

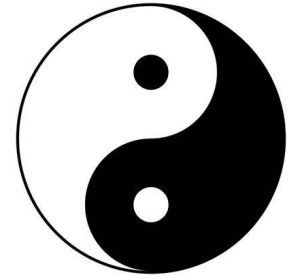
Middleware Agents for Distributed Control of Internet Services Social Media ...and AI

Richard Reisman at [Public Knowledge Emerging Tech 2024](#) (6/14)

QR1: You have been strategizing distributed systems technology for about half a century – for companies of all sizes, and on tech policy. Can you give a high-level perspective?

Systems Thinking and the Tao of Distribution

- **Tao:** Opposites blend & contain one another - non-binary, both/and
 - Yin/yang, love/strife, male/female, ...
 - Systems: centralized/decentralized ⇒ distributed
 - Chaos/tyranny ⇒ democracy ⇒ progress
- **From mainframes to smartphones and beyond**
 - 1970s: Centralized mainframes v. “decentralized” minis
 - Rise of “distributed” systems – hybrids, not all of either
 - minis ⇒ PCs ⇒ wearables; closed networks ⇒ internet, ...
 - E2E/P2P overlaid by application-specific hierarchies
- **Distribution:**
 - Flexible: Many centers or none, depending on function+context
 - Supports mix of top-down + bottom up control
 - Federation (/confederation), subsidiarity
 - Dimensions: hardware/software, data, function, services, control
- **Interoperability** – protocols, middleware, APIs, blockchain/crypto, ...
(Mary, Rachel)
- **Development:** Industry-specific IT infrastructures evolving over decades:
 - Finance, commerce, advertising, manufacturing, logistics, travel,...
 - Many layers/dimensions, mixtures of open and closed
- **Directions**
 - No one-size fits all solution
 - Increasingly open, flexible, extensible interconnection
 - Evolve “right” distribution in each dimension, for each context & time
 - But... wrong turn, “original sin”
 - Increasing policy support for open competition ...maybe
 - New “middleware” layers for user agency, ease of use, and openness...
 - Correction, rebirth

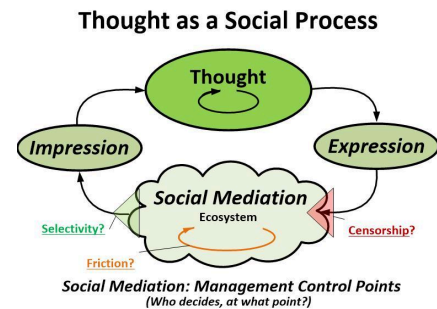


QR2: You have been increasingly focused on the failings of centralized social media and how distributed solutions promise to cut through some of the polarizing dilemmas of speech, content moderation, freedom, and democracy. Why is middleware gaining support?

Social Media Middleware

- **Problem:** Centralizing control of speech - intractable
 - Moderation/curation – feeds/recomm
 - Too diverse for simple central decisions
 - Global walled gardens
 - Platform law / Government law (1A)
 - Lose context/semipermeability/translucence
- **Thought as a Social Process** – cyclic
 - Freedom of expression/speech
 - Current focus = removal/censorship
 - +++Freedom of *impression*/listening
 - Not “freedom of reach”
 - +++Social mediation ecosystem
 - Mediates impression – judgments, values, norms
 - Fools free to rant but few listen ⇒ limited harm (except illegal content)
- **Media:** “We shape our tools, and thereafter our tools shape us”
- **Middleware** – a tool – enabling more natural, organic solutions
 - In the middle – between user and network – open market of service agent layers
 - User agency/choice – freedom of impression – delegation – Section 230:

“It is the policy of the United States... to encourage the development of technologies which maximize user control over what information is received by individuals... who use the Internet...”
 - “Bicycles for the mind” (Jobs)
 - “Infomediaries” (Hagel) - intermediaries, user agents, make service work for you
 - E2E (end-to-end) principle
 - Simple: browser as user agent, email “clients” to servers
 - Deeper interop: protocols, middleware, APIs,...
 - Enabling “delegation” to agent services – [ACCESS Act](#), [DMA](#), [NYS S6686](#)
- **Notable projects** *[split here???*
 - Mastodon fediverse (ActivityPub protocol) – little middleware, community-center
 - Threads federation – little so far – hybrid
 - Pioneering middleware – open market: Bluesky (AT Proto), Nostr, Gobo
 - Algorithmic choice (curation/ranking),
 - Composable moderation
 - Blockchain/crypto experiments, still nascent
 - Analogous to App Store – huge value creation + huge generativity,
- **Current directions** – Bluesky, Nostr and beyond
 - Attention (feeds/recommenders) – selection, composing/orchestrating, steering, lenses
 - Also ad-attention & data, privacy, other custom



