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## Web 2.0 tools for development: simple tools for smart people

by **ETHAN ZUCKERMAN**

### Introduction

I know very little about agriculture or food – but I do know a little bit about Web 2.0.<sup>1</sup> This phenomenon has so many names, manifestations, and different ways to talk and think about it. The one I usually use is the read-write web. Essentially, the Internet began as a way of sharing computer resources. But very quickly, it turned into human communication. If you give people the opportunity to communicate over the Internet they will do so.

Email actually preceded the Internet. In 1965 at Massachusetts Institute of Technology (MIT), people were sending email back and forth because they shared the same computer. By 1969 we had the Internet, and by 1971, email between computers – within nine months the majority of Internet traffic was email. The World Wide Web started in 1990. Web blogs (blogs) are over ten years old. Wikis are even older than that, from 1995. Wikipedia is becoming an enormous phenomenon, and that is nearly eight years old.

We often forget is that this is actually relatively old technology and ideas. Most Internet technology is over twenty years old. So why are we talking about it now? Because it's not about the tools, it's about the people. We are experienc-



### Box 1: Four sets of bloggers from around the world<sup>1</sup>

Top left: the first Cambodian bloggers conference, Phnom Penh, July 2007. They call themselves the cloggers. They got together to talk about how to bring forward Cambodian blogging. Top right: Jordanian bloggers, one of the most vibrant blogospheres in the world.<sup>3</sup> They did a lot of the frontline reporting when the hotels were bombed in Jordan. Bottom left: Tanzania, the TED African conference. Over a hundred bloggers came to this very elite technology conference held in Arusha, Tanzania.<sup>4</sup> Bottom right: Global Voices Forum, New Delhi, 2006. This conference brought together bloggers from all around the world.

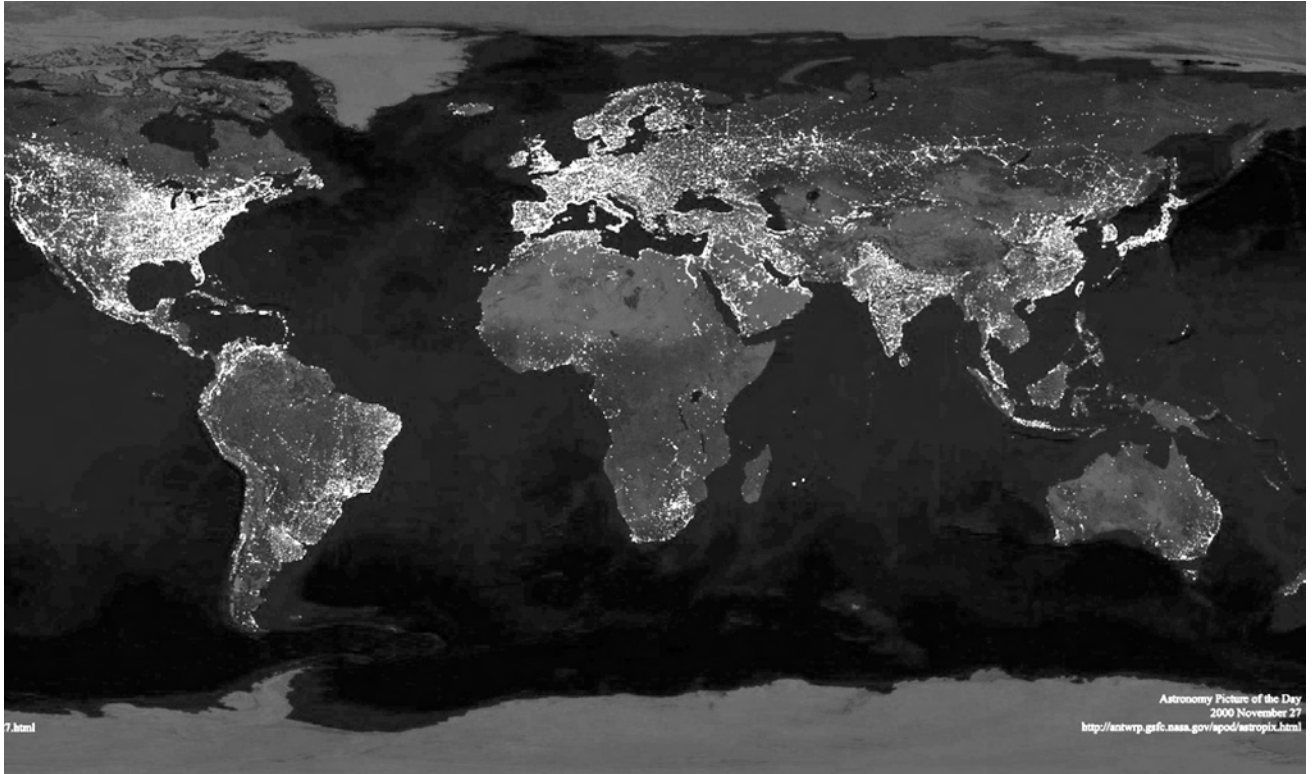
<sup>2</sup> For a definition of 'blog', see glossary, p.121. See also Kreutz, p.28 and Blogging p.106 (this issue).

