POLICY ENTREPRENEURSHIP AT THE WHITE HOUSE

GETTING THINGS DONE IN LARGE ORGANIZATIONS

THOMAS KALIL

> Policy entrepreneurs "are individuals who through their creativity, strategy, networking, and persuasive argumentation are able to bring new policy ideas into the open and promote policy change."
>
> —Michael Mintrom

For a total of 16 years, I had the honor and privilege of working at the White House, first for President Clinton (1993-2001) and later for President Obama (2009-2017). My colleagues and I had the opportunity to help design, launch, and sustain dozens of science and technology policy initiatives. We launched major research initiatives to create the "industries of the future," such as robotics and advanced materials. We worked with Congress to give every agency the authority to support incentive prizes of up to $50 million, and to make it easier for startups to raise capital and go public. We built coalitions of government agencies, companies, foundations, universities, and nonprofits to prepare 100,000 K-12 STEM teachers, foster more vibrant startup ecosystems all over America, advance the Maker Movement and accelerate the commercialization of federally funded research.[1] On a good day we were able to serve as "policy entrepreneurs," which involved generating or spotting new ideas and taking the steps needed to identify and evaluate policy options, support a sound decisionmaking process, ensure implementation, and monitor the effectiveness of the president's policies and initiatives.

I believe that individuals who have had the opportunity to serve as policy entrepreneurs acquire tacit knowledge about how to get things done. This knowledge is difficult to share because it is more like learning to ride a bicycle than memorizing the quadratic formula. Furthermore, the knowledge, skills, and heuristics policy entrepreneurs acquire is often dependent on the particular context they are

operating in. The intellectually honest answer to most questions about politics and policy is either "It depends" or "I'm not sure." Nevertheless, I think there is value in policy entrepreneurs and public servants sharing what they have learned.

I have a number of reasons for reflecting on what I've learned and attempting to share it. First, I have found public service very rewarding. My team and I were able to get things done that I believe are consequential and good for America's long-term future. Since most media coverage of government focuses on its dysfunctional elements (e.g., scandal, partisan gridlock, waste and inefficiency), many people never consider doing a "tour of duty" in government at some point in their career. Second, policy entrepreneurs could play a role in increasing the effectiveness of public servants who are just starting their career. They could do this by collaborating with public policy schools or fellowship programs like the Presidential Innovation Fellowship, the Presidential Management Fellowship, and the American Association for the Advancement of Science. Finally, policy entrepreneurs can help people who are advocating for change in government policy by sharing what they have learned. By sharing this information, the federal government will be less opaque and easier to understand.

This essay is a down-payment on my effort to share what my team and I have learned, and my attempt to entice the reader to consider public service at some point in their career. While some of the observations I share in this essay are specific to the White House, others may have broader relevance for aspiring change-makers working in large organizations. They also may be useful to individuals seeking to build coalitions and exert influence in ways that exceed their formal authority and require the mobilization of resources not directly under their control. That said, most of what follows is my personal opinion, so your "mileage" may vary.

I begin by describing my path to public service. To offer additional context, I describe some particulars of the internal functioning of the White House. I then offer some rules of thumb for getting things done that I believe are relevant for work in large, complex organizations, including but not limited to the U.S. federal government. I discuss various policy instruments that can be combined in different ways to move an agenda forward, and describe some lessons learned that policy entrepreneurs might wish they'd known on day one.

ABOUT THE AUTHORS

Thomas Kalil is a Senior Advisor to the Eric and Wendy Schmidt Group and Entrepreneur-in-Residence at UC Berkeley. Tom has also served at the White House for sixteen years for President Clinton and President Obama. During that time, he and the members of his team have helped design, launch and sustain dozens of science, technology and innovation initiatives.

The National Nanotechnology Initiative

In the late 1990s, I began to work with a group of federal program managers interested in nanoscale science and engineering, including the National Science Foundation's Mike Roco and the Navy's Jim Murday. At the nanoscale (a nanometer is one-billionth of a meter), materials, devices, and structures have novel and potentially useful properties (electrical, optical, mechanical, chemical, magnetic, etc.). Working together, we made the case for increased federal investment in this exciting area of research. For example, we argued that realizing the full potential of nanotechnology would require long-term research beyond the time horizons of individual firms and that the federal government could play an important role. On January 21, 2000, President Clinton gave a speech at Caltech in which he proposed almost doubling the federal investment in nanoscale science and engineering.

Since then, President Clinton's National Nanotechnology Initiative has resulted in $23 billion in research in nanoscale science and engineering, and the development of technological breakthroughs such as lighter, stronger materials and smart anti-cancer therapeutics that destroy tumors while leaving healthy cells untouched. Dozens of other countries have started similar initiatives, and universities have created multidisciplinary institutes, centers, and graduate programs to pursue research and education in nanotechnology.

A PATHWAY TO PUBLIC SERVICE

In 1987, I volunteered with the issues department of the Dukakis presidential campaign. A campaign is boot camp for policy wonks. Staffers in a campaign issues department learn how to gather and synthesize large amounts of information in a short period of time, write position papers and briefing memos, fact-check speeches and campaign ads, prepare candidates for debates, and manage outside networks of experts and advisors.