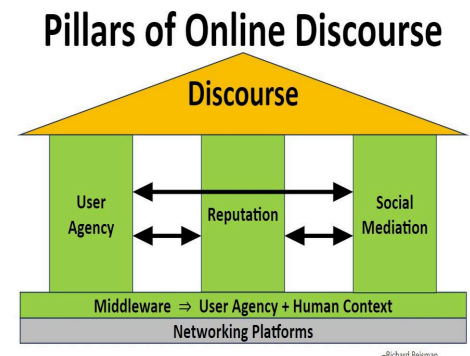
QR3: You have recently been proposing a broadened view of the scope of social media middleware. The goal is to restore the distributed ecosystems of social mediation that

*traditionally nudged free speech toward the middle ground between anarchy and tyranny.
Can you explain what that is?*

Broadening Social Media Middleware

3 Pillars of human discourse

- **Agency** - individual users - emerging now
- **Social Mediation Ecosystem** - forgotten, decaying
 - Agency supports associations
Coffee shops/taverns, social/civic, press, academia, churches, unions, workplaces, ...
 - Associations mediate/guide impression
- **Reputation/Trust** - primitive now, but guides other 2
 - Who and what is worth listening to – how humans interact
 - Basic: Reddit
 - Advanced: PageRank/TrustRank – balanced collective authority
- **Urgency** - propaganda, polarization, extremism, cults
 - Need to share consensus - “Social glue”
 - Chaos/tyranny ...or democracy+progress



QR4: AI is the elephant in the room... How does what you have been discussing relate?

AI as parallel, intertwined with Social Media

- The parallels:
 - AI within social media – to create content, support mediation, improve algorithms
 - Social media within AI – as data corpuses become increasingly dynamic, realtime, and reflexive - UGC, bias, hallucination
- Foundation Models (LLMs) – centralized, huge data centers, institutional control
⇒ new oligarchies that shape society?
- Personal AI agents
 - SLMs – eg: Apple (on-device SLM, interop with central LLMs)
Parallel case for middleware to manage connection, privacy, ...
 - True Personal AI agents
 - Agenticity - capability
 - Agentiality - relationship (faithful)
 - “Have your AI call my AI”

Selected Readings from Reisman

- [A New, Broader, More Fundamental Case for Social Media Agent "Middleware"](#)
(discussion draft/deck, 11/9/23+revs)
- [New Logics for Governing Human Discourse in the Online Era](#)

- (Centre for International Governance Innovation, 4/25/24)
- [We Can Protect Freedom of Thought by Deciding What We Feed Our Brains](#)
(Centre for International Governance Innovation, 1/17/24)
- [From Freedom of Speech and Reach to Freedom of Expression and Impression](#)
(Tech Policy Press, 2/14/23)
- [Understanding Social Media: An Increasingly Reflexive Extension of Humanity](#)
(Tech Policy Press, 4/27/22)
- [The Internet Beyond Social Media Thought-Robber Barons](#)
(Tech Policy Press, 4/22/21)
- +++ More at SmartlyIntertwined.com

Other key background on middleware:

- [Protocols, Not Platforms: A Technological Approach to Free Speech](#)
- [Report of the Working Group on Platform Scale](#)

Richard Reisman is a Nonresident Senior Fellow at the [Foundation for American Innovation](#), Contributing Author to the Centre for International Governance Innovation's [Freedom of Thought Project](#), and frequent contributor to [Tech Policy Press](#). He blogs on human-centered digital services and related tech policy at SmartlyIntertwined.com, and his work was cited in an [FTC Report to Congress](#) on Combating Online Harms.

His book, [FairPay: Adaptively Win-Win Customer Relationships](#), and related blog, FairPayZone.com, introduce new customer-value-first revenue strategies for digital services that were described in [Harvard Business Review](#). He has managed and consulted for businesses of all sizes, developed pioneering online services, and holds over 50 media-tech patents licensed by over 200 companies to serve billions of users (now all in public domain).