

INVESTIGATING INTERNATIONAL NEWS FLOW: A COMPARATIVE STUDY  
OF AMERICAN AND CHINESE NEWSPAPER COVERAGE OF BEIJING'S AIR  
POLLUTION

By

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A THESIS

Submitted to  
Michigan State University  
in partial fulfillment of the requirements  
for the degree of

Journalism—Master of Arts

2014

## ABSTRACT

### INVESTIGATING INTERNATIONAL NEWS FLOW: A COMPARATIVE STUDY OF AMERICAN AND CHINESE NEWSPAPER COVERAGE OF BEIJING'S AIR POLLUTION

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This study applies Reese and Shoemaker's hierarchy-of-influences approach and takes a novel perspective of international news flow to comparatively study American and Chinese media's coverage of Beijing's air pollution. Although a hot-debated issue, media coverage of Beijing's air pollution has rarely been analyzed thoroughly. This study finds that the two countries' newspaper coverage of the topic has both differences and similarities concerning topic priorities, source usage, and overall frames. The U.S. media covered the issue earlier. That coverage had more political topics, more negative frames, and more U.S. sources, as well as a noticeable number of Chinese NGO sources. By comparison, Chinese media covered the issue with more self-legitimizing topics in which strategies of pollution-mitigation were emphasized; it also framed the issue with mild self-criticism, projecting the issue with more of an "international public relations" strategy. Using content analysis, this study samples China Daily and the New York Times, examining news articles between 2008 and 2013 and dividing them into three time periods: pre-Olympic period, post-Olympic period, and 2013 incident period. This study explores a broader and more sophisticated approach and prospective to study American and Chinese media.

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## ACKNOWLEDGEMENTS

I finished my M.A. thesis under the guidance of Professor Bruno Takahashi. I would like to express my sincere appreciation for all your support and encouragement during the research process. Also, I would like to thank my thesis committee members, Professor Stephen Lacy and Professor Eric Freedman, who advised me to improve the content analysis protocol and the thesis content.

I spent two years studying at Michigan State University. During this time, I have met kind and knowledgeable professors, who guided me all the way here to graduate with a Master's Degree. I'm also very deeply grateful to my family, my parents in my home country, China, who financially supported me and gave me this opportunity to study in the U.S. Also, I want to say thank you to my boyfriend, Jun. He gave me crucial advice and helped me deal with the coding works for this thesis. Thanks for cheering me up. I am so happy to have completed my thesis and would like to thank all of the professors I met, my dearest parents, and friends and everyone who once gave me a hand on this road.

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## KEY TO ABBREVIATIONS

AQI .....Air Quality Index

IOC.....International Olympic Committee

NYT .....The New York Times

WHO.....World Health Organization

## **CHAPTER I INTRODUCTION**

### **An Overview of Beijing's Air Pollution as a Development Issue**

Beijing's air pollution has drawn media attention around the world, especially the attention of Chinese and U.S. media. Initially in 2008, the year when the Beijing Olympic Games took place, Beijing's air quality was criticized by U.S. media and described as "not healthy enough for a world-class race" (Scocca, 2008). Since then, it has become one of the most important reporting angles in American media's coverage of the Olympic Games (Min & Zhen, 2010).

Many industrialized countries have experienced such environmental problems, for example, water and air pollution, acid rain, and deforestation (Chapman & Sharma, 2002). As the second-largest economy in the world, China is no exception (Barboza, 2010). China started to open to the Western world and to reform its economic structure in 1978 (Wu, 2000). As Wu (2000) suggested, one of the main changes was increasing marketization. After twenty years of efforts, China has made remarkable economic achievements in this overall reform, globalizing, opening up, and modernizing. However, the country faces environmental degradation produced by this extensive economic growth and rapid industrialization.

Although other factors such as overpopulation have also caused environmental problems, the emphasis on increasing the country's Gross Domestic Product (GDP) and other economic indicators (i.e. exports, employment rate) has led to the neglect of environmental protection, thus accelerating the environmental degradation (Economy,

2011). Air pollution is a typical example, with most of the pollutants being a byproduct of industrial waste, burning coal, and other industrial activities. For a long time since 1978, China emphasized only GDP growth, but late in 1998, research found that Chinese bureaucrats had started to put equal emphasis on economic growth and environmental protection (Edmonds, 1998).

In 2004, Chinese policy-makers proposed a new package of concepts called “green GDP,” hoping to consider environmental costs when developing the economy (*Economist*, 2004). Later in 2007, studies found that the government gradually switched environmental policy from “treatment after deterioration” to “protection before deterioration.” Although the environmental protection policies are receiving increasing emphasis, China’s environmental condition is still in the stage of “partial improvement, but comprehensively degrading” (Zheng, 2007, p.3). Such problems have become severe and may affect life quality, public health, safety, and even social stability (Feng, Brewer, & Ley, 2012). Therefore, the government started to make a greater effort to build harmonious relationships between economic development and the environment, and state media coverage of such air pollution problems thus became more open and critical.

Since China’s environmental problems surfaced and media coverage of them has become a popular research topic, this study compares the American and Chinese media coverage of Beijing’s air pollution. The goal of this study is to investigate the underlying international news flow with regards to news topics, overall frames, and news source usage.

## **Beijing air pollution timeline**

Among many severe impacts of Beijing's air pollution, health cost is most significant since studies have confirmed associated health problems and premature deaths. The severity of health impacts of air pollution has been gradually confirmed across the past time periods. Wang and Mauzerall (2006) have quantitatively estimated the health impacts and damage costs due to anthropogenic emissions of air pollutants and estimated that the polluting emissions caused approximately an additional 6,000 deaths in 2000 in the Zaozhuang region in China. As the health issues getting more and more important, researchers then found the so-called "ambient particulate matter pollution" was the fourth-leading risk factor of deaths in China in 2010, behind dietary risks, high blood pressure, and smoking, according to the Health Effects Institute (Wong, 2013). The linkage between outdoor air pollution and premature deaths was also found in Chinese reports jointly conducted by the World Bank and the Chinese Ministry of Environmental Protection; they concluded that 350,000 to 400,000 people die prematurely in China each year because of outdoor air pollution (Wong, 2013).

Air pollution problems have long been existed in Beijing, one of the most populous cities in the world with more than 20 million people (World Population Review, 2014). With population growth and increasingly rapid urbanization brought by industrialization, a number of mega-cities have emerged in China since 1990 (Chan & Yao, 2008). There also has been a growing number of vehicles on many cities' roads. In 2013, car ownership reached 137 million, which was 5.7 times the number as in 2003;

car ownership in Beijing exceeded 5 million (Ministry of Public Security of China, 2014). Air pollution has become an important concern in major cities, such as Beijing, Shanghai, and Guangzhou, among which Beijing's attracts more attention from international media organizations. The first reason is that the Olympic Games popularized the issue and attracted worldwide media attention (Qing and Richeri, 2012, pp. 230-405). Another explanation is that it is the national capital and the premier political, cultural, and educational center, leading to more global attention. Also, Beijing is a direct-controlled municipality, which means it is directly under the central government. It is surrounded by Hebei Province, which has many more longstanding traditionally polluting enterprises and energy users than other cities in the south.

Beijing's air pollution gradually received more attention with the involvement of social media and foreign media sources such as the U.S. embassy. The political debate over publication of data of PM 10 or PM 2.5<sup>1</sup> (which is more detrimental to people's health) in China started in 2011. During that post-Olympic period, based on the foreign sources' Air Quality Index (AQI) data, air pollution problems were heatedly debated on the Internet, which even affected policy-making regarding setting the AQI polluting standard in Beijing (Zheng, 2012). In 2013, the U.S. embassy's Twitter account disseminated even worse AQI data, which made the media and public

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1 Particulate matters or PM, is the term for particles found in the air, including dust, dirt, soot, smoke, and liquid droplets. PM2.5 particles are air pollutants with a diameter of 2.5 micrometers or less, small enough to invade even the smallest airways. "PM2.5", Wikipedia, Retrieved from <http://wiki.china.org.cn/wiki/index.php/PM2.5>

attention rise to a new level. That situation originated and developed under the influence of several external forces. Therefore, it is broken down into the following three time periods.

January 1, 2008- September 17, 2008, Pre-Olympics; Olympics (August 8- August 24, 2008); and Paralympic Games (September 6-September 17, 2008). During the pre-Olympics and Olympics periods, based on the preliminary review of the analyzed articles, Chinese and American media coverage framed the issue in the context of the Olympic Games, with the main focus on whether the poor air quality could harm the athletes. The Chinese press concentrated on pollution-mitigating strategies, such as temporarily closing polluting industries; U.S. stories expressed doubts about the effectiveness of these strategies and questioned Chinese air-quality monitoring apparatus.

September 18, 2008- December 31, 2012, Post-Olympics period. During this time, the issue constantly received world-wide media attention. Articles reported about air pollution monitoring, the public debate about pollution-mitigating policies, and related matters. Pan Shiyi, a Chinese celebrity and a Chinese business magnate, noticed that the data from the city's AQI data were consistently better than the data from the U.S. embassy's monitoring apparatus. Pan pointed out this discrepancy on his microblog at "Weibo," China's most popular Twitter-like social media platform. Soon he claimed that there had been an exclusion or omission of the index of PM<sub>2.5</sub> by Beijing Environmental Protection Bureau (Pan, 2011). PM<sub>2.5</sub>, which is deadly fine particulate matter, then came into public sphere and quickly raised heated discussions

on Chinese social media. Under such circumstances, in 2012, the Ministry of Environmental Protection released more conservative air pollution data (PM2.5) to the public, and state media started to cover the issue more openly and critically.

January, 1, 2013-December 31, 2013. Beijing air pollution in 2013. During this year, starting on January 12, Beijing's "crazy bad"<sup>2</sup> AQI was released through the U.S. embassy's Twitter account (Wong, 2013). It reported that the AQI, as measured by the embassy, reached above 500, which was supposed to be the top of the scale, according to standards set by the U.S. Environmental Protection Agency (EPA). Shortly after that, Beijing's air pollution reemerged to be a hot-debated international topic, as both Chinese and US mainstream media had devoted considerable attention to the problem (Wong, 2013).

### **The Mass Media's Role in Beijing's Air Pollution**

Faced with China's economic rise and rising international status, both Chinese and international news media (including U.S. mainstream media) devoted considerable attention to the problems (Wong, 2013). A local environmental problem was internationalized and has been viewed as highly newsworthy since the 2008 Olympics.

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<sup>2</sup>"Crazy bad" is a term from a Twitter post and it was mentioned as a label of Beijing's air quality for several times in the New York Times. As the New York Times reported, on January 11, 2013, an air-quality monitoring device atop the U.S. embassy recorded data so horrifying that someone in the embassy called the level of pollution "Crazy Bad" in a Twitter post. The term "crazy bad" was mentioned several times in that article. Wong (2013, January 12), On Scale of 0 to 500, Beijing's Air Quality Tops 'Crazy Bad' at 755, *New York Times*, Retrieved from <http://www.nytimes.com/2013/01/13/science/earth/beijing-air-pollution-off-the-charts.html?ref=asia>

It receives continuous and considerable media attention for the following reasons: first, the problem touches on the core value of “public good” which relates to fundamental human rights, thus involving political implications in Western media’s eyes. Second, state media coverage gradually became more critical and changed in tone. This was partially due to the weight of public opinion, which mainly came from social media platforms that borrowed from international news sources. From this perspective, non-traditional media outlets influenced state media (Wong, 2013). These new communication features could be historic, presumably representing international news flow and China’s political reform on information transparency in the digital age. Importantly, such potential social change is one element valued by U.S. media when selecting international news to cover (Chang, 2010); selection criteria also includes such factors as geographical distance, normative deviance, relevance to the United States, language affinity, press freedom, and economic system (Chang, 2010). Lastly, Beijing’s air pollution is not limited to the news realm of environmental protection or economic development; instead, many of the relevant following articles went deeply into the discussions of policy-making, the role of the government, and other potential social consequences. These important economic, political, and health consequences have spanned the years since the Olympics, thus creating a comprehensive timeline for easier investigation of how the issue of pollution has changed over time and how government reactions have changed in the past several years.

