots of things. I'm the Prime Minister's Ambassador to Tech City, which means that I have diplomatic immunity in one small part of London. I'm the Editor-at-Large of *Wired Magazine* -- Editor-at-Large, for those of you who don't know, is a job title, which means that I'm not allowed to go into the office anymore, being too disruptive.

I make my living really as a futurist, the idea of a futurist being somebody who talks about the future, talks about things that are going to happen, tells stories about the future, and we tell stories about the future not so much to understand the future but to understand the present.

But nevertheless, I am paid to try and live six months in the future and many of you will be happy to know that in about four months time, PowerPoint is going to be made illegal worldwide, and so I'm not going to have any slides or anything to show you, I'm just going to talk at you for the next half an hour.

William Gibson, the great science fiction writer, said that the future is

already here, it's just not evenly distributed, and one of the things that I do in my work is attempt to highlight what is happening around the world at its very extremes and bring it back into the center so that politicians and policymakers and strategists and so on can learn to understand what is about to happen to them and take what is happening today and extrapolate it forward over the next 10 or 15, 20, 30 years.

One of the most important rules to extrapolate, one of the things that I think is most important for people to understand, is Moore's Law. Now, of course, everybody in this room knows what Moore's Law is, but for the two people who are looking at me blankly I'll just get back into it. Gordon Moore was the engineer in charge of Intel in the '50s and '60s and '70s and he looked, in about 1963, I think it was, he looked at the chips that he had been making and he said, this is a really interesting trend. For the same price, the number of transistors on the chip seems to be doubling every 12 to 18 months, and this seems to have been happening every 12 to 18 months since we started making chips. And he said, well, I wonder if this will continue.

And he went back to it a few years later and redrew the graph and he found that it was, indeed, the case that every 12 to 18 months, for the same price, the number of components on an integrated circuit would double.

Now, this became a sort of bit of computing folklore that basically says every 12 to 18 months, for the same price, computing power will double or, conversely, the same amount of computing power will halve in price every 12 to 18 months.

And this is the situation that we've been finding -- we found ourselves in since the '60s and, indeed, is probably a situation that we're going to find ourselves in until around about 2030 or 2040.

Now, the engineers in the room will point out there are lots of issues with that, but it's a good rule of thumb to go with.

This Moore's Law has many, many implications and I would say that it is the understanding and appreciation of Moore's Law, which is the key to understanding the modern world and the key to looking at all of the problems and the issues that you, as individuals, and we, as a group, all face.

The first thing is that it makes planning really, really difficult. As has been said, I work for the British Prime Minister and when David Cameron walked into Downing Street a year and a half ago, he had in his pocket an iPhone 3GS. Now, iPhone 3GS, you may remember, a couple of years ago was a miracle piece of technology, it was a magical bit of kit. I mean, obviously, now it's a piece of crap, but then it was amazing.

Indeed, if you'd gotten into the secret time machine we have underneath Downing Street and gone back five years, with an iPhone 3GS, you would have been burned as a witch.

Now, iPhone 3GS then, amazing piece of technology, now pretty rubbish piece of technology.

Let's say the Prime Minister remains Prime Minister for two terms. In eight years time he leaves Downing Street with an iPhone, what, 15? That's probably going to be around about 128 or 256 times as powerful as the phone that he had when he started being Prime Minister. Or, conversely, he may still have an iPhone 3GS, but it will be 128th the price, which means it will be around about five bucks and therefore free with a packet of crisps.

The possible for that reduction in price or that increase in power of a very simple but very powerful piece of technology like one of these is the defining sort of driving force behind the modern condition. It makes, for politicians, life very, very difficult because the Prime Minister, for example, right now, is attempting to make all sorts of

interesting laws that govern technology which won't come into force for another couple of

years, by which time the technology he's writing those laws about won't exist anymore

and will continue to be in power for maybe 10 or 20 years, by which time those laws will

be enacting themselves on technologies which we can't even possibly imagine.

This isn't a sane situation at all. Now, that won't stop politicians from

doing it, but it means that we have to really consider it, for those of us who are more

thoughtful about it.

I was at the Royal College of Defence Studies in London a few weeks

ago and we were doing some scenario planning around 2045. Now, of course, that's

completely mental, 2045, just going by Moore's Law, means an increase in technological

capability of 4.5 billion times, it means that the sorts of things that we were talking about

are things that we can't possibly imagine, we can't possibly know what the world is going

to be like in 2045 simply on the basis of what Apple and Microsoft and all of those other

companies are going to produce.

Now, for national security and defense and all of those related topics, the

main problem is, in fact the inverse, is the halving and halving and halving again of the

price of technologies because every possible new and scary technology that we can think

of, anything that you've ever scenario planned, anything you've ever dreamt about,

anything you've ever read in a thriller will eventually become so cheap as to be trivially

available to anybody.

We're starting to see this in pretty much anything you can think of,

drones, for example. Military drones, very, very expensive. Consumer based drones,

very, very cheap, increasingly cheaper every year. 3-D printing, increasingly cheaper

every year. Biological synthesis, increasingly cheap and available to everybody over the

Internet with a credit card.

Any interesting doomsday style technology that you can think of is, effectively, available today or in a couple of years' time with your parent's credit card and an Internet connection, and that's the scenario that we find ourselves in. Just the general thrum of technology moving forward means that these technologies, these dangerous technologies are increasingly available to everybody and will inevitably become available to anybody.

Now, this means that under current defense philosophies, under current ways of thinking, technological innovation inevitably leads to a constant state of asymmetric warfare. It means that we're constantly, daily -- every day, day after day, going to have to be more and more paranoid about stuff if we continue in our current way of thinking about threats.

I don't think that's really a life that I personally want to live, nor is it a way of governing or a way of running a country or a way of operating as an organization that is sustainable.

The inevitability of these technological innovations, the inevitability of the halving and halving and halving again of prices of these technologies means that at a certain point, everything is possible and available to everybody, at which point, we have to change the game completely.

So, we really need a new philosophy, a new way of reflecting on the present and the future conditions. And we really need, therefore, to start from the beginning and do an awful lot of hard thinking about what it is that we're protecting, and against what, and against whom. When we're talking about security, what does that actually mean?

So, let's look at the world as it is today. We've got lots of different groupings. Let's taking the groupings. You've got nation-states, of course, you've got

international alliances, something like the EU or NATO. You've got non-nation-state

actors, every different flavor, from al Qaeda on upwards and downwards. You've got

religious and cultural groupings, of course, diasporas of interest facilitated through social

networks; Facebook, Twitter, Google. We've got multinational companies -- Shell, Wal-

Mart, all of those. And then we've got the really dubious, non-nation-state actors like the

International Olympic Committee.

