

## 2005 – International Symposium on Online Journalism

### Saturday – Keynote Speaker

#### *"The Explosion of User-Generated Content Online"*

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#### **Speaker:**

**Gary Chapman**, Director of the 21st Century Project at the Lyndon B. Johnson School of Public Affairs at UT Austin and a Columnist at the Austin American-Statesman

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**ROSENAL CALMON ALVES:** Good morning everybody. I think we are in time to start. I know that some people must be missing after the Friday night fever in Austin, which is very common. It is pleasant. We are delighted to have Gary Chapman with us here this morning. He is one of the stars of our University of Texas at Austin. He teaches at the LBJ School of public affairs here. He is one of our best experts in Texas, in terms of high tech and telecommunications. Although he is not a journalist primarily, he writes a column. He wrote a column for the Los Angeles Times for six years and now he writes a column at the Statesman here. I thought it was a great idea to have him coming and giving us a vision of someone who is deeply involved with high tech and with Internet, with the digital divide, or digital inclusion, in this area, and give his perspective of what is going on in the Internet in terms of journalism. So thank you very much for being here.

**GARY CHAPMAN:** Thank you. It's a pleasure to be here and an honor to be here. You probably heard this before, but for those of you who are not from this area, welcome to Austin and to Texas. I thought I'd start my remarks by saying that I've been doing this kind of work for a little over 20 years now. I've started using the Internet in 1982 and grew up with the PC revolution. I started graduate school at Stanford, in the heart of the Silicon Valley, in the late 1970s and actually got to attend some of the early homebrew computing meetings where the Apple came out of, many of the machines that we now regard as ancient museum pieces. My first computer that I've used was a Xerox Alto that Bob Taylor, who bought up the Internet along with me, that box is now at a museum. When I sent it back to Bob, I had to rent a truck with a hydraulic lift to get it up into the truck, and I replaced it with a Macintosh which I could carry in my hand, which actually had more power than the Xerox Alto. It's been a long and interesting ride watching this technology evolve. I often tell audiences these days that throughout the period of time that I have been watching the Internet, this may be the most exciting time, the most interesting time.

When I was a columnist for the Los Angeles Times, my columns spanned the years of the Internet boom, the dot com boom, and I was pretty much known as a kind of (inaudible). I was constantly writing columns saying, everybody is going crazy, you are all going to lose your money, this is nuts, and all of that turned out to be true. In fact, I was just looking at an article I wrote for the Texas Monthly not too long ago that said; watch out for these stocks, you are getting into some risky territory here.

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That turned out to be true. But now, I'm feeling a sense of enthusiasm, and excitement and interest, much more than I was back then. I think, what happened during the 90s was that we essentially had a roll-out of this technology to the mass population that created the opportunities for experimentation, for novelty, for innovation that we are seeing happen now. We shook out all of the bad ideas and now we've got a new kind of paradigm which I am going to talk about a little bit today, about things that are happening over the Internet that are affecting millions of people, hundreds of millions of people, in very profound ways. Sometime within the next 12 months, we are not exactly sure; we expect that the Internet will hit a billion users. This will be kind of a psychological milestone, I think. Partially because of the growth of this technology, being so dramatically fast, it continues to grow faster than many of us expected. For example, broadband adoption rates here in the United States are growing in more than 40% per year, which is much faster than most experts would have guessed a few years ago. I'll show some charts to you in a minute about where the Internet is growing fastest and how it is covering the globe, basically, even into some of the most remote areas of the world. We expect, if this continues, that within the next five years, maybe seven years, something like that, that we'll add another billion users to the Internet, and that this will be, and continue to be, one of the most dramatic transformations of communications in the history of the world. This gives us all kinds of new opportunities for reaching people in interesting ways either through conventional media sources or, as I will talk about, from the bottom up, where we are seeing lots of user generated content that is increasingly valuable to understanding how the world works. Let me start by showing you a few charts.

