

## WHATEVER HAPPENED TO THE SPECTRUM DEBATE?

Gerald R. Faulhaber

Spectrum Policy: From the Foundations to the Future  
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## Why Is Spectrum an Issue?

- Demands for spectrum (wireless, WiFi, public safety, etc.) outstrip supply
  - In the past, technology has increased supply faster than demand
- Since 1927, spectrum allocated politically/bureaucratically by FCC
  - Control of radio interference; licensing regime
- Result: tremendously inefficient allocation
  - Most allocated spectrum unused most of the time, but unavailable, cannot be recaptured
  - Examples: UHF TV, ITFS, military

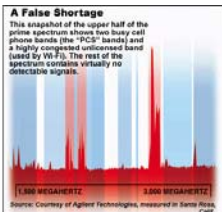
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## The Consensus

- General agreement present GOSPLAN system is untenable; false shortage



*Unless you happen to hold a license today!*

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## Coase Solution (1959)

- Establish a market in spectrum licenses, remove unnecessary restrictions and let licensees buy, sell, lease, trade, ...
  - Licenses will move to highest valued use
  - Inefficient uses will gradually disappear
  - False shortages (e.g., cellular) will gradually disappear
  - Scarcity will be replaced by abundance, price of spectrum and spectrum-based services will fall, more competition

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## Commons Solution (1998)

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- But new technologies are on the horizon
  - Cognitive radios, ultrawideband, mesh networks
  - Allow interference to be solved using hardware rather than exclusive licensing
  - Spectrum need not be allocated; it can be managed as a commons resource, open access
    - Clever devices will assure that interference won't occur
      - Analogy: ships in open ocean avoid collision using protocols; no need to "own" a piece of the ocean. In their own self-interest
    - Legal scholars and engineer/visionaries favor this approach
  - Same scholars that object to copyright! In both spectrum and IP, the model is openness rather than exclusive rights.

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## The Debate is Joined - 2001

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- Establishing spectrum auctions suggested we were well on the way to establishing property rights, until Lessig, Benkler, and most of the engineering profession declared *jihad* against property
  - Those at this table (plus a few lawyers) defended the Coasian view
  - FCC established Spectrum Policy Task Force

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## Results of Debate?

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- Core issue is overarching legal regime for spectrum
  - Command and control? *Yuck!*
  - Property Rights? (*including both private and public commons*)
  - Complete Commons? (*totally infeasible*)
  - Mixed commons/property rights? (*regulation intensive*)
- So what do we now have? **Yuck!**

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## What happened?

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- Spectrum Policy Task Force fizzled out.
- FCC turned lots of spectrum into commons, none of which has ever been used.
- Some small increase in flexible use and spectrum trading
- But command and control regulation remains with us big time. We have chosen the YUCK option by default. **Why?**

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## C&C: Social Engineering

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- Congress/FCC attempt to use the power of auctions to social engineer
  - DE auctions: discounts for blacks, women, Native Americans
  - Auctions for little guys: NextWave debacle
  - Auctions for public safety: recent 700 Mhz
- All are attempts to make the market serve social purposes, and all have ended in either a disaster or complete silliness
  - Huge Exception: initial limitation on each bidder to 40 Mhz in each market; ensured at least 4 players.

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## 700 Mhz Public Safety Radio

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- Sweet spectrum; allocation of D block to public safety aimed at solving a serious problem
  - Solution: entice private sector to build national PS network to PS specs, then operate as an underlay
    - Achieve full interoperability nationwide, 99.9% geographic coverage (vs. cell: ~90%), and let emergency calls preempt your commercial traffic.
    - And pay at least \$1.3 billion for the privilege
  - And they thought this would work!
  - Congress mandated this, and now blames FCC for its failure

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## Is There Any Hope?

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- Unless and until Congress is willing to cede its authority to interfere for political purposes in spectrum policy, I see no hope for a more sensible regime to emerge
  - Neither property rights advocates nor commons advocates will live to see Command and Control die the death it so richly deserves

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