



Ronald Coase and the radio spectrum

December 16, 2009

By Thomas Hazlett

At the University of Chicago recently, an illustrious group of scholars convened to celebrate the life and writings of Nobel Laureate Ronald Coase. It was precisely fifty years ago that Coase, a Brit-turned-American economist who had spent a decade studying the British Broadcasting Corporation and the Federal Communications Commission, wrote an essay that revolutionized the way policy makers think about radio waves and other natural resources.

Communications policy experts unanimously believed that the use of radio spectrum required central planning else "ethereal bedlam" would result. Coase saw the potential for "tragedy of the commons," but also that the usage restrictions put in place by government might be greatly improved upon if firms were given permission to modify them. Competitive market forces, unleashed, would discover the most productive ways to supply wireless services. He saw the policy task as one of defining efficient property rights, not as fixing a "market failure."

Even economists thought he was wrong. The editors of the *Journal of Law & Economics* published his 1959 article, "The Federal Communications Commission," thinking it confused about "externalities." Coase, invited to explain his "very interesting error," then published "The Problem of Social Cost" in the *JLE* in 1960. That paper - the most cited in the history of the social sciences - convinced the world.

But policy makers were slow to update. Indeed, they fought back, protecting their traditional regulatory turf. When Coase was commissioned by the Rand Corporation to craft a spectrum property system in 1962, the paper was suppressed when referees warned the think tank that violent reactions from the government and industry would shrink funding. One said, "I know of no country on the face of the globe - except for a few corrupt Latin American dictatorships - where the 'sale' of the spectrum could even be seriously proposed." In 1977, when the idea of license auctions was raised at the FCC, two members of the Commission attacked the idea as irrelevant, with odds of adoption about as likely "as those on the Easter Bunny in the Preakness."

They should have bet on the Bunny. Wireless licenses were auctioned in 1989 in New Zealand, 1991 in India, and 1994 in the US. Competitive bidding is now a standard policy tool in more than 30 countries. Over \$52bn has been raised in America, more than twice that elsewhere.

But that is barely the tip of the Coasian iceberg. The far more important reforms extend from a sharp liberalisation of the rights granted wireless licensees. Traditional broadcasting licenses specify exactly what firms may do, fixing services, applications, technologies, and business models. Mobile phone and other modern licenses, however, convey airwave rights tantamount to spectrum ownership. They define band contours and then delegate choices about usage to market players.

The result has been spectacularly successful. Blessed with exclusive control with slices of the spectrum resource, mobile carriers have invested aggressively in wireless networks, infrastructure making airwaves far more valuable. The incentives of private property and the constraints of competitive market forces push operators to organize complex transactions, ushering in generations of new technology and thousands of innovative applications. Analog gives way to digital. Voice gives way to data. Cell-phones give way to smart phones. Carrier

platforms give way to "app stores." This maelstrom of rivalry leaves the static world of top-down administrative allocation in the dust. Compare the changes in the off-air TV broadcasting market over the past 50 years to the changes in mobile handset market over the past 50 months and you'll begin to glimpse it.

Alas, many of our current communications policy experts have yet to. Hence, the plea from Vint Cerf, Google's Internet Evangelist, to abandon Coase's spectrum property vision. "Technology is at a point," he argues, "where we should allow multiple parties to occupy the same spectral space."

But Cerf, on the cutting edge of science, has yet to catch up with the insight of 1959. The question is not whether "multiple parties occupy the same spectral space," but how we organize the sharing arrangements. Government does set aside unlicensed bands, but they have proven ineffective for the most valued wireless applications. In local uses where they attach to phone or cable networks built using privately owned "spectrum in a tube," wi-fi radios and cordless phones work. But the complexity of these plug-ins pales in comparison to the wide-area networks customers deem most productive.

To provide those services, mobile carriers stack millions of "multiple parties" into the same spaces - 4.6bn subscribers at last global count. The most intensively shared wireless bandwidth is found exactly here, in spaces allocated to what regulators call "exclusive use" spectrum. That, too, is a most interesting error. But one, unlike Coase's, we should aspire to correct.

Thomas Hazlett is Professor of Law & Economics at George Mason University. Read his paper, written with David Porter & Vernon Smith, Radio Spectrum and the Disruptive Clarity of Ronald Coase.

Copyright The Financial Times Ltd. All rights reserved. Please do not cut and paste FT articles and redistribute by email or post to the web.