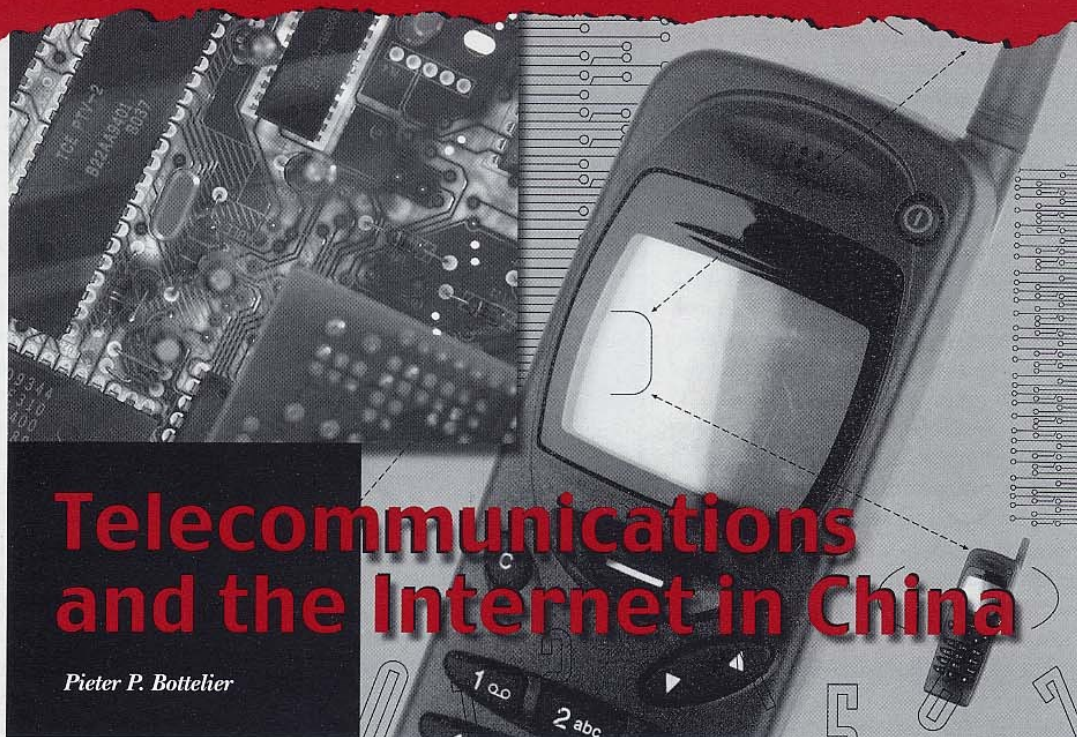Perspectives and analysis for those who serve China

ChinaSource

Telecommunications and the Internet in China

Pieter P. Bottelier

The Chinese have embraced telecommunications and the Internet as mighty allies in the country's quest for economic modernization and growth. As a late starter, China is able to leapfrog technologies, particularly in the areas of communications infrastructure and wireless applications. Although per capita usage rates are still low, the absolute size of China's market for telecommunications services and products is already among the largest in the world. The pace of change is breathtaking. A few facts and numbers to illustrate:

* The number of fixed line telephones, already over 130 million, is increasing at about 20% per year or about 2 million new connections per month. At this rate, China is adding an average sized regional U.S. Bell system every year. It is no longer uncommon for urban Chinese families to have a private telephone in their apartment.

* The number of mobile phone subscribers is increasing at an even faster rate: by the end of 2000 it is expected to reach 70 million. Only the U.S. has more subscribers. China's largest mobile phone company, China Mobile, has already almost as many subscribers as the world's largest mobile phone company, Vodafone.

* The number of pagers in use and annual sales are the world's highest.

* The number of Internet users is expected to more than double this year, to over 20 million, and double again in 2001. Business-to-business e-commerce is beginning to take off. Internet sales to private customers are constrained by the absence of reliable payment, credit and delivery systems.

* The fax, it seems, was invented for China; it made it possible for Mandarin and Cantonese speakers (using the same characters but a different tongue) to exchange documents with ease and without fear for the frequent coding and decoding errors that plagued the old domestic telegraph services. The fax arrived just when the process of domestic market liberalization started;

No other country has experienced a communications and information-access revolution as big and as fast as China is experiencing today.

the timing was perfect. It is now an ubiquitous telecommunications instrument in China.

No other country has experienced a communications and information-access revolution as big and as fast as China is experiencing today. China's government and Communist Party welcome and promote the revolution in principle as a boon for economic development. At the same time, they

are trying to shield the country against the spread of e-pornography while censuring information and monitoring exchanges. The longer-term social, political, economic, financial and fiscal implications of the communications revolution that is unfolding will undoubtedly be significant.

Foreign participation in the manufacturing of telecommunications equipment in China is already high, but there is as yet almost no direct role for foreign companies in service provision. China's impending WTO membership will change all that. Most major multi-national telecommunications and Internet companies in the world are interested in getting a piece of the Chinese action.

The dilemmas, contradictions and paradoxes that have characterized China's economic reforms since the early 1980s are nowhere as pronounced as they are in telecommunications and Internet development.

Basic policy shift

For many years, China's leaders have emphasized the need for control over information flows and telecommunication networks for political and security reasons. More recently, in 1998, after Zhu Rongji took over as Prime Minister and reorganized the government, the focus of the domestic debate on information and telecommunications policy has shifted from control, towards creating a competitive business environment and industry restructuring. The driving force behind this shift is the need for continued high economic growth and technological development. WTO negotiations served as a catalyst to strengthen and consolidate liberalizing forces in the economic
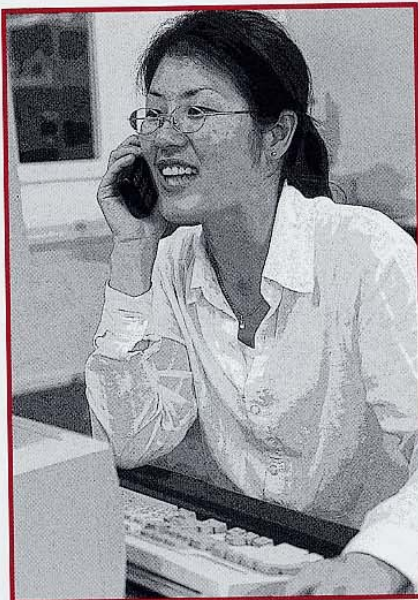
arena. But protectionist forces have also grown stronger. In the area of telecommunications, the newly created Ministry of Information Industry (MII)[1] objected to the terms of the WTO accession agreement signed with the U.S. in November 1999. MII was overruled by the State Council, however.

European Union negotiators succeeded in strengthening some of the telecommunications terms for China's accession to WTO in bilateral negotiations that were concluded in May 2000. Under the Most Favored Nation (MFN) clause of WTO, these improvements will automatically apply to the U.S. and all other WTO members once China becomes a member.

Snags and delays in the implementation of China's WTO accession terms must be anticipated. There is as yet no comprehensive telecommunications law in China, only a set of State Council-approved regulations administered

by MII. This approach is typical: to develop market regulatory institutions, the Chinese often start with a relatively simple set of regulations. When they feel that they have gained enough practical experience with those regulations, they then draft the relevant legislation. By WTO standards, MII has at present too much discretionary power. MII also has significant direct operational and commercial involvement in the sector. It controls the three major existing telecommunications companies: China Telecom, China Mobile and China Unicom[2] and—through China Telecom—it also controls about 83% of all domestic Internet connections. Under WTO rules, MII cannot remain owner and regulator at the same time. The international Basic Telecommunications Agreement (BTA) which is linked to WTO (and to which China has agreed to subscribe), requires the regulator to be independent. Foreign equity participation in Chinese telecommunications and Internet companies may increase significantly under WTO. China Mobile and China Telecom are both seeking to establish a global business profile like other large operators in this field.

