Can the Government be a Collaborative Public Problem Solver?

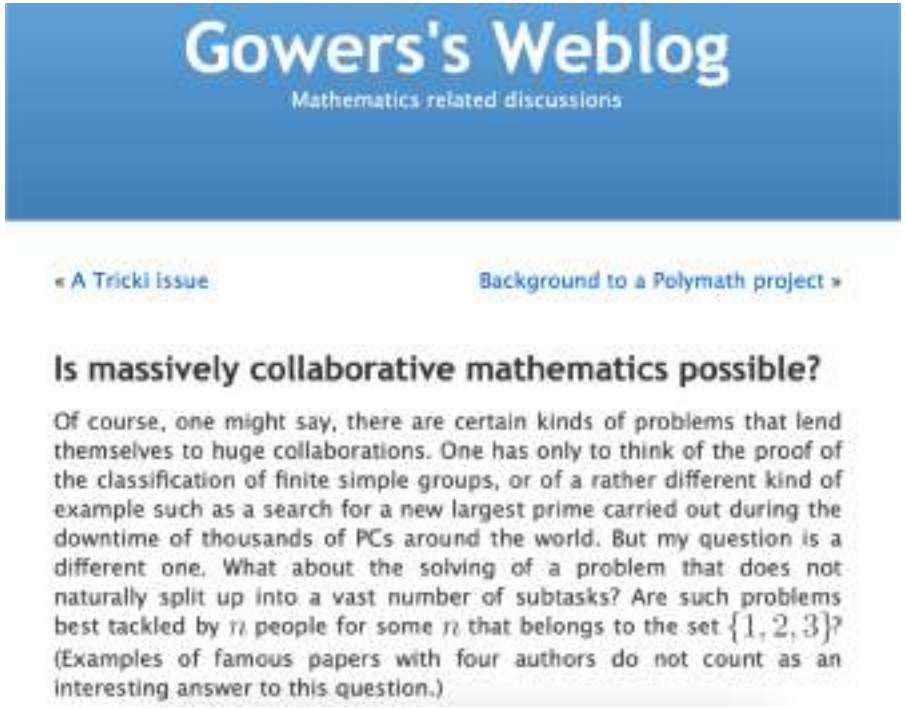
For: Kautilya School of Public Policy

By: Roshan Shankar

roshans@alumni.stanford.edu

Date: 20th December 2022

Collaboration and Problem Solving



Gowers's Weblog

Mathematics related discussions

« A Tricki issue

Background to a Polymath project »

Is massively collaborative mathematics possible?

Of course, one might say, there are certain kinds of problems that lend themselves to huge collaborations. One has only to think of the proof of the classification of finite simple groups, or of a rather different kind of example such as a search for a new largest prime carried out during the downtime of thousands of PCs around the world. But my question is a different one. What about the solving of a problem that does not naturally split up into a vast number of subtasks? Are such problems best tackled by n people for some n that belongs to the set $\{1,2,3\}$? (Examples of famous papers with four authors do not count as an interesting answer to this question.)

Doing science online

by Michael Nielsen on January 26, 2009

This post is the text for an invited after-dinner talk about doing science online, given at the banquet for the ***Quantum Information Processing 2009*** *conference, held in Santa Fe, New Mexico, January 12-16, 2009.*

Good evening.

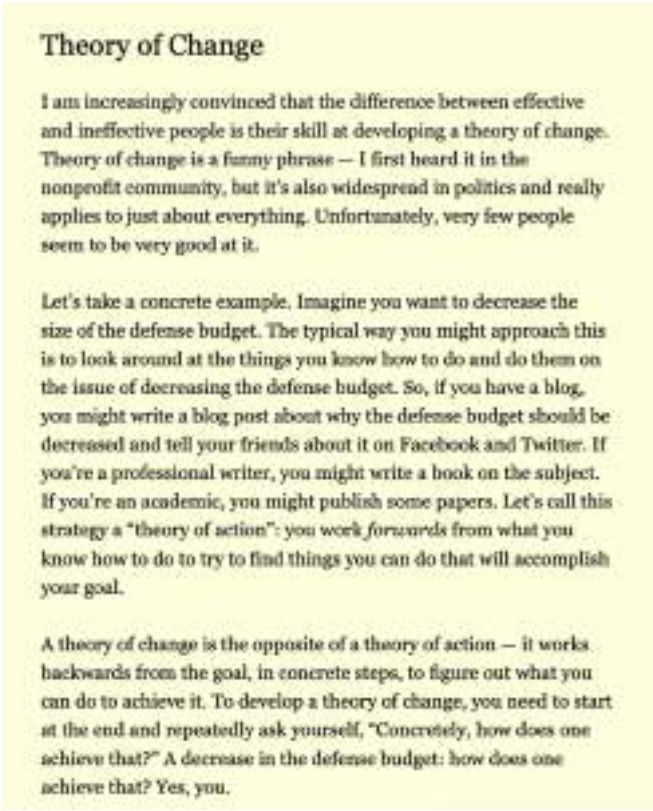
Let me start with a few questions. How many people here tonight know what a blog is?

How many people read blogs, say once every week or so, or more often?

How many people actually run a blog themselves, or have contributed to one?

How many people read blogs, but won't admit it in polite company?

Let me show you an example of a blog. It's a blog called **What's New**, run by UCLA mathematician **Terence Tao**. Tao, as many of you are probably aware, is a Fields-Medal winning mathematician. He's known for solving many important mathematical problems, but is perhaps best known as the co-discover of the **Green-Tao theorem**, which proved the existence of arbitrarily long arithmetic progressions of primes.



