



Media dependencies in a changing media environment: the case of the 2003 SARS epidemic in China

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Abstract

This article investigates media dependency among Chinese individuals during the SARS epidemic of 2003. While most media dependency research has examined dependency relations under circumstances when information was readily available, this study looks at a situation in which information was highly controlled and thus was not easily available from the mainstream media. As the socio-structural environment was not conducive to the free flow of information during a major public health crisis, audience members were not only actively engaged in information seeking from alternative resources such as short message services (SMS) and the internet, but they were also involved in creating alternative information channels by being information producers and disseminators. The internet was a particularly empowering tool to allow individuals to bypass official control and to challenge official claims during the crisis.

Key words

Chinese media • health communication • internet • media dependency • SARS • SMS

INTRODUCTION

Fuelled by the explosive development Of the internet and related technologies in the past decade or so, interest in their economic, social, cultural and political dimensions has grown exponentially among people from a wide spectrum of background and training. As computer-mediated communication (CMC) systems with the internet at their lead are 'slouching toward the ordinary' (Herring, 2004), we are witnessing a fundamental transformation in which new media has become the mainstream, as evidenced from various sources of survey data over the years (e.g. Rainie and Bell, 2004). As a result, 'users' expectations about them have become more expansive and more routine' (Lievrouw, 2004) because new media have become ingrained in people's everyday lives.

This article examines the role of the internet and new communication technologies in shifting traditional media dependency relations and in creating brand new dependency relations at the time of the 2003 SARS crisis among Chinese individuals within the broad theoretical framework of media system dependency theory. Media system dependency theory assumes that the media are best understood as a system, in control of scarce and prized information resources that engender not only media's interdependent relations with social systems but also individual dependency relations with the media (Ball-Rokeach and DeFleur, 1976, 1979; DeFleur and Ball-Rokeach, 1989). Under particular structures of societal and media systems, individuals actively seek personal and mediated channels or messages to gratify their felt needs, motives and desires (Rubin and Windahl, 1986). However, while interacting with societal and communication systems, individuals vary their needs and motives from context to context. Dependency or non-dependency on a specific medium follows from individual motives for media use and perceived availability of functional alternatives.

While most media system dependency research has focused heavily on the nature of media dependency relations under circumstances when information was readily available from the mass media, little research has been done about the issue of non-availability of information (i.e. when information is not available from the mainstream media) and its impact on the audience. The SARS case in China provides an excellent example to examine this issue because of state suppression of SARS-related information in the highly controlled Chinese media system.

THEORETICAL BACKGROUND

Media system dependency theory was proposed originally by Sandra Ball-Rokeach and Melvin DeFleur (1976), with the central tenet that individual media use is determined by the interrelations among society, media and audience. The theory attempts to explain micro-level individual media use through the analysis of structural dependency relations at the macro-level,

positing that individual media use is a goal-oriented activity and that the effects of media are a function of how dependent individuals are on mass media as a source of goal satisfaction (Ball-Rokeach and DeFleur, 1976). From an ecological perspective, DeFleur and Ball-Rokeach (1989) viewed society as an organic structure in which individuals, groups, organizations and other social systems are related to one another. The tripartite audience—media—society relationships are reciprocal in nature and the power of the media system is derived from the dependencies of others — systems, organizations, groups and individuals — upon the scarce information resources controlled by the media. Within the ecological social system, the media system is an information system that controls three types of 'dependency-engendering' information resources: information gathering or creating, information processing and information dissemination (DeFleur and Ball-Rokeach, 1989).

In attempts to refine the theory further, DeFleur and Ball-Rokeach (1989; see also Ball-Rokeach, 1985) broke up the original tripartite audience-media—society relationships into structural dependency relations at the macro-level (i.e. relationship between media system and political system) and individual media system dependency relations at the micro-level. The refined dependency theory holds that structural dependency relations determine and establish the parameters of, and the context for, the individual media system dependency relations through such intervening variables as social environments and media system activity.

As noted by Black and Bryant (1995), most existing media system dependency research has concentrated on media dependency relations at the micro-level (i.e. effects on individuals as consumers of different media sources; see also Merskin, 1999). The individual-level dependency, which is 'a relationship in which the capacity of individuals to attain their goals is contingent upon the information resources of the media system' (Ball-Rokeach, 1985: 487), has been categorized into three general dimensions: play, orientation and understanding (Ball-Rokeach, 1985). Each of these dimensions is divided further along personal and social sub-dimensions, generating the following six types of individual-level media dependency relations:

- solitary play;
- social play;
- action orientation;
- interaction orientation;
- self-understanding; and
- social understanding (Loges and Ball-Rokeach, 1993).

Individuals' relations with the media system are asymmetric rather than symmetric, because individual goals are more contingent on the information resources of the media than vice versa (Ball-Rokeach, 1985; Ball-Rokeach

and DeFleur, 1976; Ball-Rokeach et al., 1984). An individual's dependency on the media system is conceived to be not only the product of structural dependency relations, but also that of contextual factors (social environment), media factors, individual factors and interpersonal network factors (Ball-Rokeach et al., 1984).

Most media system dependency studies at the individual level have been focused on the measurement of individual media dependencies (represented by the aforementioned six goals) and their relationships with or roles in predicting key social and psychological factors. Specific examples include TV viewing (Ball-Rokeach et al., 1984), newspaper reading (Loges and Ball-Rokeach, 1993), TV shopping behavior (Skumanich and Kintsfather, 1998) and safe sex attitudes in the gay community (Morton and Duck, 2000). In addition, some media system dependency research has investigated the circumstances under which information from mass media may become more central to the goals of people, groups or other social systems, thereby increasing the intensity of media dependency relations. One such circumstance is when people perceive that they are threatened by the natural and/or social environment (Ball-Rokeach et al., 1984). Loges (1994) found that the intensity and scope of media system dependency relations are positively related to perceptions of threats in the environment. In another study, Hirschburg et al. (1986) surveyed more than 1400 residents of eastern Washington state following the 1980 eruption of Mount St Helens and found that all information sources experienced increased use and mass media were the sources of choice.

Macro-structural relations and media dependency

Media system dependency, as initially articulated by Ball-Rokeach and DeFleur, was 'a macro explanation of the relationship between the media, their audiences and the society as a whole' (Merskin, 1999: 80). As such, media system dependency scrutinizes the media's relationship with the economic system, political system and other societal (e.g. educational, religious) systems. The relationship between the media system and socio-economic system can be reciprocal or subordinate. Tuchman (1978) noted that in capitalist societies, the media system helps to reinforce free enterprise or capitalist values. Conversely, the nature of the capitalist system also legitimizes the profit-making goal of the media system (Cantor, 1980). In authoritarian nations, governments and/or ruling political parties provide substantial monetary resources for media systems, which in turn are entitled to ideological control and propaganda work. Structural dependencies or the interdependent relations between the media and other societal systems (especially the socio-economic system) set the structural boundaries of media action and then shape the flow of information upon which individuals may come to depend.

