

## Learning about New Technologies and the Changing Evidence Base for Social Science Research and Decision Making in International Development

This paper was prompted by our awareness of a changing world. Information and Communication Technology is a key tool for the Intermediary sector and one that is opening up exciting possibilities to produce, share and remix information that has the capacity to change the evidence base for research and collective action. This Practice Paper draws out the implications of some of these innovations for development research and research communications.

### Introduction

In 1998, Barry Wellman, a renowned Canadian social network theorist, argued that the manual for SPSS Statistics Software, a widely used commercial software package for statistical analysis, had been one of sociology's most valuable books. Wellman contrasted the liberating experience of using a user-friendly statistical package like SPSS with that of having to rely on experts and complicated software programmes running on closely guarded mainframe computers. Wellman's argument is one of democratisation: of the liberating potential that SPSS and the personal computer had in allowing researchers to play more with their data, discovering new connections and patterns, and enabling them to cut out the 'expert' intermediaries who controlled access to analytical tools.

In this piece I argue that new technologies are opening up exciting possibilities to produce, share and remix information that has the capacity to change the evidence base for research and collective action as profoundly as the 'SPSS revolution'. New technologies in the forms of mobile communications, user-friendly and freely available mapping and data visualisation platforms combined with Web 2.0 services are extending people's ability to coordinate at a local and global level, creating new public goods and architectures of participation between experts and academics, governments and the wider public. At the same time they introduce tensions and ambiguities along persistent and emergent divides and fault lines.

In each Practice Paper published by the **Impact and Learning Team**, we share our experience and learning. We are presenting ideas that we are exploring and that others in the intermediary sector might like to explore.

Our experiences contribute to the body of knowledge, but rarely if ever contain incontestable insights. This paper should not be read in isolation, however, and should be seen as complementary to other work conducted on related issues of capacity development, knowledge management, and policy influence.

The knowledge and information intermediary sector comprises those who seek to improve flows of knowledge between actors in decision making and change processes in order to generate better development outcomes.

Intermediaries act in a range of ways: enabling access to information; helping people to make sense of it; facilitating connections that enable knowledge to be shared between stakeholders. It is a practice sector which cuts across other sectors.

This work draws out the implications of some of these innovations for development research and research communications and provides examples of how they can establish new creative links between researchers, citizens and decision makers against the background of an evolving information and communication environment.

## New trends in information and communication for development

The internet has created unprecedented opportunities for people to view, share, combine and interrogate information and data. Some of these opportunities have materialised with the help of communities coalescing around technologies and shared ideals. The terms peer production, crowdsourcing, and the open source software model of development describe new ways of working, supported by ICTs, that enable online communities to create global information goods. Many of these efforts form part of a global movement to create an information commons, a realm of free access where information is considered a public good rather than a commodity. Among the achievements of the information commons movement are Wikipedia, Linux - the open source software equivalent to Windows, and the Creative Commons licenses, an institutional innovation that enable artists, writers and musicians to 'share and build upon the work of others, consistent with the rules of copyright'.

The ethos of openness and sharing that characterizes these communities is inspiring a wave of innovations across established institutions. In addition, Web 2.0 services and open Application Programme Interface (APIs) have laid the groundwork for the emergence of new information artifacts: mashups, websites that combine information from multiple sources have become a popular way of aggregating and remixing content. Other opportunities have materialised through the analogue to digital transformation that enables the creation of massive new databases that create new opportunities for research.

The rest of this section presents some of these innovations, draws their implications for development research and practice and relates them to emerging and persistent agendas with particular regard to openness and transparency.

### A. Opening up development and government data: (re)engaging the public

Hans Rosling's presentations bring numbers to life through stunning graphics and animations that leave his audiences speechless. Rosling, a professor of public health in Sweden, developed Gapminder ([www.gapminder.org/](http://www.gapminder.org/)), the software programme behind these presentations to make international statistics easier to understand, to help people acquire a 'fact based view of the world'. In addition to using existing data, like World Bank indicators, Gapminder incorporates Web 2.0 features that allow people to discuss analyses and upload and share their own data. Rosling (2007: 104) argues that: 'visualization and animation services that unveil the beauty of statistics for wide user groups may induce a paradigm shift from dissemination to access', making it possible to communicate information in understandable formats to the wider public, to decision makers and the corporate sector.

