# From the Guest Editors[1]

## *Open Development: A New Theory for ICT4D*[2]

Matthew L. Smith, Laurent Elder, Heloise Emdon

Open development refers to an emerging set of possibilities to catalyze positive change through "open" information-networked activities in international development. While there is evidence to support the observation that these changes could be coming, we are only now beginning to glimpse their potential for developing societies. Consequently, embedded in this theory are a high level research question and hypothesis. The research question asks how these information-networked activities work, in what circumstances, and to whose benefit? The hypothesis states that these new models of networked activities can lead to development outcomes that are both inclusive and transformative.

The theory of open development emerged through observation and experience. The importance of openness for ICT4D came to light following a long day of meetings at a secluded farm near London, Ontario in 2008. Many of the participants had been grappling with the future of ICT4D, and after having drawn an issue map, participants had an "ah ha" moment. The issue of "openness" in IT systems, policy, and development sectors seemed to permeate every element of our (IDRC) ICT4D programming. From access to use, and from content to creation, it appeared that some form of openness was a component of much of the research we supported, including open participation in use, open licensing to provide services, open content, open source, and open government.

Openness is, however, perhaps a better marketing term than analytic concept. Its fuzziness and current trendiness make it susceptible to multiple interpretations and co-option by actors who subscribe to a range of positions and ideologies. For example, openness is used to describe unfettered markets, but it also describes, for others, the justification of state support for maintaining access to public goods. Others have even seen the underlying "open source" ethos, which questions principles of ownership, as akin to socialism.

In this special issue, we differentiate ourselves from these perspectives. We are concerned with open *development;* i.e., openness that serves the purpose of *development,* not openness for openness' sake. But let's not get ahead of ourselves; first we must be clear about what openness and open development mean.

## *Open Development*

The seeds of open development were planted in the earliest designs of the Internet, with its open standards and sharing culture (Castells, 2001a), alongside the emergence of open source "thinking" and longstanding development concepts like democracy, participation, and inclusion. The success of

*1. Ben Petrazzini also acted as a co-editor for this special issue.*

*2. Special thanks to François Bar, Genevieve Lefebvre, Arul Chib, and Michael Gurstein for their comments on this piece and related discussions on the topic of open development.*

early open source applications and favorable technological advances have encouraged similar social innovations, such as those in government (open government data), research (open access), education (open educational resources), and business (open business models), to name a few.

The term "open" is shorthand for information-networked activities that have, relatively speaking, more information that is freely accessible and/or modifiable and more people who can actively participate and/or collaborate. It is not new to suggest that we are moving toward a "network society" (Benkler, 2006; Castells, 2001a). Arguably, the fundamental unit of society has always been social networks of a sort (e.g., families, communities, cities, institutions, governments). What is new about the network society is that "key social structures and activities are organized around electronically processed information networks" (Castells, 2001b). As illustrated above in the list of open activities, we are living at a time when information networks are broadening (access to and inclusion in), deepening (more information flows, higher quantity and quality of interactions), and increasing in relevance. Critically, these networks take on new forms that alter how we (people, groups, governments, etc.) mobilize and organize resources (information and people) to achieve desired ends. In general, these new forms are less hierarchical than their predecessors, and they also bring certain advantages.

There are many examples. Crowdsourcing illustrates social production in domains that were previously dominated by experts, such as peer review of academic articles,[3] the verification of mathematical proofs (Markoff, 2010), crisis mapping, and election monitoring (Banks, 2007). Collaborative production can benefit many domains, as it has in the development of biotechnologies following open source principles (Masum et al., this issue), or potentially, as a means to promote ethical consumption (Graham & Haarstad, this issue). Similarly, the low cost of online publishing has meant that anyone with access to an Internet connection can be a publisher. In the United States, one man began recording very high-quality, clear, and concise educational courses and placed them online. Eventually, he started the Khan Academy,[4] an NGO that seeks to be the world's first free classroom for the world. He has produced over 1,400 videos, and volunteers are now translating the videos into other languages. New media tools such as blogs, YouTube, and Twitter have had an effect on political action around the world. Although the extent of this impact is not well understood (Aday et al., 2010), examples abound.

These novel information networks are also beginning to change how international development itself is conducted. This change has been coined "development 2.0" by some (Quaggiotto & Wielezynski, 2007; Thompson, 2008; Heeks, 2010), although the full extent of this change is yet to be realized and understood. ICTs and Web 2.0 are a rapidly expanding range of possibilities for engaging in participatory methodologies (Chambers, 2010). The models of how and from where innovations might emerge are shifting (Heeks, 2008; von Hipple, 2005). For example, recently, the World Bank opened up their data to the world in a manner that allows for easy access and combinations (mashups).[5] Also, it provides a new level of transparency of the aid industry which was not previously possible, and recent research seems to indicate that donor transparency has the positive impact of reducing recipient corruption levels (Christensen et al., 2010).

