

Voice for the Voiceless

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• Software Developer

When I started grade school and opened my text book, the first page had the following sentence: “I love Tiananmen in Beijing.” [...] If you have been to Tiananmen, you may notice that the place cannot be “loved.” If you happen to be a college student, you may even be terrified by the place. [...] The reason I mention this example is not just to criticize Tiananmen. It is to make my point, that our education about “love” was off since its very beginning. They have never explained what is “love.” In this example, their motivation is to create a psychology of worshiping the people who are in power. They also expanded such logic to other

1989: Tiananmen Before Internet (BI)



4 May 2005 @ Hong Kong University

Orange Revolution

- ① Centered in Kiev, Ukraine
- ① Nov 2004 - Jan 2005
- ① Texting and Internet were critical to the success of the popular movement



The Internet Evolution

- cnn.com: '95
- Google: '98
- Facebook: '04
- YouTube: '05
- Twitter: '06



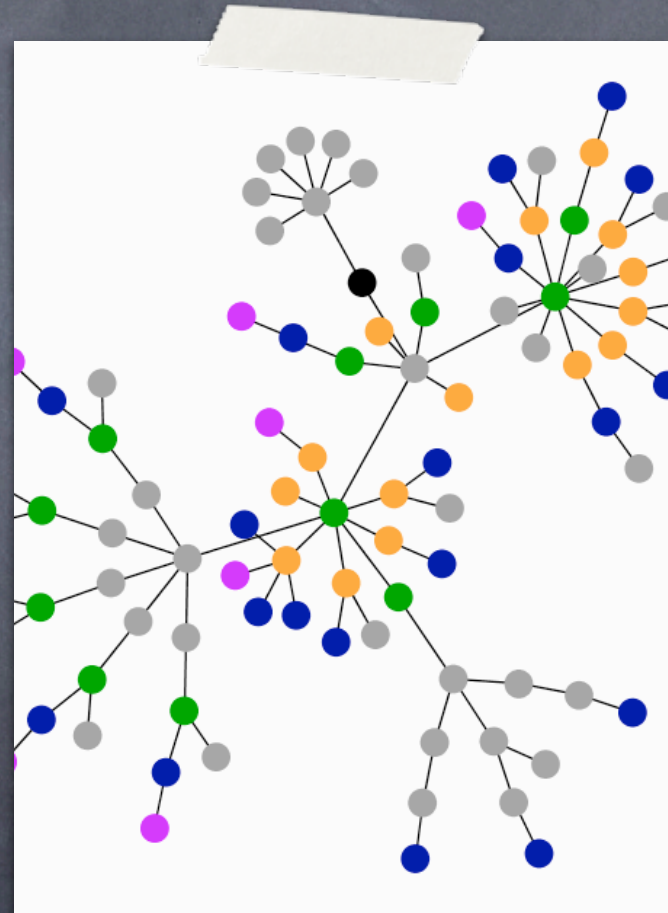
The Twitter Revolution

- Centered in Chisinau, Moldova
- April 2009
- #pman - Piata Marii Adunari Nationale
- From flashmob to 10k people in one morning



Social Graphs

- ◉ Degrees of Separation don't apply to web sites
- ◉ "Social sites" created a new Freedom of Assembly for those with access to technology



Connectivity Graphs

- Internet and mobile phone networks are state-owned or tightly regulated, enabling states to control access
- Proactive: Filtering
- Reactive: Kill Switch



Iran's Green Revolution

- June 2009
- Twitter, Facebook, YouTube
- The government blocked YouTube and filtered facebook
- Cat & Mouse with open proxy servers



Tunisia

- January 2011
- Mohamed Bouazizi died three weeks after setting himself on fire



Tunisia

- He just wanted to sell vegetables from a wheelbarrow, which had been confiscated by the government
- Within ten days of his death, the government fell



The beginning of the Arab Spring

“They called it the jasmine revolt, Sidi Bouzid revolt, Tunisian revolt... but there is only one name that does justice to what is happening in the homeland: Social media revolution.” – Bechir Blagui



Egypt

- ① February 2011
- ① The government shut down the Internet
- ① Five ISPs, but the fiber-optic links all came into one spot: 26 Ramses St, Cairo



It Backfired

"If Egypt taught the world one thing, it is that turning off the Internet isn't a good way to squash protests."

- Robert Scoble



... or maybe it is

Libya

- March 2011
- Government shut off the Internet and evicted the press



Syria

- Ongoing today!
- Government shut off the Internet and evicted the press



Why?