Theory of Change

I am increasingly convinced that the difference between effective and ineffective people is their skill at developing a theory of change. Theory of change is a funny phrase — I first heard it in the nonprofit community, but it's also widespread in politics and really applies to just about everything. Unfortunately, very few people seem to be very good at it.

Let's take a concrete example. Imagine you want to decrease the size of the defense budget. The typical way you might approach this is to look around at the things you know how to do and do them on the issue of decreasing the defense budget. So, if you have a blog, you might write a blog post about why the defense budget should be decreased and tell your friends about it on Facebook and Twitter. If you're a professional writer, you might write a book on the subject. If you're an academic, you might publish some papers. Let's call this strategy a "theory of action": you work *forwards* from what you know how to do to try to find things you can do that will accomplish your goal.

A theory of change is the opposite of a theory of action — it works backwards from the goal, in concrete steps, to figure out what you can do to achieve it. To develop a theory of change, you need to start at the end and repeatedly ask yourself, "Concretely, how does one achieve that?" A decrease in the defense budget: how does one achieve that? Yes, you.

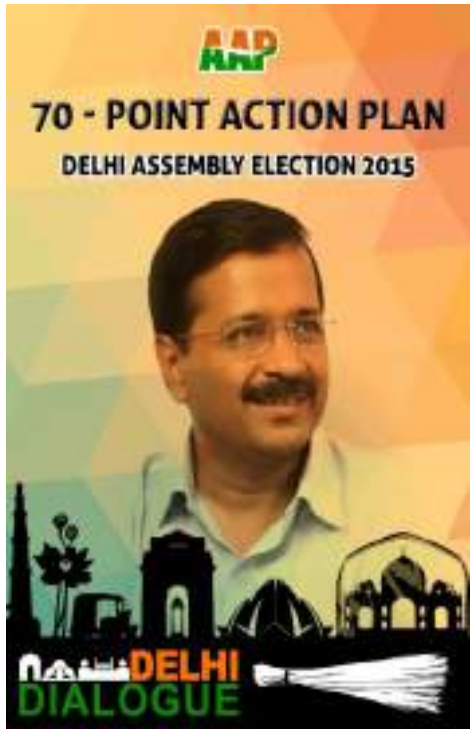
The National Capital Territory of Delhi

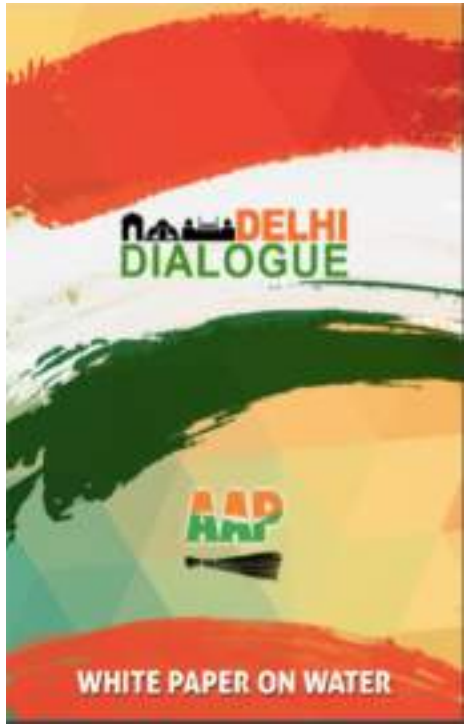
Proposition for a Revolution

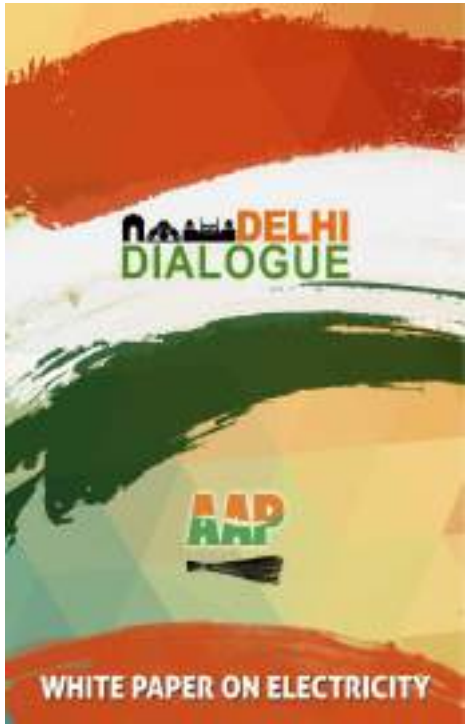
Revolution to Organization

Organization to Platform

Platform to Promise



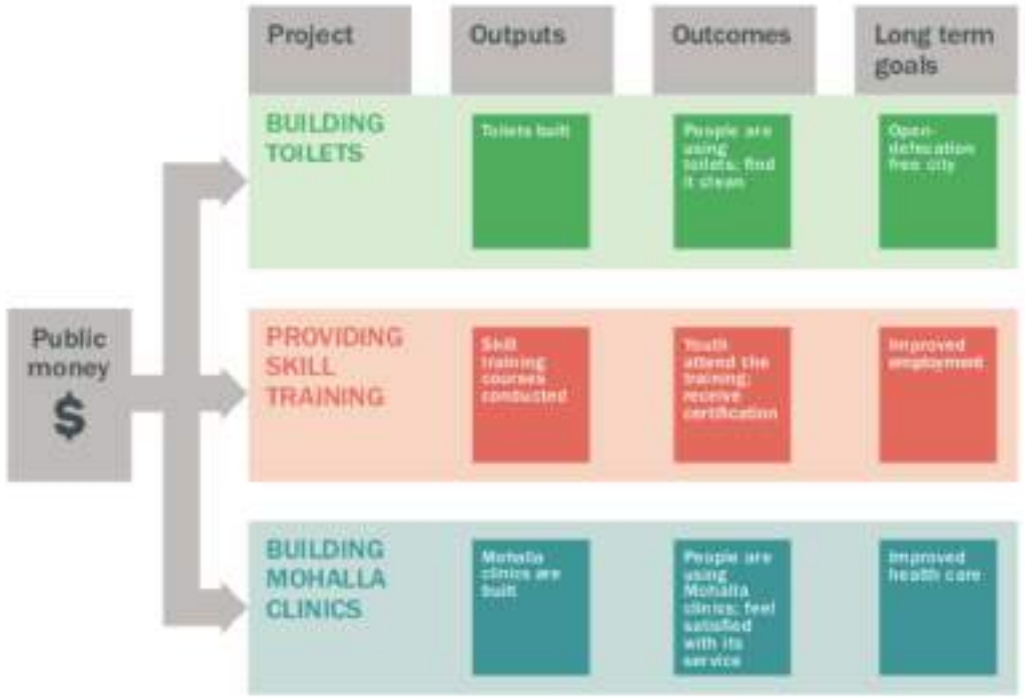




Promise to Election

Election to Government

Government to Governance



Policy as Collaboration

WISH
Transforming Healthcare Through Innovation

NalandaWay

WORLD RESOURCES INSTITUTE

HCL FOUNDATION

CITIZEN'S FRONT FOR WATER DEMOCRACY
water
Let it be for life, not for profit

Aao Jal Sanchay Karein
Boond Boond Dharti Bharein

CSIR INDIA
NEERI

gdi PARTNERS