<sup>3</sup> 'Blogosphere' is a collective term encompassing all blogs and their interconnections. See also Blogging p.106 (this issue).

<sup>4</sup> Held 4th–7th June 2007 'Africa: The Next Chapter,' Arusha, Tanzania.

<sup>1</sup> For a definition of Web 2.0, see glossary, p.123 and overview, p.8 (this issue).

**NASA's view of the earth at night. If somewhere is not lit up the odds are that it does not have a good Internet connection.**



ing a seismic shift – it's about who can be brought together with these tools.

### Issues of access and connectivity

Web 2.0 tools have an amazing capacity to bring people together in the same place. Currently, there are well over a billion people online. And critically, in most developing nations you can now expect a small percentage of people online. But this is very different from place to place. In North America you can assume that if you put information online someone can access it. But in the developing world we cannot make this assumption.

The image above should be mandatory for anyone who uses Information and Communication Technology (ICT) for development. It is NASA's view of the earth at night. It really illustrates the challenge. If somewhere is not lit up the odds are that it does not have a good Internet connection. You need electricity to be online in a sustained, meaningful and engaged fashion. And lots of the world is still suffering from basic infrastructure problems that make it very difficult to participate in many of the high bandwidth activities that we are talking about.

The image on the next page shows the fibre optic cables

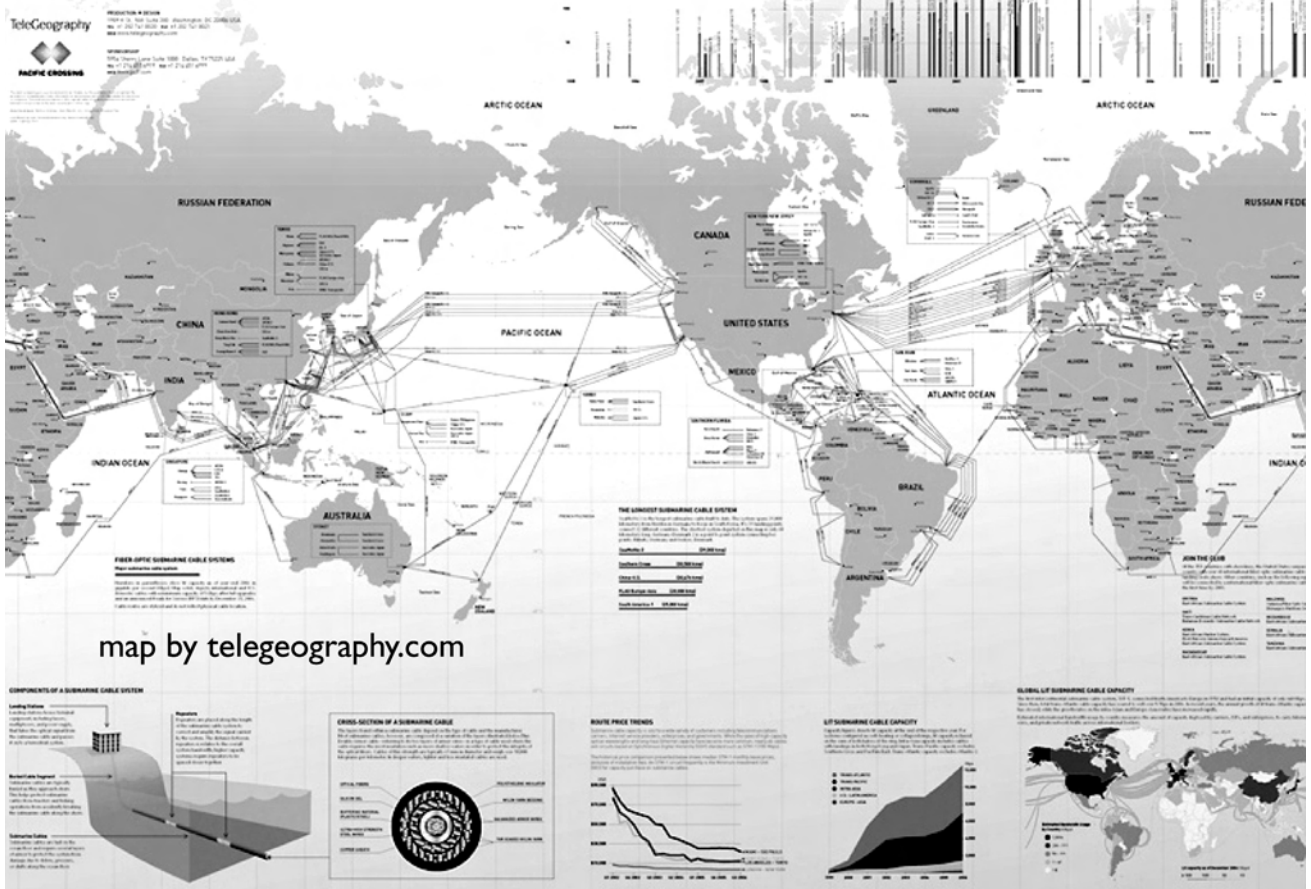
connecting the world. There is a single cable in West Africa, the Sat Three cable.<sup>5</sup> There is no cable at all in east Africa. Where these cables are is where you have the chance to get good and inexpensive Internet connectivity. But there are large parts of the world without high bandwidth at this point. In places like these, it is not about laptops, or high bandwidths: it is about much smaller devices, like the mobile phone. And the mobile is the most amazing revolution that we have seen in information technology so far.