This is currently the world distribution of Internet users. These particular figures are probably not surprising, in terms of their proportionality. Africa, of course, is way behind everybody else in terms of both world share and penetration at around 2%. Asia is growing quite rapidly. Europe and North America, of course, are dominating the world share currently, but growth in North America and Europe is starting to slow considerably, mostly because of saturation. About 75% of Americans are online now, which means that the digital divide is getting smaller and smaller all the time. Surveys seem to indicate that about one third of the people who are not online have no intention to ever getting online, which is mostly a generational thing right now. These days, in the schools, we see pretty close to 100% of American school children having access to the Internet, at least in some fashion, either through the school or library or some other place. We expect that over time, this number of people off line will continue to shrink. In some cases, the costs of being off-line will actually grow, because as we get more and more people online and we rationalize processes to serve these people, because of the lowered expense, the fact of being not connected will actually have a higher cost. This is somewhat of a paradox that the digital divide actually gets worse as the numbers get better. This is true in other countries as well.

But here are the growth rates for the Internet from 2000 to 2005. As you can see, some of the places that have the least amount of Internet penetration are actually growing the fastest. Of course, they are growing from a much smaller base, but the fact that they are growing much faster is certainly encouraging, particularly the

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Middle East, Latin America and the Caribbean and Africa, too. It is increasingly common to find cyber cafes and other places where people can access the Internet in Africa and other continents. One of the figures that everybody is watching is growth in China which tends to be concentrated in the urban areas right now but if you just look at these figures, they blow your mind if you stop and think about how many. Especially the broadband access figure, that between 2003 and 2007 we could have a ten fold increase in the number of Chinese that are using broadband. The actual number of total Chinese users is now about en par with the United States and will surpass the United States. We figure that this will have a significant impact on the character of the Internet, potentially bringing the Chinese language, for example, up to par with English as a dominant language online. Certainly giving the Chinese government itself some (inaudible) issues to deal with, as more and more people get online and they have a harder time controlling what they can see.

These are the top ten and bottom ten. This is kind of a composite access index that is prepared by a statistics organization. This is a multivariate index and, as you can see, the top ten connected nations are the ones that you might expect: Scandinavia, Northern Europe and Asian Tiger nations. Of course, all the bottom 10 are in Africa, and the poorest nations in Africa. These are the access issues that are still with us. Most of these points might not surprise you but rural users have the lowest penetration of broadband and the fewest options for getting online. Here in Texas, the research that we've done here in the College of Communications, indicates that there is relative little, or very small differences between rural and urban Texas access. Although in rural Texas it tends to be dial-up, as opposed to broadband, while in urban Texas it tends to be broadband access. The percentages of people that are using the Internet are not significantly different, between rural and urban.

Internet use is still highly correlated with income. With competitive market for access, it is an important point because the lack of a competitive market has a very high relationship with the expense of getting online. If you look at the costs for getting online, that is, how much it costs to access an Internet server provider, if you look at these bottom 10, these ten nations would be in the top ten of how much it costs to get online. Having a competitive market is a big factor. Public access in cyber cafes is still an important resource around the world, as many of us know. In Latin American in particular, there is a very strong cyber caf movement and in Asia we have a similar kind of phenomenon, PC bang phenomenon, that started in Korea and that has now moved to China and Taiwan, I'll talk a little more about that. But the developing world, we know that the cost need to come down dramatically, for the hardware, for the telecommunication access and I'll describe some of that in just a few minutes.

There are promising signs emerging about dealing with some of these kinds of things. There are new technologies coming for access, such as widespread wireless availability and broadband over power lines. Broadband over power lines in particular seems to really have a lot of potential for rural users who have access to electricity but not to a competitive market for broadband. Cheap hand-held devices, working on ubiquitous cell phone devices, maybe an important point of entry for lots of people.

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The hardware costs are falling dramatically and free software is getting more and more capable. There are new business models and technologies emerging for the developing world. I'll talk a little bit about examples of some interesting happening in the developing world about getting access to remote users. This picture right here, in the lower right hand corner is from an East African network called the Arid Land Information Network, which runs from the southern regions of Ethiopia to Mozambique and covers Somalia, Kenya, Tanzania, Uganda, parts of Rwanda, etc. They use the AfroStar satellite, which is in this diagram to collect information, upload it to the satellite and download it to satellite links scattered throughout the East African region. There is another thing that ALIN is doing that is kind of interesting. They use Mp3 files to distribute them throughout the ALIN through these satellite links and then, for really remote users who have no electricity and no infrastructure what-so-ever, including nomadic and semi-nomadic tribes' people. The Mp3 files are broadcasted over the radio, so the computer is hooked to a radio transmitters and the MP3 files become the audio that goes over the radio, which are then picked up by portable battery radios of people in very, very remote regions.

