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"The Internet, Regulation, the Private Sector and Public Safety"

Concluding Remarks
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By

KENNETH NEIL CUKIER
Technology and Telecoms Correspondent
The Economist

Good afternoon. Let me first thank Tom Bøe and Pia Hammer Bloch of the ERO for organizing such a wonderful event, and to thank all of you for the chance to participate in the CEPT community over the past two days. You have a very special community here, and I am grateful that I could be a part of it.

My remarks are supposed to be a summary of the event. But you have been here just as much as I -- so instead of reiterating what you have already heard, I would rather use this moment to offer some thoughts on a topic I care deeply about. (Clearly I cannot talk about regulation, since it is something you know far more about than I -- and besides, as we all know, journalists always get these things wrong!)

Rather, what I would like to discuss is: what makes the Internet distinctive, what this means for trends in regulation and governance, and how this affects the interplay between telecommunications and public safety.

Technology and Law

Technology changes the landscape of life, the environment of living. Technical progress also influences law and policy. Often, new technologies change things from a situation of scarcity to abundance. We are familiar with this in information technology and telecoms. For example, transistors that make up computer processors and memory have become so plentiful that we probably use less than 20% of the potential power of a PC; the rest sits idle. We "waste" transistors. Or, in terms of bandwidth capacity, we all can see the incredible jump in the past decade, from 14.4K and 28.8K, to 56K speed modems. We may have 1 megabit per second broadband at home, and if we were in Japan we might have 100MB. Computing and communications have fundamentally changed, going from scarcity to abundance.

Think now about information itself. The first relevant technical change was writing on papyrus rather than stone. Then, it was the invention of the Gutenberg press. The printing press enabled the

transmission of knowledge far wider at less cost than before. It led to an increase in literacy. (It later led to the great age of reformation and revolution that pushed aside the power of the Church and monarchies.) Yet what was most important was not just the ability to read written works -- but that it was a tool for the creation of more knowledge. The point about the printing press was that it wasn't about *printing*, but *writing* -- by the masses.

The printing press also led to changes in law. Because of it, society needed mechanisms to protect free speech, free expression, a free press. This was an Enlightenment view. Note that laws guaranteeing free speech didn't existing prior to the printing press. In a way, they didn't need to. The ability of ideas impact the world was limited. People like Jesus of Nazareth or Galileo were outliers (and we know how they ended up!). Intellectual dissent didn't require institutional protection because there was so little of it. Consider how the spread of knowledge was handled in the first information revolution here in Europe -- in Athens in 500 BC, as Greek was going from a spoken to a written language. Socrates was accused of corrupting the youth in the agora and his fate was to drink hemlock (though the day after he died, the citizens erected a statue in his honor).

What might the regulatory and policy process do in our own day when it is shocked by the sudden abundance of new information? Technology creates a new environment, and forces us to devise a new legal infrastructure to support it. Thus with the Internet, what new laws and policies will be needed that we can barely see today? What is tomorrow's equivalent of "free press" laws?

We can see one early example of where the rise of the Net is creating frictions with existing laws: in the area of intellectual property rights. The rise of peer-to-peer file-sharing is a symptom of the new ease with which people can reproduce material and share, creating problems with laws designed for an earlier era of technology, and technical presumptions, when publishing was very costly rather than very inexpensive.

We would do well to ask what new regulatory policies may be needed to guide and support the Internet, realizing that it makes information even easier to create and share -- that it is going from scarcity to abundance. Google and other search engines are emblematic of the change: we have too much information. The problem we confront often is not that information does not exist, but of finding it. Think about it: when you don't bother clicking on the 4 millionth search result that is returned after a query, it suggests that we now "waste" information like our PC wastes transistors.

The Internet's Qualities

However, what makes the Internet distinct is not just that it allows people to create information, but something else: the ability to form groups and collaborate. A decade ago, when the Internet first became a mass medium, people used to talk about how it led to "individual empowerment." And it does. But the Internet, and how it is used, is actually changing -- it is not static -- and is leading to more than just that.

Along with empowering individuals, the Internet is catalyzing the power of groups and collaboration. This helps explain the great interest in social-networking sites like MySpace or the idea of "Web 2.0" services, as described yesterday by Chris Marsden of RAND Europe. Also, user-generated content like YouTube or "mash-ups," where people take many discreet Web services and meld them together to create something new. And if you don't know what terms like "Web 2.0" or "mash-ups" refer to, you can look it up on Google -- and get reply in 6/10ths of a second, for free. That is the new world we're in.

