

Research Developments

Online and on China: Research Sources in the Information Age*

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The availability of sources has repeatedly shaped the academic study of contemporary China. In the 1950s and early 1960s scholars relied heavily on official Chinese government sources, which were often accessed through U.S. government translation series.¹ By the mid-1960s, researchers began to draw upon a broader range of Chinese media, especially from the provincial and local levels, as well as interviews with refugees and legal immigrants conducted at the Union Research Institute and Universities Service Centre in Hong Kong.² Access to Cultural Revolution materials in the 1970s, particularly revealing Red Guard newspapers and unauthorized collections of Communist Party documents and Politburo member speeches, added an additional level of understanding. The opening of China to fieldwork in 1979 prompted research programmes such as Zouping county, while the use of mainland libraries and archives provided access to an even wider range of materials.³ Since the late 1980s, as mainland researchers began to examine their society and its recent past, Chinese scholarly writings have offered a new level of detail and rigour that was previously unavailable.

The advent of information technology in China – embodied by email, the Internet and the World Wide Web – signals the next stage in the development of sources for research. Through cyberspace, researchers are now gaining direct access to an extraordinary range of information and databases both within and about China that will transform the field. The Internet facilitates contemporary research in two ways. First, it expedites access to sources that could previously only be obtained in the mainland or from specialist foreign research libraries. Many of these sources, including Chinese-language newspapers and voluminous statistical compilations, are now accessible with a computer and a modem. Effective use

* I am grateful to Michel Oksenberg, Jean Oi, Martin Dimitrov, Peter Lorentzen, Kay Shimizu and Anna Yahya for helpful comments and suggestions.

1. For an overview of the generations of scholarship, see Harry Harding, "Toward a third generation of scholarship," in *World Politics*, No. 36, (January 1984), pp. 284–301 and Harry Harding, "The evolution of scholarship on contemporary China," in David Shambaugh (ed.), *American Study of Contemporary China* (Armonk, NY: M.E. Sharpe, 1993), pp. 14–42.

2. For a survey of information sources used during the 1950s and 1960s, see Michel Oksenberg, "Sources and methodological problems in the study of contemporary China," in A. Doak Barnett (ed.), *Chinese Communist Politics in Action* (Washington D.C.: University of Washington Press, 1969), pp. 577–606. For a survey of information sources in the 1970s and 1980s, see Michel Oksenberg, "Politics takes command: an essay on the study of post-1949 China," in Roderick MacFarquhar and John K. Fairbank (eds.), *The Cambridge History of China*, Vol. 14 (Cambridge: Cambridge University Press, 1987), pp. 543–591.

3. See, for example, Andrew Walder (ed.), *Zouping in Transition: The Process of Reform in Rural North China* (Cambridge, MA: Harvard University Press, 1998).

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of the Internet *before* a research trip – to gather basic data, examine collections at various libraries or determine where to focus interview time – enables scholars to concentrate their efforts on what can only be accomplished in the field.

Secondly, the Internet captures and reflects new information sources made available by a general decline in secrecy and the rise of new actors at all levels of government and society. With respect to secrecy, China today is perhaps the most open in terms of access to information than at any time since 1949.⁴ While access remains a relative concept in the China case, the use of *neibu* classification has decreased dramatically, many of the travel restrictions have been lifted and the ability to obtain interviews has increased. In addition, during the second decade of reform in the 1990s, new actors have arisen and the attitudes of old ones have changed. The media and publishing industries have flourished, largely unchecked by government censors. Universities have established companies and policy research centres. Local governments, some empowered by their success under reform, often seek to publicize their own accomplishments and play a larger role. A vibrant private sector in the economy has taken root. The Internet provides all of these groups with a simple but effective platform, which many have begun to employ. More information than ever before is being publicly released and much of it appears online.

This article begins by reviewing the technical requirements for viewing and searching Chinese-language web sites. It then describes these online sources by category, including news sources, government sources, research resources, data sources, reference materials and the Chinese Internet world. The conclusion discusses the implications and limitations of information technology for the study of contemporary China. An appendix provides the web addresses for each site discussed.

Before proceeding, however, several caveats are necessary. First, the rate of change online is rapid. Some of the information provided in this article is likely to be outdated by the time of publication: keeping pace with the breadth of sources available on the web is a Herculean task. As a result, the sources cited here are neither complete nor definitive, but rather provide an overview of the tools necessary to tap online information as it continues to develop. Secondly, patience and persistence are required when accessing web pages in China from abroad. Some homepages may not be accessible during certain hours of the day, as they are taken off-line for maintenance. Other homepages work better with one browser, as many sites based in the mainland are often optimized only for Internet Explorer. And other times a server may be busy trying to handle multiple requests or the address has changed. If you experience problems during your first attempt, be sure to try again – and then try one more time. Thirdly, many of the sources discussed here reveal a bias towards the social sciences, especially political science and economics. This stems from the type of information available online, which strongly reflects

4. The detention and arrest in 1999 of Song Yongyi, a U.S.-based Chinese academic, unfortunately demonstrates the limits of this openness.

current events that favour the social sciences. Fourthly, unless otherwise stated below, the majority of sites reviewed in this article appear in Chinese only. While some sites do maintain English versions, these often contain only a portion of the information available in Chinese.

Technical Requirements

Accessing Chinese-language information online requires familiarity with the World Wide Web. Viewing Chinese-language web pages involves a one-time configuration of the browser to display Chinese fonts. Searching the web by actively inputting Chinese characters is slightly more complicated, as it requires software with a special input interface.

While a small number of sites will automatically display Chinese characters as picture files, the vast majority of web pages will be encoded with a Chinese font. To view these sites, users must configure their browsers to display Chinese characters or the phrase *youxian zeren gongsi* will appear as ÐÝÏÐÓéÀÖ. In general, sites from the mainland with simplified characters will be encoded with the GB font, while sites from Hong Kong and Taiwan with complex form characters use the Big-5 font. The precise mechanics of browser-configuration are not covered in this article, but step-by-step instructions are available from a number of sites (www2.mozcom.com/~w_hansen/chinese.html, help.netscape.com/kb/consumer/19981206-1.html and www.cathay.net/help/ms-win.html).⁵ Internet Explorer 5.0 simplifies the situation, as it automatically detects the appropriate coding of the target page and prompts the user to download the required font if it has not already been installed. Other browsers, such as Netscape 4.7 and Internet Explorer 4.0, must be manually configured, whereby the user must download and install the necessary fonts (for simplified or complex characters). Then, when accessing a Chinese language site, the user must change an option in the browser to display the characters.

