CHAPTER 6

PEOPLE'S REPUBLIC OF CHINA

Executive Summary

The Chinese Communist Party, in the interests of economic prosperity, is allowing the People's Republic of China (PRC) to participate in the Internet. However, the Internet presents a major challenge to government decision-making. The government is struggling to keep central control over the Internet when no one organization of the State is able to claim it as its own. The politically powerful Ministry of Electronics Industries (MEI) is vigorously competing against the Ministry of Posts and Telecommunications (MPT) for the right to control and exploit what both perceive as a potentially lucrative industry. To complicate matters further, information organizations such as the Xinhua News Agency, its ally the Communist Party's Propaganda Department and the Ministry of Broadcast, Movies, and Television (MBMT) see information dissemination as their domain and thus feel that the Internet is theirs to control. The convergence of telecommunications, processing, and information is creating conflict between many different parts of the Chinese government. These organizations are not only concerned about their own "power," but have significant economic stakes in the outcome as well.

In the face of such inter-organizational competition, the Chinese State Council has established the Steering Committee on National Information Infrastructure,[163] which is responsible for the formulation and implementation of the planning, policy, and regulations for China's information industry including the Internet. A Vice-Premier of China's State Council chairs this Steering Committee and its directors are ministers from the ministries most concerned with the Internet. It is a "space" for decision-making. It does not have the authority to impose decisions on the individual ministries. The fact that the Steering Committee has been able to come up with regulations and policies, given its internal conflicts, is testament to the power of the Chinese collectivist spirit.

Given these internal conflicts, the Chinese leadership has done well in making decisions permitting the dissemination of the Internet in the pursuit of economic gain while protecting the interests of the Party-run State. At the core of Chinese Internet policy is the decision to authorize four government organizations to run networks that connect to the global Internet:

- Ministry of Post and Telecommunications
- Ministry of Electronic Industries
- Chinese Academy of Sciences (CAS)
- State Educational Commission (SEC)

These organizations with Interconnecting Networks (IN) are responsible for licensing Access Networks (AN)[164] and other Internet businesses for which they provide global connectivity. ANs are in turn responsible for the end users and businesses they support. Though the Internet is a

[163] The National Joint Conference on State Economic Informatization was initiated in 1994. It was re-organized as the State Council's Leading Group on Informatization in 1996. Although the name in Chinese has remained the same, the English translation now being used is Secretariat of State Council Steering Committee of National Information Infrastructure. In this document we will refer to the present Committee as the "Steering Committee."

[164] Access Networks is the literal translation of the Chinese term for Internet Service Provider (ISP).

distributed technology, the Chinese have established a hierarchy of responsibility. Other government organizations such as the People's Liberation Army (PLA), Xinhua News Agency, and MBMT are lobbying heavily for IN status and have so far been denied.

The politically powerful MEI has driven many of the Steering Committee's decisions. However, the MEI has been unable to get permission to bypass the MPT international gateway. The government's need to maintain a single point of control over international traffic for security reasons, has allowed MPT to maintain its lucrative monopoly. At the same time the Steering Committee, in response to appeals from the three other INs, has convinced the MPT to lower local and international circuits prices.

Under the regulations promulgated on 30 December 1997, the Ministry of Public Security (MPS) is charged with ensuring that the Internet is not used to harm the interests of the State. Users are forbidden to use the Internet to transmit or receive information that challenges laws and administrative regulations or endangers national unity. There are also clauses against making falsehoods or destroying the order of society as well as promoting feudal superstitions, sexually suggestive material, gambling, violence, and murder.

INs and ANs are required to work with MPS to prevent and stop illicit conduct. MPS, which currently does not have the resources or personnel to track Internet use, is dependent on the INs and ANs to serve as its agents. The Chinese government has extended its social control mechanisms to the business and connectivity infrastructure of the Internet. MPS' gain in responsibility has to a certain extent come at the loss of MBMT. MBMT, which has traditionally controlled mass media in China, has not yet been able to extend its domain to cover interactive services such as the Web. MPS, which controls people, has been selected over MBMT, which has controlled content, as the best organization to oversee the use of the Internet.

The 1997 regulations do not mention or forbid the use of encryption. Officials have been reluctant to ban encryption, because it is seen as a necessary requirement for electronic commerce. At the same time, the government believes it has the power to get senders and receivers to provide copies of keys or unencrypted messages. Given the counter balancing needs of security and economic growth, the Steering Committee so far has chosen not to establish official regulations.

The Steering Committee has decided to implement three national Internet exchanges to facilitate interconnection between the four INs. These exchanges are important because it gives each IN, despite its size, relative parity for exchanging traffic with the other networks. Currently, there is a major bottleneck between MEI's ChinaGBN and MPT's ChinaNET. High-speed exchanges will allow better connectivity while potentially facilitating better monitoring of traffic. The MEI has developed software for the exchanges that will separate routing information from traffic and make it easier to track who is connecting where. Up to this point, there has been no announcement as to what organizations will run the Internet exchanges.

The ability of the Chinese government to solve these infrastructure and regulatory problems is facilitating the diffusion of the Internet (Table 51 and Figure 23). Telephone and PC penetration have been increasing rapidly. The number of Internet users has been growing even faster: by 1,150 percent in 1996 and by approximately 800 percent in 1997. The Chinese government is funding Internet access to all provinces. All major universities around the country are connected. In the commercial sector, over 50 Internet service providers (ISP) are investing in dial-up and leased-line infrastructure and competing for users. MPT's ChinaNET is rapidly expanding its national

backbone to Synchronous Digital Hierarchy (SDH—155 Mbps) and has recently signed a deal with AT&T for a T-3 (45 Mbps) connection to the global Internet that more than triples China's international Internet bandwidth. An additional T-3 international connection is planned.

Dimension	Level	Explanation
Pervasiveness	(2) *Established*	Although there are fewer than one user per thousand inhabitants, the user community has expanded from networking technicians to the country's elite.
Geographic Dispersion	(3) *Highly Dispersed*	Internet access is available from all first-tier administrative sub-divisions.
Sectoral Absorption	(2) *Moderate*	The Internet is in moderate use in the academic sector and is rare in the other sectors.
Connectivity Infrastructure	(2)	China, by increasing ChinaNET's backbone capacity and international link, and developing three exchanges, is rapidly moving into Level 3.
Organizational Infrastructure	(2) *Controlled*	There is healthy competition among ISPs in major cities, but only four networks can interconnect with the Internet and only through an MPT gateway.
Sophistication of Use	(2) *Conventional*	The Internet is used to enhance current processes, such as messaging, without fundamentally changing those processes.

Table 51. Internet Dimensions for China

Since the Internet can both enable and be enabled by China's participation in the global economy, one can expect that this cycle will sustain a high rate of diffusion for the next several years. By 2001, China's Internet population is projected to grow to 2.7 million. If current trends continue by the following decade, China could have more users on the Internet than any other country. Given the reality that China will be a major force on the Internet, it is critical to understand its Internet polices and where they come from.

China is a nation of interlaced social networks. Family, ethnic, cultural, academic, and work networks intersect with the all encompassing networks of the State and the Party. The Party is allowing China to participate in a new network—the Internet. Despite the December 1997 Regulations, dissidents, both within and outside China, will continue to use the Internet to communicate. The greatest threat to the Chinese system is not external dissent, but the breakdown of collaboration in the face of rapid decentralization of decision-making. During 1996 and 1997, the State has shown its capacities for dealing with a technology that is inherently non-hierarchical and which offers great benefits and poses great risks. The government's ability to make decisions regarding the Internet, given the amount of internal conflict, demonstrates that China's ability to both absorb and control the Internet should not be underestimated.

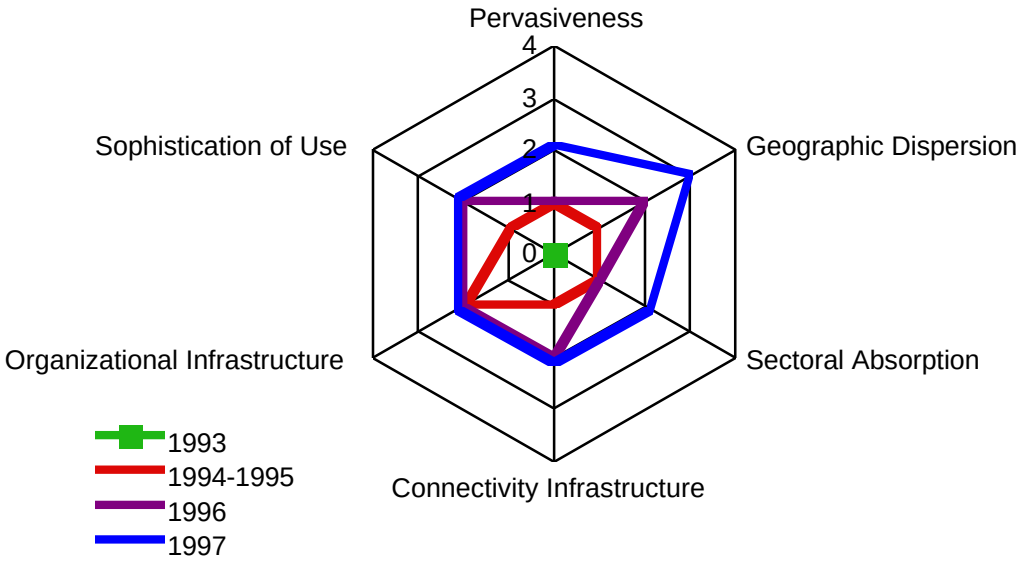

Figure 23. Internet Dimensions for China

Introduction

China is undergoing rapid political, economic, and social change. In the interests of national unity, its leadership is decentralizing decision-making to the market and the provinces. This decentralization is captured in the term "socialist market economy." This concept expresses the hope that market forces can improve the efficiency of production while the State maintains control of political activity and provides direction to the economy.

Table 52.
China in Statistics

Metric	Value[165]	Remarks
Population	1,214.21	millions, 1995
Population density	127	per km^2, 1995
GDP	508.2	US$billions, 1994
GDP per capita	424	US$, 1994
Telephones	54,940	thousands, 1996
Teledensity	4.5	per 100 inhabitants, 1996
Teledensity in largest city	14.03	per 100 inhabitants, 1996
Cellular subscribers	3,629.0	thousands, 1995
Cellular density	0.30	per 100 inhabitants, 1995
PCs	3,700	thousands, 1996
PC density	0.21	per 100 inhabitants, 1996
Television sets (receivers)	300,000	thousands, 1995
Television density	24.7	per 100 inhabitants, 1995
Literacy rate	78.0	per 100 inhabitants older than 15 years, 1990
Infant mortality	52.1[166]	per 1000 inhabitants, 1995 estimate

With 1.2 billion people, China is home to one fifth of the world's population (Table 52) and its provinces have more people than most European countries. China is not only vast (Figure 24); it is culturally and ethnically diverse, a diversity that makes maintaining central political control all the more difficult.

Figure 24. Map of the People's Republic of China

For the past ten years, China has been growing rapidly. Many sectors, such as telecommunications, are growing at annual rates of between 30 and 50 percent. Each year, about 10 million phone lines are added to the nation's public network. And yet China is still an agricultural society. Only the Eastern provinces are heavily industrialized. China's leaders hope to skip certain stages in the development process and integrate information technology into all sectors of society. They use the concept of "informatization" to describe the process, a process that is similar to but supersedes industrialization.

Informatization goes hand in hand with decentralization. In fact,

[165] Source: *World Telecommunication Development Report*, 3rd ed., 1996/97 (Geneva: International Telecommunications Union, March 1997), unless otherwise noted.

[166] *The World Factbook 1996*, <http://www.odci.gov/cia/publications/nsolo/factbook/cn.htm>.