Although Dukakis lost in 1988, I and many of my friends from that campaign also worked on the 1992 Clinton campaign. As a result, I spent some time in Little Rock writing Clinton's position papers on science and technology. After the election, I was offered a position on the White House's newly created National Economic Council (NEC), where I had the privilege of helping to shape the national agenda for science and technology.

Over the eight years of the Clinton administration, I had the opportunity to work on a wide range of issues. My title evolved over time. I ended my tenure as the Deputy Assistant on Technology and Economic Policy, but my work focused consistently on how information and communications technologies could help us achieve other national goals. For instance, I was deeply involved in efforts to expand access to educational technology, which had four primary objectives: to connect every classroom to the Internet by 2000, to ensure that teachers were as comfortable with a computer as they were with a chalk board, to encourage the development of high-quality online content, and to make sure that K-12 students had access to modern computers with multimedia capabilities. I pushed for the liberalization of Cold War export controls on computers, and also worked on bridging the digital divide. I was the principal White House advocate for the National Nanotechnology Initiative (see Text Box, "The National Nanotechnology Initiative"), and for an initiative to

The BRAIN Initiative

One of the questions I often ask people is, "What ambitious goals should we aspire to meet in the 21st century, in the same way we put astronauts on the moon and sequenced the human genome?" One person who had an answer to that question was Miyoung Chun of the Kavli Foundation. In late 2011, Miyoung had organized a workshop with a mix of researchers from neuroscience, nanotechnology, and synthetic biology. Researchers attending the workshop had concluded that there was an opportunity to do for neuroscience what the Human Genome Project had done for genetics. What was needed was an R&D investment in new tools that would allow researchers to study the brain in action. In 2012, Miyoung and I worked to build a coalition of researchers, philanthropists, and federal agencies that were prepared to back this idea. In April 2013, President Obama unveiled his Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative, a multiagency "grand challenge" to accelerate understanding of the human brain. The BRAIN Initiative brings together the scientific community with federal and private funding partners to dramatically increase understanding of how the brain processes and encodes information. Five federal agencies have invested in the effort, with the Intelligence Advanced Research Projects Activity joining the Defense Advanced Research Projects Agency (DARPA), the National Institutes of Health, the National Science Foundation, and the Food and Drug Administration. For the BRAIN Initiative, we used the preparation of the president's budget to ramp up the federal investment from $100 million in FY14 to more than $430 million per year in FY17. We also expanded the coalition of organizations that were investing in the goals of the BRAIN Initiative, which included not only government agencies but companies, foundations, research universities, and nonprofits. As part of the 21st Century Cures Act, Congress provided an additional $1.5 billion to support National Institutes of Health participation in the BRAIN Initiative, bringing total public and private investment in the initiative to $3 billion.

Research continues. In May 2017, researchers at Stanford and Caltech announced the development of new optical technologies that enable them to record across much of the neocortex of an awake mouse, which provides new insights into how the mammalian brain coordinates neural activity to complete voluntary behaviors. As Justin Sanchez, the DARPA program manager for this work, noted, "DARPA created the Neuro-FAST program to find new ways to see the brain, and the optical technologies we've developed now allow researchers to observe the brain in detail as it processes behavior." (http://www.darpa.mil/news-events/2017-05-18)

increase funding for long-term information technology R&D.

During my time at the NEC, I learned the importance of developing relationships with people both inside and outside the government, and of serving as a "force multiplier" for their work. For example, one reason we were able to get so much done on educational technology is that we had great allies, including Linda Roberts, director of the Department of Education's Office of Education Technology. My colleagues and I were able to support Linda by getting support from the president, including funding for educational technology in the president's budget, launching new initiatives with high-profile announcements, and celebrating progress. It would have been impossible to spend of all of my time on educational technology, given the portfolio of issues I was responsible for managing, but the

The Structure and Purpose of the National Economic Council and the Office of Science Technology Policy

The National Economic Council (NEC) was created by President Clinton in January 1993 to coordinate economic policymaking processes within the White House. Located in the Office of Policy Development, it is a part of the Executive Office of the President. (EOP) Executive Order 12835, which established the NEC, lays out four principal functions:

- To coordinate policymaking for domestic and international economic issues
- To coordinate economic policy advice for the president
- To ensure that policy decisions and programs are consistent with the president's economic goals
- To monitor implementation of the president's economic policy agenda

The NEC is composed of department and agency heads whose portfolios have relevance for the U.S. economy. The NEC director coordinates the president's economic policy priorities across the administration. The hierarchy of titles for the NEC staff is inverse to most people's expectations; the director is the most junior position, followed by senior director, special assistant to the president, and deputy assistant to the president; the head of the NEC is an assistant to the president.

The White House Office of Science and Technology Policy (OSTP) was established by Congress in 1976. In addition to advising the president and the administration on the scientific and technical aspects of policy matters, OSTP coordinates interagency efforts on science and technology policy, assists with the annual analysis of federal R&D budgets by the Office of Management and Budget, and offers expertise to inform presidential decisions with respect to federal policies, plans, and programs. The OSTP director under President Obama—also known as the president's science advisor—was Dr. John Holdren. OSTP plays a critical role in guiding "policy for science" (What investments in federal R&D should the president prioritize?) and "science for policy" (How can the best possible science inform areas of policy such as arms control or energy and climate?).

