Fine-Grained Censorship Mapping - Information Sources, Legality and Ethics

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- China's "Golden Shield" is the classic example.
  - Saudi Arabia presents perhaps the most extreme filtering regime. (OpenNet Initiative)
- Many different technologies; many different filtering targets; many different rationales and justifications.

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Limitations

- There are limitations to filtering technologies.
- A rough tradeoff between subtlety of approach and computational requirements.
  - In general, more sophisticated methods require greater computational resources.
  - At a national scale, these can become severe.
- Centralization of filtering can cause a variety of problems, as seen with the CleanFeed filter implemented by BT in the UK.
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- We can already observe location-specific choices of filtering in response to local events.
- We therefore expect to see differences in filtering across a state, rather than homogeneous national filtering.
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  - We may also expect organizations to have one filtering regime, even across a state.
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- Two major existing projects examine filtering:
  - HERDICT: crowdsources filtering information from volunteer web users.
  - OpenNet Initiative: have used a variety of sources, including volunteers and direct investigation as well as direct technical means, to examine filtering around the world.
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  - Tor exit nodes, and similar services such as psiphon.
  - VPN services or remote shells.
  - Creatively-used public services – webservers, IRC, bittorrent...
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  - China seems to offer no exit nodes. Much of Africa and the Middle East is the same.
  - No-one wants to run Tor-like services in highly filtered areas!
- VPN services are also rare, and usually paid. Remote shells are even more so.
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A variety of legal and ethical questions have already been raised in this talk.

- Is it legal to access blocked websites?
- Is it ethical to ask someone else to access blocked websites?
  - Questions of consent for automated tools or websites.
- Is it legal to creatively abuse a public service? (For the specific purpose of detecting or, potentially, bypassing filtering?)
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- Some sites are blocked for serious legal or societal reasons:
  - Pornography, homosexuality, *lèse majesté*, insult to religion
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- Retrieved a list of 278 DNS servers across China from the APNIC WHOIS database.
- Selected the top 80 reported blocked websites according to HERDICT.
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Early Observations

Results have not yet been analysed, but some initial observations:

- Many blocked sites are listed an non-existent in the majority of DNS servers tested.
- Several servers return no result for most blocked sites, but occasionally redirect requests to other DNS servers before doing so.
  - One server in Zhongxin returns a normal response for `baidu.com.cn`, but redirects to a Beijing server when asked about `wujie.net`, which then returns no result.

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- Many blocked sites are listed an non-existent in the majority of DNS servers tested.
- Several servers return no result for most blocked sites, but occasionally redirect requests to other DNS servers before doing so.
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- Evidence of lying on behalf of a number of servers:
  - `wujie.net` is redirected to a number of IPs, but 161 servers that returned a response directed to only 9 separate IPs – none of which appear to offer services, and are apparently unrelated to `wujie.net`.
  - Similar results for `erights.net`
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