It is a world where individuals, "empowered" at the edges or end-points, act as autonomous agents. They are decentralized, self-organizing, and form ad hoc groups and collaborate. There are open interactions, as befits an open network, with an end-to-end character. And when you consider how these individuals pursue their rational self-interest in a self-organizing way, it starts to look very similar to a market; to the "invisible hand." And the Internet is the embodiment of the private sector. When I say "market" I don't mean simply a financial one but one where information is exchanged and signals are set, though not necessarily price signals per se. And by "private sector" I do not mean "business" but simply non-governmental.

Since the 1980s, many governments tried to create a "national" or "global" "information infrastructure." France Telecom championed the Minitel, where communications and content was centralized. But none of the initiatives could come close to what happens by surprise: the rise of the Internet. It was not handed down by government (although it was initially funded by the US. Defense Department), but emerged as private entities chose to adopt the open protocol standard and connect in a bottom-up way, from universities to companies to individuals. It was for this reason that in 1996 *The Economist* called the Internet "The Accidental Superhighway."

And once the platform existed for interconnections among people to take place, new creativity flourished. People were not simply accessing information -- they were creating it. Consider the decentralized actions of individual users in aggregate: 600 billion Web pages by one estimate;1.4 billion auctions completed; there are over 34 million blog sites in China alone.

The notion that the Internet achieves the ideals of the marketplace and the private sector does not simply refer to business -- it may even represent the exact opposite. For example: Wikipedia. It has tremendous utility; it is the result of enormous economic production. Yet it was created by volunteers who worked in a fully self-organized way. And the cost of using it is free. Ironically in this respect, Wikipedia -- a market for knowledge, created by the private sector -- is perhaps the highest expression of Marxism.

What is the role of regulation in this climate? It is a complex matter because the Internet is a commingling of so many things. We are in a new environment -- in terms of society, and in terms of telecoms policy. It is characterized by individual empowerment, group formations, abundant information and the ability to share it instantaneously to almost anyone at low cost. (For the moment, this is mainly in the developed world, but it is spreading. The fastest growth of mobile phones, for example, is in the developing world.)

It is a universe of decentralized private actions that can be easily aggregated. The phrases that people have used to describe this world are things like the “wisdom of crowds,” the “long tail,” “small pieces loosely joined” and “end-to-end.” But the product of all these attributes of our new networked society leads to this: Innovation. More precisely: innovation by the many, not the few.

Over the past two days at the CEPT conference, we got a taste of some of this innovation as it relates to regulatory policy. Karl Nebbia of the U.S. Dept. of Commerce talked about cognitive radio. Representatives from industry explained how new wireless technologies impact things like hearing aids and automobile safety, to RFID-enabled supply-chains. In a myriad new ways, radio spectrum is being used innovatively. It forces us to reconsider how we treat and assign the spectrum.

And what is most impressive is that once these new wireless systems are in place, it will become the platform for even more innovation in the future. Right now, computers are connected to other computers; the Internet entails people talking to people, and people communicating to machines (such as when I click on a link that goes to a server to download a song). But in the future, it will be things talking to other things. Wireless communications will make connectivity ubiquitous among people and objects, everywhere and all the time.

The result of this cornucopia of communications should be no surprise: user-generated content. We are already witnessing this in the success of the Web, blogs, MySpace, YouTube, and the like. But it will only grow, and surely surprise us how it evolves.

Communications and Public Safety

So far, I’ve shared some thoughts about the Internet and regulation. Here is where I take these themes and explain how they relate to public safety.

As we all know, communications is vital in emergency situations. It is incumbent on regulators to make the right, and not wrong, decisions about the role that communications can play in crises, be it natural disasters or terrorism. To make my point, let me retell the story of communications on 9/11, as well as the bombing of London’s transport system on July 7, 2005, to note the lessons that the events offer.

Think about communications in New York on September 11. Some things are well known. For instance, after the planes struck, phone calls couldn’t get through but email could -- which today seems symbolic of the change in the nature of communications from the PSTN to the Net, ushering in a new era in so many ways. But there are other things that are also known about communications that day, but less appreciated. For example, after the first plane struck the tower, there was a difference between how people responded. The official authorities informed people to stay where they were. But those who had email, mobile phones, BlackBerries and pagers got a different message: get out of the building -- fast.