OSTP has historically had four divisions: Science, National Security and International Affairs, Energy and Environment, and Technology. OSTP was also the home of President Obama's chief technology officer, a position held in turn by Aneesh Chopra, Todd Park, and Megan Smith.

administration was able to make progress on educational technology (and other S&T policy issues) because we developed a network of partners inside and outside the government. These colleagues could generate ideas, implement initiatives the president had decided to support, and let us know if White House involvement was needed to keep our priorities on track.

Most recently, I served under President Obama as Deputy Director of the White House Office of Science and Technology Policy (OSTP) and Senior Advisor to the White House National Economic Council. In 2008, the Obama campaign asked me if I would be willing to lead the transition team for OSTP. In December 2008, President-elect Obama invited Dr. John Holdren to be his science advisor,

and Dr. Holdren asked me to serve as his deputy.

One thing that was different about my second tour of duty at the White House was that I was in a position to recruit and lead a team, which eventually grew to 20 OSTP staff members. Each member of my team was also collaborating with people in the White House, federal agencies, Congress, universities, foundations, companies, think tanks, professional societies, state and local governments, international organizations, etc. This significantly increased the number of policies and initiatives we were able to shape or launch using tools such as legislation, regulation, the preparation of the president's budget, proposing actions agencies could take using existing budgets and legislative authority, and public-private partnerships.

During my time at the White House, I recruited people to work at OSTP on a wide range of issues, including the following:

- Drafting and implementing President Obama's Strategy for American Innovation
- Inspiring more young people to excel in STEM education, computer science, and Maker-centered learning
- Identifying and pursuing the "moonshots" of the 21st century, such as the President's BRAIN Initiative (see Text Box, "The BRAIN Initiative")
- Improving the environment for starting and growing a business in the United States, and increasing the diversity of America's entrepreneurial ecosystem
- Creating multiagency research initiatives in areas that had the potential to create the industries and jobs of the future, such as advanced manufacturing, the Materials Genome Initiative, the National Robotics Initiative, synthetic biology, data science, high-speed networks, next-generation wireless technologies, and smart cities
- Using new insights from the behavioral sciences to achieve important policy objectives, such as encouraging members of the military to save more for the future
- Encouraging federal employees to use new approaches to solve problems and promote innovation, such as incentive prizes, crowdsourcing, and citizen science
- Harnessing science, technology, and innovation to meet administration goals in global development and global health
- Reducing the waiting list for organ transplants
- Strengthening U.S. leadership in the commercial sector
- Improving the regulatory environment for biotech entrepreneurs

After recruiting the members of my team, I adopted several strategies to increase their effectiveness. First, I gave them a great deal of autonomy and encouraged them to work on projects they found intrinsically motivating. I think intrinsic motivation is more effective at getting people to do their best work than micromanagement. Second, I tried to pass along what I had learned about getting things done. I would give new staff members suggestions about people to talk to, things to read, and tactics to try. Third, I was an advocate for their ideas. There are many "veto points" within the federal government, and I tried to help my staff if they had reached an impasse that required turning to senior-level decision-makers to resolve. Finally, I fostered a collaborative environment. The members of my team genuinely enjoyed working together. They shared ideas, contacts, advice, and tactics, and were always willing to pitch in when someone on the team needed help with a project or was organizing a large White House event. When people ask me what I am most proud of

accomplishing during my service in President Obama's White House, it is definitely recruiting and empowering an amazing group of public servants and policy entrepreneurs. I am very proud of what they accomplished during President Obama's tenure, and am confident they will go on to do great things over the course of their careers.

"INFLUENCE WITHOUT AUTHORITY" AS A JOB DESCRIPTION

I often tell people that "influence without authority" is one of the most valuable skills a White House staffer can have. That's because many of the things the White House wants to accomplish are ultimately done by someone else. The White House does not conduct scientific research, provide grants or contracts, deliver services to citizens, enforce the law, pass legislation, issue regulations, or provide appropriations to the federal government. Even when the president issues an executive order, his decisions are rarely self-executing and require implementation by one or more federal agencies.

One thought experiment that I used to pose to the members of my team is to imagine that they had 15 minutes with the president. If he thought that they had a compelling idea with strong evidence to support it and a solid implementation strategy, he was willing to pick up the phone and call anyone. If it was someone in the federal government, he could direct them to take some course of action. If it was someone outside the government, he could challenge them to do something.

My goal was to give the members of my team a sense of agency and the conviction that the status quo is changeable, not fixed and immutable. I also wanted them to appreciate the value of concreteness, to understand that things happen in the world when individuals and organizations take concrete action in the pursuit of a goal. Effective policy entrepreneurs have the ability to identify who needs to do what to achieve their goals, which is particularly important for White House staff, given that most of what they accomplish will be implemented by someone else. For example, an OSTP staffer working on a national research initiative did not have a research lab in the White House, nor did they award grants and contracts to scientists. It usually meant they had persuaded the president to include funding for that research initiative in his budget, that Congress had approved the funding, and that designated agencies then used the funds to pursue the particular research goals.

