Open Government

Transparency, Collaboration, and Participation in Practice

Edited by
Daniel Lathrop
& Laurel R. T. Ruma

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CONTENTS

	FOREWORD *by Don Tapscott*	xvii
	PREFACE	xxi
1	A PEACE CORPS FOR PROGRAMMERS *by Matthew Burton*	1
	Tipping Point: The Extinction of Pencils	4
	Competition Is Critical to Any Ecosystem	4
	Creating a Developer Corps	6
	Conclusion	8
	About the Author	9
2	GOVERNMENT AS A PLATFORM *by Tim O'Reilly*	11
	Government As a Platform	12
	Lesson 1: Open Standards Spark Innovation and Growth	15
	Lesson 2: Build a Simple System and Let It Evolve	18
	Lesson 3: Design for Participation	22
	A Robustness Principle for Government	25
	Lesson 4: Learn from Your "Hackers"	29
	Lesson 5: Data Mining Allows You to Harness Implicit Participation	32
	Lesson 6: Lower the Barriers to Experimentation	34
	Lesson 7: Lead by Example	36
	Practical Steps for Government Agencies	38
	About the Author	39
3	BY THE PEOPLE *by Carl Malamud*	41
	About the Author	47
4	THE SINGLE POINT OF FAILURE *by Beth Simone Noveck*	49
	The Closed Model of Decision Making	50
	New Technologies and Civic Life	53
	Participatory Democratic Theory in the Age of Networks	58
	About the Author	69
5	ENGINEERING GOOD GOVERNMENT *by Howard Dierking*	71

The Articles of Confederation and the Stovepipe Antipattern 72
Continued Maintenance: The Blob and Confederacy 77
Conclusion 80
About the Author 81

6 ENABLING INNOVATION FOR CIVIC ENGAGEMENT 83
by David G. Robinson, Harlan Yu, and Edward W. Felten

Citizen Initiatives Lead the Way 83
Providing for Reuse and Innovation 84
Data Authenticity Down the Line 87
Why Bother with Bulk? 88
Conclusion 89
About the Authors 90

7 ONLINE DELIBERATION AND CIVIC INTELLIGENCE 91
by Douglas Schuler

Definitions and Assertions 91
Democracy, Deliberation, and the Internet 95
Findings and Issues 100
Conclusion 103
About the Author 104

8 OPEN GOVERNMENT AND OPEN SOCIETY 105
by Archon Fung and David Weil

Transparency's Moment? 105
The Dark Side of Open Government 106
The Missing Diagnosis 108
Targeted Transparency 109
A Matter of Politics 111
Conclusion 111
About the Authors 113

9 "YOU CAN BE THE EYES AND EARS": BARACK OBAMA AND THE WISDOM OF CROWDS 115
by Micah L. Sifry

Change.gov Shows How to Change the Gov 116
"You Can Be the Eyes and Ears" 116
Recovery.gov Site Still Under Construction 117
Online Town Hall or "Participation Theater"? 118
Open Data and Open Government 119
Co-creation, Co-optation, or Collision? 121
About the Author 122

10 TWO-WAY STREET: GOVERNMENT WITH THE PEOPLE 123
by Mark Drapeau

Pockets of Excellence: The Goverati 124
Conclusion 129
About the Author 129

11 CITIZENS' VIEW OF OPEN GOVERNMENT 131
by Brian Reich

The First "We President" 132
The Internet Has Made Us Lazy 133
Toward a Findable Government 135
Advanced Citizenship 136
Conclusion 138
About the Author 138

12 AFTER THE COLLAPSE: OPEN GOVERNMENT AND THE FUTURE OF CIVIL SERVICE 139
by David Eaves

The Coasean Collapse 140
The Long Tail of Public Policy 141
Patch Culture 143
The End of Objectivity 144
Two Preconditions to Government As Platform: Capacity for Self-Organization and Collaboration 146
Extend the Network 148
The Next Civil Service Culture: The Gift Economy 149
Conclusion 150
About the Author 151

13 DEMOCRACY, UNDER EVERYTHING 153
by Sarah Schacht

Many Voices, Many Messages, One Government 153
My Idea 155
Revealing Obscured Government Data 157
Improving Communication without Being Crushed by Email 160
How to Improve Civic Engagement 161
Conclusion 164
About the Author 165

14 EMERGENT DEMOCRACY 167
by Charles Armstrong

Democracy As a Scaling Mechanism 167
Limiting Factors and the Internet 170
Building an Emergent Democracy 171
The Road to Emergent Democracy 175
About the Author 176

15 CASE STUDY: TWEET CONGRESS 177
by Wynn Netherland and Chris McCroskey

Tweet Congress: Build an App, Start a Movement 177
Starting the Movement: We Are All Lobbyists Now 179
So, Who Gets It? 180
Impact 180
Conclusion 182
About the Authors 182

16 ENTREPRENEURIAL INSURGENCY: REPUBLICANS CONNECT WITH THE AMERICAN PEOPLE 183
by Nick Schaper

Entrepreneurial Insurgency and Congress 183
Congress Tweets, Too 184
I YouTube, You YouTube 186
Social Media and the Fight for Transparency 188
Conclusion 191
About the Author 191

17 DISRUPTING WASHINGTON'S GOLDEN RULE 193
by Ellen S. Miller

The Bad Old Days: When Insiders Ruled 195
This Is the Mashable Now 196
What Comes Next 198
About the Author 200

18 CASE STUDY: GOVTRACK.US 201
by Joshua Tauberer

Opening Legislative Data 202
Screen Scraping Congress 205
Engaging the GovTrack Community 210
Conclusion 211
About the Author 212

19 CASE STUDY: FOLLOWTHEMONEY.ORG 213
by Edwin Bender

Accessing Political Donor Data Fraught with Problems 213
The National Institute on Money in State Politics' Role in the Fight for Greater Transparency 214
Bolstering the Spirit of Public Disclosure Laws 216
State-Level Transparency Faces Serious Challenges 217
In an Ideal World: Recommendations for Open Data 219
Conclusion 220
About the Author 221

20 CASE STUDY: MAPLIGHT.ORG 223
by Daniel Newman

Why We Founded MAPLight.org 224
MAPLight.org's Unique Contribution 225
Nuts and Bolts: Using MAPLight.org 227
Barriers to Transparency 231
Conclusion 232
About the Author 232

21 GOING 2.0: WHY OPENSECRETS.ORG OPTED FOR FULL FRONTAL DATA SHARING 233
by Sheila Krumholz

The Decision to Let Go of the Data 233
It's Not Easy Being Open 234

Creating a New Model for Transparency 236
The Future Is Now 237
Conclusion 238
About the Author 239

22 ALL YOUR DATA ARE BELONG TO US: LIBERATING GOVERNMENT DATA 241
by Jerry Brito

Liberating Government Data: Carl Malamud Versus the Man 241
Disclosing Government Data: Paper Versus the Internet 243
Accessing Government Data: Open Distribution Versus Jealous Control 244
Demanding Government Data: Public Money Versus Private Research 245
RECAP: Freeing PACER Documents for Public Use 247
Conclusion 248
About the Author 248

23 CASE STUDY: MANY EYES 249
by Fernanda Viégas and Martin Wattenberg

Policy 249
From Policy to Politicians 253
Visual Literacy 254
Conclusion 256
About the Authors 256

24 MY DATA CAN'T TELL YOU THAT 257
by Bill Allison

The How and Why of Data Collection 258
Federal Data: Approximations Galore 259
Good Data Doesn't Mean Good Results 262
Conclusion 264
About the Author 265

25 WHEN IS TRANSPARENCY USEFUL? 267
by Aaron Swartz

Sharing Documents with the Public 268
Generating Databases for the Public 268
Interpreting Databases for the Public 269
An Alternative 271
About the Author 272

26 TRANSPARENCY INSIDE OUT 273
by Tim Koelkebeck

Complexity Creates Opacity 275
Transparency, Meet Institutional Inertia 276
Kaleidoscope IT: One-Off Apps Obscure Information 278
A Market Focused on Proposals, Not Products 280
Framing the Window 284
Conclusion 286
About the Author 287

27 BRINGING THE WEB 2.0 REVOLUTION TO GOVERNMENT 289
by Gary D. Bass and Sean Moulton

Government Transparency: Three Hurdles 289
Putting It All Together: Disclosure of Federal Spending 297
Conclusion 303
About the Authors 304

28 TOADS ON THE ROAD TO OPEN GOVERNMENT DATA 305
by Bill Schrier

What Is Government? 305
Data Collection 306
Exposing the Soul of Government 307
Conclusion 313
About the Author 314

29 OPEN GOVERNMENT: THE PRIVACY IMPERATIVE 315
by Jeff Jonas and Jim Harper

Privacy-Enhancing Practices 316
Conclusion 324
About the Authors 325

30 FREEDOM OF INFORMATION ACTS: PROMISES AND REALITIES 327
by Brant Houston

The Act and Amendments 328
Conclusion 335
About the Author 336

31 GOV→MEDIA→PEOPLE 337
by Dan Gillmor

Crowdsourcing in Action 340
Conclusion 344
About the Author 344

32 OPEN SOURCE SOFTWARE FOR OPEN GOVERNMENT AGENCIES 345
by Carlo Daffara and Jesus M. Gonzalez-Barahona

Advantages of FLOSS for Government and Public Agencies 346
Best Practices: Management 350
Best Practices: Technical 354
Best Practices: Social 357
Make It Easy to Experiment and Learn 359
Conclusion 360
References 360
About the Authors 361

33 WHY OPEN DIGITAL STANDARDS MATTER IN GOVERNMENT 363
by Marco Fioretti

Badly Used Technology Hinders Progress 364

	The Digital Age Explained	365
	Standards and the Problems with Digital Technology	366
	The Huge Positive Potential of Digital Technologies	369
	Free and Open Standards and Software: The Digital Basis of Open Government	371
	Conclusion	372
	About the Author	373
34	CASE STUDY: UTAH.GOV *by David Fletcher*	375
	A Historical Perspective	375
	What Today's Landscape Looks Like	376
	Champions Discovered in All Branches of State Government	378
	The Dramatic Shift to Web 2.0 Principles and Tools	381
	Making Data More Accessible	384
	Conclusion	388
	About the Author	389
A	MEMO FROM PRESIDENT OBAMA ON TRANSPARENCY AND OPEN GOVERNMENT	391
	INDEX	393

FOREWORD

It goes without saying that as we step into the future, governments face incredibly complex challenges. Sustaining societies and economies in the face of climate change, energy shortages, poverty, demographic shifts, and security will test the ingenuity of those who wish to see, do, and participate in the public good.

Even though it's the twenty-first century, most governments still reflect industrial-age organizational thinking, based on the same command-and-control model as industrial-age enterprises. Today's bureaucracy and the industrial economy rose hand-in-hand. The economy needed roads, sewers, electrification, railways, and a sophisticated military. As government got bigger, and the revenue of government increased, it became necessary to build more elaborate procedures, structures, and controls, all run by new layers of professional managers. Nonpartisan hiring practices, pay scales, procedures for making appointments, financial systems, and audit processes were put in place. At the time, all of this was judged to be state of the art.

These bureaucracies operated like individual "stovepipes"—with information only flowing vertically and rarely between departments. During the last 40 years, governments, like corporations, applied computers to their work as each agency acquired and built data processing systems to meet their automation needs. The result is that old procedures, processes, and organizational forms were just encoded in software. Huge, unwieldy mainframe beasts not only cemented old ways of working, they required still greater levels of bureaucracy to plan, implement, operate, and control them. Despite best efforts, IT experts have largely failed to

resolve the chaos of inconsistent databases, dueling spreadsheets, and other data anomalies that plague many government agencies.

This is not sustainable. Governments face a reality in which they are more and more dependent for authority on a network of powers and counter-influences of which they are just a part. Whether streamlining government service delivery or resolving complex global issues, governments are either actively seeking—or can no longer resist—broader participation from citizens and a diverse array of other stakeholders. Just as the modern multinational corporation sources ideas, parts, and materials from a vast external network of customers, researchers, and suppliers, governments must hone their capacity to integrate skills and knowledge from multiple participants to meet expectations for a more responsive, resourceful, efficient, and accountable form of governance.

The first wave of digitally enabled "e-government" strategies delivered some important benefits. It made government information and services more accessible to citizens while creating administrative and operational efficiencies. But too many of these initiatives simply paved the cow paths—that is, they focused on automating existing processes and moving existing government services online.

It is the next wave of innovation that presents a historic occasion to fundamentally redesign how government operates; how and what the public sector provides; and ultimately, how governments interact and engage with their citizens. It is truly a time when either government will play an active and positive role in its own transformation, or change will happen to it. The transformation process is at the same time exhilarating and painful, but the price of inaction is a lost opportunity for government to redefine its role in society and help launch a new era of participatory government.

The good news is that glimmers of this second wave of innovation are beginning to appear in capitals around the world. Knowledge, information, talent, and energy are being moved, shaped, and channeled in brand-new ways, inside, across, and outside of the boundaries of government. A growing number of governments understand the need to distribute power broadly and leverage innovation, knowledge, and value from the private sector and civil society.

As the excellent essays and case studies in this book reveal, there is a new kind of public sector organization emerging: open government. This is government that opens its doors to the world; co-innovates with everyone, especially citizens; shares resources that were previously closely guarded; harnesses the power of mass collaboration; drives transparency throughout its operations; and behaves not as an isolated department or jurisdiction, but as something new—a truly integrated and networked organization. Today, it's a radical notion, but perhaps it's only as fantastic as the current version of government would seem to a feudal prince from the Middle Ages visiting us now. FDR and Winston Churchill wanted stronger government. Ronald Regan and Margaret Thatcher wanted less. Thanks to the Internet, we can now have it both ways. In the U.S. and many other jurisdictions, government is becoming a stronger part of the

social ecosystem that binds individuals, communities, and businesses—not by absorbing new responsibilities or building additional layers of bureaucracy, but through its willingness to open up formerly closed processes to broader input and innovation. In other words, government becomes a platform for the creation of public value and social innovation. It provides resources, sets rules, and mediates disputes, but it allows citizens, nonprofits, and the private sector to do most of the heavy lifting.

All this is happening at a time when an entire generation of baby boomers will retire from government, creating an exodus of knowledge and skills that may never be replaced. In the United States, this demographic shift will see more than 60,000 civil service employees exit annually between now and 2015. Large departments, such as the Department of Defense, will lose 20 percent of their workforces. Many of these people hold executive, managerial, or key administrative positions—replacing them will be nearly impossible.

To make matters worse, recruiting and retaining a younger generation of public servants won't be much easier. Just when government most needs an infusion of fresh-thinking talent, young people are losing interest in public administration as a profession.

Although managers typically fret at the prospect, this attrition may not be such a bad thing. Rather than worry about head counts, governments should look for new ways to ignite innovation. The emerging fiscal and demographic realities are such that most governments will have to do more with less, both today and in the future.

—Don Tapscott
Author of *Wikinomics* and *Grown Up Digital*

PREFACE

What is *open government*? In the most basic sense, it's the notion that the people have the right to access the documents and proceedings of government. The idea that the public has a right to scrutinize and participate in government dates at least to the Enlightenment, and is enshrined in both the U.S. Declaration of Independence and U.S. Constitution. Its principles are recognized in virtually every democratic country on the planet.

But the very meaning of the term continues to evolve. The concept of open government has been influenced—for the better—by the open source software movement, and taken on a greater focus for allowing participation in the procedures of government. Just as open source software allows users to change and contribute to the source code of their software, open government now means government where citizens not only have access to information, documents, and proceedings, but can also become participants in a meaningful way. Open government also means improved communication and operations within the various branches and levels of government. More sharing internally can lead to greater efficiency and accountability.

The subtitle of this book is "Transparency, Participation, and Collaboration in Practice." The terms were borrowed from President Barack Obama's memorandum on transparency and open government, issued his first day in office. In it, he committed the U.S. government to "establish a system of transparency, public participation, and collaboration." (See the Appendix.)

Obama's memo was a signal moment in the history of open government, issued by a president who gained office in part by opening his campaign to allow his supporters to shape its message,

actions, and strategy using online tools. The movement to make this happen, which goes back to the earliest days of the World Wide Web, is now generally called "Government 2.0" (Gov 2.0 to its friends).

Just as the Web has fundamentally altered retail, real estate, media, and even manufacturing, Gov 2.0 advocates seek to redefine the relationship between citizens and government officials. It's not about replacing representative democracy with some kind of online poll, but instead engaging the citizen as a full participant rather than an observer of their government.

Take San Francisco, where the city has created an API (application programming interface) to distribute information from its 311 system about city services to developers in a way that they can integrate and distribute that information into new software and web applications (see *http://apps.sfgov.org/Open311API/*). Everyone will be able to get information about citizen requests and issue new requests (such as reporting potholes) directly to city departments via their own web software. The concept breaks down the line between citizens and government—letting someone other than a government official determine how to route citizen requests.

As if this radical transformation were not enough, the Gov 2.0 movement seeks to make a similar transformation within government itself: empowering employees inside governments to go beyond the traditional boundaries and limitations of bureaucracy to act across organizational lines and move from top-down to bottom-up structures of management and decision making.

In this book we have found leading visionaries, thinkers, and practitioners from inside and outside of government who share their views on what this new balance looks like, how to achieve it, and the reforms that are needed along the way.

How This Book Is Organized

Chapter 1, *A Peace Corps for Programmers*

Matthew Burton proposes a new project to recruit top technologists into government temporarily and harness their knowledge to transform the way government information technology operates. Burton, himself a federal contractor and Web 2.0 technologist, opens this provocative piece by urging the government to fire him.

Chapter 2, *Government As a Platform*

Tim O'Reilly examines how the philosophy of the open Web applies to transforming the relationships between citizens and government. O'Reilly uses open software platforms as a model for reinventing government.

Chapter 3, *By the People*

Carl Malamud addresses the third wave of government transformation—the Internet wave—that is now upon us.

Chapter 4, *The Single Point of Failure*

Beth Simone Noveck tackles the issue of closed decision making and open deliberation in this excerpt from her 2009 book, *Wiki Government: How Technology Can Make Government Better, Democracy Stronger, and Citizens More Powerful* (Brookings Institution Press).

Chapter 5, *Engineering Good Government*

Howard Dierking explores applying software design patterns to government. Dierking covers blobs, antipatterns, and the shrinking space between government and citizens.

Chapter 6, *Enabling Innovation for Civic Engagement*

David G. Robinson, Harlan Yu, and Edward W. Felten argue for releasing data in bulk to empower citizens to better connect with their government.

Chapter 7, *Online Deliberation and Civic Intelligence*

Douglas Schuler proposes a new model for online discussion and decision making, modeled on the famous Robert's Rules of Order. Schuler goes on to ask whether we will be smart enough, soon enough, to use online—as well as *offline*—deliberation to help tackle the massive problems that we've created for ourselves.

Chapter 8, *Open Government and Open Society*

Archon Fung and David Weil argue that transparency must be applied across all of society, not just government.

Chapter 9, *"You Can Be the Eyes and Ears": Barack Obama and the Wisdom of Crowds*

Micah L. Sifry looks at the open government promises of the Obama administration and places it in the context of broader notions that underlie the philosophy of open source technology and Web 2.0.

Chapter 10, *Two-Way Street: Government with the People*

Mark Drapeau examines how and why those who favor open government need to provide outside pressure if those inside government who desire change are to able to make it happen.

Chapter 11, *Citizens' View of Open Government*

Brian Reich sketches out what reforms must achieve for regular citizens in order to be effective. Reich reminds Government 2.0 evangelists that, at the end of the day, their reforms must produce definitive benefits to be successful.

Chapter 12, *After the Collapse: Open Government and the Future of Civil Service*

David Eaves take a look at open government and the civil service and argues for experimentation and accepting the inevitable technological shift that is upon government.

Chapter 13, *Democracy, Under Everything*

Sarah Schacht asks what citizens need to do to be full participants in government. Schacht gives prescriptions for both policy makers and regular citizens to solve political gridlock.

Chapter 14, *Emergent Democracy*

Charles Armstrong outlines a new kind of digital democracy in which decisions bubble up from citizens rather than coming down from e-leaders. Armstrong hypothesizes that this

new kind of democracy is already coming to businesses and other nongovernmental players, where it will inevitably take hold before being adopted by nation-states.

Chapter 15, *Case Study: Tweet Congress*

Wynn Netherland and Chris McCroskey map the success of Tweet Congress in getting members of Congress to use Twitter and the role of activism-by-web-application in the new ecosystem.

Chapter 16, *Entrepreneurial Insurgency: Republicans Connect With the American People*

Nick Schaper describes the social media strategy the Republican minority in the U.S. House uses to outfox the Democrats who control the chamber. In doing so, this top Republican strategist teaches lessons on how social media can be used by anyone to mobilize citizens.

Chapter 17, *Disrupting Washington's Golden Rule*

Ellen S. Miller explains why radical transparency in government will act as a counterweight to the influence of monied interests in shaping government policy.

Chapter 18, *Case Study: GovTrack.us*

Joshua Tauberer looks at the phenomenal success of his website, which provides public access to data about bills and votes in the U.S. Congress.

Chapter 19, *Case Study: FollowTheMoney.org*

Edwin Bender examines the past, present, and future of online tracking of money to politicians and political parties. Bender gives unsurpassed insight into the good, bad, and ugly of transparency in campaign contributions.

Chapter 20, *Case Study: MAPLight.org*

Daniel Newman looks at how a website has been able to use open web technology and hard work to shed a new kind of light on the relationship among money, power, and legislation.

Chapter 21, *Going 2.0: Why OpenSecrets.org Opted for Full Frontal Data Sharing*

Sheila Krumholz tells the story of why the not-for-profit Center for Responsive Politics released its data about government corruption to the public and embraced the Gov 2.0 movement.

Chapter 22, *All Your Data Are Belong to Us: Liberating Government Data*

Jerry Brito calls on hackers—in the sense of brilliant programmers rather than computer criminals—to liberate government data for the masses. If the government won't make data available and useful, it is up to technologists to do it for them.

Chapter 23, *Case Study: Many Eyes*

Fernanda Viégas and Martin Wattenberg look at the ways Many Eyes, an online suite of visualization tools from IBM, has been and can be used to examine government. Among other insights, these brilliant scientists propose the radical approach to treat all text as data.

Chapter 24, *My Data Can't Tell You That*

Bill Allison looks at the problems with government data collection. Allison, an investigative reporter and open government advocate at the Sunlight Foundation, proposes making those data more useful for citizens.

Chapter 25, *When Is Transparency Useful?*

Aaron Swartz proposes a new paradigm for watchdogging the government. Swartz provides a cogent argument that transparency alone is not enough.

Chapter 26, *Transparency Inside Out*

Tim Koelkebeck looks at the need for the federal government, which he describes as a country within a country, to become internally transparent before it can be anything but opaque to regular citizens.

Chapter 27, *Bringing the Web 2.0 Revolution to Government*

Gary D. Bass and Sean Moulton identify the top obstacles to increased open government that the Obama administration faces and propose solutions. Bass and Moulton give an inside-the-Beltway view on how to make reform take hold.

Chapter 28, *Toads on the Road to Open Government Data*

Bill Schrier looks at what he has learned as CIO of Seattle, Washington, about the practicalities of implementing open government reforms and the problems reformers face.

Chapter 29, *Open Government: The Privacy Imperative*

Jeff Jonas and Jim Harper shine a light on the serious issues of privacy and the brave new world we live in.

Chapter 30, *Freedom of Information Acts: Promises and Realities*

Brant Houston looks at the history and problems of the Freedom of Information Act and similar state laws. Houston goes on to provide a prescription for updating those laws.

Chapter 31, *Gov→Media→People*

Dan Gillmor tackles the thorny issue of the relationship among the government, the press, and the citizenry in the open government universe brought around by the Web.

Chapter 32, *Open Source Software for Open Government Agencies*

Carlo Daffara and Jesus M. Gonzalez-Barahona argue that government must adopt open source software in order to achieve true open government, and that doing so has many social, societal, and economic benefits.

Chapter 33, *Why Open Digital Standards Matter in Government*

Marco Fioretti argues for government adopting open standards in its technology that eschew the lock-in from vendor-specific technologies.

Chapter 34, *Case Study: Utah.gov*

David Fletcher takes a tour through the most transparent state in the United States and explores the history as well as the future of Utah. As Utah's CIO, Fletcher is in the thick of making government open.

Appendix, *Memo from President Obama on Transparency and Open Government*
The full text of President Obama's memo.

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Daniel Lathrop and Laurel Ruma would like to thank all of the authors for contributing to a fascinating book. The time required to write and revise a chapter is not trivial, and very much appreciated. There were also many other people who worked on this book, including Yasmin Fodil, Sarah Granger, and Kevin Novak, who reviewed and commented on the manuscript. Andy Oram provided invaluable feedback and support. At O'Reilly, Audrey Doyle, Sarah Schneider, Nellie McKesson, Rob Romano, and Julie Steele guided the book through production.

CHAPTER ONE

A Peace Corps for Programmers

Matthew Burton

The federal government should fire me. Like the thousands of other contractors who develop software for government agencies, I am slow, overpaid, and out of touch with the needs of my customers. And I'm keeping the government from innovating.

In recent years, the government has become almost completely dependent upon contractors for information technology (IT). So deep is this dependency that the government has found itself in a position that may shock those in the tech industry: it has no programmers of its own; code is almost entirely outsourced. Government leaders clearly consider IT an ancillary function that can be offloaded for someone else to worry about.

But they should worry. Because while they were pushing the responsibility for IT into the margins, the role of IT became increasingly central to every agency's business. Computing might have been ancillary 20 years ago, when the only computers were the mainframes in the basement. Average employees never had to worry about them. But today, a computer is on the desk of every civil servant. Those servants rely on their computers to do their jobs effectively. Every day, they encounter new problems that could be quickly solved with a bit of web savvy, were there only a programmer there to help.

And they desperately do need help. Imagine not having Google to quickly find information; no Facebook or LinkedIn to find new colleagues; no instant messaging to communicate with those colleagues once you found them. Imagine having to ask for permission every time you wanted to publish content online, instead of being able to do it quickly and easily with a wiki or weblog. This is the state of computing in the federal government.

A TRUE STORY

On top of keeping the government from innovating, the dependence on contractors hurts the country in much more tangible ways. In February 2003, a few weeks into my job as an intelligence analyst with the Department of Defense (DoD), the Federal Republic of Yugoslavia officially changed its name to Serbia and Montenegro. My job was to maintain an enormous database of facilities in Eastern Europe, including labeling each one with a country name. But the tool we used didn't have an option for "Serbia and Montenegro," so on the day of the name change, I emailed the contract officer in charge of the database with a simple request: "This country changed its name. Could you please update the tool to reflect this?"

Doing so would have taken a computer programmer less than five minutes. But instead, he used that time to respond to my email:

"We'll consider it for the next version."

In other words, his current contract—written months prior—didn't account for changes in the geopolitical landscape, so there was no paperwork explicitly authorizing him to make this change. To do it, he would have to wait until the contract was renewed (months or years from now) and the government allotted funds for this five-minute job. It wasn't his fault; he was no doubt aware of how easy it was to make this change. But doing it without permission from either his boss or the government would spell trouble. Yugoslavia didn't exist anymore. Except inside our office, where we had to wait for a contract to make it so.

The government can no longer afford to outsource IT. It is core to the government's business. If the government intends to do IT right, it should wean itself from outsiders like me and start doing the job itself.

What's so wrong with contractors? Nothing, really; the problem is the processes they have given rise to. The pervading philosophy is that government is slow, inefficient, and incapable of quickly adapting to change, while private companies do things better, faster, and cheaper. In many cases, this is true; the government is by no means a well-oiled machine. But software is one thing that contracts do not speed up. Software developed under contract is much slower and much more expensive than any other form of software development still in practice. Here is how the typical IT contract evolves:

1. A low-level government employee complains to her boss about a problem. This could be anything from a bug in an existing piece of software to a gaping hole in her agency's IT security. The boss has no programmers on hand to solve the problem, so he dismisses it.
2. More and more people complain about the problem until it gets attention from higher levels. But even thinking about a solution is expensive—months of paperwork must come

before a contract is awarded and someone finally starts writing code—so the problem remains unsolved.

3. The problem leads to a calamity—a website is hacked, classified information is stolen, or electronic voting booths break down on Election Day—and leaders are finally motivated to solve the problem.
4. Procurement officers write a list of requirements for the ideal solution. Because they have little direct experience with the problem, they survey the workforce to get a sense of what's needed.
5. The workforce's version of the problem is condensed into a document called a Request for Proposals, or RFP. The RFP is then distributed to potential bidders, who will respond with a proposed solution and a bid based entirely on the contents of the RFP. Contractors cannot go directly to the users, the people who know the problem best. The RFP is therefore an indirect, highly edited communiqué from the user to the contractor, a substitute for the invaluable direct interaction between user and coder that guides any successful software product. But it's too late: contractors are from here on out trying to solve what they believe the problem to be, not the problem that really is.
6. The contract is awarded. Months or years after the problem was first noticed, the first line of code is written. Over the coming months, the winning bidder will develop the solution off-site, hidden from the eventual users who could be providing valuable feedback.
7. The solution is delivered. Because the target users had such a small part in the development process, the solution falls short. It is hard to use and comes with an 80-page manual.

It should now be clear why the government is so far behind the times: it isn't allowed to solve its own problems, relying instead on people who do not understand them. Two glaring faults doom the contracting process to failure. First, the development process is vastly different from that of today's most popular software. Modern web applications are persistently watching their users and adjusting their code to make it faster and more user-friendly. Adventurous users can begin using these applications before they're even finished, giving the developers invaluable insight into their users' preferences. Without this constant feedback, the developers risk spending years on a product in private, only to reveal it to the public and find that nobody wants to use it. Such products are so common in government that they have earned their own moniker, named for their eternal home: shelfware.

Second, the paperwork required to simply start coding takes time and money. So, to even consider solutions, the problem has to be severe enough to justify months of bureaucracy. Why go through all that trouble just for a problem that would take a week to solve? The logic makes the taxpayer ill: the bureaucracy actually wants high price tags. The result is an organization full of easy problems that get no attention until they are big, expensive, and ready to boil over.

Tipping Point: The Extinction of Pencils

One such problem that may soon boil over is the terrorist watch list. For years, the list—created to monitor suspected terrorists and keep them from flying on commercial airliners—had inconvenienced innocent travelers. The problems were evident, but they weren't bad enough to justify asking for help.