China's leadership has held out the vision that information technology will allow the country to decentralize decision-making, while allowing the central government to monitor and control the economy. Since 1995, China has embarked on a series of "Golden Projects" to introduce information technology into various sectors of government and society. For example, projects have been initiated to utilize information technology to transform the way the State handles taxation, customs, and other transactions. The Golden Projects embody China's traditional centralized "top-down" approach to managing change. The Internet, which is so often end user driven, challenges this form of centralized management. During the last two years, the Internet has eclipsed the Golden Projects. It is still an open question as to whether the Golden Projects will be implemented and what their ultimate effect will be. In the end, the Internet may indeed support their implementation.

Networks in China

As in other countries, China's early computer networking efforts came from the research and education communities. The CAnet (China Academic Network), established in 1987 is generally recognized as the first computer network in China. CAnet used an X.25 link to exchange information with the European Research network. Two other early, and entirely independent, sources of Internet development were the China Research Network (CRnet) and the Institute for High-Energy Physics (IHEP). In March 1993, IHEP set up a TCP/IP leased line to the Stanford Linear Accelerator Center that allowed it full access to the Internet.

As global interest in the Internet exploded in 1995 with the development of the World Wide Web, a wide variety of Internet projects began to bubble out of the Chinese academic, government, and commercial communities. Some of the academic networks began to sell "shell accounts" to commercial users and provide e-mail and Usenet connectivity to bulletin board operators. Many of these bulletin board operators were quickly evolving into full-fledged Internet Service Providers (ISP). At the same time, many government organizations created their own proposals to build national computer networks for internal use.

In 1995, the Chinese Internet was rapidly expanding in a decentralized manner throughout many sectors of Chinese society. The Chinese government after much discussion decided to allow the growth of the Internet, but imposed hierarchical controls on all the organizations involved with it. On 1 February 1996, the State Council issued Order No. 195, "Interim Regulations on International Interconnection of Computer Information Networks in the PRC," later modified on 20 May 1997.[167]

The Interim Regulations state that the Steering Committee on National Information Infrastructure (NII) is in charge of overseeing the Internet in China. These regulations separate networks into Interconnecting Networks (IN) that connect with the global Internet and Access Networks (AN) that are used to access the Internet.

The order specified that only four organizations would operate INs:

Ministry of Posts & Telecommunications (MPT) operates ChinaNET,

[167] PRC State Council, "Interim Regulation on International Interconnection of Computer Networks in PRC," Order No. 195 (1 February 1996), as modified by PRC State Council's Order No. 218, 1997 (20 May 1997).

State Education Commission (SEC) operates CERNET,
Ministry of Electronics Industry (MEI) operates ChinaGBN, and
Chinese Academy of Science (CAS) operates CSTNet.

Each of the three other government bodies chosen to administer INs has to connect to the MPT international gateway to access international circuits. The MPT is therefore allowed, in the interests of national security, to maintain its "bottleneck" on the availability and price of international bandwidth.

Internet Dimensions

Pervasiveness By July 1997, there were 25,594 Internet hosts using the *.cn* national TLD according to China's domain name registrar, China Internet Network Information Center (CNNIC) (Table 53).[168] Hosts have grown by 127 percent from the 11,282 registered in July 1996. However, this still computes to the rather low ratio of 21 hosts per million population. Of these hosts, approximately 1,500 are Web servers.[169]

Table 53. Internet Hosts in China[170]

Date	7/94	1/95	7/95	1/96	7/96	1/97	7/97
Host Number	325	569	1,023	2,146	11,282	19,739	25,594
Semi-annual growth rate		75%	80%	110%	426%	75%	30%

The ratio for users per capita is also very low although there has been exponential growth in recent years. CNNIC's statistics estimate that there were 620,000 Internet users in China at the end of October 1997.[171] Counting users is difficult, as users will often share a subscription. In addition, there are users of various sorts of Intranets who may or may not have access to the global Internet. Students at some universities, for example, have access to the education CERNET network but are blocked from accessing international hosts unless they have paid for a special account.

The Internet in China has expanded beyond the technical community, although its use is primarily by the elite in the major cities like Beijing and Shanghai. According to a 1997 survey by CNNIC, 54 percent of Internet users either specialize in scientific research, education and computer services or are students.[172]

Given the concerns authoritarian regimes have with controlling the Internet, one might have predicted that government pressures would keep the number of Internet users in China to a linear growth path. This has not been the case in China (Table 54). This can be explained in part by the fact that China has allowed MEI to compete with the monopoly telecommunications provider, MPT. MPT has been "forced" to add bandwidth, lower prices and disperse geographically far faster than it probably would have if it were the only game in town. In contrast, all Persian Gulf governments, in the interests of maintaining control,

[168] CNNIC Newsletter, No.1 (Beijing: CNNIC, November 1997).
[169] "China: Survey on Internet Connectivity in China," *Beijing Zhongguo Xinwen She* (10 December 1997).
[170] Source: CNNIC.
[171] *ibid.*
[172] *ibid.*

have only allowed the monopoly PTT to offer Internet service. This has kept prices high and put a damper on sales and innovation.

Table 54. Internet Subscribers in China[173]					
Year	1994	1995	1996	10/1997	2001 (projected)
Number of Subscribers	1,600	6,400	80,000	620,000	2,700,000
Annual Growth Rate		300%	1150%	675%	

Geographic Dispersion China's interconnecting networks span out across the country. However, CNNIC's statistics do show that Internet hosts and users are primarily concentrated in big cities such as Beijing and Shanghai as well as economically developed provinces including Guangdong, Fujiang, Jiangsu, Zhenjiang and Shangdong.

Despite this concentration of activity in the eastern coastal part of China, the Internet has been extended to almost all of the provincial capitals. At the *ChinaInt'97* conference held in Beijing in November 1997, the four major networks announced their network upgrades. As of October 1997, MPT's ChinaNET had eight regional centers and about 200 nodes in operation across the country, covering all 28 provincial capitals and four province-level cities.

The Golden Bridge Network (ChinaGBN), which relies on the JiTong's national Very Small Aperture Terminal (VSAT) satellite communications backbone, provides Internet access in 30 cities. ChinaGBN currently has two international links from Beijing. SEC's academic network, CERNET, is currently providing access to about 270 Universities around the country. CAS's CSTNet has also interconnected several hundred research institutes around China.

Sectoral Absorption Figure 25 shows the percentage of registration in each of the sectoral domains. The majority of registrations are under the *.com.cn* domain that is set aside for businesses.

ChinaNET's user base is 60 percent corporate, 30 percent individual, and 10 percent foreign.[174] Other ANs in China have similar distributions. According to a 1997 CNNIC survey, 4,066 enterprises and service institutes have access to the Internet.[175] Commerce is driving Internet usage in China, particularly international business where the cost and time savings are so appreciable. Internet-based electronic commerce is being implemented in a wide range of manufacturing businesses to communicate with suppliers and customers. IBM's software solutions chief, Steve Mills, claimed in September 1997 that "[m]ore than 70,000 Asian suppliers, mostly small to medium sized factories in China, Hong Kong, Taiwan, and Korea, selling everything from plastic toys to multimedia electronics, are using the Internet for electronic commerce."[176] The reality is that mainland China lags significantly behind Hong Kong, Taiwan, and Korea in the adoption of electronic commerce, but the momentum is building. Thus, there are no indications that more than 10 percent of businesses with over 100 workers have dedicated connections to the Internet. The Internet is still rare in the business sector.

[173] Sources: ChinaNET, ChinaGBN, CERNET, CSTNet, and CNNIC.
[174] China Research Corporation, *op. cit.*, p. 30.
[175] "China: Survey…, *op. cit.*
[176] "Lure of Net riches overtakes Asia," Reuters (15 December 1997).

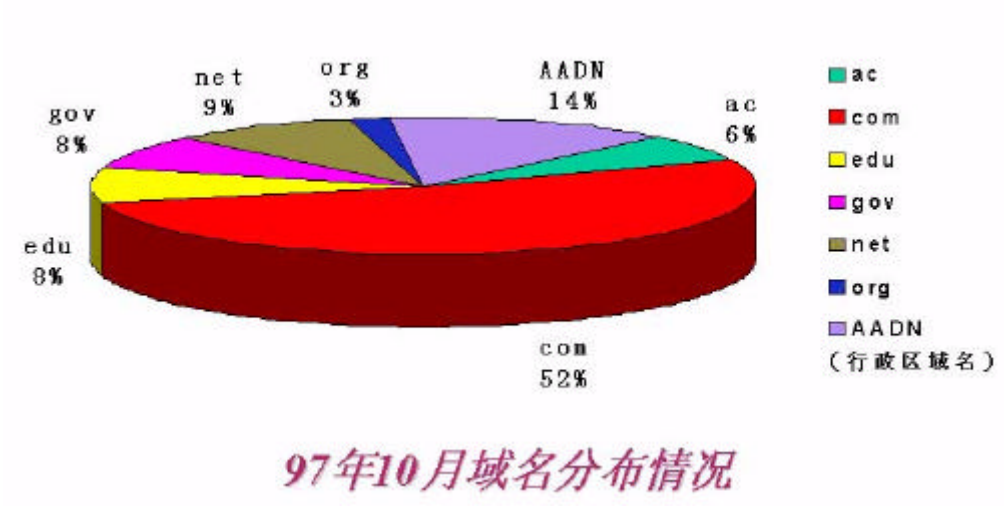

Figure 25.[177] Domain Name Distribution Under the *.cn* TLD, October 1997.

The Internet has moved rapidly into the research and academic communities. Many of the academic organizations on the network are setting up web sites and providing their faculty and some students with access to e-mail accounts. In September 1997, about 270 universities, of a potential 1000, had dedicated connections with the Internet through CERNET. Although CERNET's plan has been to connect all primary and secondary schools, this initiative has reportedly lost momentum. Very few primary and secondary schools presently are connected.

Most research institutes which belong to CAS and other industrial ministries and national agencies have also been hooked up directly to the Internet. This amounts to about 200. The research institutes that have not been connected to the Internet are often run by provinces and cities.

Government agencies have been very slow to develop a web presence. The CyberPRG[178] team identified only one national government web page, the Patent and Trademark Office, in their survey of July 1997. CNNIC has an informative web site. In addition, various government ministries and a few provincial and local governments have been involved in the development of tourism and economic development oriented sites.

However, the Chinese government is committed, as part of the Golden Projects, to using information technology to improve the coordination of government and state owned enterprise. Some internal TCP/IP based networks are being installed. Although these networks are not all initially connected to the Internet, they will be connected with larger networks and perhaps inevitably to the Internet.

[177] Source: CNNIC.
[178] CyPRG country database, <http://w3/arizona.edu/~CyPRG>.

There are strong indications that government is increasingly involved in the Internet. By the end of October 1997, there were about 323 domain names registered under the *.gov.cn* domain. Those names are only for national government agencies. A lot of local government agencies are registered under the provincial domains. Many government agencies have already begun to distribute e-mail accounts to their senior and middle-level civil servants. The slow roll-out of governmental web sites is due to national security concerns and the unwillingness of government agencies to provide updated information to the public or to budget for setup and maintenance costs.

Connectivity Infrastructure Bandwidth is scarce and expensive in China. CERNET and CSTNet use circuits that are provisioned from the MPT's Digital Data Network (DDN) at speeds between 64 Kbps and 2.048 Mbps (E1). ChinaNET uses 155 Mbps circuits to connect its eight network centers and 2 Mbps to 34 Mbps DDN lines to connect to its 200 points of presence. ChinaGBN utilizes VSAT links of 2 Mbps to connect the 30 cities in which it provides service.

By June of 1997, the four Interconnecting Networks in China had each interconnected using bilateral peering (Figure 26).