The use of Chinese in search engines greatly expands the usefulness of Chinese sources on the web, but requires additional software that allows the researcher to input Chinese characters. Most of the common Chinese-language software programs provide this function along with dictionaries and the ability to display Chinese-encoded web pages. Three of the best-known packages are NJ Star (www.njstar.com), RichWin (richwin.sina.com.cn) and Twin-Bridge (www.twinbridge.com).⁶ Through an input interface, users can enter Chinese characters directly into their web browsers and other programs through a number of different methods, including five stroke, radical and *pinyin*. Again, Microsoft simplifies the situation, as Internet Explorer 5.0 users can download a free input

5. In this article, web sites will be cited without the customary "http://" prefix. In general, there is more support for using the Chinese language on PC systems than on the Mac. For more information about computing in Chinese, see www.chinesecomputing.com and www.mandarintools.com.

6. These software packages will also automatically configure the web browser to display Chinese characters, removing the need for the process described in the preceding paragraph.

interface to enter complex or simplified characters (www.microsoft.com/windows/ie/features/ime.asp).⁷

News Sources

One of the most robust online information sources comes from newspapers. As Michel Oksenberg noted a decade ago, “the Chinese press provides the staple for research on China.”⁸ The same holds true today. Now, with the rise of the Internet, researchers can read Chinese-language newspapers on a daily basis without acquiring a subscription or visiting a specialist library. In addition, the Internet captures the increased openness of the press because of competition among national papers for readers and the rise of topical periodicals that focus on a specific subject. There are four main types of news sources available through the web: online newspapers, news monitors, news summaries and news indexes.

Online editions of print newspapers. At the time of writing, there are over 330 papers online from mainland China. These cover the news from national, provincial, local and sectoral perspectives. Apart from the *China Daily*, the *People's Daily* and the Xinhua News Agency, which provide English editions, most newspapers are published online only in Chinese. Attributes of key national papers from the mainland are listed in Table 1. In general, all the major papers publish the full text of the print edition on their web site each day. The full text of back issues is available, but the date of each archive varies by site. The *People's Daily* provides online archives from late 1995, while most other papers give access to articles posted from mid-1998. Most of the papers also offer a search function, which allows the user to scan current and archived articles by keyword. In addition, many papers offer special reports or sections on current issues, which gather relevant articles on a given topic such as China's 50th anniversary or WTO entry. At the time of writing, there is no indication that any of the papers intend to charge for access or limit the amount of archived information available, with the one exception of the Xinhua site.

While still an emerging source of information, several sites offer directories or catalogues of online Chinese newspapers. Because of the rapidly changing nature of the web in China, no list can be considered complete and multiple directories may need to be consulted. At the Chinese University of Hong Kong, the web site of the venerable Universities Service Centre indexes 32 principal national papers along with provincial and specialist papers (www.usc.cuhk.edu.hk/link.asp). Through the USC site, researchers can search by title, province or subject. Other lists include the China page from the Asia Library at the University

7. The Microsoft Global Input Editor interface will also work with Office 2000 and Outlook Express, which eliminates the need to purchase the software packages described above. Users can download with the input editor along with the relevant Chinese-font packages.

8. Oksenberg, “Politics takes command,” p. 544.

Table 1: **Web Sites of Major National Newspapers**

<i>Name</i>	<i>Web address</i>	<i>Archives</i>	<i>Search function</i>	<i>Print edition online</i>
<i>People's Daily</i>	www.peopledaily.com.cn	1995 to present	Advanced Search	Yes
Xinhua News Agency	www.xinhua.org	1992 to present*	Advanced Search	Not Applicable
<i>Beijing Youth Daily</i>	www.bjyouth.com.cnld.htm	1998 to present	Advanced Search	Yes
<i>Southern Daily</i>	www.nanfangdaily.com.cn	1998 to present	Advanced Search	Yes
<i>Southern Weekend</i>	www.nanfangdaily.com.cn	1998 to present	Advanced Search	Yes
<i>China Economic Times</i>	www.cet.com.cn	1998 to present	Subject Only	No
<i>PLA Daily</i>	www.pladaily.com.cn	1999 to present	By Date and Page Only	Yes
<i>People's Daily</i> (English)	www.english.peopledaily.com.cn	1998 to present	Keyword Only	Yes
<i>China Daily</i>	www.chinadaily.com.cn	1998 to present	Keyword Only	No

Note:

*Access to archives is not free of charge.

of Michigan (asia.lib.umich.edu/china/frame1.htm—news link) and the All-China Journalists Association in Beijing (www.acja.org.cn). Sohu, a Beijing-based Internet portal, offers a detailed channel on news media in China (news.sohu.com) and a thorough index of newspapers (www.sohu.com/News_Media/Newspaper/). In particular, Sohu produces a *pinyin* list of all online newspapers in China, which allows the user to locate a desired periodical alphabetically (www.sohu.com/News_Media/Newspaper/By_Pinyin/).⁹

Elsewhere in Greater China, many newspapers have also established online editions. In Chinese, all the major papers have web sites with the features discussed above, such as full text articles and keyword searching. In Hong Kong, papers online include the *Dagong bao* (www.takungpao.com), the *Ming bao* (www.mingpaonews.com) and *Wenhui bao* (www.wenweipo.com). In Taiwan, the *China Times* (www.chinatimes.com) and the *United Daily News* (www.udn.com.tw/mainpage.htm) both publish online editions. In English, the *South China Morning Post* (www.scmp.com) and its main competitor, the *Hong Kong Standard* (www.hk-imail.com), place the full text online each day, with limited free access to their archives. The *SCMP* web site is particularly well designed, with numerous special reports on current topics in China as well as the rest of the region. The newly established *Taipei Times* is the only English-language newspaper from Taiwan that offers a comprehensive online edition (www.taipetimes.com). The *Taiwan Times* offers a limited online edition (www.thenews.com.tw), while the Government Information Office provides headlines from selected newspapers (www.taiwanheadlines.com).

Chinese magazines are more slowly becoming available on the Internet. Unfortunately, however, they are not as well catalogued as newspapers. The best single directory comes from the Asia Library at the University of Michigan, which groups Chinese magazines according to place of origin (asia.lib.umich.edu/china/frame1.htm – link for net pubs). The main Chinese language portals also catalogue magazines, but most tend to focus on finance, commerce and other popular topics. Sohu, Sina.com and Yahoo China all provide directories of magazines (www.sohu.com/News_Media/Magazine/, search.sina.com.cn/search_dir/nm/mg/ and cn.yahoo.com/news_and_media/magazines/, respectively).

