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**Environmental accidents in China:
virtual reality's challenge to the Chinese state**

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Abstract

Environmental degradation and environmental incidents or accidents in China have been frequent headlines in the last several years. Chemical spills, air pollution, lacking waste management, etc. have been treated as signs of the externalities of China's booming economy. Recent theoretical frameworks that link globalization theories to environmental issues are permitting to conceptualize environmental accidents in China as global accidents. 'Global' foremost, because the production chains and consumptive habits that are the root causes or driving forces behind degradation and accidents are increasingly global in nature. But also, and more innovative as perspective, 'global' because of their conceptualization in the ICT sphere of the global network society.

In this paper we will discuss the highly publicized benzene spill in Jilin of November 2005 as a chemical accident in the information age (referring to Castells' theory of the Informational Society). The political dynamics of the accidents are unlike any other that China has seen before because of this. We put forward the point of view that the fall out in terms of state-civil society relations in this case are becoming the norm in a globalized China and will potentially be the trigger to change China's political system.

1. Introduction

In this paper, we will investigate the growing impact of the world wide web on the management of environmental accidents in China. The phenomenal expansion of the Chinese economy is, as is by now widely known, also causing unparalleled environmental damage. Ultra-fast urban growth, changing consumptive habits, and (historically) a general lack of environmental policy implementation at all levels of the Chinese state, have led to serious air and water pollution, issues of waste management, deforestation and desertification, to name just the few most pressing issues (Turner, 2006). Receiving recent attention are also the environmental 'accidents' or 'incidents' taking place at production facilities around the country. In this paper we claim that the old style control and command management of these accidents is increasingly less tenable precisely because of the societal changes induced by the wide spread introduction of ICT in the Chinese society. The previous impossibility, for large groups of Chinese citizens, to access all sorts of information is rapidly changing for a growing middle class, including in the first place the young urban educated groups (e.g. over 70% of the internet users in China is younger than 30 (ITU and Orbicom, 2005: 91)). This is changing public debates and discourses, and forces the Chinese state to react to societal phenomena, such as environmental accidents, in a different manner.

China's relationship to the world wide web has been an issue of debate for some time. Most observers agree that China's rise in the global economy is closely linked to the communication and information technology development in the country. It has been a key factor in allowing China to become the fastest growing manufacturing – and increasingly also service – economy in the world. In fact, the country has become the main or one of the main producers of hardware components of the material infrastructure of the information age as computer terminals, screens, chips, and other components are produced by Chinese companies or by branch factories of large multinational companies. On the other end of the hardware cycle, China is one of the major dumping grounds for so-called E-waste such as old monitors, old computer units and mobile phones (BAN and SVTC, 2002; Jinhui and Shun'ichi, 2005; Smith et.al., 2006; Widmer et.al., 2005). In the last couple of years we also witness an increased economic participation in the development of software and advanced computer programming systems. In fact, Chinese companies are developing new software according to the specifications of global markets and are, in addition, increasingly active in the software related or based service industries which depend on them (e.g. software engineering and applications support for large customers). Finally, the number of people that on a

day to day basis use computers and the internet has increased enormously over the last decade. The number of computers per 100 persons increased with a staggering 746% between 1995 and 2002 (totalling 35 million PCs in 2002 and 43 million in 2003, equalling a penetration rate of 3.4 per 100 inhabitants), compared to 91% in the USA. In a global perspective, this is by far the largest growth. The number of internet users has also boomed: from a mere 62.000 in 1997 to 79.5 million by the end of 2003 and 94 million by the end of 2004 (penetration rate of 6.3 per 100 inhabitants) (ITU & Orbicom, 2005: 27, 90-91; UNEP, 2004: 7)

Short, one can easily conclude that China has become one of the most integrated countries in the networks of conceptualization, design, production and recycling, and as of lately also the use of the network society. This type of economic activities has become one of the backbones of the Chinese economy in global perspective. On the other hand, however, there is the uneasy relationship of China to the communicative possibilities of the world wide web, which form the basis of the social and political relationships in the Information Age. The idea of free floating information, accessible by all and without any serious means to control content and format, has been a central issue of political debate in China and abroad.

In the following parts, we will first discuss the accident in November 2005 at the chemical plant in Jilin, which resulted in a serious pollution of the Songhua River. Then we will introduce the central elements of Castells' theory of the network society as far as they apply to this case. In a third part we will give an account of the communication after the accident. Special attention will go to the difference between the official communication and the 'other' communication. Fourth, we will examine the global dimensions of the environmental accident. The main focus here will be the relationship between the economic development of China and the related environmental problems. Finally, we will formulate some provisional conclusions and broader implications of the spreading of the internet in China for the relationship between the Chinese state and the civil society.

What made the Jilin accident special in our opinion was not the physical or technical nature of the accident, nor its environmental impact, or the handling of it by the Chinese authorities. What has drawn our attention is the fact that internet communication has played a major role in how the position of the company and state institutions had to change. We will use the case to show how it illustrates Castells' theory of the network society.

