

Communicating the Right to Know: Social Media in the Do-It-Yourself Air Quality Testing Campaign in Chinese Cities

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This article studies communication activities in the do-it-yourself air quality testing initiatives in multiple cities in China, through interviews with leaders of small nongovernmental organizations (NGOs) and analyses of their blogging contents. To advocate for more transparency in pollution data, in particular the hazardous PM_{2.5} particles, environmental NGOs mobilized volunteers to measure air quality and post the results online. The article examines how the DIY activism constitutes citizen participation and political involvement through informal and diffused ways of collective action. It studies the role of the Internet in facilitating the formation of a collective identity, which might be temporary and fragile. The article also discusses how grassroots DIY activities in a post-Communist country like China differ from those in the West.

Keywords: collective identity, do-it-yourself, grassroots organizations, Internet activism, microblogging, mobilization, social media

Introduction

In various cities in China, frequent smog conditions have caused growing concerns about the harmful impact of pollution on human health, but there has been a lack of reliable, trustworthy information accessible to the public. This article examines the role of social media communication in a grassroots right-to-know movement across various cities in China from 2011 to 2012, particularly the ways the movement built a network of supporters and participants, contributing to the growth and nurturing of a collective identity. The movement was initiated by small environmental nongovernmental organizations (ENGOs), which organized volunteers to measure air quality at various urban locations, monitoring the pollution data and posting results of PM_{2.5} and other pollution indicators online. Their results often challenged announced data from government environmental agencies, raising awareness about the harmful effect of air pollution and highlighting citizens' right to know.

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The article situates the air quality self-testing activities, in the context of global do-it-yourself (DIY) activism and tactical media use, to explore emerging forms of citizen involvement in civil society in China. It examines how the Internet opens new possibilities for individuals and groups dispersed across time and space to engage in a common activism cause, by facilitating the consolidation and expansion of the movement's key stakeholders—volunteers, donors, and audience/followers. Through interviews with leaders of five nongovernmental organizations (NGOs) in different cities (Beijing, Shanghai, Wenzhou, Chongqing, and Wuhan) and analyses of their regular microblogging, the article studies the mobilizing and communication processes of the DIY air quality measurement initiatives. The article explores the questions of how Internet platforms help cultivate the sense of a collective identity among organizers and participants in a country where public gatherings of any political nature are prohibited, and whether the collective cause can be sustainable. The article also discusses how a combination of online and off-line activities contributes to individual and collective empowerment and reflects the mobile nature of grassroots environmental activism in urban China.

Internet Activism and DIY Politics

Cases of cyberactivism around the globe have shown that information communication technologies (ICT) provide both communities and individuals with a range of new possibilities for communication and public participation, contributing to empowering collective movements. (Mercea, 2012; Sirkkunen & Kotilainen, 2004; Theocharis, 2012). Cyberactivism takes shape in different forms—e-mobilizations, in which the Web is used to facilitate the sharing of information of off-line protests; e-tactics, which might include both online and off-line components and do not rely on copresence for participants or organizers; and e-movements, with the process of organization and participation occurring entirely online (Earl & Kimport, 2011). In Asian countries, the advent of new communications technologies has challenged state control and the monopoly of mainstream media in multiple fronts (Zhang & Lallana, 2013). Among Chinese citizens, it is found that extensive use of the smartphone and mobile tweeting were positive predictors of engagement in online civic discourse (Wei, 2014). At the same time new communication technologies have become a target of surveillance, regulation, and control, forcing activists to constantly make adjustments to their strategies.

ICT can facilitate the formation of a collective identity, connecting social actors from diverse groups to address issues of common concern. According to Ayers (2003), the concept of collective identity is used by social movement theorists to explain how a movement can maintain and build strength over time. It is defined as “an interactive and shared definition system that incorporate[s] boundary markers, consciousness, and complex levels of negotiation to situate the individuals and the group in the larger arena of a dominant-subordinate belief system” (p. 152). A group with a collective identity shares “common concerns, a common enemy, and, typically, a common space” (McCaughey & Ayers, 2013, p. 8). By utilizing tactical media (Raley, 2009), which bypasses established media and relies on horizontal connections among participants, grassroots activists can mobilize social forces that are diffuse and fragmented to challenge the status quo with a bottom-up approach. Different from established groups like labor unions, in many cases grassroots groups are formed with social media as organizing mechanisms, bringing up new forms of individual participation (Hirsch, 2011).

Grassroots DIY activism is characterized by direct action strategies; distance from established institutions, such as governments or multinational corporations; and an emphasis on alternative media and information channels—often the Internet, as well as shared use of organizational and mobilization resources provided by subcultures and countercultures (Downing, 2001; McKay, 1998; Wright, 2004). Its manifestations come in various forms, such as street parties, demonstrations, direct actions, underground concerts, infoshops, fair trade stores, and provision of food for homeless people (Purdue, Dürrschmidt, Jowers, & O’Doherty, 1997). In animal rights movement in the United States, the UK, and Australia, the key tactical mechanisms are persuasion, protest, noncooperation, and intervention, aiming broadly at gaining publicity for the movement and challenging conventional thinking about the issue. One of the interference strategies is undercover surveillance of animal rights violations by large corporations in the food industry (Munro, 2005). “Do-it-yourself style politics” is described as “informal, participatory, all-inclusive, non-hierarchical, and a challenge to dominant political order” (Pickerill, 2010, p. 21).

Contemporary DIY activism developed from protest and direct actions from the beginning of 1990s within the so-called direct action movement, although its roots can be probably traced to the nonviolent movements since the 1960s in the United States (McKay, 1998; Vegh, 2003). The majority of research on DIY activism has been focused on industrially developed societies in Western Europe and North America, where the shift toward postmaterialism has changed the agenda of major social conflicts (Inglehart, 1991), making it possible for social movements to focus on lifestyle choices rather than on mobilization in pursuit of major political change.