Over the years, there have been a number of scholars who have explored structural dependencies at the macro-level. In examining the relationship

between TV dependency and dependency on a genre of TV programming (TV shopping), Grant et al. (1991) discussed potential changes in the structural relationship (between the media and economic system) within the media system introduced by TV shopping and how these structural changes imply changes in micro-level dependency relations. They found that such media effects as persuasion and parasocial interaction can be enhanced when media system dependency relations are particularly intense. In applying media system dependency to the media value-framing of the abortion debate and conflict in the USA, Ball-Rokeach et al. (1990) found that the particularity of the abortion case lies in media—religious dependency relations. Power (1995) analyzed how the structural dependency relations between the media (San Francisco-based newspapers) and medical and political interests affected media content regarding the bubonic plague and its carriers.

Despite the above efforts, most media system dependency studies have failed to extend their analyses to macro-level structural dependency relations and, in so doing, have sidelined the original emphasis of media system dependency theory on the society—media—individual tripartite relationships with a predominant focus on individual media dependencies (Black and Bryant, 1995; Merskin, 1999). Therefore, what is needed is an analytical focus on the identification of macro-structural and environmental conditions (contexts) of micro-media effects (i.e. individual media dependencies), as demonstrated by Ball-Rokeach et al. (1999) in their development and implementation of the Media and Injury Prevention Program in Southern California, to induce change in individuals' driving behavior through altering production policies and practices at the macro-level.

Changing state-media-audience relationships in China

The introduction of a western-style market economy in China has allowed Chinese people to enjoy a level of material prosperity which was hard to dream about in Mao's era. As average citizens today enjoy an unprecedented degree of freedom to choose what to do and where to live, and as they become less dependent on state bureaucracy in their everyday life, people have broken away from state-orchestrated ideological indoctrination by the mass media and are increasingly demanding information that is directly relevant and useful to them. The marketization of the media sector fosters a brand new media—audience relationship and has led the media to be more responsive to audience needs and demands. As Zhang (2000) observes, media reform in the past decades has led to a historical shift of both the ideological and professional domains of Chinese journalism from the party—masses model in Mao's era, to the market—audience conceptual model in the reform era.

The fundamental transformation in the Chinese media landscape from a traditional emphasis on state propaganda to the prominent role of the audience is no small matter in understanding the contemporary Chinese

media system. Inevitably, the state's practice of clinging on to the old ideology of media control on one hand, and introducing market mechanisms in the media sector on the other, has created contradictions that are not easy to tackle for all parties involved. As noted by Zhao:

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The commercialization of the press opened some spaces, enabled a degree of organizational autonomy and conferred limited sovereignty to its consumers. In this sense, it has helped to liberate the press from the state . . . The other side of this transformation, though, is the institutionalization of new control mechanisms in the forms of advertising pressure, bias toward affluent consumers in the urban and coastal areas, clientelist relationship with business and political sources and a new regime of labor discipline in the newsrooms. (2000: 21-2)

As the mass media have been increasingly commercialized, market forces instead of Party directives have become the primary concern for media executives because circulation and advertising revenue constitute the lifeline for the media in this environment (e.g. Donald et al., 2002; Zhao, 1998). Although this does not mean that government orders can be totally ignored, administrative fragmentation and changing market conditions have caused the state to lose a significant degree of content control and day-to-day management of the mass media (Lynch, 1999).

While China's political system is still closed, its social or economic structure has become wide open in the wake of market reform policies. Along with this comes a relatively open media and information environment in the country. The long-term subordinate relationship between the Party and media has been changing as a result of the media—audience relationship. As audience members are no longer solely dependent upon the official media for information and entertainment, the media system is losing the all-powerful propaganda function which had been utilized by the party state in Mao's era (see for example, Sun et al., 2001). The latest developments in new media technologies led by the internet has accelerated that trend, which means that the Chinese audience has become one of information consumers as well as creators in their day-to-day lives (see, Tai, 2006, for a detailed discussion of the impact of the internet on Chinese life).

By imposing various limitations on the flow and coverage of information, authoritarian political systems create different conditions for media dependency relations among audience members. For example, Halpern (1994) found that in the authoritarian political system of Chile, dependency on pro-government media contributed to more rightist (i.e. government-advocated) political perceptions, while dependency on illegal oppositional media was related to less rightist political opinions. Similarly, Taylor (1992) found that in Sierra Leone, where the existence of an authoritarian political system exerted serious constraints on the media system, dependency on different media types led to varying degrees of orientation to national development objectives. Even in a free

media system, as Waring (1996) shows through his empirical investigation of America's gay and lesbian alternative media, these alternative media formats play significant roles in shaping homosexual identity in opposition to the mainstream social systems. This suggests that media dependency relations are multidimensional in nature and the audience usage of specific media outlets needs to be taken into consideration in evaluating possible effects on audience.

The internet, SMS and media dependency

The swift emergence of the internet as a communication tool within the past decade has changed the information environment and raised new questions about existing media dependency relations. Because the internet provides a platform for multi-way communications in which audiences play a brand new role, how it changes individuals' dependency relations with conventional media and how it breeds new dependency relations are important questions to ask, especially when the internet tips off previous resource inequalities at times of major crisis. For example, Kim et al. (2004) found that, after the 9/11 terrorist attacks, internet high-connectors (i.e. those evidencing higher quality internet connectedness) intensified their internet connections and expanded the connections to all available communication resources, while internet low-connectors decreased their internet connections and narrowed their communication scope by strengthening their relative dependency relations with traditional mass media.

In a more recent review of media system dependency theory, Ball-Rokeach summarized the implications of the internet for media system dependency research:

The media system dependency theorist is predisposed to an evolutionary, not revolutionary, perspective vis-a-vis new communication and information technologies . . . Producer-consumer dependency relations are likely to undergo change as a result of the development of Internet dependency relations. Changes are more likely to affect the scope of the merged system's reach into personal and social life than they are to alter the structure of producer-consumer relations. The Internet thus intrudes on traditional relations by being integrated into an expanded media system that may expand the reach of understanding orientation and play goals that individuals, groups and organizations may attain through media dependency relations. (1998: 32)

However, the internet not only expands the existing media system; it also fundamentally transforms old producer—consumer dependency relations under unusual circumstances. After all, audience members are not only active consumers of information on the internet, but they have the potential to become information producers and disseminators online as well. It is here that we see some of the most significant implications of the internet for media system dependency research in the cyber-environment.