### The mobile phone revolution

We are now rapidly heading towards 3 billion mobile phone handsets worldwide. Even in less developed countries an estimated 80-90% of people have access to one. This is a level of penetration of technology that changes all the rules of the game. So when we think about participatory media, about read-write media, we have to think beyond the laptop and the Internet. We need to think about projects like Interactive Radio for Justice (see Box 1).

<sup>5</sup> 'SAT-3/WASC or **South Atlantic 3/West Africa Submarine Cable** is a submarine communications cable linking Portugal and Spain to South Africa, with connections to several West African countries along the route. SAT-3/WASC provides the only optical fibre link between West Africa and the remainder of the world.' Wikipedia: en.wikipedia.org/wiki/SAT-3/WASC\_(cable\_system)

### SUBMARINE CABLE MAP 2007



map by telegeography.com

Mobile phones are also being used in election monitoring. This is incredibly powerful. In 2000, Ghana had a remarkable election. It was a relatively peaceful transfer of power from one political party to another. It has really increased Ghana's prosperity. One of the reasons for this was election monitoring, using mobile phones and FM radios. The theory was, if someone was preventing you from voting at a polling station, you could make a mobile phone call. You didn't call the government or the police. You called the local radio station. They would broadcast that people were being prevented from voting and that if the police did not show up to enable people to vote, then it was public accountability. This model used SMS, radio and the Internet.<sup>6,7</sup>

<sup>6</sup> Another example of election monitoring is the Ushahidi project – see Okolloh (this issue).