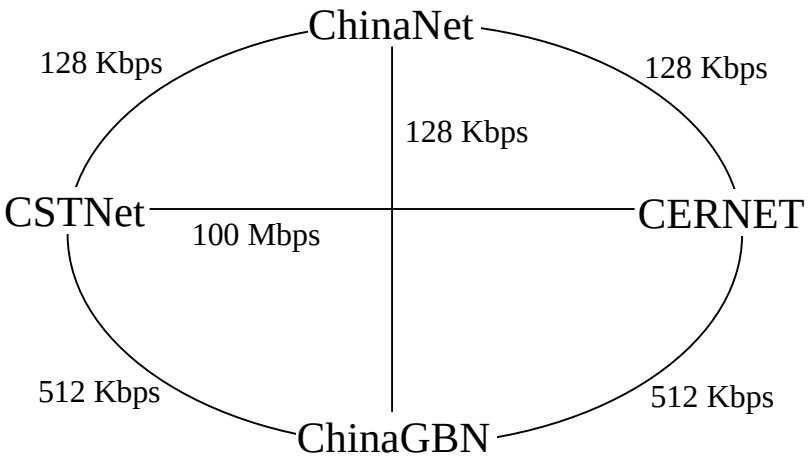

Figure 26. Interconnection of Backbones, June 1997

In December of 1997, the Chinese government announced that it was establishing three Internet exchanges in Guandong, Shanghai, and Beijing for the four INs: ChinaNET, ChinaGBN, CERNET and CSTNet. There is no indication that other networks will be welcome at the exchanges.

In November of 1997, ChinaNET announced that it had signed a deal with ATT for a 45 Mbps international Internet connection from Shanghai.[179] This connection will dramatically increase the amount of IP bandwidth going in and out of the country. China NET plans to add another 45 Mbps international link from Beijing in 1998.

Only the four authorized INs can connect to the global Internet and then only through MPT gateways (Figure 27). In 1997, the Chinese prices for the higher end international half-circuits are four times the cost of the United State-to-China half-circuit. MPT's charges for international circuits keep a real check on potential competitors such as ChinaGBN and put a damper on

[179] "AT&T introduces fastest-ever Internet access in China," *M2 Presswire* (17 November 1997).

Internet expansion. At the end of 1997, the MPT agreed, after much discussion within the Steering Committee, to lower international circuit prices by 30 percent, while cutting domestic circuit prices by 50 percent.

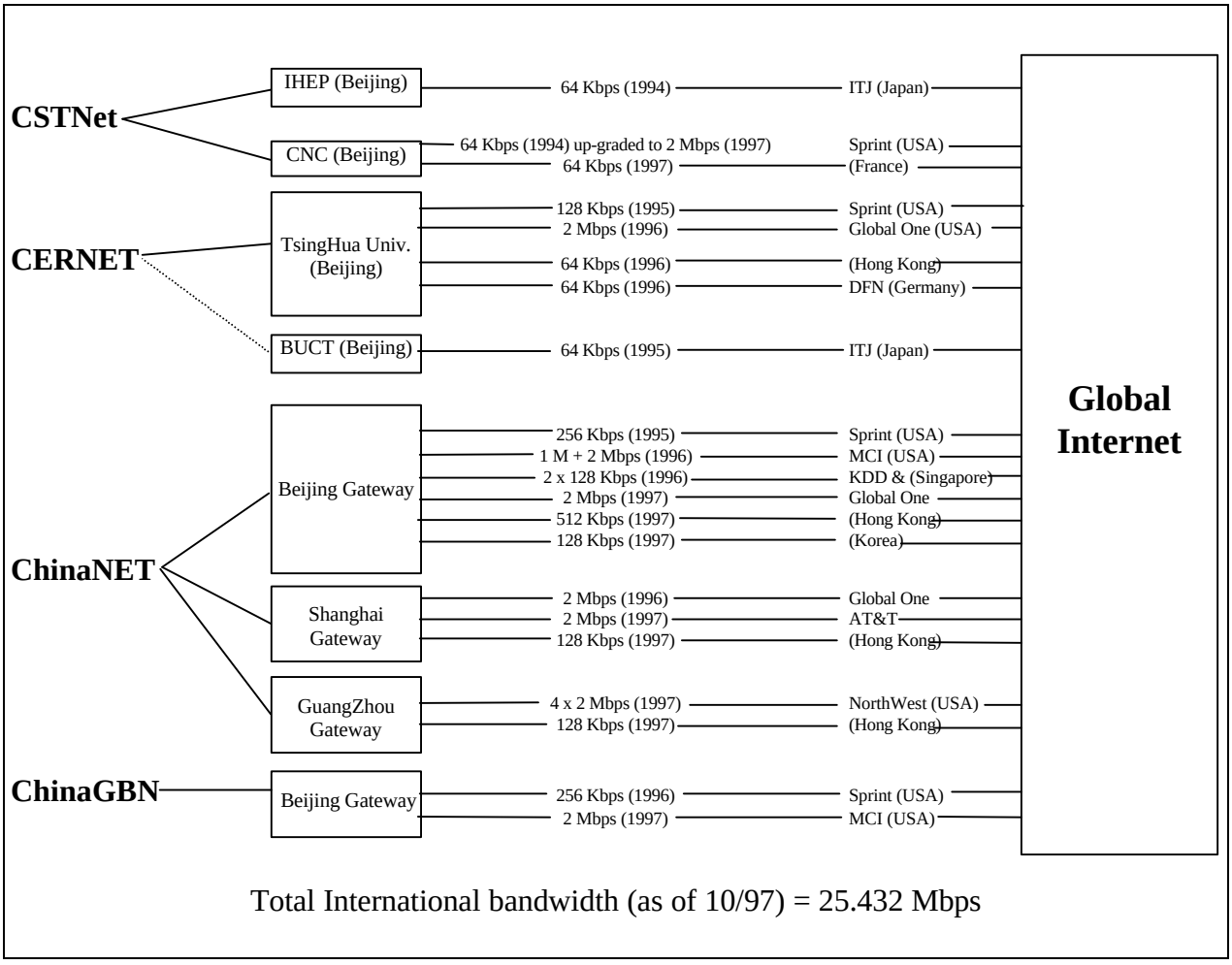

Figure 27.[180] China's International Links, 1994-1997

Organizational Infrastructure In Beijing and Shanghai, there is vigorous competition between ANs; the barriers to entry are relatively low. However, these ANs must buy their global connectivity from either ChinaNET or ChinaGBN. In addition to the circuit charge, ChinaNET charges ANs and businesses US$580 per month for 200 MB of Internet traffic over a 64 Kbps line plus US$2.50 per additional megabyte.[181]

Most ANs connect to the Interconnecting Networks with between 64 Kbps and 2 Mbps upstream connections. Leased-line prices in China, until the recent rate cuts, have been up to 40 percent higher than what is charged in most other countries.[182] Leased lines take months to install and the

[180] Sources: ChinaNET, ChinaGBN, CSTNet, and CERNET.
[181] China Research Corporation, *The Internet in China* (March 1997), p. 27.
[182] To Chee Eng, "Giant Steps, Giant Problems," *Data Communications* (February 1997), <http://www.data.com/global_networks/giant_steps.html>.

technician often requires additional payments to get the job done. If the circuit goes through multiple provinces, each provincial telephone company must be contacted and contracted with. Recent reports indicate that the provincial and municipal telephone companies, at least in cities like Beijing, have become much more professional in the past year in terms of scheduling and installing leased lines.

According to the APNIC database in early 1997, 32 networks were self-defined as ISPs.[183] This number had grown to more than 50 by the end of 1997. Some ANs, such as the Beijing Telecommunications Administration, are under the authority of the MPT. Other ANs are backed by private capital, including NetChina which has US$10 million from Chinese investors, and China Online, which is backed by the Rayes Group Ltd., a real estate development company.

Though many of China's ANs are based in one city, NetChina and China OnLine are expanding nationally. It is not clear whether they will build their own national backbones or will use the IP services of ChinaNET or ChinaGBN. As long as ANs must connect to the Interconnecting Networks to have international connectivity, ANs will have major disincentives for building their own national backbones.

ANs are playing a major role in connecting individuals and businesses in China with the Internet. They are making investments in infrastructure, technology, and marketing to broaden the appeal of the Internet. However, they do not currently have formal representation before the Steering Committee. To remedy this the Steering Committee has proposed creating a China Internet Society as a channel for ANs to participate in the decision-making process regarding the national information infrastructure.

Sophistication of Use Applications such as e-mail and Web access are being utilized to substitute for international telephone calls and mail. However, because the Internet has so substantially lowered the costs of international communication, many new forms are being initiated. One of the most popular uses is to learn more about and to correspond with American universities,[184] a popular purchase by parents for their children.

Premier Chinese institutions such as Tsinghua University are doing research in computer science, such as in the field of network agents. The research is a number of years behind the leading U.S.-based research institutions. The educational network, CERNET, has been designed and implemented by Chinese engineers with much of the engineering leadership coming from Tsinghua University.

Up to this point, China has not played a significant role in the development of Internet technology, though the government has made the development of Chinese language Web tools a priority. For example, the Sichuan Province Science and Technology Office in conjunction with Sichuan Lianhe University has developed the Xinyi translation system for translating Web pages.[185]

On 29 January 1997, MEI founded the General Research Center for IT Projects (GRCITP). GRCITP has been assigned to work on the technology for national Internet exchanges and has

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[183] Zixiang Tan, Milton Mueller, and Will Foster, "China's New Internet Regulations: Two Steps Forward, One Step Back," *Communications of the ACM* 40 (December 1997), pp. 11-16.

[184] Geremie R. Barme and Sange Ye, "The Great Firewall of China," *Wired* (March 1997), p. 140.

[185] Tang Li and Deng Xianchun, "Sichuan Institute, University Unveil Internet-based English Chinese MTS," *Chinese Science News* (1 January 1997).

developed original software for the route servers, developed means for separating routing information from data flow, and devised routing strategies to effectively manage network transmission routes. GRCITP is also working on Internet content selection and filtering.[186]

China is beginning to develop lower end routing equipment. GC Information has developed and is producing the DCOM-2000 router.[187] There is some momentum within the Chinese government to produce all critical network components to reduce the country's vulnerability to "trap doors" that could be exploited by the U.S. government in the event of a crisis between the two countries.

Summary The six dimension ratings for China from the preceding analysis are summarized in Table 55 and depicted in Figure 28, which shows the rapid expansion of the Internet from a few research networks in 1995 into academic and commercial sectors throughout the country in 1996 and 1997.

Dimension	Level	Explanation
Pervasiveness	(2) *Established*	Although China has less than 1 user per thousand inhabitants, the user community has expanded from networking technicians to the country's elite.
Geographic Dispersion	(3) *Highly Dispersed*	Internet access is available within all first-tier political sub-divisions.
Sectoral Absorption	(2) *Moderate*	The Internet is in moderate use in the academic sector and is rare in the other sectors.
Connectivity Infrastructure	(2)	China, by increasing ChinaNET's backbone capacity and international link (T3), and developing three exchanges, is rapidly moving toward Level 3.
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Sophistication of Use	(2) *Conventional*	The Internet is used to enhance current processes, such as messaging, without fundamentally changing those processes.

Table 55. Internet Dimensions for China

[186] Jin Yuzhong, "MEI, IBM Research Centers Coordinated on China Internet Content Screening," *China Electronic News* (14 February 1997), p. 1.

[187] *GC Information Company*, <http://www.gcinfo.com>.