I was reading on the Internet yesterday -- I've been away from the UK for

a couple of days and obviously we're 10 days away from the Olympics and people are

getting quite tense about it and somebody pointed out yesterday, I think it was on Twitter,

he said that we used to think that hosting the Olympics would be like the Queen hosting a

tea party, and we now realize that hosting the Olympics is like John Hurt hosting the

Alien.

So, we have all of these different new and interesting international

organizations and international groups and so on, that make the world infinitely more

complicated than it ever has been before, but we need to make a true examination of all

of the interplays between these different entities before we can possibly have an idea of

what national security actually means.

And when you do that and you do that without emotion, you find that the

major threats to security, to our way of life, to our prosperity, to our possibility of

prosperity, possibility of thriving, is not kinetic warfare or terrorism, but it's, in fact,

espionage and crime and cheating in general. Those are, in fact, the biggest threats to

liberty and the pursuit of the good life in the modern era, specifically because of the

massively interconnected and Internet-driven globalized world.

And yet we seem to spend an awful lot of time thinking about China, for

example, turning off the power grid and rolling their tanks westwards across the

Mongolian Steppe, than we worry about mafia stealing blueprints or Nigerian gangs

fishing for credit cards, and one of those is very, very present and very damaging and the

other one is an entertaining reason to spend billions of dollars but not really a national

security issue.

Indeed, when you start to look at national security based on all of these

other groupings, you start to find all sorts of interesting new enemies. You could say, for

example, that Barclay's fixing the Libor rates, the big scandal in London at the moment,

was itself the finest example of cyber warfare we've ever seen. It may well be a

corporation and not a nation-state, but to be frank, that's kind of irrelevant. For a start,

they have more money and more people than many nation-states, perhaps even more

physical territory than many nation-states, but nevertheless, information was manipulated

by malign forces and that resulted in a reduced ability of our citizens in the UK and in the

U.S., and many other countries, a reduced capability of them to prosper and to live the

good life.

Now, if that had been done by Iran, say, rather than by Barclay's Bank, it

would have been considered a major act of war, or at least would have caused a major

international incident. The fact that it was caused, however, by a bank rather than a

nation-state doesn't seem to me to actually change anything as far as my ability to pay

my mortgage is concerned. And I believe that actually as we go forward, the average

citizen will cease to see the difference as well. We're starting to see this in London after

all of the banking and media scandals.

If you want to put some money on it, I would say that the replay of last

year's London riots is going to happen about two weeks after the end of the Paralympics.

Invest in fire insurance.

Now, all of these new threats, all of these new things, come against the

backdrop of changes in the status of the nation-state. If we're talking about national

security you have to think about what is the nation-state itself. Now, of course, I'm

coming at this from a European point of view, so scale everything downwards or just nod

tentatively.

What we seem to be seeing, at least in Europe, is a hollowing out of the

political situation. Anything that can go upwards, goes upwards. Anything that can go

downwards, goes downwards. What I mean by that is, defense goes up to NATO,

international finance goes up to the European Central Bank or up to the markets or the

information flow, whatever you want to call it. Things that make sense, like food safety

and border security and all those sorts of things, they go upwards as well, up to Brussels.

And then at a national level, anything that can go down, anything can go

down to the town or the city or the village -- education, health, all of those things -- that

goes down as well.   And what you end up with is national governments who really don't

have a reason to exist.

Indeed, in Belgium they didn't have a national government for a couple of

years, nobody really noticed. I mean, I know Belgium is weird, but it's the same thing in

the UK. The end of the sort of neoliberal project in the UK will be the Westminster MPs

kind of looking at each other a little bit awkwardly because they've given all their power

upwards or downwards.

Indeed, think of if you were an ambitious young person in the UK and

you had the choice between being a backbench member of parliament or a senior person

in a town council or a new executive mayor, the most ambitious people would happily go

to the city government and not to the national government. That's a new and quite

radical change, I think.

Now, this hollowing out of the nation-state, this sort of making it slightly

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less worthwhile to deal with, has lots of interesting ramifications as we move forward. I

already talked about all these other national bodies. This brings up new interesting

questions for diplomacy. Imagine, for example, you've just been made the British

Foreign Secretary, you come into your office, it's very nice, wood-lined, beautiful thing,

looks out over Horse Guards Parade, which is hosting the beach volley ball this year for

the Olympics, so you've got a good view and your senior civil servant comes in and they

say," Congratulations, Minister, you have a limited budget here for ambassadors, and we

have to decide where we're going to send our ambassadors."

Now, perhaps not today, but certainly very soon, you might say, well,

why are we sending a guy to the Maldives, say, that ambassador is going to sit on the

beach, get a tan, possibly help some tourists every so often, but we're not sending an

ambassador to Google or to Facebook or to Wal-Mart or to Shell, which has more people,

more money, perhaps more territory, and certainly more day-to-day influence on the

economic and social life of the UK than the Maldives does.

The fact that one is a nation-state and the other is a multinational

corporation is really just a matter of definition.

So, what we're starting to see is a complete redefinition of the

boundaries between all of these original job titles and the charts that are necessary

based solely on the onward march of modern technologies.

The threats, therefore, I would say, when we talk about cyber warfare or

we talk about any of the sort of technologically mediated conflicts, are not so much kinetic

military threats, they're more social, they're more criminal, diplomatic, cultural, and

they're both very, very local and international, and less national, if that makes sense.

They're either very, very small or very, very big, and they're not this weird, middle-sized

thing of the European-sized nation-state. Of course there is a scale problem, but you

could move it up to the state level and the federal level.

However, at least in Europe and in the UK, the response so far has been -- from the government or military, has been framing these threats as military ones, the old saying about generals are always fighting the last war, but I would say that these frameworks are entirely wrong. The way of thinking about these threats, radicalization, cyber warfare, and so on, are based on entirely the wrong metaphor, entirely the wrong framing.

Instead I would suggest that we start to talk about digital radicalism, about cyber warfare, about all of cyber crime, all of these different things, whatever you want to call it, not as a military issue, but as a public health issue, as an epidemiological issue.

Even for an island nation like mine, we can't build a big wall all the way around the country and because of that, be safe in the knowledge that we're not going to be vulnerable to any of these new forms of threat.

Well, we could, but we'd have to become North Korea. And as a free nation we don't want to become, as the buzzword is, China-compliant. We don't want to be that anymore and so -- not anymore, we don't want to be that at all -- we don't want to be that at all, and so therefore we have to think of a new way of framing it.

The military is very good at building fences and holding borders, but the threat is not a border-based one, it's a viral one, it's an epidemiological one. And the only response to it, really, is to treat it, as I say, as a public health issue, to educate, to vaccinate, to isolate, to treat all of these cyber weaponry, botnets and so on, as infections in the same way as you would as if it was bird flu or TB or chicken pox or measles or whatever it is.