Western news monitors. News monitors publish a selection of news articles from the Chinese press that have been translated into English. The most established is the World News Connection, the online edition of the unclassified Foreign Broadcast Information Service, which translates selections from the Chinese press on a daily basis (wncnet.fedworld.gov). Despite offering a wealth of information, WNC lacks an efficient search engine, which means that specific articles can be quite difficult to identify

9. The other main portals all offer similar news channels on their sites, which post news from other sources. News channels are provided by Sina.com (dailynews.sina.com.cn/), Netease (www.netease.com/news/index.html) and Yahoo China (cn.yahoo.com/headlines/).

and locate. In particular, the keyword function is only full-text and the Boolean operators are incomplete. WNC is a for-fee service, but many large research libraries now offer it as part of their electronic database collection. Another news monitor is Sinofile, which translates selected articles into English (www.sinopolis.com). Sinofile provides one-paragraph summaries as well as a limited number of full-text translations of selected articles from the Chinese press. Sinofile is by no means complete, but does usually cover the current scene effectively.

News indexes. Sites with news indexes contain online directories or catalogues of news articles from other sources, creating a one-stop-shop for accessing news on China. Such sites do not create their own content, but aggregate and categorize information available from other online sources. The first organization to offer a news indexing service was ChinaOnline (www.chinaonline.com), a commercial provider of news information on China. On the daily headlines page (www.chinaonline.com/roundup/headlines.asp), ChinaOnline provides links to current stories from around 16 different papers, such as the *New York Times*, the *Wall Street Journal* and the *Financial Times*. InsideChina offers a more thorough news indexing service called “web news,” which links to more newspapers than ChinaOnline, especially those based in Asia (www.insidechina.com/webnews.php3). In particular, InsideChina organizes the stories by category, allowing the researcher to focus on a particular subject, such as politics, technology and the like, with separate headings for Hong Kong and Taiwan.

One particularly useful variant of the news index is Newshoo (www.newshoo.com), which aggregates news articles from a wide range of Chinese and foreign sources. Newshoo claims to index more than 5,000 articles a day. The site allows for general browsing by a range of topics such as politics, economics, computers or society, enabling the user to select a specific topic before seeing the relevant news stories for that day. In addition, users can enter a query into the search engine to identify relevant articles. Most articles appear in Chinese only and full text is available. The main drawback to this site, perhaps not unexpectedly, is that it does not maintain an archive, although it does hold each article for 48 hours.

News summaries. Sites with news summaries contain information that has been condensed from a range of news sources, both on the web and off-line. They are usually updated daily and can be viewed either online or delivered via email as text or HTML files. The oldest online news source, when there was only email and no web, comes from China News Digest (www.cnd.org). Starting as a volunteer group of overseas Chinese students residing in the United States, CND has grown into a comprehensive news service. It offers a number of services, including the popular news summary delivered daily via email, which includes paragraph-length summaries of key events in China, Hong Kong and Taiwan and selected in-depth stories. The news summary is drawn largely from wire

services, as well as the Chinese press. InsideChina offers a similar service, which is both posted on the web and emailed daily (www.insidechina.com/news.php3). InsideChina draws its information almost exclusively from the major wire series, such as Reuters, AFP and AP. In the specific area of international relations, NAPSNet offers daily paragraph length summaries of select articles in the Western press, offering a simple way to review most of the articles in the Western press on China without having to read all of them (www.nautilus.org/napsnet/dr/index.html). Duowei or Chinese News Net provides a useful service that summarizes news stories from newspapers and magazines in the mainland, Hong Kong, Taiwan and the United States (www.chinesenewsnet.com). News stories are grouped by subject, which allows users to scan headlines across a number of topics or to read only news from a given region, such as the mainland. The site can be viewed in simplified or complex characters and also provides a limited selection of stories in English (www.chinatopnews.com).

Government Sources

In the past two years, most government agencies at the central and local levels have established an online presence. The range of information on such sites can vary widely. The COSTIND site, for example, contains little more than three pages describing in the most general terms its functions and duties (www.costind.gov.cn), while the Ministry of Information Industry pages contain reams of data on the telecommunications industry (www.mii.gov.cn). Nevertheless, such sites greatly increase access by researchers to the Chinese government, reducing the need to gather certain types of data during research trips when time can often be quite limited, and reflect the openness of the government at all levels in providing increased amounts of information. At a minimum, government sites include basic information concerning organizational structure and functions. More detailed sites will publish key laws and regulations, research reports, relevant news and statistics. Many government sites offer English and Chinese versions, but in most cases the Chinese version contains far more information than the English one.

One of the most comprehensive directories of government web sites comes from the central government itself. The homepage of the "Government Online" project, which started in 1999 to oversee the establishment of the Internet presence of the government, provides a directory that is indexed by province (www.gov.cn). At the time of writing, there are 50 principal central government sites, representing most of the key agencies, and 3,300 additional sites at the provincial level and below.¹⁰ While the local level information varies widely, provincial

10. "Domain name statistics," China National Network Information Centre, December 1999, www.cnnic.net.cn/registration/tongji.shtml. The actual number of government agency homepages is probably much higher than the domain name figure suggests, as the ".com" and ".net" domains are widely used by many such agencies.

governments and key cities, as well as trade development boards and statistical bureaus, have established homepages.

Limited space does not permit a complete review of government sites in this article. Nevertheless, a few sites are discussed below to illustrate the value of this information source.

Information Office of the State Council. The Information Office of the State Council has established a major web presence as part of a formal public relations effort. Although the site can be accessed from a number of different addresses, the content is roughly the same on each (www.china.org.cn and www.chinaguide.org). All these sites provide the official government viewpoint on a variety of topics by publishing transcripts of recent press conferences and speeches as well as electronic copies of all White Papers issued since 1993. The official rebuttal to the Cox report, for example, was published on this site the day that it was released in Beijing. Useful for national policy.