Then a toddler was kept from boarding a flight. Then a senator. At some point, this problem crossed the threshold, and the government issued an RFP for an improved database to manage the list. The $500 million contract was awarded to Boeing and a smaller company. After months of development, a congressional investigation discovered that the soon-to-be-deployed database could not perform basic searches for names, and was missing huge stores of valuable data. The National Counterterrorism Center had spent half a billion dollars on a tool that, while certainly complex, could not do things that you and I do every day from our home computers.

Why so much money for something that seems so simple? This frame of mind—that technology projects should be big, expensive, and time-consuming—has honest beginnings. Twenty years ago, computing was a niche. The government used computers to encrypt the president's phone calls, simulate nuclear blasts, and predict the weather. The government paid private companies lots of money to build very complex systems. That's OK, because tasks such as these required lots of computing power, so the biggest, baddest, most expensive system was usually the best. It didn't matter that these systems were hard to use, because the only people using them were computer scientists. The builder of the system understood the user—the builder and user may have even worked side by side—and if the user ever needed the system to do something it couldn't, that user probably had the skills to tweak the system. Computers were left to the computer people. Everyone else still used pencils.

But computing is now everywhere. Computers long ago fit on our desktops. Now they fit in our palms. But the government still acts like computers fill basements, and if you could sit down at a government desktop, this outdated mindset would be immediately apparent: on the screen would be websites reminiscent of the mid-1990s, without any of the web-based productivity and collaboration tools that define today's Web. Expensive supercomputers still matter. But so do cheap, light web applications. Small, unassuming tools can change the way an organization does business. Such tools are commonplace online, but they do not get a second look from a government that expects and needs its technology to be expensive. Meanwhile, independent developers are at their keyboards, proving themselves willing to help a government that, as we'll see, is slowly opening its arms to them.

Competition Is Critical to Any Ecosystem

One of the reasons the Web has better tools than the government is competition.

Take airfare as an example. There are countless websites that help you buy plane tickets, each of them constantly improving their tools and layouts to make you happier. And if you aren't

happy with those sites, you're free to start your own business and compete with them. But when the government contracts new software, it gets only one product out of it. Instead of many choices, users have only two: use this tool, or use nothing.

Web developers know that the first attempt at an innovation almost never works, and that it takes many attempts before someone gets it right. For every Facebook, there are countless Friendsters. Given one chance, you'll likely end up with one of the latter. If the government wants better software, it has to start creating and acquiring *more* software.

In the past year, two promising government projects have chipped away at this problem. Washington, D.C.'s Apps for Democracy competition* let independent developers build web applications for a shot at prize money. The D.C. government's $50,000 investment bought it 40 tools in 30 days. The District got to keep every contribution but only paid for the really good ones.

Meanwhile, the U.S. Intelligence Community is becoming an unexpected leader in engaging everyday developers. To provide more analytic tools to their workforce, they have released BRIDGE,† an open development platform akin to Facebook's: now, any software developer can build a tool and provide it to intelligence analysts. If the analysts like it, the government buys it. If it's junk, your tax dollars are saved.

This approach worked for Facebook: it gained 30,000 new tools in two years, and got other people to do all the work. Most of these new tools fall into the junk category, but many others are invaluable. The community finds the good ones and makes them more visible. It is the same principle that governs our economy: we buy the dish soap that works, and the bad ones go away. We should expect the same practice from our government, whose very job is the promotion of market economies and democracy. Apps for Democracy and BRIDGE are a welcome departure from contract-based software.

But while these projects are giving government employees more options, they haven't filled in all the gaps. Who will maintain software that was built not by a global firm, but by an independent developer who is juggling multiple projects?

And what about user feedback? Neither of these projects addresses the fact that government software is built by people unfamiliar with government users. Apps for Democracy produced useful tools for D.C. residents, but little for D.C. employees. And applications on the Intelligence Community platform are hobbled by the world's biggest firewall: intelligence analysts use these tools on a top-secret network that doesn't allow them to communicate with the outside world. As long as the government keeps developers outside its walls, those developers have no hope of solving the government's technology problems. The civil service needs an infusion of technical talent. The civil service needs *intel techs*.

* *http://www.appsfordemocracy.org/*

† *http://about.bridge-ic.net*

Creating a Developer Corps

Decades ago, the intel tech (also known as "mission support" at some agencies) was a specialist in the Intelligence Community who helped analysts with now-defunct technologies: setting up the light table to look at satellite imagery, making mimeographs, and so on. Unlike today's tech support staff who sit in the basement or in Bombay, these experts sat among the analysts and were solely dedicated to the analysts' mission. And because they were government employees, they were at the analysts' disposal whenever help was needed.

But then personal computers arrived. Software made the intel techs' tools obsolete. The light tables vanished. The intel techs soon followed. It is the opposite of what should have happened: IT's role in intelligence analysis—and every other government function—has grown tremendously, while the government's in-house technical talent has dwindled. Government employees' need for technical help has never been greater, but there is nobody there to help them.

If they still existed, today's intel techs would be developers. They would be deploying web applications for new needs the moment they arose. They would mash up data and make it easier for both civil servants and private citizens to consume. They would do the things that contractors do today, only immediately—no paperwork necessary—and with users at their side. The intel tech must be resurrected for the Internet age. The government must hire web developers and embed them in the federal bureaucracy.

The government needs to hire the people who have been fueling the web application boom for the past 10 years. They are young programmers who created revolutionary tools from their dorm rooms, and they are small firms with virtual offices who stumbled upon a new way of doing business. The trouble is, most of these people are not compatible with government culture. They like working from p.m. to a.m. They don't like ties. They seek venture capital, not pay grade bumps. Are they supposed to move from one coast to another and indefinitely trade in their lifestyles for something completely different, not knowing when they would return to their old lives? That is asking too much.

But what if these in-house developers weren't standard government hires on entry-level salaries? What if their time in the government wasn't a career, but a mission akin to a term in the Peace Corps or Teach For America? A program marketed and structured as a temporary "time abroad" would let developers help their country without giving up their careers and identities.

Now is the perfect time for such a program. Silicon Valley's interest in D.C. has never been as great as it is now. Technology icons are encouraging developers to quit creating banal tools and instead put their energy into things that matter. And it's working: several prominent Internet entrepreneurs have become full-time civil servants. Many more have contributed

software tools to programs such as Apps for Democracy and BRIDGE. Apps for America‡—a federal take on Apps for Democracy sponsored by the nonprofit Sunlight Foundation—received 34 submissions during its first iteration, and 46 more on the second. Geeks want to help government. The government just has to give them the right invitation.

Like the Peace Corps and Teach For America, terms in the Developer Corps would have a time limit. Whether this limit is six months or six years, I do not know. But a limit of some kind is important. First, it will be easier for developers to make the leap if they know they will eventually return to their current careers.

Second, being detached from an agency's pay scale and career plan will give the participants the freedom to experiment and—more importantly—to fail. Failure is a key part of innovation. Technology firms know this, and their employees are used to working in atmospheres that encourage failure. If they don't try new things, they'll be killed by their competition.

Not so in government. Unlike private companies, a government—at least ours—is relatively safe from competition, and thus doesn't feel the need to be constantly reinventing itself. Things are fine how they are. The populace views failed government projects as little more than a waste of taxpayer dollars. No career-conscious government employee wants to take on such a risk. So, to succeed, the Developer Corps' participants must have the same freedom to fail that they did in their former jobs. The knowledge that their terms will end on a set date will quell the fear of failure that plagues the average government employee.

The greatest threat to this program is lack of permission. If red tape keeps developers from being productive, they will end up wasting their time fixing printer jams instead of writing code.

Developers work quickly. They can implement ideas within hours of conceiving them, continuously deploying, checking, modifying, and redeploying their code dozens, hundreds, thousands of times along the way. Doing this never requires anyone's approval. But within each government agency are multiple offices that must vet code before it is deployed: system administrators, information security officers, lawyers, and so forth.

Developers will never get anything done with such thick bureaucratic walls between them and their work. Wasting their talent is the fastest way to destroy the corp's reputation. They must be given authority to code what they please. Not all agencies will grant this authority. Such agencies must not be allowed to participate in the Developer Corps. (Participants in restrictive environments would never get anything done anyway, so there is no harm in barring uncooperative agencies.)

Finally, this program should take a page from a new organization called Code for America (*http://codeforamerica.org*). CFA recruits coders to work with government offices for set terms, but at the municipal level instead of federal. About to enter its inaugural iteration, CFA's participants will work with their respective governments remotely from a shared space in

‡ *http://www.sunlightlabs.com/contests/appsforamerica/*

California. This communal coding environment will let participants enjoy networking events, guest speakers, and the creative energy generated by each other's ideas.

The federal program I've proposed in this chapter should incorporate a similar communal environment. While coders will spend their days at their respective government agencies, group housing will let them discuss their work over dinner and drinks, allowing the creative process to continue after hours. And select days could be dedicated to meetings with government leaders and tech luminaries, visits to other agencies, and networking. Such events will help ensure a D.C. term is a boost to a coder's career instead of diversion from it.

Conclusion

Our government agencies need the ability to develop their own software. Keeping them from doing so prevents them from providing vital services that we all pay for. No story makes the case for this capability better than that of Jim Gray.

Gray was a technology pioneer who, during a sailing trip in early 2007, disappeared off the coast of San Francisco. The Coast Guard searched for him for three days and could not find him. They called off their search.

But a group of determined people kept looking. They had imagery satellites take fresh pictures of a swatch of sea outside the San Francisco Bay. If Gray was out there, he and his boat were now on film. But they were left with hundreds of photos, each big enough to cover a wall. A handful of people could never review the images in time to save Gray. So, a team of software developers converted those large photos into lots of smaller ones, which were then posted to a website where the public could review them. Clicking on a possible sighting sent a report to a flight crew, which then searched the area in question. Noticing that the images were blurry, another team of programmers contributed code that automatically sharpened the images. The entire system was created from scratch in just a few days. And it was done without any help from the government.

This effort was coordinated entirely by private citizens with the help of publicly available technology. Though he was never found, Gray inspired the largest collaborative search party in history. Twelve thousand private citizens reviewed more than half a million images. It is an amazing story of teamwork and ingenuity. Inspiring. Soul-stirring.

But also frustrating: why didn't our government do this the moment Gray was reported missing?

It is tempting to use this story as a case for more self-governance: if the public can do it and the government can't, why not go with it? Instead of equipping the government to do what private citizens already can, let's just do their jobs for them from our home computers.

The Web has made it simple to form ad hoc groups and coordinate their actions, and we will continue to see cases where such groups fill the government's shoes. But such cases will not

be the norm. Our populace cannot govern itself just yet. There are too many critical functions that we cannot yet take over. We do not have battleships. We cannot run elections. Some private citizens guard our borders, but that doesn't mean they should.

We will need a formal government for the foreseeable future. Our government should be at least as capable as a quickly organized group of virtual volunteers. It will certainly have the budget for it.

About the Author

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CHAPTER TWO

Government As a Platform

Tim O'Reilly

During the past 15 years, the World Wide Web has created remarkable new methods for harnessing the creativity of people in groups, and in the process has created powerful business models that are reshaping our economy. As the Web has undermined old media and software companies, it has demonstrated the enormous power of a new approach, often referred to as Web 2.0. In a nutshell: the secret to the success of bellwethers like Google, Amazon, eBay, Craigslist, Wikipedia, Facebook, and Twitter is that each of these sites, in its own way, has learned to harness the power of its users to add value to—no, more than that, to co-create—its offerings.

Now, a new generation has come of age with the Web, and it is committed to using its lessons of creativity and collaboration to address challenges facing our country and the world. Meanwhile, with the proliferation of issues and not enough resources to address them all, many government leaders recognize the opportunities Web 2.0 technologies provide not just to help them get elected, but to help them do a better job. By analogy, many are calling this movement *Government 2.0*.

What the heck does that mean?

Much like its predecessor, Web 2.0, "Government 2.0" is a chameleon, a white rabbit term, that seems to be used by people to mean whatever they want it to mean. For some, it is the use of social media by government agencies. For others, it is government transparency, especially as aided by government-provided data APIs. Still others think of it as the adoption

of cloud computing, wikis, crowdsourcing, mobile applications, mashups, developer contests, or all of the other epiphenomena of Web 2.0 as applied to the job of government.

All of these ideas seem important, but none of them seem to get to the heart of the matter.

Web 2.0 was not a new version of the World Wide Web; it was a renaissance after the dark ages of the dotcom bust, a rediscovery of the power hidden in the original design of the World Wide Web. Similarly, Government 2.0 is not a new kind of government; it is government stripped down to its core, rediscovered and reimagined as if for the first time.

And in that reimagining, this is the idea that becomes clear: government is, at bottom, a mechanism for collective action. We band together, make laws, pay taxes, and build the institutions of government to manage problems that are too large for us individually and whose solution is in our common interest.

Government 2.0, then, is the use of technology—especially the collaborative technologies at the heart of Web 2.0—to better solve collective problems at a city, state, national, and international level.

The hope is that Internet technologies will allow us to rebuild the kind of participatory government envisioned by our nation's founders, in which, as Thomas Jefferson wrote in a letter to Joseph Cabell, "every man…feels that he is a participator in the government of affairs, not merely at an election one day in the year, but every day."*

As President Obama explained the idea during his campaign: "We must use all available technologies and methods to open up the federal government, creating a new level of transparency to change the way business is conducted in Washington, and giving Americans the chance to participate in government deliberations and decision making in ways that were not possible only a few years ago."

Allowing citizens to see and share in the deliberations of government and creating a "new level of transparency" are remarkable and ambitious goals, and would indeed "change the way business is conducted in Washington." Yet these goals do not go far enough.

Government As a Platform

There is a new compact on the horizon: information produced by and on behalf of citizens is the lifeblood of the economy and the nation; government has a responsibility to treat that information as a national asset. Citizens are connected like never before and have the skill sets and passion to solve problems affecting them locally as well as nationally. Government information and services can be provided to citizens where and when they need them. Citizens are empowered to spark the innovation that will result in an improved approach to

* *The Founders' Constitution*, Chapter 4, Document 34 (*http://press-pubs.uchicago.edu/founders/documents/v1ch4s34.html*).

governance. In this model, government is a convener and an enabler rather than the first mover of civic action.

This is a radical departure from the existing model of government, which Donald Kettl so aptly named "vending machine government."† We pay our taxes, we expect services. And when we don't get what we expect, our "participation" is limited to protest—essentially, shaking the vending machine. Collective action has been watered down to collective complaint. (Kettl used the vending machine analogy in a very different way, to distinguish between the routine operation of government and the solution of new and extraordinary problems, but I owe him credit for the image nonetheless.)

What if, instead of a vending machine, we thought of government as the manager of a marketplace? In *The Cathedral & the Bazaar*, Eric Raymond uses the image of a bazaar to contrast the collaborative development model of open source software with traditional software development, but the analogy is equally applicable to government.‡ In the vending machine model, the full menu of available services is determined beforehand. A small number of vendors have the ability to get their products into the machine, and as a result, the choices are limited, and the prices are high. A bazaar, by contrast, is a place where the community itself exchanges goods and services.

But not all bazaars are created equal. Some are sorry affairs, with not much more choice than the vending machine, while others are vibrant marketplaces in which many merchants compete to provide the same goods and services, bringing an abundance of choice as well as lower prices.

In the technology world, the equivalent of a thriving bazaar is a successful platform. If you look at the history of the computer industry, the innovations that define each era are frameworks that enabled a whole ecosystem of participation from companies large and small. The personal computer was such a platform. So was the World Wide Web. This same platform dynamic is playing out right now in the recent success of the Apple iPhone. Where other phones have had a limited menu of applications developed by the phone vendor and a few carefully chosen partners, Apple built a framework that allowed virtually anyone to build applications for the phone, leading to an explosion of creativity, with more than 100,000 applications appearing for the phone in little more than 18 months, and more than 3,000 new ones now appearing every week.§

This is the right way to frame the question of Government 2.0. How does government become an open platform that allows people inside and outside government to innovate? How do you design a system in which all of the outcomes aren't specified beforehand, but instead evolve

† *The Next Government of the United States: Why Our Institutions Fail Us and How to Fix Them*, Donald Kettl, W. W. Norton & Company, 2008.

‡ *The Cathedral & the Bazaar*, Eric Raymond, O'Reilly, 1999.

§ *http://radar.oreilly.com/2009/07/itunes-app-store-incubation-period-increases.html*

through interactions between government and its citizens, as a service provider enabling its user community?

This chapter focuses primarily on the application of platform thinking to government technology projects. But it is worth noting that the idea of government as a platform applies to every aspect of the government's role in society. For example, the Federal-Aid Highway Act of 1956 (*http://en.wikipedia.org/wiki/Federal_Aid_Highway_Act_of_1956*), which committed the United States to building an interstate highway system, was a triumph of platform thinking, a key investment in facilities that had a huge economic and social multiplier effect. Though government builds the network of roads that tie our cities together, it does not operate the factories, farms, and businesses that use that network: that opportunity is afforded to "we the people." Government does set policies for the use of those roads, regulating interstate commerce, levying gasoline taxes and fees on heavy vehicles that damage the roads, setting and policing speed limits, specifying criteria for the safety of bridges, tunnels, and even vehicles that travel on the roads, and performing many other responsibilities appropriate to a "platform provider."

While it has become common to ridicule the 1990s description of the Internet as the "information superhighway," the analogy is actually quite apt. Like the Internet, the road system is a "network of networks," in which national, state, local, and private roads all interconnect, for the most part without restrictive fees. We have the same rules of the road everywhere in the country, yet anyone, down to a local landowner adding a driveway to an unimproved lot, can connect to the nation's system of roads.

The launch of weather, communications, and positioning satellites is a similar exercise of platform strategy. When you use a car navigation system to guide you to your destination, you are using an application built on the government platform, extended and enriched by massive private sector investment. When you check the weather—on TV or on the Internet—you are using applications built using the National Weather Service (or equivalent services in other countries) as a platform. Until recently, the private sector had neither the resources nor the incentives to create space-based infrastructure. Government as a platform provider created capabilities that enrich the possibilities for subsequent private sector investment.

There are other areas where the appropriate role of the platform provider and the marketplace of application providers is less clear. Health care is a contentious example. Should the government be providing health care or leaving it to the private sector? The answer is in the outcomes. If the private sector is doing a good job of providing necessary services that lead to the overall increase in the vitality of the country, government should stay out. But just as the interstate highway system increased the vitality of our transportation infrastructure, it is certainly possible that greater government involvement in health care could do the same. But if the lesson is correctly learned, it should do so not by competing with the private sector to deliver health services, but by investing in infrastructure (and "rules of the road") that will lead to a more robust private sector ecosystem.

At the same time, platforms always require choices, and those choices must be periodically revisited. Platforms lose their power when they fail to adapt. The U.S. investment in the highway system helped to vitiate our railroads, shaping a society of automobiles and suburbs. Today, we need to rethink the culture of sprawl and fossil fuel use that platform choice encouraged. A platform that once seemed so generative of positive outcomes can become a dead weight over time.

Police, fire services, garbage collection: these are fundamental platform services, just like analogous services in computer operating systems. And of course, here we have an "antipattern" from technology platforms: the failure to provide security, for example, as a fundamental system service, leaving it instead to the "private sector" of application vendors, has imposed a huge downstream cost on the technology ecosystem. See Chapter 5 for more on antipatterns.

The question of Government 2.0, then, is this: if government is a platform, how can we use technology to make it into a better platform?

This question allows us to fruitfully extend the platform metaphor and ask: what lessons can government take from the success of computer platforms, as it tries to harness the power of technology to remake government?

Lesson 1: Open Standards Spark Innovation and Growth

Time and again, the platforms that are the most generative of new economic activity are those that are the most open. The modern era in computing began in 1981 when IBM published the specifications for a personal computer that anyone could build using off-the-shelf parts. Prior to the introduction of the PC, IBM had a stranglehold on the computer market. It was a valuable but limited market, with very few vendors serving a small number of very big customers.

After the introduction of the PC, barriers to market entry were so low that Michael Dell, a Texas college student, was able to start what became a multibillion dollar company out of his dorm room. The market for personal computers exploded. IBM had estimated a total of 245,000 PCs would be sold over five years; as we now know, the eventual market size was in the billions, as scrappy little companies like Microsoft worked to put "a computer on every desk and in every home."‖

At the same time, the standardization of the personal computer led to unexpected consequences: software became a higher-margin business than hardware; industry power shifted from IBM to Microsoft.

In its early years, Microsoft triumphed by establishing the best platform for independent software developers. Just as the standard architecture of the IBM PC lowered the barriers to

‖ *http://www.microsoft.com/about/companyinformation/ourbusinesses/profile.mspx*

marketplace entry by hardware manufacturers, the standardized APIs of MS-DOS and, later, Microsoft Windows made it easy for developers to "add value" to the personal computer.

Over time, Microsoft began to abuse their market power as the platform provider to give advantage to their own applications. At that point, the PC software marketplace became less and less vibrant, with most of the profits accruing to a few dominant companies. As a result, many people mistakenly take the lesson from the PC era that owning a platform is the secret of marketplace control and outsized profits.

In fact, by 1995, the PC era had run out of gas. The PC became less and less like a bazaar and more and more like a vending machine. We'd moved from the open personal computer as the platform to the closed and tightly controlled Microsoft Windows as the platform. When one vendor controls the platform, innovation suffers.

What reinvigorated the industry was a new open platform: the Internet, and more specifically, the World Wide Web. Both were radically decentralized—a set of rules for programs to cooperate and communicate, with applications provided by anyone who had a good idea and the skills to write one. Once again, barriers to marketplace entry were low, with multibillion dollar companies created out of college dorm rooms, and tens of thousands of companies competing to provide previously unimaginable new services. The bazaar was back.

We see the same dynamic playing out today in the cell phone market. Cell phone providers have traditionally operated on the vending machine model. Apple changed the rules of the game with the iPhone developer platform. Suddenly, anyone could develop smartphone applications.

The smartphone platform story is perhaps the one most comforting to those inside government. Unlike the IBM PC or the Internet, the Apple iPhone is not a completely uncontrolled Wild West. Apple actively manages the platform to encourage innovation and choice while enforcing clear rules. Some observers believe that over time, the iPhone platform will not prove open enough, and will be superseded by other, more open platforms. But for the moment, Apple appears to be creating an effective balance between control and what Jonathan Zittrain calls *generativity*.#

There are two lessons for government in these stories. The first is the extraordinary power of open standards to foster innovation. When the barriers to entry to a market are low, entrepreneurs are free to invent the future. When barriers are high, innovation moves elsewhere. The second is that vibrant platforms become less generative over time, usually because the platform vendor has begun to compete with its developer ecosystem.

Some readers may take the lesson to be that government plays an important role in antitrust enforcement, keeping a level playing field. Facing the crises of the day, from banking to health care, we see a story in which entrenched players have grown large and have used their resulting

The Future of the Internet—And How to Stop It, Jonathan Zittrain, Yale University Press, 2008.

power to remove choice from the marketplace, extracting outsized profits not by creating value but by cornering it.

There may be an "antitrust 2.0" alternative. Rather than simply limiting the size or power of an entrenched player, can government insistence on openness and interoperability be used to cause a "market reset," through which innovation can once again flourish? Antitrust actions against Microsoft were focused on existing business models, yet the real competition for Microsoft came not from other businesses selling software, but from an entirely new class of advertising-based business models that were invented in the initially noncommercial, wide-open spaces of the World Wide Web.

One of the most important ways that government can promote competition is not through after-the-fact antitrust enforcement but by encouraging more innovation. And as has been argued here, the best way to do that is with open standards. So, for example, faced with the race by major players to dominate the emerging world of cloud computing, the government can forestall the risk of single-player dominance by throwing its weight behind open standards and interoperability in cloud computing. And in fact, this is just what we're seeing. The recent General Services Administration (GSA) Infrastructure as a Service (IaaS) solicitation devoted 5 of its 25 questions to vendors to the subject of interoperability:*

> 5 Please address the following Interoperability and Portability questions:
>
> 5.1 Describe your recommendations regarding "cloud-to-cloud" communication and ensuring interoperability of cloud solutions.
>
> 5.2 Describe your experience in weaving together multiple different cloud computing services offered by you, if any, or by other vendors.
>
> 5.3 As part of your service offering, describe the tools you support for integrating with other vendors in terms of monitoring and managing multiple cloud computing services.
>
> 5.4 Please explain application portability; i.e., exit strategy for applications running in your cloud, should it be necessary to vacate.
>
> 5.5 Describe how you prevent vendor lock in.

The recent U.S. Department of Defense guidance on the use of open source software by the military is a similar move that uses open standards to enhance competition.† The government's move to push for open patient records‡ also recognizes the power of open standards to promote innovation and bring down costs. And of course, the White House's Data.gov initiative (*http://www.data.gov*), a portal for open APIs to government data, takes this idea to a new level.

* *https://www.fbo.gov/index?tab=core&s=opportunity&mode=form&id=d208ac8b8687dd9c6921d2633603aedb&tabmode=list&cck=1&au=&ck=*

† *http://radar.oreilly.com/2009/10/defense-department-releases-op.html*

‡ *http://healthit.hhs.gov/blog/faca/*

In considering how open, generative systems eventually become closed over time, losing their innovative spark in the process, there is also a lesson for government itself. Figure 2-1 shows the rising share of the U.S. gross domestic product consumed by all levels of government during the past 100 years.

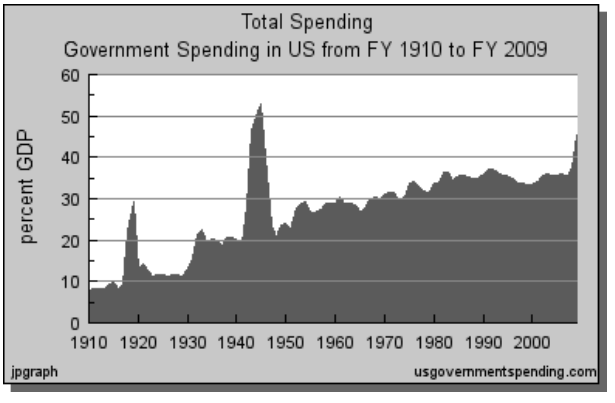


FIGURE 2-1. Government spending as percent of GDP since 1910

As a platform provider, when does government stop being generative, and when does it start to compete with the private sector? When do its decisions raise barriers to marketplace entry rather than reduce them? What programs or functions that were used to bootstrap a new market are now getting in the way? There is no Justice Department that can bring an antitrust action against government; there is no Schumpeterian "creative destruction"[§] to bring unneeded government programs to an end. Government 2.0 will require deep thinking about how to end programs that no longer work, and how to use the platform power of the government not to extend government's reach, but instead, how to use it to better enable its citizenry and its economy.

Lesson 2: Build a Simple System and Let It Evolve

In one of the early classics of software engineering, *Systemantics*, John Gall wrote: "A complex system that works is invariably found to have evolved from a simple system that worked. The inverse proposition also appears to be true. A complex system designed from scratch never works and cannot be made to work. You have to start over beginning with a working simple system."[‖]

Again, the Internet is a case in point. In the 1980s, an international standards committee got together to define the future of computer networking. The Open Systems Interconnect (OSI)

§ *http://en.wikipedia.org/wiki/Creative_destruction*

‖ *Systemantics: How Systems Work and Especially How They Fail*, John Gall, Quadrangle, 1977.

model was comprehensive and complete, and one of the industry pundits of the day wrote, in 1986:#

> Over the long haul, most vendors are going to migrate from TCP/IP to support Layer 4, the transport layer of the OSI model. For the short term, however, TCP/IP provides organizations with enough functionality to protect their existing equipment investment and over the long term, TCP/IP promises to allow for easy migration to OSI.

Au contraire. It was the profoundly simple protocols of the Internet that grew richer and more complex, while the OSI protocol stack became relegated to the status of an academic reference model used to describe network architecture.

Meanwhile, over on the TCP/IP standardization side, there was this wonderful, naive, glorious statement by Jon Postel in RFC 761:* "TCP implementation should follow a general principle of robustness. Be conservative in what you do. Be liberal in what you accept from others." It sounds like something out of the Bible, the Golden Rule as applied to computers. What a fabulous statement of philosophy! "We're not going to specify all of the details of how you interoperate; we're just going to say, 'Please do it.'"

Twitter is another good example of a fundamentally simple system. Jack Dorsey's original design sketch fit on a few lines of paper (see Figure 2-2). Much has grown from that sketch. There are now thousands of Twitter applications, precisely because the core Twitter service does so little. By thinking simple, Twitter allowed its users and an ecosystem of application developers to evolve new features and functionality. This is the essence of generativity.

Of course, in a government context when you say "build a simple system; let it evolve," that sounds like a real challenge. But let's remember that TCP/IP was a government-funded project. It can be done. The first step is getting a philosophy of simplicity into your work, understanding that designing foundations that others can build on is an important part of platform thinking. It's about creating the starting point, something that others can reuse and extend.

Designing simple systems is one of the great challenges of Government 2.0. It means the end of grand, feature-filled programs, and their replacement by minimal services extensible by others.

This quest for simplicity is one of the drivers behind Federal CIO Vivek Kundra's emphasis on Data.gov, a collection of APIs to government data. Kundra realizes that rather than having the government itself build out all of the websites and applications that use that data, providing application programming interfaces to the private sector will allow independent developers to come up with new uses for government data.

"TCP/IP: Stairway to OSI," Robert A. Moskowitz, *Computer Decisions*, April 22, 1986.

* DOD Standard: Transmission Control Protocol report (*http://tools.ietf.org/rfc/rfc761.txt*).