Media, as external factors, play a key role in analyzing the issue, influencing the public’s environmental consciousness, and motivating the society to take actions to



remedy it. For one thing, with the multi-faceted nature of the issue, it is hard to detect how different media present the issue and whether these various images delivered by the media are on the right track to inform such a mass audience. Thus, there is a need to dig below the surface to study how the issue was reported across countries and what the relatively true image is. For another thing, there is a need to study the differences and similarities among different media. This could clarify how such environmental problems are portrayed under the influence of socio-political and ideological factors. It could also help scholars study whether there is a room to improve cross-national coverage of important local issues (both for Chinese local news and international news in the U.S.). In addition, this would allow us to discover if there is room to improve journalism professionalism and practices to break media stereotypes, such as “deceitfulness of communism” by U.S. media (Du, and Kwan, 1992). Mass media play a key role in influencing the perception of environmental issues (Brulle, Carmichael, & Jenkins, 2012), and their coverage is worth researching to better understand this environmental and social phenomenon.

### **Focus and Significance of the Study**

For these reasons, there is a particular need to compare and understand the cross-national differences in coverage influenced by factors at the extra-media, ideological, and routine levels. (See Chapter III for a description of the hierarchy of influences model used in this study). Operating within a media system premised on a libertarian theory of the press (Beaudoin, 2007), the press in the U.S. and China have very

different news reporting contexts. As the world-leading economy and with incomparable discourse power representing the Western world, U.S. coverage of Beijing's air pollution is worth comparing with Chinese coverage.

The U.S. is different from China not only because of the media system but also because the U.S. is more developed with different or even opposing political-economic social systems. This sets up a macro-background for the countries' media systems. That way, comparing across media systems requires us to look separately into the structural contexts in the two nations and to look integrally into bilateral ties between the two countries (Blumler & Gurevitch, 1995); these are especially meaningful for researchers in the current age marked by increasingly close Sino-U.S. trade relationships. Moreover, under the changing pattern of international news flow facilitated by new social media technology and the increasing amount of U.S. media coverage of China's environmental problems, state news agencies are opening up gradually, yet are unable to completely get rid of institutional effects and fundamental media system constraints---they change and frame the issue in different but comparable ways with U.S. media. This phenomenon is worth studying. (Zhao, 2011, p. 143-174)

## **CHAPTER II LITERATURE REVIEW**

There have been many studies of media coverage of global environmental problems, but few have focused on a comparison between China and Western media (especially U.S. media) or compared media coverage in China and the U.S. The outbreak of the debate on Beijing's air pollution, together with the continuous world-wide media attention started before the 2008 Olympic Games, and it provides a unique opportunity to investigate how China and U.S. media represented China's local air pollution issue with diversified news characteristics during various stages of the problem between 2008-2013, and how such changing characteristics reflect gradually shifting international news flow patterns.

This chapter reviews the literature regarding shifting media systems in China and the U.S., previous comparative studies of Sino-US media coverage on environmental issues, and previous studies of international news flow.

### **News Framing and Media Systems in China and the U.S.**

How news is framed is inevitably influenced by the social-political and economic characteristics of the society on which media systems are built. Macro-level comparative studies are based on different media system backgrounds, requiring "not taking one national context for granted." News frames are subject to various factors. Gerbner (1964, pp. 495–508) pointed out that there is no fundamentally non-ideological, apolitical, non-partisan news gathering and reporting system. Moreover, Entman (1993, p. 52) found that framing is to "select some aspects of a perceived

reality and make them salient,” namely, frames emphasize or prioritize some aspects of reality while obscuring other elements. Since there is no doubt that the news framing process is not value-free, it is necessary to study the underlying media system backgrounds and especially the influential social-ideological factors that might affect the news frames before researching media content.

There have been large numbers of studies examining how news was framed in each country and how media systems influenced the news agenda, news content, and even the overall news frames. However, there is a relatively smaller set of studies comparing different countries’ news framing of a particular issue, especially comparing countries such as China and US, which are in competing positions in terms of their social and media systems (Zhao, 2012).

### **Chinese media**

In China, the long-term central concept of communist propaganda views media as generally anti-commercial and anti-professional, as they are used instrumentally as a tool for propaganda (Schramm, 1964). Today, taking a historical review, there are some research findings regarding the less rigid ideological control and the shifting role of propaganda in the media system. One catalyst behind this shift is the technology (i.e. World Wide Web) (Xiaoming, Zhang & Yu, 1996), and another force is globalization, which refers to American value-export and China’s “reform and opening-up” policy since 1978. However, unlike Hallin and Mancini (2012) who study the globalization of Western liberal-media models and examine comparisons

among various modern Western states, Chakrabarty (2009) found a need to focus on “Third World nationalism” and the existence of non-Western media systems.

Following Chakrabarty’s steps, Zhao (2012) claimed that it is necessary to analyze the world’s media systems in national structural relationships, that is, to put European imperialism or American hegemony within the history of world-wide media development and to look beyond Western media system.

There is a need for such perspectives: although the liberal model is now expanding throughout the world and Western-mode capitalism is spreading (Hallin and Mancini, 2012), the Chinese government media system has remained stable across time. Being defined by one-party led political settings (Perry, 2007), it now has become a Leninist and Maoist legacy, which relates to the world-struggles against Western capitalism and neo-imperialism (Zhao, 2012). Specifically, China’s communism, nationalism, and developmentalism contribute to its fundamental ideology that was imposed on its media system (Chakrabarty, 2009). Considering China’s political society as a whole, state media coverage generally tend to cast the government in a positive light. This is especially evident in public crisis communication cases, such as environmental and food safety crises (Feng, Brewer, & Ley, 2012). Zhao (2008) also found that media’s control under the communist party or government is rigid in some ways and sometimes also flexible and not extremely restricted in other cases. That means they are restricted to the extent that they do not pose any threat to the ruling party. This is because the whole media industry is commercialized but not thoroughly privatized, and media outlets remain affiliates of

the party-state. Therefore, journalism is subject to double-clientelism (Ren, Peters, Allgaier & Lo, 2012).

### **U.S. media**

To the contrary, the media system in the United States is very vibrant and open, and is expected to inform, to serve as a watchdog over the government and other powerful institutions, and to advertise what's in the marketplace (Strentz & Keel, 1995). To the American public, the press should be free of government or outsider interference and serve the public's right to know (Stevenson, 1995, P63, p.63), but news frames are also affected by various dominant ideologies, including capitalism and anti-communism (Akhavan-Majid, R., & Ramaprasad, J., 1998). Thus, current media, are not completely free. According to Stevenson (1995), the U.S. press has always struggled to be fully independent from state control. Especially in foreign news, government manipulation of news frames in support of U.S. foreign policy exists (Hertog, 2000); journalists always sacrifice their independent rights to the government's ideological frames, labels, and assessments (Dorman & Farhang 1988).

Previous studies have identified that in general, newspaper coverage of China has reflected the dominant capitalist ideology within the United States. As Kobland, Du, and Kwan (1992) pointed out, the predominant frame has been that of "anti-communism" (p. 64). The "deceitfulness of communists" has been a common narrative in U.S. media, and coverage about communist states has "almost entirely focused on the problems and failures of Marxist governments" (p. 66). Similarly, soon

after that, Liu and Li (1996) found that U.S. media tended to “demonize China” by focusing on or linking coverage to China’s deep-rooted human right issues (Liu and Li, 1996; Song et al., 1996; Li, J., 2009).

### **Studies of environmental coverage in China and the U.S.**

In China, environmental media and environmental coverage have flourished in the past several decades, as environmental coverage campaigns were initiated and environmental news agendas received increasing emphases (Sun, Yu, Nieman Reports, 2002). However, Wang (2005) studied water pollution in the Pearl River Delta region in South China and found that regardless of the policy of “greater openness of government,” the government’s overall control of information and prior economic considerations remained an imperative in its environmental reporting. He found that information transparency and instant sharing between the government and the rest of society was neither routine nor systematically consistent.

Studies of China’s environmental coverage are mainly event-driven, revolving around certain regions’ emergencies. Tilt and Xiao (2010) examined the 2005 benzene spill in North China as a case study to investigate the politicized environmental coverage and the immediate effects of such coverage. Similarly, Wang (2005) focused on a regional issue as well, finding that water pollution in Sihui lacked media attention from national-level news agencies, though state media had already made a step forward by breaking a long tradition of sluggishness and offering unprecedented live coverage of the pollution-crisis inquiry. In recent years, China reinforced the

overall idea of changing the focus from prioritizing economic development to environmental conservation, as examined by Tong (2014) in a study of environmental coverage of ten Chinese newspapers.

In the United States, when researchers studied the coverage of environmental issues, they found more open and diverse news sources, and the news frames were also national-interest oriented. Mazur (1993) and Lee (1993) discussed the American concern over the environment through analyzing events such as Earth Day; eventually they identified the interplay among national news media, prominent news sources, and extraneous events in shaping national concerns toward environmental issues. Another research direction is studying environmental journalism practices regarding stories such like Earth Kare<sup>3</sup> in a macro narrative. Studies of such environmental coverage went in-depth to the debate of journalism norms such as “hard news versus soft news,” controversies of presenting green consumerism and public in the environmental coverage, and discussions of thematic environmental-science news segments on TV newscasts (Corbett, 1998).

While, there is only a smaller set of studies comparatively analyzing Chinese and U.S. media coverage of environmental issues, especially local rather than global issues (i.e. “climate change,” “carbon politics”). Previous cross-national comparative case studies have touched on communicative joint efforts, such as Sino-U.S. communicative co-efforts on tackling climate change (Liu and Goodnight, 2008) and communicative conflicts among nations in which Brossard, Shanahan, & McComas

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<sup>3</sup> Earth KARE presented the environment as a government story, both in terms of news sources and arena of action.



(2004) called for studying environmental issues beyond the national levels and comparatively studying nations with competing environmental policy positions. In addition to national context and considerations of national characteristics, other research compared countries' journalistic norms. For example, Billett (2010) found that developed countries framed the issue climate change along a "risk-responsibility divide" while the Indian national press reflected a strongly nationalistic position on climate change that divides the issue along both developmental and postcolonial lines.

Traditional research on Chinese communist media and rigid ideological control of the press cannot effectively represent the new dimensions that emerged with China's environmental deterioration and economic development in recent years. For the past several decades, there were also changes in the United States, since its news media started to cover more local issues in other countries; China has been one of its media-attentive nations for such reasons as its potential social change, Sino-U.S. bilateral ties, and trade-political elements (Chang & Lee, 2010). There is a research gap in comparative analysis of American and Chinese media coverage of environmental issues, especially Chinese local environmental issues. This study tries to fill this gap by investigating the two countries' coverage of Beijing's air pollution.

