Hazy Messaging:
Framing Air Pollution on Chinese Social Media

Elizabeth Plantan (Cornell University) & Chris Cairns (Cornell University)

Abstract:
Some China watchers have heralded the advent of social media as a turning point for civil society development, praising microblogs like Sina Weibo for their ability to broadcast public concern and spur surprisingly critical public debate on social issues. However, what are the key frames related to social issues that are originating on social media and who is responsible for spreading these messages? To what extent do these key frames and messengers interact with general trends in public opinion on a platform like Weibo? Furthermore, how does state intervention shape which issue frames or voices spread and which are blocked? We gain leverage on these questions through both qualitative and quantitative content analysis of Weibo posts, focusing on its most influential users during crisis moments over air pollution in 2012. By looking at online discussion of an environmental issue, we can focus on the key actors, issue frames, and their dynamic interaction with one another on social media. In this chapter, we consider how non-state actors (including public intellectuals, Chinese environmental leaders, and branches of international environmental NGOs) frame the issue of air pollution, how they contribute to and interact with the wider conversation on Sina Weibo, and to what extent the government chooses to censor posts from these actors. This allows us to draw conclusions about the role of non-state actors in raising netizen awareness during crises and sheds light on state-society relations of the balance between state control and improving governance through social pressure in China.

Paper prepared for the symposium
“The Everyday Politics of Digital Life in China”

University of Pittsburgh

October 7-8, 2016

DRAFT

Comments welcome. Please do not cite without the author’s permission.
Introduction

The role of the Internet in politics has received increased attention in the scholarly literature in recent years, especially after highlighting the use of social media during the Arab Spring. Expectations for new digital technologies range from bringing full democratic regime change (Howard and Hussain 2011; Lynch 2011; Shirky 2011; Tufecki and Wilson 2012; Farrell 2012) to providing yet another space for resilient authoritarian regimes to gather, manipulate, and control information (Aday et al. 2010; 2012; Morozov 2011; MacKinnon 2012; Gehlbach and Sonin 2014). However, in between expectations for increased stability or total collapse lie a broad range of every day interactions between an authoritarian regime, its citizens and key non-state actors online.

This paper considers one such example of the dynamic interactions between these key actors through new digital media. Through examining online discussion of air pollution in China, this paper aims to better understand the interaction of state and society through new media by asking three broad questions. First, in adaptive authoritarian states like China, which types of non-state actors – grassroots environmental leaders, public intellectuals, or branches of international NGOs – influence public debate on environmental issues of increasing concern to citizens? What are the key frames that emerge in the online discussion of environmental issues, and how do these key non-state actors interact with web users to interpret and disseminate these frames? Furthermore, how does state intervention shape which issue frames or voices spread and which are blocked? This paper seeks to answer these questions by examining the case study of the 2012 air pollution controversy in Beijing using a unique dataset compiled from posts on Sina Weibo. This dataset, supplemented by in-depth interview data, gives insight into how non-state actors frame the issue of air pollution, how these frames interact with the wider conversation on Sina Weibo, and to what extent the government chooses to censor posts from these actors.

We find that, although both international and environmental NGOs and leaders have been identified as key actors driving the spread of discourse in the “green public sphere” (Yang and Calhoun 2007), the key influencer in our case study is a public figure who previously was not connected to the environmental movement. This highlights the importance of considering a diverse array of non-state actors who may be involved in shaping online discussions in the public sphere, even outside the issue area in question. We also find, consistent with recent literature on framing environmental issues, that framing the issue of air pollution in terms of its threat to human health was the most widespread. Finally, we argue that online discourse on environmental issues is not static or unidirectional, going from environmental “issue entrepreneurs” to the public, but is a dynamic process by which various non-state actors, citizens, and state actors interact and re-interpret their own ideas, campaigns, and policies. The findings shed light on the role of non-state actors in raising netizen awareness during crises and sheds light on state-society relations of the balance between state control and improving governance through social pressure in China. In doing so, this paper contributes to the literature on state-society relations in authoritarian regimes, environmental politics, and political communication.
The rise of environmental non-governmental organizations (ENGOs) in China over the last several decades can be connected to the interaction between environmental crisis from rapid industrialization and policies of reform and opening. As China has opened up to the world, it also opened up its NGO sector and allowed for some civil society development. At first, scholars of budding civil society in China were skeptical about its level of autonomy from the state, arguing that it followed a state-led corporatist model (Frolic 1997; Unger and Chan 1995, 2008); however, scholars have gradually shown varying degrees in Chinese civil society autonomy as organizations “negotiate” their relationship with the state (Saich 2000). It is this conceptualization of civil society as a more autonomous “third sector” in Chinese politics that this paper considers.