State Council Development Research Centre. The State Development Research Council (DRC) maintains two sites. The first is the actual homepage of the DRC, which contains organizational information (drc.gov.cn). The second is called DRCNet, which provides a wealth of information on China's reform process (www.drcnet.gov.cn). One outstanding feature of this site is access to current and back issues of the *China Development Review*, a key journal documenting the progress of China's reforms. In addition, the site maintains six separate channels on macroeconomics, business economics, financial markets, investment analysis, stock news and current affairs, each of which contains relevant news, statistics and research reports. DRCNet also provides a general news section, with reform-related news and special sections on topics such as the WTO and enterprise reform, and a comprehensive set of links to other reform-related sites in China. Useful for political economy.

Chinese Academy of Social Sciences. A leading state research institute in China, CASS conducts research on a wide range of topics. A portion of its findings is made available through its web site, which can be an excellent starting place for any scholar (www.cass.net.cn). From a practical perspective, the site contains detailed information about the organization and its many institutes. Some of the institutes have created their own homepages, with information about the topics they research and lists of relevant personnel as well as links to books and periodicals that they have produced. In addition, the main body of the site contains pages that introduce publications by CASS researchers and review other publications on relevant topics. A great place to start for almost any social science subject.

PRC embassies. The Chinese embassies in Washington, D.C., London and at the United Nations all maintain web sites. As part of their public relations efforts, these sites post press releases and other information on

a regular basis (www.china-embassy.org for Washington, www.undp.org/missions/china/ for the UN and www.chinese-embassy.org.uk for London). In addition, they have special sections devoted to explaining China's position on a current issue, such as WTO membership or human rights. The Ministry of Foreign Affairs site provides background information on China's bilateral relationships, participation in international organizations and current policy (www.fmprc.gov.cn). Useful for international relations and foreign policy.

These four sites represent only the tip of the iceberg. At the central government, most ministries have established useful homepages. Data-rich sites include the Ministry of Foreign Trade and Economic Cooperation (www.moftec.gov.cn), the Ministry of Information Industry (www.mii.gov.cn), the Ministry of Agriculture (www.agri.gov.cn), the Ministry of Finance (www.mof.gov.cn) and the People's Bank of China (www.pbc.gov.cn). The Ministry of Public Security maintains a web site (gab.mps.gov.cn) as well as an information network for public security products and devices (www.ga.net.cn).

More importantly, however, the Internet also facilitates access to provincial and local levels of government. As part of the Government Online project, each province has replicated the information available from central ministries at the local level. In Liaoning province, for example, the provincial government as well as cities of Dalian, Shenyang, Beipiao and Liaoyang, have established homepages. The site of the Liaoning People's Government includes electronic copies of *wenjian* issued by the government, information on provincial organs and offices as well as provincial statistics and laws (www.ln.gov.cn). Separate sites have been established for the Liaoning statistical bureau, price bureau, trade development board, environmental department, small/medium enterprise department and an economic news and information network – with plans for more to come online in the near future.

Research Resources

The basic research resources for scholars are becoming available in China. In particular, libraries, scholarly journals and online directories are now accessible online.

Libraries. Through the Internet, researchers can search the collections of major libraries in China, which allows for more productive research trips. At the time of writing, there are 178 libraries online, as major institutions have created interfaces that allow online access to their collections. Two caveats, however, should be mentioned. First, the Internet facilities only access the catalogues, not the full text of relevant holdings. Secondly, in many cases the catalogue available online remains incomplete, though the more recent works are usually included. Nevertheless, access to library catalogues from abroad helps researchers identify key works to consult before embarking upon field research and acquire a general feel for the collections of various libraries. In addition,

unlike most Chinese-language collections in the United States, researchers can search directly with Chinese characters, avoiding the problems inherent in using multiple forms of romanization.

Three libraries in China deserve special mention. First and foremost is the National Library in Beijing, China's equivalent of a copyright library (www.nlc.gov.cn). The National Library has the largest collection in China and is leading efforts to leverage information technology, including an effort to place 40 million pages of text online by the end of 2001. Through the web site, users can search databases of books, periodicals and statistical yearbooks. Unlike many sites in China, there is also an English version of the entire site, which explains in depth the collection (www.nlc.gov.cn/etext.htm). Unfortunately, the search engine for the National Library is a bit awkward to use at the moment, as one needs to use the advanced search function to query by author or title. Secondly, the Beijing University library has established a homepage that provides online access to its catalogue (www.lib.pku.edu.cn). While the Beijing University site does allow for searching in English and *pinyin*, best results are obtained by using Chinese characters. Users can search by title, author, publisher, keyword and subject, which facilitates identifying key works immediately. Thirdly, the Qinghua University library is also online (www.lib.tsinghua.edu.cn), with roughly the same features as Beijing University.

Several directories exist to help researchers identify other libraries online in China. One quite useful directory comes from Qinghua's library, which categorizes online libraries in China by province (www.lib.tsinghua.edu.cn/chinese/otherlib/). Another useful directory comes from the National Library, which categorizes libraries by province and by type (public, higher education, scientific) (www.nlc.gov.cn/dh/dh.htm).

Scholarly journals. One of the most important sources available on the web is the China Journals Net. Headquartered at Qinghua University, CJN draws its information from the China Academic Journals database. The online database currently includes the full text of articles from around 3,500 periodicals from mainland China and includes abstracts for an additional 3,100. While many of the journals focus on science and engineering topics, the social sciences and humanities are also well represented, as three of the databases covering History and Literature, Economics Politics and Law, and Education and Social Sciences contain approximately 990 titles.¹¹ At the moment, the archives are limited to full-text articles from 1997 to 1999, but there are plans to add articles from 1994 to 1996 as well as continually to update the service going

11. The History and Language category includes sub-headings for language, literature, art, history, geography, philosophy and culture. The Economics, Politics and Law category includes sub-headings for economics, agricultural economics, industrial economics, transportation/post and communications/trade economics, finance, political theory, party construction, foreign affairs, military affairs, mass organizations, public security, law and jurisprudence.

forward. The CJN web site is currently available through ChinaNet (www.cnki.net) and CERNet (www.chinajournal.net.cn).

A robust search engine facilitates access to the vast material available on this site. Searchable fields include title, author, keyword, abstract, full text, journal title and responsible organ. In general terms, articles can be identified by browsing the table of contents for a given journal title, which enables the researcher to stay abreast of developments in specific journals without having to search for a matching article. To view the full text of an article, the user needs to download special software, called "caj viewer," which functions like Adobe Acrobat and displays the article in its original form, complete with page numbers, tables and images. CJN is a for-fee service, but users can browse by journal title and search by article name free of charge through the main website. Libraries abroad can purchase either Web-based access or acquire a collection of the actual CD-ROMs from the Electronic Journals Publishing House.