The dynamic also raises new challenges. For example, who do donors fund if they want to support a decentralized loose network of social change actors (Bernholz et al., 2010)? New modalities of funding are required. Furthermore, as the speed of change is accelerated by new technologies, the donor

*3. See, for example, Bloom (2006); Cohen (2010); Greaves et al. (2006); Howard (2010).*
*4. See http://www.khanacademy.org/*
*5. See http://data.worldbank.org/*

and philanthropic communities must embrace the implications of dealing with the complexity involved in fostering change through networks of people.[6] For example, development planning requires the flexibility, critical thinking, and situational awareness to respond to emergent issues, as well as appropriate accountability arrangements that can handle this adaptability (Patton, 2010).

Of course, there are plenty of negative examples, a "dark side" of openness (Smith & Elder, 2010), as the expansion and deepening of networks comes with risks and challenges. For example, the pervasiveness of the Internet and Web 2.0 applications also implies that an ever-greater amount of information on people is shared and stored by both the private and public sectors, raising issues around citizens' right to privacy and who controls personal information (Mayer-Schonberger, 2009). There are many such issues, and they should not be taken lightly.

## *Disruptive Transformation*

Open development, as conceptualized here, necessarily involves a process that alters *who* is able to participate in development activities. The open development hypothesis suggests that positive development can emerge through new models of engagement and innovation that are more participatory, more collaborative, and driven more by the beneficiaries. Lower costs of entry mean that those who might have been otherwise motivated but had earlier lacked sufficient knowledge or resources can now mobilize (Hagel et al., 2010).

Such a shift is both practical and cultural. Practically, it involves ensuring that any open development initiative is true to its goals of facilitating greater participation and inclusion, and that it provides the necessary resources to remain true to those goals. Open development initiatives may consist of a superficial veneer that hides less inclusive intentions and systems (Buskens, this issue). It is no surprise, then, that two articles in this special issue stress the need for reflexive and honest researchers and practitioners to engage in a truly open and inclusive manner (see both Buskens and Harvey, this issue). Culturally, inbuilt assumptions and values are also shifting. Testing the open development hypothesis necessitates an overdue conceptual shift from viewing the "poor" as passive consumers to seeing them as active producers and innovators (Heeks, 2009; Liang, 2010). It also signifies a general movement in the central organizing principle of society away from competition and toward collaboration, as well as the concurrent adjustment of motivations and incentives that underlie such activities.

This process also shifts power and control; truly inclusive and participatory open development initiatives push for disruptive transformation (Avgerou, 2010), contesting power relationships and the status quo. The new models of information network organization that underlie open development are ultimately a direct challenge to contemporary models of production, ownership, and control. In particular, these models can threaten the interests of many of the private sector actors who have played a role in the history of ICT4D (Unwin, in press). A political economy lens is necessary if we are to understand the contours and dynamics of changes taking place in the networked society.

By way of example, we illustrate some ongoing battles that are being fought over control of both digital content and the networks on which the content passes. The battle over ownership and control of digital content is in the area of intellectual property (IP) rights. Many computer science pioneers were ardent believers in the idea that computing could only get better if you were free to copy and improve upon existing work. Consequently, the idea of open source software, and later, of open source licensing, of which the general public license (GPL) was the first example, came to be. This turned the pre-

*6. See, for example, Chambers (2010), who writes about a new paradigm called adaptive pluralism.*

dominant notion of intellectual property on its head, since a patent had been created that ensured the product would be in the public domain. Others then expanded the idea to creative goods that would otherwise fall under the domain of copyright by developing licenses like the Creative Commons. This was a response to the fact that companies active in creative and software industries were both fighting to have governments put tougher IP laws in place, and installing digital rights management technology on their goods to protect them. This was, in turn, a reaction to the threat of digital technologies' abilities to infinitely reproduce goods at no or very low cost.

This focus on IP results in policy debates between those who support reforming IP law or expanding fair use provisions, and those who want to expand the protection of IP to maximize monopoly rents and deter digital piracy, a main threat to those rents. This debate takes on added complexity when trade interests are taken into account, seeing as most developed nations make important profits through exporting IP in digital products, whereas developing countries are mostly net importers. Another interesting battlefield where crucial matters of openness are being fought over is related to the Internet itself. The Internet is built on a platform that ensures all packets of data are treated the same. This neutrality is a key strength of the Internet, and it has played an important role in ensuring its growth. However, various factors have been threatening this openness. First, the net neutrality debate has brought to the fore the ability of Internet providers to shape Internet traffic and favor some content and services over others (Bar et al., 2008). Although some question the extent of this threat outside of the United States,[7] the fact that most of the developing world will access the Internet through mobile phones may make this more of an issue there than in the developed world.