The utilization of the Internet has energized global DIY activism, as scholars argue, through participation in a “virtual public sphere” in which new forms of empowered, activist identities are fostered and negotiated amid legitimacy crises (Langman, 2005). Although the new movements seemed diffuse and unstructured, they managed to forge unlikely coalitions of different social groups to join the protests, as participants arrive at consensual truth claims. In environmental movements in Britain, activists use the Internet in a participatory manner, to aid mobilization and to add to their tactical repertoire (Pickerill, 2010).

There has been very little scholarly publication on DIY activities in post-Communist countries, where various informal and more diffused ways of collective action are presently developing, as the power of civil society is relatively weak. However, scholars contend that in these countries DIY politics, based on loosely connected networks, constitute an important non-organizational component of civil society; they are an influential social structure in the context of some social movements that can be a more lasting structure than interpersonal networks, but nevertheless they are not necessarily embedded in formal organizations (Císař & Koubek 2012; Mitchell, 1996). In mainland China, the emergent “autonomous activism” has been addressing issues involving animal protection (Li, 2006), consumer rights, and social justice issues (Zhao, 2008). Although operating mostly within the limits defined by authorities when trying to conserve endangered species and stop long-standing practices like dog slaughtering and bear farming, animal protection groups offer a “good training ground” (Li, 2006, p. 124) for other similar organizations of the civil society, and the NGOs can develop into a political force with influence on animal welfare legislations.

Grassroots Environmentalism and Communication Technologies in China

In many post-Communist countries, ENGOs have transformed from being a mobilizing agent for symbolic, populist protest against the Communist regime in the pre-democratic days to pragmatic, goal-oriented, professional organizations aiming to influence policy decisions, with the influence from their Western peers (Jancar-Webster, 1998). In China, environmental activism has been growing steadily in the last two decades, though it remains highly constrained by the state, which implements a regulatory framework to keep social organizations fragmented and localized (Schwartz, 2004). China's fragmented authoritarianism allows grassroots organizations that did not obtain legal status to survive and develop a symbiotic relationship with particular government officials (Spires, 2011). The central government appears to understand its own limitations in addressing China's environmental woes and has made moves to open limited political space for ENGOs, resulting in a paradoxical "restrictive but conducive" (Ho, 2008, p. 21) atmosphere for their growth. The NGOs that operated effectively initially were usually led by activists with political connections, an entrepreneurial mindset, and the cultural capital to negotiate with the government and donors (Matsuzawa, 2012).

ENGOs in China range from voluntary associations registered as social organizations (*shehui tuanti*), nonprofit enterprises registered as business enterprises, research centers affiliated with institutions of higher learning, and student environmental associations (Xie, 2012). There are also many Web-based groups and voluntary associations that function as NGOs but are not registered. Although many ENGOs have gained legitimacy with the state and with donors, they also face daunting challenges, particularly in raising funds and legally registering. Many NGOs operate on a shoestring budget and face severe lack of facilities. A survey shows that 60% of the grassroots ENGOs do not have offices; around half do not have computers in working order and cannot afford to publish a newsletter (Hildebrandt & Turner, 2009). They also have difficulties in cooperation among the organizations, as well as increased competition for limited resources.

Communication technologies have benefited environmental activism in China, facilitating the formation of extensive connections among individuals and organizations both online and on the ground (Liu, 2011; Shirk, 2011; Sima, 2011; Sullivan & Xie, 2009; Yang, 2009). Weibo, China's microblogs, which has more than 300 million users, has provided a highly visible way for ordinary citizens to comment on and influence controversial events instantly, even though the number of messages relating to political/social issues is relatively small compared to those about entertainment or personal affairs (Leibold, 2011), and government censorship remains a problem (Cunningham & Wasserstrom, 2012; Hassid, 2012; Sullivan, 2012). With its low cost, popularity among young people, and flexibility, microblogging has been used by many ENGO leaders to publicize their agendas and gain supporters for their work.

Most established ENGOs engage in areas that do not conflict with the interests of the central government, such as promoting environmentally friendly lifestyles and advocating species conservation. Like other types of NGOs, such as women's organizations, they often provide social service in areas that affect local residents' welfare and might brew grievances against the state. There have been signs that the state is showing willingness to allow citizens influence policy decision making at the local level (Gallagher,

2004; Mertha, 2008). The forms of environmental activism in China have expanded from education and volunteering activities to mass protests and civil litigations, sometimes leading to confrontations with local authorities and large corporations.

Newly formed ENGOs in recent years have been involved in politically sensitive issues, such as anti-dam campaigns and advocacy for pollution victims (Matsuzawa, 2012). Scholars argue that cases such as the 2003 Nu River campaign indicates that the ENGOs were functioning as social movement organizations, as they mobilize their constituency for collective actions, and they do so with a political goal, since "any issue related to self organization and public participation could be regarded as a political issue" (Jin, 2007, p. 3) in China. As demonstrated in the campaigns to preserve snub-nosed monkeys in Yunnan province and Tibetan antelope (Hildebrandt & Turner, 2009; Matsuzawa, 2012), there has been increasing networking between grassroots NGOs and journalists, government-sponsored NGOs, international NGOs, and local people affected by developmental projects. The activists have also been using rights-based discourse to raise environmental awareness among the public.

Do-It-Yourself Air Quality Measurement Initiatives

ENGOs in China became involved in air quality measurement activities after a major controversy emerged around the official test data, which were usually broadcast with weather announcements of large cities and available in local government environmental agency websites. When Beijing was preparing for the 2008 Olympics, there were questions in international media about how the air quality might pose health risks for the athletes and spectators. The city launched a massive "Blue Sky Project" by relocating factories, strengthening public transportation, and tightening vehicle emission standards, aiming at increase the number of "Blue Sky Days" annually (Xu, 2012). Yet the air quality data announced by Beijing Municipal Environmental Protection Bureau (BMEPB) was met with skepticism from many residents and visitors. Since 2008, the U.S. embassy in Beijing has been tracking and releasing air quality data, issuing hourly air quality readings on a Twitter account @BeijingAir. Later its consulates in major cities, such as Guangzhou and Shanghai, also started posting measurement results. The discrepancy between the U.S. and Chinese data has stirred intense discussions among urban residents and bloggers. The Chinese authorities stated that foreign governments should stop releasing data on China's air quality, claiming it is wrong to use labels like "hazardous" based on standards drafted in industrialized countries and tightened over many years (Bradsher, 2012).