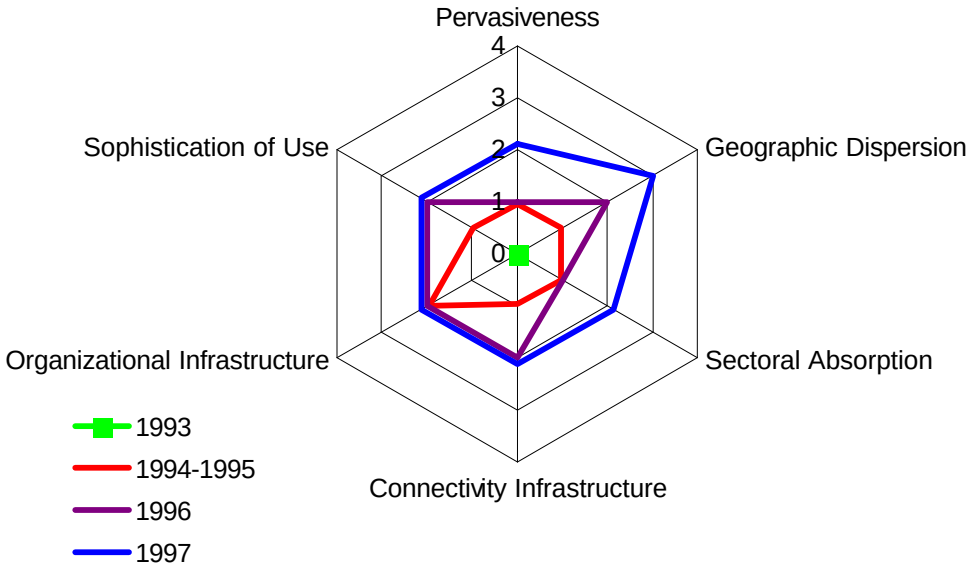

Figure 28. Internet Dimensions for China

Determinants

As reflected in Table 56, the dimensions of Internet diffusion in China are determined and shaped primarily by government policies, but also by a variety of economic and cultural factors.

The Role of Government

Policy Making Bodies with a Major Stake in the Internet

While China is slowly moving toward a market economy, most significant economic decisions are still made by government agencies. The history of the Internet in China can be explained mainly through the role these government ministries play.

In China, real political power is held by the Standing Committee of the Politburo (SCPB), usually consisting of the top five to seven leaders in China. The Party Politburo often decides strategic directions on political, economic and social issues such as economic reform plans, policies toward foreigners and even high-tech development plans.

Although the national strategy is made by the Politburo, the tactical decisions and daily operations are left to China's State Council and its ministries. The State Council usually relies on the industrial ministries to formulate and to carry out policies that the Council will then rubber stamp. In the event of conflict between ministries, the State Council will arbitrate. Though ministries have their own domains, it is a tenet of Chinese political culture that absolute decision-making power should not be granted to a single ministry. Every ministry, therefore, could have some sort of veto power over one decision or another.

As the government decentralizes, individual provincial governments are beginning to take on more and more influence over decisions. In the telecommunication field, almost all the provincial governments are seeking to expand their infrastructure. Local Provincial Telecommunication

Administrations (technically part of MPT) are aligning with the provincial governments to attract foreign investment capital and technology. In so doing, they often circumvent the directives of the MPT regarding foreign investment and architecture.

Table 56. Determinant Impact

Determinant Quality	Affected Dimension
Competition between MPT and MEI	Increases connectivity infrastructure and organizational infrastructure. Indirectly increases pervasiveness.
MPT monopoly over international circuits	Decreases connectivity infrastructure. Indirectly decreases pervasiveness.
National commitment to education and research	High absorption in academic and research sectors.
Government's desire to control the flow of information for political purposes	Limits connectivity and organizational infrastructure.
Government concerns regarding infrastructure protection	Limits sectoral absorption, particularly in government.
Government's commitment to electronic commerce	Increases sectoral absorption, particularly in business.
Limits on foreign ownership and operation	Limits connectivity and organizational infrastructure.
Entrepreneurial zeal on part of ISPs	Increases connectivity infrastructure and organizational infrastructure. Indirectly increases pervasiveness.
Development of Internet-based information services	Increases sectoral absorption and pervasiveness.
Ease of access to technical expertise	Increases connectivity infrastructure, sectoral absorption, and pervasiveness.
Western-trained engineers returning to China	Increases connectivity infrastructure, sectoral absorption, and pervasiveness.
Chinese reluctance to reveal too much to those not in their circle	Limits sectoral absorption of Web, particularly in government.
Influence of Hong Kong	Increases connectivity infrastructure and sectoral dispersion.
Development of software industry	Increases sectoral dispersion.
Moderate diffusion of PCs	Limits pervasiveness.

To complicate matters, many of the ministries are both policy-makers and dominant market players within their assigned territories. For example, MPT is both the designated regulator and operator of China's basic telecommunications services. And, MEI not only sets electronics industry policy, but owns and operates a far-flung empire of electronic manufacturing operations. There is an almost feudal aspect to the industrial ministries. When MPT and MEI interact, they are negotiating for far more than the "good" of the nation. They are struggling over wealth, jobs, and power for their dependents.

The ministries are very aware of technological change and what the loss of control and rapid change can represent to the well-being of those who are dependent on each ministry. The Xinhua News Agency, for example, depends on the monopoly it holds over news for status, power and money. The Internet provides a threat to that monopoly, but it also provides an opportunity, using the new technology to reach new markets and to create wealth.

The Internet combines elements of telecommunications, broadcasting and publishing into a new communications medium, challenging China's separated decision-making structure which is divided among industrial ministries. None of the ministries appears able to emerge as the single Internet decision-maker. Table 57 is a list of some of the policy bodies.

Table 57. Key Policy Bodies

Name	Historical Mission	Interest in Internet
Ministry of Posts and Telecommunications (MPT)	Regulator and operator of telephony and data networks	Protect its position as dominant provider of telecommunications
Ministry of Electronic Industries (MEI)	Manufactures information-technology products	Leverage its decaying manufacturing base and political power to pursue lucrative service industry
Ministry of Broadcasting, Movies and Television (MBMT)	Regulator, producer, and operator of mass media	Protect ministry's power and influence as interactive technologies challenge traditional broadcast technologies
Ministry of Public Security (MPS)	Police of Chinese society	Ensure Internet is not used to leak state secrets, conduct political subversion, or spread pornography or violence
The State Education Commission (SEC)	Policy-maker and administrator for China's education system	Internet support for university and secondary education
The Chinese Academy of Sciences (CAS)	Scientific research policy-maker and host of hundreds of research institutes	Technology transfer; Internet-oriented research and development
Xinhua News Agency	Monopoly news producer	Leverage and protect monopoly on news
Propaganda Department	Makes sure that mass media is under the guidance of the Party	Especially concerned with the influence of Western information
State Planning Commission (SPC)	Controls China's economic resources	Pricing of Internet and telecommunications services; funds for infrastructure
State Economic and Trade Commission (SETC)	Policy decisions regarding infrastructure and relationships with foreign firms	Foreign investment in China's Internet Infrastructure
State Science and Technology Commission	Policy-making and financing of China's research and development	Internet is a major focus
People's Bank of China	Loans to Chinese firms	Loans to Internet firms
People's Liberation Army	State Security; also has ties to many manufacturing interests	Security issues; expanding into Internet
Provincial and Municipal Bodies	Moving away from Central government in pursuit of their own economic development	Develop Internet infrastructure. Attract investment through Internet

With the blurring of traditional ministerial territories, China has had to find new ways to make decisions. The answer to this challenge has been to create an interim organization and position it between the State Council and the ministries. The National Joint Conference on State Economic Informatization was initiated in 1994. It was re-organized as the State Council's Steering Com-

mittee on National Information Infrastructure in 1996. The Steering Committee is charged with the responsibility for the formulation and implementation of planning, policy and regulations of China's information industry, including the Internet. It appears that China has established the Steering Committee as the single government organization for making decisions on the entire information industry including the Internet. However, it is not clear that the Steering Committee has the power to actually impose its decisions on a specific ministry. Rather, the Steering Committee is a "group space" where the stakeholders work out solutions.

History of Conflict between MPT and MEI

The role of government agencies in China's information industry and the emergence of the Steering Committee is, to a large extent, centered on the competition between MPT and MEI. These are the two most powerful ministries in the information industry. The pivotal question is who will control China's information superhighway of which the Internet is just the precursor.[188] MPT, as the telecommunications monopoly, wants to maintain control of the fast-growing and lucrative service market. MEI, a manufacturer of information-technology products, is a new player in providing services. Suffering from the onslaught of foreign and domestic competition, MEI is fighting to find a new revenue source in service provision.

MPT monopolizes China's telecommunications service market, which has been experiencing a 30 to 50 percent annual growth since late 1980s. It has been able to plow its service sector into developing its manufacturing capacity. However, with limited manpower and resources, the MPT chose to limit its focus to bringing phone service into homes. Traditionally, it has been slow and less motivated to respond to the demand for advanced services, delaying deployment of the expanding technologies.

In recent years, MPT began to adjust its strategy. Solid profits and growing demand have enabled MPT to continue to upgrade the quality and reach of its network. Up-to-date technologies such as fiber cable and satellite systems were integrated into its backbone networks.

MEI is a national base for research and development (R&D) and manufacturing of electronic components, computers and associated software, digital telecommunications systems and broadcasting equipment. MEI strongly supports deploying advanced technology and introducing competition into the service market in the interest of boosting demand for its products.

MPT's service sector is a regulated monopoly market, giving it protection from both domestic and foreign competition. This results in lucrative, guaranteed profits for its service operation. MEI must compete with both domestic and foreign players for MPT's business. Foreign equipment is preferred because of its higher quality, reliability and better after-sale service. MPT has taken advantage of its huge procurement budget to convince foreign suppliers to set up joint ventures with its equipment manufacturers, a key strategy to compete with MEI.

MPT's manufacturers have replaced MEI, becoming the dominant suppliers of most of China's telecommunications equipment markets. MPT has gradually established itself as a solidly organized, cash-rich ministry, giving it the political and economic power to protect its interests while expanding its infrastructure.

[188] Zixiang Tan, "China's Information Superhighway: What is it and who controls it," *Telecommunications Policy* 19 (1995), pp. 721-731.

MEI has desperately fought to change its market position by relying on the solid political power gained through personal ties with many top-level leaders, its broad IT technology base and its alliance with other ministries. MEI's ties to the current leadership include:

- President Jiang Zemin, former MEI minister in early 1980s.
- Former MEI minister, Li Tieyin, currently the president of the State Commission for Restructuring Economic Systems. Responsibility includes the structuring of industrial ministries.
- Current Premier, Li Peng, who was the head of the former Leading Group for the Revitalization of the Electronics Industry which was closely tied to the MEI.

As a result of the placement of these former MEI executives, serious consideration is assured by China's inner circle of new MEI initiatives. In addition, the current MEI Minister, Mr. Hu Qili, was a member of the Party Politburo in the late 1980s.

MEI and its allies launched a campaign to enter the basic telecommunications service sector. Led by its Mr. Qili, MEI formed a consortium with the Ministry of Railway and the Ministry of Electric Power. By accusing the MPT of inefficiency, as evidenced by huge unmet demand and slow development of new services, MEI's consortium successfully convinced the State Council to introduce competition and liberalization. A second carrier, China Unicom was formed on 19 July 1994. China Unicom provides both local and long-distance services. Although this carrier has a long way to go in order to compete with MPT's national operation, Unicom has opened the door to providing telecommunications services.

State Council's Steering Committee

Steering Committees in China are temporary, intra-agency organizations, often chaired by a vice-premier with participation by several ministers and vice-ministers from many ministries. They often work as a bridge between the State Council and the ministries, with decision-making power ranging somewhere between that of a judge and that of a forum for exchanging information.