This is an interesting new company. It came out of the work of some graduate students at MIT, it is called First Mile Solutions.com. This is their village area network, which is kind of an interesting idea. What they do is they put mobile wireless devices onto vehicles that have routes through rural villages. This is an example right here, you see this guy, on a motorbike on the back end of his motorbike, he's got a little wireless pack with an antennae on it. This is in Cambodia. These vehicles ride around their circuits and there are wireless devices in the villages that they travel through and when the two wireless things find each other, they transfer data from one to the vehicle and when the vehicle gets back to (inaudible) and connect to the Internet, all that information is uploaded to the Internet and the information that is waiting for the villagers is downloaded to be delivered to them. This is asynchronous delayed Internet access, but an interesting idea for people that are in very remote kinds of areas. This package costs about US\$ 700, which is not cheap but relatively affordable. They have projects demonstrating this in Rwanda, Cambodia and Costa Rica and several other countries. This is kind of a company to watch, I would think. There is also a version of this in operation in South Africa, which works a little bit differently. Instead of using wireless, they bring the cost down even further by using this small USB thumb drives, and the guy on the bike or the driver on the bus carries this little thumb drive with him. When he gets to a computer center that has no Internet access, he gets off the vehicle, plugs the drive into the computer and an open source software package, that was developed by this guy in South Africa, loads all that information on to the drive and then he takes that with him and loads it onto a computer when he gets Internet access.

I thought I'd show you some of the more remote kinds of access places that I know about. This is on (inaudible) Laos, this is on a mountain of Laos. In the (inaudible), this is an incredibly remote village that has a local area network for the village that runs in Wi-fi. Here's the Wi-Fi tree in (inaudible), Laos, and until recently this was run by bicycle powered generator. When they wanted to access, they would get somebody on the bicycle and ride the bicycle to power up the Wi-Fi transmitter and

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get the information and stop peddling. They've since gotten electrical power to this village but an interesting kind of technique. This is my wife and me, my wife is here with us today. This is in (inaudible), this is at the end of a five hours of dirt road. Certainly the most remote Internet access point that I've ever been to personally. This is on the margins of the (inaudible) reserve in Kenya. They not only have one server provider, they have two serving this village. This is satellite connectivity. This is the village itself, where both of these businesses operate. In case you think that these businesses are there for tourists, tourists don't stop here, believe me. This is the local housing of the village where these people can access the Internet through those two companies.

One of the interesting things that is happening now is that companies, major companies are getting interested in the developing world as a new place for business. Hewlett-Packard for example, has opened research and development labs in both India and South Africa. Not to take advantage of cheap labor but to actually research the market in circumstances that are considerably different than they are here in the developed world. Our local company here in Austin, Advanced Micro Devices, has launched this new program called the Fifty By Fifteen initiative at the behest of their CEO Hector Ruiz, who is a native of Mexico. The Fifty By Fifteen initiative stands for the company's strategic vision of getting 50% of the world online by the year 2015, ten years from now. One of the interesting things about this is that this is not considered part of their service, or philanthropic operations. This is one of the strategic goals of the company. They consider this to be part of their business plan. Paying attention to this and to the developing world has now resulted in a reorganization of the company, in an adjustment of their strategic vision and the production, in particular, of its first ever consumer product, which I'll describe in just a minute. They are targeting people who have a salary, a family income, of between US\$1,000 to US\$7,000 a year, which is a huge segment of the world that has so far not been target market of PC manufactures. This is an interesting new development, that companies having seen the saturation in the market for PCs and Internet access in industrialized world, the developed world, are now turning their attention to this new segment and adjusting their technological development and strategies to that market.

Here are some examples of some of these new technologies. (Inaudible) has now developed this box, which we saw a demo of it at the LBJ School just a few weeks ago, called the PIC, which stands for Personal Internet Communicator. This runs Windows, a kind of strip down version of Windows. It costs about US\$200. They are not selling it to end users. They are selling it to Telcos and Internet service providers who then, in turn, sell this as an access device to their Internet servers. It's got some interesting engineering features in it. It runs in practically any source of power. It will run on really dirty electricity. It will run on power grids that have routine brownouts or blackouts. It will even run on a car battery. They've decided that one of the expenses of PCs was the technical support, so they've made this so that it is almost sort of idiot proof. The entire disk drive can be re-imaged remotely. Instead of being on the phone with somebody and walking them through this or that kind of problem, with a virus or a bug or something like that, they just re-image the whole

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drive, which is kind of an interesting technique. You can hit the power button on this, right in the middle of anything that you're doing and it will come right back up, exactly as it was. If you put the icons in the trash, and you shut down the machine, and you turn it back on, they come right back to where they were. Tweaks like that to think of they can deal with, not only nave users, but an infrastructure in where you want to keep the costs down as low as possible.