One of the major sources of measurement discrepancy comes from that fact that the Chinese official air quality evaluations excluded the level of the pollutant PM_{2.5}, an airborne particulate matter under 2.5 micrometers in size. PM_{2.5} particulates are more toxic than PM₁₀ components, such as dirt, dust, smoke, mold, and pollen, and are small enough to directly enter the lungs and even the bloodstream, with serious health effects on people with heart or lung disease, older adults, and children (U.S. Consulate Shanghai, 2013). It can also travel in air much further than the larger PM₁₀, which was included in the routine measurement results of the official agencies. Although the U.S. embassy and consulate information heightened the public suspicions over Chinese official air data, the U.S. data measurements were obtained from a limited number of locations.

As those who consider themselves environmentalists in China are more skeptical of the government and the media than non-environmentalists (Yao, 2008), PM_{2.5} became an issue of concern for some ENGOs. In 2011, Beijing-based NGO Daerwen Nature Quest Agency initiated a grassroots air quality testing campaign focusing on PM_{2.5} levels, urging the government to measure and announce its level in air. On its website, members of the three-year-old organization post test results taken at various locations in Beijing, along with the weather condition, equipment used, and names of participants. The group offered any city resident the opportunity to borrow the equipment, learn its use, and to post their "air quality diaries" on the Daerwen website.

With the help of the Internet, similar activities appeared in other large cities, including Wuhan, Chongqing, and Nanjing. ENGO leaders organized existing members and newly recruited volunteers to measure PM_{2.5} pollution level at different neighborhoods and regularly post air quality logs online, using hand-held devices donated or lent by equipment manufacturers or purchased through fundraising. All of the key NGO groups use microblogging sites to issue continuous publication of test results and to reach out to local residents. These sites sometimes also function as a platform of questioning and dialoguing with local government agencies, particularly when severe pollution conditions affect visibility and outdoor activities. Some NGO leaders also periodically write on their personal blogging sites, detailing their journeys of air monitoring and announcing lectures, gatherings, or fundraising events.

Methods

The purpose of this study is to find out how Chinese NGOs involved in the air quality measurement activities use social media and other communication methods to fulfill their organizational objectives and connect fragmented supportive forces. It also studies how a collective identity is cultivated through a combination of online and off-line activities among participants. Specifically, the article examines how Internet communication activities facilitate the recruiting of individuals and groups to engage in the right-to-know cause, and contribute to the consolidation and expansion of the air quality testing movement's key stakeholders—audience/online followers, volunteers, and donors.

The study uses the in-depth interview method (Creswell, 1998; Gubrium & Holstein, 2002) combined with online content analysis to focus on the networking and relationship building aspects of their communication activities. Five ENGO leaders in different Chinese cities were interviewed for the study by phone in summer 2012, supplemented by e-mail communication. They were identified and contacted for this study because they regularly posted PM_{2.5} data online and organized the air quality measurement activities in their respective regions. Requests to interview ENGOs with similar activities in a few other large cities were declined or not responded to. A semi-structured topic guide was used, which include questions about the NGO, the air quality measurement initiative, equipment, testing spots and times, posting procedures, social media, staff and volunteers, online and off-line communications, fundraising, special activities, relationship with local authorities, and outlook of future developments. To address questions relating to key features of collective identity (Ayers, 2003), the interviews covered topics of shared definitions, level of consciousness of participants, boundary markers, and identity negotiations among themselves. Most of the conversations covered issues beyond these topics. Each interview was approximately 1.5 to 2.5 hours long and received the interviewee's approval to be recorded.

The NGOs studied are Daerwen Nature Quest Agency based in Beijing, the Wuhan branch of Friends of Nature, Shanghai Citizen Measurement Group, Yueqing Green Volunteers Association based in Wenzhou, and Chongqing Youth Environmental Exchange Center. Among the five groups, Daerwen started posting PM_{2.5} data first, in September 2011, though some measurement activities started in July. It is the largest of the five groups, but its air quality testing posts were less frequent than the others. The Chongqing NGO was the last to join the action, in May 2012. All of the groups except for Daerwen have only one to two full-time staff, and work with their volunteer teams to do the measurement.

The author also analyzed the microblogging posts of these NGO groups related to PM_{2.5}, from the debut of their test results (Beijing and Wuhan stated in September and October 2011, respectively; Wenzhou and Shanghai started in February 2012; Chongqing in May 2012) to August 2012. The data was analyzed by examining the topics, posting formats, frequency, authorship, and number of online followers. Also, three NGO websites—Beijing, Wuhan, and Chongqing¹—were examined for air-quality-related content, while two others do not have organization websites. The blogging and website content are categorized by the following subjects: time and reasons for starting the air quality measurement initiative, types of equipment, testing spots and times, air quality data posting procedures, staff and volunteers, fundraising appeals and activities, online and off-line group participations, special events, and relationship with local authorities. The content was also used in preparing interview questions specific to each NGO and for double-checking facts, such as details relating to special events or fundraising records. The interviews were translated from Chinese to English.

Shared Goals—Communicating the Right to Know

One of the main themes of the organizational websites and microbloggings was to explain to the public the purpose and significance of their air quality measurement activities. They state that they aim at providing test results regularly and frequently to the public as an alternative source of information because official data may be unavailable or unreliable. Local governments have been reluctant to include PM_{2.5} data in their air quality reports, as economic development is prioritized over environmental concerns in the performance evaluation of the officials (Economy, 2005).

Daerwen Nature Quest Agency explains in its website that although it is “not an authoritative agency with specialized measurement qualification,” it uses specialized measurement equipment and is “responsible for the authenticity of the test results. The site attached the World Health Organization’s recommendation for PM_{2.5} levels, as well as a draft Chinese air quality standard under discussion by lawmakers, for reference purpose. Its website also posted articles on the “killer” effect of PM_{2.5} on human health and the importance of including it in air quality evaluations.