2. The Songhua River Case

On November 13th, 2005, an explosion at a chemical plant of the Jilin Petrochemical company in the Jilin Province in North East China caused a major spill of over 100 tons of benzene, nitrobenzene, and aniline into the Songhua river. It wasn't until several days later, when the news spread about a serious problem with the drinking water supply system, and the announcement was made that the water supply would be cut off for several days in the city of Harbin, in the North Eastern Heilongjiang Province, that the accident started to draw attention from the international media. The uncertainties about a possible pollution of the river also alarmed the Russian Federation, as the Songhua River is a tributary of the Amur river in Russia, where the city of Khabarovsk is also dependent on it for its drinking water supply. Eventually the river flows into the Sea of Okhotsk

The immediate impact of the accident, namely the pollution of the river, had several consequences. First, there was the direct water pollution caused by high benzene concentration, floating down the river in a stretch of up to 150 km and causing serious damage to aquatic life.¹ Benzene is highly toxic and carcinogenic even in smaller doses. Exposure to benzene can cause nervous system disorders, immune system depression and anemia, mutations, degeneration of bone marrow and leukaemia, and can affect the reproductive system. Animals can accumulate benzene but are not able to metabolise or dispose of the chemical (Mail & Guardian Online 11/25/2005). The pollutants can have an impact on the overall ecosystem. Images of death fish on the river banks were to be found in the international media and on websites. Benzene also settled on the river bed where it will stay for a longer time period and cause further and more longitudinal damage to the river ecosystem. Other consequences include the pollution of river banks and of ground water, and lastly air pollution through the evaporation of the pollutants, which is of particular concern during the spring when the ice melts. All of these effects depended largely on the following factors: the amount and concentration² as well as the intrinsic characteristics of the different pollutants; the weather related circumstances³; and possible action taken by relevant institutions to limit the

¹ The benzene slick elongated while moving down the river and had a 150 km stretch when passing through Jiamusi. This elongation and the partial dilution of the pollutants through an increase in the water flow from an hydroelectric power station into the river probably caused the decreasing concentrations of benzene and nitrobenzene from 0.8356 mg/l on November 19 in Songyuan to 0.1694 mg/l on December 15 in Fujin (UNEP, 2005: 6, 8-9). On November 24 the slick reached Harbin, where it took the slick several days to pass through the city (Mail & Guardian Online, 11/24/2005b).

² Although much uncertainty remains about the concentration and the ratio of benzene and nitrobenzene in the river (UNEP, 2005: 6), there is mention of an amount of 100 times the safe level of benzene immediately after the spill (Mail & Guardian Online, 11/24/2005a), and a concentration of nitrobenzene of 33.15 times the permissible level on November 25 (UNEP, 2005: 6).

³ Cold weather and the ice cover on the river slows down the biological breakdown of the chemicals by sunshine or microbes and prevented quick dissolving or evaporation of the benzene. It remained

impact of the accident. Taken together these factors possibly resulted in large negative effects, as the amount and concentration of the pollutants are estimated to be high, the weather circumstances were not favourable, and there is the possibility of missed opportunities in the immediate reactions to the accident as communication between different institutional levels was rather slow.

A secondary, but very important consequence is related to the drinking water supply systems along the river, on both the Chinese and Russian side. Harbin, a city of around 4 million people, and Khabarovsk, a Russian industrial town of about 650.000 inhabitants, are the two major cities dependent on the river for drinking water. Other smaller towns along the river were in the same position. The threat here was twofold. On the one hand, there was the immediate toxicity of the river water. Closing down the water intakes for the drinking water system would solve this issue instantaneously. On the other hand, even a low dose of pollution is problematic, as it takes a while until all the toxic pollutants will be either dissolved or washed out. Although the levels of benzene might fall under certain limits, recent research demonstrates that low doses over a sustained period of time can cause damage in living organisms.⁴

As a result of the accident, the drinking water system in Harbin was shut down 30 hours before the toxic slick would pass by the city and for several days afterwards. The non-communication of certain measures taken by the Chinese State Environmental Protection Agency (SEPA) in response to the toxic spill, and the vagueness about the reason of the water supply stop in Harbin led to panic in the sense that several hundred thousand people have been said to leave the city, and a true storming of shops to buy bottled water took place. Later in this paper we will come back to this point and its relationship with the communication issue.

The accident actually appears to be a fairly standard case of an explosion of a chemical facility in a country with rather limited safety and environmental management systems (Carter and Mol, 2006: 330), where environmental disasters happen regularly, and where the suspicion of existing hidden environmental hazards looms large. Toxic substances leaked into a waterway and will dilute and reach the sea. Along the river there are consequences for the ecosystem and humans using the water. This type of accidents, although not happening every

'stored' in the river in larger concentrations for that reason. Benzene can be persistent when bacterial degradation is absent. The weather conditions also made it hard to take samples necessary to estimate the pollutants concentration.