The Chinese government sets up Steering Committees when new issues arise that can not be solved by any one ministry. An example is the State Council's Leading Group for the Revitalization of Electronic Industry, headed by then Vice-Premier Li Peng in the early 1980s. It was charged to oversee the planning, financing, coordinating and implementing of China's Very Large Scale Integrated Circuits (VLSIC), computer hardware and software, and telecommunications industries from a national perspective. Sponsored by the State Council, it had final authority over China's IT industry for almost a decade. Its role gradually faded out in early 1990 and was then transferred to the MEI.

The Steering Committee of National Information Infrastructure has its roots in the Joint Conference on National Economic Informatization. According to the State Council's Notice on 16 April 1996, the Steering Committee is the State Council's agency, fully responsible for every major issue relevant to informatization in China. Its major responsibilities include:[189]

- Formulation of the policies, regulations and laws;
- Development of strategic plans of China's NII and monitoring the implementation;

[189] PRC State Council, "The Notice on the Founding of the State Council's Steering Committee on National Information Infrastructure," Order No.15 (16 April 1996).

- Coordination of the large and cross-ministry projects;
- **Coordination and power over major issues regarding China's Internet;**
- Coordination of the technology R&D and developing standards related to China's NII; and
- Performance of other functions assigned by the State Council.

The Steering Committee is chaired by Vice-Premier, Zou Jiahua. The first deputy-chair is MEI's Minister, Mr. Hu, Qili. Other deputy-chairs are:

Wu Jichuan, minister of the MPT

Liu Qibao, deputy general secretary of the State Council

Zen Peiyan, deputy commissioner of the State Planning Commission

Xu Penghang, deputy commissioner of the State Economic and Trade Commission

Zhu Lilan, deputy commissioner of the State Science and Technology Commission

Chen Yun, deputy director of the People's Bank of China

Members of the Steering Committee consist of high-ranking officers from all the ministries and agencies who have a stake in China's Internet. They are:

Wei Yu, deputy commissioner of the SEC

Lu Xinkui, deputy minister of the MEI

Liu Shengzai, deputy minister of the foreign trade (MOFET)

He Dongcai, deputy minister of the MBMT

Liu Wenjie, deputy director of the Customs

Xiang Huachen, deputy director of the Taxation

Li Bin, deputy director of State Council's News Office

Lu Yongxang, the deputy director of the CAS

Li Zhuanshen, assistant minister of the MPS

Li Rui, deputy director of China's Technology Bureau

Yun Banggen, director of the telecommunications division of the PLA

A secretariat is set up to handle the daily operation of the Steering Committee, based on the secretariat of the previous Joint Conference on National Economic Informatization. The deputy minister of MEI, Mr. Lu Xinkui, heads it.

As an interim organization, which is the same as other State Council's Steering Committees with members from competing ministries, the Steering Committee's long-term role in China's Internet is open to question. The Steering Committee has successfully worked out the interim Internet regulations which dictate that only the MPT, MEI, CAS, and SEC can run INs. China's domain name registration center, CNNIC, has been set up by the Steering Committee under CAS. The Steering Committee in the Fall of 1997 announced its plan to set up three Internet exchange centers, and to establish China's Internet Society in the near future.

The Steering Committee has worked hard to reduce the excessive fees MPT charges on its domestic and internationally leased lines. ANs and the other three interconnecting network operators complained vigorously that this was a barrier to Internet expansion in China. Although

MPT has resisted this effort, it finally agreed at the end of 1997 to lower its international circuits by 30 percent while cutting its domestic circuits by 50 percent.

Many other issues such as formal encryption, privacy and copyright policies are waiting for final decisions from the Steering Committee. In 1997, the Steering Committee seemed most successful in making decisions only when each player, mainly government agencies, would gain. Due to its lack of legislative status, financial means and administrative power, the Steering Committee is often handicapped when making decisions when it is a zero-sum game among industrial ministries. This strongly suggests that the Steering Committee is in a bargaining relationship with industrial ministries in charge of China's communication industry. The Steering Committee has not been authorized to take over all the decision-making power from the ministries. It often requires the full cooperation of industrial ministries for it to be successful. The formation of the Steering Committee has shifted China's decision-making process regarding its Internet, as illustrated in Figure 29. The old model of ministry-dominated and individual issue-oriented decision-making with the State Council as arbitrator has been replaced by a new model of inter-ministry decision-making.

The future of China's Internet is closely tied to the fate of the Steering Committee. The current bargaining relationship may last for years with industrial ministries sharing the policy-making power with the Steering Committee. The Steering Committee may emerge as a super agency. It would then oversee every aspect of the policy and regulations for China's communication field, including the Internet, by taking over the policy-making power of the industrial ministries, leaving them as only market players. Another scenario would be for the Steering Committee to gradually fade away just like the Leading Group on the Revitalization of Electronics Industry did in 1980s. Whichever scenario finally emerges will both depend on and significantly influence the direction of China's Internet.

The Steering Committee and Key Internet-Related Issues

Selection of MPT, MEI, SEC, and CAS

In keeping with the view that the Internet is a value-added service, the government freely allows any organization to run an AN. Any interested domestic organization or firm can get a license to provide Internet services if they meet the minimum requirements. However, by granting a limited number of government organizations the right to run INs, the State Council has kept tight control over international connectivity and has established a hierarchy of responsibility.

The most challenging decision for the Steering Committee was choosing who should run the limited number of INs. As in many other nations, the research and educational community initially developed the Internet in China. Internet use for these communities is seen by the leadership as enhancing China's future. In addition, research and educational communities tend to limit their services within their own community, therefore not posing a threat to the commercial interests of other ministries. Granting CERTNET and CSTNet IN status was a logical decision few would debate, although some would argue that the two networks might be consolidated into one.

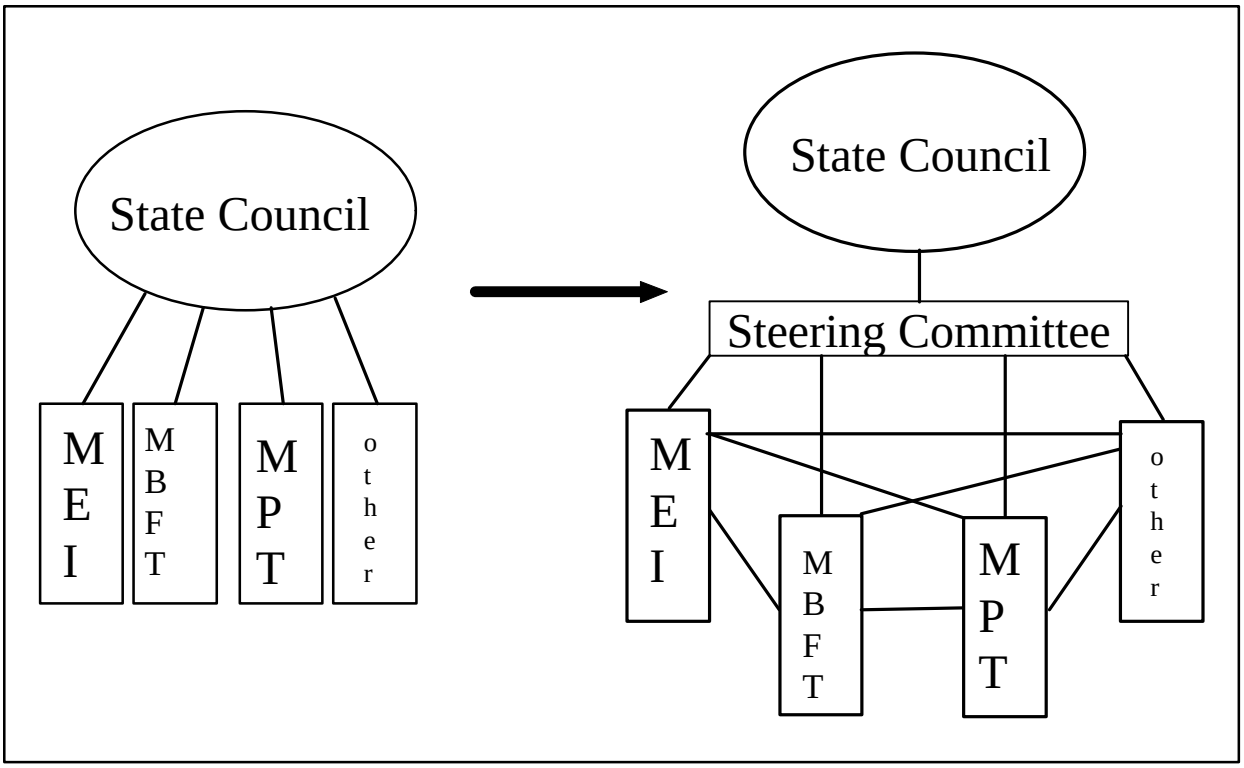

Figure 29. Evolution of Internet-Related Decision-Making

Decisions on the commercial INs were more complicated. MPT sees the Internet as a natural extension of its telecommunications services. Having been unsuccessful at becoming the only commercial IN, MPT had to settle on being one of the commercial INs. As a powerful player within the Steering Committee, MEI was in the position to have its affiliate be selected by arguing that information technology fell in MEI's domain. MEI is the only organization which launched Internet services after the State Council presented the Interim Regulations.

Other ministries have not been able to obtain the right to operate an IN. They fall into two categories. One group has done some regional development of networks for their internal purposes. This group is represented by the Ministry of Railways, the Ministry of Aerospace Industry and the People's Liberation Army (PLA). However, these organizations have been turned down apparently because Internet provision is outside their traditional business operations. In the case of the PLA, there have also been concerns about the potential power of the PLA in relation to the ministries if it were to develop a successful national commercial Internet backbone.

The other group of ministries such as MBMT and Xinhua have not able to obtain IN status. They either lack the technology base or the financial resources to run a national network at the current time. Furthermore, these ministries do not have enough political power to influence the decisions of the Steering Committee.

An IN organization has the right and responsibility to license ANs. To some extent, this is a privilege because an affiliate does not need to apply for licenses from other organizations with IN status. In 1997, it was relatively easy to obtain an AN license; the minimum requirements were technical and financial terms which were easily obtained by legitimate organizations. Even though

licenses were easily obtained, they could potentially be withdrawn if their use threatened powerful economic or political interests.

.cn Top-Level Domain Registration

MPT, MEI, CES, and CAS have been fighting to take over the registration function since 1995 when China's Internet began to significantly expand. The formation of the State Council's Steering Committee in 1996 created a place for the four organizations to deal with registration rights.

In 1997, the Steering Committee assigned a special Working Committee for CNNIC to be headed by Ms. Hu Qiheng, the retired deputy director of CAS and sister of MEI's Minister, Mr. Hu Qili. The Working Committee placed China's CNNIC within CAS's Center for Computer Networking and Information.

China's CNNIC is defined as a not-for-profit organization responsible for all the domain-name, registration-related issues under the *.cn* domain. CNNIC has published two regulations which govern its operation: the Provisional Measurements for Administration of the Registration of Domain Name on China's Internet and the Detailed Implementation Rules for the Registration of Domain Names on China's Internet.[190] CAS's Center for Computer Networking and Information conducts the daily operations of the CNNIC. Therefore, CNNIC is operated by CAS but governed by the Steering Committee through its special Working Committee on CNNIC (Figure 30).

It could be argued that CNNIC is controlled by CAS because it is headed by CAS's retired deputy Director, Ms. Hu Qiheng. However, the Working Committee consists of representatives from the four INs. Other members are technical experts on the Internet in China. Strategic decisions and regulations are worked out by the Working Committee with CAS playing a dominant role.

As a non-profit organization, it makes more sense to assign the CNNIC to one of the two academic INs, CAS or SEC, rather than the commercial INs, MPT or MEI. There is the concern that MPT or MEI would manipulate the domain name system to the detriment of the other.