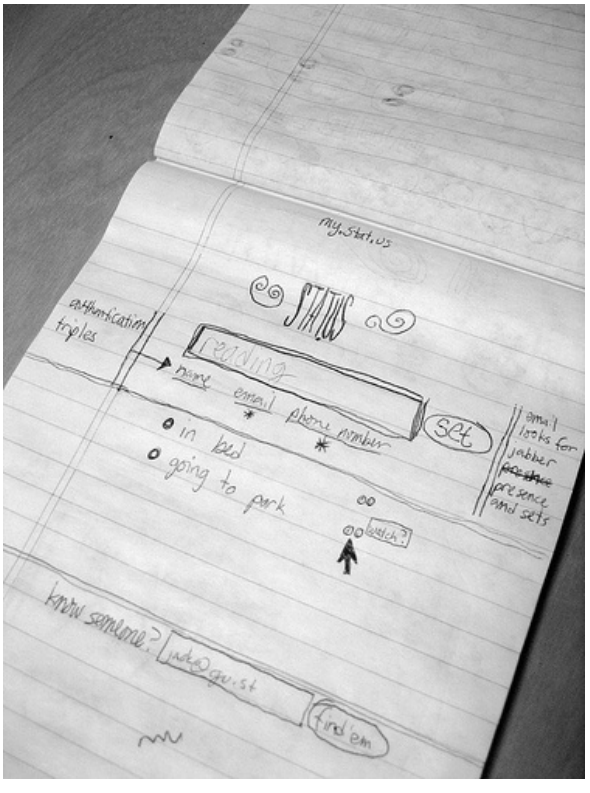


FIGURE 2-2. Jack Dorsey's original vision of Twitter

The rationale for Data.gov was laid out convincingly by David G. Robinson et al. in "Government Data and the Invisible Hand" (see Chapter 6 for an updated take on this), and the emphasis below is mine:†

> In the current Presidential cycle, all three candidates have indicated that they think the federal government could make better use of the Internet…. But the situation to which these candidates are responding—the wide gap between the exciting uses of Internet technology by private parties, on the one hand, and the government's lagging technical infrastructure on the other—is not new. The federal government has shown itself consistently unable to keep pace with the fast-evolving power of the Internet.
>
> In order for public data to benefit from the same innovation and dynamism that characterize private parties' use of the Internet, the federal government must reimagine its role as an

† "Government Data and the Invisible Hand," David G. Robinson, Harlan Yu, William Zeller, and Edward W. Felten, *Yale Journal of Law & Technology*, Vol. 11, 2009 (*http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1138083*).

information provider. Rather than struggling, as it currently does, to design sites that meet each end-user need, *it should focus on creating a simple, reliable and publicly accessible infrastructure that "exposes" the underlying data.* Private actors, either nonprofit or commercial, are better suited to deliver government information to citizens and can constantly create and reshape the tools individuals use to find and leverage public data. The best way to ensure that the government allows private parties to compete on equal terms in the provision of government data is to *require that federal websites themselves use the same open systems for accessing the underlying data as they make available to the public at large.*

Our approach follows the engineering principle of separating data from interaction, which is commonly used in constructing websites. Government must provide data, but we argue that websites that provide interactive access for the public can best be built by private parties. This approach is especially important given recent advances in interaction, which go far beyond merely offering data for viewing, to offer services such as advanced search, automated content analysis, cross-indexing with other data sources, and data visualization tools. These tools are promising but it is far from obvious how best to combine them to maximize the public value of government data. Given this uncertainty, the best policy is not to hope government will choose the one best way, but to rely on private parties with their vibrant marketplace of engineering ideas to discover what works.

Data.gov reflects another key Gov 2.0 and Web 2.0 principle, namely that data is at the heart of Internet applications. But even here, the goal is not just to provide greater access to government data, but to establish a simple framework that makes it possible for the nation—the citizens, not just the government—to create and share useful data.

SERVICE-ORIENTED ARCHITECTURE AT AMAZON

Amazon revolutionized the computer world in 2006 with the introduction of its cloud computing platform: the Elastic Compute Cloud, or EC2; the Simple Storage Service, or S3; and a series of other related services that make it possible for developers to host their applications on the same infrastructure that Amazon itself uses.

Amazon's revolutionary business model included cheap, transparent, pay-as-you-go pricing without contracts or commitments, making launching a web application a completely self-service proposition. But what's perhaps more important was the architectural commitment Amazon had made over the previous five years to building a true service-oriented architecture.‡ As Amazon Chief Technology Officer Werner Vogels described it in a 2008 *Information Week* interview:§

‡ *http://webservices.xml.com/pub/a/ws/2003/09/30/soa.html*

§ *http://www.informationweek.com/news/global-cio/interviews/showArticle.jhtml?articleID=212501404*

> Each of those pieces that make up the e-commerce platform are actually separate services. Whether it's Sales Rank, or Listmania, or Recommendations, all of those are separate services. If you hit one of Amazon's pages, it goes out to between 250 and 300 services to build that page.
>
> It's not just an architectural model, it's also organizational. Each service has a team associated with it that takes the reliability of that service and is responsible for the innovation of that service…. [W]e found that a lot of those teams were spending their time on the same kind of things. In essence, they were all spending time on managing infrastructure, and that was a byproduct of the organization that we had chosen, which was very decentralized.
>
> So…we decided to go to a shared-services platform and that became the infrastructure services platform that we now know in the outside world as AWS [Amazon Web Services].

Amazon is a bellwether example of why Robinson et al. urge that "federal websites themselves use the same open systems for accessing the underlying data as they make available to the public at large." Amazon's ability to deliver low-cost web services to the public started with its own total embrace of an internal web services architecture, in which Amazon's own applications are based on the same services that they offer to the public.

Lesson 3: Design for Participation

Closely related to the idea of simplicity is the idea of designing for participation. Participatory systems are often remarkably simple—they have to be, or they just don't work. But when a system is designed from the ground up to consist of components developed by independent developers (in a government context, read countries, federal agencies, states, cities, private sector entities), magic happens.

Open source software projects like Linux and open systems like the Internet work not because there's a central board of approval making sure that all the pieces fit together but because the original designers of the system laid down clear rules for cooperation and interoperability. (Yes, there is some oversight: Linus Torvalds and his codevelopers manage the development of the Linux kernel; the Apache Software Foundation manages the development of Apache; the Internet Engineering Task Force [IETF] and the Internet Architecture Board develop and manage Internet standards; and the World Wide Web Consortium manages web standards. But there is little or no official coordination between any of these "local" governance mechanisms. The coordination is all in the design of the system itself.)

In the case of Unix, the original design on which Linux was based, the creators started out with a philosophy of small cooperating tools‖ with standardized inputs and outputs that could be assembled into pipelines. Rather than building complex solutions, they provided building

‖ *Unix Programming Environment*, Brian W. Kernighan and Rob Pike, Prentice Hall, 1984.

blocks, and defined how anyone could write additional building blocks of their own simply by following the same set of rules. This allowed Unix, and then Linux, to be an operating system literally created as an assemblage of thousands of different projects. While the Linux kernel, developed by Linus Torvalds, is the best known part of the operating system and gave its name to the entire system, it is a tiny part of the overall code.

The Internet took a similar approach.

Tim Berners-Lee's first implementation of the World Wide Web is a great example of the Internet approach at work. Berners-Lee was a developer at CERN, the high energy physics lab in Switzerland, trying to figure out how to make collaboration easier between scientists. To do that, he simply wrote some code. He didn't have to get permission from some central design body. All he needed was one other site to install his server. And it grew from there. He built on top of existing platform components, the Internet Protocol, the Transmission Control Protocol, the Domain Name System, which were already part of the TCP/IP stack. What he defined in addition was HTTP, a protocol for web servers and clients to exchange documents, and HTML, the data format of those documents. He wrote a sample client and a sample server, both of which he put into the public domain. The industry has been off to the races ever since.

There were a number of key design breakthroughs in the World Wide Web's "architecture of participation":#

- The HTML syntax for formatting a web page was not embedded in a proprietary document format. Instead, HTML documents are ordinary, human-readable text files. What's more, every web browser includes a "View Source" menu command, which allows users to study and understand the formatting of web pages, and to copy innovative new features. Many early web pages weren't written from scratch, but were modifications of other people's pages.
- Anyone could link to any other page on the Web, without the permission or knowledge of the destination page's owner. This idea was the reversal of one taken for granted in previous hypertext systems, that links must always be two-way—an agreement between the parties, so to speak. If the document on the other end of a link goes away, an error (the famous "404" seen by any web surfer) appears, but no further action is taken. This tolerance of failure is a good example of Jon Postel's Robustness Principle at work.

Another way to frame the idea that anyone could link to any other web page without permission is to say that the Web was open "by default." That is, when developers design software, they make certain choices on behalf of their users about the way that software will work unless the user intervenes to change it. For example, in the design of the World Wide Web, it was possible to make web pages that were private and accessible only after login, but unless proactive steps were taken to hide it, any web page was visible to anyone else on the Internet.

http://www.oreillynet.com/pub/a/oreilly/tim/articles/architecture_of_participation.html

In many ways, the choice of "open by default" is the key to the breakaway success of many of the Internet's most successful sites. For example, early Internet photo-sharing sites asked their users to identify people with whom they'd like to share their photos. Flickr made "public" the default value for all photos, and soon became the gold standard for online photo sharing. Wikipedia allowed anyone to create and edit entries in their online encyclopedia, miraculously succeeding where more carefully curated online encyclopedias had failed. YouTube provided mechanisms whereby anyone could embed their videos on any web page, without coming to the central YouTube portal. Skype doesn't ask users for permission to share their bandwidth with other users, but the system is designed that way. Twitter took off because it allows anyone to follow status updates from anyone else (by default—you have to take an extra step to make your updates private), in stark contrast to previous social networks that required approval.

Cass Sunstein, now head of President Obama's Office of Information and Regulatory Affairs (*https://www.whitehouse.gov/omb/inforeg/*), is no stranger to the importance of default choices in public policy. In his book, *Nudge*, coauthored with economist Richard Thaler, he argues that "choice architecture" can help nudge people to make better decisions.* The most publicized policy proposal in the book was to make 401K participation "opt out" rather than "opt in" (i.e., participation by default), but the book is full of many other examples. As Sunstein and Thaler wrote:

> A choice architect has the responsibility for organizing the context in which people make decisions…. If you design the ballot voters use to choose candidates, you are a choice architect. If you are a doctor and must describe the alternative treatments available to a patient, you are a choice architect. If you design the form that new employees fill out to enroll in the company health plan, you are a choice architect. If you are a parent, describing possible educational options to your son or daughter, you are a choice architect.

And of course, if you are designing a government program, you are a choice architect. The ideas of Thaler and Sunstein have great relevance to areas such as agricultural policy (why are we subsidizing corn syrup when we face an obesity epidemic?); job creation (how do we encourage more entrepreneurs,† including immigrants?); health care (why does Medicare provide reimbursement for treatments that don't work?); and tax policy (where this concept is of course well understood, and the traditional bone of contention between America's political parties). Venture capitalist John Doerr's suggestion on immigration policy‡ that we "staple a Green Card to the diploma of anyone that graduates with a degree in the physical sciences

* *Nudge: Improving Decisions About Health, Wealth, and Happiness*, Richard H. Thaler and Cass R. Sunstein, Penguin, 2009.

† *http://www.feld.com/wp/archives/2009/09/the-founders-visa-movement.html*

‡ *http://blog.actonline.org/2008/11/doerr-staple-a-green-card-to-diplomas.html*

or engineering" is another example of how policy defaults could have an impact on innovation. Pigovian taxes[§] are another application of this principle to government.[‖]

In the context of government as a platform, the key question is what architectures will lead to the most generative outcome. The goal is to design programs and supporting infrastructure that enable "we the people" to do most of the work.

A Robustness Principle for Government

President Obama's memorandum calling for transparent, participatory, collaborative government is also just a statement of philosophy (see the Appendix). But it's a statement of philosophy that's fundamentally actionable in the same way that the TCP robustness principle was, or the design rules that are the heart of Unix. And even though none of these things is a formal specification, it is a set of design principles that guide the design of the platform we are collectively trying to build.

It's important to think deeply about what the three design principles of transparency, participation, and collaboration mean in the context of technology.

For example, the word "transparency" can lead us astray as we think about the opportunity for Government 2.0. Yes, it's a good thing when government data is available so that journalists and watchdog groups like the Sunlight Foundation can disclose cost overruns in government projects or highlight the influence of lobbyists (see Chapter 17). But that's just the beginning. The magic of open data is that the same openness that enables transparency also enables innovation, as developers build applications that reuse government data in unexpected ways. Fortunately, Vivek Kundra and others in the administration understand this distinction, and are providing data for both purposes.

Likewise, we can be misled by the notion of participation to think that it's limited to having government decision-makers "get input" from citizens. This would be like thinking that enabling comments on a website is the beginning and end of social media! It's a trap for outsiders to think that Government 2.0 is a way to use new technology to amplify the voices of citizens to influence those in power, and by insiders as a way to harness and channel those voices to advance their causes.

Participation means true engagement with citizens in the business of government, and actual collaboration with citizens in the design of government programs. For example, the Open Government Brainstorming conducted by the White House is an attempt to truly engage citizens in the making of policy, not just to hear their opinions after the fact.[#]

§ *http://en.wikipedia.org/wiki/Pigovian_tax*

‖ For an excellent summary of Thaler and Sunstein's ideas on government policy, see *Nudge-ocracy: Barack Obama's new theory of the state (http://www.tnr.com/article/politics/nudge-ocracy)*.

http://www.whitehouse.gov/blog/wrap-up-of-the-open-government-brainstormingparticipation/

Open government APIs enable a different kind of participation. When anyone can write a citizen-facing application using government data, software developers have an opportunity to create new interfaces to government.

Perhaps most interesting are applications and APIs that allow citizens to actually replace functions of government, in a self-service analogue to Craigslist. For example, FixMyStreet (*http://www.fixmystreet.com*), a project developed by UK nonprofit mySociety, made it possible for citizens to report potholes, broken streetlights, graffiti, and other problems that would otherwise have had to wait on an overworked government inspector. This concept has now been taken up widely by forward-thinking cities as well as entrepreneurial companies like SeeClickFix (*http://www.seeclickfix.com*), and there is even a standard—Open311 (*http://open311.org/*)—for creating APIs to city services of this kind, so that third-party developers can create applications that will work not just for one city, but for every city.

Taking the idea of citizen self-service even further, you can imagine government using a platform like Meetup to support citizens in self-organizing to take on major projects that the government would otherwise leave undone. Today, there are thousands of civic-minded meetups around issues like beach, road, and waterway cleanups. How many more might there be if local governments themselves embraced the idea of harnessing and supporting citizen concerns as expressed by self-organized meetups?

DO IT OURSELVES: AN EXAMPLE FROM HAWAII

One of the most dramatic contemporary examples is a story reported by CNN, "Island DIY: Kauai residents don't wait for state to repair road":* "Their livelihood was being threatened, and they were tired of waiting for government help, so business owners and residents on Hawaii's Kauai island pulled together and completed a $4 million repair job to a state park—for free."

Especially striking in the story are the cost and time savings:

> "It would not have been open this summer, and it probably wouldn't be open next summer," said Bruce Pleas, a local surfer who helped organize the volunteers. "They said it would probably take two years. And with the way they are cutting funds, we felt like they'd never get the money to fix it."
>
> And if the repairs weren't made, some business owners faced the possibility of having to shut down….
>
> So Slack [owner of a kayak tour business in the park], other business owners and residents made the decision not to sit on their hands and wait for state money that many expected would never come. Instead, they pulled together machinery and manpower and hit the ground running March 23.
>
> And after only eight days, all of the repairs were done, Pleas said. It was a shockingly quick fix to a problem that may have taken much longer if they waited for state money to funnel in….

* *http://www.cnn.com/2009/US/04/09/hawaii.volunteers.repair/index.html*

"We can wait around for the state or federal government to make this move, or we can go out and do our part," Slack said. "Just like everyone's sitting around waiting for a stimulus check, we were waiting for this but decided we couldn't wait anymore."

Now is the time for a renewal of our commitment to make our own institutions, our own communities, and our own difference. There's a kind of passivity even to most activism: collective action has come to mean collective complaint. Or at most, a collective effort to raise money. What the rebuilding of the washed out road in Polihale State Park teaches us is that we can do more than that. We can rediscover the spirit of public service, and apply the DIY spirit on a civic scale. Scott Heiferman, the founder of Meetup.com, suggests going beyond the term DIY (Do It Yourself) to embrace a new spirit of DIO: Do It Ourselves!

Citizen self-organization is a powerful concept. It's worth remembering that early in our nation's history, many functions now handled by government were self-organized by citizens: militias, fire brigades, lending libraries, not to mention roads, harbors and bridges. And even today, volunteer fire departments play a major role in protecting many of our communities. Traditional communities still perform barn raisings. Those of us who spend our time on the Internet celebrate Wikipedia, but most of us have forgotten how to do crowdsourcing in the physical world.

EVERYONE HAS SOMETHING TO OFFER

The reflex exerted by government to gather new information, whether in pursuit of spreading around money for housing or planning its next steps in Afghanistan, is to convene an advisory committee of experts. A whole set of laws and regulations, such as the Federal Advisory Committee Act (FACA), controls this process. Such panels are typically drawn from a limited group of academics and industry experts. A list of these advisors would no doubt show a familiar pattern of high-ranking universities.

Recent popular research on crowdsourcing and the wisdom of crowds suggests a totally different approach. Asking everybody for input generates better results than just asking the experts. Certainly, a single recognized expert will tend to offer better facts, predictions, or advice than a random individual. But put a few dozen random individuals together—on the right kind of task—and the facts, predictions, or advice that shake out are better than what the experts alone produce.

The reasons behind the success of crowdsourcing are still being investigated, but the key seems to be this: in a mix of right and wrong answers, the wrong ones tend to cancel each other out, leaving the right ones. This is the secret behind the famous appeals to the audience in the game show *Who Wants to Be a Millionaire*, as well as the success of prediction markets such as the University of Iowa's Electronic Market.†

† *http://www.biz.uiowa.edu/iem/index.cfm*

Wikipedia, which invariably makes a central appearance in every reference to crowdsourcing, plays the different opinions of the crowd against each other in more explicit ways. On relatively uncontroversial articles, contributors are expected to discuss their differences and reach consensus. This process is aided by a rarely cited technical trait of web pages: because they present no artificial space limitations, there can always be room for another point of view. On controversial topics, Wikipedia has over the years developed more formal mechanisms, but the impetus for change still wells up from the grassroots.

It's also worth mentioning, in regard to crowdsourcing, the use of low-paid or volunteer labor to carry out simple tasks such as identifying the subjects of photographs. These are called Mechanical Turk projects, in reference to a crowdsourcing technology platform provided by Amazon.com, which is itself named after an eighteenth-century hoax‡ in which a person pretended to be an intelligent machine; in the modern incarnation, thousands of people are serving as functions invoked by a computer application.

Crowdsourcing has already slipped into government procedures in low-key ways. Governments already use input from self-appointed members of the public on all kinds of things, ranging from reports of potholes to anonymous tips that put criminals behind bars.

One of the key skills required of both technologists and government officials is how best to aggregate public opinion or data produced by public actions to reveal new information or patterns. For example, cities learn a lot about neighborhoods by aggregating crime reports from residents. They could understand their needs for broadband network access much more accurately if they took resident reports into account and didn't depend just on what the broadband vendors told them (because geographic anomalies often cause dead zones in areas that the vendors claim to serve).

In general, people can provide input on several levels:

- Observations such as reports of potholes and crimes
- Feedback on government proposals
- New ideas generated through brainstorming sessions
- Full-fledged applications that operate on publicly available data

Some of those applications may operate on existing government data, but they can also be designed to collect new data from ordinary people, in a virtuous circle by which private sector applications (like SeeClickFix) increase the intelligence and responsiveness of government.

Governments are more likely to use some form of filtering than to rely on public consensus, as Wikipedia does. The combination of free debate among the public and some adult supervision from a government official makes a powerful combination, already seen in the open government brainstorming session mentioned in Lesson 3.

‡ *http://en.wikipedia.org/wiki/Amazon_Mechanical_Turk*

Finally, crowds can produce data without even realizing it—implicit data that smart programmers can collect and use to uncover whole worlds of information. In fact, smart programmers in the private sector have been doing that for years. Lesson 5 covers this trend.

—Andy Oram

Lesson 4: Learn from Your "Hackers"

The secret of generative systems is that the most creative ideas for how a new platform can be used don't necessarily come from the creators of the platform. It was not IBM but Dan Bricklin and Bob Frankston (VisiCalc), Mitch Kapor (Lotus 1-2-3), and Bill Gates who developed the "killer applications" that made the IBM personal computer such a success. It was Tim Berners-Lee, not Vint Cerf and Bob Kahn (the designers of the Internet's TCP/IP protocol), who developed the Internet's own first killer application, the World Wide Web. And it was Larry Page and Sergey Brin, not Tim Berners-Lee, who figured out how to turn the World Wide Web into a tool that revolutionized business.

Such stories suggest how technology advances, as each new generation stands on the shoulders of preceding giants. Fundamental technology breakthroughs are often not exploited by their creators, but by a second generation of entrepreneurs who put it to work.

But advances don't just come from entrepreneurs playing by the rules of new platforms. Sometimes they come from those who break the rules. MIT professor Eric von Hippel has written extensively about this phenomenon, how "lead users"§ of a product push it to its limits and beyond, showing vendors where their product wants to go, in much the way that rushing water carves its own path through the earth.

There's no better contemporary example than Google Maps, introduced in 2005, nearly 10 years after MapQuest, the first Internet site providing maps and directions. Yet today, Google Maps is the dominant mapping platform by most measures. How did this happen?

When Google Maps was introduced, it featured a cool new AJAX (Asynchronous JavaScript and XML) interface that made it easy to dynamically drag and zoom the map. But there was a hidden feature as well, soon discovered by independent developers. Because JavaScript is interpreted code, it was possible to extract the underlying map coordinate data. A programmer named Paul Rademacher introduced the first Google Maps mashup, HousingMaps.com, taking data from another Internet site, Craigslist.org, and creating an application that put Craigslist apartment and home listings onto a Google Map.

What did Google do? Far from shutting down Rademacher's site and branding him a pirate, Google hired him, and soon put out an API that made it easier for anyone to do what he did.

§ *http://en.wikipedia.org/wiki/Lead_user*

Competitors, who had long had mapping APIs but locked them up behind tightly controlled corporate developer programs, failed to seize the opportunity. Before long there were thousands of Google Maps mashups, and mapping had become an integral part of every web developer's toolkit.

Today, according to the site ProgrammableWeb.com, which tracks mashups and reuse of web APIs, Google Maps accounts for nearly 90% of all mapping mashups, versus only a few percent each for MapQuest, Yahoo!, and Microsoft, even though these companies had a huge head start in web mapping.

There are potent lessons here for governments opening up access to their data via APIs. Developers may use those APIs in unexpected ways. This is a good thing. If you see signs of uses that you didn't consider, respond quickly, adapting the APIs to those new uses rather than trying to block them.

In this regard, consider an instructive counterexample to Google Maps from the government sector. The New York Metropolitan Transit Authority recently attempted to stop the distribution of an iPhone app called StationStops, which provides schedule information for Metro-North trains. After a legal battle, the MTA relented.‖ Other cities, meanwhile, realized that having independent developers build applications that provide information to citizens is a benefit both to citizens and to overworked government agencies, not "copyright infringement and intellectual property theft," as the MTA had originally maintained.

The whole point of government as a platform is to encourage the private sector to build applications that government didn't consider or doesn't have the resources to create. Open data is a powerful way to enable the private sector to do just that.

Data Is the "Intel Inside"

Open data is important not just because it is a key enabler of outside innovation. It's also important to place in the context of current Internet business models. To explain, we require a brief excursion.

One of the central platform lessons of the PC era is summed up in a principle that Harvard Business School Professor Clayton Christensen called "the law of conservation of attractive profits":#

> When attractive profits disappear at one stage in the value chain because a product becomes modular and commoditized, the opportunity to earn attractive profits with proprietary products will usually emerge at an adjacent stage.

‖ "M.T.A. Is Easing Its Strict, Sometimes Combative, Approach to Outside Web Developers," *New York Times*, September 27, 2009 (*http://www.nytimes.com/2009/09/28/nyregion/28mta.html?_r=3*).

The Innovator's Solution: Creating and Sustaining Successful Growth, Clayton M. Christensen and Michael E. Raynor, Harvard Business Press, 2003.

As the IBM PC—built from commodity off-the-shelf parts—became dominant, hardware margins declined, over time becoming razor thin. But according to Christensen's law, something else became valuable, namely software, and Microsoft was soon earning the outsized profits that once were claimed by IBM. But even in an ecosystem of standard off-the-shelf parts, it is sometimes possible to corner a market, and that's just what Intel did when it broke with IBM's policy that every component had to be available from at least two suppliers, and refused to license its 80386 design to other chip manufacturers. That was the origin of the other half of the famous "Wintel" duopoly of Microsoft and Intel. If you can become the sole source of an essential commodity that is key to an otherwise commoditized product, you too can aspire to a logo like the ubiquitous "Intel Inside."

Reflecting on the role of open source software and open protocols and standards in commoditizing the software of the Internet, I concluded in my 2003 paper "The Open Source Paradigm Shift"* that something similar would happen on the Internet. Exactly what that was didn't become clear to me till 2005, when I wrote "What Is Web 2.0?"†

If there's one lesson that is central to the success of Web 2.0, it's that data and the algorithms that produce value from it—not the software APIs and applications that were the key to the PC era—are the key to marketplace advantage in today's Internet. Virtually all of the greatest Internet success stories, from eBay, Craigslist, and Amazon through Google, Facebook, and Twitter, are data-driven companies.

In particular, they are companies whose databases have a special characteristic: they get better the more people use them, making it difficult for competitors to enter the market. Once eBay or Craigslist had a critical mass of buyers and sellers, it became far more difficult for competitors to enter the market. Once Google established a virtuous circle of network effects among its AdWords advertisers, it was hard for others to achieve similar results.

The Internet business ecosystem can thus be seen as a competition to establish monopolies over various classes of data. It is indeed data that is the "Intel Inside" of the Internet.

What does this have to do with Government 2.0? If data is indeed the coin of the realm of Internet business models, it stands to reason that companies will find advantage in taking data created at public expense, and working to take control of that data for private gain.

Consider the story of Routesy, an application providing iPhone users with bus arrival data in the San Francisco Bay Area. Like StationStops in New York, it was taken down from the iPhone App Store after a legal complaint. While Muni (the San Francisco transit authority) was supportive of Routesy and believed that its data was public, the contract that Muni had signed with technology provider NextBus allowed NextBus to claim copyright in the data.‡ If you

* *http://tim.oreilly.com/articles/paradigmshift_0504.html*

† *http://oreilly.com/web2/archive/what-is-web-20.html*

‡ "Does A Private Company Own Your Muni Arrival Times?", *SF Appeal*, June 25, 2009 (*http://sfappeal.com/news/2009/06/who-owns-sfmta-arrival-data.php*#).

want to have the kind of responsiveness that Google showed in supporting HousingMaps.com and launching the Google Maps mashup ecosystem, you have to make sure that public data remains public!

Fortunately, the NextBus/Routesy dispute was resolved, like MTA/StationStops, with a win for the public sector. The San Francisco Municipal Transit Authority has now released an XML API to the NextBus data.§

Lesson 5: Data Mining Allows You to Harness Implicit Participation

When thinking about user participation and the co-creation of value, it's easy to focus on technology platforms that explicitly feature the creations of their users, like Wikipedia, YouTube, Twitter, Facebook, and blogs. Yet in many ways, the breakthroughs in Web 2.0 have often come from exploring a far wider range of possibilities for collaboration:

- Open source technology platforms such as the TCP/IP protocol suite and utilities created as part of Berkeley Unix, as well as Linux, Apache, and MySQL, and open source programming languages such as Perl, Python, PHP, and Ruby, all built and maintained by collaborative communities, provided the fundamental building blocks of the Internet as we know it today.
- The World Wide Web itself has an architecture of participation. Anyone can put up a website and can link to any other website without permission. Blogging platforms made it even easier for any individual to create a site. Later platforms like Facebook and Twitter are also enablers of this kind of explicit participation.
- First-generation web giants like Yahoo! got their start by building catalogs of the content assembled by the participatory multitudes of the Net, catalogs that later grew into search engines. eBay aggregated millions of buyers and sellers into a global garage sale. Craigslist replaced newspaper classified advertising by turning it all into a self-service business, right down to the policing of inappropriate content, having users flag postings that they find offensive. Even Amazon.com, nominally an online retailer, gained competitive advantage by harnessing customers to provide reviews and ratings, as well as using their purchase patterns to make automated recommendations.
- Google's search engine dominance began with two brilliant insights into user participation. First, the PageRank algorithm that Larry Page and Sergey Brin created while still at Stanford was based on the realization that every link on the World Wide Web was a kind of vote on the value of the site being pointed to by that link. That is, every time any of us makes a link to another site on the Web, we're contributing to Google. Second, Google realized that it could provide better advertising results not by selling advertisements to the

§ *http://www.sfmta.com/cms/asite/nextmunidata.htm*

highest bidder, but by measuring and predicting user click-through rates on ads. A $10 ad that is twice as likely to be clicked on is worth more than a $15 ad. Google could only deliver these results by understanding that every click on a Google search result is a kind of user contribution. Since then, Google has gone on to mine user participation in many other aspects of its core business as well as in new businesses, including speech recognition, location-based services, automated translation, and much more. Google is a master at extracting value from implicit participation. It makes use of data that its users provide simply in going about their lives on the Internet to provide them with results that quite literally could not exist without them.

Just as Google has become the bellwether company of the Internet era, it is actually systems for harnessing implicit participation that offer some of the greatest opportunities for Government 2.0.

There are great examples to be found in health care. As costs soar, we discover that costs and outcomes aren't correlated. Atul Gawande's *New Yorker* article‖ on this disconnect—outlining how McAllen, Texas, the city with the highest health care costs in the U.S., also had the worst health outcomes—led to what Health and Human Services CTO Todd Park referred to in a conversation with me as a "holy cow moment." Todd is now working on what he calls a "holy cow machine," a set of services that will allow every city to understand how its health care costs and outcomes compare to those of other cities.

We have all the data we need—generated by the interactions of our citizens with our health care system—to understand how to better align costs and outcomes. Taking this idea to its full potential, we need to get beyond transparency and, as Google did with AdWords, start building data-driven feedback loops right into the system. Google's tools for estimating the effectiveness of keyword advertising are available to advertisers, but that's wonky, back-office stuff. The real magic is that Google uses all its data expertise to directly benefit its users by automatically providing better search results and more relevant advertisements. The most amazing thing about Google is how dynamically the prices for its advertising are set. *Every single Google search has its own automated ad auction. The price is set dynamically, matching supply and demand, seven or eight billion times a day.* Only financial markets operate at this kind of speed and scale.

A Gov 2.0 analogue would not just be a "holy cow machine" for transparency; it might, for example, be a new, dynamic pricing system for Medicare. Currently, an outside advisory board makes recommendations to Congress on appropriate Medicare reimbursement rates. As David Leonhardt noted in the *New York Times*, "Congress generally ignores them, in deference to the various industry groups that oppose any cuts to their payments."# Leonhardt's solution: an

‖ "The Cost Conundrum," Atul Gawande, *The New Yorker*, June 1, 2009 (*http://www.newyorker.com/reporting/2009/06/01/090601fa_fact_gawande*).

"Falling Far Short of Reform," David Leonhardt, *New York Times*, November 10, 2009 (*http://www.nytimes.com/2009/11/11/business/economy/11leonhardt.html*).

independent body, akin to the Federal Reserve, empowered to set reimbursement rates in the same way the Fed sets interest rates.