A representative of Daerwen Nature Quest Agency states that the purpose of the air testing movement is to get open and independent information to the public through grassroots air measurement: “We cannot count on anyone else, particularly the government and corporations, even though we can cooperate with any government agencies and corporations” (interview).

¹ See Beijing: www.bjep.org.cn; Wuhan: <http://old.fon.org.cn/channal.php?cid=158>; Chongqing: www.greenba.org.

The Shanghai NGO leader explains that the goal of unofficial air testing is to demonstrate a position about public access to information, even though it may not be highly accurate, as there is a difference between nonprofessional testers and professionals:

Grassroots testing is about the public's right to know. Eventually we hope that the government or professional institutions will have accurate data announced. We can achieve this through our pressure or influence. . . . If unofficial testing can exist for 10 years, perhaps it will become really professional. (interview)

Most of the activists update the test results every day, some several times a day, all on a volunteer basis. Some of the posts are accompanied by photos and charts, and some have long paragraphs of background information. In the industrial city of Wuhan in central China, the local branch of Friends of Nature plays a key role in testing, with no full-time staff but about 70 volunteer members, nearly half of them school teachers. Five members were responsible for the regular air quality testing activities, while others participated from time to time. Aside from posting test results in "Wuhan Air Diary" from March 2012, they also compare their results with official data, and add local weather information and photos to illustrate visibility. Gathering and posting the information online would need approximately half an hour to one hour per day, depending on the level of experience. Those with computer or data processing background upload information faster. The Wuhan NGO leader describes how he works on the air diary every day:

I do monitoring three times a day, in the morning before going to work, in the afternoon before cooking dinner, and before going to sleep at night. I spend an hour every day in acquisition, data processing, mapping, and publishing. If there is an unusual weather condition, such as fog or haze, I would follow closely and release real-time data repeatedly. (interview)

In Shanghai, where the daily air quality postings are briefer, it takes an experienced volunteer only a few minutes to measure and upload the results on a typical day. These activities have influenced netizens' opinions, as well as the policies of Chinese environmental agencies, forcing some of them to take steps to measure and announce the levels of PM_{2.5}, particularly in cities where the U.S. consulates' air quality twitter messages made the issue highly visible.

To spread the meaning of PM_{2.5}, a term most residents had never heard of before, activists used social media to form Internet discussion threads, arrange group meetings, recruit new members locally, and raise funds through online transactions. Online Weibo "fans" (followers) of the bloggers, although not a significant portion among China's Weibo users, grew increasingly aware of the air pollution levels in their cities, and expressed dissatisfaction with official environmental agencies and city bureaucrats in the discussion threads. Some of them, including many college students, started to participate in the announced off-line events and joined air-testing trips. With a range of personal and Web networking efforts, the NGOs have collaborated with bicycle clubs, coffee shops, libraries, newspapers, and corporations.

Building a Community—From Concerned Watchers to Volunteers/Supporters

The activists use a slogan “I Gauge Air Quality for My Motherland” in their websites or team names, inspired by a propaganda phrase during the Great Leap Forward mass mobilization movement in the 1950s. According to the Daerwen representative, this slogan first appeared as the title of an article in the newspaper *Southern Weekend* (Feng & Lu, 2011) about these activists and was adopted by the NGOs in other cities, who came up with slogans like “I Gauge Air Quality for Wuhan.” The article helped bring public attention to the air quality testing NGOs and volunteer activities, as it highlighted the controversy over whether PM_{2.5} should be adopted as part of official testing standards. Although the activity of collecting and posting air quality data can be seen as subversive, members of the movement portray themselves as nature lovers, instead of political dissidents, contributing to the collective good with scientific tools.

The NGOs use social media not only to announce and comment on test results but also to attract public interest and build relationship with various groups vital for their agenda—audience, volunteers, donors, local collaborators, and in some cases city environmental agencies. They often post group gathering invitations, volunteer recruiting announcements, and donation appeals for equipment purchase. They also respond to residents’ concerns on local pollution sources by posting detailed testing results and sometimes interacting with officials. Social media and e-mails are used to attract participants to meet off-line to demonstrate the do-it-yourself testing process. Activists organized lectures, picnics, short tours, fundraising events, and in the case of Shanghai, vegetable shopping trips. In the first meeting of the group “I Gauge Air Quality for Wuhan,” held in March 2012, there were 29 participants, including members of the NGO, online QQ (an instant messaging program) group members, volunteers, and representatives of college environmental groups, according to the NGO blog. The meeting also included representatives of partner groups—from the local media, a bicycle association, the Energy Saving Industry Network, and Wuhan Environmental Protection Bureau.

Equipment acquisition posed one of their biggest challenges, and the NGOs were very creative and entrepreneurial in their fundraising activities. Initially Daerwen offered some testing equipment to collaborating NGOs outside Beijing, although most of the groups involved acquired their equipment later through their own fundraising activities. Daerwen also provided a bank account number to a few smaller NGOs, as an activist explained, making it possible for them to raise funds legally, because China has strict restrictions on organizational fundraising. As the largest NGO among the five, Daerwen has a public environmental education center, called the Nature University, which holds weekly activities in the environmental class and outdoor sites.

To purchase a set of equipment that costs 25,000 yuan (1 yuan = 0.16 U.S. dollars), Friends of Nature in Wuhan appealed to netizens by asking for donations in the amount of 25 yuan or its multiples. As recorded in the NGO’s Sina blog site Airwuhan, in January and February of 2012, the NGO received online donations from 22 individuals, 9,678 yuan in total, as well as off-line donations of 8,785 yuan through fundraising events. Friends of Nature paid the additional 6,589 yuan to acquire the equipment from a company in Beijing.

Activists in the Wenzhou area focus their efforts on getting average citizens interested in the PM_{2.5} issue, instead of publishing testing results daily, believing that merely posting results online is not going to draw public attention or help people understand the issue. The Green Volunteer Association of Yueqing City, a small NGO of two staff members, initiated a project called "PM_{2.5} Air Museum." Its Weibo followers were asked to carry testing equipment when taking any trip and bring back a bottle containing the air and a piece of paper with the testing results to the NGO. They were also asked to post their results on their individual microblogs, to reach their friends and blog followers. The NGO aimed to spread the information about PM_{2.5} to 100 local residents in the second half of 2012. The NGO leader believes that these activities have raised awareness on preserving the blue sky and white cloud of the area, leading to a strong opposition among netizens against a plan to build a cement factory there.