Wal-Mart, you may have seen, also has a US\$200 PC, this runs Linux, a version of Linux. It's a little bit different from some of the PCs we're used to but they brought the price way down. These prices are dropping like crazy. We also have the so called Simputer, which is made by a company in India., which is a hand-held device that cost a little bit under US\$200. We expect that these prices are continue to drop, that the goal of AMD, we've been told, their engineers tell us that they want to get the price down to about US\$50 and the size of the box down to the size of a deck of cards. We expect that will be feasible, within the next five years, from a device point of view. There are lots of other issues involving access, but from a pure hardware point of view, we think this is certainly possible.

There are also some interesting techniques for urban users that we're seeing, for low-income urban users. Obviously, I've mentioned the importance of cyber cafes and Asia's PC bang phenomenon which has somewhat faded in importance in Korea, I understand, but is now a significant factor in China. China started with cyber cafes, as the conventional model, but has since gravitated towards the Korean PC bang model, so you now find institutions in China, specially in big cities, that have 400, 500, 1000, 2000 computers in them. Very different than the conventional cyber caf. Government, of course, gets a lot more control over big concentrations of computers like that. It is more economic for the bandwidth and you serve lots of more customers. Many people think that the PC bang phenomena had to do with the deployment of broadband throughout Korea, introduced broadband to Koreans and motivated them to get it in their homes, and I think that the Chinese and the Taiwanese now are trying to stimulate the same kind of thing in urban China. In Mexico, we have something called the Yahoo! Net Prepago, which means a little card; it's like a pre-paid phone card, except it is for Internet access. This is becoming very common and popular among the urban dwellers of Mexico City and Guadalajara and other large urban centers in Mexico, where you can have an email address, like a Yahoo! email address and you can put this card in any cyber caf and get access to the Internet in a pre-paid fashion, for 100 pesos. Brazil has gone even further with this program called, this is a government sponsored program called Computador de Um Real, which means a CD Rom, it is actually a writable CD disk, that cost about 40 cents, and it has a customizable, personalizable desktop that you use to re-configure the computer in a cyber caf. So you carry this around with you and, when you put it into the machine, it brings up all your applications, your files, your calendar, your contact list, all that kind of stuff, because you're carrying this around with you. This is about the cost of the media, so it is essentially free for the people who use this. This is becoming very popular in Brazilian urban centers.

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And then, of course, we have the growth of free wireless, which most of us are familiar with. Austin is particularly famous for that. I think we have more free wireless hot-spots here in Austin than in any city in the United States. This is a growing kind of trend. We're all familiar with blogging, of course, Dan Gillmor may have shown you this chart from (inaudible), it came out a few weeks ago. This is the growth chart of blogs that (inaudible) is tracking. They are up to 7.5 million blogs. We know that that number is a gross underestimation of the number of blogs out there, but what is important is the rate of growth, where they show blogs doubling every five months. Of course, a lot of these are single initiations of a blog that never get updated, but nevertheless the fact that this is growing so fast, leaves us with a residue of thriving blogs that are having significant impact around the world. We think that this number, internationally, is probably is about twice this figure, maybe even more than that. I just read the other day that Movable Type, which of course is the leading blog company, is tracking about 8 million customers. We think that there may be as many as 20 million blogs worldwide. We're getting blogs all over the world. This is an example of a blog in Farsi. One of the most amazing statistics I've heard at South by Southwest is that there are now 70 thousand blogs in Iran. Seventy thousand blogs in Farsi targeted at the Iranian population, or the Iranian diaspora, one of the two. A speaker at South by Southwest said that, these days, if you are a dating agent in Iran, you want to know somebody's blog address before you want to know their phone number. How popular blogging has become in Iran. It represents about 10% of the entire Internet user population in the country. We're hearing from lots and lots of new voices in interesting places that gives us some perspectives on life that we wouldn't ordinarily have, certainly not through the conventional mainstream medium. This is a family in Bagdad that has been consistently blogging throughout the conflict there. This is a mother and her sons. I don't know if you can see that but, right up here it says, father (inaudible) is not interested, not interested in participating in the blog, but the mother and the sons are doing it. They blog both in English and in Arabic and, in fact, the mother of this family has now produced online courses in Arabic. She's helping English speakers learn Arabic online.