Another important emerging trend concerns mash-ups, that is, websites that combine information and data from different sources. One of the earliest and most successful uses of mash-ups for civic engagement in the UK is the TheyWorkForYou project ([www.theyworkforyou.com/](http://www.theyworkforyou.com/)), a service that allows citizens to 'keep tabs on the UK's parliaments and assemblies'. The website that was created in 2004 by volunteers draws together information from the House of Commons, the House of Lords, the Scottish Parliament and the Northern Ireland Assembly, voting records, Wikipedia entries and other websites to help citizens track the activities of MPs.

One type of mash-up that is becoming increasingly popular is geo mash-ups, mash-ups in which different sources of information and data are displayed in some geographical form. Tools like Google Maps, Google Earth and OpenStreetMap are enabling the public to take advantage of the visualisation and analytical capabilities of Geographical Information Systems (GIS) that have remained the purview of specialists for a long time. Online geospatial tools and mash-ups are becoming important platforms for organizing and sharing all manner of information with the public. The Intergovernmental Panel on Climate Change (IPCC), for example, used Google Earth to enable people to explore the potential impacts of climate change.

By illustrating what is possible, tools like Gapminder, Google Earth and technology-oriented civil society grassroots initiatives, are driving demand for credible information, putting pressure on governments and international agencies to open up information and break down information silos between universities, statistical, and national and international agencies. In April 2010 the World Bank opened up access to more than 2,000 financial, business, health, economic and human development statistics to the public for free in the hope of stimulating 'evidence-based' decision making and encouraging more innovative analyses. One of the goals of open access data policies is to foster innovation among civil society and technology entrepreneurs. Inspired by projects like TheyWorkforYou.com, the UK government launched in

2008 a competition for designers and software engineers to find innovative ways for using the masses of public data it collects ([www.showusabetterway.co.uk/](http://www.showusabetterway.co.uk/)). In the domain of international development some effort is being made to develop standards and norms and to convince donor agencies to publish data on what they fund ([www.publishwhatyoufund.org/](http://www.publishwhatyoufund.org/) and [www.aidtransparency.net/](http://www.aidtransparency.net/)). In the context of international development these trends are intertwined with persistent arguments around the importance of policies and decisions drawing from empirical research, and the underutilization and fragmentation of the information base for development. They are also interrelated with emerging agendas around 'openness', including demand for consistent publishing of government data (Hogge, 2010).

These innovations offer new opportunities to engage local and global publics and point to the emergence of a new class of information intermediaries - large and small technology actors, social movements and volunteer communities coalescing around shared ideals and technologies.

## **B. Involving the public: the power of peer production**

In addition to making existing information available and understandable as the basis for collective action and coordination, new technologies are creating frameworks of participation that seem to transform the role of the public from passive spectator to research partners and active citizens. These developments are particularly evident in crises situations, where Web 2.0 technologies, GIS, GPS, satellite imagery and mobile phones are increasingly being used to organise data collection with the help of large groups of users that are distributed across the world.

In the recent Haiti crisis, volunteers from across the world contributed to the relief effort by providing aid workers on the ground with updated maps of the island that included information about collapsed buildings, blocked roads and ad-hoc camps. These individuals converged around networks like Crisis Commons (<http://crisiscommons.org/about-us/>) a community consisting of citizens interested in contributing to humanitarian work in any way they can including crisis response organizations, international humanitarian and relief agencies, non profits and the private sector. By using open source software tools and open data projects like Openstreet map, a free data project that has been described as the Wikipedia of maps, volunteers were able to create detailed, updated maps of affected areas that have since developed into a valuable resource for reconstruction efforts by enabling agencies and NGOs to use it as the basis for coordinating the reconstruction effort. The speed to which these maps were created in the first wave of response was extensively commented upon by the media and the international community. Some experts argue (Greenough et al. 2009: 208) that these 'technologies have the potential that information actors use to make decisions in emergencies and ultimately, improve the quality of response to crises'.