⁴ People with water pits relying on ground water were another source of concern. The benzene could infiltrate the groundwater supplies (UNEP, 2005).

week, are rather frequent, and thus nothing really spectacular. What made this accident special is in our opinion the way in which the relationship between the Chinese state and civil society evolved, and was influenced by how different actors handled communication. The use of web based information technology played a central role in the shifting communication pattern.

3. Castells' theory of power relations in the Information Age and China's political organization

In his social theory of the Information Society, Castells not only describes the fundamental societal transitions of the Information Age, but also its political and social consequences. Castells describes the Information Age as “a historical period in which human societies perform their activities in a technological paradigm constituted around microelectronics-based information/communication technologies, and genetic engineering. It replaces/subsumes the technological paradigm of the Industrial Age, organized primarily around the production and distribution of energy” (Castells, 2000a: 5-6). The main form of social organisation is changing in the direction of a network. Information networks are networks “powered by new information technologies” (Castells, 2000a: 15). A set of historical events during the late 1960s and 1970s, and the availability of new information technologies created an environment in which these information networks became the “most efficient form of organization” (Castells, 2000a: 16). Consequently, these information networks started to eliminate other organizational forms as they have certain characteristics that are fundamentally different from late modernity before the wide spread use of ICT. Typical features of this network society are its non-hierarchical structure, its fluidity, and the difficulty of actors in the network to control the flow of information. This is not to say that there are no power relations in the network, yet power is redefined as the ability to give meaning to certain flows of information and to manage them in such ways that they have surplus value. This can be done by combining flows or by finding new use for them in production processes.

John Urry's argument about hybrids (“material worlds”), in the sense that social networks also have a clear material basis in the form of information hardware, is of additional use for our purposes (Urry, 2003: 56). Social systems can no longer be conceptualized as ‘purely’ social because of the growing interconnectedness of human beings and technological objects in our contemporary IT society. Castells claims that “therefore, we must integrate technology, on its own ground, as a specific layer of the social structure” (Castells, 2000a: 9). In fact, the new networks that are forming in countries like China, and which are changing the social

organization at a fundamental level, are based on the physical infrastructure of computers, improved telephone lines, internet cafés, university computer and internet accommodation, etc. It is this understanding of the fact that 'purely' social relations, in the sense of inter-human, do not exist anymore in the network society that is crucial. The hard- and software components have become an integral part of our social lives. This also means that control over hard- and software is crucial in the formation of these networks and in the potential role they can play.

This transformation of society also contains transformations and adaptations at the political level. The sovereignty and legitimacy of the state have to be called into question, as a redefinition of its role is necessary. The state has lost its central role because of its inability to effectively govern global flows, such as flows of information and communication. Decentralization of responsibilities and the sharing of power through the formation of partnerships are essential in the network society. The state is no longer situated at the top of the power hierarchy. On the contrary, "networks dissolve centres, they disorganize hierarchy, and make materially impossible the exercise of hierarchical power without processing instructions in the network, according to the network's morphological rules" (Castells, 2000a: 19). In order to survive in the network society the state has to adapt itself to the changed society and become a network state, a "state made out of a complex web of power-sharing, and negotiated decision-making between international, multinational, national, regional, local, and non-governmental, political institutions" (Castells, 2000a: 14). Power relationships remain of importance, but in the network society former centres of power are bypassed by flows of information. Information is being produced, distributed and shared at an ever accelerating pace. Flows of information circulate within and between different networks. This information processing is "at the source of life and social action" (Castells, 2000a:10). As a result, "the power of flows takes precedence over the flows of power" (Castells, 2000a: 20).

Looking at the Chinese state from such a network perspective offers interesting insights. The Chinese state is based on dominance by the Chinese Communist Party and the large state bureaucracy, which translates into a strong hierarchical political command structure and explicit linkages between ideological party objectives and policy planning. Another important factor is the lasting, and strong belief in the one party state and the communist model of political and social organisation. This has historically included an organized and harsh crusade against more independent social movements, ideas, opinions, religions and individuals which represented and defended alternative forms of social and political

organisation. Although the current situation in China is very different from the tyranny of the Mao period, the political system remains authoritarian. China's continual battle with international governmental (e.g. the United Nations) and non-governmental (e.g. Human Rights Watch, Amnesty International) organisations illustrates this.

However, since the death of Mao and the takeover of the Communist party by reform-oriented leaders, starting with Deng Xiao Ping, China has followed a political and policy path based on strong central one-party rule and deliberate economic reform aimed at integrating China in the global economy. Hence the Chinese government is, on the one hand, stimulating and managing the introduction of the Chinese economy into the global capitalist market. This introduction is heavily dependent on the facility to exchange large amounts of data through information networks, based on the rapid and pervasive spreading of information technology. In fact, Castells is describing the major shift towards the Information Age at precisely the time period of China's economic transformation, and uses Chinese cities as important examples of the impact of these changes. On the other hand, the Chinese state is trying to control the flows of information in political and social 'areas' of the world wide web. The underlying hypothesis behind these attempts is that the internet can indeed be controlled while at the same time remaining functional in a sort of isolated economic sphere.⁵

As a result of this belief, several thousand internet censors are active to track down 'subversive' or otherwise undesirable websites. Examples include the websites of large international human rights organisations, politically or religiously oriented websites, etc.⁶ In addition, the personal websites and internet exchanges of individuals or groups are monitored to look for this type of information. This has led to several arrests of individuals. Raids on internet cafes, universities and the offices of non-governmental organizations are well documented. Organizations such as Amnesty International and Human Rights Watch have published reports on the issue that demonstrate the seriousness of the Chinese state to deal with these threatening evolutions (Amnesty International, 2004; Human Rights Watch, 2001).