And once you start thinking about these sorts of threats as not being

nation-state versus nation-state, but just part of the weather, part of the weather in the

same way that flu is part of the weather, then this enables you to defend yourself and

what really matters, your individual -- the individual prosperity and rights and ability to

create prosperity of your citizens in a much more interesting way.

Now, of course everybody is -- I'm not saying that we should disband the

military and just move to providing Norton Anti-Virus for everybody, but as you move

forward along these scenarios of dangerous technologies becoming ever cheaper and

ever more available, what you come to the conclusion is, very rapidly, is that there are so

many threats -- and you can think up so many more every new day -- that it isn't possible

to defend yourself against all of them.

There's really only one way to win this game at all and that's not to play

in the first place. True defense isn't the ability to kill the other guy, it's to make sure that

the other guy doesn't want to kill you in the first place, which is why, I think, given the

option between total war, based on the fact that Occupy, next year will be able to afford

some really shiny stuff, and not having total war, it's best to not do it at all.

And education and soft power and diplomacy is really the final endpoint

of all of this. And the State Department's 21st Century Statecraft initiatives are a fine

start, if not the end.

The Internet was driven, initially, by, of course, military spending and the

space race. And there are two ways of exploring space, there are two ways of

conquering space. The first way is to take a guy and stick him in a box and stick it on the

top of a big rocket and punch your way, penetrate the atmosphere and punch your way

into space with lots and lots of noise and power. And that way you learn some interesting

stuff.

But the really -- the best way of exploring space is to go somewhere

very, very, very, very quiet and sit and listen. Now, that, I think, is the beginnings of a new framework of genuine defense against the possibility of immense amounts of threat that we need to start to explore the threats by listening rather than by punching into them.

Now, that might sound like a call for a surveillance state, and we're at the risk of gaining one in the UK, but it's certainly not. I mean, quite apart from the technical challenges of recording everybody's email and the fact that we'd have to hollow out whales to hold all the hard drives, and the sheer futility of it all, because as Editor-at-Large of *Wired Magazine,* I can just publish a guide to using VPNs and then it's broken.

The biggest problem with a total surveillance state is that it doesn't allow anyone to surrender. If everybody's been reading your mail for the past few years, you can't change your mind about things.

Now, this really highlights the fundamental problem, I think, which is that we're treating technology and insurgent uses of it, as a technological issue. We're treating all of these things as machines, as black boxes, as systems with threats and numbers against them, whereas it's not, at least not anymore, because we've reached a moment in time where these new technologies are being absorbed into the human condition.

You can all see this from your usage of cell phones, for example. I'm sure quite a lot of people, when they came into this room, turned your phones off, or at least turned them to silent. And right now somewhere in the back of your head, maybe 10 percent of your brain, is freaking out a little bit because you're wondering if anybody's emailing you, and there are some people in this room who are freaking out right now because they haven't checked Twitter in the past half an hour.

The use of modern communication technologies are becoming part of our psyche, they're becoming part of our soul. We start to see this from the way that it

changes mindsets. I will guaranty you that there are plenty of people in this room who can only remember three phone numbers, their own, their lover's, and their own when they were ten.

SPEAKER: What was the third?

MR. HAMMERSLEY: Their own, their lover's, and their own when they were ten. Hopefully they're not all the same. (Laughter)

Having these modern communications techniques has changed the way that we think and changed the way that we operate. It's even changed the way we learn. We don't, for example, learn facts anymore, we learn pathways. We don't learn individual facts, why would you bother? We learn how to get to those facts. Pub quizzes are completely ruined now, of course. It's not a test of general knowledge, it's a test of typing speed.

But these modern technologies have fused with us in a way that has given us, in many ways, super powers as individuals. Everybody here has a phone, which enables them to talk to many, many billions of people on the planet, to locate themselves in the universe within three feet, to be able to summon a cab to the front door by moving your thumbs. It's given you super powers and it has given everybody on the planet super powers.

Until we start to really genuinely understand what this technology has done to individuals and we start to understand that the technology and the individual has come together in the way that we operate ourselves, we'll never really understand the genuine threats or opportunities of these technologies.

In the end, it's not, as I say, technology that's the issue, it's the individuals who have absorbed the abilities of those technologies. And those individuals with their hopes and fears and needs, those are the things that need addressing and not

the dark possibilities of drones or the Internet.

In the end, the best defense against threats to a newly technological world isn't offense, but humanity, and perhaps, friendship. But that won't come until we have a leadership that completely and thoroughly understands those new technologies and how they work, and today we don't have that. We have, in fact, in many cases, entrusted our future to people who are thoroughly confused by the present.

Now, you here today have a responsibility to educate those leaders and to become those leaders yourselves in the next few years, and I think it's very important that we start to talk about the medium-term and long-term futures where these threats are so great that we actually have to start again and reassess everything that we're doing from a national security standpoint, both defining what is national and what is security.

If we don't do that, then we are doomed to be fighting the last millennium's wars with this millennium's weaponry, and as everybody in this room knows, that is not a happy place to be. I wish you all an awful lot of luck in this endeavor and thank you very much for having me. (Applause)

MR. SINGER: So, first, fantastic talk. You obviously touched on so many different big trends that are playing out here.

Before we turn to the audience I'd like to poke you on two areas, one is, you began with the Gibson quote about how, you know, essentially the future is the present distributed in different ways. Where is America in that distribution, particularly connecting to the trends that you talked about, not just in diplomacy, but et cetera? Where do you place the U.S. in that?

MR. HAMMERSLEY: Radically mid-table. An awful lot can be hidden by the fact that you have overwhelming military force. You can get away with an awful lot and -- but the history -- the modern history of the U.S. -- and I wouldn't just say America, I

would also include the UK in this because of the very close allegiance. All of the radical

military shocks over the past few years, whether we're talking about Somalia or we're

talking about 9/11 or we're talking about insurgencies in Iraq or Afghanistan, have all --

they've all been incredibly shocking because of the asymmetry exposed the fact that

other people were playing other games, they were fighting by different rules, they were

playing a different battle.

And so, of course, if we were to fight a -- if we were to suddenly get into

a land war against Russia in the Black Forest, then the U.S. and her allies would be

vastly superior, vastly superior, but as has been shown many, many times, both in real

life and in exercises, that vast superiority in one thing blinds you to the fact that you could

be beaten in other ways. And so -- however, having said that, of course the U.S. is a

very big country and has lots of very, very, very talented people and lots of very

interesting initiatives.

You know, the very fact that all of these people are here today means

that the opportunity to correct that is very, very high, but it wouldn't be difficult for

somebody -- no, it wouldn't be difficult for somebody with the right set of imagination and

a large enough, effectively limited budget, to still do an awful lot of damage to this country

by just being imaginative.

You know, and thriller writers make a good living off thinking up all the

ways of doing it. So, yeah, radically mid-table.