But shouldn't such a body go even further than periodic resets? Technology would allow us actually to manage reimbursements in much the same way as Google dynamically adjusts its algorithms to produce optimal search results and optimal ad placements. Google takes into account hundreds of factors; so too could a Medicare rate-setting algorithm. To take two examples from Leonhardt's article:

> Each year, about 100,000 people die from preventable infections they contract in a hospital. When 108 hospitals in Michigan instituted a simple process to prevent some of these infections, it nearly eliminated them. If Medicare reduced payments for the treatment of such infections, it would give hospitals a huge financial incentive to prevent them….
>
> There are a handful of possible treatments for early-stage prostate cancer, and the fastest-growing are the most expensive. But no one knows which ones work best.

By measuring outcomes and linking reimbursements to those outcomes—rather than the current "fee for service" model, which encourages unnecessary procedures—Medicare could pave the way to a real revolution in health care.

Because of the political difficulty of such an intervention, it's unlikely that Medicare would be allowed to unilaterally introduce such an algorithmic payment system. As a result, I do suspect that this kind of innovation will come first from the private sector, which will trounce its competition in the same way that Google trounced its competitors in the search advertising market. As a platform provider, though, it's possible to see how government investment in the data infrastructure to measure and report on outcomes could jump-start and encourage private sector investment.

Real-time linkage of health costs and outcomes data will lead to wholesale changes in medical practice when an innovative health care provider uses them to improve its effectiveness and lower its costs. Such a breakthrough would sooner or later be copied by less effective providers. So rather than attempting to enforce better practices through detailed regulations, a Government 2.0 approach would use open government data to enable innovative private sector participants to improve their products and services. And to the extent that the government itself is a health care provider (as with the Veterans Administration) or medical insurer (as with Medicare), it can best move the ball forward by demonstrating in its own operations that it has been able to harness technology to get the job done better and more cost-effectively.

Lesson 6: Lower the Barriers to Experimentation

In a memorable moment during the Apollo 13 moon mission, when mechanical failures required that the mission be aborted and the astronauts rescued using only materials on board the craft, mission controller Gene Kranz famously said, "Failure is not an option." In that case,

he was right. But far too often, government programs are designed as though there is only one right answer, and with the assumption that the specification developed by a project team must by definition be correct.

In reality, for most projects, failure is an option. In fact, technology companies embrace failure, experimentation, and rapid iteration.

This has been true long before the latest wave of technology companies. In describing his quest for a working electric light bulb, Thomas Edison said, "I didn't fail 10,000 times. I succeeded 10,000 times in figuring out something that did not work."

You can conceive of the technology marketplace as a series of competitive experiments. But even within a single company, one of the advantages of web-based business models is the ease of experimentation. Companies routinely run A/B tests of new features on subsets of their users. They add and subtract features in real time in a process of constant improvement that I've sometimes called the "perpetual beta."

More recently, thinkers such as Steve Blank and Eric Ries have described an idea that Ries refers to as "the lean startup," in which he describes exploring the market via a series of "minimal viable products," each of which tells you more about what the market really wants.*

This is at great variance with typical government thinking, which, by ignoring the possibility of failure, paradoxically creates the conditions that encourage it. Government 2.0 requires a new approach to the design of programs, not as finished products, perfected in a congressional bill, executive order, or procurement specification, but as ongoing experiments.

Quite frankly, this is likely the greatest challenge in Government 2.0, not only because of the nature of the government procurement process, but also because government programs are often dictated by legislation, or by agency regulations that are outside the scope of the agency actually making the decisions. What's more, while the commercial marketplace benefits from Schumpeterian "creative destruction," government programs are rarely scrapped or sunsetted.

This is all the more reason why government programs must be designed from the outset not as a fixed set of specifications, but as open-ended platforms that allow for extensibility and revision by the marketplace. Platform thinking is an antidote to the complete specifications that currently dominate the government approach not only to IT but to programs of all kinds.

A cultural change is also required. Empowering employees to "fail forward fast" accepts and acknowledges that even when an experiment fails, you will still learn something. Software and web culture not only embraces this mindset, but revels in it—you never know which idea will be the million-dollar idea. Once the cost of that experimentation is reduced, you can quickly scrap a product or feature that no one uses and accept that it just wasn't the thing that needed to be built after all.

* *http://www.startuplessonslearned.com/2009/10/inc-magazine-on-minimum-viable-product.html*

Finally, it is essential for best practices—and even working code—to be shared between agencies of the federal government, between states, and between municipalities. After all, as Justice Louis Brandeis wrote in 1932, "It is one of the happy incidents of the federal system that a single courageous state may, if its citizens choose, serve as a laboratory; and try novel social and economic experiments without risk to the rest of the country."†

HOW PLATFORM THINKING CHANGES THE BIG GOVERNMENT/ SMALL GOVERNMENT DEBATE

It should be obvious by now that platform thinking provides a real alternative to the endless argument between liberals and conservatives that has so dominated U.S. political discourse in recent decades. The idea that we have to choose between government providing services to citizens and leaving everything to the private sector is a false dichotomy. Tim Berners-Lee didn't develop hundreds of millions of websites; Google didn't develop thousands of Google Maps mashups; Apple developed only a few of the tens of thousands of applications for the iPhone.

Being a platform provider means government stripped down to the essentials. A platform provider builds essential infrastructure, creates core applications that demonstrate the power of the platform and inspire outside developers to push the platform even further, and enforces "rules of the road" that ensure that applications work well together.

Lesson 7: Lead by Example

When Microsoft introduced Microsoft Windows, it didn't just introduce the platform; it introduced two applications, Microsoft Word and Microsoft Excel, that showed off the ease of use that came with graphical user interfaces. When Apple introduced the iPhone, it didn't even introduce the platform until its second year. First, it built a device with remarkable new features and a suite of applications that showed off their power.

Despite everything I've said about the importance of a platform provider not competing with its developer ecosystem, it's also a mistake to think that you can build a platform in the abstract. A great platform provider does things that are ahead of the curve and that take time for the market to catch up to. It's essential to prime the pump by showing what can be done.

This is why, for example, Apps.DC.gov, the "App Store" for the city of Washington, D.C., provides a better Gov 2.0 platform model than the federal equivalent Data.gov (see Figure 2-3). Although Apps.gov provides a huge service in opening up and promoting APIs to all the data resources of the federal government, it's hard to know what's important, because

† *http://www.whitehouse.gov/blog/2009/11/19/open-government-laboratories-democracy*

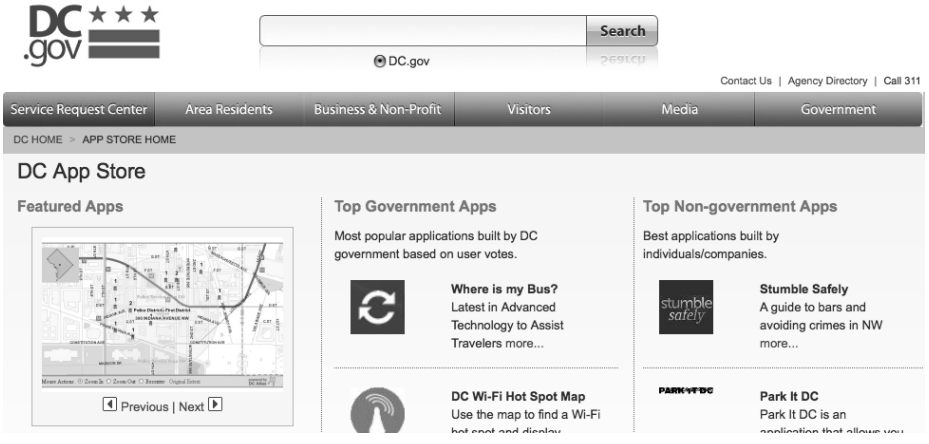


FIGURE 2-3. Apps.DC.gov home page

there are no compelling "applications" that show how that data can be put to use. By contrast, Apps.DC.gov features a real app store, with applications written by the city of Washington, D.C.'s own technology team (or funded by them) demonstrating how to use key features. D.C. then took the further step of highlighting, at a top level, third-party apps created by independent developers. This is a model for every government app store to follow.

It is true that the sheer size and scope of the federal data sets, as well as the remoteness of many of them from the everyday lives of citizens, makes for a bigger challenge. But that's precisely why the federal Gov 2.0 initiative needs to do deep thinking about what federal data resources and APIs will make the most difference to citizens, and invest strategically in applications that will show what can be done.

But the idea of leading by example is far bigger than just Data.gov. Once again, consider health care.

If the current model of "health care reform" were an operating system, it would be Windows Vista, touted as a major revisioning of the system, but in the end, a set of patches that preserve what went before without bringing anything radically new to the table.

If the government wants buy-in for government-run health care, we need the equivalent of an iPhone for the system, something that re-envisions the market so thoroughly that every existing player needs to copy it. I've suggested that an opportunity exists to reinvent Medicare so that it is more efficient than any private insurance company, and to make the VA better than any private hospital system. But being realistic, technology teaches us that it's always harder to refactor an existing system or application than it is to start fresh.

That's why the "public option" proposed in some current health care bills is such an opportunity. Can we create a new health insurance program that uses the lessons of technology—open standards, simplicity in design, customer self-service, measurement of

outcomes, and real-time response to what is learned, not to mention access via new consumer devices—to improve service and reduce costs so radically that the entire market follows?

This is the true measure of Gov 2.0: does it make incremental changes to the existing system, or does it constitute a revolution? Considering the examples of Microsoft, Google, Amazon, Apple, and other giants of the technology world, it's clear that they succeeded by changing all the rules, not by playing within the existing system. The personal computer, the World Wide Web, and the iPhone have each managed to simultaneously bring down costs while increasing consumer choice—each by orders of magnitude.

They did this by demonstrating how a radically new approach to existing solutions and business models was, quite simply, orders of magnitude better than what went before.

If government is a platform, and Gov 2.0 is the next release, let's make it one that shakes up—and reshapes—the world.

Practical Steps for Government Agencies

1. Issue your own open government directive. San Francisco Mayor Gavin Newsom has done just that. You might consider his Open Data Executive Directive as a model.‡
2. As Robinson et al. propose, create "a simple, reliable and publicly accessible infrastructure that 'exposes' the underlying data" from your city, county, state, or agency. Before you can create a site like Data.gov, you must first adopt a data-driven, service-oriented architecture for all your applications. The "Eight Open Government Data Principles" document outlines the key requirements for open government data.§
3. "Build your own websites and applications using the same open systems for accessing the underlying data as they make available to the public at large" (Robinson et al. again).‖
4. Share those open APIs with the public, using Data.gov for federal APIs and creating state and local equivalents. For example, cities like San Francisco (DataSF.org) and Washington, D.C. (Data.DC.gov and Apps.DC.gov) include not only data catalogs but also repositories of apps that use that data, created by both city developers and the private sector.
5. Share your work with other cities, counties, states, or agencies. This might mean providing your work as open source software, working with other governmental bodies to standardize web services for common functions, building a common cloud computing platform, or simply sharing best practices. Code for America (*http://codeforamerica.org*) is a new organization designed to help cities do just that.

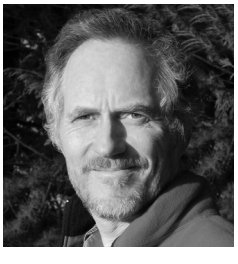
‡ *http://www.sfmayor.org/wp-content/uploads/2009/10/ED-09-06-Open-Data.pdf*

§ *http://resource.org/8_principles.html*

‖ "Government Data and the Invisible Hand," David G. Robinson, Harlan Yu, William Zeller, and Edward W. Felten, *Yale Journal of Law & Technology*, Vol. 11, 2009 (*http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1138083*).

6. Don't reinvent the wheel: support existing open standards and use open source software whenever possible. (Open311 is a great example of an open standard being adopted by many cities.) Figure out who has problems similar to yours, and see if they've done some work that you can build on.
7. Create a list of software applications that can be reused by your government employees without procurement.
8. Create an "app store" that features applications created by the private sector as well as those created by your own government unit (see Apps.DC.gov).
9. Create permissive social media guidelines that allow government employees to engage the public without having to get pre-approval from superiors.
10. Sponsor meetups, code camps, and other activity sessions to actually put citizens to work on civic issues.

About the Author



Tim O'Reilly is the founder and CEO of O'Reilly Media, Inc., thought by many to be the best computer book publisher in the world. In addition to Foo Camps ("Friends of O'Reilly" Camps, which gave rise to the "un-conference" movement), O'Reilly Media also hosts conferences on technology topics, including the Web 2.0 Summit, the Web 2.0 Expo, the O'Reilly Open Source Convention, the Gov 2.0 Summit, and the Gov 2.0 Expo. Tim's blog, the O'Reilly Radar, "watches the alpha geeks" to determine emerging technology trends, and serves as a platform for advocacy about issues of importance to the technical community. Tim's long-term vision for his company is to change the world by spreading the knowledge of innovators. In addition to O'Reilly Media, Tim is a founder of Safari Books Online, a pioneering subscription service for accessing books online, and O'Reilly AlphaTech Ventures, an early-stage venture firm.

CHAPTER THREE

By the People

Carl Malamud

Address to the Gov 2.0 Summit

Washington, D.C.

September 10, 2009

When Abraham Lincoln spoke of "a government of the people, by the people, for the people," he was speaking of more than the consecration of a battlefield, he was speaking of a wave of transformation that was changing the way government related to the citizens it served.

This transformation was the second of three waves of change. The first—the Founder's wave—began when printers such as Ben Franklin and pamphleteers such as Thomas Paine dared to involve themselves in civic affairs, publishing their opinions about how government should function, the policies it should follow, daring even to say that the people should go so far as to select their own leaders.

This first wave of transformation culminated when Thomas Jefferson took the White House, riding in on a crest of populist sentiment, a reaction against his more button-down predecessors, George Washington and John Adams. While both Washington and Adams were revolutionaries, they were aristocratic revolutionaries, governing from the top down, an elite who favored the populace with public service by governing them.

John Adams took great pains to instill a sense of dignity (some said majesty) in the new offices of government. He designed an official vice presidential uniform and suggested that Washington be addressed as "Your Excellency." Adams' sense of pomp was such that the

Jeffersonians took to referring to him as "His Rotundity" and a strong sentiment for a more representative and responsive government started to take shape.

When Jefferson moved into the White House after his raucous political campaign, he felt so deeply that his duty was to form a government for all the people of the United States that he abolished the formal dining table in the White House, replacing it with a round one so nobody could sit at the head. Indeed, if you happened to be walking by the White House early in the morning and knocked on the door, you might be greeted by Jefferson dressed in his bath robe, who would likely invite you in for a spot of breakfast.

The first great wave of transformation was a government that spoke, for the first time in modern history, directly to and with its citizens. The second wave—the Lincoln Wave—was just as fundamental.

The same day Lincoln was inaugurated in 1861, a new agency opened its doors, a Government Printing Office with a mission of "Keeping America Informed." Prior to Lincoln, the proceedings of government were reported by the press in a summary and sporadic fashion. The proceedings of Congress were reported by the Congressional Globe, a private enterprise, and the executive and legislative branches were reported only if it struck the fancy of a newspaperman.

The Government Printing Office created the first Official Journal of Government, the Congressional Record, which recorded the floors in a full and mostly true fashion. The Printing Office also began publishing the Foreign Relations of the United States, the official record of the State Department, and Superintendent of Documents John Defrees even served as Lincoln's personal editor for messages of state such as the Emancipation Proclamation.

The Lincoln wave of transformation was one of fully documenting government, publishing the rule book that governs our society. But, it was more, it was also the beginning of a formal process of involving citizens in the workings of government, a process which culminated during FDR's New Deal.

This transformation in the nature of government was spurred by broader changes in society, changes that were breathtaking in scope, but often wreaked a terrible toll on workers and families.

In 1911, in a sweatshop on the 9th and 10th stories of a New York tenement, the nation reached a watershed. The Triangle Shirtwaist factory was a sweatshop crowded with unsafe machinery and combustible materials, with no fire escapes and the exit doors chained shut to keep workers from taking breaks. It was a powder keg that would inevitably explode in a firestorm, and it did. The Triangle Shirtwaist Fire claimed the lives of 146 garment workers.

Standing across the street that terrible day in 1911 was a young woman named Frances Perkins, a social worker and the executive secretary of the New York Consumers League, one of a new kind of civic organization advocating better conditions for factory workers. Perkins watched helplessly as young women, hands clasped in prayer, leapt to their deaths. Later, she recalled

"the experience was seared on my mind as well as my heart—a never-to-be-forgotten reminder of why I had to spend my life fighting conditions that could permit such a tragedy."

Equally touched by the tragedy was a hard-boiled politician, Al Smith of Tammany Hall. Smith was horrified and formed a citizen's commission to investigate. When Theodore Roosevelt was asked who should serve as the chief investigator, Teddy thought of the young social worker he had heard so many good things about, saying "with Frances, you can't fail."

Perkins worked alongside a retired fire engineer—who sought her out and insisted on taking part as a volunteer—and with their commission of citizens they created the first fire code, spelling out the minimum standards of safety to be used in factories, offices, and homes. The fire code was adopted by New York City, then spread throughout the nation, joined over time by other fundamental public safety codes governing building, electricity, plumbing, elevators, boilers, and the other technical aspects of our modern society.

When Al Smith took the governor's seat in New York, he brought Frances Perkins with him, installing her on the new Industrial Commission, one of the first state bodies to begin regulating safety in the workplace. Perkins excelled in the post, and when Franklin Roosevelt took the governor's seat from Smith, not only did he ask Perkins to stay on, he promoted her to become one of his senior administrators.

This was an era where commissions and conferences became an important part of government, where citizens were consulted and their opinions heard in order to form a consensus on how government should act. Woodrow Wilson, Warren Harding, and Herbert Hoover used these boards and commissions to decide how to regulate the safety of aeroplanes, finance the creation of roads, and establish new-fangled efficiency mechanisms such as Daylight Savings Time.

This wave of transformation culminated when FDR moved to Washington. By then, these ideas of consultation and documentation had firmly taken root. But in the New Deal, there was chaos.

In 1934, the Assistant Attorney General went to the Supreme Court to argue why two oil companies should be required to obey regulations, only to find out that the government had never published those regulations. Justice Louis Brandeis sternly warned that without systematic publication of the rules, ignorance of the law would become a defense, and a new Official Journal of Government, the Federal Register, was created to serve as the vehicle for systematic publication across all agencies of the regulations and notifications of the executive branch.

To recap this history: The first wave—the Founder's wave—established the principle that government must communicate with the people. Next, the Lincoln wave established the principles of documentation and consultation. We are now witnessing a third wave of change—an Internet wave—where the underpinnings and machinery of government are used not only by bureaucrats and civil servants, but by the people. This change has the potential to be equally fundamental.

This transformation has its roots in unlikely quarters. The military took one of the first definitive steps, when a series of satellite launches by the U.S. Air Force from 1978 to 1993 created a Global Positioning System to guide not only the aircraft and ships of the military services, but opened the system to make navigational information available for private cars, truck fleets, commercial aviation, and even unanticipated applications such as location-enabled telephones and digital cameras. At the same time, the U.S. Geological Survey began releasing high-quality digital maps into the public domain.

With the growth of the global Internet as a communications platform, opportunities arose to offer government information differently. It suddenly became possible, and then trivial, to copy entire databases and serve them in a totally different manner.

The operation of a Global Positioning System, coupled with the release by government of extensive digital maps, is an example of what Tim O'Reilly calls "government as platform," the creation of systems that are used not only by government to fulfill its own tasks, but form the basis for private activities, both for profit and not for profit. (See Chapter 2.)

An example of "government as platform" is a database I helped put on-line in the early 1990s, the Securities and Exchange Commission's EDGAR database of filings of public corporations and other financial institutions. For many years, in order to read SEC reports, one had to go to a special reading room in Washington, asking for specific documents as one would in a closed-stack library or in approaching the service window at the County Clerk's office.

Alternatively, one could subscribe to a few computerized retail information services, and pay the operators $30 to read just one document. In this system, the government produced products to sell, and information was viewed as a profit center for the government and for a few selected concessionaires.

What we found when we placed these so-called products on the Internet—for free—was that these reports were not just fodder for a few well-heeled financial professionals, a commodity used to make the Wall Street money machine function, but instead that these public reports of public corporations were of tremendous interest to journalists, students, senior citizen investment clubs, employees of the companies reporting and employees of their competitors, in short a raft of new uses that had been impossible before.

By exposing the EDGAR database in bulk, the SEC became the platform for a host of new distribution channels, spreading the public filings into the infrastructure and helping to fulfill the SEC's mission of making our markets more efficient and transparent.

"Government as platform" means exposing the core information that makes government function, information that is of tremendous economic value to society. Government information—patents, corporate filings, agriculture research, maps, weather, medical research—is the raw material of innovation, creating a wealth of business opportunities that drive our economy forward. Government information is a form of infrastructure, no less important to our modern life than our roads, electrical grid, or water systems.

What is hopeful in what we are witnessing today is that some quarters of government appears to be embracing this new role instead of fighting it. One of President Obama's first acts was a memorandum that stated that documents should be no longer be guarded and only grudgingly released, but instead that "all agencies should adopt a presumption in favor of disclosure." (See the Appendix.)

While there is much to applaud, not all is sunlight. For too long, access to public information has been a matter of access to inside information, a matter of access to money and power. There is no better illustration of this than access to primary legal materials of the United States: the court cases, statutes, hearings, regulations, codes, administrative decisions, and other materials that define the operating system of our society, the law of the land.

When access to primary legal materials are contracted out to private concerns, as when a state court gives an exclusive contract to a corporation to publish its opinions or when a safety code becomes a revenue opportunity for a nonprofit paying million-dollar salaries, the public domain becomes private property, fenced off to extract value for a few, instead of open as a common good for us all.

We have seen this dramatically in the practice of law, where lawyers in public interest law firms and in government agencies—even the Department of Justice—carefully ration their use of the federal judiciary's PACER database and of the three retail services that monopolize the legal market. They limit their use because of cost considerations, meaning they are more poorly prepared than their adversaries from the private sector.

The costs are not insignificant. The Administrative Office of the Courts has charged the executive branch $50 million simply to access district court records. Law schools all carefully ration their use of PACER because the cost make it unworkable for them to grant law students the ability to read the proceedings of our federal trial courts at will. The Administrative Office of the Courts itself spends $150 million to access U.S. law from private contractors, a small fraction of the $10 billion per year Americans spend to access the raw materials of our democracy.

This is an issue of fundamental importance under our constitution. How can there be equal protection under the law or due process under the law—how can we be a nation of laws, not a nation of men—if the law is locked up behind a cash register, stamped with an unwarranted copyright assertion, and then shrink-wrapped in a license agreement, creating private parcels from the public domain? To purchase in bulk a collection of legal materials costs tens of millions of dollars, a barrier to competition that has resulted in decades of lost innovation for the legal profession.

The fees for bulk legal data are a significant barrier to free enterprise, but an insurmountable barrier for the public interest. Scholars, nonprofit groups, journalists, students, and just plain citizens wishing to analyze the functioning of our courts are shut out. Organizations such as the ACLU and EFF and scholars at law schools have long complained that research across all court filings in the federal judiciary is impossible, because an eight cent per page charge applied

to tens of millions of pages makes it prohibitive to identify systematic discrimination, privacy violations, or other structural deficiencies in our courts.

Access to the law, and more broadly, access to the workings of government, the fundamental databases and systems that make up government as a platform for our society, is about more than economic activity, more than improving democracy and justice, it is an opportunity for citizens to help make government more efficient. For example, when we operated the SEC EDGAR database, it was our pleasure to turn all our source code over to the government—and even configure the SEC's routers and loan them hardware—a service we gladly performed at no charge as part of our mission as a 501(c)(3) nonprofit.

I would like to leave you with three propositions that should be true in a democratic society, challenges our government can and should address today:

First, if a document is to have the force of law, it must be available for all to read. Artificial restrictions on access are not appropriate for the law of the land. The federal judiciary, in particular, must make their data much more broadly available or they will find others owning their databases, claiming authority and authenticity that should emanate directly from the courts themselves. This is a foundational issue, one that goes to the very heart of our system of justice.

Second, if a meeting that is part of the law-making process is to be truly public, in this day and age, that means it must be on the Internet. Today, *public* means *online*. When Congress holds hearings, hearings that lead to laws that we must all obey, those hearings must take place in a forum that all may attend and observe. Today, they do not.

If you want to attend a hearing today, you'd best live inside of the Beltway and have the means to hire somebody to guard your place in line. When Congress does webcast, the efforts are half-hearted and of poor quality. Many committees webcast a few select hearings, but then systematically withdraw their archives from the net. Shielding hearings from the public eye reduces the legitimacy of the Congress. Broadcast-quality video from every hearing should be made available on the Internet so our legislative process becomes more visible to all Americans.

Third, the rule of law in our federalist system is a matter that applies to all three branches of the federal government, and also to all 50 states and the local jurisdictions. The principle that primary legal materials should be available to all is a principle that needs to be driven by the leadership of the executive branch and applied to all levels of government.

Our new administration has many noted constitutional scholars—Solicitor General Kagan, Attorney General Holder, President Obama—who must surely understand the importance of making America's operating system open source. Through litigation, legislation, and executive memorandum, the Administration could and should lead a fundamental reform in how we make our laws available to our citizens, turning the private enclaves of today into the public parks of tomorrow.

The promise of the Internet wave is the promise of an opportunity for more efficient government, for more economic activity, and for a better democracy. Artificial and unjust limits on access to information based on money and power can be abolished from our society's operating system, giving us at long last a government that truly is of the people, by the people, and for the people.

About the Author

Carl Malamud is the founder of Public.Resource.Org, a nonprofit that has been instrumental in placing government information on the Internet. Prior to that he was the Chief Technology Officer at the Center for American Progress and was the founder of the Internet Multicasting Service, where he ran the first radio station on the Internet.

CHAPTER FOUR

The Single Point of Failure

Beth Simone Noveck

The world is full of amateurs: gifted amateurs, devoted amateurs. You can pick almost any group that has any kind of intrinsic interest in it, from dragonflies to pill bugs to orb-weaving spiders. Anybody can pick up information in interesting places, find new species or rediscover what was thought to be a vanished species, or some new biological fact about a species already known.

—E. O. Wilson

The patent system is just one example of how government institutions create single points of failure by concentrating decision-making power in the hands of the few, whether legislators in Congress, cabinet officials in the executive branch, or bureaucrats in agencies. Administrative practices are constructed around the belief that government professionals know best how to translate broad legislative mandates into specific regulatory decisions in the public interest. Governance, the theory goes, is best entrusted to a bureaucracy operating at one remove from the pressure of electoral politics and the biased influence of the public at large.

NOTE

This chapter is an excerpt from *Wiki Government: How Technology Can Make Government Better, Democracy Stronger, and Citizens More Powerful*, Beth Simone Noveck, Brookings Institution Press, 2009.

The Closed Model of Decision Making

The rationale for this closed model of decision making, as explained by such theorists as Max Weber and Walter Lippmann, is rooted in the assumptions of an earlier age. Although citizens may express personal opinions, they are thought to lack the ability to make informed decisions on complex policy matters. Moreover, democratic pessimists warn, government officials must be protected from the factionalized public that Madison so feared in *Federalist 10*. To ward off this danger, centralized power is concentrated in the apolitical professional or, in Weber's words, "the personally detached and strictly objective expert."* Only government professionals possess the impartiality, expertise, resources, discipline, and time to make public decisions. Or so it is assumed. The assumption is not unjustified insofar as the technology has not been available before to organize participation easily. Participation in a representative democracy is largely confined to voting in elections, joining interest groups, and getting involved in local civic or political affairs.

Thus the patent examiner, like her counterparts throughout government, must act as an expert in fields far outside her ken. The process of determining which inventor deserves a patent demands that she analyze and synthesize scientific and technical information about cutting-edge areas of innovation over which she has no real mastery. In any given subject area there are scientists, engineers, and lawyers with greater expertise, as well as laypersons with valuable insights, but the patent examiner has no access to them. In this she is not alone. In a survey of environmental lawyers, for example, only 8 percent of respondents thought that the EPA has sufficient time to search the relevant science before making a decision about environmental policy, and only 6 percent believed that agencies employ adequate analysis in their decision making.† The bureaucrat in Washington often lacks access to the right information or to the expertise necessary to make sense of a welter of available information. This can pose a challenge to good decision making and to creativity in problem solving.

The single point of failure results not just from a lack of time or resources or technology. It goes much deeper than that. Simply put, professionals do not have a monopoly on information or expertise, as the social psychologist Philip Tetlock observes. In his award-winning book *Expert Political Judgment* (Princeton University Press), Tetlock analyzes the predictions of professional political pundits against modest performance benchmarks. He finds "few signs that expertise translates into greater ability to make either 'well-calibrated' or 'discriminating' forecasts."‡ While smart people can explain, they often cannot predict and therefore make decisions based on spectacularly bad guesses.

* *Essays in Sociology*, Max Weber, edited by H. H. Gerth and C. Wright Mills, Routledge, 1991.

† "In Defense of Regulatory Peer Review," J. B. Ruhl and James Salzman, *Washington University Law Review*, Vol. 84, 2006: 1–61.

‡ *Expert Political Judgment: How Good Is It? How Can We Know?*, Philip E. Tetlock, Princeton University Press, 2005, p. 20.

Pacifists do not abandon Mahatma Gandhi's worldview just because of the sublime naïveté of his remark in 1940 that he did not consider Adolf Hitler to be as bad as "frequently depicted" and that "he seems to be gaining his victories without much bloodshed"; many environmentalists defend Paul Ehrlich despite his notoriously bad track record in the 1970s and the 1980s (he predicted massive food shortages just as new technologies were producing substantial surpluses); Republicans do not change their views about the economic competence of Democratic administrations just because Martin Feldstein predicted that the legacy of the Clinton 1993 budget would be stagnation for the rest of the decade; social democrats do not overhaul their outlook just because Lester Thurow predicted that the 1990s would witness the ascendancy of the more compassionate capitalism of Europe and Japan over the "devil take the hindmost" American model.§

It turns out that professional status has much less bearing on the quality of information than might be assumed and that professionals— whether in politics or other domains—are notoriously unsuccessful at making accurate predictions. Or as Scott Page, the University of Michigan author of *The Difference*, pithily puts it: "Diversity trumps ability"—this is a mathematical truth, not a feel-good mantra.‖

Moreover, government or government-endorsed professionals are not more impervious to political influence than the impassioned public that bureaucrats are supposed to keep at arm's length. Often the scientists and outside experts who are asked to give impartial advice to government are lobbyists passing by another name. The National Coal Council, made up almost exclusively of coal industry representatives, sits on the Department of Energy's federal advisory committee on coal policy: the department has adopted 80 percent of the Coal Council's recommendations.# White House officials regularly replace experts on agency advisory panels with ideologues and political allies (or eliminate advisory councils altogether). An Environmental Working Group study finds that the seven EPA panels that evaluated proposed safe daily exposure levels to commercial chemicals in 2007 included seventeen members who were employed by, or who received research funding from, companies with a financial stake in the outcome.*

In a published statement titled *Restoring Scientific Integrity in Policy Making*, over 60 preeminent scientists, including Nobel laureates and National Medal of Science recipients, lambasted George W. Bush's administration for having "manipulated the process through which science

§ Ibid., p. 15.