If the nearest research library does not subscribe to CJN or the desired journal, the University of Pittsburgh as offers an alternative solution through the Gateway Service Center of Chinese Academic Journal Publications. The Center provides an extremely useful and free service to researchers based in the United States (www.library.pitt.edu/gateway). Through this service, researchers can request hard copies of articles from Chinese journals. Requests can be submitted over the web through a form on their homepage, which is referred to their partner libraries in China. Use of this service requires having a citation for the desired article and does not enable searching in any way. Nevertheless, as articles are transmitted electronically from China, turnaround time can be as short as one week.

Online directories and catalogues. Online directories function as specialist portals, listing only those sites that are directly relevant to the topic at hand, in this case Chinese studies. Such sites may not have the wealth of references that traditional portals possess, but do allow for extremely specialized searches. While there are many such directories, two in particular deserve special mention: the Internet Guide for Chinese Studies and the China page from Asia Library at the University of Michigan.

Maintained by the Institute of Chinese Studies at Heidelberg University, the Internet Guide for Chinese Studies is the China portion of the Asian WWW Virtual Library project directed by the Australian National University (sun.sino.uni-heidelberg.de/igcs/). IGCS is a comprehensive specialist directory with over 1,700 entries, which groups sites according to category (education, economics, fine arts, geography, history, law, language, literature, music, philosophy, politics, society, science and technology) and ranks them according to usefulness. Researchers can either browse through the main categories or use the dedicated search engine to locate relevant sites. IGCS is maintained by volunteers, who surf the web and accept nominations to collect entries.

The librarians from the Asia Library at the University of Michigan

have created an extremely useful and detailed online resource for Chinese studies (asia.lib.umich.edu/china/frame1.htm). Similar to IGCS, the Michigan site features detailed directories of China-related newspapers, databases and reports available online. While information on this site is perhaps not as well cataloged as on IGCS, almost every site is directly relevant to academic research, as data sources and periodicals are particularly well documented. In addition, the site posts reviews of Chinese language books, which are authored by members of the academic community, and a searchable list of biographies, which serves as an online who's who.

Data Sources

The advent of the Internet also provides access to a variety of data sources for the study of modern China. Online data sources include statistics, official documents and data sets.

Statistics. The State Statistical Bureau has established the State Statistical Information Network (www.stats.gov.cn/index.html or, for English, www.stats.gov.cn/english/index.html). The site includes online editions of the *Statistical Yearbook* from 1996 to 1999 and other statistical databases as well as links to its publications, such as the *China Information Report*.¹² Through this page, researchers can also locate the web sites for provincial statistical bureaus, many of which contain the relevant statistical yearbook (www.stats.gov.cn/local/localstat.html). Statistics specific to a given industry or subject are usually associated with the relevant supervising ministry or agency and published on those sites.

Official documents. In the legal area, three excellent web sites are available. In Chinese, the Beijing University Law School has created China Law Info (www.chinalawinfo.com). The site provides the full text of most laws, which are organized by constitutional, administrative, commercial, economic, environmental and international law. In addition, the site provides an effective search engine, which allows researchers to identify articles by general subject, issuing department, date or keyword in full text. Another source is the Law-on-Line project from the Hong Kong University, which also provides a searchable database of Chinese laws (www.lawhk.hku.hk). ChinaLaw, from the University of Maryland (www.qis.net/chinalaw/), provides English translations of selected laws. Outside the legal arena, several document databases exist. One is the Beijing Document Service, which is sponsored by the China Defence Science and Technology Information Centre (CDSTIC), and provides 14

12. While a thorough check has not been conducted, the online version appears to contain all of the information of the print edition, with the one very important exception of explanatory notes.

full-text databases of documents relating to science and technology policy as well as national defence (bds.cetin.net.cn/cgi-bin/bdssele?#fcb). Membership is required to access some of these databases.

Data sets. Knowledge about online data sets continues to emerge. One of the largest directories comes from the Asia Library at the University of Michigan, which maintains two lists. The first is a list of data sources, while the second is a list of databases, covering economics, political science and humanities (asia.lib.umich.edu/china/frame1.htm – see links for data and databases). The Universities Service Centre in Hong Kong hosts a small number of large-*n* databases, including public opinion surveys and several partial censuses (www.usc.cuhk.edu.hk/databank.asp). Features of their collection include Urban Household Survey (1986–92), Women’s Status in Contemporary China (1991), Rural Economic Development in Shanxi (1949–93), Survey on Privately Owned Enterprises in China (1991), and Survey on the Reform and Efficiency of State-owned Enterprises (1980–94). The Centre for International Earth Science Information Network provides socio-economic data sets, including several GIS (Geographic Information Systems) databases that can display data by administrative region (sedac.ciesin.org/china/).

Reference Materials

Through the Internet, basic reference materials have become available online. While most of these materials exist in paper form, the online versions expedite access to reference information.

Bibliographies. One of the most complete and accessible bibliographies comes from the Association of Asian Studies, which publishes *Bibliography of Asian Studies*. Online editions allow researchers to focus quickly on the literature that is most relevant to the question at hand (www.aasianst.org/bassub.htm). In particular, the online version allows for searching by subject headings, country, journal title and author. While covering far more than just sources on China, it is easy to use and full of information. On modern China, a useful resource comes from Lynn White at Princeton University, who maintains the Contemporary China Bibliography (www.wws.princeton.edu/~Lwhite/Chinabib.pdf). The document appears in PDF form, which allows the user to search by sub-heading.¹³ In the area of modern Chinese history, the China History Research Site from the University of San Diego includes a detailed discussion of historical sources as well as a bibliography that is categorized by subject (orpheus-1.ucsd.edu/chinesehistory/sources.htm). The site also maintains a database of local archives in mainland China where scholars can share experiences about conducting research.

13. Users need to download Adobe Acrobat to view PDF files. Acrobat is available from www.adobe.com.

Dictionaries. Several excellent online dictionaries are available. In general, these are both English/Chinese and Chinese/English and also offer the option of displaying either simplified or complex characters. Chinese entries can be inputted using both character forms and *pinyin*. One very fast, easy to use dictionary site comes from Sunrain (www.sunrain.net). A more comprehensive site is Zhongwen.com, created and maintained by Richard Harbaugh of Yale University (www.zhongwen.com). In addition to language-learning tools, this site provides graphical genealogical charts, which allow the user to click and trace the origins of various characters through their radicals, and an extensive dictionary that includes a radical table. Zhongwen.com also provides a directory of all online dictionaries, which allows users to look up one word in multiple online dictionaries (www.zhongwen.com/zi.htm).