<sup>7</sup> Short Messaging Service (SMS): used for sending and receiving short text messages via mobile phones.

#### Box 1: Interactive Radio for Justice

Interactive Radio for Justice has been taking place in the eastern Democratic Republic of Congo. This is a fascinating radio and mobile phone project. It is an opportunity for people in Congolese villages to ask questions of leaders, and these questions can be very pointed. 'Hi, there are ten soldiers living in my home, they say I have to feed them. Do I have to feed them?' You might guess this is a dangerous question to ask, but you might want to ask the United Nations forces in charge, or the defence minister and the minister of justice – and that is what this radio programme does.<sup>8</sup> It gives people – particularly women – the opportunity to send questions via mobile phone text messages to very powerful people, and have them answer them over the radio. Groups of women organise listening parties around AM radios, to understand those answers. I think this is going to be the culture for many countries that we work in. It is not as sophisticated as some Web 2.0 technologies. But it is back and forth and participatory – and it uses the right technology for the people it is trying to reach.

<sup>8</sup> United Nations Mission in the Democratic Republic of Congo (MONUC)

### Using telephones to access information

One of the most interesting new technologies is called IVR: Interactive Voice Response. It has great potential.<sup>9</sup> It is a way to build phone systems that provide audio information over your phone. It is not written in text, the same way you would normally get it on a website. The idea is that you can go into a phone system and say, 'Tell me about crop prices,' or 'Tell me about medical information.' You either use voice recognition software, or work your way through an audio menu to get the audio delivered. This is so important because text-based web – and also SMS – only works well if you are literate. For many people, to really access this information, it is more appropriate to talk to them than it is to give them text. We can use FM radio, but that is still a broadcast technology. IVR allows people to retrieve information as and when they need it.

### Learning from the activists

If you give people the tools, they can feed you information. And for most people, those tools are mobile phones. There is a project in Zimbabwe, called Kubatana.<sup>10</sup> They realised that most Zimbabweans are trying very hard to stay alive. The chances of going to a cyber café and writing a long political essay are rather small. But many people in Zimbabwe have mobile phones. So Kubatana is asking people, for example: 'Are you going to participate in the next 'stay away'?'<sup>11</sup> They then use the Internet to connect – not with Zimbabweans, because that is not the best way to reach them – but with the wider world. But they use the mobile phones to collect the information from the people first. The mobile is the input and the Internet is the output. As a Westerner, the Internet is the best way for me to access this information. For Zimbabweans, it is SMS. And using the appropriate tools, for the right job at the right time, is something that we all have to understand. I recommend learning from these activists.

Something really interesting about working in Web 2.0 with human rights is that activists are 'lead users'. Lead users are those who push the limits of what is possible with the technology because they need things that the technology is not able to do. For example, the Egyptian Kefaya movement

**"In North America you can assume that if you put information online someone can access it. But in the developing world we cannot make this assumption."**

is finding fascinating ways to use Web 2.0 tools to communicate.<sup>12</sup> One of the ways they have done this is by using blogs as newsrooms. People in the field report using SMS, online instant relay chat services (IRC, or instant messaging), and digital photos. They make a phone call, and someone sitting at home in front of a high bandwidth connection acts as the newsroom, reporting on their activities, and other activities in Egypt, because otherwise it is very difficult to get their voices heard in the Egyptian press. This newsroom then suddenly becomes the source for mainstream television and media all over the world. So if the local press will not report what you are doing, you can become the local press by using blogs.

This became very important for Alaa Abd El Fattah, who was one of 800 people arrested during a protest in Egypt, 2006. There was no media coverage of it at all. But Alaa started blogging from prison. Alaa is married to Manal, and they run a blogging website together.<sup>13</sup> While Alaa was in prison, he wrote long blog posts, passed them out to Manal, and she would put them online. Despite spending 60 days in prison, he was watched by the entire world, resulting in a movement to try and get him out of prison. It had international news coverage. When he was finally released there were television reporters surrounding the court.