Identifying who needed to do what to achieve a given goal (or, as we used to put it, "A does B so C") was only the first step. We also needed to answer questions such as:

- How likely was it that a given set of actors would be both willing and able to take the action we had proposed? For example, we couldn't ask an agency to take some action they didn't have the legislative authority to do, and we couldn't challenge a publicly traded firm to take some action that was contrary to the interests of its shareholders.
- If an organization was willing but not able to act, could we (or some other actor) relax the relevant constraint?
- If an organization was able but not willing to act, could we address their concerns by providing additional evidence or modifying the proposal?
- If our goal required that multiple individuals and organizations work together over an extended period of time, was there a forum where that collaboration could occur?

As discussed below, in order to exert influence without authority, OSTP staff

had to develop and maintain strong relationships with federal agencies, other White House policy councils, and external organizations such as companies, foundations, and nonprofits.

The Critical Importance of Working Collaboratively with Agencies

OSTP couldn't have accomplished much without having strong relationships with key decisionmakers within federal agencies. Ideally these agencies would (a) react to the ideas OSTP proposed; (b) suggest ideas to us; and (c) implement the ideas we jointly agreed to pursue.

When these relations were working, they were based on mutual understanding, trust, candor, and reciprocity. White House staff understood the agency priorities, and vice versa. The agencies in turn believed in the White House commitment to follow up on agreed-upon action items, and to treat certain information as confidential. White House staff made sure that agency staff members were comfortable disagreeing with the White House or improving on the proposals the White House suggested.

To be functional, OSTP's relationship with agencies had to be two-way street, as opposed to a stream of one-sided requests. This meant that OSTP had to share information, and to identify things we could influence that were important and meaningful to the agencies, such as their budget, a presidential "shout out" in a speech, cooperation from other agencies, and so forth. Sometimes we took actions that were symbolic but meaningful, such as inviting agency leaders or staff to a White House event, helping them promote an initiative via OSTP social media platforms, praising something they had done—even inviting them to go bowling at the White House.

Developing strong relationships with agencies also required understanding the internal dynamics of an organization, the personalities of the senior leadership, and the agency culture. How are decision-rights allocated? What are the key internal meetings? Are there personality disputes or differences of opinion that affect how the agency operates? Which people in the agency actually follow up on something they make a commitment to do?

One step OSTP took under the Obama administration was to ask agencies to increase their capacity in areas important to OSTP. For example, Congress had provided OSTP with $2 billion to support community colleges, so it helped the Department of Labor recruit an expert in online learning because it wanted to devote some of the funds to online learning. OSTP also worked with NASA to create a "center of excellence" for open innovation, which increased NASA's capacity to use approaches such as crowdsourcing and incentive prizes to solve problems.

Taking Advantage of the Administration's "Bully Pulpit" and Ability to Convene

President Obama often highlighted the importance of an "all hands on deck" approach to solving problems. When actions by the federal government could not solve a particular issue, the president would often issue a "call to action" to inspire stakeholders (companies, research universities, nonprofits, foundations, state and local governments, etc.) to make specific commitments that advanced the administration's priorities.

For example, in his 2011 State of the Union Address, President Obama set the goal of preparing and recruiting 100,000 high-quality K-12 STEM teachers by 2021. To help achieve this goal, the Carnegie Corporation formed a coalition with 280 members called 100kin10, and

they are currently on track to achieve this goal. President Obama used events like the White House Science Fair to highlight the progress the coalition was making and to inspire other organizations to join them. President Clinton called the coalition "a metaphor for how the world should work."

My team was involved in similar efforts, including those to accelerate the development of applications using high-speed computer networks (US IGNITE); promote entrepreneurship in communities across the country (Startup America); foster collaboration between cities and universities to develop "smart cities" (MetroLab Network); increase the number of Americans, young and old, participating in the Maker Movement (Nation of Makers); ensure that more children of military families had access to AP math and science courses (NMSI Initiative for Military Families); encourage professionals to engage in STEM mentoring for K-12 students (US2020); make computer science a new basic in the K-12 curriculum (CS for All); and reduce the waiting list for an organ transplant.

To promote these efforts, OSTP staff would draft and seek approval for a "call to action" from the president or a senior official, identify potential roles for different types of organizations, work with organizations to craft a specific and credible commitment, and organize a high-profile public event at which these commitments would be announced. For many of these initiatives, an external organization was responsible for measuring progress, expanding the coalition, and ensuring that the coalition members were learning from each other to accelerate progress. These initiatives were more likely to succeed when they had clear and compelling goals, entrepreneurial leaders, and sustained attention (as opposed to a single kickoff event) from the White House and federal agencies.

Making a Policy Priority an Element of White House or Agency Initiatives

One of OSTP's goals was to identify instances where science, technology, and innovation could advance presidential priorities. For example, OSTP was able to make these three elements one of the pillars of the Presidential Policy Directive on Global Development policy; to make STEM and educational technology an element of the Presidential Study Directive on military families; and research a part of the president's executive order on mental health services for veterans and service members, all of which we believed could have a significant impact. For example, the Presidential Policy Directive on Global Development encouraged USAID to create the Global Development Lab, and to increase the role that science, technology, innovation, and partnerships played in advancing USAID's mission. The Global Development Lab became a champion of doing development differently—for example, by using incentive prizes, "grand challenges," mobile technology, and Big Data. Integrating science, technology, and innovation into the administration's broader policy agenda required OSTP to develop strong relationships with other policy councils, such as the Domestic Policy Council, the National Security Council, and the National Economic Council, so we could inform new policies as they were being developed.