The Wenzhou NGO used microblogging to appeal for donations and interest-free loans to acquire equipment. Its most successful fundraising practice was to sell oranges to netizens around the Spring Festival of 2012, announcing that all profits from the sale would support the air testing project. A coffee shop owned by an activist was used as the pickup spot for the orders. The NGO sold more than 1,300 boxes of oranges at the price of 60 yuan each, most of them online, and raised more than 20,000 yuan to pay off what they owed for the equipment.

The Wenzhou NGO leader explains that for microblogging initiatives at the grassroots level with very limited resources and low levels of public awareness of the issue, the key is putting in continuous efforts:

We need to do it persistently. We tirelessly respond to all the supporters and questioners. We constantly and repetitively speak out our real thoughts. Each time we do fund-raising, we write individual messages to every fan. Because we don't have a large influence, we have to do it very sincerely. (interview)

In the southwest city of Chongqing, the NGO recruited participants of the air quality tests online through advertising at a volunteer registration network called Loving Heart Savings Bank, which has files of individuals willing to volunteer for various forms of activities. Volunteers have three types of PM_{2.5}-related duties: one group does routine testing and results posting; one group works on special testing events, such as a full-day air quality measurement at Chongqing Zoo; one group works on science education on the Internet, writing posts on Weibo under "#IamPM2.5" and other subjects. Volunteers post test results online in their personal microblogs, and a daily summary chart appears in the evening hours on the group's site @ChongqingPM2.5. The volunteers have their own online QQ discussion group and microblogging site. Activities off-line include regular meetings and special events. In addition to measuring air quality data, the volunteers, many of them college students, also monitor and compile long-term data and analyze monthly trends of the testing results. The group conducted a survey among city residents about their knowledge of PM_{2.5}, as well as their major environmental concerns. It plans to get residents' feedback on the best places for leisure in the city and to get suggestions on where the official air quality testing spots should be located.

Maintaining a Collective Presence

In their efforts to communicate the messages to the public and synchronize volunteer efforts, the NGOs found social media useful in mobilizing social forces that were not easily accessible before. Although they describe off-line group activities as crucial, social media can create a sense of community in a virtual context, and bring in contributions from unexpected channels.

The Shanghai activist commented on the benefits of social media for organizing collective actions:

With microblogging, what was extremely complicated in the past now becomes very simple. . . . It is easier for those who want to participate in the action and for those involved to communicate, so an initiative can be made broader and deeper. Plus, microblogging spreads fast, so people involved can ferment more easily. (interview)

The numbers of Weibo fans following the air quality test blogs vary greatly in different cities, ranging from 81 in Chongqing to 923 in Wuhan in late August of 2012. This is partly because the Chongqing NGO air quality blogging site just started on May 29, 2012, and it was not drawing enough public awareness yet, even though it posted four to five blogs every day, the most frequent among the five NGOs. The difference in numbers of fans also can be explained by the amount of off-line activities organized around the air testing issue. For instance, both the Shanghai NGO and the Wenzhou NGO started their microblogging sites in February 2012, but the former had 132 fans and the latter had 808 fans in late August, partly because the Wenzhou NGO was more active off-line. As some activists explained, they did not focus their main efforts on increasing the amount of microblogging followers.

The activists and their DIY posting could suddenly become the center of public attention in a showdown against official agencies when the air condition in a city deteriorates significantly. On June 11, 2012, when serious smog in Wuhan led to yellowish sky, a smoky smell, and low visibility, rumors spread about a chlorine leak from Qingshan Chemical Plant and a Wuhan Steel Company boiler explosion. Online posts also show many residents reported feeling sick and showed symptoms of poisoning. Friends of Nature posted hourly air test results, finding PM_{2.5} level more than 10 times higher than normal, and they urged Wuhan Environmental Protection Bureau to "explain the cause, take responsive actions and dissipate public fear." In the interview, the activist used the Chinese word *hanhua* (shout), usually referring to speaking to the enemy in the battlefield urging surrender. The blogging posts were followed and resent by many netizens on that day, showing appreciation of the NGO measurement data and anger toward the sluggish actions of municipal environmental agencies. Later an official announcement appeared at the Wuhan government website to dispel rumors, explaining that straw burning in the neighboring provinces of Anhui and Hebei was the main source of the smog (Cai, 2012). According to Wuhan police blogging @PingAnWuhan, network police conducted an investigation and detained two individuals for fabricating rumors online.

At the early stage of the movement, the volunteers were filling a void in the official air quality announcements, pressuring the government to measure PM_{2.5}. In 2012, more and more city

environmental agencies modified their standards and started broadcasting PM_{2.5} results, but the activists still believed it was crucial to continue with their own tests, stressing their identity as DIY testers distant from official agencies. The Wuhan NGO representative expressed confidence in his handheld equipment when comparing his own results with the government data:

Our aim is not to try to be expert, but to have our presence. We only hope that other than the official channels, there are nonofficial sources providing measurement data. . . . Our equipment costs 25,000 yuan each. Theirs cost 12 million yuan, standing in one location called Central China Region Air Measurement Super Station. They held two open house days and invited us, trying to overwhelm us so we would stop, but on the contrary it strengthened our confidence, because the data we got that day were very similar. (interview)

In the southeastern city of Wenzhou, where the government started to announce PM_{2.5} data in 2012, the NGO leader explained that it is still necessary to keep their own voice and maintain the right to question official data:

We will continue to do it. Is the information announced by the government really true or not? It is a progress for the government to announce it, but that does not mean we trust you. (interview)

Environmental protection bureaus in some cities were pressured by the activists to add new PM_{2.5} measurement locations in densely populated neighborhoods or industrial areas, which were previously avoided because of expected poor air quality. Measurement equipment manufacturers have loaned their products to the NGOs, with agreements to mention the company name when posting testing results online. Meanwhile, some activists expressed caution in the interviews on whether the DIY activities should expand in scale, explaining that their current goal is not to draw a big crowd, which might lead to authority interventions, but to have a continued presence. This is particularly true for activists in large cities like Shanghai, where the police put pressure on them by monitoring their efforts and making frequent phone calls to discourage them.