A review of China's internet development is necessary to put things into perspective. The internet, which is the fastest diffused communication medium in history, has experienced dazzling growth in China in the last decade (see Tai, 2006, for a detailed overview). According to the China Internet Network Information Center, the number of internet surfers reached 94 million as of the end of 2004, second only to that of the United States (China Internet Network Information Center, 2005). Although that number makes up about 11.6 percent of the global internet population, the percentage of Chinese residents online was merely about 7.2 percent, significantly below the global average of 12.7 percent (China Internet Network Information Center, 2005). However, China's internet diffusion must be cast in the broad context of the particularities of the country's national development. Here it is relevant to mention that the majority of China's population still lives in rural areas, where the telecommunication infrastructure is rather undeveloped and the illiteracy rate is still high. Therefore, the priority of China's internet strategy has been focused on urban areas exclusively. In a related report released by the Chinese Academy of Social Sciences, a 2003 survey of residents in 12 cities indicates that about 25 percent of the urban population was online (Chinese Academy of Social Sciences, 2003). According to China's National Bureau of Statistics, the current Chinese urban population is about 389 million (see: www.stats.gov.cn/). If all or most of the 94 million internet users in 2004 were in the cities, this would put the rate of internet penetration at approximately 24.2 percent, which is highly consistent with the Chinese Academy of Social Sciences survey result. At any rate, these indications show that there is a substantial proportion of the city population which has internet access in China.

Besides the internet, the other area which has been leading the growth in China's telecommunications market is wireless communications (e.g. Wong and Nah, 2001). By the end of 2001, China surpassed the USA to become the world's biggest mobile telecom market, and at the end of May 2002, mobile phone users in China reached 170 million, standing far ahead of any other country (*China Daily*, 2002). Two years later, by the end of May 2004, mobile phone users rose to 300.6 million, according to the statistics released by the Ministry of Information Industry on 21 June 2004 (8080.net, 2004).

Alongside the explosive development of wireless phone use, Short Message Services (SMS) over mobile phones has become a fast-growing means of communication in China. SMS first started in May 2000 and it is estimated that about half of mobile phone users in China subscribe to SMS (Song et al., 2005). In a short period of just three years, the number of messages sent by SMS subscribers to the two biggest telecom service providers in China rose from 50 million in 2000 to 19 billion in 2001 and 90 billion in 2002 (Jiang, C, 2003). From 2000 to early 2005, the volume of SMS messages grew as much as 217 times (Xinhuanet.com, 2005). Its popularity and increasing role in people's lives have earned it the name 'the fifth medium' (Sina.com, 2003a), and the

economic potential of SMS to the Chinese telecommunications market is referred to as the 'economy of the thumb' (Huang, 2004). Its immediacy, portability, flexibility and most of all, its affordability (about US 1 penny per message in China) make it the more preferable medium over email for many people. As a result, SMS quickly became a popular way of communication outside of the official media domain.

Against the backdrop of these broad issues, this study looks at media dependency relations in connection to the internet and SMS among Chinese 'netizens' during the SARS crisis of 2003. As many previous studies have shown (e.g. Ball-Rokeach et al., 1984; Hirschburg et al., 1986; Loges, 1994; Power, 1995), dependency relations with the communication media are the most prominent, and these relations are most likely to undergo changes due to resource inequalities under conditions of acute threat and high ambiguity. In particular, this research examines how the internet affected audience-media—state relationships at the time of an unfolding public health crisis in a highly-controlled sociopolitical environment when crucial information was not readily available from the mainstream mass media.

The SARS outbreak of 2003 and official reactions to the disease

In spring 2003, a mysterious lethal virus, called atypical pneumonia in China and defined by the World Health Organization (WHO) as Severe Acute Respiratory Syndrome (SARS), first broke out in China's southern Guangdong province and then spread to Beijing and other regions in the country before it quickly grew into a global epidemic crisis. From the time when WHO officials were first notified of an outbreak of atypical pneumonia with unknown cause from the Chinese authorities on 11 February (Communicable Disease Surveillance and Response [CDSR], 2003) to 3 July, when WHO pronounced it contained, the total cumulative number of confirmed or probable cases reported worldwide reached 8456 and the number of deaths amounted to 812. The five nations or regions which were most affected were China (5327 reported cases and 348 deaths), Hong Kong (1755 reported cases and 298 deaths), Taiwan (682 reported cases and 84 deaths), Singapore (206 reported cases and 32 deaths) and Canada (251 reported cases and 39 deaths). The total number of nations infected by SARS reached 36 (el 1th Hour, 2003).

The first known SARS case reportedly occurred in Guangdong province on 16 November 2002 (CDSR, 2003). However, it was not until 11 February 2003 that provincial health officials broke the silence, ironically, by declaring that the epidemic was under control (*Financial Times*, 2003a; Xinhua News Agency, 2003a). It is obvious that government officials were notified of the disease early on, since a directive from the propaganda ministry was sent to all media outlets in China in early January 2003, instructing all reporters and editors to disregard stories on the spread of a pneumonia-like virus which had killed several people

in Guangdong (United Press International, 2003). The Guangzhou provincial propaganda department issued similar orders in late February to the local media (Huang, 2003). The Propaganda Department of the Central Party Committee, together with local propaganda departments, is directly in charge of media control at the national and local levels. These institutional deficiencies impeded the information flow process during this crucial period.

The initial official response was apparently intended to quell public panic and maintain order in the southern province of Guangdong during a time when an important transfer of power of central government leadership was scheduled to take place in Beijing in spring 2003 (He, 2004). Therefore, government officials at both the provincial and national levels banned the release of SARS-related stories from mid-February until March for fear of derailing its top priority: promoting economic development and attracting foreign investment (Forney, 2003). While Chinese government officials were bogged down in inaction, the virus quickly found its way to more localities, such as Beijing and Shanxi in the north.

Nonetheless, the outbreak of SARS in Hong Kong and other parts of Southeast Asia in mid- to late March quickly shifted global media attention to China (Thomson and Yow, 2004). Following mounting cases in Hanoi and Hong Kong, WHO issued a global alert about SARS on 12 March and declared SARS 'a worldwide health threat' on 15 March (CDSR, 2003). But the Propaganda Ministry instructed the Chinese media not to report this news (Pomfret, 2003; Wall, 2003). However, panic on the street was a clear indication to the average people in major Chinese cities that the epidemic was being taken seriously by the public. While all indications led to the epidemic in Guangzhou as the origin of SARS worldwide, Chinese government officials continued to stonewall and deny its existence. WHO officials sent to investigate SARS were given a cold reception in Beijing in March and their requests to visit Guangzhou met with no response from the Chinese government (Cunningham, 2003).

In late March, more news from Hong Kong and other parts of SARS-infected areas was reported back to the Chinese audience. On 28 March 2003, WHO listed China as one of the world's SARS-infected areas. Mounting international pressure forced the Chinese government to react, as the whole SARS issue had evolved into a crisis for the newly-installed Chinese leadership. On 2 April 2003, premier Wen Jiabao presided over the first State Council executive meeting to discuss the prevention and control of SARS in China. A national 'emergency response mechanism' was set up to deal with sudden outbreaks of public health events, and an inter-ministerial committee was formed to coordinate activities from different government agencies (Xinhua News Agency, 2003b). However, government officials were vehemently dismissing accusations from the international media that they had lied or covered up the SARS epidemic in China.