Media

"Whoever controls the media
controls the mind."
- Jim Morrison



A Pattern of Control

- Iran, Libya and Syria evicted journalists, shut off the Internet and phone networks
- The Internet enables Freedom of Assembly
- Repressive regimes cannot last if they cannot suppress truth



A Pattern of Control

- Iran, Libya, Syria and China use Internet content to identify and hunt down the regime's opponents
- Iran supplied Syria with technology to track down satellite phones



Great Firewall of China

- "Golden Shield"
- 162,000,000 Internet users
- 50,000 employees to monitor emails and web content
- Twitter and thousands of other sites blocked



- Deny existence: DNS reports no addresses or incorrect addresses for banned sites
- Close the road: IP packets to addresses of banned sites are blocked completely
- Filter what's left: Requests (URLs) and responses (web content) are scanned and filtered
- Collateral damage: Anything triggering any of the above creates a new temporary ban

Protecting that next great hope

"We -- even we here -- hold the power,
and bear the responsibility. In giving
freedom to the slave, we assure freedom
to the free -- honorable alike in what
we give, and what we preserve. We shall
nobly save, or meanly lose, the last best
hope of earth." - Abraham Lincoln



Requirements & Constraints

Both short & long term

- Solutions have to be deployable instantly, such as in countries with active military action against citizens (Syria, Libya)
- Solutions must work for the long term for citizens of countries with draconian controls



Undetectable & Untraceable

- People should not be putting their lives at risk by communicating
- Communication must be anonymous and locally difficult to trace
- Vocal opponents often grow into future leaders



Resiliency

- ⑥ Most critical when situations are the craziest
- ⑥ Infrastructure will likely be unreliable
- ⑥ Must survive both physical and cyber attacks



Abuse-Limiting

- Goal: Freedom of information and assembly, but not an enabler for crime
- May require limiting sites, content types



Technologies

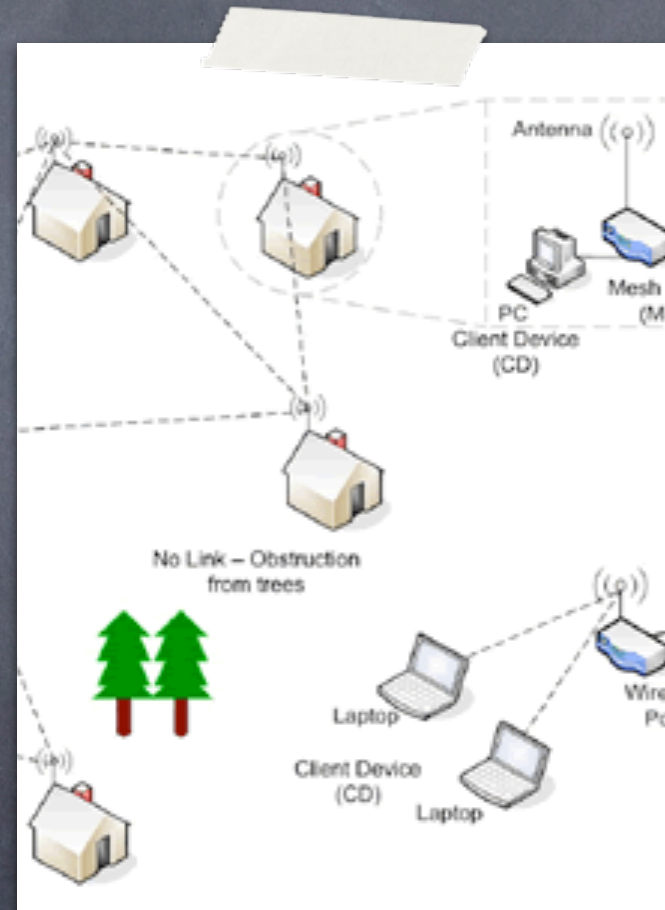
Satellite

- Satellite phones and data connectivity allow “anywhere anytime” deployment
- No dependency on local infrastructure, including reliable power
- Supports micro-cells



Mesh Networks

- Self-organizing wireless infrastructure
- Utilizes any/all routes to the Internet; complements satellite
- Could easily be built into every device (wireless routers, notebooks and phones!)



Tunneling

- Existing technology, but easily blocked in the long term
- Use the public web as a carrier wave, so blocking anything means blocking everything
- Encode traffic in images if secure connection is unavailable



Existing Infrastructure

- For short-term crisis scenarios
- Re-use existing telco infrastructure
- Viral repurposing
- Emergency mode?
- Likely requires state sanctioning



Remember

Liu Xiaobo

Imprisoned, most recently for
Charter 08

<http://www.charter08.com/>



Ai Wei Wei

Artist, twitterer.
Imprisoned during the recent
crackdown on pro-democracy
movements in China.



Anonymous

One person can make a difference.



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