Identity Negotiation—Air Quality Monitors? Educators? Advocates?

The negotiation of self-identity exists among the NGO leaders about whether they should present themselves to the public as environmental information monitors or advocates and educators. Although some activists emphasize the importance of the existence of nonofficial testing data, others consider daily postings less significant than enlightening the public on the meanings of the data and raising awareness on local environmental protection measures. The Chongqing NGO leader believes that self-testing is a means instead of a goal. He expressed his concern that if everyone goes out to test air, this must mean air pollution would have already become extremely serious, or people would not believe in any publicly announced data: "If everybody does self-testing, the equipment manufacturers would have a huge market. Isn't that awful? In fact not every family has a thermometer now" (interview).

Some activists are wary of media attention and potential government interference with their activities. They also expressed concern about the time demand of maintaining an Internet presence with a large follower base. The Chongqing NGO originally posted their own test results and the monitor results of U.S. consulate, but later they stopped posting the U.S. data, to avoid a confrontational stance with the local government, described as "strong-handed" in the interview. Skipping the U.S. data also made it easier for the volunteers to do the uploading. The NGO is making efforts to train volunteers to maintain the equipment and standardize the measurement and uploading procedures.

Organizers find it hard to recruit volunteers with long-lasting commitment and specialized experience. Although many college students are participating, one NGO leader commented in an interview that "their passion tends to dissipate easily," and that many people in the general public have complaints about public affairs, but they would not take actions to participate—"because of inertia, or because of fear."

Interviews with the NGOs find that there are different views about whether maintaining an online presence would be enough for them to feel a sense of victory in the battle against pollution. The self-testing movement can have visible impact on environmental education and awareness raising, and in some cases lobbying, for instance in May 2012, when Wuhan Environmental Protection Bureau complied with a request by Friends of Nature to publicize PM_{2.5} measurement data after the agency set up multiple monitoring stations around the city.

However, the sense of empowerment can be temporary and elusive, as reflected in some microblogging posts expressing frustrated feelings about the questionable impact of their efforts. This is also due to the lack of actions by authorities to control heavy polluters in many regions, even though clear evidences of regulation violation were collected and reported to related agencies. A collective identity as volunteer air quality testers can be highly meaningful when there is a void in official data, but its appeal to newcomers could fade if official agencies start to broadcast PM_{2.5} data regularly.

Analysis

As the activists point out, the strengths of their DIY air quality testing activities are the mobile locations, frequent updates, and distance from authorities that lack public trust. These qualities are highly compatible with the features of social media. Microblogging enabled the instant dissemination of short fragments of information, which offers constant updates on air quality at locations of interest to the residents in different urban neighborhoods. The interactive and flexible features of social media allow the scientific information to be communicated easily to concerned citizens with a personal touch. The five small NGOs manage to establish and consolidate their presence and identity through regular posting of air test result announcements, to coexist with or challenge official data. Social media played a role in various aspects of the campaign, from advocacy and raising awareness to building capacity for the grassroots NGOs in complicated political conditions.

Meanwhile, the relationship building potential of microblogging is enhanced through a combination of online and off-line activities, which allows for different levels and forms of citizen

involvement, facilitating and reinforcing commitment to the group and nurturing interpersonal relationships. The initial interest in local air quality and distrust of authorities brought in many online followers of the grassroots measurement data, and some of them gradually became willing to support the organizers by answering NGO calls for volunteering, donating, or learning about the measurement process hands-on. Though it may not lead to stable and lasting space for activities, social media can be seen as a new tool for NGO collaboration and networking across different geographic regions. Across different cities, a collective identity emerged among the volunteers as defenders of the right of the public to know, which has a broad resonance among urban Chinese residents.

Grassroots groups rely heavily on the salience of their issue and support of donors and volunteers to ensure continued viability, but mainstream media may not be the most effective channel to reach out to their audiences, or something the DIY activists wanted to associate themselves with. Most of the ENGO leaders in the air quality measurement movement prefer to have a "low-key" stance so that the issue-related activities can be sustained within a manageable scale, and they were not actively seeking media coverage, which might put unwanted labels on them or draw extra attention from the authorities. This is probably a result of caution in China's restrictive political atmosphere, which often leads to "self-imposed censorship and a conscious de-politicization of environmental politics" (Ho, 2008, p. 3). The issue of air quality involves many political factors, given the international attention on the subject from the start of Beijing's bid for the 2008 Olympics, as well as the contrasting results of the Chinese environmental agencies and the U.S. embassy. The controversy probably raised the visibility of the NGOs doing self-measurement, while at the same time subjecting them to more surveillance, which can take various forms and intensity in different cities. Thus their choice of communication methods and tools always reflect the local survival conditions of grassroots groups, in addition to technical or financial restraints. Because of the limited scale of the study, there are many related questions that could be explored further. For instance, a study of censorship of online grassroots voices could be combined with an examination of restrictions of off-line group activities to understand NGO communication strategies in specific locales in China.

Conclusion

As a right-to-know movement, the air quality testing activities require volunteers to taking both online and off-line roles—acquiring pollution data in public places and posting information through microblogging to share with netizens. There is a clear distinction between participants who take actions on the ground and the online audience or commentators who are concerned about the PM_{2.5} issue, although social media is used to encourage the online audience to take off-line roles, turning them from blog followers to volunteers. Slogans, such as "I gauge air quality for my motherland," spread through social media as well as on T-shirts, solidifying a collective identity for the participants. This study contributes to the question of how social media facilitates actions of political significance by showing that it is not only a mobilization tool for grassroots groups but also a space for collectively producing and publishing alternative information in an authoritarian state.