### **International News Flow**

With the rise of new media technologies (based on the Internet) and the increasing amount of coverage of China's environmental problems in U.S. media, the flow of international news is becoming more multidirectional. However, existing

comparative studies of environmental coverage focus mainly on the United States, and the perspective of international news flow has rarely been researched in the context of cross-national comparative studies. Thus, this study takes the angle of international news flow to compare and analyze media coverage in the two countries.

The changing international news flow has been studied by researchers, Wu (2000) investigated the systemic determinants on international news coverage in thirty-eight countries and found that the U.S. is dominant in almost every country's foreign news hole, and powerful countries such as France and Russia are also prominent. Nowadays with an increasingly clear multi-polarized world and particularly with China's economic rise, the world's power has gradually shifted from the West to the rest of the world (Ross, 2010). Chang (2010) found this could also be attributed to the Internet, which accelerated the democratization. The global media landscape is changing from cultural-imperialism to globalization, and such globalization is not Western (U.S.-lead) anymore; such a changing trend also has an effect on the social, political, and cultural realms.

Existing comparative studies of environmental coverage mainly focus on the U.S. Probably this is because the U.S. still dominates the world economy as a trade superpower. It is worthwhile to see the diffusion of news and the flow of international news beyond the American "cultural-imperialism" which was defined by Chang (2010). It is true that China's rise has given the country more political power and thus more discourse power in the world media ("Seeing red," 2011), and it is a country that is drawing more and more attention from U.S. media. Such national power, bilateral

ties, and relevance to the U.S. are dominant factors considered by U.S. media when selecting international events to cover (Chang & Lee, 2010). Meanwhile, in the case of Beijing's air pollution, Twitter information from non-traditional foreign news sources, together with the wide coverage in mainstream U.S. media, the international news flow has become more of a two-way exchange instead of a one-way value export from the West to China. What's more, Chinese state media has become less restricted: for example, pollution data started to be published earlier in 2012 (Zheng, 2012), and critical reports were allowed, particularly about a January 2013 incident which discussed "air quality exceeded the air quality index (AQI)" that foreign news agencies were allowed to report negative aspects of in relatively free ways. This additionally facilitated the international news flow "from China to the West."

Although the amount of coverage by world-wide media (including U.S. media) on China's environmental problems has increased significantly, especially about Beijing air pollution, there are currently a limited number of studies looking into coverage of China's environmental problems through the lens of international news flow. For example, one analytical report in the *Chinese Journal of Communication* pointed out several problems in environmental coverage, such as lack of deep critical discussions of the severe consequences of environmental deterioration and a shortage of continuing comprehensive reports on environmental issues (Li, 2007). In addition, environmental coverage was mostly event-driven and was concentrated in a short period (Li, 2007; Tilt and Xiao, 2010). Media coverage of environmental issues as a continuing research interest mostly focuses on developed countries or focuses on

comparisons of coverage of issues of common interests to the two countries, for example, climate change and carbon emissions reduction. Liu and Goodnight (2008) investigated the complex Sino-U.S. communicative relationships regarding the environment, using examples of disaster relief co-efforts and found a need to use diversified approaches to reach multiple-level innovations of communicative actions (local, regional, national, and global); this would coordinate global environmental policy and global sustainable development. Thus, it is necessary to turn the research direction towards local-level news, comparing the coverage and detecting the flow of such news pieces. Studies also specifically acknowledged online platforms' collaborative identity and stated that it blurred national boundaries (Ackland and O'Neil, 2011). There are also studies focusing on online media representations of Beijing air pollution, in which it was found that environmentalism practices as well as scientific data were underscored in news stories; that concentrated coverage demonstrated the growing significance of environmental issues in Chinese media (Xu, 2012).

To conclude, there is currently a limited number of studies looking into coverage of China's local environmental problems through the lens of international news flow. This study tries to contribute to this work by analyzing transnational media coverage across media systems through a lens of international news flow in accordance with the changing trend of international news flow identified by the researchers -- changing from U.S, leading "cultural-imperialism" to multinational level flow of international news (Chang, 2010). The study examines how Chinese and American news media

presented Beijing's air pollution with different/similar uses of sources and framing of topics and overall frames, and how such coverage indicated new characteristics of international news flow.

Given that wide international coverage played an important role in Beijing's air pollution issue; that Chinese and U.S. media operate within different and even opposing media systems, and that the international news flow pattern is gradually changing from "U.S. cultural-imperialism" to "multiple ways of diffusions at transnational level" (Chang, 2010), it is worthwhile to compare their media coverage of this issue through a lens of international news flow.

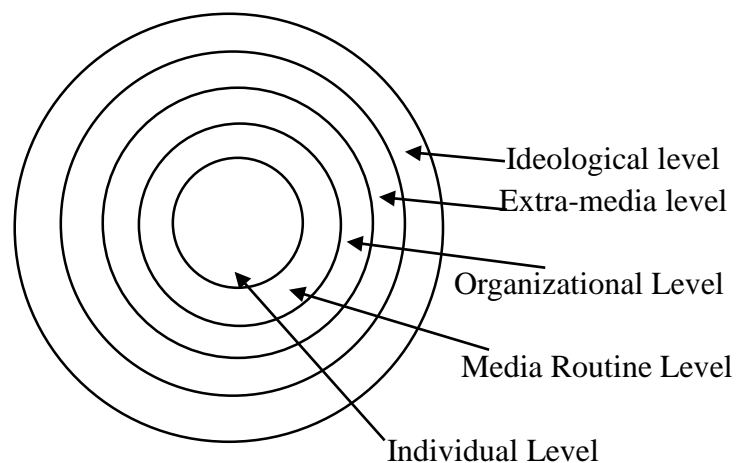
### **CHAPTER III THEORETICAL FRAMEWORK**

This study is guided by Shoemaker and Reese's hierarchy of influences model which was recently developed to explain gatekeeping theory (Shoemaker, & Vos, 2009). The main goal is to examine how the two countries' newspapers covered Beijing's air pollution. Shoemaker and Reese observed that news content is influenced by several hierarchical factors, and hierarchical circles indicate that news content is produced by individual media workers and media routines (e.g. sources of information) but it is also influenced by the nature of particular news organizational influence, by national-level economic and social ideological environment and extra-media level factors such as special interest groups, other media organizations, the audience, and advertisers. In other words: "News is a socially created product, not a reflection of an objective reality" (Shoemaker & Reese, 1996, p.1). Thus, as a socially constructed product, coverage of Beijing's air pollution is influenced by mixed economic and ideological factors, and is subordinated to the media framing process, which essentially involves selection and salience (Entman, 1993). The framing process also includes the routine level influences, such as source selection practices by newspapers. As Shoemaker, et, al. (2001) stated, gatekeeping is influenced more by forces on the routine level of analysis than by individual staff writers' characteristics. Such media routines directly reflect the organizational goal, external environment, and dominant ideology. As Shoemaker and Reese noted, ideology serves as a unifying force situated in the outermost surface in the model; media overall routines such as source and framing processes and topic priorities are routine norms

helping continually produce a cohesive ideology.

Given that, this study does not take one national context for granted. Instead, based on Reese (2001) macro extra-media level of analysis, it tries to empirically reveal the ways in which different countries' media are subject to external powers in the larger world media systems. By conducting a content analysis of how meaning is framed and constructed within a larger social interest in the service of power, this study analyzes the macro-level journalism practical, extra-media, and ideological differences via the analyses of topic, source use, and overall frames.

Figure 1 Hierarchy of influences model



Source: Pamela J. Shoemaker and Stephen D. Reese, *Mediating the Message, Theories of Influences on Mass Media Content*, Longman, New York, 1991

## Research Questions

The theoretical model highlights the importance of conducting macro-level comparative studies since it fundamentally improves our understanding of journalistic professionalism in different media systems (Hallin & Mancini, 2012).

More importantly, comparing across media systems requires us to look separately

into the structural contexts in two nations and look integrally into bilateral ties between the two countries (Blumler & Gurevitch, 1995). These are especially meaningful for researchers in an age marked by increasingly close Sino-U.S. trade relationships.

Furthermore, given the competing liberal-capitalistic and communist-propaganda media systems, the contrast also illustrates how news media organizations operating in two nations with different political and economic contexts can construct or frame the meaning of Beijing's air pollution in divergent ways. As Reese (2001) suggested, an attempt to specify the structural pattern within a given media system helps researchers guard against premature assumptions, such as "something means the same thing in one cultural setting as another," and this could help break traditional media stereotypes.

The Chinese press relies mostly on the government-controlled political agenda; thus, blogs and other Internet-based media are not comprehensive enough for study of either the governmental media system or cross-national comparisons. Similarly, in the United States, the newspaper industry is declining in circulation; however, more importantly, regardless of the political media system, elite newspaper organizations can speak to reflect the national interests and ideologies (De Sola Pool, 1952)

Based on previous literature and the theoretical model, this study chose newspapers to study and generated several research questions asking about possible similarities and differences between a Chinese newspaper (*China Daily*) and an American newspaper (*New York Times*). The former is the most widely-circulated



English-language authoritative newspaper in China; while with the second-largest circulation in the United States, the *New York Times* (NYT) is also viewed as a national newspaper of record in the United States (See Table1 for more information). This study raises several research questions with regards to topic, source, and frames, and analyzes the results to detect the cross-nation international news flow, including but not limited to news source use interactions, the direction of international news flow, and the long-term news attention cycle toward the issue across time. It also discusses how other external forces such as China's improved press freedom facilitated the flow of international news between China and the U.S.

Under different media systems, media contents are primarily influenced by ideological level factors in the hierarchy model. Specifically, based on communism and libertarian anti-communism respectively, *China Daily* and *NYT* tend to prioritize different topics with ideological biases; thus, I present the following research questions:

RQ1: What are the differences and similarities in coverage of topics about the Beijing air pollution in the *China Daily* and the *New York Times*?

The powers that shaped the priority of topic and overall frames are not merely at the ideological level, but are shared with extra-media level influences that come from outside media organizations, including public relations, influential news sources, and special interest groups. Thus, this study further turns to its central concern:

RQ1.a. Under the extra-media influences, how did the mainstream news media in each nation frame the air pollution problem?

Routine-level influences also affect coverage since individual journalists are ruled by their media organizations. To further compare and analyze the media coverage, it is worthwhile to study differences of routine-level influences, that is:

RQ2: Under different routine-level influences, how are *China Daily* and the *New York Times* different in terms of their source use?

RQ3: What is the relationship between source use and frames in each newspaper?

During specific events, there were external extra-media level of influences that affected the amount of coverage by the two newspapers, therefore:

RQ4: What are the differences in coverage during specific events/periods by each newspaper?

## CHAPTER IV RESEARCH METHOD

This chapter defines the subject of the study, discusses the study periods and sources of data; describes sampling, coding procedure, and the coding scheme; clarifies the variables as well as their operational definitions; and outlines statistics for the analysis of data. (The coding protocol is in Appendix 1.)

Data were analyzed applying a content analysis method (Riffe, Lacy, & Fico, 2005). A six-year period of news stories (2008-2013) about Beijing's air pollution was selected. The news stories are defined as non-advertising and non-commentary matters in a news product, namely, hard news pieces excluding information on comment/opinion pages, editorials, routine business data, and other similar materials. A news story about Beijing's air pollution is defined as a relevant report which has sufficient length to mention Beijing's air problem (at least one paragraph) or a complete narrative about Beijing's air pollution, e.g., stories in the *New York Times*, "Pollution triggers breathing woes" (1/16/13), "Smog in Beijing Delays Round" (10/5/13) and stories in *China Daily*, "Li pledges measures in fight for clean air" (1/16/13).

