Getting Connected

The Internet and Its Role as a Global Public Good

An Interview with John Garrity

Georgetown Journal of International Affairs: You are regarded internationally as an expert on the connection between economic development and Internet connectivity. What initially made you interested in this connection?

John Garrity: I think that like a lot of people, I am working in a career influenced by my upbringing. I grew up in Southeast Asia, and what pushed me toward working in development economics, and particularly in technology, was viewing Absolute differences in Relative Wealth. My parents both grew up in "middle class" households relative to their countries. However, in Absolute terms, their experiences were very different. For my mother, "middle class" in the Philippines in the 1950s meant no running water or electricity, but in Ohio, my father's "middle class" family possessed both of those things. These relative differences, along with witnessing absolute poverty in Southeast Asia, compelled me to examine economic development issues. With regard to technology, living far away from my relatives helped me to realize the power of communication to bridge gaps. In development economics, one of the things we have seen in the past twenty to thirty years is a drop in the number of people living in Absolute Poverty, and most of that is driven by broad-based economic growth in places like China, India, and to some extent Latin America and sub-Saharan Africa. What drives broad-based economic growth is also communications technology. So it was the merger of my experiences growing up and the impact that I have seen with communications technology.

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GJIA: The global commons is often expressed in terms of natural resources, such as air, water, and land. How could the Internet become the next global commons?

JG: It depends on the definition of the global commons. If you define a global commons as a shared resource that individuals must work out the rules for its use, that is different from a global public good, which is a good that produces positive externalities. With global public goods, which produce positive externalities, there tends to be an underinvestment because private-sector entities will not capture all of the benefits of these goods. I tend to the view the Internet more as a global public good because the Internet requires much private investment, which puts it in its own special category. But I think that is a fascinating question, to explore whether the Internet is a global commons, a global public good, a human right, all of the above, or none of the above.

GJIA: What role does the private sector play in developing Internet connectivity as a global public good?

John Garrity is a Senior Connectivity Advisor with the Global Development Lab at the US Agency for International Development.

JG: The Internet started as a public-sector endeavor in the late 1960s, but since the late 1980s and early 1990s, when the Internet transitioned into the commercial sphere, the private sector has really advanced the Internet's technology and infrastructure. So there's a wide and deep role for the private sector to play, in terms of direct infrastructure build-out, in terms of developing the technologies and products, and in terms of standards that ensure security and privacy, so that individuals feel comfortable being on the Internet. The private sector has also contributed to ensuring individuals have the right sort of technical skills to use the Internet. However, this is not to say that the development of the Internet relies solely on the private sector.

GJIA: So then what role does the public sector possess?

JG: Because of the fact that there are positive externalities to the Internet, there will always be a bit of underinvestment from the private sector in the Internet. That's where there is a very prominent role for the public sector, particularly in places where the private sector does not necessarily see a commercial return to building out Internet infrastructure, such as in rural areas. There is a role for the public sector to bridge the gap in terms of making it more affordable and more feasible to invest in those particular areas. Consequently, the public sector functions to ensure a conducive market environment for the private sector to invest in and to directly invest where the private sector is not playing a role. Additionally, the public sector can work on issues such as skills development.

GJIA: You've written extensively on the "Internet of Things" (IoT). Can you explain how this is distinguished from what one would typically consider "the Internet"?

JG: I view the IoT as a subset of the Internet. If you think about all of the communications on the Internet, you can segment the communications into three subgroups. The first subgroup is person-to-person communication, through e-mail and Skype, for example. The second subgroup of communication is machine-to-person or person-to-machine. A good example of this is when a home security system is activated and it notifies the homeowner via text message—that is machine-to-person communication. Also, if you have a remote thermostat for your home that you can control from your phone, that is an example of person-to-machine communication. The third subgroup of communication involves direct machine-to-machine communication. Essentially, the definition of the IoT includes the latter two modalities of technological communication. It encompasses when a machine generates information and sends it off to a person or another machine and when a machine is receiving information from a person or another machine and then conducts some sort of action.

GJIA: How can the Internet of Things be used in a global public goods setting to address global development issues?

JG: One of the things we are seeing with the Internet of Things is a growing use of sensors, or the machines that generate and receive information, to improve the way development work is being conducted. These sensors are being used to improve service delivery. For example, the recent report "Harnessing the Internet of Things for Global Development," which was written by Cisco and the United Nations' International Telecommunications Union (ITU), noted the use of sensors to monitor the delivery of vaccines. Vaccines tend to spoil when being delivered to rural areas, so electronic thermometers are being used to monitor

the validity of vaccines as they are being delivered so that they do not freeze or spoil. Sensors are also being used to monitor village water hand pumps in sub-Saharan Africa. These hand pumps are critical to the villages, but the problem is that the pumps tend to break easily. So sensors are being used to monitor whether these hand pumps are operational, and when they are not operational, the sensors will communicate that information to a donor agency or to a water service provider.

I believe the use of sensors and the Internet of Things is the next frontier of using information and communication technologies in development work.

GJIA: Where have we seen major successes in global development that are tied to developing widespread Internet connectivity and the expansion of the Internet of Things?

JG: Over the past decade, we have seen the intensive adoption of mobile technology in global development. These mobile technologies are used in health care to deliver messages to individuals who may not have regular access to health care facilities. For example, programs in Bangladesh and South Africa have provided regular text messages to expectant mothers providing them with prenatal advice. There has also been use of mobile technology in agricultural extension services by getting farming information out to small shareholder farmers who do not have direct or regular access to this information. There has also been a wide use of mobile technology in financial services, such as the use of mobile money payment systems. So mobile technology has really become mainstreamed in international development. I believe the use of sensors and the Internet of Things is the next frontier of using information and communication technologies in development work.

GJIA: What are some of the primary challenges to regarding the Internet as a global public good?

JG: One of the main limitations of the Internet's global impact has been the fact that the Internet is not universally accessible. The latest data from the United Nations' [ITU] demonstrates that approximately four billion people around the world are not using the Internet, so the majority of the people on the planet are not yet benefiting from the Internet. So availability, whether through broadband, WiFi, or fixed fiber, is one challenge. The second major challenge, which has presented itself in numerous places, is making sure the Internet is affordable. Even if Internet [access] is available, is it affordable based on one's own income level? The third challenge is ensuring that people have sufficient Internet skills and that the Internet is applicable to a person's life. Is there locally relevant content that individuals find value in? So it is really those three aspects of what we are trying to do [to make] sure that the Internet is benefiting everybody. We want to ensure that it is available, it is affordable, and it is applicable to people's lives.