Another interesting Web 2.0 tool is Twitter.<sup>14</sup> You can write a message of up to 140 characters long, and upload it online either from a computer or via SMS. It goes out to everyone who is following you. And many of the people who use Twitter use it to say things like, 'I'm at FAO giving a presentation'. It isn't really rich discourse. But it is great for activists, who, like Alaa, may end up in prison. So what you say is, 'I'm being taken to this police station, if I'm not out in four hours, please come and look for me.' And this is how Alaa has used Twitter.

<sup>9</sup> A good example is Voxiva, a company which has developed IVR solutions for the health and microfinance sectors. See <http://voxiva.com> for more information.

<sup>10</sup> [www.kubatana.net](http://www.kubatana.net): The NGO Network Alliance Project – an online community for Zimbabwean activists.





<sup>11</sup> A 'Stay away' is a day of protest organised by the Zimbabwe Congress of Trade Unions (ZCTU) where people are urged to 'stay away' from work to press government to address the economic meltdown. See [www.zctu.co.zw](http://www.zctu.co.zw) and [http://en.wikipedia.org/wiki/Zimbabwe\\_Congress\\_of\\_Trade\\_Unions](http://en.wikipedia.org/wiki/Zimbabwe_Congress_of_Trade_Unions)

<sup>12</sup> Kefaya (Egyptian Arabic for 'Enough!') is the unofficial moniker of the Egyptian Movement for Change, a grassroots coalition which draws its support from across Egypt's political spectrum to oppose President Hosni Mubarak's presidency. See <http://en.wikipedia.org/wiki/Kefaya> and <http://kefaya.org/index.htm>

<sup>13</sup> [www.manalaa.net](http://www.manalaa.net)

<sup>14</sup> Twitter is a social networking and micro-blogging service. See p.108 for more information.

Web 2.0 tools:  
'Cute cats'  
versus activism.

	cute videos of your cats	videos of trade union protests
	cute photos of your cats	subversive photos unblocked by firewalls
	overlay your cute cat photos on a map of your neighborhood	overlay of prisons, land ownership in your country
	realtime updates on your cat being cute	realtime updates on whether activists are free or imprisoned
	links to aspects of your cat's online presence	online newsrooms reporting on activist activities

Ethan Zuckerman

### The 'cute cat' theory: repurposing Web 2.0 tools

This is the main theoretical aspect of this article. I call it the 'cute cat theory' of Web 2.0. Web 1.0 was about static websites, home pages and online commerce and so on. Web 2.0 has different origins. Web 2.0, the 'I can share with you' web, was invented so that I can show you cute photographs of cats, and put captions on photos of cute cats, and show them all over the world. These tools were crafted for the most boring, silly purposes. But they get repurposed. So YouTube may be about showing you fun videos of cute cats – but it also lets us get videos out of Zimbabwe, and shows you a trade union protest.<sup>15</sup> Flickr allows me to put funny captions on photos of my cats to share with you, but it is also a great way to get around the Chinese firewall which blocks

certain sensitive texts.<sup>16</sup>

There are two serious points to this. For activists, there is a great benefit in using these tools. Because so many people want to use them for boring purposes, authorities do not want to prohibit access to them. So I think it is worth using these tools which have a social cost to ban rather than using a tool you have created yourself. The second thing is something we have learnt over years about ICT for development. Getting someone else to pay your development costs is a really good idea. Flickr has thousands of people working on making better and better photo-storing websites. Why create your own for development? Use the tools that already exist for your own purposes. But the problem when using these tools is that you put your data in the trust of someone else.

<sup>15</sup> YouTube is a video sharing website where users can upload, view and share video clips. See [www.youtube.com](http://www.youtube.com).

<sup>16</sup> Like YouTube, Flickr is a free to use image and video hosting website and online community platform, where users can upload, view and share images and video clips. See [www.flickr.com](http://www.flickr.com).