Civil society organizations have proliferated rapidly since the 1990s, which scholars have attributed to various sources, including the global “associational revolution” (Salamon 1994), an increase in international funding and influence (Xie 2011; Spires 2012), and the rise of the Internet (Yang 2003b) during the same period. In addition to overall civil society development, China has seen a remarkable increase in environmental NGOs in the past two decades. This has been attributed to “increasing environmental crisis” in the wake of the reform and opening process (Bao 2009, p. 7) further aided by a “greening” of the state (Ho 2001), in which the Chinese government started to enact environmental policies and create new institutions charged with environmental protection. Chinese ENGOs address environmental degradation both out of civic duty and the fact that the government often lacks the capacity to respond; meanwhile, the government responds to these ENGOs with a mix of policies “from stringent control to tolerance and encouragement” (Ho 2001, p. 901). This spectrum from control to tolerance or encouragement has led some scholars to argue that environmental NGOs in China operate in their own special “semi-authoritarian context” and have created a separate “green public sphere” for the discussion of environmental issues (Ho and Edmonds 2008; Yang and Calhoun 2007). Environmental demands from civil society have even been incorporated into decisions on policy, including high-profile cases of public participation related to large-scale projects, such as hydroelectric dams (Mertha and Lowry 2006; Mertha 2008; Han 2013).

This approach to environmental policymaking – which includes the (limited) participation of civil society – suggests a more adaptive governance style that has recently been addressed in the broader literature on China. Although the fragmented authoritarian model (Lieberthal 1992; Oksenberg 2001) was long dominant in studies of Chinese politics, it has been slowly augmented as the role of non-state actors increases in the Chinese political process. Authors have variously labeled such non-state actors as “policy entrepreneurs” (Kingdon 1984, applied to China in Mertha and Lowry 2006; Mertha 2008, 2009), “organizational entrepreneurs” (Yang 2005), or “issue entrepreneurs” (Yang 2010) in order to document the increasing potential of non-state actors to pressure and bargain with government actors in China. This shift from fragmented authoritarianism to a more pluralized “fragmented authoritarianism 2.0” (Mertha 2009) or even “consultative authoritarianism” (Teets 2013) has further widened the playing field for nongovernmental actors to actively engage in the policy process. While the central government is still firmly in control, civil society actors – particularly those working on environmental issues – have been increasingly able to be more involved in governance.
The rise of new technology, such as the Internet and social media, has presented both new opportunities and new challenges for negotiating the state-society relationship in China. Even before the proliferation of social media and social networking platforms, scholars recognized the impact that the Internet could have on civil society in China. This ranges from fostering debate and problem articulation, to facilitating the activities of existing groups, to introducing a new “radical form of public debate” (Yang 2003a, p. 469; Yang 2009). In recent years, social media has allowed a semi-autonomous space for ENGOs, public intellectuals, and bloggers to reach new audiences throughout China and the world, while ordinary web users can use online platforms to air grievances, such as complaints about environmental degradation. This presents a double-edged sword for the Chinese government. On the one hand, the central government can use ENGOs and social pressure from public opinion to improve environmental governance; on the other, building public pressure on social media risks social instability by allowing criticism of government inaction on environmental issues. Given the unique opportunities and challenges posed by social media, both for state and societal forces alike, it is important to understand which actors are most likely to be involved in online public discussion of environmental issues and what their positions and interests might be. In the next section, we consider the key actors in shaping, contributing, and responding to public discourse on environmental issues on a social media platform like Sina Weibo.

Articulating environmental problems on social media: the key actors

The Internet, in giving new possibilities for citizen participation, is an ideal platform for looking at “the interactive dynamics of technology and civil society” (Yang 2003b, p. 421). In addition to considering civil society actors, however, we argue that the Internet is a new space examining the interactions between state actors, civil society actors, and the general web-using public. In this paper, we consider which of these actors might be actively involved in the discussion of environmental issues on social media platforms like Sina Weibo. We have identified four key groups of actors: environmental civil society leaders, ordinary web users (often called “netizens”), elite social media influencers (or “Big V”), and government censors.

Environmental civil society leaders (domestic and international)

Using the idea of a public sphere (Habermas 1989), Yang and Calhoun (2007) describe the rise of a “green public sphere” for critical environmental discourse in China. The authors argue that environmental NGOs play a central role in producing this discourse (“greenspeak”) through “their creative use of the internet, alternative media, and the mass media” (Yang and Calhoun, p. 230). In this view, the most influential actors in environmental discourse are environmental organizations. Other studies have considered the role of NGOs as “issue entrepreneurs” who are constrained by political and social conditions, but still central to the promotion environmental issues online (Yang 2010). Furthermore, scholars have confirmed the importance of both domestic and international environmental NGOs in looking at environmental activism social networks on the Internet (Sullivan and Xie 2009). Following this literature, we consider environmental civil society leaders – from both domestic and international environmental NGOs – as important actors in the discussion of environmental issues on social media.
**Ordinary web users**