Mobile service providers have tended to be much greater gatekeepers of Internet provision, due in part to the centralized nature of mobile networks, and to limited wireless bandwidth, with its subsequent challenges for quality of service (Zuckerman, 2010). As the dominant players, mobile operators consolidate their power through increased market share, and they are therefore beginning to resist more open and liberal telecommunications policies (Melody, 2010). Another threat to the Internet's openness has been the ability of governments to exert influence on Internet service providers in the form of censorship or content filtering. Finally, some consider that social networking applications, such as Facebook or Twitter, as well as apps on smart phones or tablets, are also challenging the openness of the Internet (Anderson & Wolff, 2010). Through the creation of walled gardens, where a company chooses how to store and handle personal data, or which apps can be downloaded or not, potentially a more segmented, less interoperable, and more commercially dominated Internet is upon us.

This disruptive transformation focus serves as an important reminder that is not a foregone conclusion that openness will necessarily benefit the disempowered and marginalized; indeed, one might anticipate that, in times of transition, those with the resources to take advantage of the situation would benefit most. This happens both at the macro level, with actors such as the mobile operators, as well as on more local levels. For example, a study in Bangalore showed how the increase of open data (digitization of land records) led to large land capture by the already rich and empowered, rather than benefiting the poor and disempowered (Benhamin et al., 2007).

## *The Special Issue*

A key point emerging from the above discussion is that *arguments promoting openness should always be critically questioned,* in the same way that arguments for defending more closed systems should

*7. See* Economist *(2010).*

be. Consequently, we remain agnostic and pragmatic as to the open policy/practice prescriptions; the focus is on what works for *development,* rather than pushing a particular model or policy.

To connect openness to development, these models need to be studied and understood in both their particular instances in different domains (e.g., health, education, government), as well as in the development context in which they are situated. We need to know how, and in what circumstances, such models are both sustainable and transformational. For example: Does open access to scientific papers bring wider dissemination?[8] In what situations and for what type of data does government transparency result in improved accountability and government performance?

We are pleased to have the opportunity to present this special issue on open development that seeks to begin providing insight into the relevance of open development. The content of this special issue comes from two sources. The first set come from a call for papers and workshop sponsored by the International Development Research Centre in May 2010. The call was seeking papers that spoke to the following questions:

- How does (or might) increased access to information networks and communication possibilities, as well as new forms of participation and collaboration, result in social, economic, and political development?
- What are the possible downsides and risks of expanding openness in the cultural, social, economic, and political spheres, and how can we mitigate them?

We received more than 80 abstracts for the call, of which 21 were selected, with 20 papers being finally written. All 20 papers were revised through a double-blind peer-review process. Six of these papers were then chosen by the special issue co-editors to submit for this issue. One paper had already been submitted for publication in an alternative journal and therefore was excluded. The rest were put through the standard *ITID* review process, and were eventually accepted.

The Forum piece by Ineke Buskens was an invited submission. The author was asked to reflect on the potential of openness for development from a gender perspective. It also underwent the standard *ITID* review process.

We are excited by these articles, which collectively represent a first foray into exploring open development. We hope you enjoy the special issue!

## *References*

Aday, S., Farrell, H., Lynch, M., Sides, J., Kelly, J., & Zuckerman, E. (2010). *Blogs and bullets: New media in contentious politics.* Washington, DC: United States Institute of Peace.

Anderson, C., & Wolff, M. (2010, August 17). The web is dead. Long live the internet. *Wired,* Retrieved January 28, 2011, from http://www.wired.com/magazine/2010/08/ff_webrip/

Avgerou, C. (2010). Discourses on ICT and development. *Information Technologies & International Development, 6*(3), 1–18. USC Annenberg Press.

Banks, K. (2007). And then came the Nigerian elections: The story of FrontlineSMS. *Suati, Stanford Journal of African Studies, 4,* 1–4.

Bar, F., Baer, W., Ghandeharizadeh, S., & Ordonez, F. (2008). Infrastructure: Network neutrality and network features. In K. Varnelis (Ed.), *Networked publics.* Cambridge, MA: The MIT Press.

*8. See National Science Foundation (2009).*

Benhamin, S., Bhuvaneswari, R., & Manjunatha, P. R. (2007). Bhoomi: 'E-Governance,' or, An anti-politics machine necessary to globalize Bangalore? A CASUM-m working paper.

Benkler, Y. (2006). *The wealth of networks: How social production transforms markets and freedom.* New Haven, CT: Yale University Press.