TWELVE MAXIMS FOR GETTING THINGS DONE

Getting things done in government almost always requires making context-dependent judgment calls. However, I found certain observations, principles, and rules of thumb to be useful in many different contexts, which I shared with the members of my team and other OSTP staff. Below are some examples.

1. Have an agenda, rather than merely reacting to the agenda of others or to external events.

Policymakers are most effective when they are trying to accomplish something specific that they can clearly articulate:

- What am I trying to get done? What is the status quo? What is a more desirable future in the issue area that I care about?
- How will my project get done? What public and private actions or resources are needed to achieve my goals?
- How will I know if my idea is successful? What metrics of success can be tracked over time?
- Why do I believe this is the right thing to do, and that doing A will (or is likely to) cause B to occur?
- Whom do I need to convince of the value of my idea? Who should be involved in its implementation?
- How do I communicate the essence of my idea to a non-expert?

Finding the answers to these questions may require interacting with smart people and stakeholders inside and outside of government, and the answers may evolve over time. You may ultimately have to compromise or settle for only part of what you want. Of course, there is a happy medium between having no opinion and being overly dogmatic and unwilling to compromise or accept people's suggestions for improving your idea. In any case, if you can't ultimately answer your questions, your effectiveness will be limited.

2. Ask interesting questions.

Sometimes we go immediately to answers without taking time to reflect on what the right questions are. We should ask the world the questions we are asking ourselves as a way of soliciting help and ideas. OSTP has occasionally used formal requests for information to solicit information from the public.

3. If you want someone to help you, make it as easy as possible.

Making it easy for people to help you is almost always a good idea. If I wanted a senior White House staff member to intervene on a given issue, for example, I wrote the e-mail I wanted them to send or developed talking points for the conversation I wanted them to have. Whenever possible, I would identify both the problem and the solution.

At OSTP we had considerable success in encouraging agencies to increase their use of prizes and challenges. We worked with Congress to pass legislation that gave all federal agencies the authority to sponsor prizes and challenges. We worked with the Office of Management and Budget to issue guidance to agencies that reduced uncertainty about the meaning of the new prize authority statute, and we worked with the General Services Administration to get providers of specialized services related to prize management on their schedule in order to reduce the time it took agencies to procure their services. Agencies dramatically increased the number of incentive prizes they sponsored because we reduced the transaction costs of doing so.

4. Work from the top down and the bottom up.

If you are trying to get an agency or organization to take some action, it is best to work from both the bottom (or middle) of the organization and the top. If you work an issue only from the bottom up, the lower level staff may not have decision-making rights or may be overly conservative; this is particularly true for some civil servants. On the other hand, if you take only a top-down approach, you may not be able to address the arguments the

staff makes. If staff members are strongly opposed to an idea, they may not be committed to its implementation, may "slow roll" you, may roll back the initiative after you leave, or simply stop paying attention.

5. Understand the pros and cons of multilateralism, minilateralism, and bilateralism.

In addition to understanding the objectives of a particular policy, it can be valuable to see one's role in the policy process as a form of diplomacy. I describe three of the strategic approaches we most commonly used as bi-, mini-, and multilateralism:

- Bilateralism: One-on-one conversation with another organization. Advantages include (a) people are more candid and willing to share information in a one-on-one conversation; (b) it's easier to negotiate and to find common ground with just one other person; and (c) a senior person within an organization is generally available for a one-on-one meeting; this is true for organizations within and outside government.
- Minilateralism: A meeting between OSTP and a small group of agencies or outside organizations. This is especially useful for brokering a collaboration between two or more organizations, or for getting a small group of agencies or organizations on board before trying to build a broader coalition. Meaningful collaboration is generally much easier between two agencies than five or ten.
- Multilateralism: Large group meetings. It is harder to have successful large group meetings, as it is more difficult to reach consensus. However, large meetings are useful for sharing information or broadcasting an assignment to a group of agencies, and some decisions require broad buy-in. Large group meetings can also be useful for building coalitions, and they may be necessary if achieving government-wide consensus on a topic is critical.

6. Increase the likelihood of follow-up.

People don't follow up as often as we'd like. There are some things you can try to increase follow-up:

- Ask a person when they think they can complete their assignment.
- Send them an e-mail documenting their commitment.
- Keep a list of important commitments others have made to you or put a reminder to yourself on your calendar to get in touch with them.
- Try to figure out why someone is not following up (e.g., they don't understand what you want, they are too busy, they don't really support your idea, they need someone else's collaboration and can't get it, they forget).
- Create a deadline—even an artificial one.
- Escalate the pressure (e.g., meet with their boss).

7. Find and recruit allies.

Find people with shared interests who can help you get your job done. Think about people with specific skill sets whom you could recruit to the federal government. Develop and manage a network of allies with aligned interests, such as:

- Idea people, especially those with specific ideas on "what, how, and who" and are willing to commit them to paper;
- Special assistants, chiefs of staff, gatekeepers, and schedulers for key principals;
- "Doers" who follow up when they agree to do something;
- Opinion-makers, key media contacts, and people with a large following;

- Foundation staff and executives; and
- Intermediary organizations that (a) can help you engage in wholesale rather than retail efforts at coalition-building; (b) are trying to scale-up an intervention that the administration supports.