⁵ Ideologically this may seem bizarre. Marxists base their analysis of societal phenomena precisely on the connections between the economic and political spheres of social organization.

⁶ On a recent visit to China the authors attempted to access the websites of several human rights organizations, international environmental NGOs, and other politically related websites. Almost all of them were 'closed'. A similar large scale exercise has been performed by researchers from the Harvard Law school. Of the more than 204.000 web sites that were tested, more than 50.000 were found to be inaccessible from at least one point in China on at least one occasion. Almost 19.000 of them were inaccessible from at least two distinct proxy servers on at least two distinct days. The latter more conservative estimate was reached in order to distinguish between those inaccessible websites that were intentionally blocked and those that were only temporarily inaccessible (Zittrain and Edelman, 2003).

International support for this attitude of censorship and control comes from internet companies such as Google which has signed a historic deal with the Chinese State to allow the breaching of the fundamental element of the internet namely the free flow of information (Human Rights Watch, 2006). The access to the huge Chinese market was clearly of more strategic importance than the defence of the basic principles of democratic functioning of the internet.

In conclusion, we can say that the above mentioned contradictions in China's reaction to and position in a globalized world order, illustrates the difficulties it will increasingly face to remain structured in a hierarchical command and control way an to keep control on the whole society. Allowing a globalized economy and at the same time restricting political and social globalization poses huge challenges to the Chinese government. Because of the multiple possibilities and the speed of the new information technologies, control on information becomes harder and harder. Even with specialized programmes, a waterproof system of censorship is not possible. Therefore, the Chinese government will need to find new ways to deal with information not coming from official institutions and with citizens demanding more openness, clarity and transparency from the government through up-to-date information. If the Chinese government does not succeed in providing this, chances are high that citizens will rely on their own information network, which will not include the central government, as a network only contains nodes that are useful and necessary. After all "nodes increase their importance by absorbing more information and processing it more efficiently. If they decline in their performance, other nodes take over their tasks. Thus, the relevance, and relative weight of nodes does not come from their specific features, but from their ability to be trusted by the network with an extra-share of information" (Castells, 2000a: 15-16).

4. The information flows related to the accident

The initial reaction of the company, the authorities and the official state media after the accident was a combination of the following strategies: (1) to limit the information on the accident, (2) to provide information that would prevent any form of worrying or panic in the population, and (3) to ignore the Russian neighbours. This type of reaction is typical of the Chinese authorities in this sort of cases. One could call it a centrally controlled political or even ideological reaction.

In the following paragraphs we will give an account of the communication after the accident. The difference between the official communication and the 'other' communication, i.e. international and internet based, is striking.

The communication by the Jilin Petrochemical Corporation followed a fairly traditional path. Since the explosion was very visible, denying that anything had happened was not an option. The company first announced on a press conference on November 13 around midnight that the explosion caused air pollution but without any concerns for the population. No reference to any pollution of the river was made. Shortly thereafter the message came that the company had its own water treatment system and that there was no danger for toxic leakages into the Songhua river (EastSouthWestNorth). In a similar vein, a city deputy of Jilin also stated that there was no risk of large-scale pollution. Moreover, the Jilin Provincial Environmental Protection Agency initially neglected communication to the Heilongjiang Province, the city of Harbin and the Russian Authorities (Asia Pundit; People's Daily Online 11/24/2005; Turner, 2006:1) Some sources report that SEPA too was not informed until November 18 (People's Daily Online, 12/02/2005; Turner, 2006: 1). Other, unofficial sources, on the other hand, mention that already on the 13th, SEPA sent officials down to Jilin to test the polluted water (Asia Pundit). Whatever the truth is, it took SEPA until November 18 to finally issue emergency monitoring instructions to the Heilongjiang Provincial Environmental Protection Agency. Neither SEPA nor the provincial agency, however, informed the population about this, which could have prevented much of the uncertainty and insecurity that arose a few days later (UNEP, 2005: 7).