‖ *The Difference: How the Power of Diversity Creates Better Groups, Firms, Schools, and Societies*, Scott E. Page, Princeton University Press, 2007.

"Industry-Packed Federal Advisory Board Told DOE to Double U.S. Coal Consumption," Joaquin Sapien, May 19, 2008 (*http://www.propublica.org/article/industry-packed-federal-advisory-board-told-doe-to-double-us-coal-consumpti*).

* "EPA Axes Panel Chair at Request of Chemical Industry Lobbyists," Sonya Lunder and Jane Houlihan, March 2008 (*http://www.ewg.org/reports/decaconflict*).

enters into its decisions."† In 2008, 889 of nearly 1,600 EPA staff scientists reported that they had experienced political interference in their work over the last five years.‡ But if the Bush administration is among the more egregious violators of the presumed wall between politics and institutionalized expertise, its actions only go to show how easy it is for any executive to abuse his power while claiming the mantle of expertise.

Taking a historical view, the journalist Chris Mooney, in his book *The Republican War on Science*, persuasively explains that the marriage of big business to the religious right in the Reagan era has resulted in a systematic abuse of science in regulatory decision making.§ What began during World War II as an intimate relationship between science and politics—the flames of whose passion were fueled by the competitive jealousy of the cold war and the attentions of an intellectually inclined Kennedy administration—has now waned. The rise of conservatism spurred a movement to create alternative sources for scientific information. Hiding behind the skirt of science, antievolution and antiabortion politics create pressure to misrepresent science to serve political ends. At the same time, the fear by big business that scientific research might impel expensive environmental and consumer regulation further contributes to a distortion of the use of science in policy making. Mooney readily acknowledges that the Left as well as the Right makes decisions on the basis of political value judgments rather than facts. But whereas Democrats, he contends, sometimes conduct politics in spite of science, choosing to ignore the data in pursuit of a normative end, Republicans dress up politics as science and attempt to name such positions "creation science" behind a veneer of scientific legitimacy.

The problem of relying solely on professionals is compounded by the practice of confidential decision making. While federal government agencies are required by law to conduct meetings in the open (and many state governments have similar sunshine laws), this spirit is violated by regular backroom dealings with lobbyists.‖ Under the Bush administration, the attorney general changed the presumption of disclosure under Freedom of Information Act requests away from the prevailing standard to make it more difficult for agencies to release information and allow agencies to defend decisions to withhold records "unless they lack a sound legal basis."# President Obama changed it back. It is not surprising that the American people perceive government to be taking place behind closed doors (three-quarters of American adults

† "Restoring Scientific Integrity in Policy Making: Scientists Sign-On Statement," Union of Concerned Scientists, February 8, 2005 (*http://www.ucsusa.org/scientific_integrity/abuses_of_science/scientists-sign-on-statement.html*).

‡ "Interference at EPA: Science and Politics at the U.S. Environmental Protection Agency," Union of Concerned Scientists, April 23, 2008 (*http://www.ucsusa.org/scientific_integrity/abuses_of_science/interference-at-the-epa.html*).

§ *The Republican War on Science*, Chris Mooney, Basic Books, 2005.

‖ Government in the Sunshine Act, P.L. 409, 94th Cong. September 13, 1976.

"The Freedom of Information Act," John Ashcroft, Memorandum for All Heads of Departments and Agencies, October 12, 2001.

surveyed in 2008 view the federal government as secretive, an increase from 62 percent in 2006).* Massive financial bailout measures taken late in 2008 met with concerns that these troubled asset relief programs lacked transparency or monitoring. There have been myriad instances of information being deliberately hidden.

The Bush administration threatened to shut down the award-winning economic indicators website, which combines data like GDP, net imports and exports, and retail sales to make it convenient for viewers to assess the state of the economy.† The administration also announced it would no longer produce the Census Bureau's Survey of Income and Program Participation, which identifies which programs best assist low-income families, and stop publishing its report on international terrorism, making it more difficult for citizens to find important and useful news.‡ The Bush administration has taken down reports about mass layoffs and, by executive order, limited the publication of presidential records.§ Until 1999 the USPTO did not publish patent applications until they were granted.‖ Even today, the office is circumspect about Internet research to avoid compromising the privacy and confidentiality of the decision making process.# The less those outside the government know about its activities, self-evidently, the greater the need to rely on internal experts. When the public cannot see how decisions are arrived at, it cannot identify problems and criticize mistakes. Accountability declines and so does government effectiveness.

New Technologies and Civic Life

Technology enables collective action in civil society and helps some people to route around the logjam created by the single point of failure. Countless civic groups already use new communication and information-sharing tools to promote political action, operate an opposition movement, or mobilize community activism. Collaborative governance needs to be

* "More People See Federal Government as Secretive; Nearly All Want to Know Where Candidates Stand on Transparency," Sunshine Week, March 15, 2008 (*http://www.sunshineweek.org/sunshineweek/secrecypoll08*) (accessed October 2008); *Nation of Secrets: The Threat to Democracy and the American Way of Life*, Ted Gup, Doubleday, 2007.

† "Bush Administration Hides More Data, Shuts Down Website Tracking U.S. Economic Indicators," Amanda Terkel, February 13, 2008 (*http://thinkprogress.org/2008/02/13/economic-indicators*).

‡ "Bush Admin: What You Don't Know Can't Hurt Us, 2007 Version," Paul Kiel, November 23, 2007 (*http://tpmmuckraker.talkingpointsmemo.com/archives/004766.php*).

§ Ibid.

‖ American Inventors Protection Act, P.L. 113, 106th Cong. November 29, 1999.

U.S. Patent and Trademark Office, Manual of Patent Examining Procedures, sec. 904.02(c) (8th ed., 2001) ("This policy also applies to use of the Internet as a communications medium for connecting to commercial database providers"); U.S. Patent and Trademark Office, "Patent Internet Usage Policy," 64 Federal Register (June 21, 1999) ("If security and confidentiality cannot be attained for a specific use, transaction, or activity, then that specific use, transaction, or activity shall NOT be undertaken/conducted"), p. 33,060.

distinguished from this kind of civic action that is independent of government—Change.org instead of Change.gov.

The Carrotmob project (*http://carrotmob.org*) in San Francisco uses the "carrot" of consumer buying power to encourage small businesses to help the environment. Web-based tools are used to organize a consumer "flashmob," which channels business to stores that commit to environmental improvements. Carrotmob organizer Brent Schulkin asked local businesses how much they would be willing to invest in environmental improvements if the group he convened were to organize a buying spree directed toward that business. The result for the winning bodega in San Francisco's Mission District: more than triple the sales of an average Saturday, lots of free advertising, oodles of community goodwill, and a scheme to pay for improvements that, in turn, will save the business money over the long run.

Similarly, Obama Works (*http://www.whyobamaworks.org*), a corps of self-organizing citizen volunteers with no connection to Barack Obama's presidential campaign, used Internet technologies to organize neighborhood cleanups not only on a local scale but also on a national scale. Tech for Obama (*http://www.techforobama.com*) similarly galvanized support for the campaign within the techie community. Supporters, independent of the campaign, even went so far as to create "campaign offices" to recruit volunteers and organize voters. The largest one, in Silicon Valley, California, started on December 15, 2007.* Its Neighborhood Teams project geocoded the records of 1.5 million voters and used them to help over 40,000 neighbors find each other and volunteer in support of Obama. They produced and sent daily email newsletters to 5,000 people. Its 35-person technology team built its own tools to overcome inefficiencies in the organizing process. For its part, the official Obama campaign organized a summer program for Obama fellows (students and recent graduates who were recruited online) to come together and spend six weeks learning basic organizing skills from grassroots leaders. Senator Obama also spoke out publicly about creating a grassroots civic structure that could survive the campaign and continue to work on community issues after the election. In addition to meeting face to face, these volunteers used the Internet to form groups, organize, and bring about social change.

Both Carrotmob and the activities swirling about the Obama campaign are vivid examples of the use of new media technologies to convene and organize groups of people who, working together, can be more effective than any individual acting alone. Other examples include powerful online netroots organizations and blogs, ranging from MoveOn.org on the left to Red State at the other end of the political spectrum.

Civic groups are also taking advantage of new technologies to shine the light of greater transparency on government from afar. These third-party brokers of transparency are helping to do what government is not doing enough of for itself. The Cato Institute's Jim Harper launched the WashingtonWatch (*http://www.washingtonwatch.com*) program to track bills in Congress and estimate their cost or savings, if implemented into law. The Center for Responsive

* Silicon Valley for Obama (*http://www.sv4obama.com*).

Politics started OpenSecrets (*http://www.opensecrets.org*); and the New York Gallery Eyebeam launched Fundrace (*http://fundrace.huffingtonpost.com*) (now part of the Huffington Post blog) to make the Federal Election Commission's databases easier to understand and search. PublicMarkup.org (*http://www.publicmarkup.org*) used collaborative editing software, known as a wiki, to mark up the Transparency in Government Act of 2008 and the various economic stabilization and bailout proposals floated during the economic crisis in the fall of that year.† MAPLight.org (*http://maplight.org*) shines the light of transparency on money politics by illuminating who contributed to which politician and how he or she subsequently voted.

But while online communities to date may have enabled people to click together instead of bowling alone, they are not yet producing changes in the way government institutions obtain and use information. These purely civic programs are disconnected from the practices and priorities of government. They may circle around political themes and issues but are not tied into institutional processes. They are, therefore, limited in what they can accomplish. A few pioneering programs, such as Connecticut's City Scan program, suggest forms that such change might take were we to redesign rather than try to route around the workings of government.‡ Launched in the mid-1990s by the Connecticut Policy and Economic Council, CityScan helped city governments in Bridgeport and other municipalities collaborate with local communities to rescue derelict land-use sites. The organization secured a promise from each city to assist with the cleanup of a given number of parcels. Senior citizens and young people used first-generation digital cameras and handheld devices to photograph and track the progress of the work in their own communities. They mapped conditions on a website. The community groups communicated local information about land use that the government would not otherwise have had. They worked alongside the government while holding it accountable.

The government, in turn, worked with the CityScan teams, taking action based on their input and thereby giving relevance and impetus to these volunteer efforts. Technology helped both sides to organize the collaboration and to visualize its success. But the crux of CityScan was not the tools. The practices that CityScan evolved for robust collaboration between groups of citizens and local government are what differentiated this work from that of most civic action.

Collaboration and collective action, of course, are not new. Since the early nineteenth century members of the august Athenaeum Club on Pall Mall in London have penned questions in a shared book, which was left in the club's leather-chaired drawing room for other members—including Dickens and Thackeray—to answer.§ The book is still there.

As Stephen Kosslyn, chair of the Harvard Department of Psychology, explains, working together allows people to utilize many different tools. He says that, because we "simply do not

† See also "You Can Markup the Bills on the Mortgage Industry Bail Out," Ellen Miller, September 22, 2008 (*http://blog.sunlightfoundation.com/2008/09/22/*).

‡ Connecticut Policy and Economic Council, *http://www.city-scan.org* (accessed October 2008).

§ *The Athenaeum: Club and Social Life in London, 1824–1974*, Frank Richard Cowell, Heinemann, 1975.

have enough genes to program the brain fully in advance," we must extend our own intelligence with what he terms *social prosthetic systems*.‖ At the most basic level, we need to pool our diverse knowledge and skills. Even institutions need prosthetic extensions to make themselves smarter and more effective.

Virtually all activities of public life, including activism and organizing, depend on the work of teams. Until recently, however, most teams have relied heavily on physical proximity.

In the pre-Internet era, when working at a distance was not possible to the same extent (I had to be near you to join you), participation would have demanded a far greater time commitment to a cause. In the decade leading up to the American Revolution, the colonies organized Committees of Correspondence to communicate their practices of self-governance and fortify their opposition to the British.# Through the exchange of ideas about successful ways of working, they coordinated decentralized efforts at resistance across a distance. But they were committed to this all-important cause. Anything less and one would still have had to attend meetings to accomplish shared goals or alternatively pay dues to an organization to work on one's behalf. The ability now to use new technology to organize shared work makes it possible to work in groups across distance and institutional boundaries. Technology can reinforce the sense of working as a group by recreating some of the conditions of face-to-face work environments that build trust and belonging. The ability to organize collective activity puts more power in the hands of individuals by making it possible for people to self-organize and form teams around a boundless variety of goals, interests, and skill sets. And technology can support the formation of larger and more complex teams than previously imaginable.

Not surprisingly, the software community has been in the forefront of efforts to tap these benefits. Harvey Anderson, general counsel of the Mozilla Foundation, which makes the Firefox browser, says of the Mozilla community of volunteer programmers: "Many is better than one." He echoes a common refrain among those who work on open source governance: "Whenever we confront a problem, we have to ask ourselves: How do I parse and distribute the problem? How might we build feedback loops that incorporate more people?"*

The volunteer efforts extend the capacity of the full-time staff at Mozilla. By asking a community to help fix bugs in the software and rewrite the code, the organization begins to rely more and more on its community of volunteers, most of whom are not full time and most of whom may not even be known to the central project leadership. Instead, by articulating a set of common goals the Mozilla Foundation helps disparate groups of people organize

‖ "On the Evolution of Human Motivation: The Role of Social Prosthetic Systems," Stephen M. Kosslyn, in *Evolutionary Cognitive Neuroscience*, edited by S. M. Platek, et al., MIT Press, 2006; "Using Brain-Based Measures to Compose Teams: How Individual Capabilities and Team Collaboration Strategies Jointly Shape Performance," A. W. Wooley et al., *Social Neuroscience*, 2 (2007): 96–105.

"Committees of Correspondence of the American Revolution," Edward Day Collins, Annual Report of the American Historical Association (1901): 245–71.

* "Intellectual Property and Free Expression," lecture, Harvey Anderson, Stanford University, May 27, 2008 (notes on file with author).

themselves and perform practical, concrete tasks toward a shared end.† What begins as a process of information gathering builds steam and ends up creating a culture of engagement. Whereas the Mozilla organization makes the final decision about which software version to release, and when, the centralized organization cannot make these decisions without the help of the community of volunteers upon whom it relies to do the work. As the community comes to be more involved, actual decision making becomes a more amorphous concept, and control becomes dispersed. Everyone in the network has an influence.

Similarly, when a policy problem is divided into smaller parts, so that it can be distributed and worked on by collaborative teams, the drive toward openness and innovation begins. This openness may help government do its job better by bringing better information to the institution. But it can also introduce the institutional priorities to more people so that competition for solutions can emerge. Impelled by government mandate, the private sector and civil society might suggest their own solutions, evolving more robust public-private approaches, which may produce greater legitimacy than government currently enjoys. It may also help to solve complex economic and social problems faster and more efficiently.

New networking technologies, such as those embodied in Peer-to-Patent (*http://www.peertopatent.org/*), provide an opportunity to rethink the closed practices by which agencies gather information and make decisions. In 2007 the U.S. Congress mandated, and the president signed, a complete changeover by 2014 from incandescent bulbs to new, energy-efficient but mercury-containing lightbulbs. Congress instructed the EPA to implement the law into regulations. The agency, however, did not yet have a plan for disposing of the 300 million new mercury-containing bulbs sold in the United States in 2007—a number that will only increase as the mandate approaches.‡ The EPA could have solved this problem at little additional cost by setting up a simple online platform to involve a network of concerned citizens and organizations in identifying both the challenges raised by the new law and possible solutions—a lightbulb clearinghouse. Private sector companies might have stepped up to offer mercury reclamation programs sooner; foundations might have funded prizes to social entrepreneurs who devised effective solutions; interest groups might have run competitions among their members for effective recycling practices; scientists could have pointed out that they were working on the creation of a "nanoselenium" cloth to clean up mercury spills.§ Creating new channels of communication would not only inform and improve information gathering, but it could also lead to improved decision making and greater citizen involvement.

† "Summer 2008 Goals," Mitchell Baker, Mozilla Foundation chairman of the board, May 14, 2008 (*http://blog.lizardwrangler.com/2008/05/14/*).

‡ "Energy Bill Bans Incandescent Lightbulbs." For more on mercury in lightbulbs, see the EPA website (*http://www.epa.gov/epawaste/hazard/wastetypes/universal/lamps/index.htm*). For more on the congressional mandate, see "A U.S. Alliance to Update the Lightbulb," Matthew Wald, *New York Times*, March 14, 2007.

§ "A Cloth to Cut the Mercury Risk from Lightbulbs," Henry Fountain, *New York Times*, July 8, 2008.

Policy makers have been slow to seize these opportunities. Innovation is not emanating from Washington; instead, the practices of government are increasingly disconnected from technological innovation and the opportunity to realize greater citizen participation—and therefore more expert information—in government. At the very least, this means that government institutions are not working as well as they might, producing declining rates of trust in government. (In 2008 the approval rating of both Congress and the president declined below 30 percent and, in some polls, even below 10 percent.)‖ At the very worst, there is a crisis of legitimacy. Clearly, relying on a small number of institutional players to make important decisions is not the only or the best way to confront complex social problems.

One explanation for this government failure lies in the unfamiliarity with technology displayed by many policy makers, including those responsible for its regulation. In the debate over net neutrality, then Senator Ted Stevens of Alaska, vice chair of the Senate Subcommittee on Science and Innovation, infamously referred to the Internet as "a series of tubes."# While tubes could arguably be a reasonable metaphor, history has not been kind to Senator Stevens, whose literal remark has now become iconic (it has its own Wikipedia entry) of Washington's ignorance of technology. But lack of technical knowledge is not the only cause of the government's slowness to capitalize on the promise of networked, online groups. An even more fundamental explanation lies in the outdated theory of participatory democracy that drives the design of government institutions.

Participatory Democratic Theory in the Age of Networks

After the advent of the World Wide Web, many anticipated that the Internet would revolutionize government, enabling an increase in political participation: an e-democracy as well as an e-commerce revolution. Pundits heralded a new Periclean Golden Age and celebrated the civic opportunities of the new communications and information technologies.* The deliberative ideal of people with diverse backgrounds and differing viewpoints debating and even voting on public issues was about to become a reality. It did not happen.†

‖ "Bush's 69% Job Disapproval Rating Highest in Gallup History," Frank Newport, April 22, 2008 (*http://www.gallup.com/poll/106741/bushs-69-job-disapproval-rating-highest-gallup-history.aspx*); "Congressional Approval Falls to Single Digits for First Time Ever," July 8, 2008 (*http://www.rasmussenreports.com/public_content/politics/mood_of_america/congressional_performance*).

"Series of Tubes" (*http://en.wikipedia.org/wiki/Series_of_tubes*). Also see the Series of Tubes weblog (*http://www.seriesoftubes.net*) (accessed October 2008). The remark also spawned a graphic, "Series of Tubes as a Tube-map" (*http://www.boingboing.net/2007/07/20/series-of-tubes-as-a.html*).

* See, for example, *Internet Politics: States, Citizens, and New Communications Technologies*, Andrew Chadwick, Oxford University Press, 2006.

† "A Democracy of Groups," Beth Simone Noveck, First Monday, December 2005. (*http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/1289/1209*)

The Failure of Direct Democracy

Proponents of direct democracy (sometimes called pure democracy) hoped that the Internet would promote participation unmediated by representative politics by allowing citizens to express themselves through voting (referenda, initiatives, recalls) more often on a wider range of issues.‡ Direct democrats argue for the use of technology to bolster such forms of direct participation as the initiative and referendum as a way to speed up the pace of governance.

During his presidential bid Ross Perot celebrated the direct democratic ideal and advocated that the president communicate directly with the American public via new media and encouraging the public to vote regularly and directly from home on issues.§ Auburn University houses a center dedicated to teledemocracy—large-scale, Internet-enabled, direct democracy.‖ Aficionados of proxy voting like the idea of using the web to allocate one's votes to a trusted interest group of one's choosing to render direct democratic voting better informed and more practical to administer.# A now-defunct Swedish company pioneered online proxy voting in the political arena, a practice in common use in the corporate sector.*

But security and reliability problems have plagued the rollout of both electronic, kiosk-based, voting and Internet-based vote-from-home technologies in the United States. Annual political elections are hard enough to run without introducing yet more possibilities for voter fraud and abuse. Instead, new services, such as Smartvote.ch from Switzerland, use the Internet to inform voting at the polling booth. Smartvote allows the user to plug in opinions in response to questions. The software then tabulates which candidate or proposal is closest to the user's own views. Countless informational websites have sprung up around the electoral process, whether it is the *Washington Post*'s subscription service to inform the reader every time her elected official casts a vote or one of myriad webcasts of online legislative coverage designed to inform and render the political process more accountable by virtue of its being transparent.†

‡ *Direct Democracy: The Politics of Initiative, Referendum, and Recall*, Thomas E. Cronin, Harvard University Press, 2006.

§ "Ross Perot and the Call In Presidency," Charles Krauthammer, *Time*, July 13, 1992, p. 84.

‖ Center for Tele-Democracy (*https://fp.auburn.edu/tann/*). See also Direct Democracy League (*http://www.ddleague-usa.net*).

"How Might Cyberspace Change American Politics," Eugene Volokh, *Loyola Los Angeles Law Review*, Vol. 34, 2001: 1213–20.

* The company was Vivarto Inc., founded by Mikael Nordfors. Its website is still online (*http://www.vivarto.com*).

† "The U.S. Congress Votes Database" (*http://projects.washingtonpost.com/congress/rss/*); "New Opportunities for Involving Citizens in the Democratic Process," Darlene Meskell, USA Services Intergovernmental Newsletter, Vol. 20, Fall 2007: 1–3 (*http://www.usaservices.gov/events_news/documents/USAServicesNewsletterFall-07.pdf*).

But the notion of widespread, push-button democracy in whatever form does little to address how to institutionalize complex decisions in particular cases. It is no wonder that the vision of participation by direct democratic voting has not taken off.

The Timidity of Deliberative Democracy

Deliberative democracy has been the dominant view of participation in contemporary political theory. At its center is the Habermasian notion that the reasoned exchange of discourse by diverse individuals representative of the public at large produces a more robust political culture and a healthier democracy.‡ It has almost become a commonplace that people of diverse viewpoints should talk to one another town-hall style in public (this despite the fact that some recent empirical research even suggests that talking to people of differing viewpoints correlates to *reduced* participation in community life).§ It is a normative, democratic ideal unto itself and a means to the end of enhancing legitimacy in governance.

With the reduction in the cost of communications since the Internet, the hope had been that new information technologies would result in more widespread deliberation. Early e-democracy thinkers were optimistic that new technology could promote open discourse, equal participation, reasoned discussion, and the inclusion of diverse viewpoints. By allowing diverse participants to come together regardless of the boundaries of geography and time, the Internet could help overcome the hurdle of groupthink—a state in which like-minded people fail to consider alternatives adequately and fall prey to their own ideology.‖ Like direct democrats, advocates of deliberative democracy have also been disappointed. While social-scientific experiments in deliberation proliferate, deliberative theory founders on the practical reality of present-day political decision making. In practice, such conversations have been difficult to achieve, especially on a large scale.#

The weakness of the deliberative approach is not that it reaches too far (as direct democracy may) but that it does not reach far enough. By making talk the centerpiece of its normative aspirations, deliberative democracy's proponents assume that people are generally powerless and incapable of doing more than talking with neighbors to develop opinions or criticizing government to keep it honest. In theory, convening people of diverse viewpoints can have a beneficial impact on policy—assuming that the political system is structured to translate those

‡ *Deliberation Day*, Bruce A. Ackerman and James Fishkin, Yale University Press, 2004; *Debating Democracy and Deliberation: New Directions for Democratic Reform*, James S. Fishkin, Yale University Press, 1991; *Public Deliberation: Pluralism, Complexity, and Democracy*, James Bohman, MIT Press, 1996.

§ *Hearing the Other Side: Deliberative versus Participatory Democracy*, Diana C. Mutz, Cambridge University Press, 2006.

‖ *Why Societies Need Dissent*, Cass Sunstein, Harvard University Press, 2003, p. 118.

"Promise and Problems of E-Democracy: Challenges of Online Citizen Engagement," Ann Macintosh and Stephen Coleman, OECD, 2003.

viewpoints into meaningful participation in decision making.* But in practice, civic talk is largely disconnected from power. It does not take account of the fact that in a web 2.0 world ordinary people can collaborate with one another to do extraordinary things.

The anthropology of deliberative participation leads to practices designed to present the finished work of institutional professionals, spark public opinion in response, and keep peace among neighbors engaged in civic discourse. The goal is not to improve decision making, for "there is no one best outcome; instead, there is a respectful communicative process."† The desire for civilized discussion and dispute resolution lead to a requirement of demographically balanced representation in the conversation. This may ensure inclusion of all affected interests but does not, as Alexander Meiklejohn said, necessarily result in an airing of all ideas worth hearing.‡ Deliberative democracy relegates the role of citizens to discussion only indirectly related to decision making and action. The reality of deliberation is that it is toothless. Perhaps it is, as Shaw once said: The single biggest problem in communication is the illusion that it has taken place.

In 2002, for example, the Civic Alliance to Rebuild Downtown New York (with the help of AmericaSpeaks, a civic group that organizes public deliberation, and the sponsorship of the Lower Manhattan Development Corporation) convened Listening to the City, a demographically representative deliberation exercise that brought 4,500 New Yorkers together in person and 800 online to talk about the first set of designs for the World Trade Center site.§ After hearing a presentation of the proposed plans, the group was highly critical. The high-profile, public nature of the event attracted a front-page story in the *New York Times*. It led directly to officials scuttling the plans and initiating a second round of designs.

The people power, as the populist historian Howard Zinn might say, of a large number of people massing in physical space created political pressure.‖ But people were neither expected nor invited to offer advice and expertise to inform the new plans. In this carefully orchestrated deliberation, they did not have an opportunity to get involved in the cleanup nor to identify problems or solutions to the mounting environmental and economic development challenges in the area. The problem was not presented in ways that could have led to private sector assistance either in the government's effort or as an adjunct to it. Nothing about the weekend changed or improved the way government works. Arguably, the Lower Manhattan

* *Democracy Online: The Prospects for Political Renewal through the Internet*, Peter M. Shane, ed., Routledge, 2004.

† "The Right of Public Participation in the Law-Making Process and the Role of the Legislature in the Promotion of This Right," Karen Czapanskiy and Rashida Manjoo, *University of Maryland School of Law Legal Studies*, Vol. 42, 2008: 31.

‡ *Political Freedom: The Constitutional Powers of the People*, Alexander Meiklejohn, Harper, 1960.

§ "Visions of Ground Zero: The Public; Officials Rethink Building Proposal for Ground Zero," Edward Wyatt with Charles V. Bagli, *New York Times*, July 21, 2002, p. A1.

‖ See, for example, *A Power Governments Cannot Suppress*, Howard Zinn, City Lights, 2007.

Development Corporation used the Listening to the City exercise to appear responsive to citizens' concerns while obscuring the real power politics at play, ultimately depriving New Yorkers of the chance to participate rather than simply react.#

The political sociologist Michael Schudson writes about the "monitorial citizen," who is too busy to play an active role in government.* While it is important and useful that government is responsive to the watchful citizen, this passive vision does not recognize the full potential of ordinary people to share expert information and effort with government. Among members of the public are scientists, engineers, doctors, lawyers, students, teachers, and nonprofessionals with a wide range of experience and enthusiasm who can contribute to an understanding of energy independence by submitting data. Others can analyze information given to them about endangered species or participate in the drafting of policies about transportation. There are expert conferences daily, where instead of presenting disconnected academic papers great minds might also be enlisted to solve pressing social problems. These potential resources for public decision making are largely going to waste.

Distinguishing Deliberative and Collaborative Democracy

There is a difference within participatory democracy between the two related but distinct notions of deliberation and collaboration. Deliberation focuses on citizens discussing their views and opinions about what the state should and should not do. The ability for people to talk across a distance facilitates the public exchange of reasoned talk. But deliberative polls, neighborhood assemblies, consensus councils, citizen panels, and other conversation-centered experiments, whether online or off, have not translated into improvements in decision making practices. The underlying Internet and telecommunications infrastructure is essential to conversing across a distance, but the Internet by itself is not the "killer app." If it were, the history of citizen participation in government institutions, which I describe in chapter 6 [of *Wiki Government*], would already look very different.

While both deliberation and collaboration may be group-based, deliberative democracy suffers from a lack of imagination in that it fails to acknowledge the importance of connecting diverse skills, as well as diverse viewpoints, to public policy. Whereas diverse viewpoints might make for a more lively conversation, diverse skills are essential to collaboration.

Deliberation measures the quality of democracy on the basis of the procedural uniformity and equality of inputs. Collaboration shifts the focus to the effectiveness of decision making and outputs.

Deliberation requires an agenda for orderly discussion. Collaboration requires breaking down a problem into component parts that can be parceled out and assigned to members of the public and officials.

Starting from Zero: Reconstructing Downtown New York, Michael Sorkin, Routledge, 2003, pp. 57–61.

* *The Good Citizen: A History of American Civil Life*, Michael Schudson, Free Press, 1998.

Deliberation either debates problems on an abstract level before the implementation of the solution or discusses the solution after it has already been decided upon. Collaboration occurs throughout the decision making process. It creates a multiplicity of opportunities and outlets for engagement to strengthen a culture of participation and the quality of decision making in government itself.

Deliberation is focused on opinion formation and the general will (or sometimes on achieving consensus). Consensus is desirable as an end unto itself.† Collaboration is a means to an end. Hence the emphasis is not on participation for its own sake but on inviting experts, loosely defined as those with expertise about a problem, to engage in information gathering, information evaluation and measurement, and the development of specific solutions for implementation.

Deliberation focuses on self-expression. Collaboration focuses on participation. To conflate deliberative democracy with participatory democracy is to circumscribe participation by boundaries that technology has already razed. In fact, the distinctions between deliberation and collaboration become even more pronounced in the online environment, whose characteristics are increasingly making collaboration easier.‡ New technologies make it possible to join ever more groups and teams. Such familiar websites as Wikipedia, Facebook, and even video games like World of Warcraft inculcate the practices of shared group work, be it writing encyclopedia entries or slaying monsters, at a distance.