The result was that those people perished who relied on the formal authorities. Officials made decisions far from the event, or with imperfect information, or following an inflexible, pre-set plan. At the

same time, those who relied on decentralized, personal technologies -- and had greater "situational awareness" -- survived. The implication, according an excellent report by the U.S. National Institute for Standards and Technology entitled "Occupant Behavior, Egress, and Emergency Communications" is unmistakable: access to communications -- and specifically, personal communications among individuals -- is what saved many on that terrible day.

As tragic as 9/11 is, in terms of communications, it represents the good story: many people's lives were spared. On the other hand, the situation in London on July 7, 2005, albeit representing terrorism on a far smaller scale, is more problematic. We know the good things that happened that day: acts of courage and caring. And ordinary people used their mobile phones and the Web to document the situation with images and blogs -- a huge outpouring of user-generated content that was actually used by the mainstream media in its reports, and by the police in their investigation.

But there is another dimension to the story that is less well known, and deserves to be better acknowledged, particularly by regulators. After the four bombs exploded, the mobile networks became saturated as people checked on the safety of loved ones or alerted others to possible dangers. Due to the high traffic volume, many calls could not get through. But something else very worrisome happened: the London City Police that is responsible for the financial district actually ordered that a mobile operator shut down its network to the public. As a result, calls to and from those subscribers were impossible.

I know how terrible this can be personally, because I remember crossing paths with a colleague at *The Economist,* whose eyes were filled with tears as he feared his father might have died -- his journey passed through the Aldgate station, and he was unreachable. Thankfully, it turned out that his father was not on the train that was struck. But it is a reminder that in a crises situation, something as simple as a phone call can reduce panic and help the process of recovery, be it emotional or physical, not just infrastructural.

Sometimes the disjunction between what people can know on their own versus when it comes from big bureaucracies can be comic. For example, on the afternoon of the London bombings, there was a live press conference with London's police, fire and ambulance chiefs. For two hours, the officials reiterate that people should go about their normal life and return home early to avoid the rush hour crush -- even as the television station's "news ticker" below the screen continued to read in all capital letters: "Official announcement: Do not go outside."

Some of the errors of that day have only been slightly brought to light. For instance, a few weeks after the bombings I called mobile operators in Britain as well as Ofcom, the regulator, to inquire as a journalist about what had happened that day, and if operators had actually shut down their networks. The response I got was uniform; they basically said: "Get behind the yellow tape, shut up, and go away." Even a report six months later on mobiles in crisis situations by the GSM Association, the industry's trade group, was devoid of details about the incident because of a lack of cooperation from operators.

Normally, this might have been the end of it, even if it should not be. But the London Assembly, an impotent political body other than power of the pulpit, conducted an investigation that it released this

summer. It showed huge deficiencies in the way that the government and police handled the situation that day, particularly in regards to communications. It documented why and how the mobile operator O2 (formerly BT Cellnet, now owned by Telefonica), closed its network to the public on the improper orders of the City of London Police. It took this step two hours after the bombings happened, and kept it in place for almost five hours later -- which actually hampered the emergency response. To their dishonor, some police officials actually misled the London Assembly about the communications problems on the day, the report documents.

The lesson of these two terrible events, 9/11 and 7/7, should be clear: Let people communicate in times of crises. Regulators must find a way to ensure that telecoms remain open, not disabled -- and certainly not closed to the public. To close it would be very stupid.

Private Action for Public Goals

Our fears should not obscure our common sense. For example, certain tunnels connecting New York City have cell phone coverage, but the systems were temporarily deactivated for fear that terrorists could use mobile phones to set off a bomb. The train bombing in Madrid was triggered by a mobile phone, the logic goes. But this argument misses the reality: the Madrid bomb was triggered by the alarm-clock function of the phone, not a call. Should we ban alarm clocks? Moreover, by the same logic, bombs above ground could be triggered by mobile phones. Besides, all this ignores the obvious point that we live in a world where terrorists are willing to blow themselves up along with their targets: they don't need mobiles to do it.

But the public needs mobile phones – and there is more to gain in terms of public safety by maintaining a communications system. The reality of our age is that we are all first responders. And communications is a vital tool to help, which appears to vastly outweigh the potential harm it might do.

Governments have thought a lot about how they should respond to disasters. But they have paid less consideration to how they should prepare prior to the inevitable crises. The plans try to take into account myriad threats. Yet the most effective way to prepare is to ensure that there is a robust platform for people to protect and assist themselves for any situation. This is what a communications network enables. Access to telecoms is the single-most vital component of emergency prevention, response and recovery. It is the network upon which all other activities rely.