MR. SINGER: Okay. It's interesting you said imagination there because

the 9/11 Commission said that the primary failure was, in their words, "a failure of

imagination" and that actually links, in a certain way, to the second question I wanted to

pose to you now. I buy the epidemiology, the public health model. You know, one of my

concerns in how we frame cyber is that it's a "cyber Cold War" and, you know, the only

thing it shares with the Cold War is we're in the period where Dr. Strangelove was taken seriously.

The issue, though, is you -- most public health is not driven by manmade threats, and to connect back, you know, 9/11 was, in my mind, sort of how you laid out the leader challenge on our side, but it's also the adversary side. It was 20th century thinkers/leaders figuring out how to utilize 21st century technology. Bin Laden did not understand the full power of technology and certainly we could not describe as a Millennial thinker, a Gen Y thinker, but that leads -- and we have this story in technology and it's linked to radicalism, that the fringe becomes more and more powerful over time because small individuals have greater (inaudible).

So, if you were a crazy person 200 years ago, you might be able to yield a knife or a pistol, an anarchist, and you could have great effect in terms of killing a president or a queen, but you couldn't, like the Unabomber, reach out and kill people in other directions too. Today you have the radical fringe, as you put it, with powers of doomsday, particularly, at their fingertips. But what my question is, is what will that radical look like that combines both 21st century technology but also 21st century identity and thinking? What's that next generation of radical look like? What do they believe?

MR. HAMMERSLEY: I think it's going to look like an incredibly annoyed, middle class, white guy, to be honest. I think the idea that the next major radical is going to be, you know, a highly skilled engineer in Pakistan or Occupy, is perhaps -- is creating an Other, you know, with a capital O, it's creating this Other that's over there and we can go and shoot them or we can arrest them.

I think the major threat at the moment is that we're in a very interesting interstitial moment in politics and economics and really the people I'm most scared of over the next few years will be the computer engineer in the suburbs who can't pay his

mortgage anymore and freaks out.

Like I said, you know, about London, we have a huge, big distraction in ten days time, you know, four weeks of the Olympics and then there's a couple of weeks to get over the hangover, then there's the Paralympic Games, which are going to be awesome as well, and then a couple of weeks after that it's going to start to get really cold and because of the economic policies, and so on, because of the general sort of atmosphere and contrasted against things like banker's bonuses, and so on, which is a huge social issue in the UK, I can easily see not the Occupy Movement, not Anonymous, not sort of radical teenagers with silly haircuts, but your very highly skilled 45-year-old who doesn't know how he's going to pay next month's food bill and who gets cut off in traffic by a guy in a Mercedes and just loses it. And it's that sort of thing, because of the massive interconnectedness of the world and the massive complexity of all of the systems mean that anybody with any form of intelligence and a sudden loss of social responsibility, a sudden loss of that social contract, could do immense damage.

And what we're seeing, I think, and certainly in Europe, is a weakening of that social contract because we're seeing that the social contract doesn't apply to certain members of our societies. At this moment in time, it's the financial sector. At other times, it will be something else, but when you start to see the social contract dissolving, that, to me, is a bigger threat than global jihad, much bigger, much, much, much bigger. It isn't the 7/7 bombers, it's actually -- it's the Unabomber who's learned from stuff, right, it's the guy who goes postal, but on a proper scale rather than with automatic weaponry. That, to me, I think -- that's a bigger national security threat than any form of, you know, dubious drug-dealing cartel in Afghanistan. Much bigger.

And like I said, you know, it isn't hyperbole, at all, I think, to say that Barclay's fixing Libor was a form of warfare, because it absolutely was. Whether you

count it as being, you know, under the Geneva Convention, or anything like that, as being

a form of warfare, it's effect was much the same. They did a thing, which radically made

life worse for billions of people and they did it on purpose, and it's a very -- the fine line

between those things, I think, is those are the new frontiers of national security, not

brown people in another country 1,000 miles away, 5,000 miles away.

The real national security issue is the fact that we live in a massively

complex society and there are parts of that society who seem to be against everybody

else and it's the reaction against that that I'm worried of.

MR. SINGER: And so putting -- you know, as I laid out, you have sort of

three identities and the second is policy advisor, then what's your policy advice there?

What is -- the Prime Minister says, I just got a call from the American President. They

heard about your talk where you pointed out this is the next emerging threat. They

actually noticed -- they looked at actually the data points and found that, you know what,

there have been a greater number of IED incidents inside the U.S. linked to white

supremacist groups than al Qaeda linked groups. Okay, we buy your premise.

MR. HAMMERSLEY: Sure.

MR. SINGER: What do we do, would be the next question in that policy

circle?

MR. HAMMERSLEY: Well, then you have a short and medium and long-

term cocktail of stuff, right. The short -- the very easy short-term is you go -- it's police

work to find the immediate bad guys, right, the people who are setting those IEDs, for

example, you know, you go and find them and you arrest them.

The medium-term thing is to educate and to -- well, the medium- and

long-term things, together, actually, are to both educate society against that sort of thing,

to make it socially unacceptable. Whether it's a white supremacist or a jihadist, then you

-- if their mother would be disappointed in them, they won't do it. It's a social issue. It's that sort of deeper engrained thing that needs to be reeducated in society.

And the longer thing is that you have to have policies which take away the motive. If people start going around, for example, shooting bankers or smashing their houses up or whatever it is, you know, the British equivalent, you know, blowing raspberries at them and running away, right, that can only be countered by taking away the reason that those people are having that happen to them. Because, as I say, it's the motive is the issue and that involves having long-term policies around social justice and long-term policies around equality and long-term policies around the social ills, which would drive people to doing those acts, to doing those violent acts.

You have to take away their motive for doing it, because if you don't, all you're doing is just creating a situation where people see that as being the only alternative they have.

I don't think there's such a thing as evil, right, there isn't such a thing where people are born as terrorists. They find themselves in a situation where their only response to the situation that they live in is one of violence. And we're starting to see this across Europe based on something entirely different to the reasons we've seen inside the Middle East or Central Asia.

But it's the same reaction, it's a reaction against their situation, against their real life situation, and so your long-term policy has to be to make sure those long-term situations don't come out. It's not to go around and shoot them.

MR. SINGER: Okay, I would love to push back on that point with you, but I'm going to open it up to the audience here. So, if you can do -- please raise your hand and stand and identify yourself, but wait for the mic to come to you. So, right here in the front.

MS. STEPHENS: Hi. Maria Stephens, USAID. I'm trying to figure the white guy in Ohio into the paradigm that resulted in Configer and would like you to sort of expand on that and see how that phenomenon might factor into the example you gave.

And the second thing, following on that example, do you think that the partnership, the public-private partnership that formed after Configer with Carnegie Mellon and FBI is a good possible public policy response to that?

MR. SINGER: Just like you had to explain Moore's Law, give a 30-second on Configer too.