Both CAS and SEC have the qualifications to run CNNIC. CAS created the first connection for China's network to the global Internet. In October of 1990, it registered *.cn* as China's top domain name. CAS is doing significant R&D work in Internet technologies while running CSTNet. SEC came later to the Internet, but caught up rapidly. CERNET is larger and more complex technically than CAS's CSTNet. CERNET's R&D capability is at least as strong as the CAS's. Again, politics played a role when the choice was made. With strong ties to the Steering Committee through Ms. Hu Qiheng, CAS has successfully secured both the position to chair the Working Committee of CNNIC and the privilege of hosting the CNNIC. SEC has been allowed to continue as the registry of the *.edu.cn* domain which allows it to determine what organizations can rightfully use the *.edu.cn* domain.

[190] Both of the documents are available at <http://www.cnnic.net.cn>.

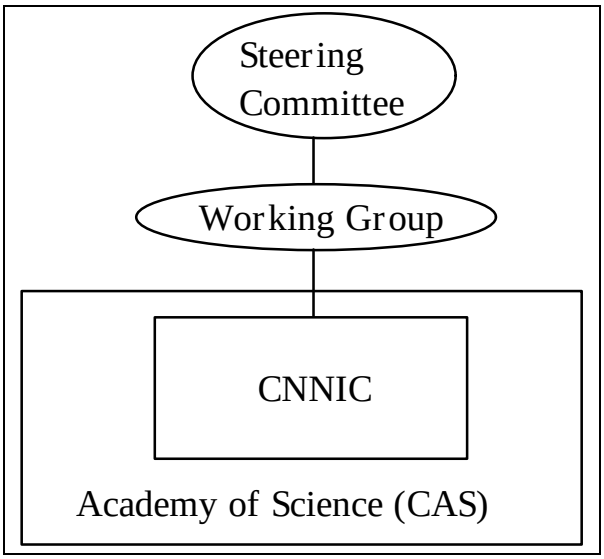

Figure 30. CNNIC Authority Trail

Internet Exchanges

In 1997, the Steering Committee announced its plan to set up three Internet exchanges in Beijing, Shanghai, and Guangzhou. The details regarding who will administer the exchanges are unknown.

It appears that the Steering Committee wants to control the three exchanges. It will probably do so by appointing another Working Committee in charge of formulating the regulations and choosing a sponsor to run the daily operations. The special Working Committee would certainly consist of representatives from the Steering Committee and the four INs. The real question is who (or which ministry) will head the Working Committee and who will be the sponsor?

It might be possible to set up three new centers independent of the four INs and put them under the direct administration of the Steering Committee. While unlikely, it is not impossible given the historical way the Steering Committee has dealt with other tangled issues. Generally, steering committees prefer that the ministries run the daily operations.

It is not possible for just any ministry to run the three Internet exchanges. The four INs have the required technological expertise. It is likely that one or more of the four will head the Working Committee and sponsor the exchanges. CAS is an unlikely candidate since it heads up the CNNIC. SEC is also unlikely since daily operations do not fit with the academic thrust of the organization. MPT is in a good position to run the three exchanges, based on its long-term telecommunications experience and strong presence in the three locations, but is distrusted by the other three INs.

MEI is in a better political position to run the exchanges since it could easily win political support from other INs and ANs, more so than MPT. In addition, it is in its own best interest to control the exchanges. However, it lacks telecommunications experience. The most likely outcome will be that MPT will emerge as the dominant player. MEI, together with SEC as well as CAS, will try to share the control to monitor the fairness of MPT's administration. How this balance will be negotiated depends on the political power of the four INs and how badly they want national exchanges.

Content Control

The Chinese State and the Communist Party have a very limited tolerance for dissent and have in place a wide range of legal and social mechanisms to control public discourse. The Internet, by providing Chinese users with immediate access to information from around the world, threatens to undermine those mechanisms. It is not so much that access to any individual dissenting opinion is feared. Rather, it is the wholesale circumvention of these mechanisms of control that most concerns Chinese leadership.

Since economic development is a leading goal of both the State and the Party, the Steering Committee has had to struggle with how to extend the control mechanisms without impeding the Internet as an engine for economic growth. To make things more complex, many different government bodies have had a role in controlling information, including the MPS, MBMT, the Party's Propaganda Department, Xinhua News Agency, and others. The Steering Committee had to choose between whether it was more appropriate for the Ministry of Broadcasting or the Ministry of Public Security to take the lead in controlling content on the Internet. MBMT has traditionally made decisions regarding what was culturally appropriate to be broadcast, whereas MPS has played a much greater role in controlling dissent. The State Committee and the Party have chosen to extend MPS's mission to controlling the Internet and have ordered the establishment of a Computer Management and Supervision organization within MPS. The provincial, autonomous regional, and municipal Public Security agencies are also required to have appropriate organizations to ensure the security, protection and management of the Internet.

On 30 December 1997, the Ministry of Public Security promulgated the "Regulations on the Security and Management of Computer Information Networks and the Internet ."[191] It is quite evident that the Steering Committee was actively involved in drafting regulations which were approved by the State Committee on 11 December 1997. The new regulations are a codification of existing practices and build on the "The Regulations of Safety Protection for Computer Information Systems"[192] and "Notice on Strengthening the Management of Computer Information Network and Internet Registration Information," both of February 1996, and the "Temporary Regulations on Electronic Publishing" of March 1996.

The regulations state that the Internet can not be used to "harm national security, disclose state secrets, harm the interests of the State, of society or of a group, the legal rights of citizens, or to take part in criminal activities."[193] No unit or individual may use the Internet to create, replicate, retrieve, or transmit the following kinds of information:

- Inciting to resist or break the Constitution, or laws, or the implementations of administrative regulations.
- Inciting division of the country, harming national unification.
- Inciting hatred or discrimination among nationalities or harming the unity of the nationalities.
- Making falsehoods or distorting the truth, spreading rumors, destroying the order of society.

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[191] U.S. Embassy, Beijing, *New Regulations Codify PRC Internet Practice*, <http://www.redfish.com/USEmbassy-China/sandt/netreg.htm>. The Chinese full text is available at <http://www.edu.cn/law/glbf.html>.

[192] Order No. 147 requires users to register with the MPS. Users do this by filling out a form at their ISP. According to a number of users the process is pretty much proforma and they have not been required to show proof of identity. This only proves that it is the ISPs records that are of value to the MPS.

[193] *ibid.*, Chapter 1, Section Four.

- Promoting feudal superstitions, sexually suggestive material, gambling, violence, murder.
- Terrorism or inciting others to criminal activity, openly insulting other people, or distorting the truth to slander people.
- Injuring the reputation of state organs.

By making it illegal to "transmit" any of the above, the ANs and the INs are responsible for the activities of their users. How actively they will be forced to monitor their users for illegal activities in order to protect themselves is not clear. On the other hand, Section Seven states that the freedom and privacy of network users is protected by law. It states that "…no unit or individual may, in violation of these regulations, use the Internet to violate the freedom and privacy of network users."[194]

What is clear is that ANs and corporations connected to the Internet are expected to work as agents for the MPS. "Units and individuals engaged in Internet business must accept the security supervision, inspection, and guidance of the Public Security organizations. This includes providing to the Public Security organization information required to discover and properly handle incidents involving law violations and criminal activities involving computer information networks."[195] They are responsible for providing information about violations of section 5 (listed above) and removing violators from the network.

For violations of these regulations, the Public Security organization has the option of providing a warning, confiscating illegal earnings, or assessing a fine of US$625 against individuals and US$1,875 to work units. For more serious offenses computer network access can be closed down for six months, and if necessary Public Security can suggest that the business operating license of the concerned unit be canceled along with its network registration.

The INs are responsible for the ANs they support; ANs are responsible for their customers; and work units are responsible for their workers. The Chinese government has extended its social control mechanisms to the business and connectivity infrastructure of the Internet in a manner that does not threaten the economic benefits it may provide. In fact, the clause requiring the MPS to "protect the legal rights of Internet service providing units and individuals"[196] may be an effort to ensure that an AN can not loose its license and connectivity solely for competitive reasons.

The regulations do not specifically mention information service providers, but do use the catch-all term "Internet business." This provides MPS the authority to supervise all parts of the Internet without explicitly trampling on MBMT's domain. MBMT is concerned with cultural influences, the political beliefs, and the social values brought by the mass media. As the Internet grows into a powerful mass medium, MBMT is expected to formulate more specific regulations to govern text, video, and audio program dissemination on the Internet. It is also looking at interactive environments such as BBS and chat rooms.

The Party's Propaganda Department is heavily involved in the regulation of "political" information to prevent the "spiritual pollution" of the Chinese people. The Department's ultimate goal is to maintain the stability of current political and social systems and to make sure that the Internet would not be developed into a tool for other groups in and outside China to disseminate what

[194] *ibid.*, Chapter 1, Section Seven.
[195] *ibid.*, Chaper 2, Section Eight.
[196] *ibid.*, Chapter 1, Section Three.

they consider as "pollution" to Chinese users. While they rarely make explicit regulations by themselves, the Department is constantly influencing the regulations made by the Steering Committee, MPS, MBMT, and others.

China has not had an explicit regulation to determine exactly what information should be filtered and which foreign Web sites should be blocked. The criteria change very often with the general political environment. However, it is a collective decision made by MPS, MBMT, and the Propaganda Department, as well as the Steering Committee, with the Committee often serving as the final endorser. The filtering actually takes places on each of the INs routers that are connected to the global Internet. Traffic to and from IP addresses of banned Web sites is not allowed to pass through the gateway. There have been reports of sites filtered on one network that were not filtered on another leading to the conclusion that the INs are also choosing what they will filter in addition to the mandates by the other ministries and departments.

Economic information has also been blocked until recently. China's official news monopoly, the Xinhua News Agency, has built up the China Wide Web (CWW) specifically to broadcast financial news. Xinhua initially succeeded in restricting foreign news agencies from providing financial news through the Internet. Xinhua's interest in centrally controlling the dissemination of information coincides with its own interests of making CWW profitable. The Steering Committee, however, has been concerned that "protectionist" filtering may hinder the development of the economic benefits of the Internet. During the US-China summit in 1997, the filtering of economic news was lifted and now users can access web sites such as CNN (www.CNN.com) from within China.

Infrastructure Protection

In October 1997, a criminal law was passed allowing charges to be brought against computer hackers. There have been several attacks against networks in China, including an attempt to shutdown ChinaNET's servers in Harbin and Shanghai. The Web page of the CNNIC was changed to an image of a laughing skull by a hacker. Experts with CNNIC said most invasions came from outside China. CNNIC's technicians recovered the web page, traced the system's bugs and set a trap. The hacker took the bait and was identified and warned by e-mail.[197]

The 30 December 1997 regulations require connecting units and corporations to "assume responsibility for network security, protection and management and establish a thoroughly secure, protected, and well managed network." They are also required to carryout technical measures for network and information security.[198]

Although it is not clear that a "thoroughly secure" network is possible, the tightening up on security serves the dual purpose of preventing users from bypassing monitoring systems and protecting both the individual network and the networks it is connected to.

There is a growing awareness of the possibility that a hostile nation could attack China's information infrastructure. Wang Baocun and Li Fei mention in their discussion of information warfare, the possibility of computer virus warfare, where computer viruses are used to alter or

[197] "Computer Networks Face Ever Increasing Number of Hackers," *China News Digest* (12 November 1997).
[198] *ibid.*, Chaper 2, Section Ten.

destroy critical computer operations.[199] The uncertainty surrounding national security concerns may explain in part the slow rate of Internet diffusion into the government.

Role of Foreigners

The Internet is treated as a value-added information/telecommunications service which is governed by the current telecommunications regulations. The MPT-dominated telecommunications regulations explicitly state that foreigners are allowed to be involved in equipment manufacturing, system installation, and management consultation. However, they are not permitted to directly own and/or operate the basic and value-added information/telecommunications services.