Platforms, like OpenStreetMap are also being used to organize data collection in non-emergency situations, in ways that seem to extend traditional, participatory development methods to support local agendas and needs. The project Map Kibera (<http://mapkibera.org/>), for example, used OpenStreetMap tools and techniques to enable local populations build an understanding of their communal resources and geographies as the basis for improving their lives and livelihoods. The project sought to create the first public map of Kibera, one of the largest slums in Africa, which is designated as a forest on official maps. Initiatives like Map Kibera can help make visible spaces for which very little public information exists, but also raise questions around the potential, unanticipated consequences of increased visibility, particularly for vulnerable populations.

Another well-known example of a decentralised, 'bottom up', information collection system involved the use of SMS reporting to overcome the media blackout imposed by the government of Kenya in the post-election crisis of 2008. The initiative was initiated and coordinated by a team of Kenyan bloggers and software programmers who created a program called Ushahidi ([www.ushahidi.com/](http://www.ushahidi.com/)) to collect and aggregate in real-time citizen reports of incidents of violence across Kenya. Since its creation Ushahidi has developed into one of the leading platforms for 'crowdsourcing' crisis information and has been adopted by a number of different organisations across the world.

These technologies, which, following the norms of open source, are developed cooperatively and incrementally, bring together different audiences and groups of contributors. First, there are the producers of these systems, the software developers and experts, with the capacity to improve and customise the software, the basis of these systems. Another group of producers involves the contributors, such as the volunteers working to create the maps of Haiti or the citizen-reporters of Ushahidi, who contribute the information needed to improve the content of these systems. Secondly, there are the expert users of such systems, in the case of crises management this includes governmental staff and the international humanitarian relief community. This group can provide input to technology experts so that better tools can be developed on the basis of first-hand experience. Thirdly, there are the lay users of these systems who may,

depending on the opportunities available to them, consume the information or also contribute to it. Every deployment of Ushahidi and OpenStreetMap involves small and large decisions (e.g. who needs access to what information) that influence how relationships between these groups are organised. Information needs are also likely to vary widely across different groups during the different stages of a crisis. In some cases, for instance, information collected in the earlier stages of an emergency might not easily reach disaster victims with no access to the internet or mobile phones unless provisions have been made for it to be disseminated through traditional media or writing.

### **C. Technology begetting data and digital scholarship: redefining social science**

Our knowledge of the dynamics of human populations depends on sample surveys, government censuses and in-depth studies of specific places and spaces and groups. Over the years a lot of questions have been raised about the validity of different methodologies and data collection instruments and their capacity to represent accurately the reality they purport to investigate. These debates are today more alive than ever as the internet and mobile communications make it possible to capture and generate far more data than was previously possible. Web surveys form only a small part of these new developments. Automated information data extraction from emails, blogs, forums and other web sources and examination of individuals' click-throughs can generate extensive information on social networks, attitudes and behaviours (King 2009). Online spaces for interaction, such as social networking sites and immersive virtual environments like Second Life are providing new sites for ethnographic observation and experimentation (Hine, 2000). Data on commercial activities and consumer patterns can be captured through credit cards and product Radio Frequency Identifications (RFIDs). Cell phones and appliances equipped with transponders can provide information on populations on the move. All these developments raise important ethical and privacy issues that we are only beginning to come to terms with.

Parallel to these developments, we are also witnessing the expansion of existing data collections available for research. We have mentioned how the World Bank is releasing its data in the hope of supporting innovative analyses. In academic circles a lot of investments have been made in improving existing research data collections and developing standards and practices for processing and curating research data. For example, the UK Data Archive ([www.data-archive.ac.uk/](http://www.data-archive.ac.uk/)), the UK's largest collection of data in social sciences and humanities, has instituted rules and procedures for documenting different types of quantitative and qualitative data to ensure that they can be understood and reused by other researchers. Recipients of UK public research funding are increasingly required to submit data generated through their work to repositories like the UK data archive.