On the other extreme, there is a positive example about how to think about public safety through private action. Consider the case of Wal-Mart and Hurricane Katrina last autumn in America. The retailer employs its own meteorologists, and started tracking the situation when it was still a small tropical storm out at sea. With experience in these situations, and a commercial interest in addressing them, Wal-Mart sent extra supplies to stores in the area well before the storm hit: rope, batteries, flashlights, fresh water, and the like.

Many companies did a lot to ensure business continuity: they set up 800 numbers for employees to call to get information; they created tent cities for employees and their families, which served

thousands of meals daily and provided emergency spending money. In the most creative response, Wal-Mart allowed any employee to simply turn up to any store and work -- a mutually beneficial thing for both employee and employer, as workers fled the worst-struck areas for safer regions. The result was that two-thirds of Wal-Mart stores were back open within 48 hours of the storm hitting land. This, while the public authorities were in utter disarray. FEMA, the Federal Emergency Management Agency, couldn't even find a boat to collect people off their rooftops.

The lesson of Wal-Mart and Hurricane Katrina directly relates to communications and public safety: it is the importance of harnessing the private sector. That is, the self-interest of business, and the decentralized, self-organization of individuals. If we create the right platform, people can do a lot to help themselves in emergencies, just as the Internet as a platform lets them build the Web or contribute to Wikipedia. But these platforms have to exist -- the communications networks have to be up and open.

Some public officials understand this. At the U.S. Department of Homeland Security, one senior official told me this: "Following disasters, we used to focus on the health, safety and welfare of people, but did not see it as our role to help industry or restore economic activity. Now, we have a totally different view. We realize that if we can get businesses operating -- the Wal-Marts and the gas stations -- they can help bring communities back to life." In other words, instead of requisitioning baby-formula for mothers, help get the supermarkets open. Government can work to let the private sector's self-interest be the force that attains public-policy objectives, by helping people to help themselves.

Telecoms Policy and Public Safety

For telecoms regulators, the lesson is this: make public safety a matter of private action. Harness market incentives and commercial self-interest. Fuse public safety with communications, taking into account how new technologies are used by individuals. Because markets require marketplaces -- platforms where information is exchanged -- it is critical for regulators to ensure the availability of communications as a platform for individuals to collaborate, self-organize and follow their rational self-interest in times of crises, just as they do when they use the Internet as a platform in other ways, from contributing to open-source software to sharing pirated music.

For example, in a presentation earlier this afternoon, an executive from DaimlerChrysler explained how the automaker is working on wireless technology so that cars can exchange information to alert other vehicles of danger. So when there is a crash and oncoming cars need to break or swerve to avoid further collisions, the information is transmitted directly to cars approaching the area. This sort of responsible sharing of information can happen on a person-to-person basis (as we saw on 9/11) as well as on a person-to-group basis (as on 7/7) and even a group-to-group basis (the idea of "smart mobs" to describe how groups organize over mobile phones). But it all requires that communications exist when we need it.

To accomplish this, there is a role for both the public and private sectors. The issues are too large for any single stakeholder to do alone, be it government, industry or civil society. It will probably require a degree of international cooperation, too, since the issue is larger than any one country to manage on its

own. It remains a question whether today's institutions are adequate to accomplish this. But it falls on today's national telecoms regulators to take the first step.

Ultimately, what these reflections suggest is that a radical change is required in the way we think about communications, the private sector and public-safety objectives. It fits in line with a wider shift in how we address social problems and the role of the state versus the private sector. For example, last month Sir Richard Branson said he would put $3 billion toward philanthropic causes, but apply a business-like approach. It pales in comparison to Warren Buffet's more than $30 billion to the Gates Foundation (with Bill's $50 billion), which has redefined the nature of charity by treating its activities like venture capital investments. The Google Foundation went one step further, and incorporated itself *not* as a non-profit organization but as an actual for-profit company.

All this is quite modern. Consider that only a decade ago, Ted Turner, the founder of CNN, pledged $1 billion -- to the United Nations! Today, wanting to do good on a global scale by handing over money to an intergovernmental organization seems either retro, quaint or foolish. Relying on the private sphere for public goals is a dominant trend, since it is often more efficient and more adaptable. In telecoms policy, we have the example of ICANN that, despite its flaws, is an example of a private-sector organization addressing a matter of global public interest.

For regulators, it all points to the need to look for ways to attain social goals by harnessing market forces, the private sector and the power of people to do what comes naturally. We have seen this success in the Internet as a revolution in communications. We now need a similar revolution in regulation. The public sector must ensure that communications are open and available to the public in times of emergencies. We need to put the public first in public safety.

Thank you.