New technology is also making it possible to divvy up tasks among a group. "Digg-style" tools for submitting and rating the quality of others' submissions have become commonplace ways to sort large quantities of information. Finally, the digital environment offers new ways to engage in the public exchange of reason. With new tools, people can "speak" through shared maps and diagrams rather than meetings. Competing proposals, using computer-driven algorithms and prediction markets, can evolve. Policy simulations using graphic technology can be created. Social networking tools enable collaborative making, doing, crafting, and creating. Yet most of the work at the intersection of technology and democracy has focused on how to create demographically representative conversations.§ The focus is on deliberation, not collaboration; on talk instead of action; on information, not decision making.

† There are numerous proponents of this "strong" theory of civic engagement: *Strong Democracy*, Benjamin R. Barber, Princeton University Press, 1984; *Democracy and Technology*, Richard E. Sclove, Guilford, 1996; *Civic Engagement in American Democracy*, Theda Skocpol and Morris P. Fiorina, eds., Brookings, 1999.

‡ "Digital Speech and Democratic Culture: A Theory of Freedom of Expression for the Information Society," Jack M. Balkin, *New York University Law Review*, Vol. 79, 2004: 1–58.

§ The ideal type of citizens' group is one that is "composed of representatives of all strata of its community; it would be unbiased, courteous, well-organized, adequately financed, articulate." *Citizens Groups and Broadcasting*, Donald Guimary, Praeger, 1975, p. 148.

The Argument for an Open and Collaborative Democracy

The case for an open and collaborative vision of democratic theory is bolstered by three arguments: collaboration as a distinct form of democratic participation, visual deliberation, and egalitarian self-selection.

First, collaboration is a crucial but not well understood claim of democratic practice. There is a belief that the public does not possess as much expertise as people in government. Furthermore, the technology has not previously existed to make collaboration possible on a large scale. These spurious assumptions have produced an anemic conception of participatory democracy. Participation has generally referred to once-a-year voting or to community deliberation, in which neighbors engage in civil dialogue and public opinion formation on a small scale. New social and visual technologies (sometimes referred to as web 2.0) are demonstrating that people are knowledgeable about everything from cancer to software and that, when given the opportunity to come together on a network and in groups, they can be effective at solving problems (not only deliberating about them). We must therefore distinguish between deliberation and collaboration as forms of participatory practice, exploring many examples of ordinary people joining together to do extraordinary things coordinated via the Internet. Peer-to-Patent is a paradigmatic case of database programmers and wind-farming experts working with patent examining professionals to make a better decision.

Second, the medium matters. To enable collaboration at scale requires designing the practices to make participation manageable and useful and then enabling those practices by means of technology. While the forms of participation will differ when information gathering or priority setting or data analysis are required, the technology should always be designed to reflect the work of the group back to itself so that people know which role they can assume and which tasks to accomplish. This second insight is what I term visual deliberation. In traditional deliberative exercises, strict procedures for who can talk govern the public conversation. But collaboration depends, instead, on having tools that convey the structure and rules of any given collaborative practice. This kind of social mirroring can be communicated through software. Peer-to-Patent uses visualizations to communicate the workflow by which information goes from the government institution to the public and back again. The website helps to convey what it means to review a patent application. It exploits rating and reputation techniques that help each group work together as a group, even across a distance. Hence, designing new democratic institutions also depends on designing the appropriate collaborative practices and embedding that design in software.

Third, collaboration is a form of democratic participation that is egalitarian—but egalitarian in a different way than the traditional understanding of the term. Typically, mass participation like voting is thought of as being quite democratic because everyone can participate in the same way. By contrast, Peer-to-Patent is not mass participation. It demands highly technical expertise. Successful participation depends upon the participant's interest in and knowledge of patents. If Peer-to-Patent were the only example of collaborative participation, it would not be egalitarian. But Peer-to-Patent multiplied by a thousand would be more institutionally

diverse and complex. If the patent expert and the doctor and the teacher each have a vehicle for engagement, contexts would be created in which they each uniquely possess expertise and derive meaning.

In other words, people do not have to participate in the same exercise. One person may want to work on Peer-to-Patent, another may want to get involved in health care debates. One person may want to work on energy policy, another may want to organize a corps of energy "scouts" to go door-to-door and help neighbors evaluate their energy usage. The ability to self-select to participate in the arena of one's choosing is what makes collaborative democracy egalitarian. A person may be an expert on wetlands because she possesses professional credentialing. Another person may be an expert on wetlands because she lives near one. Perhaps it is a level of know-how or the enthusiasm to commit more time that generates status in other domains. For every project, there is a different kind of expertise, which could be sought. Experts will flock to those opportunities that exploit their intelligence. In this choice lies the equality of opportunity.

What does open and collaborative democracy look like in practice? In the old way of working, the bureaucrat might decide to repair a bridge in response to an opinion poll or vote that randomly obtains feedback. Or the bureaucrat might publish a fully developed plan to repair the bridge, ostensibly soliciting comment in response to a notice of proposed regulation, attracting participation by formal interest groups and lobbyists but not ordinary citizens, who can never hope to match the power and influence of corporate interests. Community groups might use the web to lobby for bridge repair but with no greater opportunity to get involved in detailed decisions. The government or a nongovernment organization (NGO) might organize a face-to-face deliberative discussion about the bridge and hope to use the event to trigger a newspaper article that will influence the decision. A similar online discussion may or may not attract attention.

Under a collaborative strategy, the bureaucrat establishes the process then frames and asks the questions that will get targeted information from bridge users (the truck driver, the commuter), from an engineer, and from the informed enthusiast. The public can contribute evidence and data to help inform specific decisions, analyze data once gathered, and share in the work of editing, drafting, and implementing policies. Alternatively, if officials articulate the priority of bridge safety, they might spur private sector businesses, nonprofits, and individuals to develop their own strategies, such as organizing a volunteer corps of bridge safety inspectors who log their work on a shared website. Citizens are no longer talking about the process: they are the process.

The future of public institutions demands that we create a collaborative ecosystem with numerous opportunities for experts (loosely defined as those with expertise about a problem) to engage. There is a Plum Book, which lists government jobs, and there is a Prune Book, which lists the toughest management positions. The pluot is supposed to be the sweetest variety of plum (or plum plus apricot). Yet there is no "Pluot Book" cataloging opportunities for part-time participation in government! When participatory democracy is defined to include diverse

strategies for collaboration, when these thousands of opportunities to self-select come to light, a Pluot Book may well be needed.

Challenges for Collaborative Democracy

Critics might suggest that there already exists an architecture of participation, involving a wide array of actors in policy-making processes. Corporations participate through lobbyists and notice-and-comment rule-making. Nongovernmental organizations, too, funnel information to government through think tanks, white papers, and publications. Interest groups lobby and enlist their members to respond—usually through postcards and email—in rulemaking and legislative policy making. Scientists and others participate in deliberative, small-group, federal advisory committees that give advice to officials. And more public deliberation exercises, when they take place, help to generate opinion formation.

What is lacking, though, are effective ways for government to be responsive to the public, as opposed to corporate interests, large stakeholders, and interest groups. These citizen participation strategies suffer from the problem of "capture"—excessive political influence. Nominees are often subjected to ideological litmus tests. Lobbyists use their ability to participate to stall rather than inform the regulatory process. The use of notice-and-comment periods (in response to agency-proposed rule-making), which solicit individual participation, is typically late in the process, when policies are all but finalized. And people are too busy anyway to do the work of professionals in government.

What will prevent new, networked publics from becoming as entrenched as the lobbying culture that has produced the failures of current politics is that collaborative democracy seeks to proliferate many smaller opportunities for openness. The EPA doesn't need 100,000 people to work on the issue of asbestos or mercury. While some issues attract a huge number of people, obscure (yet important) decisions are made every day in government that could be made better if technology were used to open participation and oversight to a few dozen experts and enthusiasts: those that blogger Andy Oram calls the microelite: the 5 or 10 or 100 people who understand a discrete question and who are passionate about getting involved in a particular way.‖ Collaborative democracy is about making it easier for such people to find the areas where they want to work and contribute.

Some will counter that more active involvement in government by self-selecting private citizens would only increase the risk of corruption. Their fear is that opening up channels of participation would create a whole new class of online lobbyists and campaigns that participate to serve their own financial interests. Perhaps. But if the practices of twenty-first-century government were designed to split up tasks into many small fact-gathering and decision

‖ "In Search of Microelites: How to Get User-Generated Content," Andy Oram, November 14, 2007 (*http://radar.oreilly.com/2007/11/in-search-of-microelites-how-t.html*).

making exercises, technology would diversify against that risk. It is harder to corrupt a system with many parts. This approach would also make it easier for busy people to participate. And if government decisions were designed to be made in groups, group members would keep each other honest and blow the whistle if corruption occurs.

The primary challenge when engaging in deliberation is to avoid capture and corruption by those who speak with the most influence. In a collaborative governance environment the greatest challenge is one of design: organizing the work most effectively to tap outside expertise. The bureaucrats who design the collaborative processes might be tempted to set them up in such a way as to promote participation by particular vested interests over others. But open processes that enable people to evaluate one another's participation help to preclude the risks. At the very least, technology makes it possible to organize decision making in ways that might overcome abuses familiar from the offline world. If governance is thought of as a granular and focused set of practices, ways can be designed to delegate greater power to citizens to gather facts, spend money, and participate in making decisions.

Giving ordinary people—as distinct from corporations and interest groups—the right and ability to participate enables them to form new groups better suited to address new problems. Alone, there is not much any one person can do to bring about change or to participate meaningfully and usefully in a policy-making process. But working together a group can take meaningful action. Online groups can also change their collective goals in response to pressing problems more quickly than traditional organizations that lock in their own institutional and individual priorities.

Government need not—it must not—fear new technology and the opportunity it creates to invite participation from those with the experience in the field. Reinventing democracy as collaborative democracy will create work for government. Having a blog requires someone to respond to comments. Posting a wiki demands following the changes as they evolve. Creating a web form to invite input from the public necessitates honing in on the right questions and listening to the resulting answers. Participation will require staffing and technology to manage. But a collaborative culture does not place the burden on government or the public alone to address complex social problems. Instead, by organizing collaboration, government keeps itself at the center of decision making as the neutral arbiter in the public interest and also benefits from the contributions of those outside of government. Joseph Nye explains the collaborative imperative for governments:

> The very nature of leadership has changed in today's interdependent, globalized world. In information-based societies, networks are replacing hierarchies, and knowledge workers are less deferential. Business is changing in the direction of "shared leadership" and "distributed leadership," with leaders in the center of a circle rather than atop a hierarchy.… Modern leaders need an ability to use networks, to collaborate, and to encourage participation. They need to be able to make decisions within rapidly changing contexts. They need to attract followers into new identities—both individual and social—and provide meaning in a disruptive world of

globalization. In short, they need to use the soft power of attraction as well as the hard power of force and threat, both at home and in foreign policy.#

In other words, collaboration offers a huge potential payoff in the form of more effective government. Effective government, in turn, translates into better decision making and more active problem solving, which could spur growth in society and the economy.

Let's say that the Environmental Protection Agency wants to pass a regulation protecting a certain endangered species. As currently designed, public input comes too late for anyone but a lobbyist to effectively have a say. But the Internet makes it possible to design methods for soliciting better expertise sooner from private citizens. Or imagine that the United States Postal Service wants to cut its energy bills by 30 percent over the next three years. An online best-practices website would enable the USPS to generate many solutions from crowds of people. Those crowds could include self-selected experts across federal, state, and local government as well as motivated members of the public. Imagine that a series of economic events triggers a crisis of confidence in the economy. Technology could make it possible to track economic data in a more transparent, collaborative, verifiable way.

Innovation in the practices of governance will require investment. But if government can design effective mechanisms—law, policy, and technology—to build the bridge between institutions and networks, it can enhance its legitimacy and value. Look what happened to the entertainment industry. Fearing a loss of ad revenue from consumers' home taping, the movie studios and television broadcasters initially feared the new tools. They (unsuccessfully) sued the makers of the Betamax personal video recorders (the precursor of the DVD and the VCR) in an effort to put the consumer electronics companies out of the Betamax business altogether.* People wanted to watch movies at home and would not be stopped. Eventually, the home video rental market, far from threatening the incumbents, flourished and vastly increased their markets.

Similarly, in response to the advent of digital technologies that reduce the cost of making and distributing nearly perfect copies of music, the record labels proposed legislation to criminalize new forms of copyright infringement. They began suing twelve-year-olds and grandmothers for illegally sharing music files via peer-to-peer networks and filed suit to put the makers of these new digital technologies out of business.† But the law is out of step with society's music

"Picking a President," Joseph Nye, *Democracy Journal*, Fall 2008: 19–28.

* Sony Corp. of America. Universal City Studios, 464 U.S. 417 (1984).

† Prioritizing Resources and Organization for Intellectual Property Act of 2008 (ProIP Act) S. 3325. "Big Content Gloats as Bush Signs Pro-IP Act," Nate Anderson, Ars Technica, October 14, 2008 (*http://arstechnica.com/news.ars/post/20081014-bush-signs-pro-ip-act-big-content-gloats.html*); "RIAA Settles with 12-Year-Old Girl," John Borland, September 9, 2003 (*http://news.cnet.com/2100-1027-5073717.html*); "RIAA versus Grandma, Part II: The Showdown That Wasn't," Eric Bangeman, December 16, 2007 (*http://arstechnica.com/tech-policy/news/2007/12/riaa-versus-grandma-part-ii-the-showdown-that-wasnt.ars*). See also MGM Studios Inc. v. Grokster, Ltd., 545 U.S. 913 (2005) (peer-to-peer file-sharing case), and also *http://arstechnica.com/old/content/2005/06/5042.ars*.

consumption practices: while traditional business models wane, iTunes, eMusic and other alternatives innovate and embrace the power of new technology. Instead of cheating or routing around the music laws, these new entrants are helping to reengineer and reshape the industry. If institutions don't work with the networks, networks will work around them, rendering government practices increasingly disconnected, ineffectual, and brittle.

About the Author

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CHAPTER FIVE

Engineering Good Government

Howard Dierking

Looking back over the history of the United States, it is not just remarkable to see how 13 former colonies of the British Empire could come together to form what became the longest continuously functioning government in recorded history, but it is also incredible that such a durable government was set up as a republic. Until the United States, history records few examples of even moderately successful republics, and even those moderate successes were aided by factors external to the specific system of government employed. How, then, did the framers of the U.S. Constitution succeed in creating a republican-style government where so many had failed?

Simply put, by good design.

When looking back through the Constitution and the Federalist Papers, we can observe that the founders took many novel approaches in crafting the structure of the United States. Indeed, Alexander Hamilton went so far as to describe these approaches as based on the new "science of politics."* The Constitution was the embodiment of this new science and served as a lightweight framework, providing enough prescription to ensure basic stability in the republic, but little more, so as to enable the government to adapt over time and thus ensure the longevity of that stability.

In many ways, the framers of the Constitution were like the software designers of today. Modern software design deals with the complexities of creating systems composed of

* Federalist 9.

innumerable components that must be stable, reliable, efficient, and adaptable over time. A language has emerged over the past several years to capture and describe both practices to follow and practices to avoid when designing software. These are known as *patterns* and *antipatterns*. This chapter will explore known software design patterns and antipatterns in context of the U.S. Constitution and will hopefully encourage further application of software design principles as a metaphor for describing and modeling the complex dynamics of government in the future.

The Articles of Confederation and the Stovepipe Antipattern

Software design patterns and antipatterns can be classified by the general type of problem they describe or solve. Patterns in a category known as *enterprise architecture* make a good place to begin exploring the connection between the worlds of government and software, as they tend to be concerned more with the management of overall systems than with lines of code. What follows is an exploration into how the Articles of Confederation, the first constitution of the United States, represents a classic example of an antipattern known as the *enterprise stovepipe*. From that comparison, we will explore strategies for overcoming an enterprise stovepipe and will then see how the Constitution is in fact a historical illustration of those strategies.

> NOTE
> **An antipattern is much like a regular pattern in that it describes observable phenomena that tend to occur with some frequency. However, antipatterns go further to define specific types of patterns which generally yield negative outcomes. Put another way, an antipattern describes a pattern that should be stopped.**

The First Constitution

Drafted during the early part of the American Revolution, the Articles of Confederation became the first constitution for the new confederacy of 13 states. Though the original draft of the Articles provided for a strong federal government, the sentiments of the time resulting from the war for independence from Great Britain ultimately yielded a governmental structure that consisted of a loose confederation of independent states, bound together by a "firm league of friendship."† While the Articles did provide provision for a federal government, the language used to define its goals was undermined by the language used to describe the constraints on its ability to achieve those goals. For example, in describing the role and ability of the federal government to assess and levy taxes on the states to provide for the cost of war, including the recently fought Revolutionary War, Article 7 establishes the following:

† Articles of Confederation, Article III.

> All charges of war, and all other expenses that shall be incurred for the common defense or general welfare, and allowed by the United States in Congress assembled, shall be defrayed out of a common treasury, which shall be supplied by the several states, in proportion to the value of all land within each state, granted to or surveyed for any Person, as such land and the buildings and improvements thereon shall be estimated according to such mode as the united states in congress assembled, shall from time to time direct and appoint. The taxes for paying that proportion shall be laid and levied by the authority and direction of the legislatures of the several states within the time agreed upon by the united states in congress assembled.‡

The problem in the preceding example is simply that while the federal government is charged with a responsibility, its ability to fulfill that responsibility is up to the sole discretion of the various state legislatures. This example is representative of a more general pattern that can be seen throughout the 12 Articles. Moreover, history shows that the federal government established under the Articles was simply ignored by the states, resulting in an embarrassingly long delay in accepting the Treaty of Paris and the inability of the federal Congress to pay back debts accumulated during the Revolutionary War, including payment to soldiers of the Continental Army.

The Stovepipe Antipattern

From a software architect's perspective, the Articles of Confederation created a governmental system that is best represented by an antipattern known as a *stovepipe enterprise*.§ This term derives from the metaphor of the exhaust pipes that sit atop a potbellied, wood-burning stove. Because burning wood releases byproducts that corrode metal, these exhaust pipes would require constant patching, and this patching would generally use whatever material was on hand, ultimately resulting in a chaotic patchwork of fixes.

In software architecture, a stovepipe enterprise is formed as the result of multiple application development efforts that are conducted in isolation from one another. This development approach yields a patchwork of systems built using different development methods and different technologies, and many times having overlapping or competing functionality (see Figure 5-1).

As a result, any form of integration, whether it is integrating individual systems within an enterprise or integrating with systems external to an enterprise, is difficult or altogether impossible.

Internal integration is equivalent to navigating a minefield of systems with similar terms representing different concepts, or multiple terms for the same concept. Additionally, many such systems in a stovepipe enterprise provide many of the same business processes, but use completely different rules in accomplishing those processes. Therefore, integrating one system

‡ Articles of Confederation, Article VIII.

§ *AntiPatterns: Refactoring Software, Architectures, and Projects in Crisis* (Wiley, 1998).

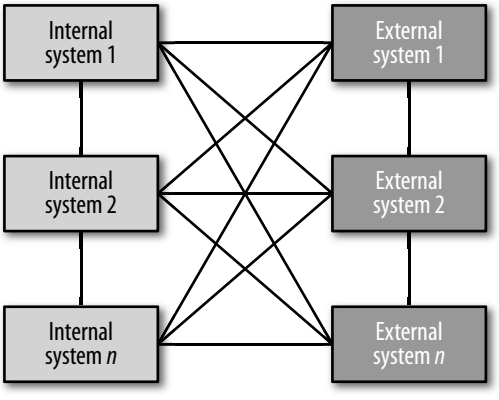

FIGURE 5-1. Example of a stovepipe enterprise

within a stovepipe enterprise to any other system requires, at the very minimum, finding the correct system with which to integrate, resolving differences in technology, resolving differences in terminology, and ensuring that both systems have a sufficient level of understanding about the internal processes of each other.

If you multiply these consequences by the total number of systems that must generally integrate in even the most trivial-sized enterprise, you can see that the net result of a stovepipe enterprise is at best an extremely high cost of maintenance. More realistically, however, the likely result is that automated integration will not be attempted at an enterprise level, and more costly manual integration tactics will prevail. Additionally, the lack of a single interface point for external integration may inadvertently lend itself to an environment where individual systems begin integrating outside the enterprise, effectively broadening the enterprise stovepipe to a multienterprise stovepipe. In this context, the stovepipe antipattern can bring with it the unintended consequence of tying the entire enterprise to expectations set by one of its parts.

Order from Chaos: The Standards Reference Model

The core problem behind a stovepipe enterprise is that there is effectively no underlying framework to provide basic guidance around integrating systems in an enterprise. Put another way, there is no architecture. Each system attached to the stovepipe is designed independently of, and evolves separately from, the other systems in the enterprise. The solution for reversing this antipattern is found in both laying down a common set of standards around how applications are to be constructed and integrated, and creating a set of core infrastructure components to provide determinism across systems in terms of management and integration as well as to provide consistency for integrating with external enterprises. In software architecture terms, this solution is known as a *standards reference model* (see Table 5-1).

TABLE 5-1. An example standards reference model

Document	Purpose	Scope
Open Systems Reference Model	Defines a list of target standards for any development project	Enterprise
Technology Profile	Defines a more concise list of standards for a specific development project	Enterprise
Operating Environment	Defines guidelines around system release and installation	Enterprise
Systems Requirements Profile	Defines a summary of key requirements for a family of related systems	System family
Enterprise Architecture	Provides a complete view over a system or family of systems	System family and system
Computational Facilities Architecture	Defines the abstract integration points for a system or family of systems	System family
Interoperability Specifications	Defines the technical details for a Computational Facilities Architecture	System
Development Profile	Records the implementation plans to ensure successful integration between systems	System family

As should be evident, the standards reference model is composed of multiple levels of standards based on relevant organizational scope, and it proceeds from abstract to concrete. This is an important point to note, because in any sizable organization, failure to establish proper scope boundaries when attempting to solve a stovepipe antipattern can result in another antipattern known as the *blob*, whereby a single entity evolves to assume a large set of responsibilities outside of those to which it was originally purposed.

NOTE

A blob or god class is the result of a poorly maintained software system where a single unit of program code grows to assume responsibility—in part or in whole—for nearly every aspect of system behavior. The result is that this unit of code becomes large and brittle (a change to one section can have dire unintended consequences to other sections), and the system does not evolve.

Some of the various scopes commonly associated with a standards reference model include the enterprise scope, the system family scope, and the system scope. To prevent the creation of an inflexible architecture, each scope must balance flexibility with prescription. For example, it is generally unreasonable to assert a code or system-scope directive at the enterprise scope, since such an assertion would be dependent on far too many additional predicates relating to hardware, operating systems, and various other tools. Rather, many times at this scope, the

appropriate standard is simply to identify the possible standards that are available for use by various system families, and define a process for augmenting that list. As one proceeds from the enterprise scope to the specific system scope, the various standards can become incrementally more concrete, since at those lower scopes, there is also much more known about the objects of those standards. This scoped approach enables the standards reference model, and the order that follows suit, to scale to very large enterprises.

The Constitution As a Standards Reference Model

By the time of the Philadelphia Convention in 1787, the delegates along with the majority of the leaders of the time were well aware of the consequences from the lack of strong union under the Articles of Confederation. However, there was a great deal of debate surrounding the available alternate forms of governance. The fundamental problem was one of how to create a stronger, more permanent union between the states and provide for the welfare of all citizens while not putting the fundamental principles of liberty and self-governance at risk. Many at the time argued that a move toward a stronger central government, which had initially been written into the Articles of Confederation and later removed, was seen as an inevitable path toward the form of despotism over which the war for independence from Great Britain was fought. On the other hand, structuring the government as a single republic was also seen by many, including Federalists such as Alexander Hamilton, as simply an alternate path toward despotism. In arguing for the government laid out in the Constitution, Hamilton acknowledged that throughout history, many famous republics "were continually agitated, and at the rapid succession of revolutions, by which they were kept in a state of perpetual vibration, between the extremes of tyranny and anarchy."‖ Hamilton is referring here to the historical example referenced by many opponents of the proposed constitution of the ancient Greek and Roman republics. Such governments were ultimately unable to prosecute an effective government or control the rise and growth of internal factions. Additionally, a more general criticism of republican government in that day came from men such as Montesquieu, who argued that a traditional republican form of government could remain effective within only a small populace.

The framers argued ardently that such prior models could overcome their historical limitations thanks to significant improvements such as the "regular distribution of power into distinct departments—the introduction of legislative balances and checks—the institution of courts composed of judges, holding their offices during good behavior—the representation of the people in the legislature by deputies of their own election."# These were the elements that greatly shaped the U.S. Constitution and created a framework for the establishment of a confederated republic with a federal government strong enough to carry out the duties for which it was established, but engineered in such a way as to prevent a majority or minority faction from subverting the general welfare.

‖ Federalist 9.

Ibid.

The confederated republican government codified in the Constitution and argued for in the Federalist Papers is similar in nature to a standards reference model. Similarly, it proceeds from the abstract definition of goals to the establishment of the various components of the federal government as well as their relationship to one another and to the state legislatures. In reference model terms, it establishes itself as the core set of standards against which all concrete standards are evaluated. It then proceeds to define more concrete participants of the systems—specifically, the three branches of the federal government. Additionally, it defines in concrete terms the relationships that the branches are to have with one another and with the states (see Table 5-2).

TABLE 5-2. Constitution as a standards reference model

Section	Purpose	Scope
Preamble	Defines the core principles to which any system of proposed government must conform	Union
Articles 1–3	Establishes the principals of the federal government	Federal
Article 4	Defines the relationship between the federal government and states and among the states themselves	Federal and state
Articles 5–7	Defines procedures for amending (extending) the Constitution, establishes it as the ultimate legal authority, and defines ratifying procedures	Federal and state

Like a standards reference model, the Constitution provided a unifying vision and a common set of rules by which other acts of legislation could be evaluated. Additionally, it defined the fundamental interoperability points between the various principalities that had a role to play in government, but then deferred to those principalities to the determination, promulgation, and interpretation of those responsibilities. As a framework, these lightweight qualities are what enabled the United States to reach the geographic scale that it did and even survive near collapse in the face of secession nearly 100 years later.

Continued Maintenance: The Blob and Confederacy

While the stovepipe antipattern represents just one high-level example, you can hopefully see at this point that many of the patterns that have emerged in software design have applicability in the structuring and maintenance of government. Looking into the future, another antipattern worth investigating is known as the *blob* or the *god class*.

The Blob

One of the most widely used paradigms in designing software is known as *object orientation*. At a very high level, this approach describes the organization of source code into discrete units called *classes* whose purpose is to encapsulate related data and behaviors for a given abstraction.

For example, were one to model the U.S. governmental structure using an object-oriented approach, the resultant classes might look something like Figure 5-2.

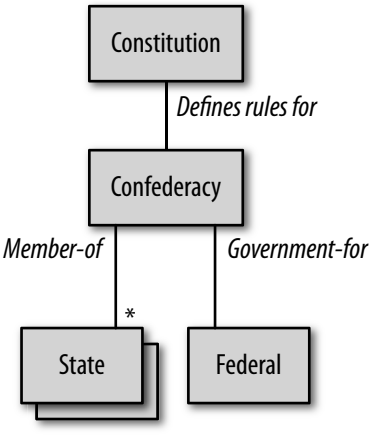

FIGURE 5-2. The U.S. government as an object model

One of the benefits of using the paradigm—and much of the reason for its popularity in designing modern systems—is that it naturally breaks up complexity into manageable units of code which can be verified and maintained independently without causing a ripple effect throughout the entire system. As we can observe, this was certainly an expected benefit that would result from the Constitution's design of a confederated republican government, as Hamilton articulates by quoting Montesquieu:

> Should a popular insurrection happen, in one of the confederate States, the others are able to quell it. Should abuses creep into one part, they are reformed by those that remain sound. The State may be destroyed on one side, and not on the other; the confederacy may be dissolved, and the confederates preserve their sovereignty.*

As with any endeavor, a great set of tools or paradigms does not by itself yield a well-designed system. In the world of object-oriented design, constant effort must be exerted to ensure that the classes defined most accurately represent the abstractions that they are meant to describe and that the system's code is most appropriately divided among the classes in accordance with previously defined goals such as independent testing and maintainability. Should the software designer become lax in this effort, an antipattern known as the blob or the god class can emerge.

The blob antipattern is generally the result of a system designed using object-oriented tools, but without the discipline of object-oriented thinking. It reveals itself in a design "where one class monopolizes the processing…."† Looking at this antipattern in terms of responsibilities,

* Ibid.

the blob class assumes a significant majority of the responsibilities in the system, and generally relegates the other classes to dependent supporters.

The problems inherent in this type of system are many, and all stem from the fact that nearly every capability that the system supports is tightly associated at the code level—a term in software design known as *coupling*—with every other capability in the system. Therefore, any change to one capability requires modifying the blob class, which would then impact every other capability for which the blob has assumed responsibility. This creates a situation that is inefficient at best due to the amount of energy that must be exerted to manage changes or new capabilities. At worst, it dramatically increases the likelihood that changes to the blob will unintentionally break a seemingly unrelated part of the system.

The solution for keeping an object-oriented system from devolving into a blob antipattern is constant expenditure of effort to ensure that all system logic meets two basic criteria: high cohesion and low coupling. High cohesion describes ensuring that all code that is logically related is physically grouped together in the same class. This enables a discrete area of functionality in a system to be more comprehensible, and more importantly, testable. Low coupling describes the removal of as many dependencies as possible between the aforementioned cohesive units. This enables each unit to evolve independently while significantly reducing the risk that the evolution of one unit will unintentionally cause the failure of another. Additionally, it has the added benefit of enabling the designer to more confidently evaluate the efficiency of each unit without the distraction of the efficiency or inefficiency of related units.

The blob and government

The blob antipattern many times develops when a system is relatively small in size. The entire system can be known in whole, and so the necessity of solid design is less obvious than in large systems, where the sheer number of capabilities provided makes such principles a necessity. The framers of the Constitution also understood these principles in context of the size and scope of government. For example, in articulating how an extensive republic is more beneficial to guarding the public interest, James Madison argues that by extending the sphere:‡

> …you take in a greater variety of parties and interests; you make it less probable that a majority of the whole will have a common motive to invade the rights of other citizens; or if such a common motive exists, it will be more difficult for all who feel it to discover their own strength, and to act in unison with each other. Besides other impediments, it may be remarked, that where there is a consciousness of unjust or dishonorable purposes, communication is always checked by distrust, in proportion to the number whose concurrence is necessary.

