CReST Keynote

Ethical Issues in Neuroscience: From Ethics to Policy and Law

Featuring
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July 23, 2013

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Potomac Institute Press

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CReST

The Center for Revolutionary Scientific Thought (CReST) at the Potomac Institute for Policy Studies brings together individuals from a variety of backgrounds to enable a comprehensive outlook of science and technology (S&T) futures from academic and policy perspectives. CReST intends to: 1) develop new ideas, 2) formulate strategies on how to achieve revolutionary gains in S&T, 3) provide a discussion forum to address political, ethical, legal and social issues related to S&T, and 4) inform the public and policymakers about the most pressing issues and concerns regarding the future of S&T.

The CReST mission of solving vital societal problems is enacted through research studies, products, seminars, and conferences designed to address the most trying challenges facing our society.

EVENT

ETHICAL ISSUES IN NEUROSCIENCE: FROM ETHICS TO POLICY AND LAW *KEYNOTE ADDRESS*

BY MICHAEL S. SWETNAM

CEO and Chairman, Potomac Institute for Policy Studies

as presented at the conference:

Ethical Issues in Neuroscience

American Association for the Advancement of Science (AAAS)

July 23, 2013

Washington, DC

The neuroscience community gathered for this one day symposium to discuss the ethical issues in neuroscience. Attendees included those who are working in or interested in learning about the intersection of neuroscience with policy, law, ethics, media, and society. Speakers included personnel from government, industry, think tanks, and academia. The symposium addressed the topics of neuroethics in defense, promoting and teaching neuroethics, and transitioning the focus from ethics to policy and law.

KEYNOTE ADDRESS TRANSCRIPT

MICHAEL S. SWETNAM

Thank you AAAS for bringing us together to address some of the most important issues facing the nation. Today, I am going to talk about the process of moving from ethics to policy and from doctrine to law in Washington, DC.

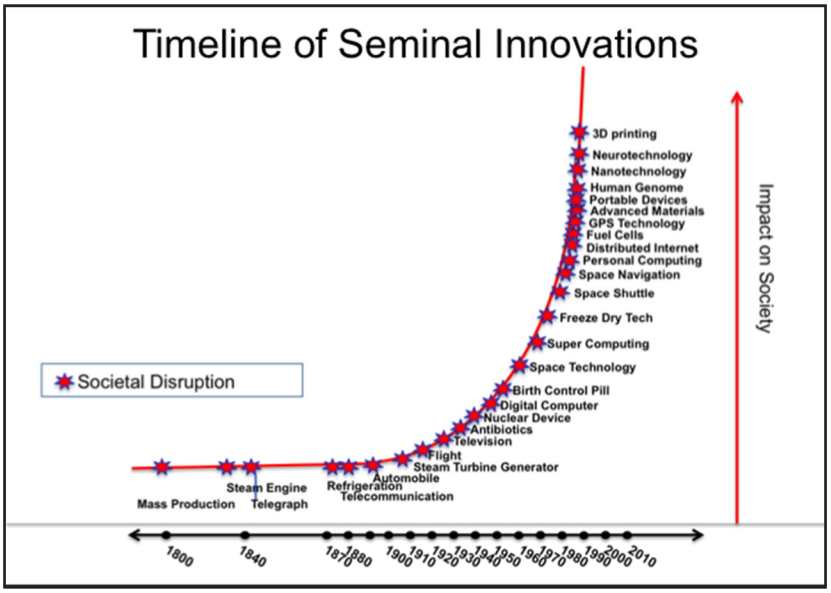
The Potomac Institute for Policy Studies is a unique entity in the DC area. We are an independent, not-for-profit organization that focuses on science and technology policy. More importantly, we work on issues surrounding how science should inform policy and how policy should be driven by good science. Our policymakers need to understand which sciences and technologies to invest in and which ones are overstated. Especially important in DC, policymakers need to base law on a rational understanding of nature, humanity, and the universe as opposed to enacting legislation based on societal norms or morality. Simply put, policy should be founded on what science tells us is good for mankind.