MR. HAMMERSLEY: Well, Configer, and all of the other sort of things like Stuxnet, and all those others, there's a whole new generation of interesting, whatever you want to call them, viruses or worms or bits of software that are possible to use in these, that are being released into the wild, and some are being used by military and some are being used by, you know, mafia, or some are being made by 13-year olds for shits and giggles.

I think the connection is that as these technologies -- when they're first used, they're new and novel and everybody goes into overdrive about finding out what they are, and how they work, and who made them and all of that sort of stuff. But as soon as that has happened, the technology is out there and anybody can use it.

And so what connects the white guy in Ohio who's a bit pissed off and, you know, Configer or Stuxnet or any of those -- Flame or any of those -- is time, it's just a matter of time.

This is a thing with the sort of democratization of modern technologies, you know, to take your specialty with drones, right, so military drones were, at one point, very expensive pieces -- well, they still are, but, you know, very expensive pieces of kit, and now you can buy them, you know, right in London for 500 quid. And next year they'll

be 250 or the one that's 500 quid will be twice as good.

And so, what you're seeing is, I think, what was once military only and going to remain in that sphere of human existence, radically democratized and radically commercialized, consumerized, whatever you want to call it, so that in a few years time everybody can get at it with a judicious bit of Googling or use of Amazon. You can buy uranium ore on Amazon, I found out yesterday, it turns out. That's weird.

MS. STEPHENS: (Inaudible) for Carnegie and FBI?

MR. HAMMERSLEY: I think that's a very good -- it's a very good response in that you need to have -- so you have this weird dilemma in that you have -- you have to have expertise across society in countering these threats, but the way you learn to counter those threats -- the same knowledge is also the knowledge you would use to create those threats.

You know, if you're a coder who can create the antidote, you're also the coder who can create the next generation of the thing, and so you need as many of the good guys as you possibly can, which means it's very, very good that you have this sort of crossover between the public sphere and the private sphere or the academic sphere, because you want as many people as you can to be able to do that stuff.

But the dilemma is that the more of those people that you create, you're undoubtedly going to create some more of these people as well.

But that point, and this is the same for synthetic biology, the core for synthetic biology is that the antidote to bad uses of synthetic biology is to create as many synthetic biologists as you possibly can. You know you're going to create lots more bad ones, but you're going to have even more good ones because people are inherently good, or at least we'd like to think, right, and so you create as many -- you spread that knowledge as far and as wide as you possibly can and then you'll have as many good

people for you as you can.

And the computer security industry, you know, is very well versed in the open security bug fixing model, you know, to use the old phrase, security through obscurity doesn't work. Keeping it all secret and locking the knowledge up inside a federal agency isn't going to help anybody. Does that make -- yeah?

MR. SINGER: Right there.

MR. WINTERS: Steve Winters. It seems that in terms of the U.S. government is encouraging means for dissidents in countries, maybe Iran and so forth and so on, to be able to communicate, people talk about Twitter revolution, so forth and so on, perhaps in terms of their own dissidents they aren't so positive. But if we take something, for example, the Tor Project --

MR. HAMMERSLEY: Yeah.

MR. WINTERS: -- where the U.S. government basically is supportive of a project that's trying to guaranty anonymity in communication. What's your position on the Tor Project? Are they making a mistake there? Because that would seem to be exactly what you're thinking is not the way to go.

MR. HAMMERSLEY: No, I think the Tor Project is fantastic. I think the Tor Project is fantastic, it's just that people have to recognize that -- and this is the same in the UK government as it is in the U.S. The UK government has exactly this thing, you have the Foreign Office, which is very much for supporting dissidents and trying to engineer a guaranteed free speech and coming out and fighting against censorship of the Internet in all possible forms and all that sort of stuff. And then you have the Home Office saying, we want to listen in on everybody's emails, and during the riots in London last year you had the Prime Minister saying," I want to be able to turn the social networks off at times of national emergency," things like that.

And, of course, when the Home Office comes out with things like that we get press releases from China saying," We congratulate the British government in coming around to our way of thinking," you know, which actually happened, and lots of Middle Eastern dictators -- you know, Central Asian dictators were very pleased that we had come over to their way of thinking.

And, of course, people in the Foreign Office and other associated agencies freaked out at that point because we'd spent the previous six months telling Arab leaders that they were really bad for turning off the Internet.

I think that's an internal -- an in-country politics issue that comes about from a Baby Boomer misunderstanding of how the Internet works.

An example of this is pornography. So, there's a big campaign in the UK at the moment from a couple of, sort of, right-leaning national newspapers and conservative MPs to -- that are calling on all of the Internet service providers in the country to apply national level pornography filters. And -- opt-out pornography filters. So, they will be on by default and if you wanted to get some porn, you would have to call up British Telecom or whoever and say, hello, please put me on the porn-loving list, please. (Laughter)

You know, and they would turn it off, and all that. Now, of course, there are so many things wrong with that that actually it's hilarious, really, but it comes from a standpoint of ignorance, it comes from a standpoint of ignorance that you can't filter porn in the first place, that it's easily circumventable, you know, that it creates a big list of people in the country who've opted into see porn, which is just not something we ought to have, you know, all of those different things.

But when you say that to those newspapers or to those politicians or so on, they kind of don't believe you. They don't quite get that filtering for pornography isn't

possible, because it would require creating an artificial intelligence that could look at every image going across the Internet and decide if it was art or porn or, you know, you just couldn't do it.

And so -- I've thought a lot about this in many ways and you just can't do it. And so, I think all of those questions about whether you have Tor or whether you don't, or whether you have national level porn filtering or you don't, really comes down from a specific generation of people who happen to be in charge at the moment who don't get the technical limitations of the medium that we're talking about, and we just have to educate ourselves and educate them and get through this period, get through this period of -- you know, the next 20 years are going to be quite nasty.

MR. SINGER: In the U.S. we have this dispute on Internet freedom and we have the exact same parallel, the State Department has gone through, and by my tracking, four different iterations of what it thinks Internet freedom is. How do you define it?

MR. HAMMERSLEY: It's a -- well, okay, there's not a single-sentence definition. I wish there was. I would go for a network-neutral, carrier-neutral medium, as in, so, full net neutrality, to use the technical sort of thing in net neutrality, which is that the Internet service providers themselves can't distinguish between different traffic, between -- either distinguished by type of traffic, i.e. they allow video or video conferencing or something to go through first before email, say, which does make a lot of sense from some points of view, but shouldn't be allowed, and that they also don't filter on the basis of the content of that traffic, that it's a neutral medium in the same way as the post office doesn't read your mail.

It's, I think -- we talk about the End Twin Principle and all of these other sort of technical phrases, but it's basically that it's untouchable -- it's untouched and

untouchable by authority, whatever that means.