Once the authorities of the city of Harbin were informed⁷ of the water pollution, they also tried to cover-up what was happening. In a first statement on Monday November 21, they announced that routine maintenance on the city's water system would require a temporary shutdown and that nothing was happening out of the ordinary or that would cause any danger. This announcement immediately caused social unrest, however, as it would be the first time that the water would be cut off in such a large area and for so long (China Daily, 11/22/2005). As there was no explanation for the water stoppage in the first statement angry website postings calling for greater clarity started to multiply (EastSouthWestNorth). People could not understand what was happening and immediately started to rush to the supermarkets to buy bottled water in large quantities (Financial Times, 11/22/2005). On Tuesday November 22, a second statement was made by the city's authorities, which mentioned the possibility of water pollution because of the explosion at the petrochemical plant in Jilin 8 days before. The statement also assured that the water quality at that moment was still at a normal level. This

⁷ It remains unclear when and by whom the Harbin city government was informed. Probably they received their information from the Heilongjiang province after the governor had received a report about the pollution on the 18th (Time, 01/12/2005).

second announcement was initially not widely distributed.⁸ Fears for pollution were denounced as rumours. Much uncertainty remained as not more details were given and the Harbin Water Supply Company refused to comment (EastSouthWestNorth and Chinanews 11/22/2005). PetroChina and SEPA both said that they “cannot come to this conclusion as yet” (EastSouthWestNorth).

However, while the official network of information was spreading a specific interpretation of the incident, another form of communication was spreading completely different information. As said, China is rapidly becoming the largest internet society, and the expectation is that by the year 2008, China will have more internet users than any other country. That means that more people will have access to flows of information which are based on other organisational principles than the formal political context that surrounds them.

Via the internet, a completely different story was distributed to local and global audiences. Local citizens were using Email messages, blogs and websites to send out personal observations, worries, and also questions about the official handling of the situation. International resident or expats of different sorts were using the same internet based channels to give their accounts of the situation. The following excerpts illustrate this rather well.

A blog posting by a woman on the evening of November 21 shows how that, immediately after the first statement was made, people already linked the announcement of the water system shutdown to the explosion in Jilin a week before:

“At some time around 10am this morning, my son came home and secretively told me, "Mom, store some water. Harbin is going to have a city-wide water stoppage." I said, "Is this a quick hygiene clean-up?" My son said: "My guess is that it is the Jilin benzene factory explosion leading to pollution of the water upstream coming

⁸ It is not clear when the second statement was exactly issued. Different sources give variable information about this. *People's Daily Online* wrote on 11/23/2005 that the second statement took place on Tuesday the 22nd of November. *China Daily* posted two different articles on the 22nd of November concerning the two statements of the Harbin city government. The article posted online at 06:05 mentions that the second statement was also issued on Monday afternoon. The other article posted online at 20:51 says that two separate statements were made on Monday and Tuesday. For this second article *China Daily* got its information from *Xinhua*. *Chinanews* adopted the first article and published it on its website in the afternoon. On the web log *EastSouthWestNorth* we read “on November 21, the Harbin City government issued a public notice on account of the explosion at PetroChina's benzene factory in Jilin further up the Songhua River, it is anticipated that Songhua will be affected by the pollution in the river water coming from upstream”. *The Wall Street Journal* article of 11/23/2005 states that the first notice was issued on Monday and the second notice was issued some time later but also says that this second notice wasn't widely distributed until Tuesday.

from Jilin." My son also said: "In order to prevent citizen panic, this is still a secret at this time."

"Don't believe in rumors!" I said, even as I systematically went through all the hygienic procedures while talking to my son. Before I knew it, it was 2pm and the phone rang: "This is the building maintenance department. Water will be stopped at midnight all across the city. Please make preparations to store water ..." The voice was light, as if it was afraid to scare me. It would seem that what my son told me was true!

Hmmm ... I just called my elder brother to inform him of the water stoppage. He hurriedly said: "Yes, yes. I know about it. I was just buying water from the outside. The supermarkets are sold out!" Heavens! It is that serious!!! I immediately called the trainer at the recreational club. Before I even finish talking, he told me: "Hey, sister! Everyone at the club has gone out to purchase water, so you better get prepared. Don't come here! I am going home right now!" This is getting serious!! My husband then called to say: "I really didn't expect that the water at the supermarket is selling out."

So I started to collect water. I used all the pots and buckets. When my husband and son came back from work in the evening, I told them that they will have to eat instant noodles and western food the next few days in order to conserve water and not wash dishes! The two men agreed. I told them to take baths immediately, so that I can fill up the bathtub with water immediately afterwards. It had been a hurried and tense day, and I have no idea what is going to happen tomorrow" (EastSouthWestNorth)

An email from an American student studying in Harbin send the 22nd of November around noon reflects how badly informed the citizens in Harbin were:

"Our campus first told us yesterday that they were "cleaning out the water tanks because they were dirty. But now they have retracted the story and said that it is because the water is polluted, but will not tell us what kind of pollutant it is. Also about the earthquake, there are rumors that for the next 5 days there is a possible earthquake in the vicinity of Harbin [...] The whole city is on edge here. Businesses are closed. No one knows if we can cook food, and the government is not telling us anything [...] There are lots of rumors flying around in Harbin right now. Its just a chaotic situation that no one seems to have a handle on" (EastSouthWestNorth).