### Study period

Beijing's air pollution has been a continuous worldwide news subject since the 2008 Olympic Games when it started to attract media attention around the world, especially attention about the standard air quality for such a world-class competition. Thus, 2008 is the starting point of this study. After this period, between 2009 and

2012, the Chinese public started to actively discuss the underlying problematic model of economic development and the pollution data; such debates pressured state media to report openly later on. In 2012, the Beijing Environmental Protection Bureau was forced, for the first time, to open its air pollution data--PM2.5 to the public. This period of heated discussion is defined as “Second: Post-Olympic era.” The last study period begins with the re-occurrence of poor air quality in January 2013 when the city exceeded its AQI as measured by the U.S. embassy’s air quality monitor. This crisis soon became widespread as a topic of discussion on China’s social media-Weibo (Wong, 2013), which is equivalent to Twitter. Accordingly, media coverage increased again, especially in Chinese media.

### **Data collection**

The data set for this study is composed of newspaper articles from *China Daily* and the *New York Times* from January 1, 2008, to December 31, 2013. The two newspapers were chosen not only because of their extensive coverage of Beijing’s air pollution, but also because of their prominence and influence with attentive publics, policy-makers, think-tank experts, and journalists (see Table 1 for more details).

*China Daily*’s influence comes from its propaganda function and its authority. As the most widely-circulated English-language newspaper in the country, *China Daily* is often viewed as an English-language version of *People’s Daily*, the mouthpiece and an organ of the Central Committee of the Communist Party of China (CPC).<sup>4</sup> Beginning

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<sup>4</sup> *People’s Daily* official website, “About us”,

in 1981, this authoritative newspaper has served as a link between officials and the public. It tells people what the government is doing; it reports and promotes official positions to maintain social stability (Chang, 1989).

In addition to Chinese citizens, *China Daily* is also aimed at increasing the number of its foreign readers—it is published by satellite in the United States as a “Window into China.” It’s often used as a guide for foreigners to learn China’s official policies, China’s major domestic news and international news as well (*China Daily* official website)

Similarly, *NYT* serves an elite, highly educated segment of the population nationally. *NYT* is often viewed as a national newspaper of record in the United States. More importantly, as a quality newspaper, it’s already internationalized as a significant source of international news, and plays a major role in setting the news agenda in the U.S. media system (Althaus, & Tewksbury, 2002; Weaver, McCombs, & Shaw, 2004).

Table 1 Information about the two sample newspapers

	<i>China Daily</i> <sup>5</sup>	<i>New York Times</i>
Founded (year)	1981	1851 <sup>6</sup>
Circulation	800,000+	1,865,318 <sup>7</sup>

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Retrieved April 28, 2013, from

<http://english.peopledaily.com.cn/102840/7560415.html>

<sup>5</sup> *China Daily* official website, (n.d.). *About China Daily*, Retrieved April 26, 2014, from <http://www.chinadaily.com.cn/cd/introduction.html>

<sup>6</sup> "Total Circ for US Newspapers." Alliance for Audited Media. March 31, 2013. Retrieved April 7, 2014, from <http://www.auditedmedia.com/news/research-and-data/top-25-us-newspapers-for-march-2013.aspx>

<sup>7</sup> The number is the total average circulation excluding branded "Total Circ for US Newspapers." Alliance for Audited Media. March 31, 2013. Retrieved April 7, 2014.

## Sampling Procedure

The searchable online database of *China Daily* (<http://search.chinadaily.com.cn/>) contains articles from the entire six-year period. Because the official website doesn't support the Boolean search term "Beijing\* AND Air\*", the keyword "Beijing air" was used for data retrieval, followed by manual examination of headlines and leads to identify whether an article is related. A total of 715 news stories were found in the first 2008 period (Olympic period). After examination of headlines and leads of all stories, twenty-nine stories were identified in this period. Irrelevant articles concerned issues such as "air travelling," or "air zone defense." Following the same approach, sixty of 3,127 articles were identified in the second "Post-Olympics" time frame (September 18, 2008-December 31, 2012), and seventy-eight of 673 articles were collected in the third sample period (2013). In total, a complete list of coverage of "Beijing's air pollution" consists of 167 news stories. This comprises the population of *China Daily* for this study.

Because the Lexis Nexis database includes only *NYT* articles and not articles from *China Daily*, using Lexis Nexis for *NYT* and the official website for *China Daily* presumably means incomparable data retrieval methods which can weaken the validity of the study. Therefore, data retrieval for *NYT* also was from its official website. *NYT*'s official website does accept Boolean search terms; thus an effective Boolean search term was designed to maximize the retrieval of stories while simultaneously limiting the number of unrelated articles. Using "Beijing\* AND Air\* AND (Pollution\* OR Quality\*)" as keywords, articles from *NYT* came from its

official website (<http://query.nytimes.com/search/sitesearch/>). The retrieval results were further adjusted through a manual screening process. After the manual screening, twenty-four of 312 articles were identified in the first Olympics time period, twenty-three articles were relevant from 2,030 results in the post-Olympics period, and twenty relevant stories were identified from 793 results in the third time period. In total, sixty-seven *NYT* stories were identified with clear themes of Beijing's air pollution.

### **Coding schema and measurement**

In addition to the articles' date period, newspaper ID, and quantity/frequency, there are three major measurements for this content analysis based on the pretest: topic, source, and overall frames. An extensive pre-review of press and academic coverage of Beijing's air pollution was conducted in preparation for development of the coding schema.

Based on the data from the review, especially of coverage by U.S. and Chinese press, categories were inferred. Based on the Beijing air pollution timeline, three periods were generated. In the pretest, in the U.S. press, political aspects of the pollution, together with the potential political reform in the country that could be brought by this crisis, were mentioned frequently. The main focuses of Chinese newspapers such as *Global Times* rarely covered the issue from a political lens. Instead, they mostly focused on strategy/solution of the problem. The overall frames in the pretest were relatively diversified, with Chinese coverage being mostly neutral

but with slight positive spins on the government, and U.S. newspapers' tones of criticism. According to the previous studies of the countries' media systems, it is also true that Chinese state-run media tend to cast a positive light on the government (Ren, Peters, Allgaier & Lo, 2012) while the U.S. liberalized media environment allowed more critical reports, particularly more critical coverage on international news for the consideration of advancing U.S. foreign policy and national interests (Hertog, 1990; Wong, 2013). In this content analysis, the variable of "overall frames" refers to selection and salience (Entman, 1993) and can be understood as emphasizing or prioritizing some aspects of reality while obscuring other elements. Beijing's air pollution problem has multi-faceted aspects that can be prioritized or obscured. Based on the preliminary review, two main operational definitions for the frame of the countries' newspaper coverage appeared: "Showing pollution-mitigating progress: government's self-legitimization" and "Negative complaints toward the pollution." There also is a "none of the above" category which allows coders to exclude other overall frames they encounter that are not anticipated by the coding scheme.

"Politics" and "Strategies or potential solutions" were two topic categories that most frequently reflected *NYT* and *China Daily*'s content emphases, respectively. Data analyzed in the pretest also touched upon Chinese problematic economic development and the negative impact of the pollution on public society. Therefore, two more topic variables concerning "economics" and "social impacts" emerged. In addition, there were cause-analyses and mentions of health consequences in the pretest. Thus the following content categories ("topic" and "overall frames") were formed:



Content-topic:

1. Strategies or potential solutions
2. Analysis of causes
3. Social impacts
4. Health
5. Economic and related environmental industries
6. Politics

Content-overall frames:

1=Showing the pollution-mitigating progress: government's self-legitimization.

2=Negative complaints about the pollution

3=None of the above

Each article is coded for the presence of the coding category for the topic variable. If present, the treatment of that topic is coded as present (1), if not, it is coded as absent (0). For the variable of "overall frames," the categories are mutually exclusive, and they are assigned numbers to represent the article. Total paragraphs containing such explicitly defined frames are identified and calculated to identify if it is prominent. Only through the quantifying and pre-definitions can the overall prominent frames be correctly coded.

Such frames cannot exist without the use of sources. Each article has multiple sources; sources are also coded as "present (1)" or "absent (0)." Source variables were created based on their occurrence in the pretest and were created in accordance with the main research goal of China-U.S. comparisons as well. In the pretest of

thirty-two articles, official sources were used most often, and non-official sources mainly included social elite, NGO, and public sources. The comparison also requires sources to be further operationalized by dividing them by country. For example, Chinese official source and U.S. official source should be coded differently. Therefore, these definitions of source variables were generated: official sources are those with credentials yet relatively biased positions, such as Chinese government, Chinese environmental bureau, U.S. embassy, US Environmental Protection Agency, etc. Social elite sources refer to scientists and university professors; this category only includes those who are affiliated, namely the researchers. NGO sources are relatively independent non-governmental or non-profit organizations, such as the U.S. Olympic Committee. Public sources are ordinary American and Chinese people.

### **Coder training and intercoder reliability**

Two coders, including the researcher, coded the data. The researcher trained the other coder by explaining the protocol which includes instructions of the codebook, definitions of variables and measurements of variables. Then, a brief pretest was conducted, where thirty-two (approximately 13%) of the total 234 sampled articles were coded independently by the two coders. These articles were from two other newspapers (*Global Times* from China and *USA Today* from the U.S.), which are equivalent to *China Daily* and the *NYT*. Using different newspapers in this pretest can avoid the contamination of the original sample from *China Daily* and the *NYT*. The coding of these articles in the pretest provided data for a reliability analysis (see Table

2).

Table 2 Intercoder Reliability

		Krippendorff's Alpha
V03-Topic	3.1 Strategies or potential solutions	.763
	3.2 Analysis of causes	.745
	3.3 Social impacts of the Beijing air pollution	.75
	3.4 Health	.738
	3.5 Economic and related environmental industries	.753
	3.6 Politics	.933
V04-Source	4.1 China's official source: (i.e. government, environmental protection ministry)	.905
	4.2 China's social elite/expert source (researchers)	.872
	4.3 China's NGO source and non-profit source	.921
	4.4 China's lay public	.857
	4.5 Business in China	.82
	4.6 Individuals in organizations in China (businessman, chairman)	.836
	4.7 US official source: (i.e. US government, US embassy, EPA)	.767
	4.8 US social elite/expert source (i.e. University professor)	.873
	4.9 US NGO and non-profit source	1
	4.10 US public (i.e. US citizens living in Beijing)	1
	4.11 Business in US	.786
	4.12 Individuals in organizations in US (businessman, chairman)	1
V05-Overall Frames	1=Showing the pollution-mitigating progress: government's self-legitimization. 2=Negative complaints toward the pollution 3=None of the above	.701

Intercoder reliability was calculated using Krippendorff's Alpha (Krippendorff, 2003), with the value of "1" representing perfect reliability. In this study, Krippendorff's alpha ranged from .70 to 1.0, which is within the acceptable level of reliability (Krippendorff, 2003). The mean reliability for the nineteen variables was .84.

## **Data analysis**

The collected data were entered into a computer by the author and compiled into a data file suitable for statistical analysis. SPSS was used for checking error against the original coding sheet of news articles, describing data, testing the research questions, and investigating the data patterns to answer the research questions.

Descriptive and inferential statistics were used for data analysis. Descriptive data analysis includes analysis of frequency distribution of the two newspapers across time. Topics, sources, and overall frames were analyzed according to their frequency distribution. Inferential statistics used was chi-square. As a nonparametric inferential statistics, the multivariate chi-square examines the independence and tests whether two variables are independent of each other.