IDinsight
Improving lives with data and evidence

Saajha

Pratham

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ICLEI
Local Governments for Sustainability

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Technology as Ideology

Innovation as Stack

Learnings: Part 1

Civil-society participation in governance and policy making

- Government guided by the principles of equality, justice, self-governance, community building, decentralization, sustainability
- Citizen dialogue shaped policy direction via Delhi Dialogue (2014-15)
- Continued focus on civil society engagement in policy-making, through the Delhi Dialogue Commission (2015-18), and Dialogue and Development Commission (2018-)

Outcome Budget and Green Budget

- Overhaul of the budget process to increase transparency and accountability in public spending
- 'Outcomes Budget': Integration of clear indicators for tracking expenditure against Outcomes
- 'Green Budget' to fast-track critical environmental issues

Innovative external governance arrangements

- Innovative vertical and horizontal governance and project delivery models to bring together different tiers of government
- External partnerships with NGOs and academics to champions to take forward ideas
- New outcomes-focussed divisions created for sustainability projects, and new structures between the state and citizen groups and communities

Learnings: Part 2

DECENTRALISE AND DEVOLVE POWER TO CIVIL SOCIETY

For Delhi, the concept of 'Swaraj', which engages citizenry in decision-making processes and agenda setting to ensure needs are met and actions supported, has been hugely successful.

'INNOVATION AS A STACK': SOLVE NEEDS, THEN WANTS, THEN DESIRES

Delhi has adopted the 'stack' approach which ensures the first foundation is laid in any given process or project. The 'stack' process involves first addressing the needs, then the wants and subsequently addressing the desires of the community. This approach therefore incorporates global best practices and innovations, but solves the community's problems and issues first and foremost.