Governed by this general regulation, the role of foreigners in China's Internet can be categorized into two types. On the equipment selling and system integration side, foreigners have played and will continue to play active roles. Sprint has been very active in China's Internet market by re-selling system equipment, helping system installation, and selling the American side of international circuits. Cisco, Bay Networks, Sun Microsystems, and other suppliers have sold millions of dollars of equipment to Chinese buyers. MPT's ChinaNET is actually built up by a joint venture between its own affiliate and Asia-Info, a Texas-based U.S. corporation run by U.S.-educated Chinese.

The Chinese government is unlikely to allow the direct ownership and operation of telecommunications services for the foreseeable future. A commonly accepted way of working around these prohibitions is for a foreign corporation to form a joint venture with a Chinese partner. This joint venture would then aid the operation of another Chinese operator. This is still an unusual practice for many Western corporations who see the high risks involved. However, many foreigners have already adopted the joint venture approach in other telecommunications markets such as cellular phone and paging services. Foreign corporations such as Prodigy have created a joint venture with the PLA aligned China North Industries Corp. (Norenco) Group.

Although the Steering Committee is in charge of the Internet, the role of foreigners in the Internet is based on China's general policy toward foreigners in telecommunications services. This policy is being scrutinized in the context of China's potential entry into the World Trade Organization (WTO).

Encryption

It is interesting that the 30 December 1997 regulations do not mention the use of encryption over the Internet. It is possible that the Steering Committee has not yet been able to develop a strategy that balances the authentication and encryption needs of electronic commerce with the State's security needs. The current situation is highly ambiguous. There are reports of some use of PGP (Pretty Good Privacy) software and of other encryption programs being available for sale. At the same time, only authorized companies are supposedly allowed to use encryption. Without explicit regulations on what is and is not permitted, the Chinese Internet community operates in a gray area when using encryption software.

Yuan Youxin, Science and Technology Officer at the Chinese Embassy in Washington, explained that the Chinese government believes that encryption technology should be encouraged in the

[199] Senior Colonel Wang Baocun and Li Fei, "Information Warfare," in Michael Pillsbury (ed.), *Chinese Views of Future Warfare* (Washington, D.C.: National Defense University Press, 1997), p. 330.

interests of supporting economic transactions. The Chinese government, he noted, has more authority than the U.S. government when tracking down criminal behavior and is able to track down illegal behavior without needing to de-encrypt messages. According to Yuan Youxing, having full access to whom is sending and receiving encrypted messages is perhaps more effective and efficient than reading the actual messages.

Internet Telephony

Given the high cost of international phone calls, there is a significant amount of experimental use of Internet based telephony. Sparkice, which is 51 percent owned by Unicom, is aggressively pursuing Internet telephony. Edward Zeng, President of Sparkice, sees Internet telephony as within their domain because the State Council has authorized Unicom with providing basic telecommunication services. He believes that he can offer telephone service to the United States at one percent of its present cost. However, Unicom's right to provide voice service over ChinaGBN's international Internet circuits is another gray area that may or may not be resolved by the Steering Committee in the coming year. MPT, which desperately wants to keep its monopoly of international voice traffic, will be fighting against MEI, which sees a huge opportunity in Internet telephony for its subsidiary, Unicom.[200]

Information Services and Copyright

The status of information services in China is still evolving. The May 1997 regulations required all Internet businesses to get a license from the organization running the IN with which they connect. It is assumed that all Internet-based information businesses are registered with the IN with which they either directly or indirectly connect. But again, many information business are operating in a gray area between what is permitted and what is not addressed. Businesses that are venturing into this uncharted space are usually wise to have connections with one or more high government official, who provide legitimacy and support to the business. Some of these relationships are familial. More than a few Internet businesses are being run by the sons and daughters of China's government elite.

The March 1996 "Temporary Regulations on Electronic Publishing" and the 30 December 1997 "Regulations on the Security and Management of Computer Information Networks and the Internet" restrict information that challenges the State, the Constitution, laws, or administrative regulations. However, there are few regulations governing the business of information services business.

The copyright law, passed in 1990, does establish a basic framework for establishing the rights of authors. This can be applied to protecting electronic information. However, the law does not provide any guidance on whether service providers are liable for making content available.

It is a fact that many of the information providers in China are selling government information and in fact are owned or partly owned by the government. The question arises as to whether an agency such as Xinhua, for example, could have potential competitors cut off from Internet access. Until late 1997, they were able as they were able to do just that with foreign competitors. One Internet businessperson believes that MPT and MEI would probably be unwilling to cut off customers purely to satisfy Xinhua's economic interests. However, MPT and MEI do, have

[200] U.S. Embassy, Beijing, *PRC Net Dreams: Is Control Possible?* (September 1997), <http://www.redfish.com/USEmbassy-China/sandt/infocon.htm>.

"relationships" with certain information providers. Whether they will treat competitors with those businesses fairly is open to question, though the vigorous competition between the two INs will probably serve to minimize heavy-handedness.

China's Role In Global Internet Governance

The Beijing Internet Networking Institute has taken the lead in building relationships between those involved in the Internet in China and their colleagues in the international networking community. In 1996, the Institute hosted the "Chinese Internet Development and Technology Conference" which brought high officials from over 30 government ministries and agencies together with the engineers who had built the Internet in Japan. The Institute's International Representative, Jie Liang, attended the groundbreaking Harvard Conference on Internet Coordination and Administration in the fall of 1996.

Representatives from CERNET and CAS have been active in the Internet Society. Xing Li, a professor at Tsinghua University and one of the technical forces at CERNET, has given presentations on the CERNET network at the Hawaii (1995) and Montreal (1996) conferences.

Over 30 Chinese researchers came to Hong Kong in January of 1996 for the Asia Pacific Networking Group (APNG) meeting. Xing Li and three others stayed for the *Apricot'96* conference where they met with the cream of Asia's networking elite. At the end of the conference, Xing Li was elected to the board of APNIC, the organization that oversees the allocation of Internet addresses in Asia. In addition, Xing Li was nominated to the board of the Asia Pacific Internet Association (APIA), an association devoted to supporting the Internet business community. At the 1997 *Internet Conference*, and the parallel meetings of APNG and APNIC, Chinese also participated. The Chinese have not been as active in the Internet Engineering Task Force, the group that sets many of the Internet standards.

The People's Republic of China has been in the background during international talks on revising copyright laws to meet the needs of the digital networked era. They were present at the WIPO diplomatic conference on copyright, but have yet to sign the treaty. As a rule, the Chinese are participating in most of the regional fora regarding the Internet and in the major global meetings. It was noteworthy that the PRC was not present at the UN Conference on the Internet and Human Rights.

In October of 1997, the Beijing Internet Networking Institute and the State Council hosted *China Inet'97* that brought Don Heath, the President of the Internet Society, Bob Collet, the Chairman of CIX, and representatives from the World Intellectual Property Organization (WIPO) and International Telecommunications Union (ITU) together with the leaders of the Internet community in China.[201] As the global Internet community has wrestled with how to govern the domain name system and the root servers on which it is based, China has become more and more of an important player. The Chinese have not taken an active leadership role, rather they have used the crisis as an opportunity to build relationships both within the Asian and global communities.

[201] For pictures and biographies of the speakers see <http://www.conference.org.cn/english/speaker.html>.

Other Determinants of Internet Capabilities

National Commitment to Education and Research

With the establishment of the first interconnection at the Institute for High Energy Physics (IHEP) in 1993, the academic and research communities have been a hotbed for Internet connectivity. The government's 1996 Internet regulations were due, in part, to the speed at which the Internet began to bubble out of the academic community. The rapid roll-out of CERNET to 270 universities demonstrated the ability of educational communities to mobilize financial and technological resources. Providing universities throughout the country with Internet access has not only raised the nation's technological expertise, but has undoubtedly contributed to the excitement about the Internet in the commercial sector. In the future, the academic community may also contribute to Internet diffusion in China by generating significant Chinese language content that will attract non-English readers to the Web.

Entrepreneurial Zeal

Although the diffusion of the Internet in China is structured by the competition and collaboration between various government ministries, it is also driven by the entrepreneurial zeal of certain sectors of Chinese society. Many of the initial users and providers of the Internet came from the technological entrepreneurs who have found niches in the PC resale industry. These users had both the skills and the motive for getting on the Internet and then searching for customers.

Availability of Technical Information

Technological expertise is not a barrier. Networks such as CERNET and ChinaNET demonstrate the ability of China to assimilate and integrate networking technology. Both these networks have been engineered by U.S.-trained engineers who have returned to China. At the same time, the Internet has significantly lowered the barriers to the flow of technical information into China.

Culture & Language

Culture, particularly language, plays a major role in the rate of Internet diffusion in China where most of the population does not read or understand English. Though many of China's elite want to use the Internet to access Western sites, there will have to be significant and "compelling" content published in Chinese if the Internet is going to become pervasive in China.

Given the shortage of computers not only in China's secondary schools but also in its universities, most Chinese have no experience using a PC, let alone a network. This is compounded by the fact that there has been no standard or easy way to enter text in Chinese into a computer, though technological breakthroughs are on the horizon. However, the powerful work ethic of the Chinese will stimulate the mastery of new technologies as they become available in the workplace.

Microcomputer and Software Industries

China's software industry is still nascent. Chinese companies have developed partnerships with some of the major software giants including Netscape, Oracle and IBM aimed primarily at localizing products for the Chinese market. The software industry is growing by 50 percent per year.[202] Five hundred and sixty four universities teach courses in software programming.

[202] Ray Zhang, "China's Software Industry Growing by 50 Percent Annually," *China News Digest* (28 October 1997).

The microcomputer industry continues to expand. Over 2.1 million PCs were sold in China during 1996.[203] The PC market has been expanding at about 40 percent per annum. If this rate grows to 50 percent this year, by the year 2000 one-tenth of China's nearly 100 million urban families will have a home computer,[204] driving Internet usage significantly beyond the 1 million-user level. The fact that a PC costs more than a worker's yearly salary is a major barrier to widespread diffusion. However, if Internet access is seen as essential to a child's success, it is possible that the extended family, who may only have one grandchild to invest in, will be willing to pool resources to ensure that the child has access to both a PC and the Internet.

Information Services

Information service providers, such as China Wide Web (CWW), are utilizing ChinaNET's infrastructure. The official Xinhua news agency owned, China Internet Corporation (CIC), has developed CWW as a national Intranet that provides business information. CWW originally filtered news and did not provide access to foreign web sites. CWW has switched its isolationist positioning and opened its service to include relatively full access to the World Wide Web.[205]

CWW has partnered with many American Internet businesses. It has entered into a strategic relationship with Netscape to develop and operate Netscape's Chinese home site. Bay Networks and Sun Microsystems are providing the hardware. Information industry partners include Bloomberg Financial Markets, Dun & Bradstreet, Reuters, Thompson Financial Services, and the *Financial Times*.[206]

Dragonpulse, a Sparkice/Unicom joint venture, has exclusive rights to sell information from the on-line edition of the State Statistical Bureau Databases.[207] This includes a database of over one million Chinese companies, including addresses, phone number, basic financial information, and news references. Dragonpulse plans to charge businesses about US$8000 per year for full access to the databases.