**“For activists, there is a great benefit in using these tools. Because so many people want to use them for boring purposes, authorities do not want to prohibit access to them.”**

It is a natural concern that we want to own our own infrastructure. But people are learning to use these collective tools because in many ways they are a lot more powerful than anything you can build yourself. This is mainly because there are thousands or hundreds of thousand of people working on them.

Web 2.0 forces us to become more trusting. But we can be careful about it, about how we license our data. Always make copies. There is also data that we never want to entrust to anybody else. It is important to be able to communicate very securely and to encrypt your own information if necessary. But for a lot of these systems, there is literally no way you can build these from scratch.

### Which tools for which purposes?

To decide which tools are best for you, you need to think about who you want to reach and how. A lot of people are using virtual environments. But they are only useful to very few people with extremely high bandwidth – not the people we want to reach. They also need to be effective. What are you actually going to get out of it?

You also have to ask: what are your users putting into it? Something that has become very trendy in the non-profit sector is recruiting for causes on Facebook. E-petitions are also very popular. If all you have to do is click a button saying ‘join my cause’, people will join. But what does it mean? We are looking for participation. We are looking for engagement. We are looking for people to put content out there. If someone simply says, ‘Oh, this is important to me’, it is not nearly as interesting as someone actually being able to send you a message, write a post, share their voice, and articulate themselves.

### Blogging: the ecosystem of links approach

This leads me to blogging. Blogs are as generic as a piece of paper, a press release, a newspaper, or a personal diary. What you need to figure out is why you are writing and who you are writing for. For me, it was a way to express my half-formed ideas and getting feedback on them, ‘Hey, folks in

my community: help me think this through’. If you blog as a way of sharing academic ideas with people working in your field, that can be very powerful. In my department at Harvard, you would have to blog for the simple reason that this is how we engage in academic conversation.

The other powerful thing about blogging is links. I was in Zimbabwe last year and wrote some fairly harsh posts about Zimbabwe. If you go online and search for ‘holiday’ and ‘Harare’ you won’t find travel guides or a ministry of tourism website, you will find my website. This is not because I’m the most knowledgeable person on Zimbabwe. It is because of the magic of links.<sup>17</sup> Search engines like Google love links. Google looks for websites that are linked to lots of different places. And blogs get linked to a degree that almost nothing else gets linked.

Blogs exist in a digital ecosystem where links are our currency. We link as a way of saying ‘I’m interested in this’ or ‘I think this is really stupid’. We link all the time. And so on my little blog there are thousands of people who are linking to me, and Google sees this and says, ‘Wow, there’s a thousand of people pointed at him, he must be important, he must be knowledgeable’.

This is the reason to blog. And this is the reason organisations should be blogging. Whether you are blogging formally or informally, take the ecosystem approach. If you want to be recognised by search engines like Google, you have to look at who is searching for you. And the best way to get linked to is to link to other people too. You have to figure out how to participate. And participating so that people link to you and you link to them is one of most effective things you can do.

### Linking to Wikipedia

However, the single biggest thing you can probably do as a non-governmental organisation is to use and understand Wikipedia.<sup>18</sup> If you search Google for ‘food security’, the number one match is going to be Wikipedia. Wikipedia is now the ninth most popular website in the world. It is an enormous project with hundreds of thousands of people working on it, but you can be one of them at a very, very low cost of entry. People worry, ‘Can I edit Wikipedia?’ or ‘Can I participate in it?’ The answer is yes. Wikipedia is a culture of

<sup>17</sup> In computing, a hyperlink is a reference, link, or navigation element in a document or websites to another place or other websites. To insert a hyperlink to another place is often simply called to ‘link’. See: [en.wikipedia.org/wiki/Hyperlink](http://en.wikipedia.org/wiki/Hyperlink)

<sup>18</sup> Wikipedia is a free online encyclopaedia that anyone can edit. It is a multilingual, web-based, free-content encyclopaedia project. The name ‘Wikipedia’ is a combination of the words *wiki* (a type of collaborative website) and encyclopaedia. See: [en.wikipedia.org](http://en.wikipedia.org)