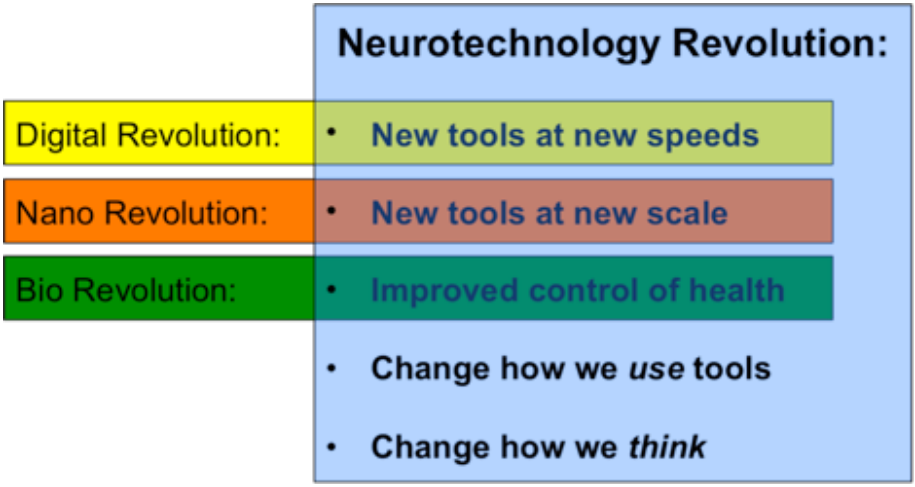
To ensure the success of the legislative process, the Potomac Institute follows trends in where science is going, who is doing what, what fields are flourishing, and what fields are stagnant. Most importantly, we identify new and near future areas of science that will potentially revolutionize the world in unpredictable ways.

Understanding and assessing new trends in science is the first step in helping policymakers react to scientific progress. In general, scientists tend to underplay the impact that their profession has on the human race. However, over the last several centuries science and technology has been the single largest driver in the evolution and change of human affairs. The printing press made it easier to propagate books across a continent; spreading education, provoking thought, inspiring a revolution and a renaissance in Europe, and even resulting in the overthrow of governments. This single technical leap had a more profound impact on our society than any prior

innovation. A few centuries later, mass manufacturing, the steam engine, and other advances created the Industrial Revolution that decimated the agrarian lifestyle and completely transformed society. A mass migration to the cities resulted in a dramatically improved standard of living. Since the Industrial Revolution, there have been an increasing number of cases where technology driven societal changes have occurred. These innovations have caused or contributed to such events as the Great Depression and World Wars.

It is clear that scientific advancements have a profound effect on societies around the globe. Following the Industrial Revolution, we developed flight, television, and fast communications, technologies that have permeated societies around the world. Today we continue to see the development of earth shattering, economy changing, and socially disruptive technologies every few years. These technologies continue to have an increasing impact on society and the cumulative effects are harder to mitigate.





Currently we are undergoing massive societal impacts due to four major technologies. 1) digital technology – which has drastically changed the way we communicate 2) biological technology – which could extend human lifetimes by 20, 30, or 40 percent 3) nanotechnology – which will change the way we build things 4) neuroscience and neurotechnology – which will change our understanding of the human mind. The neurotechnology revolution encompasses the previous revolutions and will make a larger impact than any of them individually. As a result of these transformations, governments will have more complicated and difficult issues to face than ever before.