Forum posts at a Harbin Bulletin Board System (BBS) reflect the uncertainty and uneasiness of the citizens in Harbin:

“At after 10am, my colleague received a telephone call from his friend at the municipal public works department to go home to save water because the water supply is going to stop. [...] So my colleague grabbed some money and went downstairs to buy water at the supermarket. He returned emptyhanded in less than 20 minutes. The water is all gone. Only some beer is left. I went to the Harbin Daily website, but there is no news. In the afternoon, the office BBS had more posts about the water stoppage and earthquake” (EastSouthWestNorth)

International media where also relatively fast in spreading the news about the incident and its consequences. On its website, the BBC already reported on the morning of the 22nd that the unexpected mains stoppage was likely to be linked to the Jilin accident. It also referred to the environmental bureaus of Harbin and Jilin, which continued to deny that the water had been polluted and that this was the reason for the water supply shutdown (BBC News 11/22/2005). The Financial Times posted a similar report on its website in the early evening of the 22nd (Financial Times, 11/22/2005). In fact, some of these media managed to interview Chinese scientists that gave accounts of the incident and the handling of the government. Also, local citizens were interviewed expressing the lack of information and the distrust in the official handling of the accident.

Given these new circumstances, Chinese authorities had little other option than to change the message. On Wednesday November 23, SEPA officially confirmed that the Songhua River was heavily polluted and that this pollution was caused by the explosion at the petrochemical plant in Jilin 10 days earlier (People's Daily Online, 11/24/2005).

Once the pollution was officially admitted, more official information was spread. The city published information on the water quality via local media, hotlines were opened, and public announcements were made on TV, radio, and the Internet (People's Daily Online, 11/28/2005 and 11/29/2005). UNEP was informed on November 26 and invited for a site visit on December 5 (UNEP, 2005:11). Daily communication was also organized with the Russian Federation⁹. Nevertheless,

⁹ It was not until 11/24/2005 that Beijing told they had informed Russia of the water pollution situation in the river (People's Daily Online, 11/24/2005). This means that the Russian authorities had to wait for eleven days before getting full and correct information about the extent of the accident and the potential threats to the water supplies on the Russian side. Which explains the angry reactions by the Russian authorities.

there remained much uncertainty about the scope of the pollution, and about what exactly happened between the 13th and the 23rd of November. The UNEP Field Mission Report illustrates well that due to the delayed information it was very difficult to estimate initial pollution levels (UNEP, 2005: 4). Difficulties with taking samples and restrictions on UNEP-mission actions were an extra factor making it difficult to assess the full dimensions of the environmental pollution (UNEP, 2005). By trying to reconstruct the events taking place between the 13th and the 23rd of November it became clear, that even after the the pollution was officially confirmed, much uncertainty remained about who was responsible for what and which officials received what kind of information at which point in time.

At a press conference on November 24th Zhang Lijin, the deputy director of SEPA, defended the government's approach of information distribution and did not believe that Beijing informed the Russian Federation "late" (EastSouthWestNorth; CNN, 11/24/2005; The Paper Tiger, 11/24/2005). And during his visit to the city of Harbin the 26th of November, the Chinese Premier Wen Jinbao didn't offer an explanation for the government's attempt to cover up the chemical spill but stressed the attempts made to ensure there was clean water for the citizens and he emphasized the importance of quickly releasing information to the public (Washington Post, 11/27/2005). It also became clear that between the explosion in Jilin and the official statement of SEPA on the 23rd numerous officials had knew about the pollution, and that companies such as Zhejiang's Nongshan Mountain Spring Corporation (a water bottler company) were informed of the water stoppage days ahead (EastSouthWestNorth).

The lack of quick and adequate official information and communication thus clearly resulted from an attempt to cover up the accident. Most of the official communication followed the traditional path via Beijing, which tried to control all information publicly released. In the Chinese Communist Party a special task force regarding the accident was installed. It directed the communication and tried to keep reactions by citizens, media and the Russians under control. One of the goals of this approach was to avoid social unrest. But the lack of information and the delay in spreading information only fostered the uneasiness of the citizen population.

The reaction towards the media aimed at controlling information and spreading a specific state formulated message. The official state media, which fall under close scrutiny of Communist Party censorship, brought the account of the story as an accident with limited environmental impact. In addition, the state institutions had reacted in a timely and adequate manner and the population was in no way at risk.

The message to domestic and even more to international media was that they were not supposed to come to Harbin or Jilin because there was no news to be gathered. National press was also controlled by ordering journalists to publish only official reports or not publishing news about the disaster at all (Newsweek International Edition, 11/29/2005).

A clear and almost immediate outfall of the incident was that a number of high officials were fired. This included party officials at high level posts, such as Xie Zhenhua, the head of SEPA (Newsweek International Edition, 12/06/2005). China National Petroleum Corporation, the parent company of Jilin Petrochemical, criticized the company and the general manager, and two workshop managers were fired December 5 (Newsweek International Edition 12/06/2005). Furthermore, the environmental authorities of Jilin Province were criticized by Wang Yuqing, vice-minister of the administrative affairs section of SEPA. Wang blamed Jilin for not informing SEPA about the accident from November 14 to 17 (People's Daily Online, 12/02/2005). Eventually Wang Wei, the vice-mayor of Jilin, was held responsible for the cover-up of the water pollution, but he committed suicide¹⁰ just before Beijing investigators were able to interrogate him about his role in the cover-up (Newsweek International Edition, 12/19/2005).