MII did not object to the further liberalization of China's telecommunications equipment market under WTO. It felt that lower import tariffs [from a current average of 13% to 0% for goods and components that are covered by the International Telecommunications Agreement (ITA) to which China will subscribe as a WTO member] would reduce domestic manufacturing costs and thus improve China's competitive position on international equipment markets. MII's objections were exclusively concerned with what it

considered an excessively rapid opening of domestic service markets to foreign competition and equity participation. MII would prefer to strengthen and consolidate the domestic and international position of the three major telecommunication companies it controls and other smaller national companies before opening markets. Important legal and institutional changes will be needed for the successful implementation of WTO accession terms in the area of telecommunications. Many of these changes are politically sensitive.

Institutional and technological aspects of system expansion

When market economic reforms started under Deng Xiaoping in the early 1980s, China had fewer than one million telephones, almost all in Party and Government hands. There was only one telephone operator controlled by the Ministry of Post and Telecommunications. Smaller towns and villages generally had no telephone. The national telecommunications infrastructure was extremely thin. The leadership soon realized that improved telecommunications and access to information are *sine-qua-non* for successful market reform and rapid economic growth. The construction of a national fiber-optic trunk line network was started in the late1980s and later supported by the World Bank. Ten years ago it would have been impossible to undertake such projects on a private-commercial basis. Since the mid-1990s, the development of new infrastructure in China—including some telecommunications infrastructure—has become increasingly commercially financed, from both public and private sources.

Today, China's infrastructure for telecommunications (wired and wireless), switchgear, transmission stations, house connections and so on, is, for the most part, relatively new and state-of-the-art. Cellular phone circuits tend to be overloaded in many cities and give less reliable service than the hardwired system. Some small analog wireless telephone systems are still in use, but the vast majority of all telephones

in China are already digital. The wired system expanded from 10 million connections in 1990 to 130 million at the end of July 2000. This represents an average annual growth rate during the decade of almost 30%! In spite of this extremely rapid rate of expansion and contrary to what most industry experts had expected, the quality of service in China has generally improved. Waiting times for new connections in urban areas have been reduced while connection charges were lowered.

These improvements are, to a large extent, the result of domestic competition or the threat of it. To break the domestic monopoly of China Telecom, the Government created, in 1993, a second public phone company, China Unicom. This rapidly growing company now has about 5% of the total

Today, China's infrastructure for telecommunications, switchgear, transmission stations, house connections and so on, is, for the most part, relatively new and state-of-the-art.

telephone market and close to 20% of the wireless market. Its $4.9 billion international initial public offering (IPO) in June 2000 was the largest Asian IPO outside Japan until the $6.6 billion international share issue by China Mobile in October. Both issues were significantly over-subscribed which confirms a strong international interest in China's telecommunications development. China Mobile, which was originally part of China Telecom and separately incorporated in 1999, is planning to start wired telephone and related services while China Telecom has applied for a license to offer wireless services. It is already offering cheap mobile services in limited areas based on fixed-line technology. Smaller Chinese state-owned telecommunications service companies are China Netcom (broadband data communications), Jitong (data networks), CSTNet and CERNet (educational networks). Under WTO, foreign companies will be allowed to enter the service field.

Because wireless systems are in

greater demand and can be installed more quickly—and often at a lower cost per subscriber than wired systems—the mobile phone system in China is expanding even faster than the wired system. In terms of numbers of mobile phone subscribers, China has already surpassed Japan and is now ranking number two in the world after the U.S. China is expected to have over 250 million mobile phone subscribers by the middle of this decade, far more than any other country. The dominant mobile phone transmission technology used in China at present is Europe's Global System for Mobile communications, GSM. New technologies are being developed. China's second largest mobile phone service company, Unicom, plans to construct a new wireless communications network using

Code Division Multiple Access (CDMA) technology patented by Qualcom of the U.S. At the same time Siemens of Germany is collaborating with the Chinese Academy of Telecommunications Technology to develop the latter's TD-SCDMA[3] technology.

China has already become the largest market in the world for mobile phones and related equipment. Motorola, which earns a significant part of its global corporate profits in China operations, is the market leader for some product lines while Nokia and Ericsson lead in others. They compete fiercely on the Chinese market and also manufacture in China for export. Such exports are likely to grow rapidly after China joins WTO. Motorola recently gained approval from the Chinese to build a $1.9 billion communications chip factory in Tianjin (where it already owns and successfully operates a large equipment factory). Several of the larger foreign telecommunications equipment manufacturers in China, including Motorola, provide middle and

high-level technical training at schools and universities they finance or help finance. The training associated with foreign-led telecommunications and Internet development is significant for technological development in China.

MII is actively promoting the growth of some nine small domestic telecommunications equipment manufacturers that together have a market share of 5% at present. In support of the growth in market share of local companies, MII has been trying to introduce import restrictions and production quotas for foreign companies. This is inconsistent with WTO rules and with the government's own announced intention to level the domestic market playing field for all companies, regardless of ownership.

Foreign companies are actively competing to develop and market mobile Internet connection systems. The pressure to go mobile is greater in China than it is in the U.S. where access to low-cost and reliable wired systems is omni-present. China may well become the first major country in Asia after Japan to popularize mobile Internet use on a large scale.

WTO accession terms

Subject to possible modifications and clarifications made during the on-going multi-lateral phase of WTO entry-negotiations, the main accession terms relevant for the telecommunications sectors as negotiated by the U.S. and the E.U. are:

1. A significant reduction in tariffs on telecommunications equipment and component imports (to 0-3%).

2. Elimination of all current restrictions on domestic distribution and trade by foreign companies.

3. Uniform application of domestic taxes to all companies, regardless of ownership.

4. Foreign companies permitted to own up to 50% in companies providing Internet, email, voice mail, on-line info, data retrieval, paging and enhanced fax services, and 49% in wired and wireless telephone service companies.

5. Adoption of internationally ac-

cepted norms for the promotion and regulation of competition in domestic and international telecommunication services.

These accession terms would be implemented over adjustment periods of varying length from immediate (upon accession) to a maximum of six years. The terms are nothing less than revolutionary. When fully implemented, the Chinese market for telecommunications equipment and services will be one of the most open in the developing world. Much will have to happen in terms of domestic legal, judiciary and regulatory systems development in China, however, before all of the above terms can be fully implemented and enforced through local courts. The WTO dispute settlement mechanism offers alternative protection, but under this mechanism only WTO member states (not individual companies) can request a WTO ruling on disputes.

The long-term social, political, financial and economic consequences of full implementation of the accession terms are likely to be great. There are also fiscal implications. China Telecom is the second largest taxpayer. Growing domestic competition in the fixed-line, wireless and related telecommunication services may reduce profit margins and room for indirect taxes. By agreeing to the accession terms, China has accepted major risks in order to create important new opportunities and incentives for economic reform and development. There is no clearer indication of China's intention to become a modern and open economy, than its signing of WTO accession terms as negotiated with the U.S. and the E.U.

The Internet, information flows and the "knowledge economy"

Some small local Internet experiments started in 1987. China's Internet was formally launched in 1991. It was initially limited to interconnections between university research laboratories, but it has since been expanded nationally. The market for Internet Service Providers (ISPs) is dominated by state-

owned telecommunications companies that are regulated and controlled by MII. The dominant ISP is Chinanet, owned by China Telecom, which controls 83% of all current Internet connections. Many small local Internet companies exist, but most are struggling financially, in part because of high rates charged to them by China Telecom. This should begin to change under WTO.