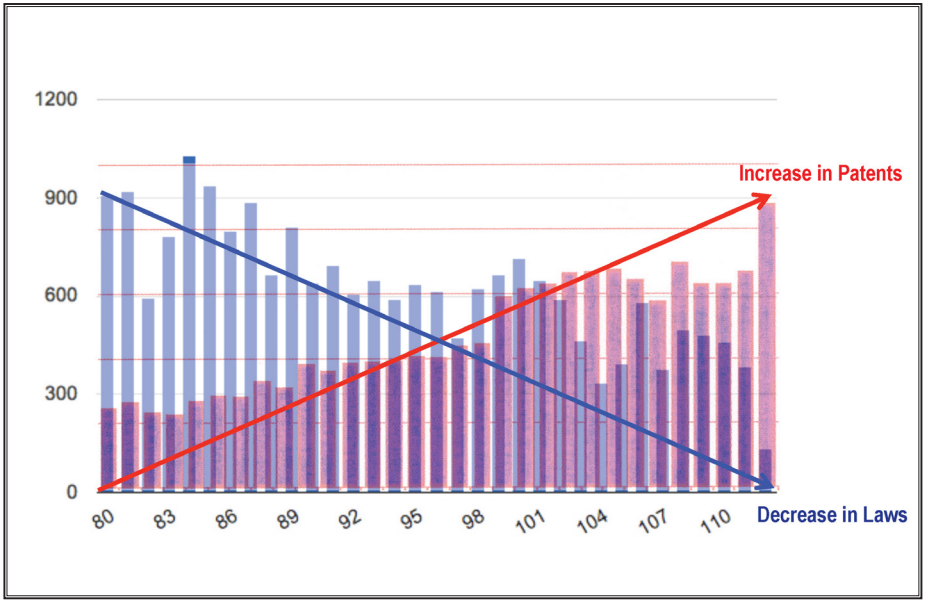
Though technological advancements have vastly improved the way we live around the world, there are a few negatives to consider. Technology is amoral: it can be used for good and for bad, particularly in regard to violence and war. For instance, during this

conference today there has been discussion about the effects of neuroweapons. The potential use for harm should not be underrated. Look at the history of atomic energy technologies. The energy and military applications motivated the development of policy to control the spread of nuclear weapons prior to their widespread use. Without these policies we may have seen nuclear war. The output and future impact of technologies is absolutely critical to contemplate. Policy development requires an established ethical understanding that is turned into legislation that governs, controls, and manages.

How good is our government at dealing with the difficult policy decisions about advanced science and technology? Over the last 50 years the number of laws ratified by Congress has decreased precipitously. The data depicts a long running trend that has been even more prevalent in recent years. It is a sign that should scare the American public because we are actually passing fewer laws. Even so, some believe that this is not a bad thing or they feel they do not need any more help from Washington, DC. Regardless of these trite notions, we need regulation, legislation, and policy to 1) control technologies that might hurt us, and 2) to advocate and encourage science that could help us. Policy should be driven and informed by science and technology as well as developed to manage the development of science and technology.

Even though the government is enacting less policy, scientists are doing a lot more science. If we combine the trends in S&T and the trends in government, you can see the clearly conflicting arrows in this graph (on page 11). Therein lies a tremendous problem: policy may not be able to catch up nor deal with the impacts of new technological advancements.

After the printing press and the Industrial Revolution changed the way the modern world operated it took a few decades for governments to change the laws and policies that needed to deal with the implications of these technologies. For the Industrial Revolution, this entailed larger cities, development of suburbs, and the rise of mass transportation.



A long time ago, every senior person above the grade of lieutenant had a secretary, and typing pools communicated important letters and memos across organizations. Today, none of that exists. There are a few administrative assistants at the senior level but no secretaries or typing pools. Additionally, organizations used to be more hierarchical but new technologies have leveled the structure. In the past, you could set up a business with 10 or 20 people and sell products locally, but if you wanted to sell nationally you would have to build warehouses across the country, own trucks, and have sufficient infrastructure and money to build a national corporation. Nowadays, in order to be an international corporation all you need is a FedEx account and an Internet connection. These capabilities, which were not available 30 years ago, have profoundly changed the way we work and live. These are the effects of the digital technology revolution that is still ongoing. Our laws and policies are struggling to address these changes.

Recent advances in biological technology will have a similar effect. Increasing life expectancy, which has risen from 65 to 75 and to now even 80 or 85, has an impact on government cycles such as Social Security. Years ago, every major corporation had retirement benefits or a pension. Today, you are lucky if you get a 401k or 403b since companies cannot afford to provide these benefits. Government policymakers have to deal with these issues and most do not have an in depth understanding of what I am trying to convey today.

It takes time and thought to create policy and the lead up to writing those documents is more complex and difficult than ever before. Moreover, fewer of our leaders are technologists, which makes these issues especially difficult for them. For example, there were 43 proposed pieces of legislation last year on cyber, information technology, and cybercrime – none of which were passed. Cyber capabilities have been transforming our society for two decades. Policy development is trailing the technology.