Online bookstores. Amazon.com look-alikes have begun to appear in China. While the actual purchase and shipping of books online is not practical from abroad, online bookstores do allow researchers to stay abreast of the latest publications, scholarly and otherwise. Most of these sites categorize their book by subject, which allows for virtual browsing, and provide search engines. Three of the best are the Beijing Book Building (*Beijing tushu dasha*), which is managed by Xinhua (www.bjbb.com.cn), the Shanghai Book City (*Shanghai shucheng*) (www.bookmall.com.cn) and Dangdang (www.dangdang.com). Directories of other online bookstores are available from Sina.com (search.sina.com.cn/search_dir/syjj/dzsw/shopping_online/bookstore_online/) and Sohu (www.sohu.com/company/Books/Bookstore/Online_Bookstore/).

The Chinese Internet World

Chinese language portals serve as gateways to the Chinese Internet world. Some portals focus on a particular Chinese-speaking region, such as the mainland, while others focus on the world-wide Chinese community. Like their counterparts in Silicon Valley such as Yahoo or Excite, Chinese portals offer a wide array of information and generally function as comprehensive card catalogues of web sites. According to the latest survey by the China National Network Information Centre, the top ten portals viewed by mainland Chinese are:¹⁴

1. Sina.com
www.sina.com.cn
2. Netease
www.163.com, www.netease.com, www.yeah.net

14. "List of top ten outstanding web sites," China National Network Information Centre, January 2000, www.cnnic.net.cn/develst/cnnic2000top10.shtml.

3. Sohu
www.sohu.com, www.sohu.com.cn
4. 163 Email
www.163.net
5. Capital Online
www.263.net, freemail.263.net, www.263.net.cn
6. China.com
www.china.com
7. 21st Century
www.21cn.com
8. EastNet
www.east.net.cn, www.east.com.cn, www.east.cn.net
9. Shanghai Hotline
www.online.sh.cn
10. *Computer Daily*
www.cpcw.com, www.yesky.com

What differentiates these portals from their American counterparts is that most of their information is in Chinese and much of it comes from Chinese-language sites based in the mainland. As the Internet continues to develop and spread, these sites will become import gateways to information about a segment of the Internet that would otherwise remain closed to most outside China.

Chinese portals offer the same range of features as their English counterparts, such as Yahoo and Excite. They offer free email, catalogue web sites by subject heading and maintain channels on topics such as news, finance, entertainment and the like. In addition, however, two features of Chinese portals should be mentioned. First, most of the major portals in China offer bulletin boards and chat-rooms, where Chinese from anywhere can participate to discuss the stated topic. While some chat-rooms are actively monitored by the hosting portal, they do allow for a relatively free exchange of opinions, even on sensitive subjects such as political reform. While there have been reports of some portals shutting down sensitive chat-rooms, anecdotal evidence suggests preliminarily that such conversations are relatively free and open.¹⁵ To circumvent the local censors, several bulletin board web sites catering to mainland Chinese users have been established abroad. Two of the most popular sites are Omnitalk (www.omnitalk.com) and Creaders (www.creaders.net), which divide bulletin boards by subject. Secondly, some portals in China now offer free homepages to their registered users, which allow them to create enthusiast web sites based on their hobbies and other interests. While such pages are generally not well categorized, they can provide links and information not necessarily covered elsewhere. Such

15. Prior to the tenth anniversary of Tiananmen in 1999, the portal Sohu closed one of its chat-rooms. While the stated reason was for maintenance, an employee was reported to have stated that the reason was concern about anti-government postings. In general, however, reported instances of such self-censorship are rare. See Reuters, "Chat shuttered on Tiananmen anniversary" (1 June 1999) available through CNET, news.cnet.com/news/0-1005-200-343097.html?tag=st.cn.1.

sites are often located through a subject category of one of the portals or through a search engine.

In addition to sites discussed above, there are a growing number of portals that focus on the global Chinese community. Complementing its popular portal in Beijing, Sina.com provides sites for Hong Kong (www.sina.com.hk), Taiwan (www.sina.com.tw) and overseas Chinese (www.sina.com). Other sites focusing on Greater China include Renren (www.renren.com), Zhaodaole (www.zhaodaole.com), MyRice (www.myrice.com), Etang (www.etang.com), and ChinaRen (www.chinaren.com). Many of the major portals in the United States have also established Chinese language sites. Yahoo offers a general Chinese language site (chinese.yahoo.com), as well as sites for the mainland (cn.yahoo.com), Hong Kong (hk.yahoo.com) and Taiwan (tw.yahoo.com). Netscape also offers portals for the mainland (home.netscape.com/zh/cn/) and Taiwan (home.netscape.com/zh/tw/), while Excite provides a Chinese-language version of its portal (chinese.excite.com). In English, other useful sites include Virtual China for trade and finance information (www.virtualchina.com), ChinaSite for a directory of general-interest English links (www.ChinaSite.com) and ChinaOnline for economic and business news (www.chinaonline.com).

With respect to information about the development of the Internet in China, three sites are particularly useful. First, in Chinese, is the site of CNNIC, the government agency that oversees domain-name registration in China (www.cnnic.net.cn). In particular, this site includes a history of the Internet's development in China (www.cnnic.net.cn/internet/shtml) and access to the bi-annual surveys on Internet usage in China that have been conducted since the autumn of 1997 (www.cnnic.net.cn/develst/report.shtml). Secondly, Virtual China maintains a channel on their site devoted to information technology in China, which features an archive of news stories that is updated on a daily basis (www.virtualchina.com/infotech/index.htm). Thirdly, Professor Alex Tan from Syracuse maintains a useful personal homepage on the development of the Internet in China (web.syr.edu/~ztan/China-tel.html).

Conclusion

As suggested by this article, the development of online sources will greatly enhance the study of contemporary China and contribute to the development of the field. To start with, the application of the Internet will increase the efficiency of the research process. Chinese web sites provide basic information about various organizations and their personnel. Remote access to card catalogues and periodicals in China decreases the importance of long library stays in the mainland. The electronic publication of statistics reduces barriers to the collection and analysis of data. Even casual surfing of the web – by reading the news, scanning government sites and monitoring bulletin boards – keeps scholars abreast of the latest developments in their areas of expertise.