TRANSPARENT GOVERNANCE

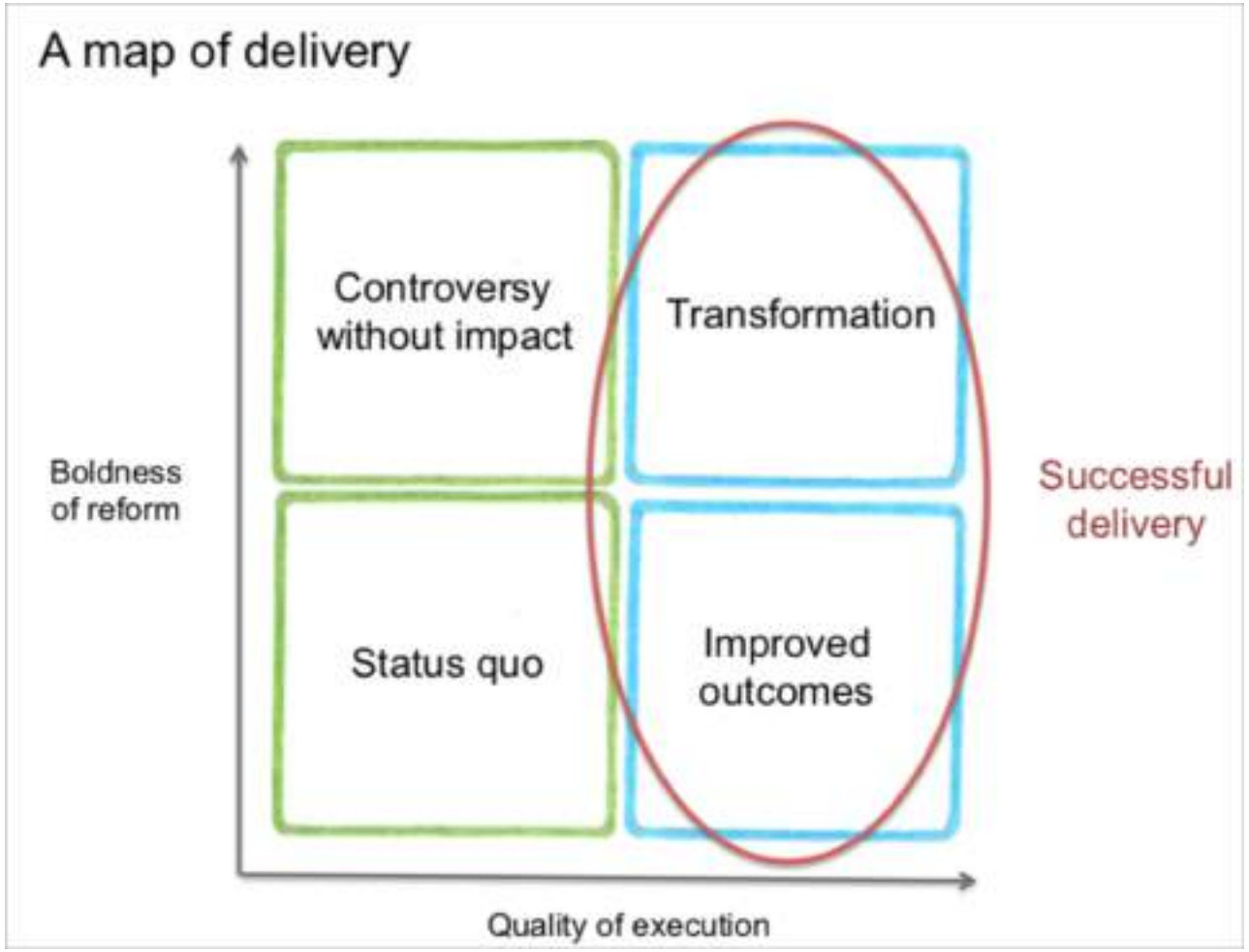
Delhi Government have taken a transparent approach to governance with clear accountability. To achieve this clear and accountable governance, a number of key steps are taken by the Government:

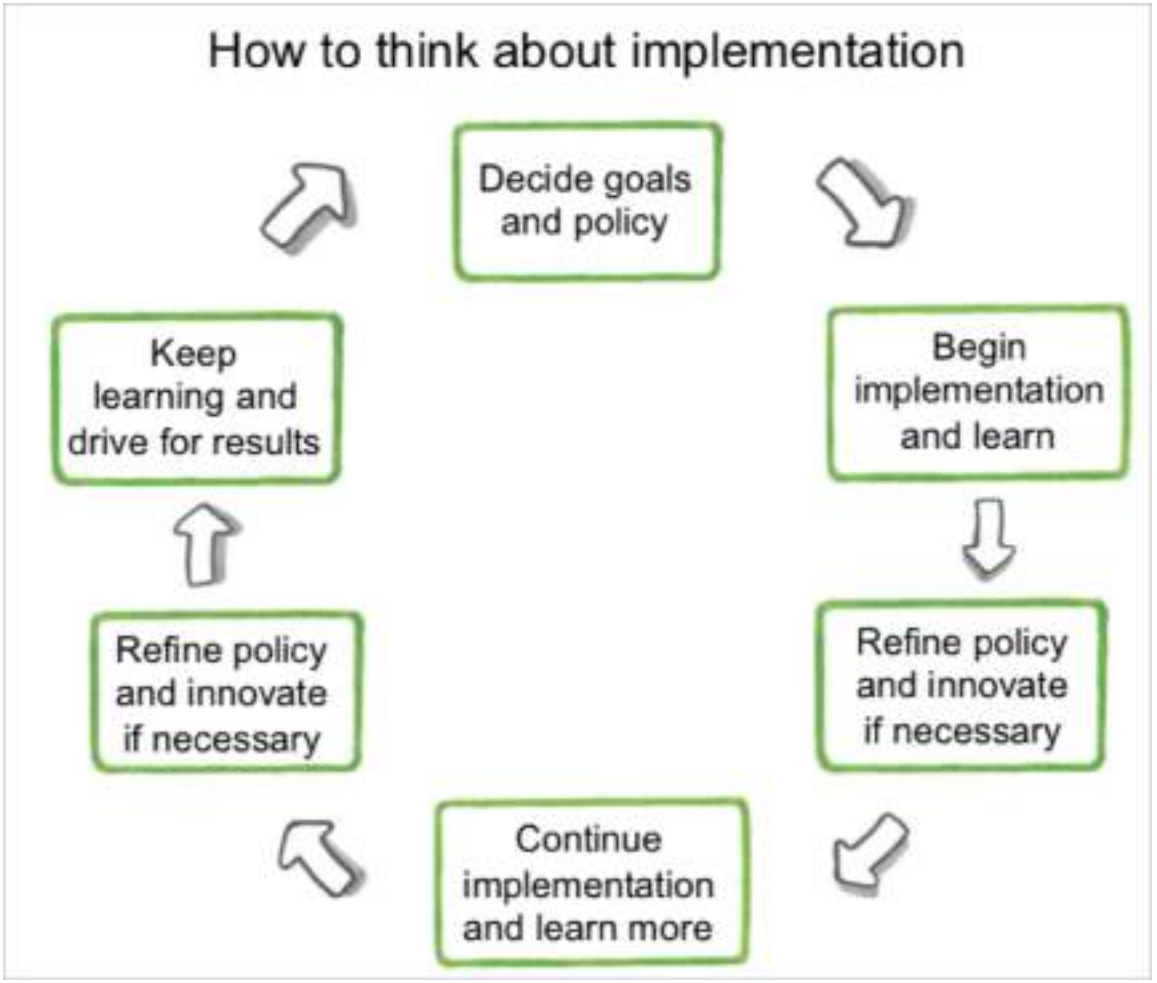
- **Step 1: Increase the number of problem solvers** through awareness, creating an inclusive and participatory process and prioritising sustainable development through strong political leadership and integrated governance arrangements
- **Step 2: Set the agenda for long-term plans** with clear key performance indicators (KPIs), Outcomes and Outputs that continuously evolve through citizen feedback and become departmental procedure in institutional memory instead of outlier exercises
- **Step 3: Partner with allies** to evolve a long- term, multi-sectoral perspective that have funded mandates with a clear path of implementation
- **Step 4: Monitor and evaluate progress** through local monitoring and evaluation (M&E) systems through academia and civil society to ensure that implementation remains on track, and support the development of local capacity for more responsive and accountable governance