The US political process was designed to be deliberative, slow, and methodical, allowing time to explore all aspects of an issue. The Founders of this great country designed a system that would make it difficult for Congress to pass a law today, change it tomorrow, and then repeal it the next day. The process was designed to be purposeful and cumbersome. Policymakers are constantly faced with problems. Often they are overwhelmed. They will need help understanding technology and developing policy options for dealing with it.

That brings us back to the topic of neurotechnology.

Neurotechnologies are changing the world and because of this, we need organizations like AAAS and the Potomac Institute to help support the Office of Science and Technology Policy (OSTP) and other S&T decision bodies to explain implications of neurotech to our policymakers. Specifically, the government needs advice regarding new policy, new legislation, and new investments.

Advances in neurotechnology may even change what it means to be a human being. The ethical issues of such an effect are profound. Twenty years ago, S&T policy people helped Congress understand the implications of nano-science. Today we need to help them explore the ethics and then develop a doctrine that reflects the rising advancements in neuroscience.

Scientists have an obligation to help our leaders understand the issues intersecting S&T and society. Although most parts of government have official S&T advisory boards, the US Congress does not. The US Congress therefore needs scientists willing to advise the US Congress and other policymakers.

For the naysayers who complain that the system is broken, there are still laws being passed and issues being explored, each of which need to be informed decisions. In fact, if you analyze the Congressional process – when it works, when it does not, why it works some times and not other times – you come away with a very important insight: throughout the political process there are opportunities for communication with Congressional members and staff to help them understand the issues.

This intersection is one of the primary avenues of the Potomac Institute. We give briefs, write suggestive legislation, and outline options for policymakers based on science and technology trends and real data. The process is slow and difficult but we are trying to improve that system. Last year, we tried to assist legislators who sought to pass legislation on cyber security. This was a difficult undertaking because everyone had their own understanding of the scientific facts.

A counter example can be illustrated by the Patriot Act that was passed three times by a large number of votes primarily as a result of a well-orchestrated communications job through two different presidencies. True, it is a very controversial bill but it is probably the most comprehensible cyber security bill yet passed on Capitol Hill.

The question is why did the Patriot Act pass, even with controversy and privacy concerns, whereas the other 43 bills did not? The primary difference was that many outside individuals spent large amounts of time on Capitol Hill from 2005 to 2008 talking to policymakers about the real facts surrounding and leading to this bill. This kept attention focused on the bill, resulting in Congressmen and women bringing it to the floor and voting on it. The bottom line is communication. Policymakers had a chance to hear the untarnished facts, without the hyperbole of TV, and to ask the right questions and interact with S&T experts.

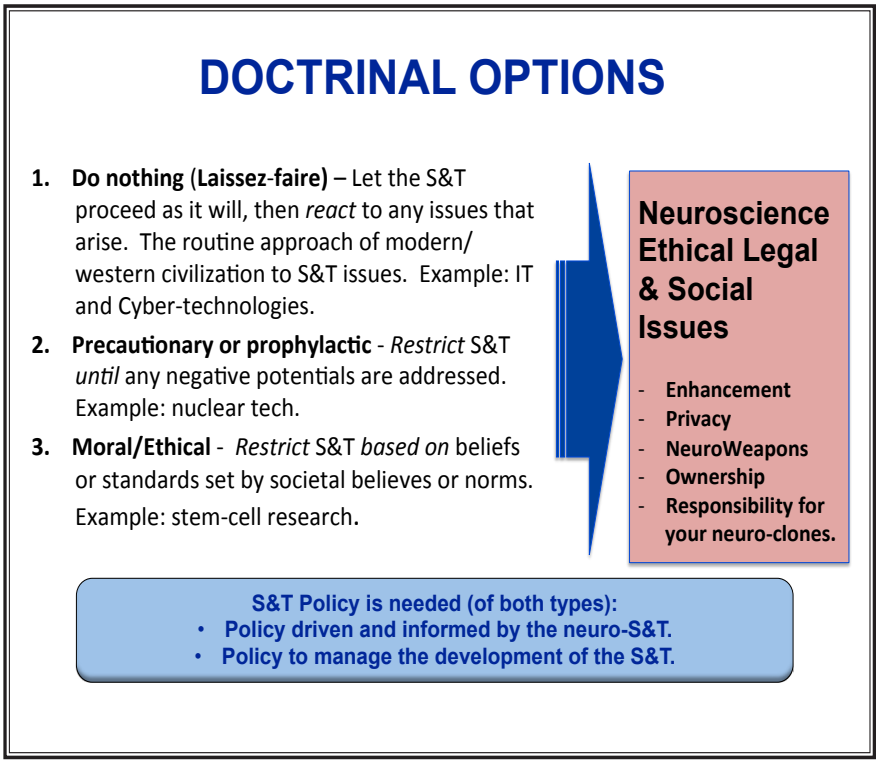
Typically, members of Congress do not write legislation. Staff members may occasionally write legislation, but most legislation is written by advocacy groups, think tanks, friends of the court, and other individuals in Washington concerned with the issue. If you want to have an impact in this town, become an expert in your field and write draft legislation for your senator or representative, which he or she then may actually use.