On 3 April, health minister Zhang Wenkang held a press conference briefing the media on the SARS situation in China. While acknowledging that by the end of March, there were 1190 infections and 46 deaths, with most of them in Guangdong, Zhang said that it was safe to live, work and travel in China and that 'the epidemic of atypical pneumonia has been put under effective control' (Associated Press, 2003; *China Daily*, 2003). Zhang's remarks caught the attention of an insider, Jiang Yanyong, a 72-year-old retired surgeon and former director of the 301 Military Hospital. Jiang, infuriated by the blatant lie from the official side and worried about a public health disaster, decided to contest the official statistics from his first-hand knowledge in treating patients at the hospital. After being spurned by the official Chinese closed-circuit television network and the Hong Kong-based Phoenix Satellite TV (which was partly funded by the Chinese government), Jiang had his revelation published by *Time Online* on 8 April 2003: that at the 309 Military Hospital alone, doctors had admitted 60 patients showing signs of SARS symptoms and seven had died, contradicting the official figures at the time of 12 infections and three deaths in Beijing (Jakes, 2003). Official dispute of Jiang's revelation came on 13 April in a special interview with Meng Xuenong, then Mayor of Beijing, who denied that there were 60 SARS cases in the military hospital and insisted that the disease was under control in the capital city (*Financial Times*, 2003b).

A turning point in the official strategy arrived on 17 April at an emergency meeting of the nine-member Politburo Standing Committee of the Communist Party, the highest decision-making body in Chinese politics. The meeting, chaired by President Hu Jintao, explicitly warned against the cover-up of SARS cases, demanded accurate, timely and honest reporting of the SARS situation at all levels of government agencies, and decided to establish a responsibility monitoring system within the communist hierarchy (*Financial Times*, 2003c).

On 20 April, it was announced that Zhang Wenkang and Meng Xuenong were to be removed from their posts within the Communist Party for their mishandling of the crisis (Foreman, 2003). As another part of the government strategy in crisis management (and in another scene rarely seen in Chinese politics), Liu Qi, the Party boss of Beijing, issued an apology at a publicized meeting of senior officials on 21 April over the 'inaccurate and late disclosure of facts on the disease's spread', 'poor management systems for tackling the virus' and a 'failure to abide by the policy of "early discovery, early reporting, early isolation (of SARS sufferers) and early treatment"' (Skyngge, 2003: 1).

From late April 2003, with closures of schools, cafes, cinemas and many other public facilities, the Chinese government launched a massive nationwide 'People's War' against SARS, called for by President Hu Jintao (Xinhua News Agency, 2003c). The mass media also joined the government effort by urging a patriotic campaign to wage a 'People's War' against the

disease (Bezlova, 2003), and in turning a health campaign into a massive political movement, neighborhood committees and street organizations developed 'community watch' surveillance networks in detecting and reporting SARS cases (*Financial Times*, 2003d). On 24 June 2003, Beijing became the last city in China to be removed from WHO's SARS-infected areas and to have travel advice against the city lifted, marking a milestone in the global war against SARS (*Financial Times*, 2003e).

SMS and the internet as communication tools and alternative resources

Media system dependency theory maintains that audience members' media dependency relations will intensify at times of major crises. In China, when important information is not available from the official media, the Chinese audience often turns to unofficial media outlets for orientation and surveillance. For example, during the 1989 Tiananmen Student Democracy Movement, the Chinese audience relied heavily on western shortwave radio broadcasts, fax machines and international phone lines to obtain information not available from the state-run media. But during the SARS crisis, the internet and SMS emerged as viable alternatives and in some cases, as the main sources of information for people in China, especially in the early phase of the outbreak (Kuhn, 2003; see also Xiao, 2003a, 2003b). When SARS first broke out in November 2002, there was no media coverage at all and no one knew anything about the disease; no information was available from public or private sources. Even when the first news story appeared in early January 2003 in local newspapers (Congressional Executive Commission on China, 2003), not much public attention was given to the issue. It was only in late January when the disease spread to more cities and infected more patients that rumors about a fatal flu quickly spread by word-of-mouth and SMS.

On 8 February 2003, residents in Guangzhou who were just back to work from a week-long Chinese New Year holiday were flooded with the message that a fatal flu was spreading in Guangzhou. On that day, 40 million SMS messages were sent; on 9 February 2003, 41 million messages; and on 10 February, 45 million messages (Chen and Jiang, 2003; see also Jiang, X, 2003). Most messages were about a mysterious virus that had even killed doctors who were supposed to treat patients and people began to panic.

However, people tend not to trust messages like this easily; they know well that there are always those who have fun with creating mischievous notes of this nature. So for many people, the initial response was to seek confirmation (or disconfirmation) from others about the truthfulness of the messages, via phone calls, word-of-mouth or informal, personal networks (Yu and Zhang, 2003). In popular internet chatrooms, similar messages were circulating. However, there had been no confirmation from any official source, so all kinds of rumors began to emerge on the street (Zhou, 2004). The widespread rumors

and other kinds of uncorroborated information created public alarm which pressured the government to respond; this resulted in the two press conferences on 11 February 2003 from the provincial government and municipal government, respectively. At this stage, SMS in combination with informal networks of communication (e.g. email, chatrooms, bulletin board systems) built up a fermenting pressure from within audience members in the state-run media to inform the public what was really happening.

From January to mid-February 2003, SMS played a major role in breaking the news to local residents; the internet only played a marginal role in communicating information about the disease. However, SMS alone did not constitute a credible source for most people; it was when they were able to cross-validate the information from multiple sources that they began to take the disease seriously. The fact that the internet was not a major factor in sourcing information at this stage was largely because the epidemic was still regional in scope, only affecting a few cities in Guangdong province. Under this circumstance, SMS and informal networks were more effective in spreading the message to a local audience.

The internet played a much more important role when the epidemic contaminated more areas, especially when it spread to the neighboring region of Hong Kong. From mid-February 2003, information about an outbreak of an unknown epidemic spread to other parts of the country via internet chatrooms, SMS and word-of-mouth; journalists in Guangzhou received inquiries from colleagues in the nation but they did not know how to respond for lack of specific instructions from the above (Chen and Jiang, 2003). Meanwhile, some online postings from self-appointed experts began to attribute the cause of this illness to anthrax, mouse virus¹ or biotechnology tests (Chen and Jiang, 2003). But the credibility of these claims remained very low and people had no clue as to which to trust (Chen and Jiang, 2003; Yu and Zhang, 2003). Uncertainty about the cause of the disease and how it spread created a natural breeding ground for rumors (Zhou, 2004).

Things began to change when the epidemic attacked Hong Kong from early to mid-March. Unlike their counterparts in Guangzhou, the media and government officials responded in no time to the virus in Hong Kong, and WHO became involved from the start (SARS Expert Committee, 2003). More information began to become available in March from WHO and its website (which is readily accessible in China), including the global alert on 12 March, the announcement of atypical pneumonia as a 'global health threat', the travel advice on 15 March and Guangzhou as the original source of the disease (CDSR, 2003). At this point, people began to turn to the internet for more information, especially websites in Hong Kong, Singapore and Taiwan, most of which were not banned in China. Meanwhile, many surfers who got hold of fragments of information were posting on the bulletin boards of major portal sites in China (Hoenig, 2003). The internet

created a venue of public communication which had not been available before in the face of such a major crisis for Chinese citizens.