The Internet-facilitated DIY environmental activist movements in authoritarian countries are significant for examining new forms of civil society activities, which are adopting some practices of their

counterparts in the West. The movements enable the formation of a temporary collective identity among individuals and groups dispersed in time and space to take collective actions with a definite agenda, circumventing restrictions against copresence, such as a street rally, even though online activities might be also monitored and censored by the authorities to various extents. The e-tactics add new mobility, agility, and vitality to the emerging civil society groups. Although the organization structures are somewhat fluid, the issue-centered activities can be effective with the persistent coordination and leadership of core members of the locally based groups. Activists at the grassroots level are keenly aware of their lack of resources, as well as the restrictions on their efforts to expand their venues of activities. By calling attention to tangible, pragmatic goals, which are usually related to the well-being of citizens in a certain location, the environmentalist groups could establish legitimacy, avoid persecution, and at the same time strive for support from all possible collaborators, which might include Western environmental groups, to sustain the needs in financial, technical, manpower, and publicity aspects.

On the other hand, although DIY activities in the West are often manifested in ways distancing themselves from established institutions, the DIY groups in a non-Western country like China might have a more complicated and subtle relationship with official institutions. For the activists, it is very hard to avoid the issue of how to deal with the official agencies, as the process of expanding the movement and building coalitions would necessarily involve non-private institutions, such as libraries, universities, news media, or city environmental agencies. If there are corporate sponsors involved, they might also have an intricate relationship with the government. The outcomes at different areas might vary immensely, depending on the political will and capacities of the specific NGOs, as well as their past relationship with local agencies. In the process, it is possible for the activist cause to be absorbed or incorporated into agendas of the official institutions, and the cause may lose its steam as a grassroots movement. This could be a contentious process of identity negotiation and soul searching for the NGO leaders involved. This might be particularly relevant for environmental groups, as the NGO organizers are getting more effective on monitoring hazards and raising awareness of citizens' rights, but face tough hurdles in preventing and reducing pollution. The NGOs at different cities might have to move on to new initiatives after PM_{2.5} becomes a component of the official air quality measurement and announcement data, and the online and off-line community might disband as a result. However, after the participation experience, some core members of the grassroots communication network might remain, as online followers of the organizers or potential supporters for future mobilizing causes, like seeds for social change that might sprout in different places when the time is right.

References

- Ayers, M. D. (2003). Comparing collective identity in online and offline feminist activists. In M. McCaughey & M. D. Ayers (Eds.), *Cyberactivism: Online activism in theory and practice* (pp. 145–164). New York, NY, and London, UK: Routledge.
- Bradsher, K. (2012, June 5). China asks other nations not to release its air data. *The New York Times*. Retrieved from <http://www.nytimes.com/2012/06/06/world/asia/china-asks-embassies-to-stop-measuring-air-pollution.html>
- Cai, W. (2012, June 12). Straw burning sparks rumor of major disaster. *Shanghai Daily*. Retrieved from http://www.china.org.cn/china/2012-06/12/content_25625240.htm
- Císař, O., & Koubek, M. (2012). Include 'em all?: Culture, politics and a local hardcore/punk scene in the Czech Republic. *Poetics*, 40(1), 1–21.
- Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, CA: SAGE Publications.
- Cunningham, M. E., & Wasserstrom, J. N. (2012). Authoritarianism: There's an app for that. *Chinese Journal of Communication*, 5(1), 43–48.
- Downing, J. (2001). *Radical media: Rebellious communication and social movements*. Thousand Oaks, CA/London, UK/New Delhi, India: SAGE Publications.
- Earl, J., & Kimport, K. (2011). *Digitally enabled social change: Activism in the Internet age*. Cambridge, MA: MIT Press.
- Economy, E. (2005). Environmental enforcement in China. In K. Day (Ed.), *China's environment and the challenge of sustainable development* (pp. 102–120). Armonk, NY: ME Sharpe.
- Feng, J., & Lu, Z. (2011, October 28). I gauge air quality for my motherland (Wo Wei Zuguo Ce Kongqi). *Southern Weekend (Nanfang Zhoumo)*. Retrieved from <http://www.infzm.com/content/64281>
- Gallagher, M. E. (2004). China: The limits of civil society in a late Leninist state. In M. Alagappa (Ed.), *Civil society and political change in Asia: Expanding and contracting democratic space* (pp. 419–454). Stanford, CA: Stanford University Press.
- Gubrium, J. F., & Holstein, J. A. (Eds.). (2002). *Handbook of interview research: Context & method*. Thousand Oaks, CA: SAGE Publications.
- Hassid, J. (2012). Safety valve or pressure cooker? Blogs in Chinese political life. *Journal of Communication*. 62(2), 212–230.

- Hildebrandt, T., & Turner, J. L. (2009). Green activism? Reassessing the role of environmental NGOs in China. In J. Schwartz & S. Shieh (Eds.), *State and society responses to social welfare needs in China: Serving the people* (pp. 89–110). London, UK, and New York, NY: Routledge.
- Hirsch, T. (2011). More than friends: Social and mobile media for activist organizations. In M. Foth, L. Forlano, C. Satchell, & M. Gibbs (Eds.), *From social butterfly to engaged citizen: Urban informatics, social media, ubiquitous computing, and mobile technology to support citizen engagement* (pp. 135–150). Cambridge, MA: MIT Press.
- Ho, P. (2008). Self-imposed censorship and de-politicized politics in China: Green activism or a color revolution? In P. Ho & R. L. Edmonds (Eds.), *China's embedded activism: Limitations and constraints of a social movement* (pp. 20–43). New York, NY: Routledge.
- Inglehart, R. (1991). *Culture shift in advanced industrial society*. Princeton, NJ: Princeton University Press.
- Jancar-Webster, B. (1998). Environmental movement and social change in the transition countries. *Environmental Politics*, 7(1), 69–90.
- Jin, J. (2007). *Beyond the small world: Chinese environmental NGOs and confrontational public campaigns* (Doctoral dissertation). Available from ProQuest Dissertations and Theses. (UMI No. 3292952)
- Langman, L. (2005). From virtual public spheres to global justice: A critical theory of Internet worked social movements. *Sociological Theory*, 23(1), 42–74.
- Leibold, J. (2011). Blogging alone: China, the Internet, and the democratic illusion? *The Journal of Asian Studies*, 70(4), 1023–1041.
- Li, P. J. (2006). The evolving animal rights and welfare debate in China: Political and social impact analysis. In J. Turner & J. D'Silva (Eds.), *Animals, ethics and trade: The challenge of animal sentience* (pp. 111–128). London, UK: Earthscan.
- Liu, J. (2011). Picturing a green virtual public space for social change: A study of Internet activism and Web-based environmental collective actions in China. *Chinese Journal of Communication*, 4(2), 137–166.
- Matsuzawa, S. (2012). Citizen environmental activism in China: Legitimacy, alliances, and rights-based discourses. *ASIA Network Exchange*, 19(2), 81–91.
- McCaughey, M., & Ayers, M. D. (Eds.). (2013). *Cyberactivism: Online activism in theory and practice*. New York, NY, and London, UK: Routledge.
- McKay, G. (Ed.). (1998). *DIY culture: Party & protest in nineties Britain*. London, UK: Verso.