Before one can develop policy one must first create doctrine to guide the underlying policies. Political doctrine dictates the types of policies that will be proposed. Policies are the overarching principles that guide decisions resulting in specific laws. There are three distinct categories of doctrines related to S&T policy development.

The first is to do nothing, take a laissez-fare approach by allowing the science and technology to proceed naturally and then react to any issues that arise. This is the routine approach of western civilization with regards to science and technology topics. An example of this type of doctrine approach is with cyber technologies. The second approach is precautionary or prophylactic. In this method, a potentially harmful action, science, or technology cannot be undertaken until it can be done safely and without damage. This is when a government restricts the science and technology from progressing until any negative potential is addressed. The world took this approach with respect to nuclear technology; the negative effects were so dangerous that it was decided the technology

should not proceed without extreme control. The third, and less scientific, approach to doctrine is by using moral or ethical standards by societal beliefs or norms to restrict science and technology. The United States took this approach in the early 2000s when discussing stem cell research. The reason for choosing a specific doctrinal approach should be informed by the science and technology as well as using the doctrine to manage the development of the science and technology.

For neurotechnology, the neuroethical problems can be tackled with a combination of several of these doctrinal options. For neural enhancement, we can tackle problems as they arise, aka the reactionary approach. For neuroweapons, we may want to instead invoke the precautionary principle. Overall, we need to build a doctrinal framework to address each of the issues with neurotechnology.