Although environmental civil society leaders are important actors in the online discussion and articulation of environmental problems, they do not by any means have a monopoly over these issues and may also be constrained by the political and social conditions in which they are embedded. As Yang (2005) notes, environmental NGOs in China are mostly non-confrontational and push for gradual change while working with government institutions. Meanwhile, netizens or “ordinary” web users, may actually have greater latitude to speak out on issues of “wide public resonance” (Yang 2010, p. 117). With relative anonymity and large numbers, ordinary web users may be more able to push boundaries and achieve more rapid change than environmental leaders. Furthermore, web users have their own interpretations to add to public debate over environmental issues. As Tang and Huhe (2014) argue, “the meanings and values developed through online discourse and attached to news events by web users are alternative to those presented by journalists, politicians, and organizations” (p. 562). For these reasons, we consider the contributions of the broad population of web users in China to the public debate over environmental and social concerns.

**Elite social media influencers (“Big V”)**

In addition to ordinary web users, there are also some elite users of social media platforms like Sina Weibo that may have a magnified influence in the online discussion of environmental issues. The most influential or “elite” users on Sina Weibo are known as the “Big V” for the letter “v” that appears next to “verified” user accounts. As scholars of Chinese politics have noted, these “Big V” have disproportionally more influence on platforms like Sina Weibo than ordinary users, which has even attracted the attention of the Chinese government in the form of recent crackdowns on a few of these elite users (Svensson 2014). Other studies of social media in other contexts have confirmed that elite users, such as the “Big V” on Weibo, are important influencers. Wu et al. (2011) have found that 50% of the links consumed on Twitter are generated by just 20,000 elite users. In measuring influence, it is important to note that number of followers, although a decent proxy for whittling down “elite” users, does not necessarily mean that all of these users are influential (see Avnit 2009 on the “million follower fallacy”). Instead, the most influential users are those that “have an active audience who retweet[] or mention[] the user” (Cha et al. 2010, p. 11). Therefore, we include certain “Big V” not only because of large number of followers, but also because of the potential for the greatest influence (in terms of retweets or mentions) on environmental topics that we focus on in our study.

**Government censors**

Finally, our fourth actor actively involved in online discussions of environmental issues are government censors. As many scholars of China have shown, online censorship in China is

---

1 See Ho and Edmonds 2008 for a discussion of embedded activism.
2 Although a 2013 crackdown on high-profile “Big V” led by top Party officials has greatly diminished their latitude to speak out on “sensitive” political topics, it would be premature to conclude that these limitations extend to the environmental sphere, or that (despite the current restrictive climate) the sort of lively civil society pressure embodied by the “Big V” in 2011-12 on Weibo will not recur in the future.
Articulating environmental problems on social media: the key frames

These above-mentioned actors are all involved in an interactive process of problem articulation, framing, and (re-)defining the limits of acceptable critical environmental public discourse. In categorizing and analyzing that online discourse, we identify several different key frames. Frames are social and cultural constructions of events and developments that shape individual beliefs, perceptions, or attitudes. While framing is variously defined throughout the literature, an important consensus is that frames are *selective* and *salient* (Entman 1993). They “highlight some aspects of reality while excluding other elements, which might lead individuals to interpret issues differently” (Borah 2011, p. 248). Thus, frames select certain bits of information and present them in such a way that may be salient to individuals and make them think about an issue in a different way. Frames rarely operate in isolation and more often compete with one another within the same issue area (Chong and Druckman 2007). Different frames on the same topic are essentially competing over “resonance” with a target audience (Snow and Benford 1988). In thinking about environmental issues, particularly the problem of air pollution in China, we look at four broad groups of frames: environmental, health, government blame/responsibility, and comparisons to international standards or conditions abroad (what we term “domestic vis-à-vis foreign”).

Environment

Traditional “environmental” frames emphasize the importance of environmental protection for the environment’s sake. Yang and Calhoun’s (2007) concept of “greenspeak” falls mostly under this category. This frame stresses human-nature harmony, green consciousness, and the protection of biodiversity of the natural environment. Some scholars have critiqued this framing, arguing that the traditional “environment” frame unnecessarily separates nature from humans (Lakoff 2010). Furthermore, environmental issues are so complex that it can often be difficult to find “simple, basic framing” for effective mobilization (Lakoff 2010, p. 80). In this way, environmental civil society leaders acting as “advocates and disseminators” (Yang and Calhoun 2007, p. 213) of a traditional environment frame might be at a disadvantage in attracting their target audience. This framing is not expected to be sensitive for government censors.