In addition, the range of information sources now available will enrich the quality of research. First, increased access to statistical and public opinion data will reduce the barriers to using rigorous quantitative methodologies, whose application with respect to China has arguably lagged behind other areas of political science and the social sciences. While problems of accuracy and relevance will no doubt persist, the existence of longitudinal data sets from the reform era provide a key source that was not available to scholars of previous generations. Secondly, the qualitative data revealed through more open newspapers, government agencies and other organizations who use the web as a communication channel will add an additional dimension to ongoing research programmes and suggest new questions to investigate. The importance that the government has attached to information technology implies that it is imperative for scholars to consult the relevant sites within China as they conduct research. Thirdly, the development of the Internet in China itself generates a set of fascinating research questions. Given the subversive potential of information technology, the government's embrace of the internet creates a puzzle that needs to be explained. Likewise, the Internet raises questions about the impact of information technology on government administration, state capacity, economic development and the role of transnational ideas. China will provide a superb case study through which to explore these issues.

Finally, the Internet will facilitate the establishment of transnational communities of scholars, bringing together individuals who research similar topics from around the world. Such communities will not only strengthen ties among European and North American scholars, but also provide a platform for including scholars from Asia and especially Greater China. By facilitating the exchange of ideas as well as data, the Internet will boost collaborative research. In the area of international relations, for example, a number of sites have been created around China's global role. Taiwan Security Research (www.taiwansecurity.org) maintains an archive of news stories on China, while the Chinese Security Homepage (members.aol.com/mehampton/chinasec.html) and Chinese Foreign Policy Net (www.stanford.edu/~fravel/chinafp.htm) serve as online portals for national security and foreign policy, respectively.

Nevertheless, as with any class of sources, several limitations exist. First, the dispersion of online sources across research topics and across time is uneven. At the moment, much of the content focuses on reform-related topics, especially enterprise reform, finance and information technology. In terms of time, a strong bias towards the present emerges, in part because the Internet in China is only a few years old. As online sources continue to develop this problem will decrease, but it does generate a bias that should be acknowledged. Secondly, the authenticity of electronic information may be problematic. It is far easier to post an essay online than have it printed in a journal, much less peer-reviewed. More generally, just because a report is published on the web does not mean that it is genuine, much less accurate. While information authenticity problems are not new to the study of China, they will not end with the

rise of the Internet. The use of online sources requires good judgement and additional fact-checking by the scholar to verify data authenticity and accuracy. Thirdly, the rapid pace of change makes it difficult, if not impossible, to gain bibliographic control over online information sources. With a moving target like the Internet, which constantly evolves in real time, cataloguing will be challenging. The creation of scholarly communities to collect information on a common subject may help mitigate this problem over time.

Despite the overriding optimism expressed in this article, any irrational exuberance about the benefits of the Internet should be tempered by the uncertainty that surrounds the broader implications of using online sources. As the Internet is a relatively new phenomenon, its precise impact on scholarly research and the China field in particular remains unknown. While the benefits will surely outweigh the costs, several sources of caution exist. First, the seductive quality generated by the speed and immediacy of online information should not negate in any way the importance of employing traditional sources that have sustained the field to date. Online sources should not be viewed as substitutes for existing ones, but as complementing the current body of literature and at times facilitating access to those parts of the literature that are difficult to obtain from abroad.

Secondly, the ease of access to information that the Internet facilitates may be double-edged and generate problems of information overload. By dramatically increasing the amount of data that a scholar can acquire in a short period of time, without even undertaking a research trip, the Internet can make it more difficult to separate critical information from the superfluous. As with any research question, the credibility of the conclusions stems from the *quality* of the data, not the quantity. More is not necessarily better. The importance of identifying and acquiring the appropriate information for the research question at hand must be stressed.

Lastly, the advent of the Internet contains the potential to bias the selection of research topics. The emphasis within online sources on information from the present and recent past, coupled with the ease of access, may imperceptibly shape the interests of scholars by steering the field towards the most researchable topics, not necessarily the most important or intellectually stimulating questions about China. This distortion may not necessarily be conscious, but seems plausible given the characteristics of online sources. In the Information Age, clearly posing and framing research questions will be more critical than ever before. Rigorous research design is necessary to ensure that scholars address the most salient issues about China and determine what type of data is necessary to answer the question being considered.

Throughout the development of the field, the availability of sources has shaped the study of contemporary China. Access to increasing amounts of information has driven intellectual progress, as scholars moved from official sources to unauthorized ones and from the Centre to the provinces. In previous generations of scholarship, a deficit of data often

existed, as available sources failed to answer the research questions at hand. The advent of information technology suggests that this pattern has ended. Online sources will combine speed of access along with an overall surplus of information. The challenge now for scholars will be to take advantage of this wealth of sources to continue progress in the field.

Appendix: Web Addresses

Technical

General

Mandarin Tools	www.mandarintools.com
Chinese Computing	www.chinesecomputing.com
Viewing Chinese on the Web	www2.mozcom.com/~w_hansen/chinese.html help.netscape.com/kb/consumer/19981206-1.html www.cathay.net/help/ms-win.html

Chinese Software

NJ Star	www.njstar.com
RichWin	richwin.sina.com.cn
Twin-Bridge	www.twinbridge.com
Microsoft Chinese Input and Fonts	www.microsoft.com/windows/ie/features/ime.asp

News Sources

Selected Mainland Papers

<i>People's Daily</i>	www.peopledaily.com.cn/
<i>People's Daily</i> (English)	www.english.peopledaily.com.cn
Xinhua News Agency	www.xinhua.org
<i>China Daily</i>	www.chinadaily.com.cn
<i>Beijing Youth Daily</i>	www.bjyouth.com.cnld.htm
<i>Southern Daily</i>	www.nanfangdaily.com.cn
<i>Southern Weekend</i>	www.nanfangdaily.com.cn
<i>China Economic Times</i>	www.cet.com.cn
<i>PLA Daily</i>	www.pladaily.com.cn

Selected Hong Kong Papers

<i>Dagong bao</i>	www.takungpao.com
<i>Ming bao</i>	www.mingpaonews.com
<i>Wenhui bao</i>	www.wenweipo.com
<i>South China Morning Post</i>	www.scmp.com
<i>Hong Kong Standard</i>	www.hk-icemail.com