Advances in electronic publishing and demands from funders are seen to change the character of scholarly research communication by making the publication and management of data as integral to the research process as that of publishing the analysis of findings. In a sense data are becoming as much the output of the research process as traditional formats of communication, like reports, peer reviewed articles, books etc. For some, this is key to ensuring a rigorous peer review, as it allows researchers to check the validity of findings by replicating the results of the analysis. Data sharing has after all been an integral part of academic practice in natural sciences, and has revealed over time a number of false or falsified conclusions. However, access to data alone is not enough. Data can be falsified and their increased availability calls for increased demands to establish their legitimacy. Details on research methodology, including details on the origins of the data and trust in the review processes adopted by particular repositories can provide reassurance over their credibility.

Social scientists face, however, an additional crucial challenge, that of interpretation. Even if data are verified, their meaning can be contested through different interpretations. Moreover, the validity and suitability of different data collection instruments and methodologies can also be the object of contestation. In the field of development studies, Robert Chambers (2008, 1995) has critiqued the suitability of conventional, large-scale multi-subject questionnaire surveys to understand rural poverty. The expansion of data collections and the creation of new data sources generated by and collected with the help of technologies cannot ease the important epistemological and political agendas that lie at the heart of empirical investigation.

### **Conclusions: old problems in new guises or novel opportunities and challenges?**

Despite his enthusiasm about the empowering potential of SPSS, Wellman felt obliged to point to the costs of the

SPSS revolution which included a diminished regard for theory and common sense brought about by the ease of running complex analyses, an emphasis on statistical analysis that led to a disregard for qualitative modes of enquiry, especially in the United States, and a proliferation of statistical packages that biased sociological enquiry towards survey research perspectives.

It is not yet clear how widespread access to specialised tools, open data resources and the increased publication and communication capabilities of Web 2.0 tools are enhancing the ability of activists and local communities to pursue their own agenda and improve their lives. The promise of the internet for democratization has proven to be elusive. Eugeny Morozov (2009) a Yahoo! Fellow at the Institute for the Study of Diplomacy at Georgetown University has concluded that the internet has failed to challenge dominant configurations of power in Eastern European countries. Matthew Hindman (2009), an American sociologist, has furnished evidence that indicates that, contrary to popular belief, the internet has also had very little effect in democratising American politics, resulting in consolidating the power of existing elites rather than broadening political discourse. Some have argued that although in some respects we are seeing a diminishing of the digital divide, a new divide appears to emerge or become more prominent. This includes, the participation divide, one that expresses a gap in the skills and capabilities needed to take advantage of the creative opportunities afforded by new technologies among different groups (Hargittai and Walejko 2008), which in turn may be associated with a variety of socioeconomic factors including gender, age and income (Rask 2008; Glott *et al.* 2010). Power dynamics and inequalities re-emerge consistently across existing and emerging fault-lines.

Moreover, transparency and the evidence into practice agendas are not always informed by an understanding of the complexities and political dimensions of research and policy processes. Fung, Graham and Weil (2007:53) put this point eloquently: 'Simply placing information in the public domain does not guarantee that it will be used or used wisely. Individuals' and groups' responses to information are inseparable from their interests, desires, resources, cognitive capacities, and social contexts. Owing to these and other factors, people may ignore information, misunderstand it, or misuse it. Whether and how new information is used to further public objectives depends upon its incorporation into complex chains of comprehension, action and response'. The idea that information is never neutral, particularly in the policy process is not a new idea (Majone 1989; Davies 1994).

So what is new? Do new technologies change substantively the landscape of information and knowledge or do they simply reshuffle dominant power dynamics and reaffirm old agendas? Are we simply blinded by their newness or are they indeed revolutionary in character as many would argue?