Health

---

3 See the literature on authoritarian information for arguments that censorship is an “information gathering” tool for the regime.
Alternative framings of environmental issues abound. However, in discussing environmental degradation, a strong alternative framing is immediately apparent: its impacts on human health. Studies of the effects of framing have shown that interest in and willingness to take action on climate change increases when it is framed as an issue that impacts human health – instead of being framed as simply an environmental issue (Maibach et al. 2010; Myers et al. 2012; Cardwell and Elliott 2013). Framing environmental issues as public health issues may increase resonance by making “the problem more personally relevant, significant, and understandable to members of the public” (Maibach et al. 2010, p. 1). In the Chinese context, framing environmental issues as health issues may be a particularly fruitful avenue. Recent high-profile studies linking pollution to human health impacts (WHO 2016; Chen et al. 2012; Pope and Dockery 2013; Lelieveld et al. 2015) have drawn increased attention to the issue. Issue entrepreneurs might be especially important in brokering the gap between health and the environment in China (Yang 2010); meanwhile, environmental NGOs may also be able to use the public health frame “as a vehicle for pushing change on broader issues of transparency or greater public participation” (Holdaway 2013, p. 269). For this reason, when considering the environmental and health frames in competition, we expect that the health frame, when available, will be more salient and resonate with a broader audience in online discussions of environmental problems in China. Because the health frame has potentially broader frame resonance and mobilizing potential, we expect that government censors would censor this frame at a higher rate.

**Government blame/responsibility**

Framing of environmental issues in terms of government blame or responsibility is our third frame, as a way to look directly at expectations of the state-society relationship with regard to environmental issues in China. Nonstate actors engaging in the online discussion of environmental issues in China may have a particular view of how the government should deal with them. These comments may emphasize that it is the government’s responsibility to address and solve environmental problems (rather than business/industry or citizen’s themselves). Comments may also blame the government for ignoring or mishandling the environmental problem at hand. Here, we are interested in the extent to which all of our non-state actors hold the government responsible and how the government censors respond to this framing of the issue. We expect this frame, especially negative evaluations of government blame, to be censored at a higher rate. We also expect that direct and negative government blame might be off limits for environmental civil society leaders, given that they want to continue a semi-cooperative relationship with government actors, but more available to Big V and ordinary web users who may not have to worry about sullying existing relationships with government officials.

**Comparisons to international standards or conditions**

The discussion of environmental problems in China does not happen in a vacuum. For better or for worse, online commentary on environmental issues often compares the Chinese situation to international standards or environmental conditions abroad. For the issue of air pollution, which has international WHO standards, this is especially salient. Comments that directly compare China’s domestic air quality to the international standard make an implicit critique of the Chinese domestic situation for being below the international standard. Given the time period and specific case that we are examining, we expect that these “domestic-vis-à-vis foreign”
comparisons will be more considered more “off limits” for members of environmental civil society who are trying to maintain a working relationship with government officials, but more widespread for unaffiliated Big V and ordinary web users. These comments will also be censored at a higher rate. We expect this to be the case because online comparisons of China’s situation vis-à-vis other countries can invoke nationalist themes of humiliation by foreigners (see Cairns and Carlson 2016) and put the government on the spot to defend China’s honor.

Case Description: The 2012 Dispute over U.S. Embassy Air Data Disclosure

From the off the charts “Airpocalypse” in 2013 to the March 2015 documentary “Under the Dome,” discussion of air pollution in China has dominated the media, both foreign and domestic. Air pollution has been a problem in China for quite some time, but the issue became a political flashpoint in 2012. Although daily Air Quality Index (AQI) data has been available in many Chinese cities since the early 2000s, there was a more recent controversy over including measurements of PM2.5 (particulate matter of 2.5 micrometers in diameter or less) in this data, making it more fine-grained than the official data that only included the larger PM10 (Chan and Yao 2008). The U.S. Embassy in Beijing has been recording and reporting its hourly PM2.5 readings since 2008, and this practice slowly spread to U.S. Embassies and Consulates across China. The Chinese government asked the U.S. Embassy to stop reporting the data, but the United States continued to release its information on Twitter. These reports – and accompanying commentary – also spread on Sina Weibo (the Chinese version of Twitter) creating more public awareness of China’s air pollution problems.

In early January 2012, in response to mounting public pressure, the Chinese government announced that it would be releasing more detailed air quality data in Beijing using the PM2.5 standard by the end of January (Barboza 2012). Unfortunately for the government, air pollution surged on January 10, 2012, going “beyond index” according to U.S. embassy PM2.5 data, but air quality was still “good” on the official scale that only measured PM10 (AFP 2012). To make matters worse, the Chinese government’s release of PM2.5 readings at the end of January coincided with the Chinese Lunar New Year celebrations, when fireworks caused a spike in air pollution (Bodeen 2012). Although the Chinese government was releasing data on PM2.5, these measurements were suspiciously lower than the U.S. Embassy readings, which cast doubt over whether official air quality measurements could be trusted.