† *AntiPatterns: Refactoring Software, Architectures, and Projects in Crisis* (Wiley, 1998).

‡ Federalist 10.

Madison argues here that the size of the union was one of the very things that would shield it from the rise of despotism at the hands of any group of citizens, whether they are in the majority or the minority. On this point, I believe that additional reflection is warranted. Madison seems to define size predominantly in terms of geography, and as such, the difficulty that he describes in specific groups being able to discover their own strength seems to be somewhat predicated on the geographic disbursement and isolation of the various members.

In the present age, we live in a society where access to any person or any piece of information is never more than a few button or mouse clicks away. Size, according to its utility as described by Madison, cannot be measured in square miles or even number of people, but in the speed with which individuals can connect with one another. And by this definition, the sphere has in effect grown smaller. This increases the risk of the blob antipattern developing in government by way of the blurring and sometimes outright dissolution of the scope boundaries established explicitly in the Constitution and implicitly as envisioned in the Federalist Papers. A governmental blob can take many forms; however, media and the press can serve as a good indicator for where the concerns of citizens are most closely placed. And this indicator is not encouraging as we are witnessing the continued decline of local news outlets due to either consolidation or outright closure. This places the responsibility of all news—and by association, all perceived concerns of government—to national news organizations, who as a product of seeing a high return on investment for each news story they pursue, will naturally focus their attentions at the federal scope. A shift in the focus of the citizenry from an inherently local to federal scope, coupled with a smaller society as a result of advances in technology, creates an environment where it becomes easier for political factions to mobilize and where their effects can be far more reaching and destructive.

Conclusion

While this chapter is not intended to provide comprehensive treatment of republican government and Constitutional history, nor a complete catalog of software design patterns, it has hopefully demonstrated that there is a strong correlation between the two, and has effectively put forth software design as a new metaphor for exploring the dynamics of government. Further, as we are currently in a period of widespread reform efforts, the lessons and mitigation paths described in antipatterns, such as the blob, can help to ensure that reform efforts continue to yield a sustainable and maintainable republic.

The next logical step, and the subject of future research, will include taking aspects of the U.S. governmental system and actually modeling them in software. Such an endeavor will more concretely demonstrate the patterns outlined in this chapter, along with many others. More importantly, however, it will create an executable model that can be modified and tested based on the application of new patterns. As the evolution of technology continues to change some of the fundamental dynamics of our society, it is likely that the very same technology will be necessary to enable our government to evolve as well.

About the Author

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CHAPTER SIX

Enabling Innovation for Civic Engagement

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Edward W. Felten

Until recently, government data made its way to the Internet primarily through central planning: civil servants gathered the raw data generated by their work, processed and analyzed it to make maps, reports, and other informative products, and offered these to citizens seeking insight into school performance, crime in their neighborhoods, or the status of proposed laws. But a new, more dynamic approach is now emerging—one that enlists private actors as allies in making government information available and useful online.

NOTE

A portion of this chapter was previously published as "Government Data and the Invisible Hand," *Yale Journal of Law & Technology*, Vol. 11, 2009 (*http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1138083*).

Citizen Initiatives Lead the Way

When the Web was born, computational and network resources were so expensive that building large-scale websites required substantial institutional investment. These inherent limits made government the only free provider of much online civic information, and kept significant troves of data off the Web entirely, trapped in high-end proprietary information

services or dusty file cabinets. Government officials picked out what they thought to be the most critical and useful information, and did their best to present it usefully.

Costs for storage and processing have plummeted, but another shift, less well known, is at least as important: the tools that let people develop new websites are easier to use, and more powerful and flexible, than ever before. Most citizens have never heard of the new high-level computer languages and coding "frameworks" that automate the key technical tasks involved in developing a new website. Most don't realize that resources such as bandwidth and storage can be bought for pennies at a time, at scales ranging from tiny to massive, with no upfront investment. And most citizens will never need to learn about these things—but we will all, from the most computer-savvy to the least tech-literate, reap the benefits of these developments in the civic sphere. By reducing the amount of knowledge, skill, and time it takes to build a new civic tool, these changes have put institutional-scale online projects within the reach of individual hobbyists—and of any voluntary organization or business that empowers such people within its ranks.

These changes justify a new baseline assumption about the public response to government data: when government puts data online, someone, somewhere, will do something innovative and valuable with it.

Private actors of all different stripes—businesses and nonprofit organizations, activists and scholars, and even individual volunteers—have begun to use new technologies on their own initiative to reinvent civic participation. Joshua Tauberer, a graduate student in linguistics, is an illustrative example. In 2004, he began to offer GovTrack.us, a website that mines the Library of Congress's (LOC) THOMAS system to offer a more flexible tool for viewing and analyzing information about bills in Congress (see Chapter 18). At that time, THOMAS was a traditional website, so Tauberer had to write code to decipher the THOMAS web pages and extract the information for his database. He not only used this database to power his own site, but also shared it with other developers, who built popular civic sites such as OpenCongress and MAPLight (see Chapter 20), relying on his data. Whenever the appearance or formatting of THOMAS's pages changed, Tauberer had to rework his code. Like reconstructing a table of figures by measuring the bars on a graph, this work was feasible, but extremely tedious and, ultimately, needless. In recent years, with encouragement from Tauberer and other enthusiasts, THOMAS has begun to offer computer-readable versions of much of its data, and this has made tools such as GovTrack easier to build and maintain than ever before.

Providing for Reuse and Innovation

Making government data public should always include putting it online, where it is more available and useful to citizens than in any other medium. But deciding that certain data should be published online is the beginning, not the end, of an important series of choices.

All publishing is not equal—instead, the way data is formatted and delivered makes a big difference. Public sector leaders interested in supporting this trend should look for the formats

and approaches that best enable robust and diverse third-party reuse. Such a publishing strategy is powerful because it allows citizens themselves to decide how best to interact with civic data. Government-produced reports, charts, and analyses can be very valuable, but it is essential to also publish the underlying data itself in a computer-friendly format that makes it easy for the vibrant community of civic technologists to make and share a broad range of tools for public engagement.

Innovation is most likely to occur when data is available for free over the Internet in open, structured, machine-readable formats for anyone to *download in bulk*, meaning all at once. Structured formats such as XML make it easy for any third party to process and analyze government information at minimal cost. Internet delivery using standard protocols such as HTTP can offer immediate access to this data for developers. Each set of government data should be uniquely addressable on the Internet in a known, permanent location. This permanent address can allow both third-party services, as well as ordinary citizens, to refer back to the primary unmodified data source as provided by the government.

Public government data should be provided in this format in a timely manner. As new resources are added to a given data set, or changes are made, government should also provide data feeds, using open protocols such as RSS, to notify the public about incremental additions or changes. However, a feed that provides updates is of limited value unless the existing body of information that is being modified can itself be downloaded in full. These principles are not ours alone—they are consistent with a number of other recommendations, including the Open Government Working Group's list of eight desirable properties for government data (*http://resource.org/8_principles.html*).

In an environment with structured data, questions about what to put on the home page become decisions for the public affairs department. Technical staff members in government, whose hard work makes the provision of underlying data possible, will have the satisfaction of seeing their data used widely—rather than lamenting interfaces that can sometimes end up hiding valuable information from citizens.

Third-party innovators provided with government data in this way will explore more advanced features, beyond simple delivery of data. A wide range of motivations will drive them forward, including nonprofit public service, volunteer enthusiasm, political advocacy, and business objectives. Examples of the features they may explore include:

Advanced search

The best search facilities go beyond simple text matching to support features such as multidimensional searches, searches based on complex and/or logical queries, and searches for ranges of dates or other values. They may account for synonyms or other equivalences among data items, or suggest ways to refine or improve the search query, as some of the leading web search services already do.

RSS feeds

RSS, which stands for Really Simple Syndication, is a simple technology for notifying users of events and changes, such as the creation of a new item or an agency action. The best systems could adapt the government's own feeds (or other offerings) of raw data to offer more specialized RSS feeds for individual data items, for new items in a particular topic or department, for replies to a certain comment, and so on. Users can subscribe to any desired feeds, using RSS reader software, and those feeds will be delivered automatically to the user. The set of feeds that can be offered is limited only by users' taste for tailored notification services.

Links to information sources

Government data, especially data about government actions and processes, often triggers news coverage and active discussion online. An information service can accompany government data with links to, or excerpts from, these outside sources to give readers context into the data and reactions to it.

Mashups with other data sources

To put an agency's data in context, a site might combine that data with other agencies' data or with outside sources. For example, MAPLight.org combines the voting records of members of Congress with information about campaign donations to those members. Similarly, the nonprofit group Pro Publica offers a map showing the locations of financial institutions that have received funds from the Treasury Department's Troubled Asset Relief Program (TARP).

Discussion forums and wikis

A site that provides data is a natural location for discussion and user-generated information about that data; this offers one-stop shopping for sophisticated users and helps novices put data in context. Such services often require a human moderator to erase off-topic and spam messages and to enforce civility. The First Amendment may make it difficult for government to perform this moderation function, but private sites face no such problem, and competition among sites can deter biased moderation.

Visualization

Often, large data sets are best understood by using sophisticated visualization tools to find patterns in the data. Sites might offer users carefully selected images to convey these patterns, or they might let users control the visualization tool to choose exactly which data to display and how. Visualization is an active field of research and no one method is obviously best; presumably sites would experiment with different approaches.

Automated content and topic analysis

Machine-learning algorithms can often analyze a body of data and infer rules for classifying and grouping data items. By automating the classification of data, such models can aid search and foster analysis of trends.

Collaborative filtering and crowdsourced analysis

Another approach to filtering and classification is to leverage users' activities. By asking each user to classify a small amount of data, or by inferring information from users' activities on the site (such as which items a user clicks), a site might be able to classify or organize a large data set without requiring much work from any one user.

Exactly which of these features to use in which case, and how to combine advanced features with data presentation, is an open question. Private parties might not get it right the first time, but we believe they will explore more approaches and will recover more rapidly than government will from the inevitable missteps. This collective learning process, along with the improvement it creates, is the key advantage of our approach. Nobody knows what is best, so we should let people try different offerings and see which ones win out. For those desiring to build interactive sites, the barriers to entry are remarkably low once government data is conveniently available. New sites can easily iterate through many designs, and adapt to user feedback. The people who ultimately benefit from these investments are not just the small community of civic technologists, but also the much larger group of citizens who seek to use the Web to engage with their government.

Data Authenticity Down the Line

Once third parties become primary interfaces for crucial government information, people will inevitably ask whether the presented data is authentic. Citizens may wonder whether some of the sites that provide data in innovative ways are distorting the data. Slight alterations to the data could carry major policy implications, and could be hard for citizens to detect.

To lower the barrier for building trustworthy third-party sites, government should provide authentication for all published bulk data sets so that anyone who encounters the data can verify its authenticity. Since government is the original publisher of the data, and citizens seek assurance that a third party has not altered the data, government is the only party that can provide a useful digital signature for its data. While other publishing tasks can be left open for many actors, only government itself can provide meaningful authentication.

The ideal way to provide such authentication is through National Institute of Standards and Technology (NIST) standard "digital signatures." Government should sign entire data sets, which will allow any downloader to check that the "signed" data set was published by the government and not altered in transit. The advantage of digital signatures is that it allows third parties to republish a trustworthy mirror of the same signed data set. Innovators who download the signed data set, from either a third-party source or the government's own server, can trust that it is authentic if its attached signature is valid. Enabling trustworthy third-party mirrors can significantly reduce the government's server and bandwidth costs associated with hosting the primary copy.

But just authenticating at the data-set level is not enough. Government must also make it possible for citizens to verify, down to a reasonable granularity, the authenticity of individual

elements that were picked out from the larger set. If signing individual elements is overly burdensome, government can alternatively publish individual data elements over a secure web connection (HTTPS). A third-party website offering crime statistics, for example, could link to specific data elements on the secure government website. This would make it easy for citizens to verify that the statistics for their own neighborhoods represent authentic government data, without having to download and verify the entire bulk data set on which the website is built.

There are a number of ways to support data authentication at each level—digital signatures and secure web connections are just two possibilities—and each agency, perhaps with the input of outsiders, should determine which option provides the best trade-off between efficiency and usability in each circumstance.

Why Bother with Bulk?

An alternative approach to bulk data, and one that is sometimes mentioned as an equivalent solution, is for government to provide a data application programming interface (API). An API is like a 411 telephone directory service that people can call to ask for specific information about a particular person or business. The directory operator looks up the answer in the telephone book and replies to the caller. In the same way, computers can "call" an API and query it for specific information, in this case, from a government database that is otherwise inaccessible to the public, and the API responds with an answer once it is found. Whether a third-party website uses an API or hosts its own copy of the government data is an architectural question that is not likely to be directly observable by the website's end users.

APIs can be excellent, disappointing, or anywhere in between, but generally speaking, providing an API does not produce the same transformative value as providing the underlying data in bulk. While APIs can enable some innovative third-party uses of data, they constrain the range of possible outcomes by controlling what kinds of questions can be asked about the data. A very poorly designed API, for example, might not offer access to certain portions of the underlying data because the API builder considered those data columns to be unimportant. A better API might theoretically permit access to all of the data, but may not allow users to get the desired data out efficiently. For instance, an API for local spending might be able to return lists of all projects by industry sector, but might lack the functionality to return a list of all projects funded within a particular zip code, or all projects contracted to a particular group of companies. Because of API design decisions, a user who wants this information would face a difficult task: she would need to find or develop a list of all possible sectors, query the API for each one, and then manually filter the aggregate results by zip code or contractor.

APIs and finished, user-facing websites face the same fundamental limit for the same reason: both require a designer to decide on a *single monolithic interface* for the data. Even with the best of intentions, these top-down technical decisions can only limit how citizens can interact with the underlying data. Past experience shows that, in these situations, interested developers will struggle to reconstruct a complete copy of the underlying data in a machine-readable way,

imposing a high cost in terms of human capital and creating a risk of low data quality. The task would be like reconstructing the phone book by calling 411—"First, I want the last names starting with Aa…." Moreover, APIs and websites are likely more expensive for government to develop and maintain, as compared to simply publishing copies of the raw data and allowing third parties to host mirrors.

If government releases the data first in bulk, citizens will not be restricted to just the approved interfaces. Since APIs, like websites, do serve a useful purpose in efficient data delivery, developers will build their own APIs on top of bulk data sets that best suit their own needs and those of downstream users. Indeed, a number of nonprofit groups have already built and are now offering public APIs for data the government has published in bulk form. OMB Watch, for example, combines multiple government contract and grant databases into a single "FedSpending" API that other developers use for their own sites. The National Institute on Money in State Politics offers a "Follow the Money" API which provides convenient access to its comprehensive state-level campaign finance data set (see Chapter 19).

Conclusion

Government should seek to ease any friction that limits developers' ability to build these tailor-made solutions. Only with bulk data can government harness the creativity and innovation of the open market and leverage the power of the Internet to bring all kinds of information closer to citizens. In the long run, as the tools for interacting with data continue to improve and become increasingly intuitive, we may reach a state in which citizens themselves interact directly with data without needing any intermediary.

Of course, beyond publishing data, government might also decide to build finished websites, and to build APIs. But publishing data in bulk must be government's first priority as an information provider. The success of a government is measured, ultimately, by the opportunities it provides to its citizens. By publishing its data in a form that is free, open, and reusable, government will empower citizens to dream up and implement their own innovative ideas of how to best connect with their government.

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CHAPTER SEVEN

Online Deliberation and Civic Intelligence

Douglas Schuler

In addition to the prosaic—but nevertheless crucial—tasks related to the everyday necessities of staying alive, people and communities must also face—at least indirectly—a wide range of staggering challenges, such as pandemics, environmental degradation, climate change, starvation, war, militarism, terrorism, and oppression. Unfortunately, many of the world's inhabitants are very young or have other good reasons (such as extreme poverty) for their lack of opportunity, motivation, knowledge, or skills to face these challenges.

This, in essence, is the situation in which we find ourselves: a world seriously out of order and a world society that for many reasons may be less equipped to deal with these challenges than it needs to be. This is precisely the issue that the concept of "civic intelligence" is intended to highlight: *will we be smart enough, soon enough*?

Definitions and Assertions

Before we go any further, it seems best to present the four concepts that are at the core of this chapter—civic intelligence, democracy, open government, and deliberation—and show how they are related to each other.

1. *Civic intelligence* is a form of *collective* intelligence directed toward shared challenges.* Its presence or absence will determine how effectively these challenges are met. Civic intelligence exists to a greater or lesser degree in all societies.

   Because the government and other elite groups are not capable of addressing the problems we're faced with, a deeper form of civic intelligence built upon rich interactions between citizens distributed throughout the world will be required. This intelligence won't emerge solely from a series of votes or other algorithmic techniques no matter how clever they are.

   Thinking in terms of civic intelligence helps us to pose an interesting thought experiment: as the challenges facing us become more complex, numerous, fierce, and unpredictable, do we have the necessary collective intelligence to meet them?

2. *Democracy* in its ideal sense is the form of political organization that most closely embodies civic intelligence.

   Many people seek a precise definition of democracy to guide their thinking in this area. But the meanings of social concepts are not chiseled in granite. In its most general form, democracy means governance by the people. Democracy takes different shapes in different contexts. Democracy is also defined by inclusive and transparent processes, although access to these processes is sometimes blocked and the processes themselves are often corrupted by the political or economic elite.

   Many descriptions of democracy focus on the outcome and the formalized process for getting there. One common aspect of arguments in support of democracy is the prospect of an outcome that is better because of more involvement in its creation, almost exclusively through voting. Rarely heard is the idea that participation in a democratic process can actually make individuals more qualified for citizenship and hence can build a type of civic intelligence that is better for the entire commonwealth. This is the case that John Dewey, the prominent American public intellectual, developed: that democracy should be seen as a *way of life*, not as a duty to be duly discharged every four or so years.

   Democracy exists at the intersection of practicality and idealism. As a society attempts to move closer to an ideal democratic state, it generally becomes more difficult to maintain its practical nature. On some level, democracy, like any system, must be implemented (and maintained); it consists of institutional processes and material machinery and uses resources. Is democracy more expensive in terms of resource investment (including time and money) than other forms of government? How much is democracy *worth*?

3. *Open government*, an idea whose meaning is currently being constructed, offers a provocative set of ideas for reconstructing government in ways that could increase and improve the abilities of democratic societies to deal effectively, sustainably, and equitably with its issues. In other words, open government, if implemented thoughtfully, could

* "Cultivating Society's Civic Intelligence: Patterns for a New 'World Brain'," Douglas Schuler, *Community Informatics*, Leigh Keeble and Brian D. Loader (eds.), Routledge, 2001. *Liberating Voices: A Pattern Language for Communication Revolution*, Douglas Schuler, MIT Press, 2008.

improve our democracy and our civic intelligence while keeping the costs to acceptable and appropriate levels.

Some people take comfort from the seemingly solid ideological position that asserts that "less" government is always good. This position tacitly acknowledges that other institutions (e.g., large corporations) will assume more power (though likely of a different kind). President Obama rightly reframes that question not as a choice between *less* or *more*, but between *better* or *worse* government. And if the goal isn't necessarily *less* government, the goal is certainly not *no* government. After all, *Road Warrior* makes a better movie than an exemplar for an ideal society. The goal is to change the nature of governance, particularly the relationship of "ordinary citizens" to the government, not the abandonment of social norms. The main reason that governance should be opened up to "ordinary" people is not because it's more just. And while opened-up governance is likely to be less corrupt than opaque governance, opened-up governance is simply the only feasible way to bring adequate resources (such as local knowledge and creative problem-solving capabilities) to bear on the challenges that we now face.

Open government without a corresponding increase in an informed, concerned, and engaged citizenry is no solution; in fact, it makes no sense. Paradoxically, the first place to focus attention when attempting to develop a more open government is on the people being governed. Open government might mean totally distributed governance; the end of the government as the sole governing body. For that reason, one of the most critical questions to ask is what capabilities and information do *citizens* need most to meet the challenges they face?

4. *Deliberation* is a process of directed communication whereby people discuss their concerns in a reasonable, conscientious, and open manner, with the intent of arriving at a decision. Deliberation takes different forms in different societal contexts and involves participants of myriad interests, skills, and values. It is generally more formal than collaboration or discussion. While some people may balk at this "tyranny of structure," it is the shared awareness of the structure that provides legitimacy and impetus toward meaningful discussion and satisfactory decision making.

   Deliberation occurs when people with dissimilar points of view exchange ideas with the intent of coming to an agreement. Less successful outcomes—that are not *failures*—include agreeing to disagree, or even attaining a better understanding of other viewpoints. At any rate, deliberation is distinct from other communication modalities such as individual reflection, repeating and reinforcing shared viewpoints, acquiring a viewpoint solely through exposure to mass media, or working to defeat a person, idea, or enterprise, not via merits of one's own argument or the lack of merits of the other, but by any (nonviolent) means necessary, including character assassination and lying.

   Significantly, deliberation is an important capability within the more general capability of civic intelligence. After a decision is made, there is presumably an opinion or frame, activity or plan that is shared by a larger number of people. The intended product of

deliberation is a more coherent vision of the future. It can also result in increased solidarity within a group.

The Context of Deliberation

Deliberation, of course, makes sense only within a social context and is meaningful only when it's actually linked with multiple "levels" of society, including, ultimately, the potential to be a factor in social change. This "context of deliberation" can be depicted visually in an hourglass form (see Figure 7-1). Although somewhat abstract, this depiction illustrates the necessary social attributes of a society in which deliberation can be said to function adequately. (And a society without deliberation can't really be considered a democracy society.) The lower half of the hourglass shows that deliberation depends on the desire and the ability of the people to deliberate, and that the venues within which people can deliberate are available. The upper half of the hourglass shows that deliberation is an instrument of democracy only when the possibility of interacting with—and influencing—the rest of society exists. This means that "social access points" such as newspapers, educational systems, public forums, government institutions, and the like that can help carry the content and the decisions of a deliberative body to a wider audience in society also exist. This in turn relies on the receptivity of people and institutions to actually adopt the findings of the deliberation.

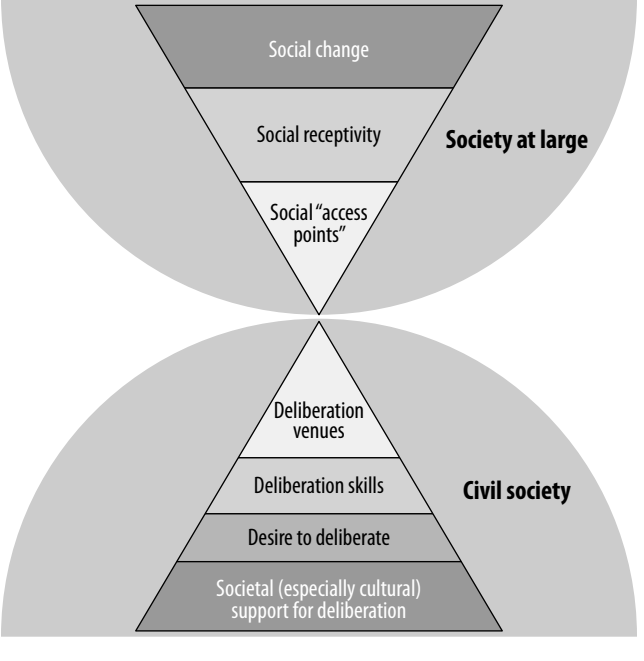


FIGURE 7-1. Context of deliberation

Democracy, Deliberation, and the Internet

Since its inception, the Internet has been touted as a medium with revolutionary potential for democratic communication. Although other media including broadcast television and radio have not lived up to their democratic potential, it is too early to dismiss the Internet as being solely a tool of the powerful. The Internet is actually a "meta-medium" that can be used to host a variety of traditional media as well as new hybrids.† Its extreme mutability, coupled with the potential of establishing communication channels between any two (or more) people on Earth, accounts for its enormous—and radical—potential for democratic communication. Certainly, civil society recognizes this and has been extraordinarily creative in using the Internet for positive social change.‡ On the other hand, many people don't have full access to the Internet or have the time to access it. These vast differences help provide another dimension to the have/have-not continuum, and to the degree that governance moves into the digital realm this distance becomes a measure of digital disenfranchising.

Although a very large number of approaches to communication exist in cyberspace, one critical function—deliberation—seems to have been forgotten. Groups need to deliberate, and for many reasons they aren't always able to meet face to face. In fact, as many problems that we face are global in nature, the groups that are affected by the problems or who otherwise are compelled to address the problems must reach across local boundaries to address their shared concerns. The need for computer support for online *deliberation* can be shown by the fact that many online discussions seem to have no resolution at all; they often dribble off into nothingness, leaving more frustration than enlightenment in their wake. Worse, many online discussions degenerate into "flame wars" where online feuds make it difficult for the nonfeuders to get any work done.

Online Civic Deliberation

Online deliberation is the term for a network-based (usually Internet) computer application that supports the deliberative process. People have been thinking about how computer systems could be used for collaboration, negotiation, and deliberation for some time. Douglas Engelbart's work in this field was pioneering.§ At present, few examples exist, although this number is slowly increasing. There have been many innovative deliberative approaches

† "Community Computer Networks: An Opportunity for Collaboration Among Democratic Technology Practitioners and Researchers," Douglas Schuler, *Technology and Democracy: User Involvement in Information Technology*, David Hakken and Knut Haukelid (eds.), Centre for Technology and Culture, University of Oslo, 1997.

‡ "Appropriating the Internet for Social Change: Towards the strategic use of networked technologies by transnational civil society organizations." Mark Surman and Katherine Reilly, New York: Social Sciences Research Council Information Technology and International Cooperation Program, 2003.

§ "Coordinated Information Services for a Discipline- or Mission-Oriented Community" (*http://www.dougengelbart.org/pubs/augment-12445.html*), Douglas Engelbart, 1972.

involving face-to-face interactions. These include the consensus conferences developed by the Danish Board of Technology (DBT) (*http://www.tekno.dk/*), deliberative polling,‖ and Citizen Summits (e.g., *http://americaspeaks.org*). The DBT is currently coordinating the Worldwide Views on Global Warming project (*http://www.WWViews.org*) with approximately 50 countries to engage their citizens in deliberation about climate change: other deliberative projects are also targeting climate change, including MIT's Collaboratorium# and the Global Sensemaking project (*http://www.globalsensemaking.net*). While I do not have the space here to discuss them, people have experimented with video teleconferencing, live television, special-purpose-outfitted rooms, and so forth to assist deliberative processes. These efforts, however positive some of the results may have been, are often stymied by high costs and other challenges and have yet to be adopted widely.

There are several reasons for the relatively small effort in this area. For one thing, deliberation applications are difficult to design and implement. This is one of the main reasons why few applications are available. (Of course, this reflects the "chicken and egg" nature of this situation. *If the applications don't exist, people won't use them. If people don't use them, programmers won't develop them*….) For this reason, we must develop deliberative systems in a co-evolutionary way, working cooperatively with the communities that are most interested in using them. Moreover, there is seemingly little money to be made with online deliberation. E-commerce, for example, has larger target populations, is easier to program, and is more lucrative. The difficulty of demonstrating the benefits of deliberation using current approaches may contribute to this lack of support.

Deliberation is also difficult to do. It is time-consuming, it is confusing in many cases (due to content as well as the formal nature of the process), and the "payoff" is often perceived by would-be participants to be far less than the effort expended. For this reason, the percentage of people who actively engage in deliberation in a regular civic or formal sense is very low—even lower than voting, a discouraging fact considering voting's low bar and its declining rates of participation. A third reason is that government bodies from the smallest towns to the highest national and supranational (e.g., the European Union) levels seem unable (or, perhaps more accurately, unwilling) to support public deliberation in a genuine way, whether it's online or not.

The hypothesis is that if it were easier to participate in deliberative sessions and—most importantly—the results of their efforts were perceived as worthwhile, citizen deliberation would become more popular. If deliberation actually was incorporated into governance and

‖ "Experimenting with a democratic ideal: Deliberative polling and public opinion,"James Fishkin and Robert Luskin, *Acta Politica*, Vol. 40, Number 3, 2005: 284–298.

"Supporting Collaborative Deliberation Using a Large-Scale Argumentation System: The MIT Collaboratorium." Mark Klein and Luca Iandoli, Directions and Implications of Advanced Computing; Conference on Online Deliberation, Todd Davies and Seeta Peña Gangadharan (eds.), San Francisco: Computer Professionals for Social Responsibility, 2008.

became valued by society at the same time, a closer approximation of the vision of democracy as a way of life envisioned by John Dewey would be achieved.

Support for Online Civic Deliberation

Development of a network-based application that could help nonprofit, community-based organizations convene effective deliberative meetings when members couldn't easily get together for face-to-face meetings could be very useful. While the goal is not to replace face-to-face meetings, it is hypothesized that the use of an online system could potentially help organizations with limited resources. Ideally, the technology would increase the organization's effectiveness while reducing the time and money spent on its deliberative meetings. In general, judging the success of any approach to deliberation includes considering access to the process, the efficacy of the process (including individual involvement and the process as a whole), and integration with the social context (including legal requirements, etc.). Of course, these criteria overlap to some degree and influence each other.

Motivated by a long-term desire to employ computing technology for social good, particularly among civil society groups who are striving to create more "civic intelligence" in our society, I proposed that Robert's Rules of Order could be used as a basis for an online deliberation system.* The selection of Robert's Rules of Order was supported by its widespread use—at least in the United States—and the formalized definitions of its rules. Robert's Rules of Order is one version of the familiar form of deliberation often known as *parliamentary procedure*. Proposals are put forward to the assembly with *motions* ("I move that we hire Douglas Schuler as our executive director") that must be *affirmed* ("seconded") by another person in the assembly before the proposal can be discussed, possibly amended, and voted on (or *tabled*—dismissed at least temporarily) by the assembly.