**The single biggest thing you can probably do as a non-governmental organisation is to use and understand Wikipedia. If you search Google for 'food security', the number one match is going to be Wikipedia.**

The screenshot shows the Wikipedia article for 'Food security'. The article text includes:
 

- Food security** refers to the availability of food and one's access to it. A household is considered food secure when its occupants do not live in hunger or fear of starvation. According to the World Resources Institute, global per capita food production has been increasing substantially for the past several decades.<sup>[1]</sup> In 2006, MSNBC reported that globally, the number of people who are overweight has surpassed the number who are undernourished - the world had more than one billion people who were overweight, and an estimated 800 million who were undernourished.<sup>[2]</sup> According to a 2004 article from the BBC, China, the world's most populous country, is suffering from an obesity epidemic.<sup>[3]</sup>
- Worldwide around 852 million people are chronically hungry due to extreme poverty, while up to 2 billion people lack food security intermittently due to varying degrees of poverty (source: FAO, 2003). As of late 2007, increased farming for use in biofuels,<sup>[4]</sup> world oil prices at more than \$100 a barrel,<sup>[5]</sup> global population growth,<sup>[6]</sup> climate change,<sup>[7]</sup> loss of agricultural land to residential and industrial development,<sup>[8][9]</sup> and growing consumer demand in China and India<sup>[10]</sup> have pushed up the price of grain.<sup>[11][12]</sup> Food riots have recently taken place in many countries across the world.<sup>[13][14][15]</sup>
- It is becoming increasingly difficult to maintain food security in a world beset by a confluence of "peak" phenomena, namely peak oil, peak water, peak grain and peak fish. More than half of the planet's population, numbering approximately 3.3 billion people, live in urban areas as of November 2007. Any disruption to farm supplies may precipitate a uniquely urban food crisis in a relatively short time.<sup>[16]</sup> The ongoing global credit crisis has affected farm credits, despite a boom in commodity prices.<sup>[17]</sup> Food security is a complex topic, standing at the intersection of many disciplines.
- A new peer-reviewed journal of *Food Security: The Science, Sociology and Economics of Food Production and Access to Food* is to be published from 2009.<sup>[18]</sup> In developing countries, often 70% or more of the population lives in rural areas. In that context, agricultural development among smallholder farmers and landless people provides a livelihood for people allowing them the opportunity to stay in their communities. In many areas of the world, land ownership is not available, thus, people who want or need to farm to make a living have little incentive to improve the land.
- In the US, there are approximately 2,000,000 farmers, less than 1% of the population. A direct relationship exists between food consumption levels and poverty. Families with the financial resources to escape extreme poverty rarely suffer from chronic hunger, while poor families not only suffer the most from chronic hunger, but are also the segment of the population most at risk during food shortages and famines.
- Two commonly used definitions of food security come from the UN's Food and Agriculture Organization (FAO) and the United States Department of Agriculture (USDA):
  - Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. (FAO)
  - Food security for a household means access by all members at all times to enough food for an active, healthy life. Food security includes at a minimum (1) the ready availability of nutritionally adequate and safe foods, and (2) an assured ability to acquire acceptable foods in socially acceptable ways (that is, without resorting to emergency food supplies, scavenging, stealing, or other coping strategies). (USDA)<sup>[19]</sup>
- The stages of food insecurity range from food secure situations to full-scale famine. "Famine and hunger are both rooted in food insecurity. Food insecurity can be categorized as either chronic or transitory. Chronic food insecurity translates into a high degree of vulnerability to famine and hunger; ensuring food security presupposes elimination of that vulnerability. [Chronic] hunger is not famine. It is similar to undernourishment and is related to poverty, existing mainly in poor countries."<sup>[20]</sup>

 The page also features a sidebar with navigation, search, and interaction options, and a 'Contents' table of contents at the bottom left. On the right, there is a line graph titled 'Food production per capita index 1961-2005' showing an upward trend, and a photograph of a field of barley with the caption 'Barley is a major animal feed crop.'

sharing information. But you have to be believable and share information respectfully and respect the culture. Learn how that culture works. Linking to Wikipedia is literally the most effective thing you can do.