Throughout the spring, these sorts of incidents continued to be covered in the foreign press and discussed online, but they culminated in an official statement in June 2012. On World Environment Day (June 5), Wu Xiaoqing, the Vice Minister of Environmental Protection, demanded that the U.S. Embassy stop releasing its air pollution data (Ford 2012). He argued that it was unfair to judge China’s air pollution using American standards, since China was at a different level of development. This comment set off a firestorm on Weibo, as netizens both mocked the Vice Minister’s statement and generated much debate about the Chinese government’s responsibility to solve the problem of air pollution. This June event, and another that followed about a week later, mark a turning point in the 2012 online discussion of air pollution.

Data and Methods
To examine the dynamics of online discussion of air pollution in 2012, we examine relevant posts on Weibo during 2012. To do this, we draw upon a trailblazing dataset collected by researchers at the University of Hong Kong (“WeiboScope”). This dataset consists of over 38,000 Weibo celebrity users, which the researchers defined as all users with a Verified user account status and more than 10,000 followers as of January 2012 (Fu, Chan, and Chau 2013). To our knowledge it is the most comprehensive dataset of Weibo posts currently available. While such a sample is biased toward educated elites, as opinion leaders these individuals are in fact our population of interest since they have the potential to influence ordinary web users’ opinions and are more likely to catch the eye of government censors. Each row in the dataset consisted of one social media post plus associated meta-data. We relied only on the post text, and counted embedded reposts as part of the text.

To filter out only the data relevant to air pollution, we selected posts for our dataset that contained one or more of the following keywords: “air pollution” (kongqi wuran or daqi wuran), “air quality” (kongqi zhilang or daqi zhiliang), “smog” (wumai), “haze” (huimai or huiwu), and “PM 2.5” (in Latin characters). This left 71,088 posts for all of 2012. We went through several stages of pre-coding exercises to determine the key categories before moving on to the full coded sample. This is detailed in the Appendix. After several rounds of pre-coding exercises, we settled on our key categories or “frames.” As detailed above, these categories fit into four larger frames: 1) environment; 2) health; and 3) government blame/responsibility; and 4) domestic vis-à-vis foreign. After hand-coding a sample of these posts, we trained a computer program (ReadMe) to estimate proportions for the rest of the year’s posts (see Appendix for details).

In addition to analyzing all posts during 2012, we also singled out three individual user accounts from our dataset to represent the key non-state actors mentioned earlier. These include: an environmental civil society leader from a domestic Chinese environmental NGO (Institute of Public and Environmental Affairs founder, Ma Jun), a branch of an international environmental NGO operating in Beijing (Greenpeace East Asia, Beijing office), and an elite social media influencer (“Big V”) on the issue of air pollution (Chinese business magnate, Pan Shiyi). We coded all of the relevant posts from these three users according to our categories. The next section explains why we chose these three particular actors, emphasizing their importance in the online discussion of air pollution in 2012 as confirmed through in-depth interview data.

Selection of key individual accounts: Ma Jun, Greenpeace, and Pan Shiyi

The three individual accounts were chosen from a list of potential key actors that the authors brainstormed early on in the project based on personal and scholarly knowledge of the topic. The final selection of these three, however, was confirmed through author interviews with several of these key actors and their peers. 

---

4 As a robustness check, we search key dates during 2012 when discussion about pollution was known to spike, and holistically read for posts relevant to air pollution but not containing one of the above keywords, to ensure that keyword sampling does not induce a selection issue. This is detailed in the Appendix.

5 Interviews were conducted by the first author from February 2016 to May 2016 in Beijing, China. In all cases, interviewees asked for full anonymity (their name and the organization’s name) as a condition of giving the interview.
First, we selected Ma Jun for his influential work as the founder of one of Beijing’s most active environmental NGOs, the Institute of Public and Environmental Affairs (IPE). Ma Jun has received many accolades for his work on the environment in China, including the 2006 Goldman Environmental Prize, an “environmental Nobel” that honors environmental activists from around the world. Many of the NGOs interviewed in Beijing mentioned Ma Jun and his organization as the best organization working on pollution data disclosure. In addition to his recognition among the environmental activist community, the scholarly community has also regularly singled him or his organization out as a focus of their research on environmental civil society in China (Yang 2010; Wu 2013). Since it was founded in 2004, IPE has been collecting, analyzing, and publishing data on pollution in China. Ma Jun’s philosophy, however, is to only use government-released data instead of releasing unsanctioned data or collecting data themselves. This allows them to stay within acceptable boundaries of environmental NGO behavior and to work closely with government officials; however, it does limit them in their ability to keep pushing for more data disclosure. During 2012, Ma Jun would have been keenly aware of and interested in the debate over PM2.5 data disclosure – a measure missing from his organization’s database without official government data release. However, he would have also been cautious to limit his calls to more official government release, since his project depends both on continued government data release and good relations with government officials.