PARTNERSHIP WORKING

When working with experts and co-creating solutions, internal discord often reduces, and it is possible to gain buy-in and support from a wider team. This process of co-creation has also led to co-delivery and a higher success rate than would have been seen without partnership working.

Learnings: Part 3





Learnings: Part 4

Delhi's Energy Context in 2014

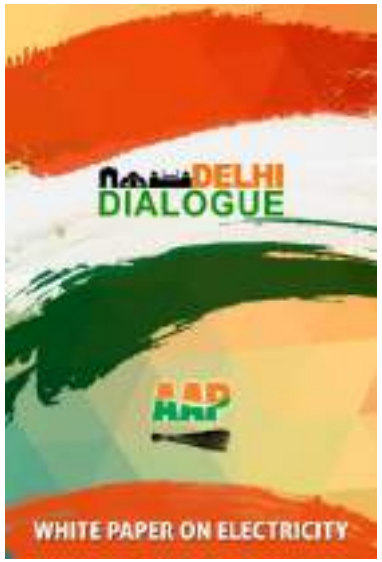
GENERATION: Delhi was a net consumer of energy. It received 80-85% power from expensive PPAs. Expensive thermal power stations, improper audits, lack of governance or regulatory interest and outdated CERC agreements ballooned costs.

TRANSMISSION: Delhi Transco Ltd. was a financially weak, technically unproductive and organizationally misgoverned public entity.

DISTRIBUTION: Power distribution in Delhi was privatised in 2002 with a promise to reduce T&D losses calculated at 55% then. Efficiency gains over a decade were unseen from private sector operations. Price of electricity faced by consumers increased dramatically over a decade due to guaranteed 16% profit to Discoms per law coupled with lack of checks and balances sought through executive oversight and legislative participation.

SUSTAINABILITY INITIATIVES: Innovative efforts in renewable energy, electric vehicles and roof top solar remain a pipe dream with little to no movement by agencies and departments involved in the Power Sector.

UNRELIABLE ELECTRICITY: The coupling of aforementioned inadequacies made consumers face unreliable, unclean and expensive electricity. Electricity theft was incentivized due to poor governance structures and carbon-based alternatives like diesel generators and home inverters were the norm for commercial or reliable usage.



Climate Leadership (2015—2022)

- **POLICY**
  - Citizen-centric tariff subsidy
    - Free electricity up to 200 units
    - 50% subsidy up to 400 units
  - Delhi Solar Policy 2016
  - Delhi Air Quality Declaration 2019
  - Delhi Electric Vehicle Policy 2020
- **PROGRAM**
  - Delhi Rooftop Solar Scheme
    - Solarize Dwarka
    - Solarize Shakur Basti
  - Delhi Agri-Solar Farmer Income Scheme
  - Group Net Metering and Virtual Net Metering Scheme
  - Supply Code amendments for accountability
  - Delhi Renter's Tariff Scheme
  - Meter installation camps by MLA by Assembly Constituency
- **PROJECT**
  - Installation of Transformers and Cabling across city
  - Rooftop Solar Scheme Uptake by Public and Private Sector
  - Floating Solar Projects and Solar Park
- **PRACTICE**
  - Utilization of solar energy in sustainability projects
  - Cross-department implementation with renewables

Key Outcomes

- 5 million households in Delhi get access to affordable 24*7 electricity.
- 2.2 million households receive free 200 units per month lifeline energy.
- Only city in India to have no tariff hike in 6 years.

- Robust power transmission and distribution system to supply in more than 32,000 million units of electricity at peak power demand of 7409 MW.
- Coal-based thermal power plants shut down.

- Old PPAs and Discom performance being negotiated and fought in courts.
- New PPAs of 1940 MW of Solar Power and 750 MW of Wind Power signed.
- Subsidy to Discom transferred to manage unpaid liabilities with transmission company. This strengthens its finances and improves its functioning.

- 1800+ net-metering connections approved.
- 4,000+ distribution transformers installed with 1800 MVA capacity with 90% reduction in load shedding.
- Bloomberg Cities 100 Report hails Delhi as 2nd most emissions reducing city in the world after Chengdu, China

- Ask a friend of yours who has lived in Delhi for 10-15 years:
  - Is your electricity stable and affordable? What about your friends in other states? How was it before?
  - Do you own an inverter? When did you last use it?
  - Have you seen a generator? When did you last see it?