Selected Taiwan Papers

<i>China Times</i>	www.chinatimes.com
<i>United Daily News</i>	www.udn.com.tw
<i>Taipei Times</i>	www.taipeitimes.com
<i>Taiwan Times</i>	www.thenews.com.tw
Taiwan Headlines	www.taiwanheadlines.com

Newspaper Directories

Universities Service Centre	www.usc.cuhk.edu.hk/link.asp
Sohu (general)	www.sohu.com/News_Media/Newspaper/
Sohu (pinyin)	www.sohu.com/News_Media/Newspaper/By_Pinyin/
University of Michigan	asia.lib.umich.edu/china/frame1.htm (news link)
All-China Journalists Association	www.acja.org.cn

Western News Monitors

World News Connection	wncnet.fedworld.gov
Sinofile	www.sinopolis.com

News Summaries

China News Digest	www.cnd.org
InsideChina	www.insidechina.com/news.php3
NAPSNet	www.nautilus.org/napsnet/dr/index.html
Chinese News Net	www.chinesenewsnet.com
English	www.chinatopnews.com

<i>News Indexes</i>	
ChinaOnline	www.chinaonline.com/roundup/headlines.asp
InsideChina	www.insidechina.com/webnews.php3
Newshoo	www.newshoo.com
<i>Magazine Directories</i>	
University of Michigan	asia.lib.umich.edu/china/frame1.htm (netpubs link)
Sohu	www.sohu.com/News_Media/Magazine/
Sina.com	search.sina.com.cn/search_dir/nm/mg/
Yahoo China	cn.yahoo.com/news_and_media/magazines/
Government Sources	
<i>Government Directories</i>	
Government Online	www.gov.cn
<i>Selected Government Sites</i>	
State Council Information Office	www.china.org.cn
Development Research Centre	www.chinaguide.org
DRCNet	drc.gov.cn
Chinese Academy of Social Sciences	www.drcnet.gov.cn
PRC Embassies	www.cass.net.cn
USA	www.china-embassy.org
UK	www.chinese-embassy.org.uk
UN	www.undp.org/missions/china/
Ministry of Foreign Affairs	www.fmprc.gov.cn
Ministry of Foreign Trade and Economic Co-operation	www.moftec.gov.cn
Ministry of Information Industry	www.mii.gov.cn
Ministry of Agriculture	www.agri.gov.cn
Ministry of Finance	www.mof.gov.cn
People's Bank of China	www.pbc.gov.cn
Libraries	
<i>Key Libraries</i>	
National Library	www.nlc.gov.cn
Beijing University	www.nlc.gov.cn/etext.htm
Qinghua University	www.lib.pku.edu.cn/chtml/
<i>Library Directories</i>	
Qinghua University	www.lib.tsinghua.edu.cn/chinese/otherlib/
National Library	www.nlc.gov.cn/dh/dh.htm
Journals	
China Journals Net	
ChinaNet	www.cnki.net
CERNet	www.chinajournal.net.cn
Gateway Service Center of Chinese Academic Journal Publications	www.library.pitt.edu/gateway/
Online Directories	
Internet Guide for Chinese Studies	sun.sino.uni-heidelberg.de/igcs/
University of Michigan	asia.lib.umich.edu/china/frame1.htm
Data Sources	
<i>Statistics</i>	
State Statistical Information Network	www.stats.gov.cn/index.html
English	www.stats.gov.cn/english/index.html
Provincial bureau list	www.stats.gov.cn/local/localstat.html
<i>Official Documents</i>	
China Law Info	www.chinalawinfo.com
Law-on-line	www.lawhk.hku.hk
ChinaLaw	www.qis.net/chinalaw/
Beijing Document Service	bds.cetin.net.cn/cgi-bin/bdssele?#fcb

Data Sets

University of Michigan
Universities Services Centre
CIESIN

asia.lib.umich.edu/china/frame1.htm (data link)
www.usc.cuhk.edu.hk/databank.asp
sedac.ciesin.org/china/

Reference Materials*Bibliographies*

Bibliography of Asian Studies
Contemporary China Bibliography
China History Research Site (UCSD)

www.aasianst.org/bassub.htm
www.wws.princeton.edu/~Lwhite/Chinabib.pdf
orpheus-1.ucsd.edu/chinesehistory/sources.htm

Dictionaries

Sunrain
Zhongwen.com
Dictionary Web

www.sunrain.net
www.zhongwen.com
www.zhongwen.com/zi.htm

Online Bookstores

Beijing Book Building
Shanghai Book City
Dangdang
Sina.com Directory

www.bjbb.com.cn
www.bookmall.com.cn
www.dangdang.com
search.sina.com.cn/search_dir/syjj/dzsw/
shopping_on_line/bookstore_online/
www.sohu.com/company/Books/
Bookstore/Online_Bookstore/

Sohu Directory

The Chinese Internet World*Top Portals in China*

Sina.com
Netease
Sohu
163 Email
Capital Online
China.com
21CN
EastNet
Shanghai Hotline
Computer Daily

www.sina.com.cn
www.163.com, www.netease.com, www.yeah.net,
www.sohu.com, www.sohu.com.cn,
www.163.net
www.263.net, freemail.263.net, www.263.net.cn
www.china.com
www.21cn.com
www.east.net.cn, www.east.com.cn
www.online.sh.cn
www.cpcw.com, www.yesky.com

Other Portals on China

Sina.com
Hong Kong
Taiwan
Zhaodaole
MyRice
ChinaRen
Etang
Yahoo
China
Hong Kong
Taiwan
Netscape China
Netscape Taiwan
Excite
Virtual China
ChinaSite
ChinaOnline

www.sina.com
www.sina.com.hk
www.sina.com.tw
www.zhaodaole.com
www.myrice.com
www.chinaren.com
www.etang.com
chinese.yahoo.com
cn.yahoo.com
hk.yahoo.com
tw.yahoo.com
home.netscape.com/zh/cn/
home.netscape.com/zh/tw/
chinese.excite.com
www.virtualchina.com
www.ChinaSite.com
www.chinaonline.com

Bulletin Boards

Omnitalk
Creaders

www.omnitalk.com
www.creaders.net

Internet Information

CNNIC
History
Statistics
Virtual China
Professor Alex Tan

www.cnnic.net.cn
www.cnnic.net.cn/internet.shtml
www.cnnic.net.cn/develst/report.shtml
www.virtualchina.com/infotech/index.html
web.syr.edu/~ztan/China-tel.html