The Government tries to control the Internet in three ways:

1. Internet Content Providers (ICPs) need government permission to connect to ISPs to disseminate news, information, etc.

2. The Net (including chat rooms, email, websites) is censured by Internet police in most provinces. The police can and does block transmissions it considers pornographic, illegal or against national interests. Since such censuring obviously cannot screen all transmissions and websites, great reliance is placed on self-censorship.

3. The Government sets specific guidelines for mass media (newspapers, TV, radio) and for Internet content providers, including "links" between them.

There are many loopholes in the Government's control system. Anyone with direct access to servers in Hong Kong or abroad has unrestricted access to the Internet. This often includes personnel working for foreign invested companies and organizations of which there are thousands. Even domestic transmissions are often not fully controllable. In his speech to the nation, April 8, 1999, endorsing Permanent Normal Trade Relations (PNTR) status for China, President Clinton compared efforts to control the Internet to trying to nail Jell-O to the wall. It is hard to find a more apt description of the difficulties that Chinese Internet censors are up against. The Internet, more than any other medium for information dissemination and communication, will inform China about the rest of the world and itself. Even if it does not change the political scene, the Internet explosion in China will at least

Graham Cousens

Deploying Appropriate Technology

Samuel E. Chiang

> **"G**o with the people, live with them, learn from them, love them. Start with what they know, build with what they have. But of the best leader, when the job is done, the task accomplished, the people will all say 'we have done this ourselves.'" —*Lao-Tzu, 700 B.C.*

The vision

"What do you think of our choir?" the Inner Mongolia church leader yelled out while steering our motorcycle through the snow on a wintry night. Though muffled by the protective headgear in numbing minus twenty degrees Celsius, I told him the choir was fantastic (they sang in tune and harmony; their sense of rhythm would be the envy of many church choirs that I know, and their expressive

China is not a newcomer to today's technology.

voices and expressions brought people into a desire to worship).

Then he surprised me! He said, "We are making large quantities of cassette recordings of the choir and we are mailing them to many Christians in other provinces in China, so that we can minister to them individually and to their churches!" Here began my decade long journey observing the development of the church in China and

their own vision of using appropriate technology to achieve their God given vision of reaching their neighbor and the unreached.

The church in China is deploying technology appropriately and using it effectively. Consider the following:

● Already, in Hebei province, churches are recording Gospel messages for the day when China is open to "radio broadcasting" from local counties.

● Already, in Yunnan province, lilting Christian music and Gospel messages echo through loud speakers in a setting of magnificent mountains and valleys.

● Already, in certain market places, 300 to 1,000 hymns are entered into playback devices (called the "Hymnmaster") which may be linked to small stereo-boxes that are able to provide four-part harmony, both piano and or-

gan music and other features that will help churches train their choirs and assist in worship.

● Already, from Xinjiang to Fujian, various titles of Christian books have been published and circulated through desktop publishing and replication.

Church leaders in China are using appropriate technology in ministry. But a fast moving economy, with a certain latitude of openness from the government, is changing China's vast landscape and the way technology must be deployed to reach all sectors of society. What are the economic and technological realities in China today? How can the church—and we who are assisting the church—engage in effective use, and in some cases limited use, of technology? This article addresses these questions.

The economy and technological advances

Economic development and reform in China over the last twenty years have produced profound changes: the GNP has more than doubled and new markets have developed. People who tend

to think of step-wise technological development in China are often shocked by her quantum technological leaps. The typical desktop computer is a Pentium III while an affordable laptop is minimally a Pentium II model. China is not a newcomer to today's technology!

Foreign corporations are often excited by the market place in China. The oft quoted market figure of one billion people is not necessarily supportable due to the country's poor transportation infrastructure; but, the reality of 600 million people as a market space is supportable. China has

North America is projected to have less than 200 million mobile phone users in 2003.

In terms of television viewers, China is a huge market of 1.1 billion. With 320 million television sets in homes,[3] the growth of this market will become saturated at about 400 million sets in 2003. Of greater interest is the number of households that have cable television—currently 80 million[4] (in the USA there are 77 million). Moreover, the daily viewing time of young adults in China is not very different from that of their US counterparts: 162 minutes versus 171 minutes respectively.[5]

strengthen the church in China, face new challenges. Some Western Christian organizations have already seized upon the availability of affordable cable and are using it to broadcast their programs into China. However, the time slots are awkward and the programs are in English. Radio programs go into China not only on airwaves, but via cassettes and CD-ROM.

In the West, a migration from VCRs to DVDs is occurring, but China never really had an installed base of VCRs. Rather, skipping a generation of technology, the society now has a huge, affordable and installed base of VCD players (videos on CDs which are less versatile than DVDs). If one were to climb to some of the most remote areas in Sichuan province, one would find "minority" villages with houses that have satellite dishes and televisions with 19 or 21 inch screens. Back in the city, the accepted size of a television screen among the younger generation is 29 inches. This combination of large screen size televisions and VCD players mixed with a changing society that grants private freedom of expression has launched a "content driven" VCD movement.

> **If one were to climb to some of the most remote areas in Sichuan province, one would find "minority" villages with houses that have satellite dishes and televisions with 19 or 21 inch screens.**

been awarded much direct foreign investment ($46 billion in 1998 with 80% coming from APEC countries),[1] especially in the hi-tech arena. In fact, much of China's Internet infrastructure is newer and more advanced than what is in place in the USA.

Of great benefit to China is the building of the Internet backbone and the implementation of wireless technology. The number of Internet users is growing rapidly. With 18 million users in 2000, the projected growth is 80 million users by 2003.[2] (In contrast, Japan currently has 23 million users and is projected to have 60 million by 2003.) According to the Yankee Group, many "third" world countries usually have at least two people per Internet account—and China is no different. Thus, the currently reported numbers are, in reality, already underestimated.

The figures for mobile phone users are even more astounding. By the beginning of 2001, there will be 80 million mobile subscribers representing 6% of the population. Analysts project that by 2003 there will be an estimated 250 million mobile phone subscribers (19% of the population). Wireless phones will outnumber wired ones. In contrast, reaching the saturation point,

With imminent accession to the WTO injected with fierce competition from abroad, China's own market orientation will become more competitive. This is good news for users of technology, as Internet and mobile phone costs should decrease. However, which technologies should the church deploy? What will be their cost to the church, and will church leaders be able to use them effectively? We shall explore these questions further.

Ministry intersecting technological realities and possibilities

With 60% of China's population under the age of 24, marketers are drooling over the prospect of reaching the youth. MTV, which accesses 47 million households in China, is leading the charge by importing commercial pop culture and icons from Japan, Taiwan, and Hong Kong. Many returning overseas scholars are also importing Christian and Western secular democratic and scientific values that further shape this group of 630 million that represents the next generation. China is modernizing, changing and transforming at a speed that has little, or few, parallels in history.

Church leaders in China, and ministry leaders who would like to help

The Wenzhou church has seized this opportunity to put beautiful nature scenes with the sound and words of their choirs singing hymns on VCDs. This wave of supplying "content" soul ministering music and of enabling people at home (Christian or otherwise) to sing Christian songs has become a huge ministry. Similarly, the *Jesus* film has been circulated throughout China using this same installed base of technology with many coming to know Christ. The voice-only version of the *Jesus* film has also been repackaged in VCD format. Likewise, children are enjoying the *Super Book* series on VCDs. Strategies such as these essentially put both "content" and "technology" transfer into the hands of the church leaders increasing their capacity to minister more effectively.