Another development, a relatively new development, is that blogs are beginning to serve social purposes. This, in particular, was a particular great example, the Southeast Asia earthquake and tsunami blog which went up and, in about 24 hours after the Tsunami, this was implemented by a gentlemen in Sri Lanka, an Indian engineer, who thought this would be a good thing to do produce information about the tsunami. This, very quickly, within a few days, became the number one international point information about the devastation about the tsunami and they quickly developed some really very useful features for people all over the world. You can't read these links but here is a link for missing persons. You could upload photos of loved ones you were concerned about to ask people to look for those individuals or, if you were in the area, you could upload photos of people who had been found, who were unidentified so that people all over the world could see them. Here's two links over here. One was help needed and the other one was help offered. You could match international contributions and send skills with the needs of the place. This is still going, by the way and has become a real example of the social utility of this

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technology. I've also been told that United Nations peace keepers are now encouraging blogging by people who are in these zones where United Nations peace keepers are working, in order to boost the amount of information and intelligence that is available to the peace keeping forces. They are convinced about this sort of distributed intelligence model that it can help them do their jobs. In Liberia, for example, which is under the United Nations protectorate status right now, one of the things they are trying to do is distribute computers and build local blogs so that they get more information from the grass-roots about the state of things, for increasing the effectiveness of the administration.

I mentioned to a few people, the last few days I've been to the University of South Carolina in Colombia, they have a program there called Newsplex which is doing some interesting things. This is one of the projects that they did last year, doing mob blogging as news reporting. A program that was sponsored by Cingular because they use cellular phones to do this, cellular phones with cameras. They have journalism students from a number of universities scattered throughout the eastern part of the United States using cell phones with cameras to take pictures and upload content to this website which then became the distributed newsite for reporting on the campaign. This is a really fascinating experiment because you've got a much more fine grain kind of reporting than you did through conventional resources of reporting. Most of journalists tended to gravitate to single points of action or the reporting, like the convention, something like that, where these students actually by not having access to those points, because of not being credentialed journalists, were reporting on things all over the place and actually getting a more interesting, or at least supplemental picture of the campaign and using their camera phones for reporting purposes.

Free software is growing in capability. We've got programs like Drupal and Plone for content management, both of them based on php and (inaudible). These are generating their own code (inaudible) for all kinds of other applications. This new (inaudible) our media dot org, which is a generalized free resource for all kinds of media built on Drupal. We have new resource database which are increasingly capable and free. We have sites for photo sharing like Flickr and Buzznet and others, Ourmedia.org, which just started over the last few weeks, is now advertising itself as a general depository of any media you would like to put up and share it with other people and they are going to keep it forever, according to them. I'm not sure what that means. We've got Skype for voice over IP, RSS aggregators, podcasting software of course, which is free. And podcasting is not just for music now, just this past week, former senator John Edwards, the vice-presidential candidate of last year, who many people think is positioning himself to be a Presidential candidate in 2008, he announced that he is doing podcasting now of his thoughts on politics. Podcasting is, of course, RSS enabled, so you can subscribe to these things the same way you could subscribe to RSS feeds except that you get audio instead of text.

One of the things we're interested in at the LBJ School, we've been fooling around for the last few months is GIS, open source GIS software. Google maps is, of course, has just been rolled out and there are some people playing around with that and

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doing some interesting things. Here is, for example, hacking google maps. We just learned, over the last few weeks that you can hack Google maps with Java Script and XML. This is an example. It didn't come out very well on the graphic, I'm sorry. This is a walking tour of this guy's neighborhood, in (inaudible) New Hampshire. Which means that he's selected the way points. He's actually hacked Google maps so that they show his way points but, what is more interesting about it is that they have his own links on the way points. These way points and the links on them are actually either of their graphics, so Quicktime movies, they're audio files, whatever he wanted to put up, he just threw up some stuff as kind of a demo. Which means that you get kind of a location annotation, which is very interesting and very powerful. Here is another example. This is the new (inaudible) called G3GPS camera. This is a camera that has GPS built into it. Which means that the pictures that you take are annotated with the GPS coordinates, of where you are standing when you take the picture. This camera has Wi-Fi built into it so you can upload photographs from the cameras' memory card without being connected to a computer they have a Wi-Fi network. What we're likely to see, especially as we get GPS into cell phones and cell phones with cameras is, as I said, location annotation, what you might call geo-spatial reporting, where journalism is actually tied to a location of a place. You can look up place and see a history of stories that are actually linked to GPS coordinates.