Second, we chose Greenpeace because it is a globally important international NGO that has a branch office in Beijing. The Greenpeace office in Beijing works on issues related to pollution through their climate and energy campaign that focuses on curbing coal consumption. During the period from 2011-2013, the climate and energy campaign actually shifted to incorporate more messaging about PM2.5 (ultimately linking coal as the cause) because of the increase in public awareness of urban air pollution. Greenpeace not only has a social media presence, but also engages in “social monitoring” of online discussion to understand which issues are of top concern. Greenpeace’s social media team would be keenly aware of the discussions happening online with respect to air pollution both for promoting their own research and campaigns and for learning what the public finds most engaging.

Finally, we chose Pan Shiyi, Chinese real-estate mogul, for his outspoken and widely recognized contribution to the online discussion around air pollution in 2012. International news reports regularly described Pan Shiyi’s role and online presence. Chinese environmental activists also recognized Pan’s key role. One interviewee mentioned that they regularly monitored his posts from 2011-2013 to see what he was saying about PM2.5. Another interviewee at a leading Chinese environmental NGO said that Pan Shiyi had made the single biggest effort to contribute to transparency of air quality data in China during this time period. Finally, the Chinese government may have even picked up on Pan’s influence, as evidenced by an interview on

---

6 Interviews, international environmental NGOs, Beijing, R59 & R67
7 Interview, domestic environmental NGO, Beijing, R56
8 Interview, domestic environmental NGO, Beijing, R60
9 Interview, international environmental NGO, Beijing, R59
11 Interview, international environmental NGO, Beijing, R67
12 Interview, domestic environmental NGO, Beijing, R56
CCTV in 2013 that was widely interpreted as the government pressuring Pan to rein in his online presence and criticism. Although we cannot be certain that Pan was reined in because of his comments about air pollution, this does suggest that the government was concerned about Pan’s general ability to use social media to spread information and his opinions to a wide audience. Before the government’s warning, we expect Pan Shiyi’s level of activity and ability to spread critical speech online to be much higher than that of our other two key actors.

Results

Before we look at the key actor and frames for 2012, it is helpful to start with an overview of the data. After subsampling the WeiboScope dataset for our pool of relevant posts about air pollution, 71,088 posts for the year 2012 remain. These relevant posts are graphed in Figure 1.

---

http://chinadigitaltimes.net/2013/09/netizen-voices-cctv-reins-pan-shiyi/
Figure 1 shows the number of relevant posts for each day over the course of the year. There is a spike in posts near the beginning of the year in January, and then an even higher spike in the middle of the year (June). The surge in posts at the beginning of the year may be related to actual real-world poor air quality during January (see Figure 2). However, AQI is fairly low in June, so it is unlikely contributing to the spike in relevant posts in June. As mentioned in the case description, we argue that this June surge of posts on Weibo is related to Wu Xiaoqing’s (the Vice Minister of Environmental Protection) speech on World Environment Day (June 5), the discussion online after his comments (June 6), and a viral post from Pan Shiyi about the U.S. Embassy air pollution controversy about a week later (June 13). While this paper does not go into these dates in detail, because of the volume of posts on those two dates and the changes in censorship strategy in response to those events (see Cairns and Plantan 2016), we are using the June 6 and June 13 events as a breakpoint in our data that allows us to compare the period before the Weibo firestorm broke loose (January to June 6) to the period after (June 13 to December).

Before looking at these before and after periods, however, we first turn to the distribution of frames in our 500-post random sample (Figure 3). Overall, web users in our dataset discussed the issue of air pollution during 2012 in terms of government accountability, health, and comparisons to abroad (domestic vis-à-vis foreign, labeled in Figure 3 as “DVF”). They also tended to share reposts of news and AQI monitoring. Their use of the “environment” frame is minimal. This may suggest that web users find “health” frames of air pollution to be more resonant than environmental ones.

*Individual Key Frames (Overall)*
For each individual overall (Figures 4-6), the “health” frame is emphasized more than the “environment” frame. This seems surprising for Greenpeace and Ma Jun, considering that they are representatives of international and domestic environmental NGOs. However, since health frames may be more resonant than purely environmental issues, these environmental civil society leaders may be using “health” frames to push their environmental campaigns and environmental policy goals. Furthermore, both Greenpeace and Ma Jun emphasize government accountability. This may show their readiness and desire to work with the Chinese government on issues related to air pollution. Meanwhile, Pan Shiyi posts mostly retweets of AQI monitoring, with some commentary on government accountability, health, and comparisons of China’s situation to abroad (domestic vis-à-vis foreign). Meanwhile, he barely uses the “environment” frame, nor does he re-post many news articles about the topic. Interestingly, none of these three individuals emphasizes the “domestic vis-à-vis foreign” (“DVF”) frame, invoking it much less often than web users in the overall sample in Figure 3. This could be because these three actors would be aware that direct comparisons of China’s domestic situation might be more sensitive for government censors and were self-censoring.¹⁴