ABOUT ROBERT'S RULES OF ORDER

Robert's Rules of Order was developed over a 40-year period by Henry Robert, beginning in the late 1800s. Robert's "rules" defined an orderly process for face-to-face meetings in which the goal was to make decisions fairly. One of the most important objectives was to ensure that the majority could not silence the minority—every attendee would have opportunities to make his ideas heard. At the same time, however, the minority could not prevent the majority from ultimately making decisions. One of the interesting observations about the Robert's Rules process is that it seems to be useful at

* "A Civilian Computing Initiative: Three Modest Proposals," Douglas Schuler, *Directions and Implications of Advanced Computing*, Ablex Publishing, 1989. "Cultivating Society's Civic Intelligence: Patterns for a New 'World Brain'," Douglas Schuler, *Community Informatics*, Leigh Keeble and Brian D. Loader (eds.), Routledge, 2001. *New Community Networks: Wired for Change*, Douglas Schuler, Addison-Wesley, 1996. *Robert's Rules of Order, Newly Revised*, Henry Robert, Perseus Books, 1990. "Online Civic Deliberation and E-Liberate," Douglas Schuler, *Online Deliberation: Design, Research, and Practice*, University of Chicago Press, 2009.

a variety of scales: groups with just a handful of members can use them as well as groups numbering in the hundreds or even more. Robert's Rules of Order is now used by thousands of organizations around the world every day, and in fact, its use is legally mandated in many government and civil society meetings.

Robert's Rules of Order is a type of "protocol-based cooperative work" system. It is related to Malone's "semi-structured messages" work† and the work done by Winograd and Flores‡ (which was built on the "speech act" work of John Austin.§) Those examples all employ "typed messages." The message "type" is, in effect, a descriptor of the message content, and because it is discrete it is more easily handled by computer applications than natural language. There are several reasons why a strict regimen over communication may be imposed. Generally, this is done is cases where there is contention for resources. In the case of deliberation, the scarcest resource is the time available for speaking. This is generally true in situations when explicit objectives and/or formal constraints are placed upon the venue—in a courtroom or with a legislative body, for example.

E-Liberate is created

In 1999, a team of students at The Evergreen State College developed the first prototype of an online version of Robert's Rules of Order that was ultimately named *e-Liberate* (which rhymes with the verb *deliberate*; see Figure 7-2). The objective of e-Liberate was to move beyond chat, premature endings, and unresolved digressions. The initial objective was to support groups that were already deliberating and to try to mimic their *existing* processes—*as closely as possible*. This approach was intended to minimize disruption by integrating the online system as unobtrusively as possible into their work lives. E-Liberate is intended to be easy to use for anybody familiar with Robert's Rules of Order.

Online deliberation offers some advantages and disadvantages over face-to-face deliberation. The system employs a straightforward user interface which is educational as well as facilitative. The interface shows, for example, only the legal actions that are available to the user at that specific time in the meeting. (For example, a user can't second a motion that she submitted or when there is no motion on the table to second.) Also, at any time during a session an "about" button can be clicked that presents an explanation of what each particular action will accomplish, thus providing useful cues that aren't available in face-to-face meetings. In addition, the software checks if meeting quorums exist, conducts voting on motions, and

† "Semi-structured messages are surprisingly useful for computer-supported coordination," *ACM Transactions on Office Information Systems*, Thomas Malone, et al., 1987.

‡ *Understanding Computers and Cognition*, Terry Winograd and Rodrigo Flores, Addison-Wesley, 1987.

§ *How to Do Things with Words*, J. L. Austin, Harvard University Press, 1962.

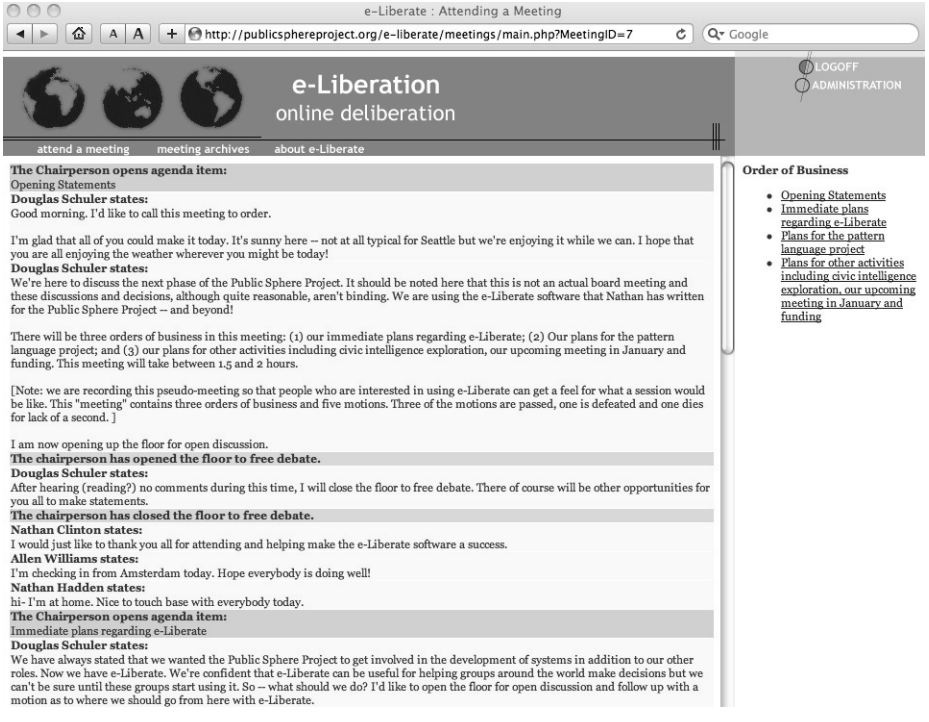


FIGURE 7-2. E-Liberate meeting in progress

automatically records (and archives) the minutes. See *http://publicsphereproject.org/e-liberate/demo.php* for a transcript of an entire sample meeting.

The developers of e-Liberate have begun working with groups that are interested in using the system to support actual meetings. We are enthusiastic about the system but are well aware that the current system is likely to have problems that need addressing. It is for that reason that we continue to host meetings with groups and gather feedback from attendees. We plan to study a variety of online meetings in order to adjust the system and to develop heuristics for the use of the system. Our plan is to make e-Liberate freely available for online meetings and to release the software under a free software license.

For many years, Fiorella de Cindio and her group at the University of Milan have been developing community collaborative tools in association with the Milan Community Network (Rete Civica di Milano, or RCM) effort. The openDCN approach is to work toward an integrated ensemble of online services that is useful for community members and citizens.‖ The evolving environment builds on the idea of *spaces* to organize these services.# Thus, the *community* space

‖ "Deliberation and Community Networks: A Strong Link Waiting to be Forged," Fiorella De Cindio and Douglas Schuler, Communities and Action: Prato CIRN Conference, 2007.

supports discussion, brainstorming, the City Map application, and other capabilities; the *deliberation* space supports interactions that are more structured and formal; and the *information* space links the other two spaces in a variety of ways. The openDCN effort is informed by theory but always with the objective of promoting effective, inclusive, and widespread citizen participation. The openDCN developers created a deliberation module that was inspired by e-Liberate but omits some aspects of Robert's Rules based on usability studies. This basic module has been tested in several locations around Italy, generally around Agenda 21 participatory urban planning activities. The results have been mixed, but the work has helped bring many potential challenges and opportunities to light. A change in the leadership of a municipal administration, for example, is likely to result in profound changes, often withdrawal of support. Other significant projects include the *georeferenced discussion* used on a site sponsored by the South African Ministry of Communication for the 2010 soccer world championship (*http://www.e-soccer.opendcn.org/*). The *informed discussion* has been used to support a group of friends who were together in the university during the years around 1968 and want to maintain their friendship online (*http://www.68cittastudi.retecivica.milano.it/*), while the *citizens consultation* has been used by the Milan School Trade Unions to collect feedback from workers on a negotiated agreement (*http://flc-cgil.retecivica.milano.it/*). Additionally, openDCN has been used to support teaching and learning in the virtual community course at the university (*http://jlidcncv.lic.dico.unimi.it/* and *http://desire.dico.unimi.it/*).

Findings and Issues

Our experience with online deliberative systems is limited. What follows is a discussion of issues that the developers of any deliberative system should address.

Role of the Chair

The first set of issues is related to the role of chair, which Robert's Rules of Order explicitly specifies for every meeting. The specific role of the person so designated includes enforcing "rules relating to debate and those relating to order and decorum," determining when a rule is out of order and to "expedite business in every way compatible with the rights of members."* These responsibilities apparently rule out a meeting conducted solely among peers. The main reason that a chair is needed at all is due to the fact that the rules alone won't suffice. There are a variety of situations in which the chair's input is needed, notably when human judgment is required. Another reason that Robert called upon the services of a chair in his deliberative universe is that meeting attendees may attempt to "game" the system by invoking rules, which although strictly legal, violate the spirit of the meeting. We initiated a form of

"A Two-room E-Deliberation Environment," Fiorella De Cindio, et al., Directions and Implications of Advanced Computing; Conference on Online Deliberation. San Francisco: Computer Professionals for Social Responsibility, 2008.

* *Robert's Rules of Order, Newly Revised*, Henry Robert, Perseus Books, 1990.

"auto-chair" in e-Liberate after we ascertained that the chair could actually be an impediment to progress and seemed to be less necessary in the online environment—at least in some situations. When an attendee requests the floor, he is automatically "recognized" by the automated proxy of the chair.

Distributed Meeting Attendees

A second set of issues is introduced when meeting attendees are unseen and distributed. These issues arise when a process that is used in face-to-face environments is adapted to be used in an online environment. For example, how do we know when a quorum is present? This is part of the larger issue of how we know who's online. Establishing the identity of a person who is interacting, sight unseen, via the Internet is important and is certainly not trivial. In some cases—as in online voting—there are opportunities for fraud that may sometimes prove irresistible. We also would like to know whether, for example, members are offline by choice or whether they want to participate but are unable to connect. And if they're not connected and/or not paying attention to the meeting at any given time, does that mean that they're not in attendance and, consequently, a quorum may no longer exist?

Social Environment Requirements

The third set of issues is related to the legal and other aspects of the social environment in which the system operates. In addition to establishing whether a quorum exists, a variety of other requirements include the timely distribution of the notice of the meeting, who can attend, and what type of access must exist for members and must be translated in suitable ways into the digital medium. All of these issues are interrelated and influence each other in obvious and subtle ways. For example, since attendees are no longer at a single shared location, where they would be (presumably) attending solely to the business of the assembly, the question of meeting duration comes up. Should meetings be relatively intense affairs where all attendees are interacting and business is conducted in one or two hours or should/could the meeting be more leisurely, perhaps stretching over one or two weeks? The distribution of attendees across time zones highlights a variety of "problems" that humankind's Earth-based orientation and social institutions (such as the "workday", the "workweek," and family obligations) place in the way of Internet-enabled "always-on" opportunities. These problems add considerable complexity to an already complex undertaking, and for now it suffices to say that addressing these issues will require social as well as technological approaches. Finally, we can only raise the issue of how well e-Liberate performs when used by larger groups. The only way to understand and learn about that is to host meetings with larger numbers of people—50, 100, 1,000—and observe the results and interview the participants.

E-Liberate's Role

At present, e-Liberate supports online deliberative meetings, discrete sessions that aren't linked in any way to each other. But deliberation is an ongoing process—not a sporadic, context-free occurrence that has neither history nor consequences. This fact suggests, among other things, the need to integrate deliberative technology with other collaborative technology such as brainstorming or collaborative editing. It is hypothesized that developing software that could support a variety of protocols, along with the ability to inspect and modify the rule base, would make new deliberative projects plausible without necessarily changing the functionality of the basic Robert's Rules core. It may be possible to develop a variety of "plug and play" modules that could support exploration in the area of "deliberation in the large" in which individual meetings or sessions ("deliberation in the small") are linked. The ongoing nature of deliberation also suggests that an online tool that helps maintain institutional memory would be especially useful (including the retrieval of agenda items that had been postponed in prior meetings). In many collective enterprises, it is common to break the larger group into smaller working, distributed subsets such as committees or consortia, and the system should support that.

There are also several capabilities related to integration with other services such as email, fax, videoconferencing, and so forth. Invitations and other notices are already sent electronically to e-Liberate participants and there are other times when email communication should be invoked. We also plan to look into document sharing (e.g., the organization's bylaws) among participants and support for image presentation during meetings.

Finally, as I alluded to earlier, we live in an era in which problems aren't always confined to one country. The need for international and other cross-border initiatives in which the participants are not elites is critical. The expression "deliberation in the small" can be used to describe a single meeting. Although a single meeting is the foundation of deliberative discourse, it's only a molecule in the universe of social learning, or what could be called deliberation *in the large*.

Addressing the broader issues of deliberation in the large can be faced in several ways, from a piecework bottom-up approach, linking, for example, environmental groups in some way, perhaps via an e-Liberate-like system, perhaps not. The other, somewhat orthogonal, approach is to design and implement (and evaluate and critique, etc.) new systems that explicitly address this issue in a more top-down way. Our approach readily combines both approaches and allows for others not yet identified. We are proposing a loosely linked, collaborative enterprise that combines both theoretical and applied research, information and communication technology (ICT) design and implementation, public and popular education, and policy work. We are

looking into deliberation in the large as an important thought experiment that should be taken up in a broad social dialog.† Part of this is related to inherent rights of people (to communicate, deliberate, participate, etc.), and part of this is related to the necessity of global communications on issues such as climate change.

Conclusion

The online environment offers many opportunities for collective problem solving. Online deliberation (especially in conjunction with other collaborative approaches) has immense potential whose surface is only now being scratched. Although deliberation is not as easy to do as, say, online shopping, it is a cornerstone of democracy and of the civic intelligence required in the twenty-first century.

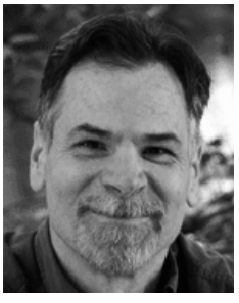
Currently, there are few opportunities for individuals to help address shared problems. We believe that focusing on civil society—both its organized and its unorganized constituents—is a rich, rewarding, and deserving area for multisector collaborative ventures. The time is ripe for loosening the restrictive boundaries between institutional bodies and other groups of people worldwide: the current governors must be willing to share or abandon some of the power they currently hold, while the people must be willing to assume increased responsibility for governing tasks, thus becoming more fully realized citizens.

A host of risks are associated with these deliberative proposals. Yet the risk of not acting is the most dangerous. Focusing attention on online deliberation presupposes a faith, partially supported by evidence, which states that humans of diverse social stations can deliberate together. We may yet employ our vast technology to the task of obliterating ourselves and life on earth. This possibility should surprise no one: throughout history, humankind has exhibited an enthusiastic genius for establishing hells on earth that surpass the misery of those conceived by our poets, artists, and theologians. On the other hand, the ability to deliberate together may be our most powerful—yet neglected—natural resource. And in our embrace of open governance, we may discover that it is the key to civic intelligence.

I want to thank Fiorella de Cindio for many helpful suggestions with this chapter and for many fruitful discussions and collaborations over the years.

† "'Tools for Participation' as a Citizen-Led Grand Challenge," Douglas Schuler, Directions and Implications of Advanced Computing; Conference on Online Deliberation. San Francisco: Computer Professionals for Social Responsibility, 2008.

About the Author



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CHAPTER EIGHT

Open Government and Open Society

Archon Fung
David Weil

Perhaps more than any other national leader, President Obama has stressed his commitment to "creating an unprecedented level of openness in Government" (see the Appendix).* His administration has followed up these words with impressive actions—expanding the quality and quantity of data available on USAspending.gov, laying the groundwork for making the economic stimulus and recovery expenditures public, and creating a high-level process—*itself* conducted in a highly inclusive way—to develop open government policies under the Office of Science and Technology Policy.

Transparency's Moment?

Complementing these federal initiatives, a host of skilled civic organizations—composed of groups such as Sunlight Foundation, OMB Watch, and the League of Women Voters—now comprise a capable transparency movement that both presses for greater openness in government and develops tools to enable citizens to take advantage of that openness. Coming somewhat later to the issue of transparency, these groups and others have caught the eye of important funders at philanthropies such as the Open Society Institute, the Omidyar Foundation, and the Ford Foundation.

* "Transparency and Open Government," President Barack Obama, Memorandum for the Heads of Executive Departments and Agencies, January 21, 2009 (*http://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment/*).

These developments converge in a perfect storm (the good kind) that may in several years result in a federal government that is much more open to public scrutiny than it has ever been. Indeed, this government may in time become more open than any other major government in the world. This would be a remarkable democratic achievement.

Enthusiasts of transparency, which most readers of this book are, should be aware of two major pitfalls that may mar this achievement. The first is that government transparency, though driven by progressive impulses, may draw excessive attention to government's mistakes and so have the consequence of reinforcing a conservative image of government as incompetent and corrupt. The second is that all this energy devoted to making *open government* comes at the expense of leaving the operations of large private sector organizations—banks, manufacturers, health providers, food producers, drug companies, and the like—opaque and secret. In the major industrialized democracies (but not in many developing countries or in authoritarian regimes), these private sector organizations threaten the health and well-being of citizens at least as much as government. The remedy for this second pitfall is to marshal forces in government and the civic sector into a movement for an *open society*. The aim of this chapter is not to celebrate the current hopeful moment for transparency, but to draw attention to these blind spots and to suggest some correctives.

The Dark Side of Open Government

The principle that government—not just its laws and policies, but the reasons and processes of decisions that generated those policies and the flows of money that fund their implementation—should be open seems not just unobjectionable, but an essential component of democratic government. Without that freedom of information, citizens cannot hold their government accountable, evaluate officials' claims, and hold them responsible when they veer too far from the tether of democracy.

This reasoning becomes problematic when transparency focuses primarily—or even exclusively—on accountability. Campaign finance disclosure, contracting disclosure, and much of the freedom of information activity aims to create a "gotcha" game in which the information provided by open government measures is used by journalists, advocacy groups of the right and left, and political opponents to catch official wrongdoing. This cat-and-mouse game forms a civic check-and-balance mechanism that is fundamental to curbing the misbehavior of the powerful. In this regard, our society is fortunately blessed with many independent journalists whose personal interests and professional ethos press them to sniff out official malfeasance. The American public, going back to the time of Tocqueville and before, have had a skeptical strain in their view of government, particularly the possibilities of malfeasance. When pollsters asked whether "this country is run by a few big interests looking out for themselves" or whether it is run "for the benefit of all the people" in 2004, 54% of respondents thought that it was run

by a few big interests.† Open government efforts can thus plug into a media apparatus and public political culture that together make a very effective "gotcha" machine.

But the larger responsibility of citizens is not just to judge when officials behave badly, but also to provide feedback on their performance in more nuanced ways, including registering approval when government performs well—when it protects people's interests and solves public problems effectively and justly. Unfortunately, the current discourse of transparency—focused as it is on accountability and issues such as corruption—produces policies and platforms that are particularly sensitive to government's mistakes but often are blind to its accomplishments. Transparency in this sense is like a school report card that only reports when a student is sent to detention, plays hooky from class, or fails courses, but does not register when she earns As in her course. The systems of open government that we're building—structures that facilitate citizens' social and political judgments—are much more disposed to seeing the glass of government as half or even one-quarter empty, rather than mostly full.

Thus the progressive impulse for transparency—shared famously by Justice Brandeis as well as most of the authors of this volume—may well produce conservative or even reactionary effects of delegitimizing government activity quite broadly as public disclosure feeds more and more stories of government waste, corruption, and failure. To illustrate, consider current efforts to disclose federal stimulus spending activity. Much of that disclosure aims to make public the flow of funds through contracts, enabling journalists and citizen-auditors to "follow the money." This is a worthy contribution to forming public judgments about the stimulus package. But its main thrust provides less information on project progress, its capacity to provide employment to parts of the labor force particularly hard hit by the recession, or the public value created by the spending (e.g., how much local users of an improved transportation line benefit from decreased commuting time or more predictable service). Instead, the approach tends to focus on costs and not the commensurate public benefits arising from the spending. Imagine if Amazon or Internet Movie Database (IMDb) reviews only allowed users to point out problems with books and movies but not to highlight what they thought was artful and creative about them. People who looked at Amazon and IMDb reviews would think that the overall quality of books and movies was very poor indeed. That's what stimulus transparency—and much government disclosure generally—does.

The solution to this problem is not to reduce government transparency, but rather to create a fuller accounting of it. Instead of focusing solely on disclosure systems that produce accountability, we should press for disclosure systems that allow citizens to identify and express their evaluation of government activities as they would private products and services. One promising set of examples of this are public accounting systems developed by a number of local

† The American National Election Studies (*http://www.electionstudies.org*), *The ANES Guide to Public Opinion and Electoral Behavior* (University of Michigan, Center for Political Studies). In a similar vein, Tocqueville famously noted, "The American Republic will endure until the day Congress discovers that it can bribe the public with the public's money." (Alexis de Tocqueville, *Democracy in America* [1838, reprinted by Harper Perennial, 1988].)

governments that provide a platform for citizens, civic groups, and other organizations to provide ongoing feedback on the service provision of specific government agencies or key providers such as the police.‡

But these fledgling examples need to be ramped up, particularly given the escalating scale and scope of government activity in response to the economic crisis. Disclosures about federal economic stimulus activities, for example, need to be organized around projects rather than contracts—that is, on the users who ultimately benefit from expenditures. They might report many dimensions of performance—such as the number of jobs created and the quality of those jobs. And they might enable residents in local communities to rate those projects—as they rate books, movies, and hotels on commercial sites—on criteria such as how they are serving specific public needs and the quality of services provided.§ Americans might be justified in feeling pretty good about the stimulus in areas with many five-star projects and suspicious where there were lots of projects with just one or two stars. In essence, we need transparency that provides a full accounting of the benefits as well as the costs of government activities. The information technologies are readily available;‖ what we need is the political drive to foster a more complete form of open government.

The Missing Diagnosis

A broader and more important question for transparency advocates is this: what is the problem for which transparency is the solution? One natural answer to this question is that transparency is the solution to the particular challenges of democratic *government*. Governments exercise enormous power—including the power to put people in jail and seize their possessions. Democratic governments are also supposed to express the will of the people. Transparency can both check power and help to make government responsive. A quite different answer to this question, however, is that many large organizations in society—not just national governments, but also corporations, social service agencies, and public service providers—create harms and risks to individuals, and transparency is a general method that can help citizens understand these harms, protect themselves, and press organizations of all kinds to behave in more socially responsible ways.

‡ See, for example, "What Exactly Is City Stat?", Bob Behn, *The Operator's Manual for the New Administration*, Rowman and Littlefield Publishers, 2008.

§ One interesting example of the elements of such a system was created by the nonprofit news organization, ProPublica, on its website. The "Stimulus Progress Bar" and associated materials provide ongoing tracking of the progress of stimulus spending across the country (see *http://www.propublica.org/ion/stimulus*).

‖ Many of the burgeoning information technologies developed by the private sector could be readily adapted to this task. This has been recognized by a growing number of organizations, including an offshoot of Google, Google Public Sector (*http://www.google.com/publicsector*), which focuses on developing new applications for public sector organizations.

From this second perspective, should transparency enthusiasts invest their energies in *open government* or in creating an *open society* in which organizations of all sorts—in particular, private corporations—are much more transparent? The answer to this question depends on a sober evaluation of the social facts on the ground; where do the risks and harms to citizens come from? In societies where government is the major force, where it has few mechanisms for public accountability, and where other organizations are, by comparison, innocuous—China, Iran, and nations with still-embryonic forms of democratic governance where the boundary between public and private spheres is opaque and often corrupt—transparency should aim primarily to make government more open.

The United States and other industrialized democracies, however, possess quite a different organizational ecology. Governments at the federal, state, and local levels are large and powerful, to be sure. But the well-being of citizens—their employment; the purity of the food they eat and the air they breathe; whether their waterways are fishable and swimmable; their housing prices, mortgage rates, and credit charges; the reliability and safety of transportation; even the very soundness of the economy—also depends on the actions of large and often secretive organizations in the private sector, such as banks, manufacturers, and other corporations.

Therefore, a very substantial part of the energies of transparency advocates should be redirected toward making corporations and other organizations in society meet the same standards increasingly demanded of open government. This shift requires the transparency movement to reorient itself in several substantial ways. Government assumes a different role in the political imagination. Rather than a looming specter of threat that society must tame through transparency, government becomes an ally of society whose strength is required to make businesses transparent. In many cases, private and civic organizations will not disclose information voluntarily, and the force of law and policy—and the kind of authority that can come only from government—will make them do so. Complementing a citizen's right to know about general processes within government, measures to create an open society produce information that is geared at reducing specific risks and harms, such as health threats, pollution, and economic risks.

Targeted Transparency

To open government partisans, the open society agenda may seem quite foreign; where to begin? Fortunately, laws and policies that compel corporate disclosure have emerged in various policy domains in recent decades. In other work, we have called these measures "targeted transparency" because they aim not just to provide general information, but rather to achieve specific public objectives such as better schools, high-quality hospitals, and safer consumer products.#

Full Disclosure: The Perils and Promise of Transparency, Fung, Graham, and Weil, Cambridge University Press, 2007.

In 1997, for example, the Los Angeles County Board of Supervisors adopted an ordinance that requires restaurants to post highly visible letter grades (A, B, C) on their front windows that are based on the results of County Department of Health Services inspections. This transparency system makes it much easier for patrons to avoid restaurants with dirty kitchens or otherwise unsafe practices. There is substantial evidence that the system has worked. Revenues at "C" restaurants declined and those of "A" restaurants increased after the policy was implemented. Over the course of a few years, the number of "C" restaurants decreased and the number of "A" restaurants increased. Perhaps most importantly, fewer people are getting sick from food poisoning after the implementation of the report card system. Studies estimate that hospitalizations from foodborne illnesses have decreased from 20% to 13%.* This transparency innovation has spread to several other cities and two states.

At a larger scale, Congress passed a law in 1975 (and has updated it several times), called the Home Mortgage Disclosure Act (HMDA), that compels banks to disclose detailed information about their mortgage lending. HMDA requires banks and other lending institutions to amounts, geographic distribution, and other characteristics of their mortgage applications, including race, gender, and income of applicants. Advocacy groups such as National People's Action and community-based organizations have used data produced by HMDA to show how many lenders discriminate and to help negotiate fairer lending practices with those institutions. Furthermore, banking regulators used the data both to establish the extent and patterns of discrimination as well as to conduct their enforcement efforts under laws such as the Community Reinvestment Act.†

These are just two examples of how methods of transparency have been applied to the actions and products of private sector organizations. Transparency has also been used—sometimes quite effectively and sometimes less so—to address problems such as automobile safety, nutrition and health, hospital safety, credit risk, environmental quality, and workplace health and safety.

Analyzing the effectiveness of transparency incentives is important because measures that succeed can reduce critical public risks and improve public services. Those that miss the mark can distort incentives in ways that waste resources and expose people to risks they do not fully comprehend. In addition, some transparency systems in areas of health care and for certain consumer products are gaining momentum as information and communication technologies increase the capacity of citizens and consumers to use them to make more informed choices—

* Ibid, pp. 192–194.

† Ibid, pp. 203–205. HMDA and CRA have also been cited recently as one of the precipitating causes of the subprime mortgage meltdown. In our view, transparency surfaced wide-scale and pernicious discrimination in bank lending practices. How much it also contributed to the inappropriate use of subprime and other forms of complex mortgage instruments during the housing boom—versus other factors such as the securitization of mortgages and the agency problems arising within the housing finance sector that allowed brokers to approve borrowers with little capacity to meet the terms of their mortgages—requires separate treatment.

and to circle around corporate secrets and political obstacles to collaborate on their own transparency efforts. Technology is also transforming the capacity of entities that create public risks to pick up signals from consumers' changed choices and respond by reducing those risks.

A Matter of Politics

These efforts to make the private sector of society, as opposed to government, more transparent have emerged in fits and starts. Unlike the open government movement, there is no focused and organized effort to create an open society through these kinds of measures. Instead, they have emerged bit by bit in particular fields. Health advocates see some advantage in pressing for hospital disclosure in one place. In another, environmentalists press for toxics disclosure as part of their antipollution efforts. Worker advocates push for disclosure of chemical exposures in the workplace somewhere else. Furthermore, targeted transparency often emerges as a response to some kind of crisis. Congress, for example, passed a law requiring automobile manufacturers to disclose the propensity of their cars to roll over in 2000 after a series of widely reported fatal SUV accidents earlier that year. The current economic crisis is engendering its own calls for transparency in regard to regulating the financial sector, including more responsible disclosure of risks to potential borrowers for home loans to redress information failures in the subprime mortgage market, and better disclosure of systemic risks from complex securities.‡

These dynamics limit the reach of targeted transparency because of common political dynamics. As with open government, efforts to make private organizations more transparent often face substantial opposition. It is no surprise that the California Restaurant Association opposed the Los Angeles health grade report system. Generally, companies and other associations will act in the political arena to oppose laws and policies that compel them to provide information to the public.

Conclusion

The contest between these groups and transparency advocates is usually rigged against transparency. In the open society domain, transparency laws and policies usually create requirements upon some small group of organizations—restaurants, car manufacturers, hospitals, and the like—to tell the public information that most organizations wouldn't voluntarily disclose. At a minimum, it is cumbersome to comply with these requirements. Often, disclosure can harm some of these organizations by highlighting their bad behavior and

‡ For example, a Federal Trade Commission study conducted in 2007 demonstrates that the methods of disclosure used by banks to provide information on standard 30-year mortgages are often misunderstood by mortgagees, to say nothing of the more complex features of subprime loans. See James M. Lacko and Janis K. Pappalardo, "Improving Consumer Mortgage Disclosures: An Empirical Assessment of Current and Prototype Disclosure Forms," Federal Trade Commission Bureau of Economics Staff Report, June 2007.

embarrassing them. On the flip side, those who benefit from greater social transparency—sometimes consumers, investors, citizens, and the public at large—are much more numerous and diffuse. As a matter of practical politics, it is usually far easier for smaller groups of concentrated interests to organize to oppose or undermine transparency policies than it is for the much larger groups of consumers and citizens to organize to support and defend those very same policies. Political scientists and political economists have called this the problem of "asymmetric organization." The dynamic explains why so many disclosure policies end up being toothless and ineffective.§

For these reasons, the current sophisticated movement for Open Government should expand its agenda and become a movement to Open Society. In American society, the threats to citizens individually and to society generally come as much—perhaps much more—from powerful private sector actors as from government. Therefore, it is appropriate, even urgent, that the champions of transparency and disclosure train their sights on all of these threats: those coming from economic and civic organizations as well as those coming from government. They should build on the burgeoning lessons of IT-enabled social networks to create responsive, evolving, and vibrant transparency platforms. Absent such a broader movement of targeted transparency to create an open society, many of the real sources of social risk—those that have been responsible for widespread food contamination, the meltdown of the housing market, the broader economic crisis, and the exploitation of the poor through usurious lending practices—will remain shrouded in secrecy, mysterious to citizens, and beyond the reach of democratic control.

§ For a full discussion of political sustainability, see *Full Disclosure*, chapter 5.

About the Authors

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