On a somewhat longer perspective, the government announced several elements that can be interpreted as partial policy changes. More attention will go to the public communication about accidents. But also, the questioning of the safety of a number of production facilities has become a topic. In fact in the Hunan province, more than 30 facilities of chemical plants along riverbanks have been temporarily shut down to perform security checks. Furthermore the fine the Jilin Petrochemical Company had to pay shows that companies will have to take (financial) responsibility for the environmental damage they caused. The company was fined the maximum 1 million yuan (125.000 U.S. dollars). Although this is just a trifle in comparison to the 1.2 billion U.S. dollar the Chinese government will have to spent on the clean-up (BBC News, 01/25/2007 and Xinhua Online, 01/25/2007).

On a more fundamental level, recent information strongly suggests that the Chinese authorities are taking environmental issues more seriously for several reasons. First, their economic cost is growing to levels unknown to modern

¹⁰ Beijing tried to avoid that news about the suicide would be published in the Chinese Press and gave the media the message to quit reporting on the scandal once and for all (Damage Control: Chinese Press leaks on the big spill 12/12/2005)

industrial societies. Estimates range from \$ 50 billion per year or up to 5% of the GDP. A second reason is the high impact on human health, especially in urban areas.¹¹ Third, recent international coverage of environmental issues in China have made this a sort of tarnished spot on an economic performance that is the envy of many, including western countries.

5. Global dimension

Although it was a domestic accident, which had limited trans-boundary consequences, one of the most interesting aspects of this environmental accident are its global dimensions. These global characteristics are not only related to the booming Chinese economy and its increasing linkages with globalizing production and consumption networks, which are the driving forces behind environmental degradation and accidents as the ones described in this paper. Foremost, its global dimensions are linked to its conceptualization in the ICT sphere of the contemporary network society.

First, China's fast-growing economy ensures that the country is increasingly integrated into the world capitalist economy, which also includes the development of large 'global' companies. The PetroChina Company Limited, the parent company of the company that caused the accident, is majority owned by the Chinese government, but is a prominent player on the global market of oil and petrochemicals. It produces for the Chinese market primarily, but is linked to global oil and chemicals supply and production chains through numerous commercial and material transactions. It also exports for global markets and more specifically for countries such as Burma, which also adds to the global debate about the role of Chinese companies in areas which are problematic. The company is quoted on the New York and the Hong Kong Stock Exchange since 2000 (PetroChina, 2007) and the impact of the Jilin accident was visible on the market. Its stock, for example, fell 2.4% in one day on the Hong Kong Stock Exchange and the accident also caused unrest among US investors (among whom Warren Buffet) (Bacani and Wu, 2006). Ironically, AsiaMoney – a leading capital markets magazine in Asia – awarded PetroChina in February 2005 the title of “Overall Best-Managed Large Cap Company in 2004” and “Overall Most Improved Company for Best Management Practices” in 2004 (SEC Info, 2006).

¹¹ China is in that respect no different from many countries. When human health is at risk, environmental issues become more urgent and politically important. The risk for negative political repercussions (i.e. legitimacy of state policies in the eyes of citizens) and liability issues are major concerns.

Second, Chinese environmental policies are increasingly perceived as having a global dimension. It is important to recognize this, because the discourse about the Chinese model of economic expansion is by now almost automatically linked to the discourse about the environmental pollution and externalities of the model. Air pollution and water pollution related environmental problems have received most attention (Turner, 2006). This is not unusual when 16 of the 20 most polluted cities in the world are situated in China (World Bank, 2006). Furthermore, carbon emissions are increasing rapidly. Between 1990 and 2004, emissions rose with 67%, (compared to 88% in India and 19% in the USA), equalling as a unit of GDP (PPP) 158 tons per million dollars (compared to 147 for the USA). Despite this large increase, this still only comes down to 0.8 tons per person (compared to 5.5 for the USA), which means that there is still a large potential for increase (Worldwatch Institute, 2006: 7, 16). Other environmental problems also caused by large scale industrialization projects are of a major concern as well (Turner, 2006: 3-4). Since the 1990s environmental non-governmental organizations have started to emerge, with different NGO's focussing on specific environmental problems, such as desertification (Han Hai Sha), or the protection of endangered species (The Tibetan Antelope Information Center) (Yang, 2003). Some of these NGOs are not even registered and only operate through the Internet (Carter and Mol, 2006: 341). Given the scale of the Chinese economy and the scale of pollution, its impact on global pollution levels is large, worrisome and subject of global debate and policy activity. Even though the accident in Jilin is not immediately of global or even regional scale in terms of environmental consequences, it has been perceived in the international media, the UN and other fora as a case that underscores the global concerns about the Chinese model of rapid economic growth. In that sense it most definitely has global dimensions.