The government continued with its old style of information control in the face of the SARS epidemic up to early April (He, 2004). In the meantime, people who were more vigilant knew that there was a problem in China and began to pay attention to SARS-related information from internet sources. The amount of available information about SARS increased as international pressure on the Chinese authority was mounting to change its approach in dealing with SARS. The government was certainly aware of the spread of information on the internet at this time, because website managers received government directives to remove 'negative' postings about deadly diseases, and violators could face fines or punishment (Saiget, 2003; Wade, 2003). This proved to be a mission impossible, since there are hundreds of thousands of registered users on any of the major portal sites and tens of thousands are engaged in online chatting on a typical day (Tang and Liu, 2004). At first, major portal sites closely followed government orders in filtering 'undesirable' postings; however, as time went by and as the epidemic spread to more localities, many content managers turned a blind eye to SARS-related postings and left them unremoved (Kuhn, 2003), whether out of their own conscience or negligence.

For those who had been exposed to the internet or overseas media on the situation of SARS in China, it was Zhang Wenkang's well-publicized press conference that turned them off (Hoenig, 2003). Although they had no specific clue as to the exact scope of this disaster, they were sure that what the minister said at the conference was only a half-truth. From early April, news about SARS was no longer banned by the government; however, the official media strictly followed the government line in assuring the public that the disease was under control. Most online postings begged to differ (Gittings, 2003; see also Kuhn, 2003). Many college students — the most likely internet adopters in China — were glued to the internet, hungry for information about SARS, while increasing numbers of college campuses set up special bulletin board sections for students to exchange information with one another. Students not only posted news about the situation of SARS infections on their campuses (Ma, 2003a, 2003b), but also condemned the government for lack of transparency in handling the crisis (Ma, 2003c). The heavy reliance on the internet as an information source on SARS explained why college students led all other groups in fleeing the capital in April (Rang Lim, 2003; Ma, 2003c).

From early April until 20 April, even when more information became available from the official media in the wake of the official acknowledgement of the SARS outbreak, Chinese 'netizens' desperately sought alternative information from online media, with many of them posting their findings on bulletin boards to counter the official side of the story. Meanwhile, most

website administrators adopted a more tolerant attitude towards messages posted in chatrooms and on bulletin boards. The event that catalyzed this online behavior was, of course, the letter from Dr Jiang Yanyong, which was already well circulated and well read by mid-April. Encouraged by Jiang's bravery, many doctors, nurses and others followed Jiang's example in exposing government lies by telling the truth about what had been happening in local hospitals (see for example, Beech, 2003; Deutsche Presse Agentur, 2003).

Then came the government order for a 'full disclosure' on 20 April. This was the breeze of freedom for which all the media had been praying. There was an immediate explosion of SARS-related stories and columns about SARS prevention. However, contrary to what might have been expected, the initial response from the general public to this 'full disclosure' was a nationwide panic, mainly caused by this sudden turn from little to too much information about the disease. However, the public soon calmed down as it got closer to the truth and quickly joined the government campaign in conquering the disease. In response to the 'full disclosure' order, major Chinese portals immediately published special SARS-related sections to accommodate the rising demand for online information." Special coverage, daily statistics, exclusives, emergency measures — anything and everything in relation to SARS became hot items for the portal sites.

In a telephone survey of the residents of five Chinese cities (Beijing, Chongqing, Guangzhou, Nanjing and Shanghai) from 23—25 May 2003, it was found that more than 40 percent of the respondents first heard about SARS through sources other than the mainstream media. In Guangzhou, where the epidemic first broke out, the percentage was as high as 60 percent. In terms of the specific channels through which people first received the news about SARS, people mainly said that they heard it from others (56.7%), got the information from talking to others (such as on the phone) (19.4%), or from the internet (14.2%) (Sina.com, 2003b). From the lack of detail about the exact wording of the questions, it is assumed that the first category, 'heard it from others', includes SMS and being passively exposed to the information.

Several points are worth mentioning here. First, the survey was conducted more than a month after the government's 'full disclosure' policy and by this point all kinds of information were readily available from all media sources. Second, the survey did not ask people *when* they heard the news, but instead focused on *how*. It is reasonable to assume that most of those who said that they heard the news from non-mainstream media most likely learned of the disease early and, had efforts been made to determine the origin of the sources of information (i.e. the network of informant—*informed* relationships), it is likely that the internet would be named as a main source of SARS-related information for the early informants at a time when most official media were silent about the issue. Regardless of this, the role of the internet in the information flow process of the early stages of the SARS outbreak should not be underestimated.

DISCUSSION

With media system dependency theory as the primary theoretical framework, this study set out to examine media dependencies among the Chinese audience in the face of the 2003 SARS epidemic. In particular, this research explored how the Chinese people responded to a major public health crisis by utilizing various alternative communication resources in a rapidly-changing information environment spearheaded by the internet and other new communication technologies when crucial information was not available from the mainstream media from the emergence of the disease to early April, before the government adopted the 'full disclosure' policy.

It has been argued that media dependency relations (either with an entire media system or a particular medium) are determined mainly by the degree to which a society is undergoing change, conflict or instability and the degree to which the media function as a central source of information (Ball-Rokeach and DeFleur, 1979; McQuail and Wmdahl, 1993). The SARS epidemic of 2003 in China exemplifies these two conditions well: there was a high level of confusion and ambiguity in Chinese society during times of an unfolding public health crisis and people were in desperate need of crucial information from the media on the cause, development, prevention and cure of the disease. This represents one of the scenarios in which media dependency relations are the most salient.

To compound the situation, there are significant structural barriers that crippled the flow of vital SARS-related information in Chinese society at the macro-level. Inevitably, SARS points to the lack of transparency and public accountability in the Chinese polity (e.g. Thiers, 2003; Zheng and Lye, 2004), which accounts for the official unresponsiveness in the early stages of the crisis. Much of the delay, confusion and miscommunication in the early phase of the SARS crisis is attributable to the dysfunctional institutional politics of the authoritarian Chinese regime. There has been much debate already about the institutional ailments in Chinese politics in the SARS case, as illustrated by Huang's remarks below:

The pattern of the Chinese government's response to SARS was shaped by the institutional dynamics of the country's political system. A deeply ingrained authoritarian impulse to maintain secrecy, in conjunction with a performance based legitimacy and an obsession with development and stability during political succession, contributed to China's initial failure to publicize the outbreak. Meanwhile, an upwardly directed system of accountability, a fragmented bureaucracy and an oligarchic political structure hampered any effective government response to the outbreak. (Huang, 2004: 130)

Inattention to the outbreak of the SARS epidemic on the part of the central authority and the failure of the central government to tackle the disease at the beginning meant that the state could not act as a dependable source of information and support for the ordinary citizens as the crisis deepened.

information. Instead, they may take the lead in breaking the news and creating a network of communication that sits outside of the official domain. The decreased dependency of the public on the government and official media as sources of information implies a more powerful audience, which can challenge the party-state's monopoly over information and extract a certain degree of responsiveness from the state under unusual circumstances. Of course, all these new dependency relations have been made possible by the changing information environment of evolving new communication technologies such as SMS and the internet.