Kumar Garg, who joined my team in June 2009 and who became my de facto number two, had a favorite maxim while at OSTP: "find your doers." Doers are energetic and entrepreneurial people who take responsibility for the execution of an idea, even if important elements of the process are outside their job description. If they get stuck, they are willing to explain why and what help they need. Many people expressed interest in collaborating with OSTP, and Kumar would audition them by giving them a straightforward task that could be done in 15 minutes. People who passed this test would be given progressively more challenging assignments.

8. Think of the end at the beginning.

It usually makes sense to identify your desired results at the beginning of a policy process and to work backward from that. For example, if you want an agency to issue a request for proposals on a given technical topic, try to determine who within the agency will have to approve it and who can draft it, and ensure that they support the idea.

9. Save the world one document at a time (or "write it down, make it happen").

It's likely that, at some point in the policy-making process, the policy will need to be instantiated in one or more documents in order to make and implement a decision. I often told members of my team that part of moving a decision forward is to first discover what document (or documents) need to be written so the policy can be implemented. What you're trying to do will determine the appropriate policy lever. For example, developing a regulation like the International Entrepreneur Rule requires publishing a draft in the Federal Register, collecting public comment, and finalizing a rule that goes into the Code of Federal Regulations. If you're trying to launch a multi-agency research initiative, it may require a request for proposals that's embraced by multiple agencies and an inter-agency memorandum of understanding that allows any one of those agencies to fund submitted proposals. If your goal is to send a clear signal that something is a presidential priority, then issuing a presidential memorandum or executive order can help accomplish that. These documents also generally direct one or more agencies to take some concrete action.

Other documents useful in the development and implementation of policy include funding proposals for the president's budget, a proposal to hold a presidential event, amicus briefs on important cases, administration policy statements on proposed legislation, agency directives, fact sheets and other event press releases, and memoranda of understanding between agencies or with outside organizations.

While not all policy goals can be accomplished through documents alone, they are critical in framing a challenge or opportunity, presenting options, making a decision, and implementing that decision.

10. Make the schedule your friend.

High-priority events—including events in the White House held by the president, the vice president, senior advisors, and members of the Cabinet—can allow an organization to get a great deal accomplished, including:

- Signaling to the world that your issue is an administration priority;
- Creating an artificial deadline for agency and private-sector commitments;
- Working with a speechwriter to make an important point, highlight a success story, issue a call to action, or set an ambitious but achievable goal;
- Offering supporters of an initiative the opportunity to meet or hear from the president; and
- Drafting a fact sheet that can go into detail about public and private commitments.

Before you suggest holding an event, be clear what the answers are to key questions:

- What message will the event will convey?
- What is the president (or some other administration official) announcing?
- What are the deliverables?
- Is there a compelling backdrop or visual?
- Who is accompanying the president at the event?
- Who are the potential third-party validators or critics of the policy proposal that is being announced?
- If you could write the headline and the first paragraph of an article covering the event, what would it say?

11. Use standing meetings effectively.

Questions to ask yourself before going to a meeting include:

- What are you trying to accomplish?
- Have you worked to "pre-sell" your position to key participants in the meeting?
- Should you bring a document to help shape the discussion and signal your interest in the topic?
- Are clear next steps and assignments coming out of the meeting and captured in minutes?

Standing meetings provide another opportunity for action. One important standing meeting in the White House was the 8:30 senior staff meeting led by the chief of staff and attended by Dr. Holdren. It offered Dr. Holdren the opportunity to raise issues with other senior White House advisors.

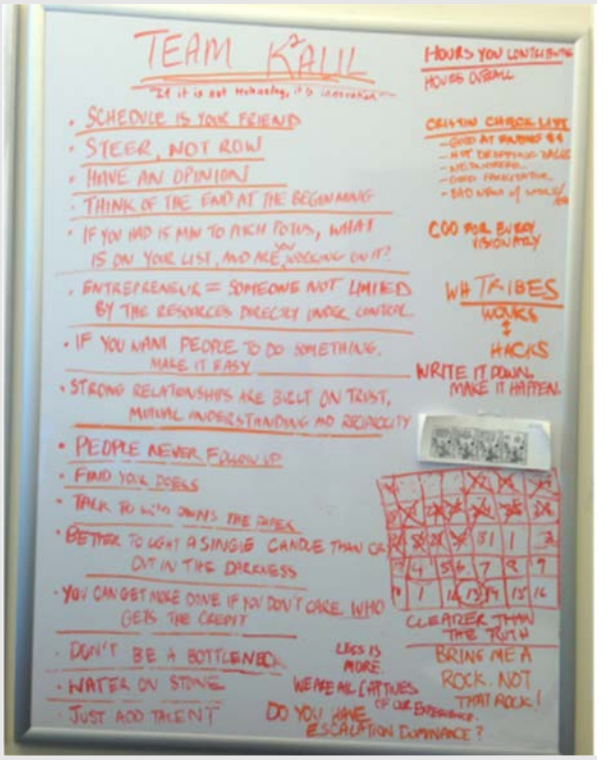
12. Have a large and constantly growing "toolbox."