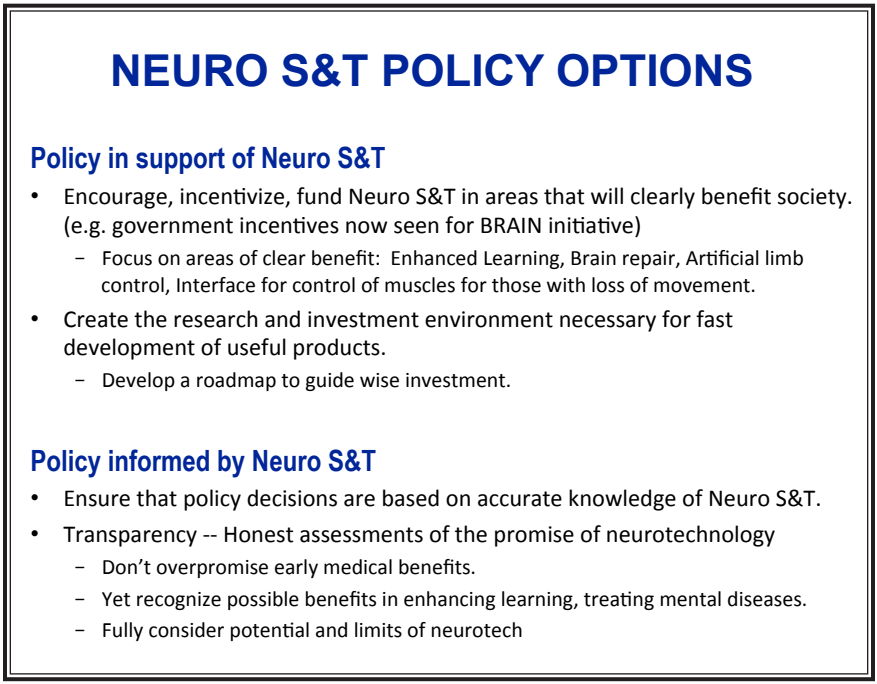


Policies are driven by doctrine. There are two types of science and technology policy: policy driven and informed by neuroscience and policy to manage the development of science and technology. For neuroscience, S&T policy of both types is needed. Specifically, scientists can drive the policy by informing members of Congress of the implications of scientific findings. It is the duty of scientists to help create policy and laws using accurate knowledge of neuroscience. It is important to deliver an honest assessment of the promises of neuroscience. Scientists shouldn't over promise medical benefits, but recognize possible benefits in enhanced learning, and treating mental diseases, while fully considering the potential and limits of neurotechnology.

In addition to developing laws and policy based on science, we need to have laws that advocate and fund important scientific research. For neuroscience, policy should be created to support neuroscience and technology. We can encourage, incentivize, and fund neuroscience and technology areas that will clearly benefit society. Rather than debating each of the topics, there are some areas of clear benefit to all of society: enhanced learning, brain repair, artificial limb control, and interfaces for control of muscles with loss of movement. It is important to create the research and investment environment necessary for fast development of useful products. In order to do this, priorities need to be stated and a roadmap should be developed.

To create this type of legislation, scientists need to start informing Capitol Hill of what sciences to invest in. Congress controls the budget of the National Science Foundation and National Institutes of Health and thus must be informed of high priority areas. For instance, you could suggest that a small percentage of grant funding be allocated to investigate the ethical implications of a new technology that you are developing.

Oversight and enforcement are also critical topics in legislation. Policing mechanisms emphasizing self-regulation, government regulation, or international regulation may or may not work. You can-



not simply rely on the commercial industry to self-regulate. There is no clear answer for oversight and enforcement, but any effective policy on this topic must have sufficient sway because recommendations or advice will not change the system.

As stated before, the most effective way to create policy is through communication to the policy makers. The public debate should be framed through opinion pieces and books. Briefings about new S&T should involve legislators and should promote the right topics to be included in future bills. Public discourse could even spur Executive Orders from the Administration that promote a particular position for the future. Political advocacy groups, which work for this purpose, may create tension with Capitol Hill but that is also part of the process. For a scientist or technologist, however, this process is simpler because it is relatively easy to focus on good science and facts without partisanship.

Science advocacy should be one of the most non-partisan activities in Washington and there is great need for more efforts in this realm. This should encourage you to consider the next steps for tackling impacts of S&T innovations in the political arena. We need more options for S&T and there are many of us whom have the potential to solve these problems.

NEXT STEPS

- Create the Public Debate!
  - White papers that explain/frame the issue and recommend action.
  - Articles, books, speeches, etc. – (example: NSA, Snowden, PRISM, Metadata).
  - "Friends of the Court" briefings, proposed legislation: informed by think tanks, non-profits, etc.
- Develop Doctrine, Policy, and Law to address NELSI.
  - Doctrine that articulates the parameters of what is and is not acceptable to the society/nation.
    - Develop and propose international norms in neuro S&T.
  - Draft candidate Executive Orders, and Department Policy.
- Develop a candidate framework for legislation and law.
  - Develop a roadmap to address fundamental science, technology, and NELSI.
  - Create a national coordinating office for oversight and enforcement.

Now is the time to start!

QUESTIONS AND ANSWERS

Question: I appreciate your call to extend communication and allow policymakers time to talk and get the ideas across, but could you comment on whether we can, will, or should slow down technological progress to allow for proper checks and balance of sorts? For example, in NSF or NIH funding applications, researchers could include policy implications in their grants so if their study is funded, allowing staffers on the policy side to readily pull that information and garner it for quick administration to the policymakers. What are your thoughts on that?

Answer: Excellent question, but slowing down S&T is really sensitive. One might say that it is unethical. Another would say you couldn't slow down S&T even if you wanted to. Personally, I don't think that's true. Whether that's the right thing to do, however, is the root of your question. There is no right or wrong answer, but policy follows societal momentum. If society wanted to shift and slow down S&T, you would see policy that reflected those demands. This is likely to occur if we produce a technology with such profoundly detrimental implications that the general outcry would claim that scientists have too much autonomy and freedom with their work and thus need more oversight. Some of these dynamics are starting to happen, but the best way for scientists and technologists to deal with this is by helping our society discuss, understand, and deal with the issues before we have to defend them. The precautionary movement in Europe, for example, is a caution sign.