## CHAPTER V RESULTS

In this study, two representative U.S. and Chinese newspapers were analyzed, the *New York Times* and *China Daily*. Across the two newspapers, 234 articles were coded, among which 71.3% (n=167) were from *China Daily* and the remaining 28.6% (n=67) were from the *New York Times*. It's worth noting that the findings are based on the significant differences across newspapers at  $p = .05$  level. In terms of “practical significance,” all the significant findings are associated with at least a 5% difference between the percent scores of the categories compared. This sampling quantity difference (167 and sixty-seven articles) can be explained by the newspapers' different positioning (with *China Daily* being a national party-newspaper catering to international readers and *NYT* being internationally well-known and having an international focus). In this background, their attention to this Chinese local environmental issue across time is different, *NYT* devotes less attention to the issue, and the budget spent on this issue is less than that of *China Daily* as well. It is understandable that *China Daily* has a larger number of articles covering Beijing's air pollution.

### **Descriptive results: Frequency of distribution**

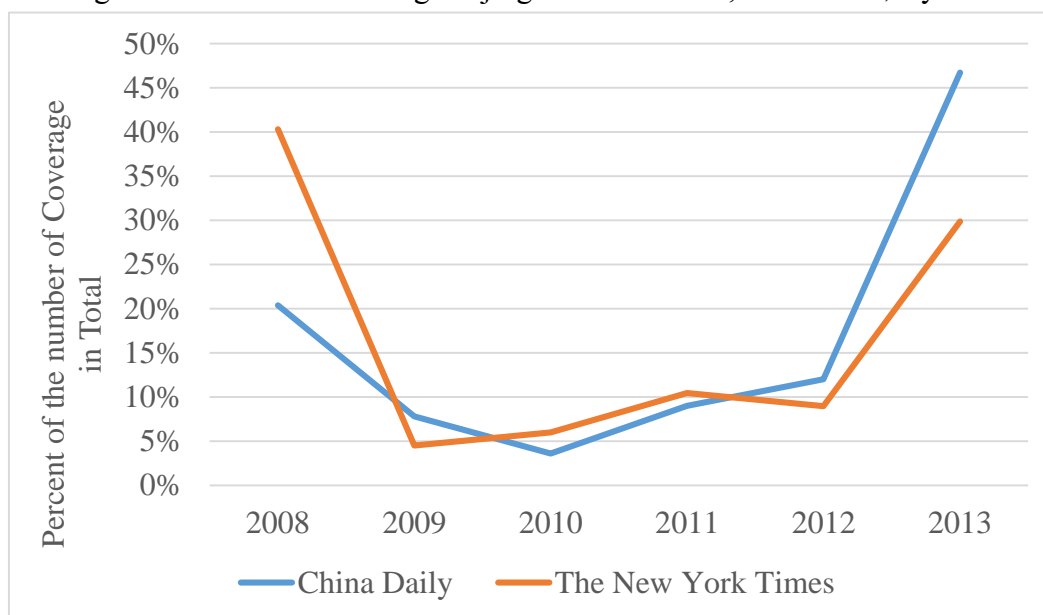
Examination of data began by computing descriptive statistics and computing the changing frequency of coverage of Beijing's air pollution by the newspapers across time.

To answer RQ by evaluating differences in coverage during specific periods

marked by specific events, this study counted the total number of articles by year and by period from 2008 to 2013. The frequency of articles in *China Daily* rose and fell throughout the months, but in general, it rose across time (as indicated in Table 3). In contrast, distribution of the frequency of coverage in *NYT* is relatively even across periods in Table 3.

Generally, the yearly distribution, as showed in Figure 2 reflects that the *NYT*'s attention peaked in 2008 and 2013, and it also reflects the overall increasing coverage in *China Daily*. In both newspapers, there were more articles covering Beijing's air pollution in 2008 and 2013, compared with the percentage in 2009-2012 (Fig.2). More coverage in 2008 and 2013 was mainly attributable to the world-event Olympic Games in 2008 and a Beijing air pollution incident in January 2013 (during which the U.S. embassy reported the AQI went above its air quality scale).

Figure 2 Trends in Covering Beijing's Air Pollution, 2008-2013, By Year



Under this trend, however, there are still differences between the newspapers in their changing frequency of coverage of the issue. As indicated in Figure 2, the

frequency in *China Daily* changed closely following the change of frequency in *NYT*, which presumably indicates the flow of information between the two countries as well as the increasing openness of Chinese media.

Initially, as indicated in *NYT*'s curve in Figure 2, the Olympic Games helped increase media attention from *NYT* toward Beijing's air pollution in year 2008 (twenty-seven articles, 40.3% of the total sixty-seven *NYT* articles). Back then, Beijing received considerable international media coverage encompassing the sports themselves, which included discussions of political, economic, and other aspects of the city, such as security, policy toward foreign journalists, and so forth (Qing, & Richeri, 2013). Compared with *NYT*, as the state's official media, *China Daily* was reluctant to publish sufficient data in that initial year and had a much lower percentage of its coverage on negative news (thirty-four articles, 20.4% of the total samples).

In the following years, there were incessant public complaints, which mainly revolved around the information distributed by the U.S. embassy (i.e. AQI, PM2.5 data). Under such pressure, in 2012, China started to make a turning point to release data to the public about the crucial air pollutant—PM2.5. Then, it gradually reported the issue more openly, critically, and even caught up with *NYT*'s percent of coverage later in the post-Olympic period (September 18, 2008 -2012) (Figure 2). Thus, the curve of *China Daily* coverage generally rose after the Olympics year, as presented in Figure 2; this reflects how changes in public opinion brought by the export of American news sources led to the increase of the Chinese government's media

transparency and also implies an increasing flow of information between the two nations in these post-Olympic years.

With the gradual involvement of the U.S. embassy and the occurrence of Beijing's air pollution incident in January 2013, the second peak of *NYT*'s changing curve shows that this local environmental issue was exported to the U.S. and was internationalized (Figure 2). In the opposite direction, with the increasing media openness affected by U.S. sources (i.e. U.S. embassy's Twitter account), *China Daily* also reached its peak point of attention toward the issue in 2013 (seventy-eight relevant pieces, which represent 46.7% of the total 167 *China Daily* articles) (Figure 2). Although the frequency distribution across period does not reveal the dramatic change of coverage on *China Daily*, the 2012-turningpoint brought by Chinese government's data-publishing, together with the yearly-changing curve (Figure 2) shows that *China Daily* has increased its coverage of Beijing's air pollution across time, especially after 2012.

Table 3 Frequency Distribution of Articles on Beijing's Air Pollution

	<i>China Daily</i> (n=167)		<i>New York Times</i> (n=67)	
	Frequency	%	Frequency	%
<b>Period I (Jan, 1, 2008-Sept,17, 2008 )</b>	29	17	24	36
<b>Period II (September 18, 2008-Dec,31, 2012)</b>	60	36	23	34
<b>Period III (Jan,1, 2013-Dec, 31, 2013)</b>	78	47	20	30
<b>Total</b>	167	100	67	100



## News Topics

*China Daily* differs from *NYT* in prioritizing topics. RQ1 asked whether differences in presenting topics of Beijing's air pollution existed between articles in *NYT* and *China Daily*. The findings showed significant differences. As shown in Table 4, a chi-square test of independence was conducted between the newspapers comparing the frequency of their coverage of the six topics. Significant differences were found. What was noteworthy was the most frequent topic in *China Daily*, "Strategies or potential solutions" (32 percent), whose focus was on stories that stress the government's or relevant industries' strategies to tackle Beijing's air pollution problem, such as an environmental regulatory act, industries' responsiveness and environmentally friendly policies, free mask distributions, and others. It is shown that *China Daily* (32%) was significantly more likely to cover this topic than *NYT* (19%) ( $\chi^2 = 12$ ,  $df=1$ ,  $p < .01$ ). The findings also showed that a significantly larger proportion of topics of "Social impacts of Beijing air pollution," "Health" and "Politics" were found in *NYT* than in *China Daily*. For the topic "Social impacts of Beijing air pollution" which referred to coverage of macro-level influences of the pollution on the general public and society (i.e. public's reactions and society's changes caused by the pollution), *NYT* presented higher percentage of its articles (19%) than *China Daily* (14%) ( $\chi^2 = 6.57$ ,  $df=1$ ,  $p < .01$ ). Similarly, as shown in Table 4, news articles in *NYT* (20%) had more coverage of topic of health aspects than *China Daily* (14%) ( $\chi^2 = 7.67$ ,  $df=1$ ,  $p < .01$ ). The most frequent topic in *NYT* was "politics", and the difference in percent of coverage was the most significant among

the topical differences of the newspapers ( $\chi^2 = 28.45$ ,  $df=1$ ,  $p<.001$ ): *NYT* (17%) presented more quantitative level of topic of “Politics” than *China Daily* (1%).

There were also similarities in the newspapers’ coverage of topics of “Analysis of causes” and “Economic and related environmental industries.” A chi-square test of independence was calculated comparing the results of the newspapers’ coverage of the topic of “Analysis of causes”. No significant difference was found ( $\chi^2 = .47$ ,  $df=1$ ,  $p>.05$ ), and coverage by the newspapers of this topic appeared to be independent. Similarly, a chi-square test of independence was calculated comparing the results of two newspaper coverage of the topic of “Economics and related environmental industries”. The two newspapers did not vary significantly in their coverage of “Economic and related environmental industries ( $\chi^2 = .35$ ,  $df=1$ ,  $p>.05$ ).”

Table 4 Distributions of Mentions of Topics

Topics	<i>China Daily (n=167)</i>			<i>New York Times (n=67)</i>			$\chi^2$
	<i>Frequency</i>	% <sup>a</sup>	% <sup>b</sup>	<i>Frequency</i>	% <sup>a</sup>	% <sup>b</sup>	
<b>Strategies or potential solutions</b>	126	32	75	35	19	52	12.00**
<b>Analysis of causes</b>	78	20	47	28	15	42	.47
<b>Social impacts of the Beijing air pollution</b>	57	14	34	35	19	52	6.57**
<b>Health</b>	57	14	34	36	20	54	7.67**
<b>Economic and related environmental industries</b>	54	14	32	19	10	28	.35
<b>Politics</b>	23	6	14	31	17	46	28.45***
<b>Total</b>	395	100		184	100		

<sup>a</sup> proportions of topic over all the topics’ mentions (e.g.  $126/395 \approx 32\%$ ).

<sup>b</sup> proportions of mentions over all the articles (e.g.  $126/167 \approx 75.4\%$ ).

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$

## The Overall Frames of News Coverage

RQ1a asked whether the two mainstream news media framed air pollution differently. According to Table 5, *China Daily* and *NYT* framed it in significantly different ways ( $\chi^2 = 64.79$ ,  $df = 2$ ,  $p < .001$ ). *China Daily* was significantly more likely to frame the issue non-negatively, either being “Showing pollution-mitigating progress/showing government’s self-legitimization” (17%) or relatively neutral——“None of the above” (72%) than *NYT*, which completely omitted the former self-legitimizing frame (0%) and only framed less than half of its total articles as the “None of the above” (42%); instead, *NYT* more significantly framed the issue as “Negative complaints toward Beijing’s air pollution” (58%) than *China Daily* did (10%).