Policy entrepreneurs must be able articulate a coherent relationship between means and ends. They also need to identify the policy levers that will help achieve a given goal, such as changes in the tax code, regulatory policy, legislation, R&D investments, etc.

Policy entrepreneurs are more likely to be able to propose the right mix of tools if they increase their understanding of how and under what circumstances they might use a given policy instrument. One hallmark of President Obama's innovation policy was to encourage experimentation with different techniques for solving problems. Examples include incentive prizes, grand challenges, multisector collaborations, harnessing behavioral insights to improve policies and programs, citizen science and crowdsourcing, human-centered design, making open data available in machine-readable format so third-party developers can create value-added services, innovative procurement tools that allow the government to partner with commercial firms and startups, and the authority to recruit top talent for a tour of duty in government.

The "Team Kalil" Whiteboard

Most OSTP staff had never worked at the White House, and many were also new to the federal government. To help them with the "onboarding" process, I prepared several presentations and documents, one of which was called "Getting Things Done at the White House." Kumar Garg, started a list of the aphorisms in these documents and contributed some of his own.



- Schedule is your friend
- Steer, don't row
- Hours you contribute/Hours overall
- Have an opinion
- Think of the end at the beginning
- If you had 15 minutes to pitch POTUS, what is on your list and are you working on it?
- Entrepreneur = someone not limited by the resources directly under their control
- If you want people to do something, make it easy
- Write it down. Make it happen.
- Strong relationships are built on trust, mutual understanding, and reciprocity
- People never follow up
- Find your doers
- Talk to who owns the paper
- Better to light a single candle than cry out in the darkness
- You can get more done if you don't care who gets the credit
- Don't be a bottleneck
- Water on stone
- Just add talent
- We are all captives of our experience
- Do you have escalation dominance?

Where New Ideas Come From

Policy entrepreneurs will be more effective if they are open to ideas that come from a variety of sources within and outside the government, from experts and citizens alike. Existing commitments the president made during the campaign or while in office are an excellent starting foundation, but consider too the input of advisory committees (such as PCAST, the President's Council of Advisors on Science and Technology), agency advisory committees (e.g., the Defense Science Board), or external "blue ribbon" commissions. Reports from congressional organizations such as the Congressional Budget Office or the Government Accountability Organization can provide another perspective on which administration policies to pursue, as can legislation introduced in the current or prior Congress. The National Academy of Sciences, think tanks, and academic literature can be rich repositories of ideas ready for translation to action.

Imitation of a good idea should be embraced; an idea, model, or approach that has been successful in one context can be adopted by another. For instance, former U.S. Chief Technology Officer Todd Park and serial entrepreneur Steve Blank helped encourage the translation of Silicon Valley's Lean Startup methodology to applications within the federal government. Innovative practices are often first adopted by some institutions (e.g., state and local government, universities, nonprofits) but not others, which makes it important to keep scanning the progress of other institutional actors.

Finally, good policy entrepreneurs keep their eyes and ears open to ideas from the crowd. Understand the position of stakeholders (e.g., private sector, professional societies, foundations, nonprofits) as expressed in position papers, congressional testimony, etc., and also consider using workshops and requests for information to the public to solicit citizen participation directly.

SKILLS AND DISPOSITIONS REQUIRED FOR SUCCESS

To be successful using the above strategies requires nurturing certain learnable skills.

The Diplomat: Has the ability to act as an honest broker to resolve interagency disputes or help agencies reach consensus on a policy issue. This is critical because a lack of consensus can delay progress on an idea or initiative.

The Visionary: Has the ability to generate or spot good ideas. In the White House, this is especially valuable in the run-up to the budget, major policy addresses, and presidential or cabinet events. Effective policy entrepreneurs have the ability to get excited about others' ideas, not just their own, which dramatically increases the number of ideas they can advocate for.

The Advocate: Has the ability to be an effective champion for the president's priorities. This requires the ability to explain in a compelling way why something is a priority and what individuals and organizations can do to advance it. This is important because presidential decisions are rarely self-executing and may require action by the Congress, federal agencies, state and local governments, the private sector, and civil society.

The Communicator: Has the skill of clear and concise oral and written communication with multiple audiences. A communicator also has a solid understanding of what different audiences are looking for (e.g., scientists and engineers vs. White House communications officers vs. an Office of Management and Budget exam-

Relationships with Other EOP and White House Components

Getting things done often requires understanding how the rest of the Executive Office of the President operates, who else cares about the issues you work on, what constitutes success for other EOP offices, and how to communicate and work effectively with them. In some cases, OSTP staff managed the relationships with the following offices:

- Other policy councils: National Economic Council, Domestic Policy Council, National Security Council, Council of Environmental Quality
- White House Communications Office. OSTP played a key role in choosing presidential events and the "message of the day."
- Office of Public Engagement. Promoted good relationships with outside groups.
- Office of Digital Strategy. Oversaw effective use of the Internet to get the White House message out and engage the public.
- Speechwriter. Speechwriters are looking for compelling facts and figures, clear goals, moving stories about individuals, metaphors, and a framework and narrative arc for the speech.
- White House Legislative Affairs
- Office of the First Lady, Office of the Vice President
- Staff Secretary. Managed the paper flow to and from the president.
- Office of Management and Budget
- Presidential Personnel

iner). This requires having empathy for the individual you are collaborating with and the ability to ask what motivates them and how they define success in their role. It requires establishing the context needed for them to understand your idea; to avoid using jargon, special vocabulary, or acronyms they are unlikely to understand; and to know what "mental models" they use to make sense of the world.