DELHI ELECTRICITY REGULATORY COMMISSION

Delhi Electricity Regulatory Commission (Group Net Metering and Virtual Net Metering for Renewable Energy) Guidelines, 2019

1. Short title and commencement

(TO BE PUBLISHED IN DELHI GAZETTE EXTRAORDINARY PART)
GOVERNMENT OF NATIONAL CAPITAL TERRITORY OF DELHI

Delhi Electricity Regulatory Commission
Viniyamak Bhawan, C-Block, Shivalik, Malviya Nagar, New Delhi-110017

Agriculture-cum-Solar Farm Scheme in NCT of Delhi

1. Background

(To be published in Part IV (Extraordinary) of Delhi Gazette)

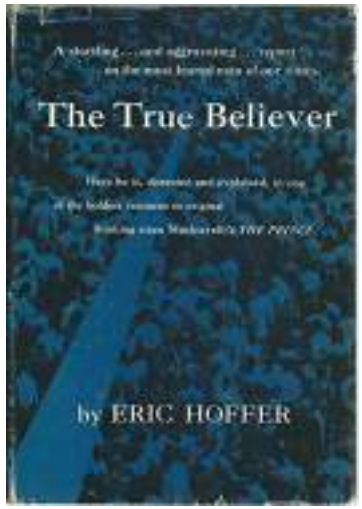
DEPARTMENT OF POWER
GOVERNMENT OF NCT OF DELHI
Delhi Secretariat, IP Estate, New Delhi-110002

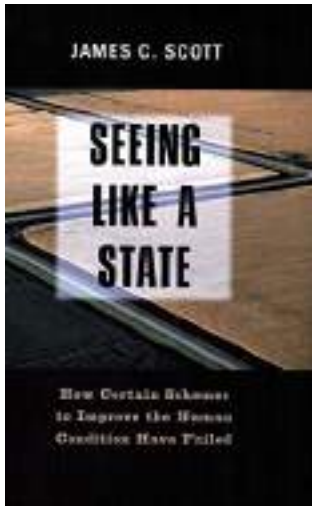
NOTIFICATION

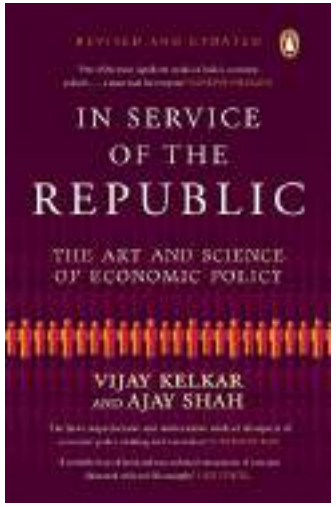
Delhi Solar Policy, 2016

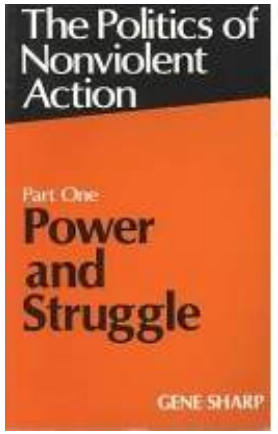
1. Background

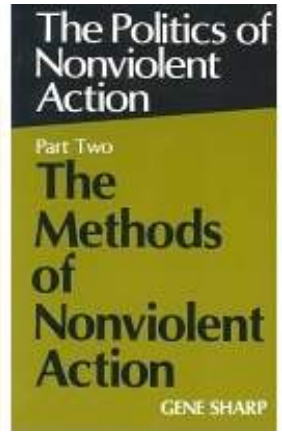
Thank You!