Some church leaders have become even bolder! They have used laptop computers fitted with "laptop overhead projectors" to zoom the *Jesus* film onto a

large screen that accommodates a viewing audience of 1,000 people. Professionals, students and professors, church leaders, and theological teachers have used the *FirstLIGHT2000* CD-ROM software as both follow-up material and training curriculum for those who are reached through the VCD media. An interesting sidelight of this wholesale "content and technology" transfer is that the same *Jesus* film, *FirstLIGHT2000* or *Super Book* Stories can be used overseas where the *diaspora* Mainland Chinese are residing.

A visit to the Chinese simplified script Internet portals makes one aware that there are already many Christian sites with a growing number of websites of Mainland Chinese origin. Church leaders in various cities from Beijing to Changsha to Urumqi have already used "instant messaging" to discuss Bible passages and to encourage one another. However, of real interest are the "Christian chat rooms!" Without doubt, these are monitored—and some people are outright political in their views. However, there are also genuine "seekers." Questions like "Can a communist party member become a Christian?" pop up with regular frequency, and respondents have answered those seekers well.

The mobile phone market has an even larger market space than computer linkage to the Internet. Based on conservative estimates, the Chinese government believes many more people will have their first experience on the Internet through mobile phones rather than computers. With current pricing structures, the cost of a mobile phone is prohibitively high; however, this is now changing in a dramatic way. For about a decade, China has had world class manufacturing facilities that have won them market space for large appliances as well as smaller ones. Now, they are entering into the manufacture of mobile phones using their own brand names and competing directly against Nokia, Motorola and Ericsson. While a number of pressure points exist for both the manufacturers and the wireless providers, the bottom line is they want to and must

succeed. The benefits accrue to the consumer in lower prices for both handset units and airtime charges.

Even more interesting is the progression of wireless providers into the next generation of technology with a mobile device that is constantly connected to the Internet.[6] While the current general user profile is to send data and communications tethered to a fixed line, with newer technology, using a faster put-through rate, it is conceivable to send data and communications in an untethered manner—the ultimate anytime, anywhere proposition. With this technology, there are some significant possibilities for using the mobile phone from anywhere including: off-site mentoring; various participants joining in web-based meetings that cross various time zones; Internet radio and broadcasting.

Which changes and legacies are we enabling?

Clearly, technology is seductive. The recent avalanche of the new economy "dot com" failures is instructive on the seduction of technology that tossed out all reasonable judgments and left prudence widowed. Inevitably, the West

and its churches will introduce many forms of "must-have" technology into China, and certainly, the Chinese would like to take part in the "latest" technology. When assisting and enabling church ministries in China, we should carefully assess what the "appropriate" level of technology is. Can the users learn it and apply it? What are the on-going maintenance costs? Are plans made for the obsolescence of the technology? Who will pay for the upgrade or the next round of purchases?

However, even more important than the answers to these questions is to understand that there are clearly at least four very different markets in China: cities, villages, those over 25 who are church leaders, and those who are un-

der 25 years of age. Ministries in China and those in the West must identify the context they are dealing with as well as the already installed base of technology. They also need to examine the migration paths taking place in the entire society at large. For example, is society moving towards DVDs or staying with VCDs?

Technology is not the final solution nor is it an ideal solution; it is merely a tool. Imagine what would happen if we replaced Sunday School teachers with VCDs (as some church leaders in China thought might be possible). What would happen to pedagogy? What would happen to "life on life" transfer? What would happen to the principle of modeling Christ to others?

Principles to remember

Undoubtedly the deployment of various appropriate technologies is irrevocably fused in the ministry patterns of the church in China. Many church leaders highly welcome the use of technology that allows them to launch further visions and ministries in obedience to the Great Commission. The West, and her churches that are assisting the church in China, will introduce

Many church leaders highly welcome the use of technology that allows them to launch further visions and ministries in obedience to the Great Commission.

additional new technologies fueling greater iteration in the use of technologies for ministry. Measured against the clock-speed of this life, technology can, and is, making an impact in the Mainland Chinese church, but, measured against eternity, it may just be a few nano-seconds, if that long.

We must not forget that technologies cannot replace some universal principles that extend across cultures and are especially applicable in China. I list a select few for your consideration in two categories: for those over 25 and those under 25.

Universal principles for those over 25:

1. Adult church planters, leaders and learners are motivated and

curious; they have preferred learning styles. To use "content dump" through VCDs negates the reality that adults are diverse and each one is unique.

2. Adult church planters, leaders and learners generally wish to develop critical thinking and problem solving skills. This involves developing or enhancing their ability to listen, question and work as a team.

3. Introducing appropriate and affordable technologies tends to decrease fear and envy and will enhance adoption and usage.

Universal principles for those under 25:

1. Ministering to children requires modeling, time, energy and great patience!

2. Ministering to youths requires all of the above as well as affirmation in "self worth."

3. Ministering to young adults includes all of the above as well as challenges to their worldview and buttressing their Christian worldview.

4. Provision of "content technology" can draw a technologically friendly audience away from the prevailing cultural worldview and attract them to wholesome content and a biblical worldview.

Finally, technology does not build the house of God; it only assists. "Unless the Lord builds the house, they labor in vain who build it" (Psalm 127:1).

END NOTES

1. Economic Intelligence Unit, *Business China*, 1999.

2. Figures from *Business Week*, May 29, 2000.

3. Figures from *Asia Week* October, 2000.

4. Figures from *Asia Inc.* July, 2000.

5. http://www.time.com/time/asia/features/youngchina/index.html October, 2000.

6. This next generation is known as General Packet Radio Switching, or "GPRS." The data put-through rate is at a theoretical 128 k/sec, which is double the current standard modem rate of 56 k on most computers. And the next generation, which is even faster, is known as Enhanced Data rate for Global Evolution, or "EDGE" with a theoretical data put-through rate of 384 k/sec.

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Information, Relationships and Confidentiality

Pete Holzmann

The rise of information technology at the end of the 20th century radically transformed the relationship between technology and culture. Whereas we used to fit technology to the needs of the culture, today the culture does whatever the technology makes possible. In this sense, technology controls culture.

This technology is itself in a constant state of change, similar to a biological organism. It grows and dies exponentially and becomes significant long before it is either large or old. In the economy of today's technology, what is plentiful (as opposed to what is rare) is valuable. The more widely a technology is used, the more valuable it becomes. A case in point would be the fax machine. If one were to own the world's only fax machine, it would be useless, as it could not be used to communicate with anyone else. However, as the number of available fax machines increases, so does their value.

A corollary here is that the more connected the technology is, the greater its value becomes. Information hoarded on one computer is not nearly as valuable as information shared with the larger community. In a strange way, selfishness is being redefined as "feeding the network," for the larger the network becomes, the more personal benefit one can derive from it.

This evolving relationship between technology and culture has significant implications for the body of Christ as it seeks to harness the benefits of information technology in fulfillment of its mission, whether in China or elsewhere.

What are computers good for?

Computers are useful in fulfilling two basic functions: tracking information and facilitating relationships. God's purpose for today's interactive technology is to provide a set of tools to help build relationships between real people. This new organ for the body of Christ—a "digital nervous system"—enables us to know more of what is happening around the world and to coordinate our activities accordingly. If we find that our use of computers and related technology is actually impeding our personal relationships, then it is time to step back and ask whether they are really serving their intended purpose.

Email communication needs to be

viewed as a conversation rather than an exchange of correspondence. The key to managing email effectively is to treat it as a means of informal communication, like a telephone call, and to respond rapidly.

The growing role of the World Wide Web (Ignore it at your peril!) illustrates the changes being wrought through advances in information technology. The primary source of information for a new generation, the Web is capable of providing fresh, concise, and clear information. The challenge is to be effective, not frantic, with the exponential increase in information. In addition to being a source of information, the Web has also emerged as a practical commerce tool.