¹⁴ It is also possible that these individuals would have posted more content under the “domestic vis-à-vis foreign” frame, but that these posts were automatically censored or blocked and are therefore not included in our dataset at all. For a discussion of how censorship is measured in the WeiboScope dataset, see Fu, Chan, and Chau 2013.
Individual Key Frames Before/After June 2012 Events

Now that we have examined the overall spread of our data, the key frames overall, and how our key individuals compare to the overall sample, we can move on to before and after comparisons. These before and after comparisons allow us to see if there are any shifts in messaging from our key actors after the June surge of Weibo posts. This type of analysis allows us to tease out some dynamics of online interaction, rather than looking at framing as static or unidirectional.

Figures 7 and 8 show Greenpeace’s frames before and after the June 2012 events, respectively. As the year went on, Greenpeace modified its social media strategy to frame the issue of air pollution more as a “health” issue than a pure “environment” issue. They also reduced the proportion of posts assigning the government responsibility, which might suggest that they thought mentioning government accountability was less impactful (or, perhaps, they adjusted this after seeing which of their posts were censored). The other categories stay more or less the same for the two periods. By splitting the year up into two periods, these results show that “health” framing of air pollution was not just widespread throughout the year, but that it increased in the second half of the year after the Weibo firestorm. This also suggests that Greenpeace changed its initial strategy for discussing air pollution issues online to emphasize “health” frames more as the year progressed.

Figures 9 and 10 show Ma Jun’s frames before and after the June 2012 events, respectively. Ma Jun’s posts showed a similar trend, with a focus on health framing increasing in the second half of the year.
In contrast to Greenpeace, Ma Jun stays remarkably consistent in his messaging (see Figures 9 and 10). His emphasis on “government responsibility” throughout the year shows the stake that he has in getting the government to continue to disclose pollution data. The only noticeable shift is a slight reduction in the “environment” frame and an increase in the “health” frame. The rest of the categories stay relatively the same throughout the year. These graphs show just how narrow and focused Ma Jun’s social media messaging on air pollution is. Despite a slight increase in “health” frames, Ma Jun continues to emphasize the role of the government in releasing air quality monitoring data, without making as many references to the more sensitive issues of the U.S. Embassy controversy or direct comparisons to conditions abroad. Out of the two environmental civil society representatives, Ma Jun has a much more consistent and narrow focus in participating in the online discussion about air pollution in China, which might explain why his posts do not change much in response to the events of June 2012.

Pan Shiyi’s posts about air pollution show the most dramatic shift after the June 2012 events of the three individuals (see Figures 11 and 12). In the first part of the year, while he did regularly post AQI monitoring data, he also posted original content across several categories, including health, government responsibility, and domestic vis-à-vis foreign. In the latter half of the year, Pan Shiyi noticeably reduced the amount that he posts using any of the key frames, while increasing the proportion of posts that are simply AQI monitoring data. It is possible that this could be a result of increasing pressure or censorship for his comments and viral tweets in the other categories. After all, the June 13 surge in Weibo posts is mostly accounted for by one of his tweets about the U.S. Embassy controversy going viral.

Censorship of Key Individuals (Overall)

So far, we have examined how these three key individuals initially framed the topic of air pollution and how they may (or may not) have changed after the June events. But how do government censors react to these individuals who have the potential to influence a broader audience on Weibo? The original WeiboScope dataset includes information on which posts that
are deleted (censored) after being posted. For our three individuals, therefore, we can present the proportion of known censored posts (Figure 13).

In this graph, Ma Jun is censored less than Greenpeace, but both are still censored at a fairly high rate. For comparison, only 10% of posts in the 500-post random sample were later deleted by government censors. Both Ma Jun and Greenpeace are censored more than web users in the overall dataset, which suggests that censors were more concerned with what these two actors were posting. Overall, Pan Shiyi’s posts are censored the most when both his retweets of air quality monitoring and his original posts are included together; however, when taken alone, his original posts are censored at a similar rate to the 500-post random sample. This might mean that the censors are more concerned with the information that Pan is spreading and his ability to spread it widely than they are with his opinions or take on the issue. The fact that these influencers and their posts are censored differently also shows that the government has a nuanced approach to censorship that does not affect all online actors equally.

_Censorship of Key Individuals Before/After June 2012 Events_

Examining the proportion of censored posts before and after the June 2012 events is even more telling. In the 500-post random sample of overall web users in the dataset, about 7% of posts were censored. This is lower than censorship rate for the overall year and lower than the censorship rate for the latter half of the year. For the latter half of the year, 13.2% of posts in the random sample are censored.