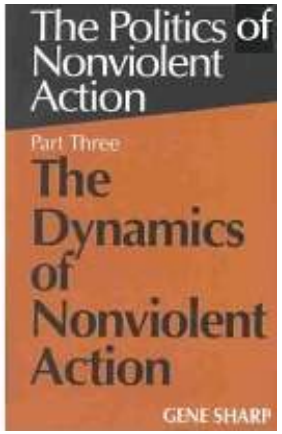

The True Believer
by ERIC HOFFER

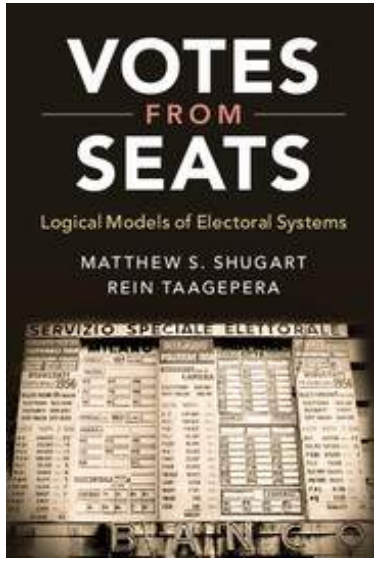

JAMES C. SCOTT
SEEING LIKE A STATE

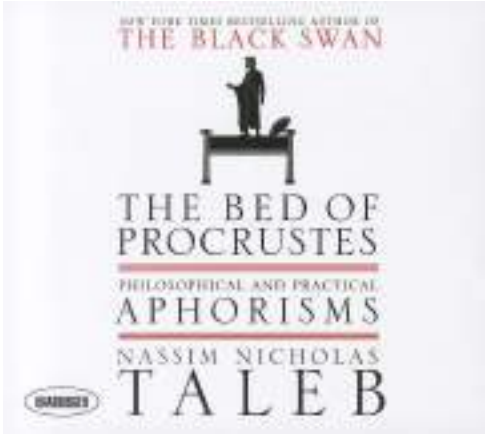

IN SERVICE OF THE REPUBLIC
THE ART AND SCIENCE OF ECONOMIC POLICY
VIJAY KELKAR
AND AJAY SHAH

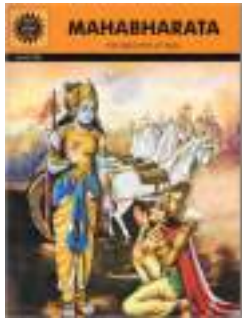

The Politics of Nonviolent Action
Part One
Power and Struggle
GENE SHARP

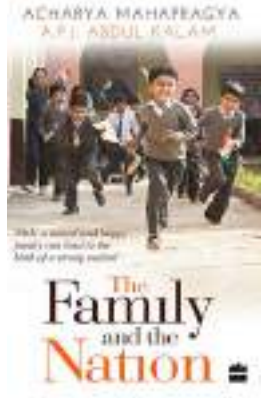

The Politics of Nonviolent Action
Part Two
The Methods of Nonviolent Action
GENE SHARP


The Politics of Nonviolent Action
Part Three
The Dynamics of Nonviolent Action
GENE SHARP


VOTES FROM SEATS
Logical Models of Electoral Systems
MATTHEW S. SHUGART
REIN TAAGEPERA


THE BLACK SWAN
THE BED OF PROCRUSTES
PHILOSOPHICAL AND PRACTICAL
APHORISMS
NASSIM NICHOLAS
TALEB


MAHABHARATA


ACHARYA MAHAPRAGYA
A.P.J. ABDUL KALAM
The Family and the Nation

Urban Water Metabolism for Indian Cities

Case Study for Delhi

Advisor: Professor Anu Ramaswami

Student: Roshan Shankar, G1, CEE

Example: Water and Delhi

Remote Sensing

- River Network
- Watershed Boundaries
- Water Reservoirs
- Elevation
- Rainfall
- Soil Moisture
- Surface Water Storage
- Surface Water Flows
- Evapotranspiration

Physical Sensing

- Water Quantity
- Water Quality
- STP
- WWTP
- WTP
- SPS
- BPS
- UGR
- Groundwater Levels
- Domestic Water Demand
- Industrial Water Allocation

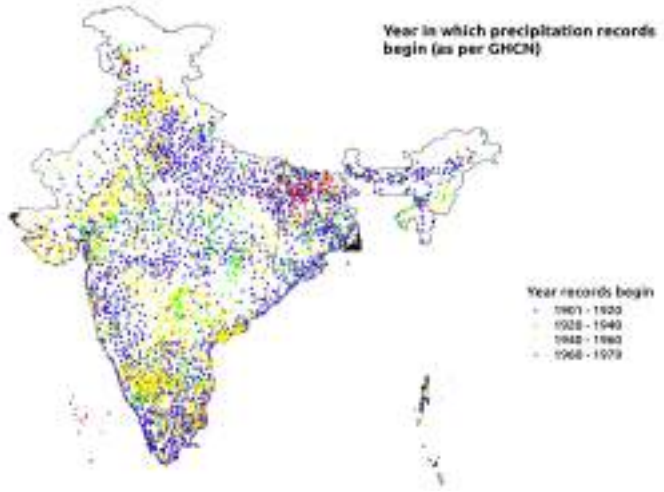
Social Sensing

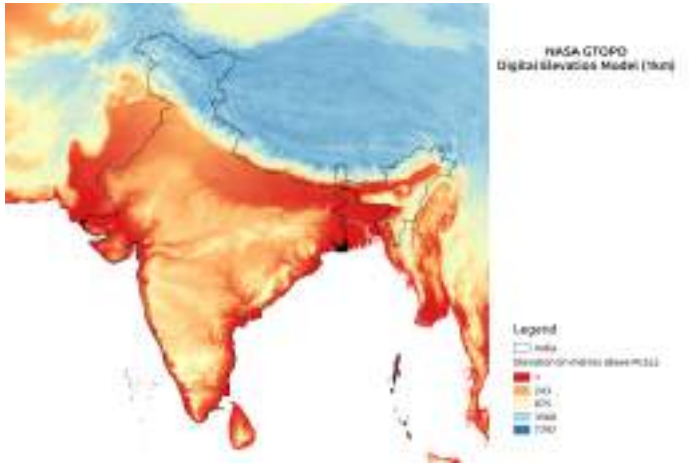
- Water Survey
- Operations
- Maintenance
- Cost/Price structure
- Tankers and borewells
- Grievances
- Formal/informal

