FT.com
FINANCIAL TIMES
New economy policy forum

Innovation depends on property rights

March 19, 2003

By Thomas Hazlett

Kudos to Eli Noam for provoking this debate. It is needed: the airwaves are over-protected by regulation, stifling new technologies and abundant competitive opportunities. Opening the fortress to productive enterprise would unlock enormous social value.

This reality precedes licence auctions by over 75 years. When, in 1935, the Federal Communications Commission blocked Edwin Howard Armstrong's exciting FM innovation at the behest of AM radio station owners, the system was already profoundly anti-consumer. Licence auctions, initiated in the US in 1994, removed some inefficiencies. But the fundamental problem is that blocks of spectrum are still allocated by regulators á la Gosplan. Competitive bidding in the US assigns licences, but government dictates how frequencies may be utilised.

Auctions do not necessarily degenerate into monopolistic revenue extraction. Countries with liberal spectrum regimes, such as Australia and Guatemala, have cheap prices for wireless licences, healthy entry and robust sector growth. The failure of other countries to match their success cannot be attributed to competitive bidding.

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The user-fee system advocated by Prof Noam relies upon an inordinately complex auction process, utilising technology not yet invented to ration airwaves via rules not quite clear. It would automatically perpetuate government stewardship, as decisions made to "open" bands via user fees, permissible transmission standards (and power levels), and the format in which rights are sliced and diced will necessarily favour some technologies (and services) at the expense of others. Prof Noam's discussion of emerging software-defined radio systems is a tip-off: many sharing systems already exist, but implementing his approach would prompt regulators to pick and choose among them.

Lawrence Lessig's open-access proposal underprices airwave rights, squandering them. Implicitly, such approaches acknowledge that scarcity is an issue - this is why proposals for a 'spectrum commons' inevitably come with calls for 'etiquettes' or 'protocols' to limit interference. These vest de facto ownership with government regulators, constraining rights commonly held.

The internet example raised by Prof Lessig actually proves the point. When government technologists were running things, interconnection between commercial and government-owned networks was largely precluded. The "network of networks" was eventually prised open by commercial networks anxious to expand the scale and scope of what was possible. The great contribution of the technologists was a useful protocol linking separately owned and operated data systems. Today, the internet delivers packets over networks built by enterprises that charge users for access.

The good news is that spectrum allocation schemes remarkably similar to those championed by Profs Noam and Lessig are possible via what Richard Epstein suggests: privately owned spectrum. With radio waves controlled by competitive players, profit incentives force band managers to optimise

frequency use. Giving this system full run makes spectrum access rights flexible, plentiful and cheap. Technologies now blocked by rigid rules can pay for bandwidth, bringing new services to market and spurring investment to discover yet more advanced systems.

A property regime makes viable the sharing solutions that excite alternative visions. CDMA, the world's most successful spectrum-sharing application, has been deployed virtually everywhere 2G and 3G wireless phone operators have been given the freedom (i.e. property rights) to configure bandwidth and make technology selections. Cable systems provide privately owned spectrum in a tube, extending high-speed internet access to nearly 12 million US households via shared local area networks.

A promising new wireless broadband system by ArrayComm has begun to operate all across Australia, using 5 MHz (less than allocated to one TV station) to provide 1 Mbps internet access to users who enjoy mobility and ubiquity - coverage far beyond tiny "hotspots". ArrayComm's technology intensely re-uses frequencies to pump up bandwidth, but is best delivered on spectrum not used by others. Australia's liberal regime allowed this wireless entrant quick and easy market access: a nationwide licence cost just $5 million.

Such innovations ought to grow and prosper, subject to competitive challenge. Granting consumers the right to choose necessarily entails allowing rival networks the right to supply. Expanding property rights to radio spectrum is the efficient path to that end, and to a cornucopia of wireless 'killer apps'.

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