- Mercea, D. (2012). Digital prefigurative participation: The entwinement of online communication and offline participation in protest events. *New Media & Society*, 14(1), 153–169.
- Mertha, A. (2008). *China's water warriors: Citizen action and policy change*. New York, NY: Cornell University Press.
- Mitchell, T. (1996). *Popular music and local identity*. London, UK, and New York, NY: Leicester University Press.
- Munro, L. (2005). Strategies, action repertoires and DIY activism in the animal rights movement. *Social Movement Studies*, 4(1), 75–94.
- Pickerill, J. (2010). *Cyberprotest: Environmental activism on-line*. Manchester, UK: Manchester University Press.
- Purdue, D., Dürrschmidt, J., Jowers, P., & O'Doherty, R. (1997). DIY culture and extended milieu: LETS, veggie boxes and festivals. *The Sociological Review*, 45(4), 645–667.
- Raley, R. (2009). *Tactical media*. Minneapolis, MN: University of Minnesota Press.
- Schwartz, J. (2004). Environmental NGOs in China: Roles and limits. *Pacific Affairs*, 77(1), 28–49.
- Shirk, S. (2011). Changing media, changing China. In S. L. Shirk (Ed.), *Changing media, changing China* (pp. 1–37). New York, NY: Oxford University Press.
- Sima, Y. (2011). Grassroots environmental activism and the Internet: Constructing a green public sphere in China. *Asian Studies Review*, 35(4), 77–497.
- Sirkkunen, E., & Kotilainen, S. (Eds.). (2004). *Towards active citizenship on the net. Possibilities of citizen oriented communication: Case studies from Finland*. Tampere, Finland: University of Tampere. Retrieved from <https://tampub.uta.fi/bitstream/handle/10024/65638/951-44-5827-3.pdf?sequence=1>
- Spires, A. J. (2011). Contingent symbiosis and civil society in an authoritarian state: Understanding the survival of China's grassroots NGOs. *American Journal of Sociology*, 117(1), 1–45.
- Sullivan, L. (2012). A tale of two microblogs in China. *Media Culture Society*, 34(6), 773–783.
- Sullivan, L., & Xie, L. (2009). Environmental activism, social networks and the Internet. *China Quarterly*, 198(6), 422–432.
- Theocharis, Y. (2012). The wealth of (occupation) networks? Communication patterns and information distribution in a twitter protest network. *Journal of Information Technology & Politics*, 10(1), 35–56.

- U.S. Consulate Shanghai Air Quality Monitor. (2013). *U.S. citizen services*. Retrieved from <http://shanghai.usembassy-china.org.cn/airmonitor.html>
- Vegh, S. (2003). Classifying forms of online activism: The case of cyberprotests against the World Bank. In M. McCaughey & M. D. Ayers (Eds.), *Cyberactivism: Online activism in theory and practice* (pp. 71–96). New York, NY, and London, UK: Routledge.
- Wei, R. (2014). Texting, tweeting, and talking: Effects of smartphone use on engagement in civic discourse in China. *Mobile Media & Communication*, 2(1), 3–19.
- Wright, S. (2004). Informing, communicating, and ICTs in contemporary anti-capitalist movements. In W. van de Donk, B. D. Loader, P. G. Nixon, & D. Rucht (Eds.), *Cyberprotest: New media, citizens, and social movements*. (pp. 77–93). London, UK: Routledge.
- Xie, L. (2012). *Environmental Activism in China*. New York, NY: Routledge.
- Xu, J. H. (2012). Online news reports of air quality issues in Beijing. *Telematics and Informatics*, 29(4), 409–417.
- Yang, G. (2009). *The power of the Internet in China: Citizen activism online*. New York, NY: Columbia University Press.
- Yao, Q. (2008). Media use, postmaterialist values, and political interest: The making of Chinese environmentalists and their views on their social environment. *Asian Journal of Communication*, 18(3), 264–279.
- Zhang, W., & Lallana, E. C. (2013). Youth, ICTs, and civic engagement in Asia. *International Communication Gazette*, 75(3), 249–252.
- Zhao, Y. (2008). *Communication in China: Political economy, power, and conflict*. Lanham, MD: Rowman & Littlefield.

Appendix

Table 1. Summary of Air Quality Testing Activities by ENGOs Analyzed.

NGO location	Beijing	Wuhan	Shanghai	Wenzhou	Chongqing
Air testing started	7/6/2011	10/30/2011	2/1/2012	2/15/2012	5/29/2012
Number of persons in regular team	N/A (lends equipment to citizens)	5	1	2	over 20
Data posting format	Journals and irregular Weibo	Weibo with charts and photos	Brief Weibo	Irregular Weibo	Weibo with charts
Number of Weibo followers (8/2012)	N/A	923	132	808	81
Primary blog site	http://goo.gl/NOx6jM	http://goo.gl/5Yv2Nd	http://goo.gl/3aS2IH	http://goo.gl/5JbRDY	http://goo.gl/lhJ1RK