ChinaInfo is a state-sponsored but commercially operated information provider. It offers over 100 free and fee-for-service databases from the Institute of Scientific and Technical Information of China (ISTIC) over the Internet.[208] ChinaInfo requires a US$25 registration fee and a US$60 deposit to access its for-fee databases. ChinaInfo is being run by the Wanfang Data Corporation, a subsidiary of the State Science and Technology Commission. It was developed as part of a State Council backed effort to create a state

[203] "China Fails to Meet Expectations," *Reuters*, Aug. 5, 1997.
[204] "Internet's Entry Into China Urgently Required Proper Chinese-Language Software," *Chinese Science News*, July 21, 1997.
[205] *South China Morning Post* (11 December1997).
[206] <http://www.china.com/cichtml/cww_part.html>.
[207] <http://www.dragonpulse.com.cn>.
[208] U.S. Embassy, Beijing, *To Make the Net Speak Chinese: Emerging Chinese-Language Information Services*, September 1997, <http://www.redfish.com/USEmbassy-China/sandt/ChinaFCA.htm>.

interconnected network with a Chinese-language environment. The State Council would like to promote Chinese Web sites both to spur usage and to dampen the allure of foreign sites. It is not clear how well the State Science and Technology Commission will be able to enroll other government bodies into making their data available on this information service or how much compelling content they can actually create.

There are major questions as to how these information services providers will interact. Xinhua, which has domain over news, may resist the development and expansion of other information sources such as ChinaInfo and Dragonpulse. More importantly, if government agencies get involved in selling information only to highly paid subscribers, are they providing news or are they running an insider trading facilitation service?

It is not characteristic of the Chinese to reveal information for free to everyone. Relationships precede information disclosure. In the emerging culture of the Internet, people disclose information to build relationships, or even just for the "joy" of disclosing. There are some in the Chinese entrepreneurial community who are making the shift, but the Chinese, in general, are far more comfortable using e-mail and browsing on the Web than they are in publishing on the Web. In part, this explains the fact that over 300 national government agencies have registered domain names and yet only a handful have home pages. Given the Chinese preference to share information within the context of a relationship, there are questions about how quickly the Web will develop in China.

Hong Kong

Hong Kong, with its special status as both part of and separate from China, will play a critical role in funneling technological innovation and investment into the Chinese Internet industry. Hong Kong currently has over 275,000 people using the Internet through more than 80 Internet Service Providers.[209] In addition, with its high degree of global connectivity from multiple competing providers, Hong Kong may provide options for Chinese networks that need a source for global Internet connectivity.

Hong Kong's success with integrating electronic commerce will have an impact on mainland China. Not only can Chinese businesses be expected to imitate successful practices, but mainland trading partners may be pushed to utilize the Internet to do business with their partners in Hong Kong. Hong Kong corporations such as CIC are attempting to develop "compelling content" that will attract Chinese businesses and consumers to the Internet.

With regard to content control, the Hong Kong government and the Hong Kong Internet Service Provider Association (HKISPA) have developed a code of ethics where individual ISPs have committed to filtering the IP addresses of Web sites that are obscene, and insuring that indecent material carries suitable warning messages.[210] The PRC's new content regulations do not apply in Hong Kong under the "one country two systems" form of governance.

Hong Kong ISPs are confident that China will not seize control of their infrastructure or change Internet policies and regulations. The PRC's interim regulations on the Internet have stated that the Internet in Hong Kong, Macao and Taiwan is treated as the Internet in any other foreign country. Circuits to those areas are considered "international links." However, the "similar

[209] "ISPs Looking at Fast-growing China Market," *Newsbytes* (8 July 1997).
[210] "Hong Kong to Combat Indecent Materials on Internet," *Beijing Xinhua* (27 October 1997.

language," geographic proximity, close economic ties, and sensitive political relationship would put Hong Kong's Internet into a special category within China's policy regime.

Problems and Prospects

While it is primarily the technologic, economic, and academic elite who are using the Internet, there are three routes through which the Internet may penetrate deeper into Chinese society. One is through electronic commerce. As e-mail, EDI, and Web pages come to be seen as critical for communicating with suppliers and customers, these technologies will be rapidly adopted by Chinese industry. The second involves the continued rise of an upwardly mobile middle class who sees Internet access as something they must have. The third path is through China's children. China's families are willing to devote immense resources to giving their children an opportunity for advancement. If the Internet is seen as essential to that advancement, then investment in PCs and Internet access will follow.

Will Internet-enabled dissent pose a threat, perceived or real, to the Chinese government? Social conditioning backed up by the fear of the MPS will keep most Chinese users in line. However, certain dissidents will find cracks in the system or will rely on anonymizers,[211] encryption, and other cloaking devices to protect themselves. The Internet could become one more extension of the "bamboo telegraph" that has allowed word of crises to spread rapidly across China for centuries. In the event of a crisis, it is assumed that the government has plans to shut down the Internet's international connections and even the INs themselves. Given the economic stakes that the key decision-makers have in the Internet, the decision to shut the Internet down will have to be made at the highest level of the State Council and only in the face of a major crisis.

The Chinese Internet today is not free from dissent. Groups such as "Human Rights in China" are using e-mail to send information to hundreds of addresses within China and are getting dozens of hits from within China each week.[212] Human Rights in China does not, however, send sensitive information to a particular individual via e-mail, because of the dangers that the message will be intercepted electronically or by someone who shares an account.

Dissidents in China write an electronic magazine called "Tunnel" that is sent via e-mail to a Silicon Valley address where it is electronically mailed back into China to thousands of addresses. Some 20 issues have appeared since June 1997. Currently, the MPS is currently not aggressively prosecuting the recipients of "Tunnel" in China, but whether they are being tracked is unknown.

The general feeling is that MPS is too technically backward and the ANs are too busy scrambling for customers to aggressively catch all dissident traffic. But the reality is that by controlling the ANs, MPS has the potential to sharply curtail dissident messages if things begin to get out of hand. Whether they will be able to curtail things fast enough in a rapidly developing crisis is open to question.

Those outside of China who oppose the PRC government are aggressively using the Internet to network and share information. The Tibetan exile community and its supporters have developed many interconnected Web sites that provide information on Tibet, the Dalai Lama, and the Central Tibetan Administration. Some of the most prominent of these sites are blocked and can not be

[211] "Anonymizers," relay servers, enable users to send anonymous e-mail and newsgroup posts.
[212] Erik Eckholm, "China Cracks Down on Dissent in Cyberspace," *The New York Times* (1 January 1997).

accessed in China or Tibet.[213] It is not obvious how much of an effect these Web sites will have on the Chinese government or population. Chinese human rights groups and Tibetan activists may have their greatest impact by using the technology to focus the attention of the U.S. government on human rights issues within Tibet and China.

Some speculate that the funneling of investments back into China by the overseas Chinese community will have the most transformative impact. This community is making active use of the Internet to participate in Chinese society without being physically present. By making investments and building relationships electronically, they can work to transform the country from the outside. By staying outside the country, they are beyond the grasp of the MPS.

Conclusion

The Internet is gradually being absorbed into China. The Chinese government is wrestling with how to keep central control over a technology that touches on the domains of many different ministries and agencies. Through the Steering Committee, these various stakeholders have been able to collectively make decisions and promulgate regulations.

The long-term prognosis for the Internet in China is a far more perplexing problem. In 1997, the U.S. Embassy interviewed an MPT official whose goal it is to reserve access to foreign Internet web sites for people (such as academics) who have a need for international communications. In his view, ANs will wither away, to be replaced by a state-owned electronic information network.[214] Even as late as the middle of 1997, this vision and others like it were being debated within the government. The government leadership continues to choose "Internet connectivity" with the protections embodied in the 30 December 1997 regulations.

One of the most important challenges facing the PRC government is how to encourage the use of encryption for electronic commerce, while preventing the widespread use of encryption to undermine the efforts of the MPS. The Steering Committee has yet to officially announce a position or regulation to deal with this complex issue.

U.S. policy-makers, who are negotiating with the Chinese on a wide range of Internet issues including content control, copyright, encryption, infrastructure protection, and the opening of the telecommunications industry, should be cognizant of the dynamics of decision-making in China regarding these issues. Although the Steering Committee has been able to make decisions, its power resides in the ministries that participate in it. The Steering Committee, in that regard, is not unlike the interagency tasks forces that are dealing with Internet related issues in the United States. The difference is the huge economic stakes that the Chinese ministries have in both state owned and privatized telecommunications and information services.

Various government ministries have made geographical dispersion a priority, at least to the major political, academic, and economic centers. On the other hand, the government has been slow to utilize the Web to disclose information to the public. Various ministries are attempting to capitalize on the information they control through partnerships with information providers such as China Online, China Wide Web, and ChinaInfo. China Wide Web's decision to allow its users to access the whole World Wide Web is an indication that most Chinese, despite the hope of some in the government, see the value of the Internet in being able to access western Web sites.

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[213] Tibet University does have a connection to the Internet through CERNET.
[214] U.S. Embassy, Beijing, *PRC Net Dreams…*, *op. cit.*

Despite the high level talk of economic informatization, there is little evidence that the Chinese leadership is aggressively seeking to "reinvent government" by using information technology. However, information technology and the Internet are introducing change. The government is maintaining command of all aspects of the Internet in China from the end user to the network operators. China's elder statesmen have agreed on the merits of China connecting to the Internet in the interests of supporting economic development. The ability of the ministries to effectively make decisions regarding the Internet today is a good indicator that the State will be able to continue to absorb the Internet at least in the near future.

AN	Access Network—A network that provides access to the Interconnecting Networks; generally an ISP
APIA	Asia-Pacific Internet Association—A business association concerned with the Internet in Asia
APNG	Asia-Pacific Networking Group—An Asian organization with roots in academic networks
APNIC	Asia-Pacific Network Information Center—Allocates IP numbers in Asia
CAnet	China Academic Network—An early (1987) Chinese academic network
CAS	Chinese Academy of Sciences—China's foremost research organization
CERNET	China Education and Research Network—A national educational network that is operated by SEC
ChinaGBN	China Golden Bridge Net—A network operated by JiTong which is aligned with MEI
ChinaNET	The MPT's Internet network—The national interconnecting network run by MPT
CNNIC	China Internet Network Information Center—Allocates domain names and keeps network statistics for China <http://www.cnnic.net.cn>
CRnet	China Research Network—An early (1990) network that used X.25 link to exchange information with Internet
CSTNet	China Science and Technology Net—A national interconnecting network run by the CAS that connects research organizations
CWW	China Wide Web—An Internet based-information service partially owned by Xinhua News Agency <http://www.china.com/cichtml/cww.html>
GRCITP	General Research Center for IT Projects—A research center operated by MEI in conjunction with IBM; focuses on Internet infrastructure research
HKISPA	Hong Kong Internet Service Provider Association—Association of Hong Kong ISPs that has developed self-regulatory policies on content control
IHEP	Institute for High-Energy Physics—The first organization to have a TCP/IP connection to the Internet
IN	Interconnecting Network—IP-based networks that connect to the global Internet
ISTIC	Institute of Scientific and Technical Information of China—Collects data on scientific research in China and makes the databases available through ChinaInfo
MBMT	Ministry of Broadcast, Movies, and Television—Regulates and owns mass media in China; still trying to find its role in controlling interactive services

MEI	Ministry of Electronics Industries—Controls significant part of electronics industry in China and is very politically powerful
MOFET	Ministry of Foreign Trade—Involved in all international trade agreements and joint ventures
MPS	Ministry of Public Security—Has the responsibility, *inter alia*, for ensuring that the Internet is not used against the interests of the State
MPT	Ministry of Posts and Telecommunications—The dominant telecommunications provider in China; operates ChinaNET
PLA	People's Liberation Army—The military service, comprising ground, naval, and air units; has unsuccessfully tried to get permission from the State Council to run an IN
PRC	People's Republic of China
SCPB	Standing Committee of the Politburo—Made up of the top five to seven leaders of the Communist Party; sets major policy direction for country
SEC	State Educational Commission—Runs one of the four INs, CERNET
SETC	State Economic and Trade Commission—The trade commission; the State Council has granted it authority over Jitong and UNICOM
SPC	State Planning Commission—Responsible for formulating strategic and long term goals for national development, goals unveiled in China's ten-year, five-year, and one-year development plans
SSTC	State Science and Technology Commission