As a connection provider, the Web allows for virtual communities and opens up new possibilities for maintaining and improving relationships with a

tion and increased ease of access to that information raises legitimate security concerns for those who use information technology. By thinking through which information needs to be available to whom and when, we can reduce the risk of information being used in ways that would prove embarrassing—or worse. In doing so, we need to have realistic expectations of our staff and systems and know the limits of both.

We first need to ask what is at stake. What would be the consequences if certain information were to get beyond its intended users? Some information simply should never be put on a computer (particularly if that computer is going to be taken into places where the information could become a liability). In fact, if it can be handled without the use of a computer, then a non-technical solution is preferable.

Will the other person remember which information was supposed to be confidential and which was not? At what point will a piece of information cease to be confidential?

When it comes to protecting information as it is transmitted from one place to another, perhaps the first rule of thumb is to be innocuous—to hide in a crowd. One message among millions in the flow of daily communications is less likely to be singled out for scrutiny if the parties involved are friendly toward their host government and assume that it is aware of their activities. At the same time, prudent steps taken to protect the confidentiality of electronic communications need not draw unwanted attention. The business world has a legitimate need to guard its communications and has developed widely accepted protocols for doing so. These commonly used methods may be utilized without fear of raising undue suspicion.

Communication in the 21st century involves online teamwork supported by a variety of new tools.

large portion of the body of Christ. Communication in the 21st century involves online teamwork supported by a variety of new tools. Email conferences, virtual offices, and shared calendars and contact managers are already common in today's cyber work world. In the not-so-distant future we may expect further support for networks of relationships. Online negotiating networks will facilitate complex interactions between individuals and groups of individuals. Online meetings, with real time video and audio, will become much more of a possibility even for smaller organizations, and portable presentation technologies, such as laptop computers with digital cameras and projectors, will also become more accessible.

Responsible Information Management

The exponential growth of informa-

Keep the scope of what is to be considered confidential as narrow as possible. Differentiate between the various kinds of information involved: our information versus the information of those outside our organization or network; information used inside the country versus outside; information flowing in versus flowing out, and so on.

The question of who to share information with is complex, as most of us work within networks and belong to multiple overlapping communities of interest. This requires clear guidelines and understanding within these networks and communities, as the community of knowledge can grow very rapidly and unknowingly.

It is also important to think about the lifespan of a given piece of information. Once it is residing on someone else's computer, we have no control over where it will end up and when.

Some guidelines for responsible information management:

1. Plan proactively; failures usually occur due to inadequate processes.

2. Look for gaping holes in our armor. Most vulnerabilities are quite simple (such as publishing information that should never get into print in the first place).

3. Keep a human in the loop in order to deal creatively with unanticipated situations.

4. Defer to local leadership when working cross-culturally; what may be of no consequence to you may have serious consequences for them.

5. Do not reveal more than can be agreed upon by the whole organization or network.

6. Check your motivation for revealing information. Is there a legitimate need to know, or are we using the information for its fund-raising value or to enhance our credibility?

Pete Holzmann is president of ICTA, the International Christian Technologists' Association.

Peoples of China

Technology and Unreached Peoples

Jim Nickel

Technology has given us some powerful tools that are useful in our efforts to advance the kingdom of God among the unreached peoples of China. Massive databases of information on unreached peoples have been compiled and are being constantly updated. Communication systems that will allow intercessors, strategists, pastors, missionaries, and others interested in these people groups to access the information they need and to connect with co-workers are in development.

Increasingly affordable digital video cameras, editing equipment, and projectors are making it easier to put a face on unreached peoples, which is key to mobilizing intercession for and outreach to them. Widespread availability of VCD players in China has made it possible to distribute evangelistic and training videos within China.

The Internet is opening channels of communication with the rest of the world from within China that would have been impossible a few years ago.

It would seem, at first glance, that we ought to uncritically accept all these tools, and use them to the fullest extent possible. However, it might be wise to take a step back and consider the downside of our increasing reliance on technology in our quest to fulfill the Great Commission in China. In the insightful book *Changing the Mind of Missions* (see box), Jim Engel and Bill Dyrness caution us against relying too much on the tools of technology, along with the other products of modernity.

There are a number of issues we must consider. Here are a few suggestions, offered not as the final word on this subject, but in the hope that they will stimulate some constructive thinking and dialog that will result in the wise use of technology in the discipling of unreached Chinese peoples.

Balance High Tech Methods with High Touch Ministry

Christian ministry is all about relationships. While God revealed something of what He is like in the natural order, when He wanted to fully reveal Himself He came in the flesh. In like manner, we may be able to communicate something about God through the tools of technology, but there is no substitute for incarnational communication. A VCD of the *Jesus* film (to use one example) may be a relatively effective means of communicating the story of Christ, but a person—or better, a community of people—in whom the Spirit of Jesus is living is a far more effective means of bringing Christ Himself to the unreached.

This is not to say we shouldn't seek to distribute printed and audio-visual media that contains the gospel message as widely as possible within China. But wouldn't it be better, wherever possible, to have this done by near-neighbor Christians who will use these resources to explain and supplement their own personal and corporate proclamation of the gospel in the context of on-going relationships?

The relational dynamic in communication is especially important in Asia.

Taking a New Look
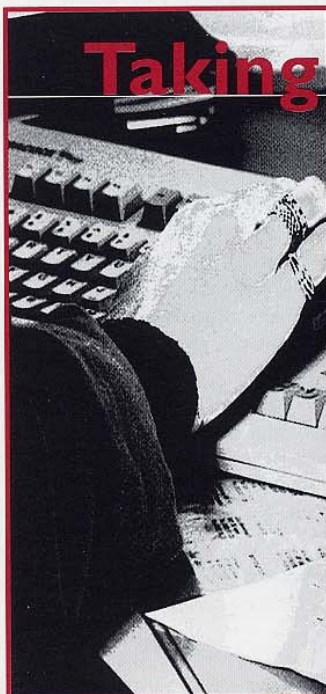
In their recent book, *Changing the Mind of Missions* (Intervarsity Press, 2000; 192 pp, $12.99), James Engel and William Dyrness provide a challenge to the Western missions movement that is timely and on-point for all involved in seeking to advance the kingdom of God, and especially relevant to those of us whose focus is on China. The authors pull no punches as they incisively analyze the shortcomings of "Missions, Inc.," as they dub the Western missions establishment. At the same time, they offer helpful suggestions to both agencies and churches on how to adapt to the changing realities of the world in which we live and minister.

"North American Christian commitment to world evangelization is in sharp retrenchment....The purpose of this book is to help you understand why this crisis has arisen and what it will take to reverse the dangerous sag and decline now so disturbingly evident." (p.17)

Three trends that threaten to derail the North American missions movement are identified:

1. The captivity of the movement—and much of the evangelical church—to American cultural realities, especially economic and political pragmatism.
2. The shift of missions initiative and leadership to the two-thirds world church, while Western missions continue to launch initiatives and maintain programs conceived in the West that are often inappropriate and even harmful in other contexts.
3. The loss of our theological roots through the reduction of the Great Commission to proclamation.

The authors view the latter trend as the most serious of the three and urge a return to the discipling of the nations as the goal and the re-integration of evangelism and social action as the means to this end.

"There is no question that the Christian presence indeed is being expanded globally. But is evangelism the outcome Christ intended when he said, 'Go and make disciples of all nations....'? Making disciples involves much more than encouraging people to accept certain truths about God and to begin attending church. It involves a total transformation of the heart and life that involves a righteousness that impacts not only individuals but families, communities and nations." (p.22)

The book also analyzes the other two trends, and challenges the church in the West to examine its methodology in the light of both biblical patterns and the changing realities of our time. The authors charge that Western churches and mission agencies are captive to

A recent article in the *L.A. Times*, "Selling the Internet to Skeptics," telling the true story of a business marketing goods made in China through the Internet, made it clear that the key to success is personal relationships. The headline on the second page of the article said it all: "ASIA: Human Contact Still Vital to Bridging Internet Gap."[1] If that is true in creating business connections, how much more in creating spiritual connections!