Third, the case described in this paper has global dimensions because of its close connections to the dynamics in the ICT sphere of our globally networked society. Castells (2000b) argues that the information and communication technology revolution has so fundamentally changed our society that it is qualitatively distinct from the previous, industrial age. It has changed our social structure, our symbolic interaction, our economic organizational structure, and our political management of societal problems. An important consequence of these transformations in our society is a redefinition of time and space. In this respect, Castells conceptualizes a new social space that has arisen in our contemporary society, which he refers to as the 'space of flows'. He defines it as "the technological and organizational possibility of organizing the simultaneity of social practices without geographical contiguity. Most dominant functions in our society (financial markets,

transnational production networks, media systems etc.) are organized around the space of flows. And so to [sic] do an increasing number of alternative social practices (such as social movements) and personal interaction networks” (Castells, 2000a: 14). Information and information networks play a key role in this space of flows.

It is clear that in the case of the Jilin accident, information networks have played a particular role and that the information on the internet followed a space of flows dynamic. Very soon after the first statement of the Harbin city government was issued, messages on blogs appeared linking the water supply shutdown to the Jilin explosion. This appearance in the blogosphere can be seen as a form of culmination of a social debate that had been going on as a result of the unrest that was created after the first announcement. This social debate was not only held through interpersonal communications, but also via Email and text messages, and spread much faster than government officials could have imagined. Especially after the second announcement, in which a reference was made to the Jilin blast, the news very quickly spread throughout the world wide web, even making it possible for European citizens to read about the incident while sitting at the breakfast table on November 22.

The government’s information flows were clearly embedded in what Castells would call the ‘space of places’, with which he refers to the more localized, socially and geographically bounded organization of our social lives (Castells, 2000b: 442). The information was for the most part vertically controlled, while following more traditional controllable, material paths. However, while the government was initially reacting to the crisis as it had probably done for a very long time, it was confronted with a fundamentally different society. The information on the internet followed a space of flows dynamic. It contained a networked spreading of the information in instantaneous time, without clear vertical lines of control over which information to which target audience was spread. It was not only spread in China, but on a global scale, thus triggering domestic and global media reaction. In addition, international political reactions, questions from local and domestic environmental groups and reactions from the global corporate world became part of the debate.

Once absorbed by the virtual world of information flows, therefore, the information was qualitatively transformed, thereby creating a ‘real virtuality’ (Castells, 2000b). Compared to the pre-ICT age, messages coming from ordinary citizens, as well as the announcements of government officials, flow around the world with the speed

of light, thereby creating their own dynamics. Although the Chinese state is still eagerly trying to control the flows of information, it is no longer able to do so. As a result, the state is no longer the primary source of information for Chinese citizens that are integrated in a network society. Information in an internet environment determines the importance, the relevance and the relative weight of the different nodes in the network as they “increase their importance by absorbing more information and processing it more efficiently” (Castells, 2000a: 16).

Not only has the Chinese state in that sense lost its centrality as source of information, this evolution also puts larger pressures on the state to become more transparent and clear in its communication. In case the Chinese state will not succeed in this task, the possibility exists that it will lose power and authority in favour of other information sources/nodes in the information network. We hypothesize that the Harbin case could be a tipping point in this evolution.

6. Conclusions and broader implications

The Songhua River case is in our approach not so much an example of an environmental accident in China as an indication of a much more fundamental transformation in Chinese society. The environmental character of the example of this transformation is important because the environmental externalities of the Chinese economic miracle are as much an intrinsic characteristic of it as its connection to the internet. The case clearly demonstrates that the duality in the Chinese society in terms of a closed political system versus a gradual opening up for global markets has a number of clear consequences. The idea that a strict state system can have enough control over the internet to actually prevent certain forms of communication, certain topics of communication, or the formation of social networks seems to be more and more an illusion.

Debates about the future of China invariably have to include the transformation of the political system. Most observers of China's one party state model seem to agree that this system is in the long run incongruent with the further liberalisation of the economy and of China's popular culture. Following Castells' observations we dare to take it one step further. The introduction of China in the global economy, which is largely based on information technology, is the driving force behind the social and political transformation that is beginning to become visible in China. Castells explains this in the following way: “once introduced, and powered by information technology, information networks, through competition, gradually eliminate other organizational forms, rooted in a different social logic” (Castells, 2000a:16). In other words, the social organization which forms the basis of the economic success will at

the same time be the basis for political transformation. Indeed, regardless of the internet censorship, of the grip on the tradition media, and of the repression, the processes taking place in China are of such fundamental nature that they are redrawing the relationships of power, political meaning and the role of the state. As China is increasingly becoming a nation of internet users, and hence of people with access to information flows beyond the direct control of the government, it is unavoidably moving in the direction if a clash between the political system and the aspirations of an information age population.

That incidents relating to the environment play an important role is no coincidence. The magnitude of environmental pollution and degradation, its link with health issues and the relative political space to discuss environmental issues (compared to for example human rights or freedom of religion issues) make them an almost natural focal point for public discontent.

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