Internet communication such as bulletin boards, chatrooms, multi-user domains (MUDs) and MUDs object-oriented (MOOs) is primarily playful in nature (e.g. Pesce, 2000; Shedletsky and Aitken, 2004; Turkle, 1997). This is also normally true with communication over SMS. It fits nicely with one of the three dependency relations delineated by Ball-Rokeach (1985). However, individual dependency relations with these communication systems shifted to orientation and understanding during the SARS epidemic, as shown in this study. This indicates the nature of multidimensionality of dependency relationships, suggesting that understanding of particular dependencies over certain mediums should be contextualized rather than generalized.

The study is limited in the sense that the evidence presented concerning individual dependency relations over SMS and the internet during the SARS outbreak has been largely anecdotal. In-depth interviews and first-hand accounts from a substantially larger number of individuals would be more helpful in this regard. Future research needs to collect evidence from a large number of audience members by following a more systematic approach in order to investigate further the dynamics of dependency relations with new media platforms such as the internet and SMS in the face of unfolding public crisis.

CONCLUSION

Information flow during the 2003 SARS crisis among individuals in China provides an excellent case to evaluate the changing nature of media dependency relations brought about by the dynamic interplay among new information technologies, interpersonal or informal networks and conventional media. The SARS epidemic also offers important perspectives into the evolving interactions among audience, media and state in the highly-controlled communication environment in the Chinese context. Moreover, the SARS case also sheds light on the prospect of new communication technologies spearheaded by the internet as an empowerment tool for individuals to bypass official control and create alternative communication resources in Chinese society, where the authoritarian state controls vital channels of information. It also demonstrates how user-generated content made possible by the changing media environment can shape the course of developments of events during major public crises in an authoritarian state.

Of course, the internet remains very much early in its development and new online applications are being invented or reinvented constantly. As the internet further penetrates every aspect of human life and as new media formats are diffused in society, future research needs to examine the persistent nature of media dependency relations and structural transformations in the evolving tripartite state—media—audience relationship brought about by these new media platforms in different media systems under different circumstances.

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Notes

- 1 Mouse virus is an engineered virus which is created typically in laboratory conditions. It can be spread by mice to human beings, causing epidemics or other public health crises, hence there was a rumor that SARS was one type of this kind of virus.
- 2 See, for example, the special coverage pages of SARS at Sina.com: <http://finance.sina.com.cn/nz/nfzmsars/index.shtml>; Sohu.com: http://news.sohu.com/57/26/subject_206252657.shtml; Eastday.com: <http://sars.eastday.com/>; and Qianlong.com: <http://china.qianlong.com/fd/>

References

- 8080.net (2004) 'News Summary: Chinese Mobile Phone Users Surpassed 300 Million', 22 June, URL (consulted June 2005): <http://www.8080.net/html/200406/m221044580.html>
- Associated Press (2003) 'Chinese Government Figures Show SARS Outbreak in Southern Province May Be Slowing Down', wire news, 3 April.
- Ball-Rokeach, S.J. (1985) 'The Origins of Individual Media System Dependency: A Sociological Framework', *Communication Research* 12(4): 485-510.
- Ball-Rokeach, S.J. (1998) 'A Theory of Media Power and a Theory of Media Use: Different Stories, Questions and Ways of Thinking', *Mass Communication & Society* 1(1-2): 5-40.
- Ball-Rokeach, S.J. and M.L. DeFleur (1976) 'A Dependency Model of Mass-media Effects', *Communication Research* 3(1): 3-21.
- Ball-Rokeach, S.J. and M.L. DeFleur (1979) 'A Dependency Model of Mass-media Effects', in Gary Gumpert (ed.) *Inter/Media*, pp. 81-96. New York: Free Press.
- Ball-Rokeach, S.J., M. Rokeach and J.W. Grube (1984) *The Great American Values Test: Influencing Behavior and Belief through Television*. New York: Free Press.
- Ball-Rokeach, S.J., G.J., Power, K.K. Guthrie and H.R. Waring (1990) 'Value-framing Abortion in the United States: An Application of Media System Dependency Theory', *International Journal of Public Opinion Research* 2(3): 249-73.
- Ball-Rokeach, S.J., M. Hale, A. Schaffer, L. Porras, P. Harris and M. Drayton (1999) 'Changing the Media Production Process: from Aggressive to Injury-sensitive Traffic Crash Stories', in D. Demers and K. Viswanath (eds) *Mass Media, Social Control and Social Change: a Macrosocial Perspective*, pp. 229-62. Ames, IA: Iowa State University Press.
- Beech, H. 'Unmasking a Crisis. Time Investigates: As SARS Rages in China, Officials Seem More Intent on Saving Face than Saving Lives', *Time*, 21 April, p. 62.