And that really comes down to what I think the State Department called the Dictator's Dilemma, which is -- the Dictator's Dilemma is you want to have everything that the Internet brings you, you want to have all of this communication, you want to have the trade, you want to have the teaching capabilities, you want to have the social benefits, you want to have everything that the Internet gives you, and with that you're going to get some other stuff you don't like.

Now, in the case of the dictator, it's things like calls for democracy and social cohesion and lots of stuff, but in, you know, free Western countries, it's things like pornography or people talking about, you know, whatever it is you don't want them talking about, but tough. Deal with it, because that's the stuff that you get when you also get the good stuff. And if we're opting in for the good stuff, then we have to be sort of grown up about it and say, and people are going to use this for bad stuff as well.

But just because they're using it for bad stuff doesn't mean we do anything about it because doing something about it would affect the good stuff. And the good stuff is more important.

That was very flappily said, but you know what I mean.

MR. SINGER: Gotcha. Right there.

MS. QUEHRN: Hi. Sarah Quehrn, Atlantic Council. You mentioned that one thing that you were particularly concerned about was the high-skilled individual who has a great deal of power to enact a lot of damage themselves, but what do you do about large-scale ideological movements, whether it's transnational terrorist organization or whether it's, like, the Black Bloc in the UK or whether it's a large-scale youth movement -- how do you keep those two -- a large-scale ideological movement -- how do you keep those two skill sets separate?

And what's the risk of, for example, a terrorist organization contracting a highly skilled individual to launch a large-scale attack? And what does a government do to keep that from happening? Does that make sense?

MR. HAMMERSLEY: Yes, it does make sense. The answer is really, you can't, and therefore you have to not, and concentrate your efforts on other things, those other things being looking at those groups that you're talking about and addressing those issues from a different angle.

If you're going to spend your entire time chasing the technological possibilities of something bad happening, you're missing the point. The point is it's the social causes of those bad things happening that are things that we can fix, right, that's what government can do, that's what society-at-large can do, that's kind of the point of government and society-at-large is to find the bits of our community that are having a bad time or grumpy or violently opposed to the stuff we're doing, whatever -- you know, anywhere on that scale of discontent, finding those parts of our nations and our societies and working out what it is that's making them want to blow us up and fixing that, not setting up some massive baroque apparatus to prevent mythical guy A meeting, you know, group B and hiring them on some weird, like, rent-a-terrorist website.

It's, of course, because this is my point, is that you can come up with a trillion scenarios. We could spend all day and the rest of the year coming up with highly entertaining ways to kill ourselves. It would be brilliant fun, right, and we could get massive grants for it, we could all get PhDs, it would be brilliant, right, amazing. And undoubtedly this city is, as London is, full of people being paid lots of money to do that.

But because we can think of so many ways of doing that and because the only way of preventing that from happening is to become North Korea, is to basically shut down the Internet and the postal service and posters on the street and all -- you

know, it's basically to become draconian, because the increase of technology has

allowed all of these threats to multiply to a level where it would be trivial if everybody in

this room -- because everybody in this room is very clever, it would be very trivial for

anybody in this room to become a super master terrorist because that common

denominator has become so cheap and so easy, it's pointless to fight it and we have to

go and fight something else, we have to direct our efforts not against technological

threats, because there are so many and they're so easy and they're so cheap, we have

to go against the social causes of those threats. Because that, actually, now, weirdly, is

the easier option.

Ten, twenty years ago, it might have been the other way around, that we

can't fix inequality and we can't fix, you know, all of those things, but what we can do is

we can find the 50 guys in the country who are liable to set -- you know, to make bombs,

and we can make sure that we keep watching them, because they're the only 50 guys in

the country who've got that skill set and so we can easily afford and easily plan to have

people watching those 50 guys.

But now it's completely switched. And now anybody of average

intelligence with an average credit card in their pocket could become a really, really bad

guy, really, really easily. And the threat from that sort of person continues to double

every year.

So, that's not the most efficient way of fighting those people. Actually

now the most efficient way is to attack the social causes, and so if you wanted to prevent

the black bloc or, you know, the militarized wing of Occupy or whoever it is, 4chan,

whoever, if you want to prevent them from blowing things up, go and talk to those people

and find out why it is they want to blow things up and then come to some form of

arrangement. All right? Don't continually try and prevent them from getting weaponry

because everybody here can get into a cab and go to the nearest computer store or to

Toys-R-Us and buy some cool stuff and we can make a big mess this afternoon.

So, capability is so universal that we have to go for motive.

MR. SINGER: Right here.

MR. JOERN: Bill Joern, ROI3. Lots of questions, but in the title of the

talk it says "the nexus between social media, emerging technologies, and digital

radicalization" and I wish I had time to ask you a zillion questions.

I don't know, maybe I missed it, but I don't know if you've identified,

described, or mentioned the implications of what the emerging technologies are.

MR. HAMMERSLEY: For what, precisely?

MR. JOERN: It's in the title, that's all.

MR. HAMMERSLEY: Oh, for digital --

MR. JOERN: Yeah. Not to be pedantic about it.

MR. HAMMERSLEY: Oh, sure.

MR. JOERN: I'm curious as to what's next.

MR. HAMMERSLEY: I'm not going to give you a sort of what's the next

shiny gadget answer, but what we're seeing, I think we're on a track already where we're

just pointing down the same exponential curve, and so the major trends that we have at

the moment are the -- as I kind of -- as I said in my last answer, the trivialization of what

were previously very difficult things to do, the trivialization of weaponry, and the

trivialization of group forming.

Group forming is the thing that the Internet really brings -- has brought --

one of the two major social changes, I think, the Internet has brought over the past ten

years has been ease of group forming.

It's now, no matter what your interest, no matter what your predilection,

no matter what it is, you can find a group online who share those same curiosities or the same values or the same interests or whatever, no matter what you're into, whether that's knitting or a particular medical condition or a particular sexuality or a particular form of political radicalism.

So, group forming is a big issue. Previously if you were a radical, you would have to start in a pub somewhere, stand on a chair, make a speech, try and get people -- you know, and you would have -- social movements were hard to start because it was hard to get that critical mass of people.

Now, the group forming capability of the Internet is slightly -- you know, they're socially and psychologically slightly different, but it's much more effective to find -- it's very easy to find hundreds if not thousands of people who might want to join with you.

I think the second, and this is a slightly subtle point that I haven't really addressed before, the second major social change that the Internet has brought about is about opinion.

Consider this, 15 years ago, if you wanted to review a restaurant or a book, then you would have had to have started 20 years previously, become a cub reporter on a newspaper, worked your way up through that newspaper to become the restaurant reviewer. Then you would have gone to dinner and then you could have written a restaurant review and had it published in your newspaper.

Nowadays, it's basically impossible to do anything in a major Western city that you can't review online for an audience. You can't read a book, you can't listen to some music, you can't come to a lecture, you can't go to a hotel, you can't do anything without being able to review it. In fact, experiencing things and then reviewing them in public is kind of what we do as the modern state, and because of that, I think that we're starting to see a generation or two of people who are -- who expect that they should be

able to give their opinion on anything and to have that opinion be as equally weighted as anybody else's.