Everybody is sharing everything with everybody. These are all kinds of sites for sharing. Whatever kind of media you've got, photos, calendars, you can share your calendar, there is a new site for, this is a really clever URL, this is actually the URL, <http://del.icio.us> for sharing bookmarks. What you do is, when you find a site that you like, you have a little bookmarker that sends javascript to this site and it records that site on your personal account, on that website. Anywhere you are in the world, you can access your bookmarks. More importantly, you can share them with other people. What is interesting about this is that your database of bookmarks is also RSS enabled, so people can subscribe to your bookmarks. So, whenever you update your bookmarks, somebody will be notified that there is a new bookmark from you. If you have a community of folks that are watching things, you can share those kinds of things with each other.

Ratings, this is a funny, or could be funny, could be tragic, site: TrueDater.com, which is a place to rate dates. If you have a date with somebody, you can rate them. You go to this site before you go out a date with somebody and find out how he has been rated as a date. Of course, podcasting and video, we have sites like .Mac, where you can put up Quicktime movies and then Ourmedia.org, which takes just about anything. This is kind of an emerging model of Internet use that is so interesting these days. Rich and diverse content. Lots of variation in the content: video, audio, text, photo, you name it. Tied together with easy to use front ends, so the front ends themselves are increasingly easy to use, for content management, for sharing things, for doing all kinds of things that were difficult just a few years ago.

Centralized services, and this is an important point because, we're moving away from applications on the desktop and on the hard drive, and moving towards centralized services that can be accessed from any device. You get a lot of

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advantages out of this. You can concentrate tech support onto a small number of sites, you can share expensive resources, like programming talents, things like that. At the LBJ school right now, we're doing a lot of experimentation with GIS software and, one of the models that we're looking at in New York City where 300 non-profits are sharing the use of an expensive GIS server license. So the 300 non-profit can use this very expensive GIS software for a very reasonable cost. Whereas, if you try to get licenses for all these organizations, it would just be crushingly expensive. Centralized services, of course, facilitated by broadband, really make a difference. Largely free, with new business models, most of these places are free. They are aimed at self expression, communication and community building. They are scalable across different technology platforms. For example, I have an RSS feeder on my phone now, I don't use it very much, but I can get RSS feeds on my phone so we're building in the capability to get scalability to get across different platforms. One of the most important things and interesting things is rapid development of customizable tools online. Most of these things are opened source. You can hack them, like Google maps, Drupal or (inaudible) to do what you need to have done. You don't have to start from scratch, in other words.

This is some of the elements of user innovation. It's content sensitive, it's user driven. We're looking for appropriate technologies, like the first (inaudible) dot com, where you look at the problem and apply the technology to it. You don't look at a village out in the middle of Rwanda and say, how are we going to get DSL to these guys. You look at an appropriate technology solution that's out there and get innovative about how to do that. Availability of usable tools, like I said, php and MySQL and others, free and are now widely available in a sort of basis for a lot of innovation. They have a focus on capacity building, emphasis on voice sharing and (inaudible) rather than a passive experience. Most people are now not interested in introducing the Internet to people just so they can look at CNN.com, or something like that, we're more interested in this sort of model that I've been describing, of sharing, community building, getting self expressive, building blogs, building new platforms for sharing photos and media and things like that. What we're really seeing is grass-roots, local innovation, inspired by global examples. Somebody comes up with a good idea, and then somebody else around the world says, that can be really effective for me, in my particular circumstance. Like the tsunami blog, where this guy, he's heard of blogging, blogging tools are out there, he's inspired by the blogging example and he says to himself: I can do that for this horrible catastrophe that has happened to the world and maybe do something good for the world. I think that's going to accelerate, we're going to see a lot more of that. Especially if we start to get this technology into the hands of more and more people. That's my comments for this morning. If we have time.

**AUDIENCE:** My name is Dean Graber and I was interested in hearing a little bit more about the geo-spatial reporting, where is that being experimented with? What are the tests that are being conducted? How are we likely to start using that?