- Bezlova, A. (2003) 'Health - China: Anti-SARS Drive No Less than a People's War', inter-press service, 2 May.
- Black, J. and J. Bryant (1995) *Introduction to Mass Communication* (4th edn). Madison, WI: Brown & Benchmark.
- Cantor, M.G. (1980) *Prime Time Television: Content and Control*. Beverly Hills, CA: Sage.
- Chen, H. and H. Jiang (2003) 'Guangzhou kangji burning bingdu ['Guangzhou Fights against an Unknown Virus'], *Nanfang Weekend Daily Online*, 13 February, URL (consulted May 2004): <http://www.nanfangdaily.com.cn/zm/20030213/xw/tb/200302130499.asp>
- China Daily* (2002) 'Domestic Cell Phone Users Hit 170 Million, the World's Most', 22 June.
- China Daily* (2003) 'Minister: Epidemic under Control', 13 April.
- China Internet Network Information Center (2005), *The 15 Internet Development Statistical Report*. URL (consulted June 2005): <http://www.cnnic.org.cn/download/2005/2005011801.pdf>
- Chinese Academy of Social Sciences (2003) 'Internet Development Report in Twelve Chinese Cities in 2003', URL (consulted June 2005): <http://www.wipchina.org/index.php/download/4>
- Communicable Disease Surveillance and Response (CDSR) (2003) 'Severe Acute Respiratory Syndrome (SARS)', World Health Organization, URL (consulted October 2004): http://www.who.int/csr/media/sars_wha.pdf
- Congressional Executive Commission on China (2003) 'Information Control and Self-censorship in the PRC and the Spread of SARS', URL (consulted May 2004): http://www.cecc.gov/pages/news/prcControl_SARS.ph.p
- Cunningham, R.J. (2003) 'Constraints on China's Coverage of SARS: For a Variety of Reasons, Neither the Government Nor the Press Handled the Medical Crisis Well', *Nieman Reports* 57(2): 50-3.
- DeFleur, M.L. and S. Ball-Rokeach (1989) *Theories of Mass Communication* (5th edn). New York: Longman.
- Deutsche Presse Agentur (2003) 'Magazine Investigation Reveals "Truth" Inside Beijing's SARS Wards', press agency, 14 April.
- Donald, S.H., M. Keane and Y. Hong (eds) (2002) *Media in China: Consumption, Content and Crisis*. New York: Routledge Curzon.
- el lth Hour (2003) 'SARS Country Breakdown', Sources from BBC News, Centers for Disease Control, CNN, ReliefWeb, Reuters, World Health Organization, July, URL (consulted May 2004): <http://vwww.el lth-hour.org/resources/timehnes/sars.countries.html>
- Financial Times* (2003a) 'Pneumonia "under control" in China's Guangdong Province after Five Dead', Global News Wire, 12 February.
- Financial Times* (2003b) 'Beijing Mayor Says SARS under Control, Denies 60 Cases Detected in Army Hospital', Global News Wire, 14 April.
- Financial Times* (2003c) 'China: Politburo Standing Committee Meets to Discuss SARS Control', Global News Wire, 17 April.
- Financial Times* (2003d) WHO Experts in China Praises "Unique" SARS Surveillance System', Global News Wire, 13 May.
- Financial Times* (2003e) 'WHO Lifts SARS Advisories against Chinese Capital', Global News Wire, 24 June.
- Foreman, W. (2003) 'China Fires Health Minister and Beijing Mayor, Cancels Massive Holiday after New Jump in SARS Deaths', Associated Press, 20 April.
- Forney, M. (2003) 'Stalking a Killer: How Did a Deadly Virus Find Its Way from Southern China to the Rest of the World?' *Time Online*, 14 April, URL (consulted July 2004): <http://www.time.com/time/asia/covers/501030421/tictoc.html>

- Gittings, J. (2003) 'Beijing Is Losing the People's War in Cyberspace', 21 July, *YaleGlobal*, URL (consulted June 2005): <http://ydeglobal.yale.edu/display.articlePicH2133>
- Grant, A.E., K.K. Guthrie and S.J. Ball-Rokeach (1991) 'Television Shopping: A Media System Dependency Perspective', *Communication Research* 18(6): 773-98.
- Halpern, P. (1994) 'Media Dependency and Political Perceptions in an Authoritarian Political System', *Journal of Communication* 44(4): 39-52.
- He, B. (2004) 'SARS and Freedom of Press: Has the Chinese Government Learnt a Lesson?', in J. Wong and Y. Zheng (eds) *The SARS Epidemic: Challenges to China's Crisis Management*, pp. 181—98. River Edge, NJ: World Scientific Publishing.
- Herring, S.C. (2004) 'Slouching Toward the Ordinary: Current Trends in Computer-mediated Communication', *New Media & Society* 6(1): 26-36.
- Hirschburg, P.L., D.A. Dillman and S.J. Ball-Rokeach (1986) 'Media System Dependency Theory: Responses to the Eruption of Mount St Helens', in S. Ball-Rokeach and M. Cantor (eds) *Media, Audience and Social Structure*, pp. 117—26. Beverly Hills, CA: Sage.
- Hoenig, H. (2003) 'SARS Virus Attacks State Control of the News', *New Zealand Herald*, 26 April, URL (consulted March 2004): <http://www.nzherald.co.nz/feature/story.cfm?cjd=619&objectid=3451301>
- Huang, J. (2003) 'SMS Triggers the Economy of the Thumb: Secret of its Instantaneous Success', *Sina.com*, 14 July, URL (consulted May 2004): <http://tech.sina.com.cn/it/t/2003-07-14/1522209178.shtml>
- Huang, Y. (2004) 'The SARS Epidemic and its Aftermath in China: A Political Perspective', in S. Knobler, A. Mahmoud, S. Lemon, A. Mack, L. Sivitz and K. Oberholtzer (eds) *Learning from SARS: Preparing for the Next Disease Outbreak*, pp. 116-36. Washington, DC: National Academies Press.
- Jakes, S. (2003) 'Beijing's SARS Attack', *Time Online*, 8 April, URL (consulted May 2004): <http://www.time.com/time/asia/news/daily/0,9754,441615,00.html>
- Jiang, C. (2003) 'SMS in China', URL (consulted May 2004) <http://journalism.berkeley.edu/projects/chinadn/en/archives/SMS%20in%20China.doc>
- Jiang, X. (2003) 'Perspective: A Periscope of SMS in China', *BBC News* (Chinese version), 6 June, URL (consulted May 2004): http://news.bbc.co.uk/hi/chinese/china_news/newsid_2993000/29935721.stm.
- Kang Lim, B. (2003) 'Panicking Crowds Flee Chinese Capital', *New Zealand Herald*, 24 April, URL (consulted March 2004): http://www.nzherald.co.nz/feature/story.cfm?c_id=619&objectid=3450925
- Kim, Y.C.J.Y. Jung, E.L. Cohen and S.J. Ball-Rokeach (2004) 'Internet Connectedness Before and After September 11, 2001', *New Media & Society* 6(5): 611-31.
- Kuhn, A. (2003) 'Chinese Learn True Scope of SARS from the Internet', *USC Annenberg Online Journalism Review*, 5 May, URL (consulted May 2004): http://www.ojr.org/ojr/world_reports/1053657288.php
- Lievrouw, L.A. (2004) 'What's Changed about New Media? Introduction to the Fifth Anniversary Issue of *New Media & Society*', *New Media & Society* 6(1): 9-15.
- Loges, W.E. (1994) 'Canaries in the Coal Mine: Perceptions of Threat and Media System Dependency Relations', *Communication Research* 21(1): 5-23.
- Loges, W.E. and S.J. Ball-Rokeach (1993) 'Dependency Relations and Newspaper Readership', *Journalism Quarterly* 70(3): 602-14.
- Lynch, DC. (1999) *After the Propaganda State: Media, Politics and 'Thought Work' in Reformed China*. Stanford, CA: Stanford University Press.
- McQuail, D. and S. Windahl (1993) *Communication Models for the Study of Mass Communication* (2nd edn). New York: Longman.
- Ma, J. (2003a) 'Party Leaders in Emergency Talks on SARS', *South China Morning Post*, 18 April, p. A1.