### Filtering: accessing relevant information online

The last thing I want to talk about is filtering. I was introduced to filtering in the context of Global Voices.<sup>19</sup> Filtering is something important that we forget about. There are close to 100 million people creating content online. When 100 million people talk, it is really hard to listen. So how do you filter those voices to a meaningful size? One way is by getting together in groups and saying: 'This is what is important to me'. One example is Muti, a South African project that just looks at African voices.<sup>20</sup> It votes and ranks what is the most interesting and important content online. For your work, this may turn out to be very helpful. A World Bank project called

buzz monitoring looks at over a thousand development blogs and websites and then lets you put your own filter on top of it.<sup>21</sup> For example, you can use 'malaria' as a filter. Buzz Monitor then retrieves links to the most relevant content.

### Filtering and translation

The most important thing about filtering is that it is not about the tools, it is about the people. To really filter information meaningfully, people have to do it. If you hand 100 blog posts to a person and say 'Which ones are about malaria?' you will get far better information than by relying on a search engine. For example, Global Voices is a project which takes citizen media – e.g. blogs, videos, or Podcasts – from all over the developing world and presents it to people in a way that is useful for them.<sup>22</sup> It is not high-tech – we use free tools, such as the free Google email service and other mailing lists. But it works because about 120 people work on it. They select the most interesting content and translate it – an enormous task. Speaking English on the Internet is no longer

<sup>19</sup> Global Voices Online is an international network of bloggers and citizen journalists that follow, report, and summarise what is going on in the blogosphere in every corner of the world. See: <http://globalvoicesonline.org>  
<sup>20</sup> See [www.muti.co.za](http://www.muti.co.za)

<sup>21</sup> See: <http://buzzm.worldbank.org>

<sup>22</sup> For a definition of 'Podcast' see glossary, p.122 (this issue).

enough. There are more non-English than English speakers online. There are more people blogging in Japanese and Chinese. You have to translate.

### Filtering for meaningful content

Most importantly, you have to add context. And this is where we do the most work. For example, if you are interested in agriculture in the developing world, you have to think about the issues and select stories that will make sense to a wider audience, and translate so people can understand them. Then you have to contextualise the content. For us it takes hundreds of people to do this, and really thousands because we also rely on the bloggers who create that original content. If anything is important about Web 2.0, it is finding ways to line up dozens, hundreds, or thousands of people to solve these tasks that are otherwise almost impossible for us to solve alone.

Using Web 2.0 tools for development does present risks and challenges. Letting people speak freely is threatening. And letting everybody speak to a potentially global online audience is extremely threatening. What is so interesting about these tools is that anybody who can get online can use them. It has always been possible for ill-informed, bigoted people to stand up and speak to a large group of people. All Web 2.0 really does is amplify people's voices. You will often find that they are the harshest or most outrageous voices. So you need filtering. Look for the most interesting, pertinent voices, the voices speaking to a particular topic or set of issues.

**“It’s not about the tools – it’s about the people the tools bring together.”**

### Conclusion

This new Web 2.0 movement means that eventually, everyone who is connected on the web is going to be producing something. This is just the start. Out of the hundred million people creating content online, there are probably only a tiny fraction who would ever want to be speaking to you. The vast majority of people use these tools to speak to their family and friends, within private communities. But the question about information niches and wider niches is really important. Many of us get very deep in one particular corner of the blogosphere. I know a lot about development and African blogs, but occasionally I read other types. And I have to figure out who I want to listen to and who I want to believe. Who are the experts in those spaces? What I think we will have to get very good at, is not so much listening to individual voices, but to the editors and aggregators.

It is about simple tools for smart people. I have a lot of faith in human beings. It is people who are emerging as online subject experts – and those of us who are going to be really well informed are simply going to have the best collection of subject experts.

It’s not about the tools – it’s about the people the tools bring together.

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#### NOTES

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