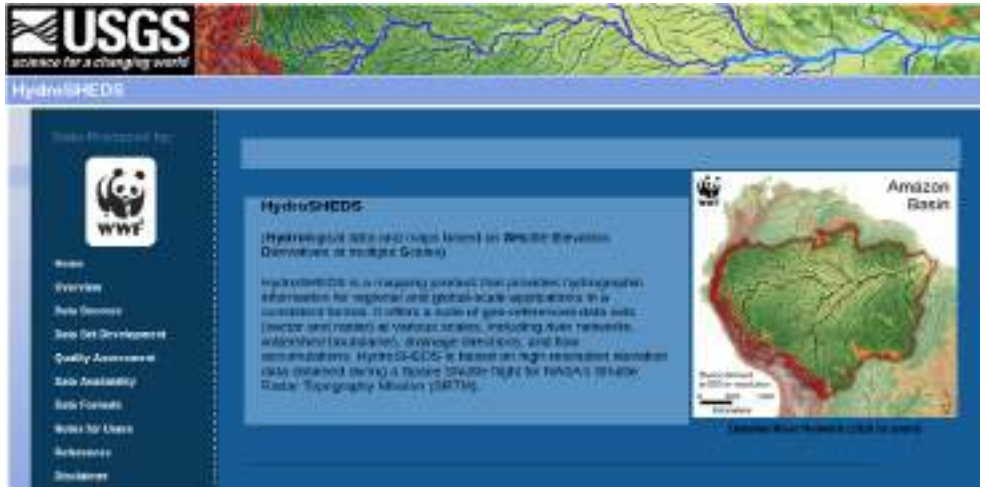
Strategic Open Data (Remote Sensing)

State (Open Data)

- Data Segmentation
- Data Demand
- APIs
- Trusted Intermediaries
- Example
  - International agencies
  - National governments
  - Space companies (near future)







Strategic Open Data (Physical Sensing)

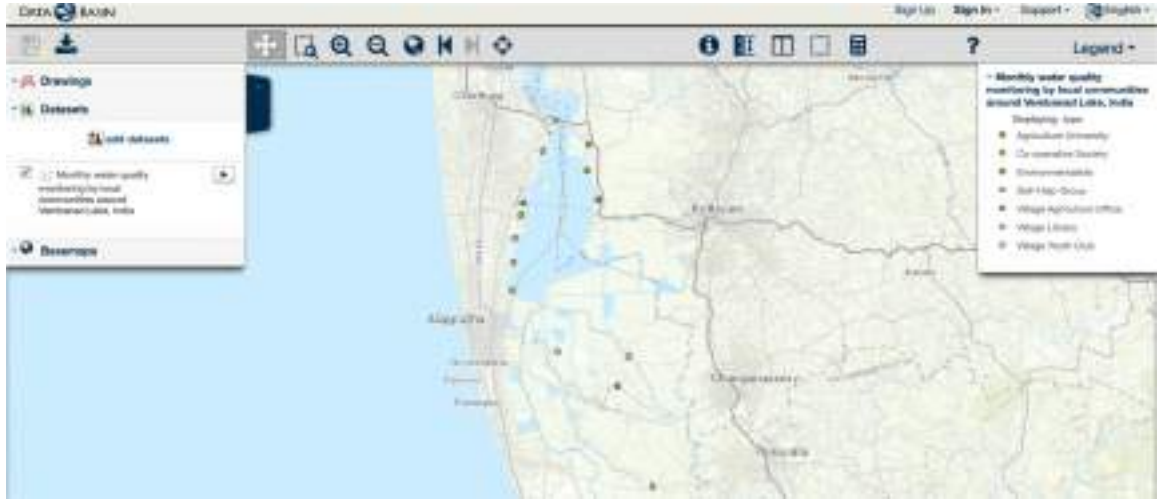
Market (Smart City)

- Data Collaborative
- Data Stewardship
- Prizes and Challenges
- Corporate Social Responsibility
- Example
  - City governments
  - Water companies working with states
  - Non-profits and multi-lateral agencies

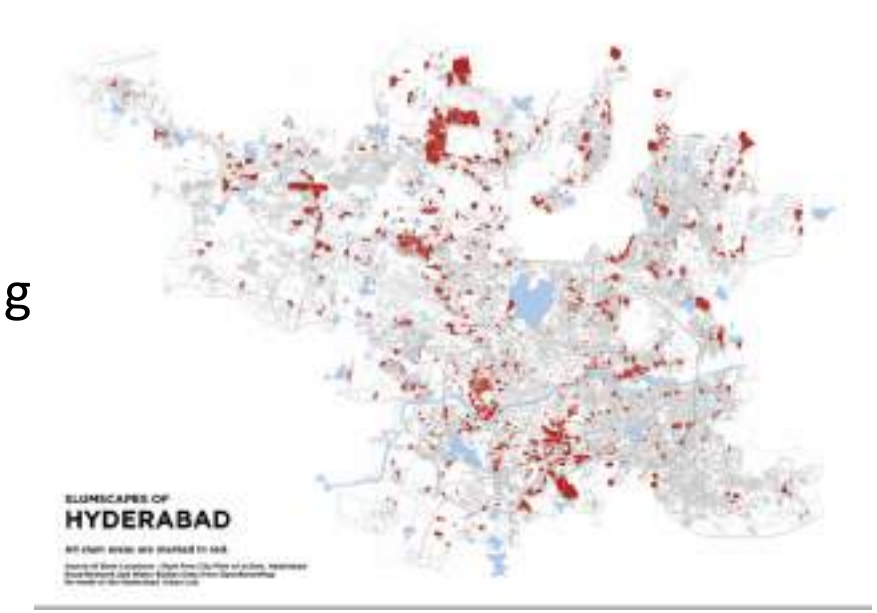
Strategic Open Data (Social Sensing)

Society (Hackable City)

- Data Cooperatives
- Research Partnerships
- Communities and Movements



- Example
  - Open Street Mapping
  - Community Water Mapping
  - Academic and research collaboratives



Thank You!

PRINCETON UNIVERSITY

Connecting multiple sectors...

...across spatial scales with multiple societal outcomes