Table 5 Overall Frames of The Two Newspapers on The Coverage of Beijing’s Air Pollution

	<i>China Daily</i> (n=167)		<i>New York Times</i> (n=67)	
	Frequency	%	Frequency	%
Showing the pollution-mitigating progress: government’s self-legitimization	29	17	0	0
Negative complaints toward the pollution	17	10	39	58
None of the above	121	72	28	42
Total	167	99 <sup>a</sup>	67	100

Note:  $\chi^2(2) = 64.79$ ,  $p < .001$

<sup>a</sup> Some rounding error

## News source usages

Frames were based on different source use patterns. Thus, RQ2 focused on source usage and asked how *China Daily* differed from *NYT* in using sources in their

coverage. As shown in Table 6, they relied on very different patterns of sources. Meanwhile, some Chinese sources were used in *NYT* as frequently as in *China Daily*. Also, there was a certain degree of inclusion of U.S. sources in *China Daily* (e.g. some percentages of U.S. sources in *China Daily* were similar to that of Chinese sources in *NYT*). These show some similarities of source usage between the newspapers.

The tests of difference of proportion identified six different source distributions between the newspapers. They were “Chinese official sources”, “Chinese social elite sources”, “U.S. official sources”, “U.S. social elite sources”, “U.S. NGO sources”, and “U.S. public sources”. *China Daily* (37% of stories) relied significantly more on Chinese official sources than *NYT* stories (27%), and on Chinese social elite sources (18%) than *NYT* (8%) ( $\chi^2 = 6.91$ ,  $df = 1$ ,  $p < .01$ ;  $\chi^2 = 10.16$ ,  $df = 1$ ,  $p < .01$ ). While *NYT* relied significantly more on U.S. official sources (12%) than *China Daily* (5%) ( $\chi^2 = 12.41$ ,  $df = 1$ ,  $p < .01$ ), having significantly more U.S. social elite sources (11%) than *China Daily* (2%) had ( $\chi^2 = 30.73$ ,  $df = 1$ ,  $p < .001$ ), and using significantly more U.S. NGO sources (6%) than *China Daily* (3%) used ( $\chi^2 = 4.07$ ,  $df = 1$ ,  $p < .05$ ), and also using significantly more U.S. public sources (9%) than *China Daily* (2%) ( $\chi^2 = 23.11$ ,  $df = 1$ ,  $p < .001$ ). In other words, there were significant associations between these sources usage and the newspapers.

Table 6 Comparison of Sources of China Daily and The New York Times on the Coverage of Beijing’s Air Pollution

News Sources	<i>China Daily</i> (n=167)			<i>New York Times</i> (n=67)			$\chi^2$
	Frequency	% <sup>a</sup>	% <sup>b</sup>	Frequency	% <sup>a</sup>	% <sup>b</sup>	

Table 6 (cont'd)

<b>Official Sources</b>							
Chinese officials	<b>144</b>	<b>37</b>	<b>86</b>	<b>48</b>	<b>27</b>	<b>72</b>	<b>6.91**</b>
U.S. officials	20	5	12	21	12	31	12.41**
<b>Nonofficial Sources</b>							
<b>Social elites</b>							
Chinese social elites	72	18	43	14	8	21	10.16**
U.S. social elites	6	2	4	19	11	28	30.73***
<b>NGO</b>							
Chinese NGO	45	11	27	17	10	25	.06
US NGO	11	3	7	10	6	15	4.07*
<b>Lay public</b>							
Chinese public	58	15	35	18	10	27	1.35
U.S. public	6	2	4	16	9	24	23.11***
<b>Other business sources:</b>							
Individuals in business/businesses in China or U.S.)	32	8	19	12	7	18	.05
<b>Total</b>	394	101 <sup>c</sup>		175	100		

<sup>a</sup> proportions of source over all the source presences (e.g. 144/394≈37%).

<sup>b</sup> proportions of source over all the articles (e.g. 144/167≈86.2%).

*Note: Source variable also considers international sources (non-Chinese and non-US sources), which were coded as open-ended variable and thus not being included in this table*

<sup>c</sup> Some rounding error

\*p< .05. \*\*p< .01. \*\*\*p<.001

The study also included the open-ended source variable, that is, international non-Chinese and non-US sources. The newspapers both focused on World Health Organization (WHO) the most, followed by source of International Olympic Committee (IOC), with the former used for interpreting AQI-standard of healthy life and the latter showing official international attitudes toward Beijing's air quality during the Olympics.

## **Relationship between source and frames, differences within category**

There were four out of six topics that were covered in significantly different amount by the newspapers. Specifically, according to Table 4, the most significant difference concerned coverage of the topic of “Politics” which referred to stories that politicized the issue, including but not limited to, linking pollution to human right problems, discussing how the influence/consequence of pollution might reflect on or impact the government’s ruling role, or associating the pollution data-opening efforts with the government’s potential political reform in information transparency. To answer RQ3, the following excerpts are more detailed and present how the newspapers frame the issue differently with the different uses of sources, even within the same topic category; this shows the relationship between source and frame.

### **Topic of ‘Politics’**

As an example of the topic of “Politics,” here are excerpts from *NYT* and *China*

*Daily* stories:

*“Xia Yuchen, a 25-year-old resident who returned to Beijing from France three months ago, welcomed the new leadership's determination, but said she hoped the problems can be tackled as soon as possible... "To tackle air pollution, a transparent supervision system is needed” (China Daily, January 29, 2013, “Pollution top for new Beijing leaders”)*

*“...Bill Bishop, the editor of Sinocism, a daily online newsletter about news media coverage of China, wrote on Monday that “Chinese media is all over the story in a remarkably transparent contrast to today’s haze in Beijing...Even before the 18th Party Congress<sup>8</sup>, the official news media had some latitude to*

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<sup>8</sup> The 18th National Congress of the Communist Party of China (November 8-14, 2012) was in Beijing. The Congress mainly focused on the handover of power to a new generation of leaders.

*publish critiques of environmental policy and investigate environmental degradation, in contrast to strict limits on what they can say on “core interest” issues like Tibet and Taiwan. Nevertheless, the coverage unfolding now represents a new level of depth in addressing air pollution.” (New York Times, January 14, 2013, “China Lets Media Report on Air Pollution Crisis”).*

*“Chinese people want freedom of speech...China’s new leadership under Xi Jinping, who took over as general secretary of the party in November, is already feeling the pressure of these calls. Mr. Xi has announced a campaign against corruption, and propaganda officials, in a somewhat surprising move, allowed the state news media to run in-depth reports on the air pollution last week.” (China Daily, January 19, “Widening Discontent among the Communist Party Faithful”)*

Although both newspapers covered topics of information transparency and tried to indicate potential improvement of political policy based on that, their perspectives differed in their coverage of the topic “Politics.” The much smaller set of mentions of the “politics” topic in *China Daily* implied a slightly critical attitude and tried to put a positive spin on the government’s determination to tackle pollution and disclose pollution data via quoting public sources. However, *NYT* coverage mixed criticism and praise, including mild praise for Chinese media’s recent widening and deepening coverage of air pollution, and included major criticisms linking the pollution to deep-rooted human rights or press freedom issues in which less Chinese official sources presented (i.e. paragraphs quoted previously show that there were still strict limits, and freedom of expression had not been truly achieved). Source use details illustrate different frames between the newspapers.

### **Other ways to address the topic**

For each individual topic, there were different ways of interpretations of the different use of sources, though the percent of coverage quantity didn't appear to vary significantly. Another aspect that answers RQ 3 concerns coverage of the topic "Analysis of causes," *NYT* included discussions of industry waste, coal-burning factories, automobile exhaust, and so forth with narratives, while *China Daily* blamed foggy weather and fireworks as causes of the pollution using Chinese social elite sources (*China Daily*, February 16, 2013 "Lunar New Year goes green with fewer fireworks"), and even used Chinese official sources to blame Western countries, stating that they were transferring pollution to China. (*China Daily*, July 30, 2008 "Haze doesn't mean poor air quality"). This is illustrated by this excerpt:

*"China is today producing most of our electronics and consumer products. Providing electricity for such large-scale production creates massive pollution. In a sense, the way in which the US and Europe 'solved' part of their pollution problem is now causing pollution in other parts of the world, such as China..."*  
(*China Daily*, January 16, 2013, "Li pledges measures in fight for clean air"),

### **Overall negative complaints and overall frame of "self-justification"**

Based on the topic priority differences, RQ1.a. further asked if the overall frames were significantly different. Results supported the existence of such differences, and here are some excerpts representing the frames "Showing pollution-mitigating progress: government's self-legitimization" and "Negative complaints toward the pollution" represented by *China Daily* and *NYT*:

*Paragraph. a. "The quality of the air in China's capital has improved for 14 consecutive years, with the number of major pollutants falling... The municipal government has been taking measures to cut coal consumption in the city for a*



*number of years...*” (*China Daily*, January 16, 2013. “Li pledges measures in fight for clean air”).

*Paragraph. b. “What the leaders neglect to say is that infighting within the government bureaucracy is one of the biggest obstacles to enacting stronger environmental policies. Even as some officials push for tighter restrictions on pollutants, state-owned enterprises — especially China’s oil and power companies — have been putting profits ahead of health in working to outflank new rules, according to government data and interviews with people involved in policy negotiations.” (“New York Times,” March, 13, 2013 “As Pollution Worsens in China, Solutions Succumb to Infighting”).*

It is clear that *China Daily* is more likely than the *New York Times* to have self-legitimizing frames, such as “air quality has improved for 14 consecutive years” in Paragraph a. There were also articles in the Olympics period self-justifying that pollution was caused by fog/weather or other non-air quality-related substances (*China Daily*, July 30, 2008, “Haze doesn’t mean poor air quality”), as discussed previously. This prominent frame accords with *China Daily*’s prioritized topic—“Strategies or potential solutions” because its emphasis on governmental pollution-mitigating strategies came prior to the buildup of discourse about governmental self-legitimization of pollution-mitigation. *NYT*, to the contrary, was more likely to frame the issue around “Negative complaints toward the pollution,” such as showing distrust toward the underlying institutional problems, namely market failures when facing state-owned monopolized oil companies, as stated above in paragraph b. Such negative frames were commonly found in *NYT*, which also was consistent with the prominent topics in *NYT* such as “Social impacts of Beijing’s air pollution” and “Politics” because pollution’s impacts are usually negative.

## CHAPTER VI CONCLUSIONS

### Summary of comparisons

The review of these news story excerpts, as well as the statistical results, indicate these conclusive differences and similarities between the newspapers.

1. The Chinese press, as represented by *China Daily*, favored the topic of “Strategies and potential solutions” the most in their coverage of Beijing’s air pollution, while topics of “politics” and “Social impacts of Beijing’s air pollution” were more prominent in *NYT*.
2. For the topic “Analysis of cause” of which the newspapers had a similar percent of mentions, the details (the potential causes) were interpreted in different ways: *China Daily* blamed Western countries’ transferring pollutants, as indicated in a quoted news paragraph, as well as the weather, while *NYT* mentioned a wider range of potential causes, for example, industry waste and automobile emissions.
3. *China Daily* and *NYT* framed the issue in diverging patterns with different uses of sources: Frames in *China Daily* stories were mostly either neutral or reflecting self-legitimizing confidence about the issue, but *NYT* tended to frame the issue critically around “Negative complaints toward the pollution.”
4. Source use patterns between the newspapers show both similarities and differences. For one thing, there were similar percentages of usage of sources, including Chinese NGO, Chinese public, and other business sources. For another thing, *China Daily* relied significantly more on Chinese official and

Chinese social elite sources, while *NYT* relied significantly more on U.S.

official, U.S. social elite, U.S. NGO and U.S. public sources.

## **Discussion**

### **Factors influencing news content**

Using a quantitative content analysis, the study applied the hierarchy of influences model and tested factors that affected the different performances of two countries' press to investigate the overall international news flow.