---

15 This, unfortunately, does not capture censorship that blocks a post from being published online in the first place and therefore may under-report censorship. However, the proportion of censored posts overall is still quite high and meaningful for these three key individuals, particularly given the unadjusted censorship rate for our 500-post random sample (50 out of 500 posts were censored, or 10%).
Compared to the overall sample, censorship of Ma Jun’s posts in the first time period is comparable. However, after the June events, censorship of Ma Jun’s posts increases substantially. This might suggest that the government censors were paying more attention to his potential role in shaping the online debate about air pollution. Meanwhile, Greenpeace’s censorship rate stays fairly constant, dropping slightly in the second half of the year. This may be because Greenpeace was already censored at a fairly high rate in the first half of the year, and actually decreased its posts about government responsibility in the second half of the year, while Ma Jun stayed constant with respect to frames of government accountability.

The most striking result, however, is the increased censorship of Pan Shiyi during the second time period. Even though the majority of his posts are AQI monitoring, which is a category generally less likely to be censored (see Cairns and Plantan 2016), a higher proportion of Pan Shiyi’s posts are being censored after the June events. This suggests that the government censors are concerned about his role as an online influencer and more concerned with his ability to spread information broadly and rapidly, regardless of what that information is. In addition, Pan Shiyi had several posts that went “viral” and were widely retweeted during 2012, including on June 13. A future version of this paper will look at a few of these viral posts to follow the spread of individual messages from Pan Shiyi on Weibo to better understand the dynamics of those viral post events.

Conclusion

Overall, this discussion gives a detailed view of the dynamic interaction between non-state actors, the broader public, and government actors online. Although the literature on environmental civil society and the “green public sphere” in China emphasizes the role of environmental civil society leaders, they may not be the only ones shaping the debate of environmental issues in the online public sphere. An online social media platform like Weibo opened up the discussion of social issues to a broader audience, where anyone could add their voice to the debate. However, some voices on Weibo matter more than others, as exemplified by Pan Shiyi, who eventually attracted government attention for his ability to spread information rapidly and widely on the platform. Meanwhile, the data also support findings from issue framing literature (which are often supported by framing experiments with convenience samples of Western university students). Framing environmental issues in terms of their “health” consequences may be a more effective
way to encourage public pressure and public awareness of environmental issues. The fact that the “health” frame dominated on Weibo shows the potential generalizability of these findings from the Western issue framing literature. Furthermore, although the “health” frame dominated throughout the year, some actors (Greenpeace) changed their strategy to emphasize the “health” frame more as the year went on. This leads to the third point, that discussions of environmental issues in the online public sphere are not unidirectional or static, but a dynamic process of interaction. Greenpeace did not stick to its social media messaging mix of frames from the earlier half of the year, but decided to alter its messaging to emphasize “health” and de-emphasize “government”. While we cannot prove that Greenpeace did this because of prevailing online public sentiment or a reaction to government censorship, the data does suggest such a change in strategy after the June 2012 events. NGOs might not just use social media to promote their ideas, but they might also modify their campaigns in response to expressions from web users or other influential actors in the online public sphere.

Overall, our study points to broader implications for state-society interactions in responsive authoritarian regimes like China. In particular, this case study highlights a pathway through which online public pressure may influence policymaking in China. Pan Shiyi did not only attract government attention for his overall presence on Weibo; he also attracted attention from the environmental community in Beijing. Those in the environmental community were watching what Pan Shiyi posted on Weibo with great interest and recognized his central role in increasing public pressure on the government. One person at an international environmental organization in Beijing said that this “public pressure [was] the top reason that the government agenda shifted” regarding the disclosure of PM2.5 and that online pressure “massively accelerated the speed of policymaking.” This comment points to the broader implication for non-state actor influence and the impact of public pressure on policymaking in China. Although Weibo is in decline and the Big V have been reined in since 2013, there are other more recent examples of this type of mechanism for influencing environmental policy. Chai Jing’s 2015 documentary, *Under the Dome*, although only allowed to evade censorship for a few days, was able to influence broader public opinion about air pollution and its connections to health. The “health” frame that we find prevalent in our study is also the primary frame that Chai Jing invokes in her documentary. The spread of Chai Jing’s documentary online, like Pan Shiyi’s posts, may have helped to fan the flames of public pressure on the government to more directly address the environmental and health impacts of air pollution. This pathway for non-state actors to potentially influence environmental policymaking illustrates the real-world implications and importance of mass discussions of environmental and social issues online.

---

16 Interview, international environmental NGO, Beijing. R59
17 For media coverage of Chai Jing’s documentary and its impact, see http://www.nytimes.com/2015/03/19/opinion/why-under-the-dome-found-a-ready-audience-in-china.html