**GARY CHAPMAN:** I have to say this, this is just speculation of my part at the moment. I don't know of any particular experiments like that. The Reco camera has

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just come out, with GPS built into it. There may be some people out there using GPS devices that are doing something like this, but I haven't seen any organized efforts to do that yet. I think this feature of Google maps, being able to hack Google maps for your own purposes, which incidentally is not really a kind of a hack because it is readily apparent that the people who built Google maps intended for this to be built into the program. I think that is going to open up lots of interesting possibilities. One thing I didn't mention, which deserves a comment, is that one thing that we'd like to move towards, that we don't have now, is the ability to freely pick and choose from these functionalities and to get them to work well with each other, without a lot of redundancy and with a high degree of confidence that you can share the information across platforms and through portals and things like that. We are ways away from that and this is one of the things I think could be a great contribution of computer science and the programming profession, to figure out how to do things like that. For example, if you want to run Drew-pal or (inaudible) or one of these kinds of free software packages, it comes with a registration and log-in procedure. But if you want to run something else, like a calendar program or something that is better than the ones from in those packages, they also come with their own registration and log-in procedures, and the two are not compatible with each other. What we need to do is kind of modularize these functions and get them into a way where we can package them and just pick and choose from the best that are out there, and sort of put them together like (inaudible) toy kinds of capabilities. I think that's going to be one of the interesting programming challenges of the next five to ten years.

**AUDIENCE:** (inaudible), from BBC dot com, I'm interested in your take in these largely free new business models, are they sustainable in the long term or is this going to boom and bust? What's your take on that?

**GARY CHAPMAN:** I think what is happening is a very interesting and unusual social phenomenon that is happening, where the innovation is happening amongst people who are not particularly motivated by money, at least at first. They're trying something and then they get a lot of people to use that innovation and then somebody else comes along and says: well, maybe there is a way we can make money out of this. Their value added to the proposition is precisely what you just described. How do we make this sustainable in terms of having enough income generation that we are able to improve it and make sure that it lasts, and that sort of thing. I think that's another form of experimentation that we're in right now. The classic example, of course, is going from Napster to iTunes, that kind of transition, which I think, in general, most consumers consider it to be a kind of salutary transition, for the most part. There are still people out there doing illegal file-sharing but that ability to take something that was free and move it into a pay model, has not been a terrible jolt, for most users, and I think that that will happen to a lot of other services, too. So, for example, Flickr was just bought by Yahoo!. Yahoo! obviously sees some sort of value in that. Yahoo! is about to roll out, you probably know this, Yahoo! 360, which a lot of people think is going to bring blogging to the mainstream. Blogger.com is owned by Google, etc. We see this sort of gradual absorption of a lot of grass-roots innovative technologies into business models that seem to be thriving. By the way, just sort of in a side comment, you might surmise,

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or at least see the implication about the utter irrelevance of Microsoft to what I've just described to you, as the future of these kinds of trends on the Internet. There are companies out there that get this. Google is one of them, Yahoo! is one of them, there are a few others. There are some interesting new start-ups going on the Silicon Valley, in San Francisco, and Microsoft, as usual, is clueless about most of this stuff.

**AUDIENCE:** Maybe you can develop your idea about Microsoft a little bit, you know, because my question is, what are the implications you see, the implications of this open source moment in expanding the public domain, for copyright law. There seems to be a concern, (inaudible) with the copyright regime just expanding tremendously and completely unethically and so on. Do you think this is an antidote to that, or would it just exacerbate the problem?

**GARY CHAPMAN:** I think that (inaudible) is doing some of the most important work in this area. Again, another experimental and unsettled feature of this whole development. I think that the introduction of things like creative commons and the idea of flexible rights is certainly one of the most important kind of innovations in this respect. We are probably going to be doing some experimentation with open source digital rights management, I would expect that that's probably on the horizon, of figuring out how to do copyright protection for content providers that is not the conventional model of all or nothing and attached to legal institutions and silos and things like that. Obviously, this explosion of information I've been talking about is getting way ahead of copyright as we understand it. Copyright is going to have to catch up in some fashion, but I don't think it is going to be the model that we know now that's going to catch up. It's going to be something much more innovative and flexible. I don't know if that answers your question. It is a hard one to answer.

**ROSENAL CALMON ALVES:** Thank you very much.

**GARY CHAPMAN:** Thank you.