If I read lots of books and I review them on Amazon, then my review and my rating of five is as equally weighted as any other Amazon reviewer, whether they are a professor of English literature or whoever else. Same thing for a restaurant, same thing for a hotel, same thing for anything else.

And where we find ourselves, I think as a society, is within a political situation where that's not the case. This is going to be very much -- you're going to see this an awful lot in the run up to the Presidential election here in November, that there are hundreds of thousands of venues where everybody in this room can go in, you know, with their real name or pseudonymously or completely anonymously give their political opinion and have it be treated as something important by the people who read it.

And then you have the election and whoever is elected is elected and you then try and tell that person or your Senator or your Congressman or whoever it is, you try and tell that person what your opinion is, and then you find you are ignored. And it's that disconnect between what we have in the rest of our lives, which is everything we do we can critique and we can publish that critique and it will be taken seriously and will have an affect on everybody else and the political world and the political sphere of most Western nations which is, you make a decision, you make a critique once every four or five years, and then from thereafter you're ignored.

You know, the old J-curve theory of revolution is that revolutions happen when the rate of change isn't quite as high as the expected rate of change. It's not -- revolution doesn't happen when there's no change, revolution happens when there's not quite enough. And I think what we are finding at the moment is, people's expectations of their political views being take seriously are very high because, damn it, their views on

music and their views on literature and their views on, you know, whether *The Avengers*

film was any good or not, are taken seriously by the Internet, by society-at-large, but their

views on politics aren't because the political system isn't set up -- for very good reasons,

isn't set up to deal with that sort of Internet tempo, and what -- this is, again, one of the

reasons, I think, behind the riots we had in London last year, which is you had a whole

generation of people who are very used to their opinions counting in the spheres in which

they operated, in the cultural spheres -- music and sport and so on -- and once they

started to have political views and they found that their political views were completely

ignored, didn't register anywhere, in fact, then it was that disconnect between what they

had in the majority of their lives and what they found in their political lives meant they

were instantly alienated from the political sphere, disenfranchised completely. Whereas

they're hyper-enfranchised, the Internet hyper-enfranchises you in everything else.

MR. SINGER: Isn't there -- there's actually a tie between the two that

you're not going into, which is the, yes, I can social network -- and this may go to the title

-- I can link with other people, but I am drawn towards like-minded people that validate

what I already thought beforehand, and so -- they tell me -- I'm right because they tell me

I'm right. Well, I like them because they tell me I'm right, and that's true whether I'm

drawn towards music or I'm drawn towards some radical political view, and so it's actually

the echo-chambering effect maybe aiding, I would argue, radicalization, that it's the

grouping that allows folks to come together who echo each other and drive each other to

more extremes. Is that a valid --

MR. HAMMERSLEY: Yes, I think that's entirely right, because, yes, on

top of all of these things you also have the fact that you'll sit there and you're going, well,

you know, not only do I have all these opinions and I publish these opinions online, but

when I publish them online, everybody tells me I'm correct. And yet, I'm still ignored.

There's a great technology writer called Paul Ford, and he says that the motto of the Internet in the 21st century or sort of the zeitgeist of the Internet is the phrase, "Why wasn't I consulted?" That's the cry, that's the *cri du coeur* of the entire Internet, "Why wasn't I consulted?" If you read any sort of newspaper comment system, you know, you read the Huffington Post, you read any of those things, the majority of the comments are really people saying, "Why wasn't I consulted about this? How dare the President do that. Why wasn't I consulted?"

And that's a new -- I think that's a new thing, you know, previously, 20, 30, 40 years ago, people would go, well, I wasn't consulted because I'm just a dude, right, I'm just a guy. Whereas now, because they spend -- because people spend a lot of their time being consulted by their friends, by their social networks, by the fellow community members of whatever website they're members -- you know, part of, and because that community is self-reinforcing, because everybody -- because there is this echo chamber effect and everybody makes everybody else feel as if they're all geniuses, then suddenly, when you're then presented with your, sort of -- the pointlessness of your own opinion, that's sort of a nasty situation to be in.

So, I think you're entirely right, that we haven't quite yet come to terms socially with these newfound capabilities of things like being able to review everything we can do. And we also feed off of that. So, you know, nobody here would ever go on holiday without -- or read a book without checking out the reviews first, and you would probably, now, not go through the professional reviewers first. You go and look on Amazon or you go and look on, you know, Trip Advisor or something like that, which is all entirely social, not expert-based.

And how we get around that in the political sphere is very difficult. I'm not entirely sure how you can do it. I think it's possibly a matter of leadership, old-

fashioned, rhetorical leadership, which is something, I think, that is radically missing in Europe.

You know, I was raised by President Bartlett and Captain Picard. Some people in the room get that joke. I was raised by good old -- proper leaders, right, and we don't have that at the moment in the political sphere in Europe, and so -- which is why these things are splitting apart.

Now, again, that leads us to a darker thing, which is, previously, certainly in Europe when we've had very bad economic social situations, strong leaders have appeared and that didn't really end well because of the 1939-45 unpleasantness. So, we have to be really careful.

MR. SINGER: In the back corner there.

MR. KLAUS: Just following up on a couple things here. Ian Klaus, the State Department. So, thank you for the statecraft nod and thank you for a fascinating talk.

This might be predictable, but I just wanted to follow up a little bit on the demise or the greatly exaggerated demise of the state, because this is an argument that comes around every once in a while, and for the short-term, mid-term, long-term solutions you propose, whether it be police action in the financial sphere, we could call that regulation, or whether in the medium- to long-term it's education or cultural, and surely cultural if we want to follow Benedict Anderson or many, many other people, is in part, a creation of the state itself.

And I wonder if -- I mean, we can disagree there and we can go a thousand different ways, but it's an argument that's been made -- I wonder if you're not implicitly -- or maybe you want to say it explicitly -- making an argument where the solution to many of our problems to come is not strong leadership and a creative,

perhaps, more localized, but strong and functional state where you're simultaneously

telling us on the other side, that the state is giving away, either up or down, and sort of

ceding this leadership position. So, where do we go in that sort of paradox?

MR. HAMMERSLEY: Yeah, it's a really interesting paradox, isn't it? So

many things I can talk about there.

I think it depends on what you talk about the state. Again, you know, I

said this a few times, it's a matter of scale at odds here, so obviously here in this country,

the state is -- you have time zones, right, it's a really big place, it's a really, really big

place. There's the state in Europe, you know, I've driven across Belgium without noticing

many times, right, you know, you leave France, you arrive in Denmark, you know, bloody

hell, or you arrive in Holland, what the hell was that, right?