The Student: Is comfortable as a generalist when necessary and can quickly get up to speed on a new issue. This is particularly important in an environment like the White House, where individuals may have a broad portfolio and need to respond to varied crises or external events, such as Deepwater Horizon, Fukushima, and the Ebola and Zika outbreaks.

The Recruiter: Identifies people who should be working for the government or for newly created positions. The recruiter is more likely to steer than row and, like Tom Sawyer, is able to get colleagues and associates to help "paint the white picket fence."

The Organizer: Follows up on the status of a commitment to an action and tracks next steps.

The Connector: Builds networks of people who can help generate ideas. The connector helps prevent surprises, finds out what is really going on inside other organizations, and gets things done.

COMMON PITFALLS

Spreading Yourself Too Thin

When we try to do too many things, there is a danger that we will get none of them done. We must learn instead to identify opportunities for "surgical interventions." In my case, there were a number of instances when I put in enough time to get President Obama to embrace an idea but not enough to build congressional

support. For example, for five years the president called for the creation of a "DARPA for Education" that would invest in high-risk, high-return research to develop breakthroughs in learning technologies, such as advances in artificial intelligence to create software as effective as a one-on-one tutor.[2] I did not devote enough time to this initiative to build congressional support for it, so it was never enacted.

Allowing the Urgent to Drive Out the Important

Imagine that you have 15 minutes to pitch an idea to the president, one you can seriously imagine him including in a major policy address and you spending some time to make happen. Why aren't you working on that, as opposed to devoting too much time to things that are not that important? I encouraged my team to "steer, not row," and to make sure they had a federal agency or external partner that could implement a desired initiative. They also needed to block off time to do work that was important but not urgent, to make sure that progress would continue on their biggest priorities, no matter what short-term issues arose.

Spending Too Much Time on Reports

Before you devote a great deal of time to drafting, editing, and seeking approval of a report, ask yourself whether it is really necessary, how it will help you advance your agenda, and what additional work will be required to implement the report's recommendations. Have a clear theory of what action will flow from it. It's far more likely that something will happen if you use your document not only to articulate things someone might do but also to lay out the specific things particular people or organizations agree to do by a given date.

Allowing Something to Drag On Indefinitely

When necessary, try to force resolution of an issue that is dragging on by resorting to escalation with your partner agency or organization. This might involve having your boss meet or communicate with their counterparts to resolve the issue or, if necessary, to prepare a decision memo for the president.

Failing to Plan How Your Ideas and Initiatives Will Survive to the Next Administration

Some initiatives survive the transition from one administration to the next, while others are washed away like a sand castle on the beach. For example, although President Clinton unveiled the National Nanotechnology Initiative in January 2000, his last year in office, the effort was also embraced by presidents Bush and Obama. I believe this initiative has survived for more than 17 years because:

- The topic is not partisan, unlike health care, climate change, or the minimum wage;
- Congress passed a law authorizing the initiative in 2003;
- The Clinton administration created a "coordination office" charged with helping the agencies that were working together and preparing reports for Congress on the federal investment in nanoscale science and engineering; and
- There was a group of companies, industries, national labs, research universities, and scientific professional societies that supported the initiative.

These favorable conditions will not exist for all initiatives, and policymakers should therefore consider what they can do to increase the chances that their initiatives will carry on.

Allowing People to Be Surprised

People dislike being surprised, even if it is good news. It is important to lay the groundwork before announcing a major new action by floating trial balloons for feedback, taking time to introduce a plan in a one-on-one setting before a meeting, and so forth.

CONCLUSION

Successful policy entrepreneurs know how to wield influence that exceeds their formal authority, build coalitions, take advantage of open "policy windows," and, more generally, know how to get things done in complex environments. They also learn about the strengths and limitations of different policy tools, and about the challenges and opportunities in specific policy domains.

Although some of this information and know-how is highly context dependent, much of it is generally applicable. In fact, it could be highly useful to students interested in a career in public service who are getting a master's degree in public policy; to people participating in fellowship programs such as the American Association for the Advancement of Science or the Presidential Management Fellowship program; and to citizens seeking to shape or inform public policy.

One way to disseminate this information would be through a partnership between public policy schools and policy entrepreneurs. They could capture and synthesize information about the range of traditional and new tools policymakers are using to solve particular problems. This is important because advancing public policy requires a coherent relationship between means (the policy tools that will help achieve a given goal) and ends (the goal). More citizens and public servants will be able to propose creative solutions to important problems if they understand what tool (or combination of tools) is likely to be successful.

[1.] The Maker Movement is a grassroots community of people that are interested in being producers of things, not just consumers. New tools and technologies such as laser cutters and open source electronics are enabling individuals and small teams to design and make just about anything.

[2.] DARPA stands for Defense Advanced Research Projects Agency, which is an agency of the U.S. Department of Defense responsible for the development of breakthrough technologies for national security.