Question: Since discoveries are occurring at such a breakneck pace, how do you avoid rushing bad laws that are too standards-based, too vague, or impossible to implement but also not just waiting for good laws and policies to be put forth on the issues?

Answer: Policymakers worry most about weapons of mass destruction in the hands of a despot or crazy person. The probability of that occurring increases with the rapid pace of technological development. The creation of doctrine for nuclear weapons was easy

as we could limit the access to uranium, which is extremely hard to purify. Biology, however, is different, as the materials are readily available. Therefore, we have to worry about powerful technologies in the hands of crazy individuals. In fact, author and scientist David Brin claims the reason why we don't find other advanced species like ours is because they have created technology that lead to their destruction. He believes that all intelligent species are terminal. I hope not.

Question: A lot of what we have been discussing today is the role of scientists and shareholders and trying to spread the word about neuroethics and related issues. You mentioned effective ways to interact with leadership by doing policy work for them. This creates the onus on the community to step forward and become better advocates to write legislation and become leaders. Most people here who have spent a lifetime dedicating themselves to learning and pursuing science but not leadership. Could you share some general points about what leadership offers science and the roles and obligations it has to promote these issues on its own?

Answer: Thank you for that question. I think the Potomac Institute lives in this realm. If you want to do S&T policy, you need scientists who want to do policy. There are, thankfully, a few people in the science realm who are very senior and have therefore become interested in the implications of what they are doing and thus more policy motivated. However, these are few and hard to find even though they are some of the most valuable people in the world. They are in places like OSTP, AAAS, and the Potomac Institute. We believe in policy driven by science and it is important that some people focus their career towards that goal. They need to start from an early age, learning how to be a good scientist and understanding how to apply that to policy. Since the biggest driver in the world today is S&T, scientists and technologists need to do policy as a profession. We are trying to grow those people, professionals who work in the DC system, for S&T. Without them I do not think our town or even country will have a bright future ahead.

Question: You mentioned that there are many policy options such as creating a public debate or working with advocacy groups to do policy for Congress. These options work for a democratic and deliberative society. What about other political systems in the world, such as China, which is relying on S&T to solve many of its social problems? Can science be neutral, non-neutral, or progressive?

Answer: Politicians will tell you that nothing is neutral. That statement is not true. Although we have a great system in this country, we need to better use technology to empower our government. The US Congress is one of the least technologically savvy institutions. We need to help them use technology more and in a broader context. If you look back to the Federalist Papers that were the foundation of the US Constitution and Bill of Rights, you will see that our founders talked about how a democracy is the utopian vision. The old Greek definition of democracy is one man, one vote, though it was impossible at that time to bring all landowners together every year to vote on everything. Due to this, the idea of a representative republic was born. Technology, however, is changing this idea and a government that embraces technology will allow us to be better as a country than we are today. The younger generation who does "likes" postings on Facebook get this. Through technology, we are moving closer to a more pure form of democracy. In regards to China, all but two of the Chinese leadership are technologists. Four of them are PhD level. 94% of the entire ruling class of the military, even down to the rural parts, have technical training. They have an interesting developing capitalistic system. It is a capitalistic totalitarian government that allows freedoms to the extent that the system is driven by technologists. It will be very interesting to see how the China experiment evolves on the world stage of governments. They may have something to teach us or to scare us, it should be closely watched.

Question: How do you scale up? How do you take bench scientists and really scale up to the important topics you have outlined here? Some scientists understand the impact, but others only care when

funding is cut. How do you scale up specifically in the neuroethics and neuroscience policy spaces?

Answer: It's really hard and communication is difficult. Our representatives on Capitol Hill reflect our population and society. We, as a society, are highly reactive. We are not strategic and we don't plan well. For example, we knew before 9/11 that the FBI and CIA did not share data on threats to our country. After 9/11 we showed that this was one of the main reasons we did not detect the terrorist before they acted we fixed the problem. We are reactionary as a rule. Therefore, one of the better ways of improving communications with our policy leaders is to put the issue in the context of the last item they are reacting to. Politicians like to fight the most recent war. For neurotechnology, it is difficult to talk about what might happen. However, it is easier to talk about what is happening in the context of cyber security. For example, we are losing our privacy in the cyber realm you can relate the same issue to neuroscience. It is difficult but we should still try.