In our urgency to reach the unreached, I fear that we sometimes forget that God has sovereignly chosen to use people to disciple people. The discipling of the peoples of the earth cannot be accomplished merely through the communication of propositional truths. The Chinese characters for "disciple" carry with them the idea of a student going to the door of a teacher to seek a mentoring relationship. What if, when the student comes, he finds not a teacher but only a book, VCD or website? These may be effective tools, but can never substitute for a disciple-maker—to say nothing of a community of reproducing disciples!

Test for Appropriateness

Just because something exists

doesn't mean we have to use it. That seems obvious, but you wouldn't know it by the way we all rush out to buy the latest gadget to hit the shelves and then try to figure out how to use it in our ministry. An insightful article in the Dec00/Jan01 issue of *FSB* (*Fortune Small Business*) magazine cautions against such faddish excesses: "It's all too easy to get sucked in by whizzy, high-tech toys that, in the end, clog the arteries of the business processes in your company rather than speed things up."[2] The article acknowledges that the payoff for using the right kind of technology can be huge, if—and it's a big if—appropriate technologies are employed.

The article suggests two important tests of appropriateness:

1) What is the expectation of real-world return on investment?

2) What level of technology can your business absorb and support? Be selective in your technology choices, the author advises:

Focus technology investments on precisely identified business problems, not on what's new and hot or on what you want to play with.... This means that you have to think broadly about the technology path your business should follow, and not just

about the right technology for the here and now. It takes thought, planning, and time before you commit to the expenditure.[3]

This latter point is crucial for our work in China. The only way the huge task of discipling all the unreached peoples of China can be accomplished is through the multiplication of reproducing disciples and churches. Thus, the methods we use generally ought to be reproducible. We should seriously consider whether it is appropriate to use technologies that are not available to the church in China in our ministry there.

Obviously, the equation is different when considering what we need to manage our work and communicate with constituencies in our sending base. Still, using wisdom in tech purchases is vital.[4]

Have Realistic Expectations

In his recent book *Hooking Up*, Tom Wolfe includes an essay entitled "Digibabble, Fairy Dust, and the Human Anthill." In this essay he challenges the popularly held belief that the Internet is destined to transform human consciousness. He dubs this belief "digibabble," which he defines as "the purely magical assumption that as the Web, the Internet, spreads across the globe, the human mind expands with it."[5]

While most Christians would disavow having such an obviously humanistic belief, there is evidence to suggest that we have been infected by it. How many of us, as new technologies developed, have fallen into the error of thinking "This is the key to reaching the world!" Think back to previous technological breakthroughs: the printing press, radio, and television, for example. All these were hailed as the ultimate solution to the challenge of world evangelization. But were they?

Obviously not; the task has still not been completed. All these tools have been very helpful, but in and of themselves none has proven to be the silver bullet that would enable us to complete the task of world evangelization. We need to have realistic expectations of

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outmoded paradigms, dealing at length with the extent to which modernity has impacted us.

Dyrness and Engel contend that the goal of missions should be not to reach the world, but rather to discern and respond strategically to the leading of the Holy Spirit.

"It is time to flesh out what world missions might look like if it is (1) initiated and empowered by God, (2) motivated by a vision of the reign of Christ, (3) characterized by mutual sharing from multiple centers of influence, and (4) committed to partnership and collaboration." (p.97)

Engel and Dyrness devote time to both the Church in Missions and Missions Agencies. Dealing with the latter, they call upon agencies to carefully reevaluate every aspect of their ministry, from core values to procedures. Indeed, agencies are called to an entirely different approach to ministry than most have pursued in the past:

"For decades Mission, Inc., has tended to move from the Western center to the periphery, ablaze with technological firepower, large-scale programs and a visibly Western worldview....Becoming Galilean means adopting a very different outlook and approach.

"Galileans are pilgrims with a message that

must be visibly incarnate to other seekers of the truth, and being Galilean is not defined by geography, wealth, education or technological sophistication. Pilgrims do not possess a 'religious product' that must be marketed by skillfully persuasive firepower to an unreached world. Strategy, technology, numerical growth and resources are not driving considerations, because the pilgrim model is characterized by an unfailing commitment to place people before programs." (p.166)

An intentional approach to leadership development is urged, and donor-driven strategies are eschewed. The authors also offer some specific suggestions for reengineering agencies to operate more effectively and efficiently.

The book closes with a helpful summary that encourages churches and missions agencies to respond positively to the challenges facing us. Not all readers will agree with either the diagnosis of the problem or the prescriptions for correction offered by the authors. However, the issues they grapple with are critically important, and we all need to wrestle with them.

—Jim Nickel

Email & Confucius

During the 1980s, color televisions were targets of envy. A work unit PC had to be "heavily guarded"—no ordinary man was allowed access to it. A cell phone was the ultimate symbol of the superiority of the owner's social status and wealth in contrast to that of every-day people—even though at that time a cell phone might be half the size of a brick! Now, television is common in every household. PCs—stepped up from 286s to 586s to Pentiums II, III and IV—have become a basic part of office equipment in every governmental organization, company and school with even more being privately owned and used by millions. Cell phones are on sale everywhere with people from all walks of life, including produce vendors, milkmen and garbage haulers, now using them.

This Information Technology (IT) craze is changing the face of China's culture. Official government statistics show China had 16.9 million Internet subscribers by the end of the first half of 2000 and by 2002, China will surpass Japan and be next only to the US in its number of Internet users. Cell phone owners increased by 17.96 million this year. Car phones, videophones and televisions are becoming popular. The debut of Wireless Application Protocol (WAP) in China now allows cell phones to access the Internet.

View from the Wall
By Huo Shui

For office jobs, the ability to use the computer is as essential as the ability to write Chinese characters. College graduates must secure a certificate indicating their level of computer literacy before sending out resumes. Various levels of government have computer proficiency and email usage as staff training topics. College admissions indicate that computer science and Internet communications remain the top choices as programs of study. Books on Internet communications, computer hardware and software occupy the best display racks of major bookstores while on street corner kiosks computer related magazines and newspapers are increasing "as fast as bamboo shoots after rain."

Fierce competition has broken out in this field. China Unicom, the new competitor in China's tele-communication industry, is vehemently challenging the 50 years monopolizing status of government-run China Telecom. In the PC market, Chinese made units now comprise a larger share of all computers sold in China than previously. Almost all the major IT industry players have branches in China; some (Microsoft and Motorola) have built their own research institutes. The latest scene in Beijing's *Zhongguancun* neighborhood is a multitude of IT companies run by Chinese

graduates with foreign passports or US "green cards." China, the old dragon, is embracing the mighty IT goddess with unprecedented zeal at the advent of the information age. As millions of Chinese chat on their mobile phones, sit in front of their computers exchanging emails with friends on line or surf the web in search of all kinds of information, they no longer take pride in that "information highway" built two thousand years ago known as the Great Wall. Instead, we find countless new firms, both large and small, along with *Zhi Ben Jia* (entrepreneurs with knowledge as their capital asset) shining as glittering new lights on the social stage of China.