## First implication

Throughout this paper I have pointed to the importance of the social processes that underlay how technologies are produced and consumed. Some of these processes involve new actors and social movements, like the information commons, that come together to form communities coalescing around shared ideals and technologies. These include technologists and amateurs contributing to free/open source software projects and open data initiatives who subscribe to the ideals of openness and transparency. These communities push the boundaries of what we can do with information and create resources and tools that can freely be used and modified. At the same time, these groups offer the development community templates for collaboration that include new ways of working and innovating. As in the case of Haiti, these new ways of working bring together global and local audiences, formal organisations and informal communities. In principle, this extends the problem-solving capabilities of the global community, and its ability to respond to crises by organising the effort of globally distributed networks of volunteers. Developing a better idea of how these communities work is critical in evaluating the potential of new technologies.

## Second implication

Other processes involve institutional practices and dynamics of appropriation, the different ways in which new technologies and new ways of working are adopted and modified by communities on the ground, the civil society, and formal organisations. In recent years there has been a host of formal initiatives, like UK open gov and the recent open data initiative of the World Bank, that try to capitalise on the innovative potential of open source software communities and the information commons movement. Understanding the way technologies are shaped, that is how technological possibilities are translated into specific initiatives and woven into specific agendas, is critical in evaluating their impact and the limits of technological innovation.

The positive shaping of these possibilities, especially in development work, requires the willingness and the capacity of researchers and practitioners not only to understand these processes but also to engage with technologies themselves

in order to understand the opportunities that they provide, where important points of control lie, and the choices that are encoded in their design and use.

### Third implication

In many cases this involves cooperation with some of the new intermediaries, technology entrepreneurs and social movements, and an awareness of the broader forces that shape the information and communication landscape, such as the dialectic between the private and the public character of information and knowledge. In the context of international development, technologists can benefit from development practitioners' and researchers' knowledge of the dynamics of poverty and exclusion and the politics of information to develop tools that are relevant and appropriate for the contexts in which they are deployed.

### Fourth implication

A contribution can be made by researchers with an understanding of the dynamics of information technology and of how technologies work as social processes, as agents of positive transformation from the status quo.

There is no easy answer to the question of the radical or mundane character of new technologies, as much of it depends on how technological possibilities are realized, and one's vantage point in assessing them. Between the argument that there is nothing new under the sun, and an unreserved optimism stemming from technological advances, lies the need for critical reflection informed by scholarship, an understanding of the variegated social processes and institutional practices that shape technologies from production to consumption, and the desire to engage with technology and technology actors.

### References and Further Reading

References for IDS Practice Paper In-Briefs are available via this link:

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# Learning about New Technologies and the Changing Evidence Base for Social Science Research and Decision Making in International Development

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What makes development research accessible, relevant or appropriate for people outside the research community? Does development research get its due in policymaking and practice? What would be value for money in research communication?

The Impact and Learning Team at IDS are interested in how communication of research brings about change - in particular, what happens when people and technology mediate between researchers and decision makers. We use the term 'intermediary' to describe people and technology acting in this way. We think they play a critical role in making knowledge accessible, relevant and responsive to demand.

The work we are doing in the Impact and Learning Team (ILT) is exploring and testing this assumption using action research. We support people to think about the difference they want to make as well as how they are going to go about it. We draw insights and approaches from IDS's history of research, and the fields of marketing, strategic planning and evaluation, and capacity development.

This Practice Paper is an output from our work.

## Full list of papers in this set

Batchelor, S. (2011) 'Learning about analysing Networks to Support Development Work?', *IDS Practice Paper In Brief 1*, Brighton: IDS

Batchelor, S. Gregson, J and Crooks. (2011) 'Learning about an Alternative Approach to Strategic Discussions,' *IDS Practice Paper In Brief 2*, Brighton: IDS

Ishmael Perkins, N. and Okail, N. (2011) 'The Large Conference Re-Imagined and Re-visited,' *IDS Practice Paper In Brief 3*, Brighton: IDS

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Hogan, C. (2011) 'Learning about the Role of Culture in Research Policy Intermediary Work,' *IDS Practice Paper In Brief 5*, Brighton: IDS

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