- Ma, J. (2003b) 'Shanxi Medical School Sealed Off', *South China Morning Post*, 2 May, p. A3.
- Ma, J. (2003c) 'Virus Spreads Panic among Beijing Students: The Education Ministry Remains Silent as Two Leading Universities Halt Classes after Lectures Are Infected with SARS', *South China Morning Post*, 17 April, p. A2.
- Merskin, D. (1999) 'Mecjia Dependency Theory: Origins and Directions', in D. Demers and K. Viswanath (eds) *Mass Media, Social Control and Social Change: A Macrosocial Perspective*, pp. 77–98. Ames, IA: Iowa State University Press.
- Morton, T. A. and J. M. Duck (2000) 'Social Identity and Media Dependency in the Gay Community: The Prediction of Safe Sex Attitudes', *Communication Research* 27(4): 438–60.
- Pesce, M. (2000) *The Playful World: How Technology is Transforming Our Imagination*. New York: Ballantine Books.
- Pomfret, J. (2003) 'Outbreak Gave China's Hu an Opening', *Washington Post*, 13 May, p. A1.
- Power, J. G. (1995) 'Media Dependency, Bubonic Plague and the Social Construction of the Chinese Other', *Journal of Communication Inquiry* 19(1): 89–110.
- Ramie, L. and P. Bell (2004) 'The Numbers that Count', *New Media & Society* 6(1): 44–54.
- Rubin, A. M. and S. Wmdahl (1986) 'The Uses and Dependency Model of Mass Communication', *Critical Studies in Mass Communication* 3(2): 184–99.
- Saiget, R. J. (2003) 'China Gags SARS Talk on Internet Chatrooms', Agence France Presse, 6 April.
- SARS Expert Committee (2003) 'SARS Expert Committee Report', 2 October, URL (consulted June 2005): http://www.sars-expertcom.gov.hk/english/reports/summary/files/e_sumprt_fulltext.pdf
- Shedletsky, L. J. and J. E. Aitken (2004) *Human Communication on the Internet*. New York: Pearson Education.
- Sina.com (2003a) 'SMS Has Become the "Fifth Medium?"', 24 February, URL (consulted May 2004): <http://tech.sma.com.cn/it/t/2003-02-24/1454167580.shtml>
- Sina.com (2003b) 'Weekend: Opinion Survey on Atypical Pneumonia in Five Big Cities', 1 June, URL (consulted May 2004): <http://news.sma.com.cn/c/2003-06-01/19521123697.shtml>
- Skumanich, S. A. and D. P. Kintsfather (1998) 'Individual Media Dependency Relations within Television Shopping Programming: A Causal Model Reviewed and Revised', *Communication Research* 25(2): 200–19.
- Skynge, J. (2003) 'Admission on SARS Fractures Beijing's Wall of Secrecy: Rare Apology from Top Official Could Herald New Openness', *Financial Times*, 22 April, p. 1.
- Song, W., X. Zhan and W. Cheng (2005) 'Five Years of SMS: The Fifth Medium - SMS or Internet?', *Xinhuanet.com*, URL (consulted June 2005): http://news.xinhuanet.com/newmedia/2005-05/12/content_2949495.htm
- Sun, T., T. K. Chang and G. Yu (2001) 'Social Structure, Media System and Audiences in China: Testing the Uses and Dependency Model', *Mass Communication and Society* 4(2): 199–217.
- Tai, Z. (2006) *The Internet in China: Cyberspace and Civil Society*. New York: Routledge.
- Tang, J. and L. Liu (2004) 'China Builds a Net of Safety on the Internet', *News Weekly* (China), 5 April, URL (consulted May 2004): <http://my.cnd.org/modules/wfsection/print.php?articleid=6610>
- Taylor, D. S. E. (1992) 'Application of the Uses and Dependency Model of Mass Communication to Development Communication in the Western Area of Sierra Leone', unpublished PhD thesis, Kent State University.
- Thiers, P. (2003) 'Risk Society Comes to China: SARS, Transparency and Public Accountability', *Asian Perspectives* 27(2): 241–51.
- Thomson, E. and C. H. Yow (2004) 'The Hong Kong SAR Government, Civil Society and SARS', in J. Wong and Y. Zheng (eds) *The SARS Epidemic: Challenges to China's Crisis Management*, pp. 199–220. River Edge, NJ: World Scientific Publishing.

- Tuchman, G. (1978) *Making News: A Study in the Construction of Reality*. New York: Free Press.
- Turkic, S. (1997) *Life on the Screen: Identity in the Age of the Internet*. New York: Touchstone.
- United Press International (2003) 'Analysis: China in Continued SARS Denial', 8 April.
- Wade, C.M. (2003) 'Analysis: China in Continued Denial', United Press International, 8 April.
- Wall, D. (2003) 'SARS Set Off Power Struggle in Beijing', *Japan Times*, 19 May, URL (consulted March 2004): <http://search.japantimes.co.jp/cgi-bin/eo20030519a1.html>
- Waring, H.R. (1996) 'Media System Dependency and Identity: The Development of America's Gay and Lesbian Alternative Media and the Transformation of Homosexuality', unpublished PhD thesis, University of Southern California.
- Wong, J. and S.L. Nah (2001) *China's Emerging New Economy. The Internet and e-Commerce*. Singapore/River Edge, NJ: Singapore University Press/World Scientific Publishing.
- Xiao, Q. (2003a) 'Testimony Before the U.S.-China Economic and Security Review Commission', URL (consulted May 2004): <http://www.uscc.gov/researchreports/2000-2003/reports/qiates.htm>
- Xiao, Q. (2003b) 'Cyber Speech: Catalyzing Free Expression and Civil Society', *Harvard International Review* 25(2): 70-5.
- Xinhuanet.com (2005) 'SMS Spreads like an Erupting Volcano: An Overview of SMS in China', URL (consulted June 2005): http://news.xinhuanet.com/newmedia/2005-05/12/content_2949398.htm
- Xinhua News Agency (2003a) 'Pneumonia Outbreak under Control in Guangzhou', 11 February.
- Xinhua News Agency (2003b) 'Wen Jiabao Chairs State Council Executive Meeting, Discusses SARS, State Council Work', 2 April.
- Xinhua News Agency (2003c) 'Chinese President in Tianjin Calls for 'People's War' Against SARS', 1 May.
- Yu, X. and J. Zhang (2003) 'Guangzhou: Five Days of Crisis', *Southern Weekend*, 20 February, URL (consulted May 2004): <http://www.nafangdaily.coni.cn/zm/20030220/cs/csfm/200302200863.asp>
- Zhang, Y. (2000) 'From Masses to Audience: Changing Media Ideologies and Practices in Reform China', *Journalism Studies* 1(4): 617-35.
- Zhao, Y. (1998) *Media, Market and Democracy in China: Between the Party Line and the Bottom Line*. Urbana, IL: University of Illinois Press.
- Zhao, Y. (2000) 'From Commercialization to Conglomeration: The Transformation of the Chinese Press within the Orbit of the Party State', *Journal of Communication* 50(2): 3-26.
- Zheng, Y. and L.F. Lye (2004) 'SARS and China's Political System', in J. Wong and Y. Zheng (eds) *The SARS Epidemic: Challenges to China's Crisis Management*, pp. 45-75. River Edge, NJ: World Scientific Publishing.
- Zhou, X. (2004) 'A Transformation of Communication: A Social Psychological Analysis of Rumors in Relation to SARS', URL (consulted June 2005): <http://www.folkcn.com/news/Class/xssy/ztyj/25623313.htm>

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