Though not every Chinese company that ventured onto NASDAQ was a success story, the IT industry has, to some degree, changed China's economic structure. Statistics from the central government have confirmed that the IT industry has, for the first time, led the national economy in the rate of growth. In a way, this industry growth has narrowed the gap between China and developed countries. It has enlivened the national economy and increased the technological element of China's products. Without doubt the growing IT industry has created much business for China. Even the older ladies who are playing the stock market are knowingly purchasing IT shares that to them mean a fortune. As for Chinese shareholders, even the NASDAQ's fall this year did not cool down their devotion to IT stocks.

Most people, including cell phone vendors and buyers, computer sellers and buyers, Internet service providers (ISPs) and their subscribers, stock brokers and share holders, are pleased with the IT craze. In China's history, there has never been an industry growth that excited so many people. I, personally, have never heard of anyone publicly opposing the IT craze in China. But, as the folk song says: "The new moon shines on the nine states of China, where some are happy and some are anxious." In the midst of the joy that the IT craze brings to China, a few, who live inside the *Zhongnanhai* or central government compound, are anxious. What about? They worry that the rapid growth of information access is making the world smaller and smaller, that news travels faster and faster, that people are more and better informed, that a society is becoming more and more complex and that it is increasingly difficult to monitor what people hear.

Thirty years ago, just a few words from Mao accomplished the following: 12 million students, who were denied schooling, were sent to rural areas to work in the fields; 1,600 million eyes were allowed to watch only eight plays—the *yangbanxi* (revolutionary theatrical prototype plays); no wage increases were given to anyone for a period of ten years; the
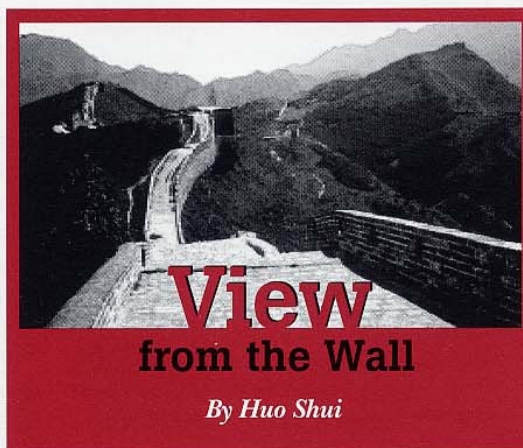
disastrous "moving the mountain" movement applied the *Dazhai* success formula to every corner of China without regard for regional differences; an "ocean of humans" flooded Tiananmen Square as a million "Red Guards" moved into it. Why could those things happen? In addition to the iron hand of the military and police, one reason was the extreme ignorance of the ordinary people. In those days, owning a short wave radio could well result in public humiliation and the charge of "listening to enemy radio stations" with the result of being jailed. Millions of Chinese believed, from the bottom of their hearts, that two thirds of the human race living in other parts of the world were living in "despair that is ocean deep and pain that is burning hot." We Chinese were ready to give up all to follow Mao's direction, to liberate these suffering people and to fly the red flag throughout the globe. No one was interested in the Western concepts of "democracy" or "freedom;" ordinary people knew nothing and dared not talk about the world outside China.

Mao died and the gang of four collapsed. Deng opened the door, people came in from the outside and Chinese were allowed to go out. People became more informed. But for those who knew no foreign language and never went overseas, access to outside information remained very limited despite CCTV's daily five minutes of international news. No one anticipated the coming of email that awoke peoples' desire to learn about the world outside and think independently. In the beginning, email worked only with Western alphabets; however, soon Chinese email software appeared causing a flood of information. Internet cafes able to host a few dozen people were rapidly set up. Reports on anything happening in the entire world spread all over China. Web pages and web sites began to provide news and host forums. Begging for one's attention, it all forecasts a coming "attention economy" age.

Overwhelmed by so much information, people cannot help but ask: "What makes the principles of one na-

tion, one party, one theory and one leader legitimate? How long will this structure last? Can we live like people in other parts of the world?" These are troubling questions for China's authorities who realize that the power of the people lies in the information they receive; nevertheless, it is next to impossible to ban computers, telephones, fax machines or cell phones. Thus, the government has increased attempts to monitor web sites and email.

Recently, the government issued further regulations for controlling the Internet. It's unclear how much these governmental efforts can resist the information flow. When technology has enabled a person to consume information online via a cell phone, it is difficult to control the content flow.

These same conflicts are reflected in China's ancestors. The great Confucius, over 2000 years ago, cautioned the ruling class of his time re-

garding their subordinates by saying: "It would be better to give them freedom than to let them be informed." Mao simply totally cut off the information flow, allowing his policy of obscurantism to be carried out successfully.

IT development in China brings with it the possibility that China will enter the international information sharing community overnight. While tanks could quell student protestors, and police could overpower *Falungong* members, the country's government today can find no effective way to block the growth of IT. Were Confucius to come back to life today, perhaps he too would like "yimei-er."*

*Pinyin of a commonly used Chinese transliteration of "email" (伊妹儿).

Huo Shui is a former government political analyst who writes from outside China. Translation is by Ping Dong.

Technology and Unreached Peoples

what technology can do.

Wolfe tells us that the Web, the Internet, does one thing: it speeds up the retrieval and dissemination of information. Most of us have found that the Web is also a great way to establish and maintain connections with people.[6] Nevertheless, access to a huge amount of data on people groups does not mean that we are any closer to reaching them. A great deal depends upon how we use the information. If it results in more fervent and effective intercession, in developing wise strategies for the discipling of these peoples, in enabling the global body of Christ to partner together to reach them, then—and only then—will it be of any use.

This final point might be the most critical one. Each of us in the body of Christ brings a part of the answer to the question of how the Great Commission might be fulfilled. As researchers and computer gurus and evangelists and disciplers and publishers and church planters and people with other gifts and tools work together in part-

nership, we can see great progress towards the goal our Lord has set before us.

Let's use wisely every tool God has given us—technological or otherwise—in the service of our King, and His kingdom will advance, not by humanistic machinations, but by His Spirit working in and through His church.

END NOTES

1. Evelyn Iritani, "Selling the Internet to Skeptics," *L.A. Times*, Oct. 23, 2000, p. A1, 8.

2. Jim Seymour, "In Search of the Payoff," *FSB*, Dec'00/Jan'01, p.48

3. Ibid., p.49

4. This article in *FSB* has a number of good suggestions I don't have room to include here. If you're interested, you can find the entire article on-line at http://www.fsb.com/fortunesb/articles/0,2227,1146,00.html.

5. Tom Wolfe, *Hooking Up*. Published by Farrar, Straus and Giroux, 2000.

6. For a more balanced treatment of the value of the Internet, see Pete Holzmann's article on page 8 of this issue.

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Book Review

Understanding China

Contemporary China by Alan Hunter and John Sexton. St. Martin's Press, New York, 1999, 226 pp. ISBN 0-312-22147-9, paperback. Cost: $18.95

A review by Kim-kwong Chan

China has undergone major social changes—especially during the past two decades. Standard texts on contemporary China are quickly outdated and, in general, sinologists have a hard time keeping up with the changes of this vastly diverse sociopolitical reality called China. It is not easy to find a single volume, written for the layman, that provides an overall picture of this vast and complex country. Alan Hunter and John Sexton's Contemporary China may have achieved a seemingly impossible task—providing a scholarly work that covers most of the important issues in contemporary China, yet easily read by

tional Relations" and "China into the Twenty-First Century." It covers virtually all the major themes that one needs to know about China. Most of the chapters are summaries of current scholarship in that particular field.