This international comparative study applied the theories of influences on news content originated by Shoemaker and Reese (2001) to international news. The findings support these conclusions:

First, based on the two very different media systems, it is highly possible that extra-media and ideological-level factors influenced the differences in media content, such as differences of topic priorities and overall frames. Extra-media forces are mainly external sources, special interests that operate from outside of the newspaper itself and affect media organizations and content (Shoemaker and Reese, 1996). Ideological factors inherently rooted in the two countries' media systems and national characters were valued. These include: national interests, Chinese state media's tendency to put a positive spin on new content, the U.S. liberal media system in which critical reporting and underlying anti-communism ideologies are valued.

Based on these different media systems, different extra-media national interests were assumed and confirmed as influencing source usage and overall framing. For

example, *China Daily* used more Chinese sources while *NYT* relied more on U.S. sources due to their national interests and ideological positions. Moreover, *NYT* presented more critical topics such as “Social impacts,” or “Politics” which politicized the pollution issue. Meanwhile, being under a government-controlled media system, *China Daily* tended to emphasize the topic of “strategy” and thus stated/discussed the effectiveness of such pollution-tackling strategies to provide more positive tones and confidence. Also, under such ideologies, frames were more mild and neutral in *China Daily* than in *NYT*. These findings accord with previous studies of Chinese and U.S. media systems and previous studies of Chinese coverage.

Second, Shoemaker and Reese’s model of influence of factors on media content suggests that factors not only at the ideological, extra-media level but also at organizational media routine levels affect news content. This also can be inferred from the study because the overall frames were formed by varied source usage, and such different source selection processes speak for what attitudes or work practices were valued in the newspapers’ professional routines or even in the newspapers’ policies (Reese and Ballinger, 2001). Thus, importantly, the assumption is that journalists who wrote or edited those articles were subordinated to different limits such as time, journalism norms, etc. Based on the results, it is thus assumed that *NYT* coverage followed traditional norms of objectivity and balance because it also valued official sources from China and balanced its source usage from both sides. Not surprisingly, *China Daily* relied more on sources from China. Even when they used the same source, the words were different. The meanings were routinely structured; such source

use pattern differences came from journalists' writings which originally resulted from what journalists were obliged to do by forces outside their control (Reese, 2001), for example, values of objectivity and balance as forces in U.S. media.

### **Changing media landscapes in the two countries**

Based on the coverage of Beijing's air pollution problem, this study found new comparative characteristics indicating the changing media landscapes in the countries. As *NYT* described it, Chinese officials' initial attitude toward the U.S. embassy's publishing of air pollution data was reluctance (as indicated from the frequency distribution curve in Table 3. In the initial period, *China Daily* had less coverage, but the later information openness (Table.3.) across periods revealed that media increased the amount of coverage and changed its role from focusing on belief-imposing propaganda to the role of "public relations" when facing problems. This presumably represented the liberalization of Community Party and a more open media system as media control is less restricted in some certain aspects (Zhao, 2008: 30; Yu, 2009: 94).

In the meantime, unlike previous studies which stated that U.S. media has the common narrative of "deceitfulness of communists" and always revolved coverage around "the problems and failures of Marxist governments" (Kobland, Du, and Kwan, 1992, p. 66), in this study, *NYT* included a mild degree of praise towards the Chinese government's efforts in tackling the pollution issue. That indicates a milder critical frame that was relatively rare in previous U.S. media coverage of China. Some previous studies found that in general, U.S. newspaper coverage of China was "almost

entirely focused on the problems and failures of Marxist governments” and were critical (Kobland, Du, and Kwan, 1992, p. 64). A possible explanation for that change is that China increased state media’s coverage of this negative issue and allowed the state media to report critically.

### **International News Flow**

A final aim of this study is to investigate international news flow. In accordance with previous research, the changing media landscapes were facilitated by the increasing free flow of international news. It is clear that there has been a gradual change from “U.S. cultural imperialism” to “multiple ways of diffusions at transnational level” in terms of the international news flow at a global level (Chang, 2010). This results also accord with the previous study by Wu (2000), reconfirming that bilateral political and commercial relations between the two countries were getting closer.

U.S. sources are reaching Chinese state media content. On one hand, there was a rising trend of coverage of Beijing air pollution in *China Daily* across the three study periods, and this rise was mainly due to U.S. sources’ exporting pollution data to China. It was also because of the Chinese public’s heated discussions based on information from U.S. sources. On the other hand, with the power of social media (i.e. U.S. embassy’s Twitter account and the Chinese Twitter-like Sina Weibo), U.S. sources permeated state media as U.S. media accepted Chinese sources. Chinese sources in U.S. media sometimes account for a similar percent of stories as the

percent of U.S. sources in Chinese media. As these results show, although source use patterns between the newspapers are mostly significantly different, *China Daily* has more or less incorporated some U.S. sources: U.S. official sources (5%), U.S. social elite (2%) sources, U.S. NGO sources (3%), and U.S. public source (2%). Similarly, U.S. media also incorporated similar amount of Chinese sources into their news stories: Chinese social elite sources (8%), Chinese NGO sources (8%), and Chinese public sources (10%).

This potentially implies the two-way direction of news flow across the two nations. It is not only because of the nature of the issue, but more importantly and possibly, due to the freer flow of information and the increasing accessibility of Chinese sources to U.S. media. Specially, *NYT* and *China Daily* had a similar percent of usage of Chinese public sources (*China Daily*, 15%; *NYT*, 10%) and Chinese NGO sources (*China Daily*, 11%; *NYT*, 10%). Chinese NGOs, particularly environmental non-profit organizations, are thus possibly getting increasingly frequently used in domestic and U.S. media and are becoming internationalized. This further supports the conclusions of increasing environmentalism practices and increasing significance of environmental issues in China, as Xu (2012) found in his study of online coverage of 2008 Olympics-period Beijing Blue-sky project about air quality. However, it differs from Xu's (2012) claim of "event-driven journalism" because the pollution has changed to be a longer-term news agenda, and the topics and amount of coverage are also getting more diversified across time in this six-year study than in Xu's (2012) study of the coverage of the 2008 Olympics period. The easier accessibility of sources

(especially Chinese environmental NGO sources) indicates the possibly freer flow of international news, and more importantly, implies the increasing awareness of environmental conservation that Tong (2014) found in a study of ten Chinese newspapers. Such awareness deeply motivates and facilitates the openness and easier use of Chinese sources as found in this study.

### **Limitations and Suggestions for Future Research**

One challenge in comparative research is measuring the actual equivalence of the two newspapers. The selected U.S. newspaper has much more influence in the world than *China Daily* and has larger international and national circulations as well.

The content analysis in this study is limited in several respects: It is confined to newspapers, looks only at a single case, and uses a relatively small media sample as well, for example, the NYT sample is not large enough to have article fell into the frame category of “Showing pollution-mitigating process: government’s self-legitimization”(Table 5).

Moreover, the variable of overall frames also has a relatively larger percent of articles falling into the category of “None of the above.” A possible explanation is that *China Daily* used more relatively neutral frames that were neither self-legitimizing nor critical/negative. This limitation can be overcome by conducting more pretests to create more detailed categories for the sampled articles to provide more explanations of frames.

The study also lacks details in explaining how the two newspapers’ actual



coverage were different at ideological level.

Future studies could explain the differences at the ideological level with more detailed examination of source use diversities, for example, by creating source index and calculating source distribution and diversity as well in two newspapers, respectively. Future research could investigate the relationship between news coverage and people's perception of the issue to explain ways in which different portrayals of an issue present misperceptions and stereotypes to citizens of the two countries. This could also allow for a better investigation of the presetting stereotypes that were explained earlier by media system differences.

Finally, with the technological developments of social media and China's continuing media openness under such developments, the new changing media landscapes and flow of international news can be further explored with multiple approaches, such as tracking how the original news pieces flowed from one source in a country to another source or another news platform (i.e. online) in another country. With more Chinese NGO sources "flowing" to U.S., it is also worthwhile to study sourcing more deeply to investigate Chinese environmentalism and development of NGO. It can also be explored in the context of multiple countries to more thoroughly study patterns of international news flow in the bigger picture across longer times.

## **APPENDICES**

## Appendix 1 Introduction

This news story protocol is aimed at investigating international news flow with the analysis of the coverage of Beijing air pollution by American and Chinese newspapers. It examines the primary story topics and different source use for different frames, and how these story topics and source priorities jointly indicate the changing trends of international news flow.

### *News Story*

A “Beijing air pollution” news story focuses on the discussion of Beijing city’s air pollution problem, for example, stories about pollution seriousness, discussions of strategies and solutions that can ease the problem, and so forth.

News stories are defined as all nonadvertising and noncommentary matters in a news product. In this study, the news product is the newspaper, and it would usually include all staff-produced professional news stories found in various news sections and exclude comment/opinion pages, sports, routine business data, society news and similar matters. It may include relevant feature stories and cover stories produced by local staff reporters and syndicated and wire services stories relevant to issue. (Riffe, Lacy, & Fico, 2005)

### *Beijing Air Pollution issue*

Beijing air pollution has been a continuous worldwide news receiving high attention since the 2008 Olympic games, during which the problem attracted media attention around the world. After three-year public discussions of the Beijing air, in 2012, the environmental ministry was forced to open the air pollution data--PM2.5 to the public. As measured by U.S. embassy’s air quality monitor, on January 12, 2013, Beijing exceeded its Air Quality Index (AQI). This crisis then again was widely discussed around China’s social media-Weibo (Wong, 2013).

Beijing is the capital and one of the most populous cities in the world. “Air pollution” refers to the introduction of chemicals, particulates, biological materials, or other harmful materials into the atmosphere which could cause disease, death, or damage to humans or other living organisms.<sup>9</sup>

### *PM2.5*

The so called “crazy bad” AQI was released by U.S. embassy’s twitter account. (Wong, 2013) In 2011, a Chinese celebrity called Pan Shiyi, noticed that the numbers from the city's AQI were consistently better than the numbers released by US embassy. Pan pointed out this index discrepancy on his Chinese Microblog (“Weibo”), which is a twitter-like social media platform, and then he claimed that there had been an exclusion or omission of the index of PM2.5 in the Beijing Environmental Protection Bureau. PM2.5, which was the deadly fine particulate matter, then came into public discussion quickly and soon raised heated discussions on social media, but at that time, official media and relevant environmental agencies still didn’t give

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<sup>9</sup> Air pollution. (n.d.). Retrieved January 5, 2014, from [http://en.wikipedia.org/wiki/Air\\_pollution](http://en.wikipedia.org/wiki/Air_pollution) **YOU NEED TO CITE MORE CREDIBLE, ORIGINAL SOURCES THAN WIKIPEDIA**

immediate responses to or sufficient coverage of these public inquiries and complaints about the missing data on PM2.5

“PM2.5” was not included in the daily monitoring in the Beijing Environmental Protection Bureau until 2012. Particulates or particulate matter (PM) are tiny pieces of solid or liquid matter associated with the atmosphere, and among these PM data, PM2.5 refers to fine particles (diameter of 2.5 micrometers or less) and is the one that has aroused heated discussions and extensive media coverage.<sup>10</sup>

#### *A source*

A source is a person or organization who gives information to news reporters (Riffe, Lacy, & Fico, 2005). In this study, sources are mainly divided as international and national sources, both for *China Daily* and for *the New York Times*, to identify the potential pattern of international news flow. Also, in China, sometimes expert sources are included as government sources because they are funded by the government and biased towards the government.

