

Un-governing the Internet.

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This talk is about de-politicisation through technology!

- Unfortunately (alas) my Spanish is insufficient,
- So I am presenting in English...
- I know that there is language governance in some countries in Europe
😊

First, let's define "governance"

Political Science Definition: "Governance is the sum of the many ways individuals and institutions, public and private, manage their common affairs. It is the continuing process through which conflicting or diverse interests may be accommodated and cooperative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions either have agreed to or perceive to be their interest."

My definition: Political, *non-neutral* - possibly admits of *arbitrary* decisions, e.g. price or customer price or performance *discrimination* (not differentiation)

There's a lot of Internet Governance

- But not on the expensive bits
 - Like connectivity/capacity/traffic
 - Like Content
 - Like Equipment vendors
 - Self-Organisation seems to work for them!
- Why is there so much governance?
 - On things that shouldn't really matter much
 - Such as...

Entities that are governed and who governs them (roughly)

1. Address Space
 1. Regional Internet Registries
2. Name Space
 1. Internet Corp. for Assigned Names&Numbers
 2. Verisign, alt root mad people
3. Protocol Space
 1. IAB/IESG/IETF (+IEEE and ITU+)
4. Service Space
 1. FCC/Ofcom/Regulatory Bodies + Market

History, Philosophy & Economics

- (D)ARPA funded BBN (and others) to build the ARPANET (and SATNET and Packet Radio Net) from 1973-1981
- From 1981-1992, the NSF (and other agencies- e.g. NASA) built regional nets
- In a star (they were EGP Stubs off the ARPA&NSFNet core).
- In 1992, the divestment (privatization) of the Internet was achieved rapidly
 - BGP promotes innovation in ISP relationships (ignoring protocol problems, it allows emergent interconnect policies)
 - (Actually, creativity in cellular business relationships also very succesful in promoting innovation in net layer)
- But not of the identifier spaces
 - (Note: creativity in use of identifiers (sim/location) in cellular also not very good ☹)

Conflating Research, Engineering, Operations

- Due to the strong continued rapid development of technology
 - Both by industry and researchers
- The IETF/IESG/IAB had a role...
 - ...and the **IANA** linked from that in the identifier space
 - ...including protocol identifiers
 - ...and operational service object identifiers

IANA & Jon Postel (& ISI/USC)

- The system worked well while dominated by researchers
- Remember in 1992, divestiture was still largely into *regionals*, and even the first commercial ISPs were founded often by academics
- Remember in 1992, we only just saw the first web server and browser.
- We all trusted IANA == Jon Postel
 - As he was one of us (Internet Assigned Number Authority)
 - You can tell, since he allowed April 1st RFCs
 - And chose "real" RFC numbers wittily (e.g. rfc1984)

Post Web Commercial Realities

- From 1992 to 1999, most growth in sites/content of true value
 - Online shopping initially key - note also the non imposition of state taxes on internet shopping encouraged things in the USA
- But also just plain corporate presence/adverts:
 - search engine + click through
- Note since 2001 much of the growth has been in services of value:
 - e.g. P2P, VOIP, social nets, internet games etc
 - As much in unregulated content service (piracy but also legal content) as in application innovations

Could we privatize the identifier spaces?

1. Address Space

1. We may need to (scarcity of IPv4)

2. Name Space

1. We can do this technically:
2. Separate directory (LDAP or Search result are attributed)
+ location independent name

3. Protocol Space

1. Not clear we need to - no real resistance to ok ideas -
2. multiple protocols are less expensive than in the past
3. Aside from management complexity/cost

4. Service Space

1. Is already an aggressively competitive market (in Europe and Asia even if less so in US).
2. C.f. Ofcomm Neutrality report 2007

Market in IPv4 Addresses

- Could we run a dynamic online market in IPv4 addresses
- Start with auction (like spectrum)
- Require "capable" bidders
- Use revenue to fund upgrade to IPv6?
 - (ideally with innovations like location/identity split)
 - Think: Carbon Tax but with *Carbon Trading*
 - *C.f. spectrum trading*
- Note scarcity in market might lead to run on the address bank and hoarding
 - But run on price would promote innovation
 - Note ARIN, RIPE, APNIC putting in systems to trade blocks (though not market) over next year.

Multiple parallel name spaces

- The Internet is a bit simplistic
 - For example, you only have 1 route from a to b at any time
 - And you can't have two sites called "Apple.com"
 - Even though on an apple computer you can have two files called the same thing
- Solution is to attribute named objects
 - This is a feature of X.500 Directories
 - And the results from search engines
 - And of multi-lingual support too
- A simplistic hierarchy with a single root doesn't cut it - c.f. Fire, Women and Dangerous Things
 - Some doubts about attributes in past - typically due to immature implementations

Threats & Policing

- Of course, this is not without problems
 - Name space squatting
 - Address space theft
- So we need police
- But if virtual objects are already the subject of economies,
- Then normal property law applies
 - Note of course property law is governance
- Though you need the right type of property definition
 - Why shouldn't objects in my home and SL and in the DNS be treated the same?

Address Space: Meta-DHCP

- DHCP server in the sky
- Connected to stock market.
- Transactional support for atomic buying
- All existing technology
- C.f. multicast address assignment mechanisms in past (never deployed though ☹)

Multiple Name Spaces

- Already have organisational registries in market (company name, trademark etc)
 - Simply attribute names properly (so searches can distinguish)
 - Then the pressure on DNS names goes away (users don't care if
- **Apple Computer** maps to apple-computer.com and **Apple Records** maps to apple-records.co.uk
 - Since *search* results are all they see and click on
- And DNS is now just a technical component free to do better rotaries and dynamics and security

Design not *for*, but to *avoid*, Tussel

- The evolution of the protocol, connectivity and service space was and is highly innovative
 - The net self balances on multiple time scales (congestion control, TE, provisioning)
 - The net routes around problems (c.f. accidental blackholing of youtube by Pakistani ISP)
- The evolution in name and address spaces has been restrictive and backwards looking
 - I assert this is due to excess governance (in my definition, not pol sci 😊)
 - I've asked a few folks with large blocks if they'd sell - yes sure...they said
- We need more neutrality

Summary and Outlook

- (In England, we might talk about the weather and say that the outlook is summery☺)
- But in Internet Governance, the problem is that the lawyers and governators have taken over
 - the lunatics are running the asylum
 - And technical people talk about "tussel spaces" instead of solving the problem

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- References
 - Wikipedia
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