The second chapter, "Land and People," is a refreshing one for it addresses the centrality of the peasant existence in China—the land. Although this topic has often been neglected by contemporary China studies, it has been an important
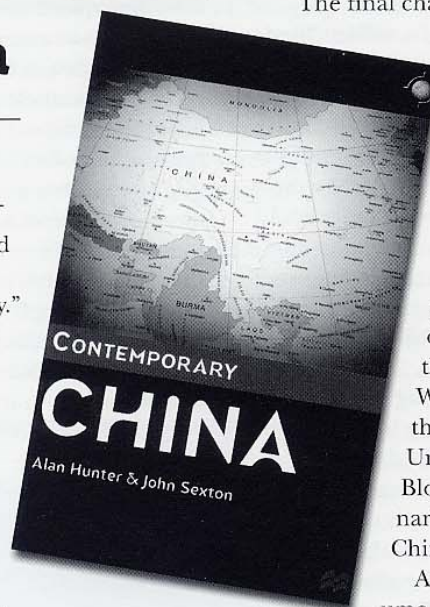
equally multifarious, or even chaotic, kaleidoscope of religious practices under the watchful, and at times resentful, eyes of a hostile state" (p.175).

The final chapter challenges the reader with thoughtful questions to ponder regarding the future of China vis-à-vis the rest of the world. Will the current regime continue to remain in power with the rapid opening of China to the rest of the world? Will the break-up theory—the Soviet Union and Eastern Bloc countries scenario—be applicable in China?

At the end of this volume, there are several valuable additional sections. The "Recommended Reading" section provides an annotated bibliography for each chapter. The "Bibliography" contains most of the important publications on contemporary China. A unique feature, "China on the Internet," brings the reader into the World-Wide-Web age of information. Also included is an index as well as diagrams, maps, graphs and boxes of information scattered throughout its pages.

The fact that it was written by a British sinologist may provide a continental worldview—a refreshing perspective on China in contrast to those stances commonly taken by American scholars. One omission I noted was that the boundary line for Chongqing Municipality, newly established in 1997, was not included on the map of China's provinces and major cities (p. xiii). *Contemporary China* is an important and timely volume not to be missed by either China experts or the layperson.

> # This volume provides a comprehensive spectrum of the current sociopolitical landscape of China.

the laity, in a book about 200 pages long. This small volume is co-authored by a sinologist (Hunter) and journalist (Sexton), a unique combination of scholarship and general readership.

While most of the current books on contemporary China emphasize the areas of economics and politics, this volume provides a comprehensive spectrum of the current sociopolitical landscape of China. Its chapters include "The History of Modern China, Land and People, The Chinese Economy, Political Life, The Social System, Chinese Culture, China's Interna-

theme within China among the 70% or so of the Chinese population that live in rural areas.

The inclusion of religion in the chapter on "Chinese Culture" is very appropriate. Not only the traditional religions, but also folk religion, which is an emerging phenomenon, are discussed. They are described as follows: "...China's traditional religious life was multifarious, encompassing many kinds of beliefs and practices with all kinds of local and personal varieties. It seems that by the 1990s a modern version of the situation had emerged, with an

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lay the foundation for a new "knowledge economy."

Foreign investment in telecommunication equipment, services and the Internet

Major investments and technology transfers from abroad have already been attracted. Motorola is China's largest single foreign investor in telecommunications equipment manufacturing. European companies are also heavily invested and Japanese companies have also become active. Foreign portfolio investments in Chinese state-controlled telecommunications service companies, at current market values, exceed $20 billion. This amount is likely to grow much larger with new international IPOs and when the government decides to sell more of the shares it holds in listed state-controlled telecommunications companies to finance development. The amounts involved in telecommunications investments are typically very large. To obtain a strategic foothold on the Chinese mobile market, Vodafone recently acquired a 2% interest in China Mobile in a negotiated $2.5 billion cash transaction. If this transaction reflects a realistic market value of the shares, it implies a market capitalization of $125 billion for China Mobile which would make it the largest company in Asia (in market capital terms) outside Japan.

Conclusion

Among developing countries, China is number one in the pace at which telecommunication services and the Internet are being developed. In absolute size, China's market for mobile telephones and related equipment is already the largest in the world. Many of the world's major telecommunications equipment manufacturers, such as Motorola, Ericsson and Nokia, are already heavily invested in China and compete fiercely on the rapidly expanding domestic market. Some foreign manufacturing companies also use China as an export base. Once China enters WTO, China's market for

domestic telecommunications and Internet services will also open to foreign participation and competition. The agreed terms on which China will enter suggest that China will become one of the most open markets for telecommunications and Internet services among developing nations and even among many developed countries.

These developments will contribute enormously to China's modernization and integration into the global economy. They will also have significant domestic social and political impact. While increased access to telecommunication and Internet services for a rapidly growing share of the population does not guarantee political democratization, it will promote development of the "knowledge economy" and facilitate exchanges between people. China should be applauded for trying to screen the

Internet for pornography. Its efforts to screen for information and exchanges that the Party and the government consider undesirable are more questionable. In the long run, these efforts are not likely to be terribly successful.

END NOTES

1. MII is China's regulator of communications and promoter of the information industry. It is also responsible for policy development. This new powerful agency combines the previous Ministries of Post and Telecommunications (MPT), Electronics Industry (MEI), Radio, Film and Television (MRFT).

2. The latter two have subsidiaries listed in Hong Kong; American Depositary Receipts (ADRs) are traded in New York.

3. Time Division—Synchronized Code Division Multiple Access.

Pieter P. Bottelier is an international economist, China scholar and consultant. Currently an adjunct professor at Johns Hopkins University and formerly the senior advisor for East Asia at the World Bank, he has written extensively on China's economic reforms and lectures at major universities.

On the Way to the Future

On January 2, 1921, exactly two months after becoming the world's first commercial broadcaster, pioneer radio station KDKA scored another first by airing the worship service of Calvary Episcopal Church in Pittsburgh, Pennsylvania. Thus began the era of religious broadcasting, and with it, the potential of reaching people anywhere in the world with the gospel message—provided they had access to a radio.

As it happened, radio became one of the primary means by which people in China could hear the gospel and by which messengers of the gospel in China could receive instruction and training. However, two prerequisites needed to be fulfilled before radio could assume such an important role. Radios needed to become popularly available, and the Chinese language needed to be unified in one dialect that could be used across the provinces. When both of these prerequisites were met under Mao, radio more than realized its potential, becoming a lifeline for believers that were cut off both from outside contact and from one another.

Brent Fulton

Eighty years after Calvary Episcopal's maiden voyage onto the airwaves, the Internet holds forth a promise similar to that of radio. The added attraction is that now the message is bound neither by the limitations of time (web pages can be accessed any time day or night) nor spoken language (translation into a relatively few common written languages makes the message accessible to most of the literate world). Add to this the ability to communicate across time zones from anywhere to anywhere in the world, and one begins to see the potential for people to not only receive the message but also dynamically interact with others about its meaning—provided they have access to a computer linked to cyberspace.
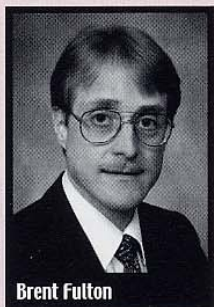
Herein lies the gap between information technology's enormous potential as a tool for communicating the gospel and its application in China today. Like so many things in China (the consumer automobile market, for example), the potential is mind-boggling, but a quick reality check reminds one that realizing this potential may be many years away.

Optimistic estimates put the number of China's Internet users by the end of 2001 at more than 40 million. However, most of these are still concentrated in a few major cities. Although fiber optic cables and cellular transmission towers draw more Chinese closer together on a daily basis, vast regions of populous rural China remain outside the reach of China's expanding communications web.

This is not to minimize the unprecedented technological revolution taking place in China, but merely to suggest that the vision of 1.3 billion Chinese connected in cyberspace may be further away than the staggering statistics would seem to imply. While this compelling vision provides powerful inspiration as we move toward the future, may our fascination with the vision not keep us from the very real opportunities along the way.

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