Bernholz, L., Skloot, E., & Varela, B. (2010). *Disrupting philanthropy: Technology and the future of the social sector.* Center for Strategic Philanthropy and Civil Society, Sanford School of Public Policy, Duke University.

Bloom, T. (2006). The Internet is allowing much more interactive science publishing. *Nature,* 444. Available at: http://www.nature.com/nature/peerreview/debate/nature05030.html

Castells, M. (2001a). *The Internet galaxy.* New York: Oxford University Press.

Castells, M. (2001b). *The network society and organizational change.* Conversations with History; Institute of International Studies, UC Berkeley. Retrieved January 28, 2011, from http://globetrotter.berkeley.edu/people/Castells/castells-con4.html

Chambers, R. (2010). Paradigms, poverty and adaptive pluralism. Institute of Development Studies, University of Sussex, *IDS Working Paper No. 344.* Available at: http://onlinelibrary.wiley.com/doi/10.1111/j.2040-0209.2010.00344_2.x/pdf

Christensen, Z., Nielsen, R., Nielson, D., & Tierney, M. (2010, November 12–13). Transparency squared: The effects of aid transparency on recipients' corruption levels. Presented at the International Political Economy Society Conference, Cambridge, MA.

Cohen, P. (2010, August 23). Scholars test web alternative to peer review. *The New York Times.* Available at: http://www.nytimes.com/2010/08/24/arts/24peer.html?_r=2

*Economist.* (2010, September 2). *The Web's new walls: How the threats to the Internet's openness can be averted.* Retrieved January 28, 2011, from http://www.economist.com/node/16943579?story_id=16943579

Greaves, S., Scott, J., Clarke, M., Miller, L., Hannay, T., et al. (2006). Overview: Nature's peer review trial. *Nature,* 444. Available at: http://www.nature.com/nature/peerreview/debate/nature05535.html

Hagel III, J., Brown, J. S., & Davison, L. (2010). *The power of pull: How small moves, smartly made, can set big things in motion.* New York: Basic Books.

Heeks, R. (2008). ICT4D 2.0: The next phase of applying ICT for international development. *IEEE, 41*(6), 78–85.

Heeks, R. (2009). The ICT4D 2.0 manifesto: Where next for ICTs and international development. Development Informatics Group, University of Manchester, *IDPM Working Paper No. 42.* Available at: http://www.sed.manchester.ac.uk/idpm/research/publications/wp/di/di_wp42.htm

Heeks, R. (2010). Development 2.0: Transformative ICT-enabled development models and impacts. *Communications of the ACM, 53*(4), 22–24.

Howard, J. (2010, July 26). Leading humanities journal debuts 'open' peer review, and likes it. *The Chronicle of Higher Education.* Available at: http://bit.ly/hMSszt

Liang, L. (2010). Access beyond developmentalism: Technology and the intellectual life of the poor. *Information Technologies & International Development, 6*(Special Edition), 65–67.

Markoff, J. (2010, August 16). Step 1: Post elusive proof. Step 2: Watch fireworks. *The New York Times.* Retrieved January 28, 2011, from http://www.nytimes.com/2010/08/17/science/17proof.html?_r=4&scp=1&sq=markoff%20theorists%20&st=cse

Mayer-Schonberger, V. (2009). *Delete: The virtue of forgetting in the digital age.* Princeton, NJ: Princeton University Press.

Melody, W. (2010). Openness: The central issue in telecom policy reform and ICT development. *Information Technologies & International Development, 6*(Special Edition), 89–91.

National Science Foundation. (2009). Open access to scientific papers may not guarantee wide dissemination. Retrieved January 28, 2011, from http://www.nsf.gov/news/news_summ.jsp?cntn_id=114225&org=NSF&from=news

Patton, M. Q. (2010). *Developmental evaluation: Applying complexity concepts to enhance innovation and use.* New York: The Guilford Press.

Quaggiotto, G., & Wielezynski, P. (2007). Development 2.0: A new paradigm for the non-profit sector? *FreePint,* Newsletter No. 230. Available at: http://web.freepint.com/go/newsletter/230#feature

Smith, M. L., & Elder, L. (2010). Open ICT ecosystems transforming the developing world. *Information Technologies & International Development, 6*(1), 65–71.

Thompson, M. (2007). ICT and development studies: Towards development 2.0. *Journal of International Development, 20*(6), 821–835.

Unwin, T. (forthcoming). The Internet and development. In W. Dutton (Ed.), *The Oxford handbook of Internet studies.* Oxford, UK: Oxford University Press.

Von Hippel, E. (2005). *Democratizing innovation.* Cambridge, MA: MIT Press.

Zuckerman, E. (2010). Decentralizing the mobile phone: A second ICT4D revolution? *Information Technologies & International Development, 6*(Special Edition), 99–103.