Sources are explicitly identified as such when news reporters quote or paraphrase information from them in stories (Riffe, Lacy, & Fico, 2005).

All the steps that are taken in the content analysis coding process can be described as follows (V stands for variable): (a) all relevant Beijing air pollution stories are read to identify whether it has the sufficient length of mentioning of Beijing air problem (at least one paragraph) and specific publishing time period of that article are coded, topic that covered are also coded, source use are identified to discuss frame differences. (b) all steps for each articles are coded by one coder and checked by another. (c) each story is then analyzed for several specific characteristics listed below.

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<sup>10</sup> Particulates. (n.d.). Retrieved January 5, 2014, from <http://en.wikipedia.org/wiki/Particulates>

## Appendix 2 Codebook

Table 7 Content Analysis Codebook

<u>Variable</u>	<u>Category Names and Codes</u>
<u>Numbers</u>	
V01	<u>Newspaper and circulation rank</u> 1= <i>China Daily</i> 2= <i>The New York Times</i>
V02	<u>Period ID</u> 1=Olympic game period (from January 1st, 2008 to September 17th, 2008)
V02	2=Post-Olympic time: Extensive public discussions of Beijing air pollution (from September 18th 2008 to December 31st, 2012) 3=Beijing air pollution incident: discussions on “air quality exceeded the air quality index (AQI): (from January 1st 2013 to December 31st, 2013)
V03	<u>Primary story topic of Beijing air pollution coverage (Yes: 1/ No: 0)</u> 3.1 Strategies or potential solutions 3.2 Analysis of causes 3.3 Social impacts of the Beijing air pollution 3.4 Health 3.5 Economic and related environmental industries 3.6 Politics
V04	<u>Source (Yes: 1/ No: 0)</u> 4.1 China’s official source: (i.e. government, environmental protection ministry) 4.2 China’s social elite/expert source (researchers) 4.3 China’s NGO source and non-profit source 4.4 China's lay public 4.5 Business in China 4.6 Individuals in organizations in China (businessman, chairman) 4.7 US official source: (i.e. US government, US embassy, EPA) 4.8 US social elite/expert source (i.e. University professor) 4.9 US NGO and non-profit source (i.e. US Olympic Committee) 4.10 US public (i.e. US citizens living in Beijing) 4.11 Business in US 4.12 Individuals in organizations in US (businessman, chairman)

Table 7 (cont'd)

V04	4.13 International organizations (i.e. UN, WHO, world independent research institute) (open-ended)
V05	<u>Overall Frames</u> 1=Showing the pollution-mitigating progress: government's self-legitimization. 2=Negative complaints toward the pollution 3=None of the above

## Appendix 3 Coding Instructions

### V01 Newspaper

Record the one digit code to identify the newspaper in which the story appeared. *New York Times* is “1” and *China Daily* is “2.”

### V02 Period ID

Record the one-digit code to divide when the story appeared in the newspaper. The news period starts from January 1<sup>st</sup>, 2008. There were several events affecting the air pollution coverage, such as “2008 Beijing Olympic Games,” “the first time that Chinese government publish PM 2.5,” and “Air Pollution data’s exceeding the index in January 2013,” there are also several political, social and cultural events happened that have affected the coverage, such as “firework use during China’s traditional Spring Festival (Lunar New Year) season, the environmental policy forum in annual sessions of NPC and CPPCC in China, which is usually in March, and so forth. Therefore, to ensure that the sample size is big enough to see the significant overall international news flow and changing trends of coverage in this case across time, this study makes a 6-year time frame to collect articles.

1. Olympic game period (including the pre-Olympic, the Olympic and the Paralympic Game period, ranging from January 1<sup>st</sup>, 2008 to September 17<sup>th</sup>, 2008)
2. Post-Olympic time: Extensive public discussions of Beijing air pollution (from September 18<sup>th</sup>, 2009 to December 31<sup>st</sup>, 2012)
3. Beijing air pollution incident: discussions on “air quality exceeded the air quality index (AQI): (from January 1<sup>st</sup> 2013 to December 31<sup>st</sup>, 2013)

### V03 Primary story topic of Beijing air pollution coverage

A one-digit code will be used to identify the category of the story that is under evaluation. To be coded as one of these categories, there should be characteristics that include the following. Each story contains two or more elements, so each topic will be coded as “existent” or “not existent” (1 or 0). To calculate, each topic will accumulate the number to see which appears to be the dominant topic in each newspaper. Topic can be calculated as “1” (existent) in an article only if the article contains a complete thoughts of the topic with several sentences describing it.

#### *1. Strategies or potential solutions*

Any story with a headline or lead that stresses some strategies to tackle the Beijing air pollution problem. Topic in this category include discussions of some certain strategies that can be potentially useful to ease the city’s air pollution, and descriptions of the city or Chinese government’s new strategy, for example, environmental regulatory act, environmental industries’ responsive and environmental friendly policies, free masks distributions and others.

#### *2. Analysis of causes*

Any story with a headline or lead that stresses causes of Beijing air pollution. This type includes stories that analyze how the pollution happened and how it gradually became serious. Possible cause analyses concentrate on pollutants from auto industry, severe influence of coal plants, use of fireworks, etc.

### *3. Social impacts of the Beijing air pollution*

Stories that mainly discuss the general social impact of Beijing air pollution, except for impacts in health aspects. These stories show how the pollution affect the general public and the society. These emphasize the public's reactions, and society's changes caused by the pollution.

### *4. Health*

Stories that mainly portray disease, potential death, and other related health damages or problems that are potentially caused by or related with the air pollution.

### *5. Economic and related environmental industries*

Any story with a headline or lead that stresses the economic side of Beijing air pollution. This type includes stories that analyze how the pollution and environmental deterioration occur due to the extensive economic growth, how environmental protection strategies may affect the macro-economic growth and probably affect some pollution-related industries.

### *6. Politics*

Any story shows the political issue in the article is included, for example, human right issue, how the pollution brought influence on or reflect Chinese government's ruling role, Chinese government's potential political reform, and China's government information openness which indicates the international news flow.

### *7. Others*

If the story does not has the above categories, even though it is a Beijing air pollution story.

### V04 Source

Primary story source is the source that takes up the most story space. Record "1" as "Yes" if the source is present, use "0" to record No if the source is not present.

Official sources are those with credentials yet relatively biased tones, such as Chinese government, Chinese environmental bureau; US official sources may include US embassy, US Environmental Protection Agency. Social elite/expert sources refer to scientists, university professors, and this category only includes those who are affiliated, namely the researchers. Chinese and WE NGO / non-profit sources are those relatively independent organizations in each country. Chinese and American



lay public refer to those ordinary people who are not informed. Businesses in China and US refer to those companies in or run by the two countries and their voices in the news. Individuals in Chinese organizations and individuals in American organizations are representatives in the companies. International organizations refer to non-Chinese AND non-US organizations which are relatively independent and relatively free from influence of China or US, for example, United Nations, WHO, World independent research institute, they are not the focus of this study, plus, there are not many international organizations in the previous articles. Thus, international organization sources are coded as open-ended.

Overall, these source use similarities and differences may indicate different or common frames shared by the two newspapers and identify the information flow.

#### V05 Overall Frames

Record the one-digit code that best describes the frames that the article has. Analyze the cited sources and the stated attitudes (adjectives) by the sources towards the “Beijing air pollution,” and count the paragraphs which have such sources to identify the frames. At the end, the numbers that represent the following frames are recorded and compared, respectively.

##### *1. Showing the pollution-mitigating progress: government’s self-legitimization.*

Use this code if the Beijing air pollution in the article is not criticized hard by sources, source appears confidence in tackling or solving the pollution, and even praised the pollution-mitigation process accomplished by Chinese government, or admits that Chinese government has prioritized the pollution agenda. This could contain stories in which the pollution is described as an extreme case, and the overall air pollution seriousness has been improved over the past years, or can be described as the problem will confidently and unquestionably been solved soon. The adjective words include “hopeful, successful in some strategies, some innovative improving devices will be put into service,” or any other words with progressive connotations.

##### *2. Negative complaints toward the pollution*

The problem is described in a negative light by sources or the reporters. This could contain stories in which the problem is described with serious adjectives and described to be in an extremely hard condition, and stories with multiple critical unofficial sources consistently complaining about the air pollution, the cases in which the pollution will negatively result in the loss of trust or faith towards Chinese government, or the frames that generally unconfident about potential pollution-tackling strategies.

##### *3. None of the above*

#### Appendix 4 T-Test Table: Comparing source usage of two newspapers

Several t-test analyses were conducted for the comparisons of numbers of following source categories ‘total source’, ‘official’ and ‘nonofficial source’, ‘Chinese nonofficial’ and ‘US nonofficial source’ on China Daily and NYT (these were combined from the original 12 source categories). The categorizations and T-Test were conducted in case the nonparametric inferential chi-square tests are not effective due to the equally small number (sometimes zero) of each source in two newspapers. In that case, merely comparing the frequency for each individual category could be failed and invalid; an additional categorizing(combining) and a comparison of means are needed. While eventually, chi-square tests turned to work well and presented significant results, thus, these T-test approaches are included in this appendix.

According to the following Table 7, a t-test was conducted comparing the mean score of total source number in China Daily to the mean score of total source number in NYT. No significant difference was found ( $t(232) = -1.473$ ,  $p > .05$ ). The mean of total source number of China Daily ( $m = 2.36$ ,  $sd = 1.13$ ) was not significantly different from the mean of total source number of NYT ( $m = 2.61$ ,  $sd = 1.31$ ).

For the total official source use, total number of official source on China Daily averaged .98, with a standard deviation of .45; total number of official source used on NYT averaged 1.03, with a standard deviation of .67. No significant difference was found ( $t(90) = -.536$ ,  $p > .05$ ), neither. The mean of total quantity of official source in China Daily was not significantly different from that of NYT.

The below Table 7 also presents that there was no significant difference on nonofficial source use between China Daily and NYT ( $t(232) = -1.344$ ,  $p > .05$ ). The mean of number of nonofficial sources on China Daily ( $m = 1.38$ ,  $sd = 1.05$ ) was not significantly different from the mean of number of nonofficial sources on NYT ( $m = 1.58$ ,  $sd = 1.08$ ).

Whereas, for the quantity of Chinese nonofficial source, a significant difference was found ( $t(232) = 2.337$ ,  $p < .05$ ). The mean of the number of Chinese nonofficial source on China Daily ( $m = 1.24$ ,  $sd = .96$ ) was significantly higher than the mean of the number of Chinese nonofficial source on NYT ( $m = .91$ ,  $sd = 1.01$ ). Similarly, there was a significant difference for the use of US nonofficial source ( $t(88.993) = -4.705$ ,  $p < .01$ ). The mean of the number of US nonofficial source on China Daily ( $m = .33$ ,  $sd = .54$ ) was significantly lower than the mean of number of US nonofficial source on NYT ( $m = .85$ ,  $sd = .84$ ).

Table 8 T-Test Comparison of Source Usage between the Two Newspapers

Number of source	China Daily		The New York Times		T
	Mean	Std. Dev	Mean	Std. Dev	
Official source	.98	.45	1.03	.67	-.536
Nonofficial source	1.38	1.05	1.58	1.08	-1.344
Chinese nonofficial source	1.24	.96	.91	1.01	2.337*

Table 8 (cont'd)

US nonofficial source	.33	.54	.85	.84	-.705**
Total source number	2.36	1.13	2.61	1.31	-1.473

\*p < .05. \*\*p < .01.

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