BIOGRAPHY

MICHAEL S. SWETNAM

CEO and Chairman, Potomac Institute for Policy Studies

Michael Swetnam assisted in founding the Potomac Institute for Policy Studies in 1994. Since its inception, he has served as Chairman of the Board and currently serves as the Institute's Chief Executive Officer.

He has authored and edited several books and articles including: "Al-Qa'ida: Ten Years After 9/11 and Beyond," co-authored with Yonah Alexander; "Cyber Terrorism and Information Warfare," a four volume set he co-edited; "Usama bin Laden's al-Qaida: Profile of a Terrorist Network," co-authored with Yonah Alexander; "ETA: Profile of a Terrorist Group," co-authored with Yonah Alexander and Herbert M. Levine; and "Best Available Science: Its Evolution, Taxonomy, and Application," co-authored with Dennis K. McBride, A. Alan Moghissi, Betty R. Love and Sorin R. Straja.

Mr. Swetnam is currently a member of the Technical Advisory Group to the United States Senate Select Committee on Intelligence. In this capacity, he provides expert advice to the US Senate on the R&D investment strategy of the US Intelligence Community. He also served on the Defense Science Board (DSB) Task Force on Counterterrorism and the Task Force on Intelligence Support to the War on Terrorism.

From 1990 to 1992, Mr. Swetnam served as a Special Consultant to President Bush's Foreign Intelligence Advisory Board (PFIAB) where he provided expert advice on Intelligence Community issues including budget, community architecture, and major programs. He also assisted in authoring the Board's assessment of Intelligence Community support to Desert Storm/Shield.

Prior to forming the Potomac Institute for Policy Studies, Mr. Swetnam worked in private industry as a Vice President of Engineering at the Pacific-Sierra Research Corporation, Director of Information Processing Systems at GTE, and Manager of Strategic Planning for GTE Government Systems.

Prior to joining GTE, he worked for the Director of Central Intelligence as a Program Monitor on the Intelligence Community Staff (1986-1990). He was responsible for the development and presentation to Congress of the budget of the National Security Agency, and helped develop, monitor and present to Congress the DOE Intelligence Budget. Mr. Swetnam was also assigned as the IC Staff representative to intergovernmental groups that developed the INF and START treaties. He assisted in presenting these treaties to Congress for ratification. Collateral duties included serving as the host to the DCI's Nuclear Intelligence Panel and Co-Chairman of the S&T Requirements Analysis Working Group.

Mr. Swetnam served in the US Navy for 24 years as an active duty and reserve officer, Special Duty Cryptology. He has served in several public and community positions including Northern United Kingdom Scout Master (1984-85); Chairman, Term limits Referendum Committee (1992-93); President (1993) of the Montgomery County Corporate Volunteer Council, Montgomery County Corporate Partnership for Managerial Excellence (1993); and the Maryland Business Roundtable (1993). He is also on the Board of Directors of Space and Defense Systems Inc., Dragon Hawk Entertainment Inc., and the Governing Board of The Potomac Institute of New Zealand.

POTOMAC INSTITUTE FOR POLICY STUDIES

The Potomac Institute for Policy Studies is an independent, 501(c)(3), not-for-profit public policy research institute. The Institute identifies and aggressively shepherds discussion on key science, technology, and national security issues facing our society.

The Institute hosts academic centers to study related policy issues through research, discussions, and forums. From these discussions and forums, we develop meaningful policy options and ensure their implementation at the intersection of business and government.

The Institute remains fiercely objective, owning no special allegiance to any single political party or private concern. With over nearly two decades of work on science and technology policy issues, the Potomac Institute has remained a leader in providing meaningful policy options for science and technology, national security, defense initiatives, and S&T forecasting.

The Potomac Institute for Policy Studies is proud to present the Center for Revolutionary Scientific Thought (CReST).

CReST Keynote

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