The states, they're much smaller and so, yes, of course, I think there are

some things which are very good to be collectivized to create some form of state-like

apparatus, but how you define that is very -- is very difficult, and so it could be city-states.

I lived in Florence, in Italy for a long time, and you can easily see the resurgence of city-

state -- in Europe you could easily see city-states within a federal Europe, easily see that

coming back.

It worked very, very well for about 800 years when we had the

Renaissance and the Enlightenment. Right? It was a very successful system, and

there's an awful lot of stuff that goes upwards to Brussels and the rest of it is localized,

and certainly, again, as a response to things like climate change and so on, I could easily

plan out in 30 years time a return to sort of -- to city-states. You can easily see again

massive fracturing where you get much smaller states, so the secession of Scotland, for

example. I'll happily put money on that happening, Scottish independence, 2014.

So, I can easily see as well that nation-states just get smaller and

smaller. And as opposed to the idea that culture is defined by the state, I think it's

actually the other way around, the state is defined by the culture and the people will start

to -- if they want to create a polity, they'll create a polity around a cultural piece.

Again, perhaps more difficult, but if you were to have an independence

vote in London, everything within the M25 -- just anybody within the M25 gets to vote on

whether or not London gets to secede from the rest of the United Kingdom, we'd be out

of there. I mean, seriously, because it's a completely different culture within that ring

road, right? It's a completely separate culture.

So, yeah, these things are going to become more fluid and more fluid

around cultural values and modern cultural values, today's cultural values, not some

weird nostalgia. I think that's another thing that really strikes me, is that an awful lot of

these claims to statehood, and specifically in the UK with the calls to leave Europe, the

idea of Britain or the idea of England is an extraordinarily nostalgic thing. The imagery

that is used to promote the idea of British-ness is bizarre -- bizarrely nostalgic. It doesn't

reflect my experience of living in that country at all.

And so, I think if you were to start again and start redrawing borders

based on culture and based on the people who live in it today, you would get something

radically different. And that may well -- may well indeed happen because of this

fracturing of Europe and the fact that things are going -- you know, city-states and village-

states and things like that are much more -- I'm rambling. I'll shut up.

MR. SINGER: I'd steer you as well potentially to the work that -- here at

Brookings we have the Metropolitan Program, Bruce Katz is working with, things they've

been finding is whether it's -- the mayor of Sao Paulo having -- leading a community, a

political community, that's the same size as Australia, but also an economic community

that's the same size as Australia, to most of the breakthroughs in international trade

agreements or environmental policy is happening at the city level globally, and that's why you're seeing the rise of these -- you could call them, sort of, world mayors.

MR. HAMMERSLEY: Right.

MR. SINGER: That is, they're mayors of towns that yet have a greater identity, a greater recognition than some of the Ministers in that country, whether it's the mayor of London or the mayor of New York or the like, that you're seeing that popping up. It's an interesting trend that maybe echoes back to the Renaissance.

MR. HAMMERSLEY: Yeah, and I think I said that's a very good thing.

MR. SINGER: We've got time for one last question here. Let's hear from the Navy over here.

MR. HAGEROTT: Mark Hagerott out at the Naval Academy in the Forum on Emerging and Irregular Warfare. Great talk, great insights, and the midshipmen are picking up on this too, these 18- to 22-year-olds, but I wanted to come back to your metaphor about, you know, the epidemiological -- you know, the immune system, and ask you, couldn't you have basically building on Gleick's book, *The Information,* or Kevin Kelly, *What Technology Wants*, that what we're seeing is just the human scale immunity system now expanding on a grand scale with information across the globe and that cyber security becomes just the immunity system running underneath, but this question of kinetic warfare, because obviously the Navy is struggling with big programs -- kinetic warfare, just like a human being can still be killed by someone, you know, hitting them in the head, strangling them, that you still are going to have the kinetic needs -- defend the country, defend borders, ships, aircraft, or robots, kinetic, but also underneath cyber becomes like the immunity system, you've got to watch it, you've got to, you know, inoculate against viruses.

But they're both running together. It's not one or the other. And you've

got to spend, which makes it very expensive, you've got to spend across the spectrum.

How does that fit with your framework?

MR. HAMMERSLEY: Yes. Yes. Absolutely. Absolutely. However, it's

different for different countries and for different -- for people with different spheres of

influence.

So, certainly, for the U.S., absolutely. Big blue water, you know, Navy,

plus the sort of information warfare, so on, you know, immune system, absolutely. But

what we're looking at, really, I think, is all the other countries.

And so as a good example of this Scotland. We just talked about the

independence of Scotland in 2014. Scotland becomes independent in 2014 -- you know,

the vote happens on the anniversary of Bannockburn, so it's like the most amazing day to

have a vote of independence, brilliantly chosen by the Scottish National Party, and that

vote's going to happen. I would make you a bet that Scotland is going to become

independent.

At that point, they have to decide whether or not they have an armed

forces. And if you were the new Minister of Defence for Scotland, you then have --

you've got your limited budget, because it's going to be a small country with limited

amounts of money, and you have to decide what are you going to spend that money on.

And it's actually a really interesting exercise. Are you going to spend it

on a navy? Well, the answer is, probably not. Who's going to invade? The Norwegians?

Right? The Vikings? Like, no.

SPEAKER: The English.

MR. HAMMERSLEY: The English, right. Well, and again, and then you

say to the Scottish, well, are you going to have a land army? And it's going to cost you a

lot of money. Well, are they going to be expeditionary? Probably not, because it's a very

small. So, the land army is going to consist of defending that one land border, which is with Yorkshire.

Now, the people from Yorkshire are quite feisty, but they're not going to go across Hadrian's Wall, right. So again, you have this thing -- Scotland is like, well, actually, our major national security is based on maybe the oil platform, so that might be reason for having a navy, or helicopters, at least. But again, that's a multinational thing, and so NATO protects those.

And instead, Scotland will say, well, actually, our major issue is our banks and our information networks and our electricity grid and all of that sort of stuff, and so our entire national security is based on the information and not on kinetic capability, because we've got nobody to shoot at.

And at that point -- and you start to see that in lots of other countries, and what that does to long-term planning of, say, NATO, is it makes it much more interesting because I can see a lot of smaller countries, especially in Europe, especially with limited budget saying, actually, we kind of don't need to spend this many billion on a new aircraft carrier. We'd rather spend it on schools and hospitals and aid and whatever else, because that's better for national defense, because it's what we're defending in the first place.

And so, the U.S. is the exception always, and so, for you guys, yeah, absolutely do both. Go for it. Do everything. Do what you like. But for smaller countries, it kind of doesn't make any sense to have things that go bang.

MR. SINGER: Well, that's an interesting way to end, but I think we'll end there because we're getting to the witching hour. It's been a fantastically interesting session. I think you've given us all a real immense amount to chew on here, so please join me in a round of applause. (Applause)

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