

The epistemology of environmental investigative journalists: the case of China

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Abstract

This paper offers a case study of the epistemology of Chinese environmental investigative journalists, drawn from 42 in-depth interviews conducted from 2011 to 2013. The study proposes that it is the knowledge that journalists form, rather than whether the knowledge is objective, is important for understanding the epistemology of environmental investigative journalists. The analysis reveals that four types of knowledge are central to what participants come to know about environmental issues in the process of validating evidence and making judgements. The importance of experience, cognition and evidence-based judgment in the knowledge formation process means there is an inevitable (but covert) involvement of journalists' subjectivity in their reports. This suggests that the participants practice an advocacy and ethnographic journalism, characterised by pragmatism, existentialism and particular standpoints, while making a strong claim to "truth". These standpoints are generated in the pre-writing investigation stage rather than in the writing-up stage. Therefore, in this case study, the epistemology of environmental investigative journalism is concerned with how and when meanings and opinions are generated in the process of knowledge acquisition, rather than whether the knowledge is objective.

Keywords: Environmental investigative journalism, Epistemology, China, Knowledge, Experience, Objectivity journalism, Advocacy journalism, and Ethnographic journalism

Introduction

“Epistemology is the study of knowledge and justified belief” (Steup 1996: 1). There are different approaches to and views of epistemology. This paper takes those of Rogers. According to Rogers (1898), while reality is objective and transcendent of experience, knowledge, which exists between reality and experience, emerges from judgement. The judging process adds up to experience of reality and leads to an increase in knowledge of reality (Rogers 1898). Nevertheless, the judging process and knowledge of reality have to be distinguished from 'the reality about which the judgement is made'. The former is only 'a copy' of 'the reality known', while the latter is 'an original' (Rogers 1898: 470-474). In other terms, the thing known is objective and the knowing of the thing, which along with the knowing process are within experience and subjective (Rogers 1898). This implies that subjectivity always exists and absolute objective knowledge of things is impossible to reach. Despite that, distinguishing the true from the false is the most credible route to objective knowledge. When it comes to journalism, the process of distinguishing is a process of knowledge formation, in which journalists need to decide what is true, credible and valuable, to verify the information they collect and to absorb it as part of their justified beliefs. This is a process of evidence-validating and judgement-making. In journalism, it is possible to hold true accounts of things without achieving pure objectivity, while one cannot equate objectivity with truth (Muñoz-Torres 2012). The knowledge that is formed in journalists' investigations provides the basis for the knowledge that is embodied in their reports (Ekström 2002). The way in which journalists form the system of knowledge and verify beliefs reflects the nature of their work and culture.

Our current understanding of the epistemology of investigative journalism is limited. This is for two reasons. First, most studies in the field focus on examining daily reporting or other types of journalism such as literary journalism and TV journalism, which accords objectivity a central position (such as Hanitzsch 2007; Durham 1998). The centrality of 'objectivity' may be a source of oversimplification when it comes to investigative journalism and may curb our capacity to understand its epistemology, as investigative journalism is not guided by the principle of objectivity. Second, very few studies have examined the epistemology of investigative journalism since the publication of the classic work of Ettema and Glaser (Ettema and Glaser 1987). Ettema and Glaser's study mainly discussed the overall “process of justification” but left detailed scenarios about the formation and nature of knowledge untouched.

To fill this gap, this article examines the epistemology of a group of environmental investigative journalists in China with the aim of answering two questions: How do investigative journalists form the system of knowledge about environmental issues that is not part of the areas of their expertise? And what kinds of knowledge are involved? In other words, the study shifts the emphasis of analysis from the centrality of objectivity to the actual process of knowledge formation and

the nature of knowledge that environmental investigative journalists need to possess. The article explores these questions through analysing interviews with 42 Chinese environmental investigative journalists about their practice and perception of environmental issues.

The epistemology of journalism and environmental investigative journalism

Much of the literature on the epistemology of journalism has focused on whether and to what extent knowledge produced by journalists is and should be objective. For example, Muoz-Torres has examined the epistemological tenets behind the stylebooks of three main newspapers in Spain. Objectivity is seen as the main epistemological tenet, though there are inconsistencies associated with truth and knowledge in professional journalistic practices (Muoz-Torres 2007). Another example is Huxford's study that reveals the tension in two epistemological modes: *scientia* and *probabilitas*, with the former as "disembodied objectivity" and the latter "embodied expert opinion". His study suggests journalistic credibility is increasingly based on the grounds of *probabilitas* rather than *scientia* (Huxford 2011).

Other studies on relevant topics also place the objectivity/non-objectivity dichotomy or continuum in the centre of their discussions. The study of Godler and Reich, for example, summarises three epistemological approaches to truth and reality: realism, social constructionism and pragmatism (Godler and Reich 2013). These three approaches represent three different levels of realising truth in a process of truth-seeking, i.e. objectively realising truth, subjectively constructing truth, and realising practical truth. Durham examines the critiques of scientific objectivity and journalistic objectivity and proposes an alternative view from the perspective of standpoint theory (standpoint epistemology) to replace strong objectivity (Durham 1998). Based on Durham's work, Ryan is quite optimistic about objective journalism and regards it as indispensable in a free society. Ryan's article evaluates the norm of objectivity as one of the most important journalistic values that a free society needs. It introduces three alternative approaches to objectivity: existential, standpoint, and public/civic journalism. It reviews and refutes critics of objectivity with eight criticisms and assesses the difficulties in practising objectivity (Ryan 2001). The studies of Durham and Ryan actually discuss the situation in a dichotomy of objectivity (objective journalism) versus non-objectivity (non-objective journalism).

Though the seminal work of Hanitzsch has developed a more complicated analytical framework for understanding the epistemologies of journalism than those of Durham and Ryan, objectivity is still regarded as an important element of journalism culture in his work. Taking cultural particularities into consideration, Hanitzsch's article analyses journalism culture and argues that the epistemologies of journalism have two fundamental dimensions: objectivism and empiricism (Hanitzsch 2007). He suggests objectivism is a continuum with the correspondence pole (high) that is close to the absolute truth at one end and the subjectivism pole (low) that reflects the constructionist view of journalistic work at the other. In his view, empiricism refers to the ways in which journalists justify claims to truth according to certain evidence. The ways range from empirical (high) to analytical (low). The first

dimension in fact reflects the division between the belief in objective journalism and constructionist distrust in absolute objectivity, while the second dimension reflects the division between fact-based journalism and opinion journalism.

Mellado and her collaborators have adopted Hanitzsch's model in analysing the similarities and differences in professional cultures in Chile, Brazil and Mexico (Mellado, et al. 2012). This model has also been used in the research of Godler and Reich, who examine factors (external and internal) influencing journalists' perception of reality and therefore making their epistemological beliefs shift between believing in interpretationism and objectivism (Godler and Reich 2013). These studies discussed here all have the norm of objectivity at the centre of their discussions.

When it comes to environmental investigative journalism, however, it is uncertain whether a focus on objectivity is appropriate for understanding its nature and culture. On the one hand, it is problematic to apply the principle of objectivity to environmental journalism. For example, it has been argued that objectivity has ceased in the case of civic and environmental journalism in Brazil (Dornelles 2011). Environmental journalists in India and South Asia have asserted that they are practicing advocacy journalism instead of objective journalism (Acharya and Noronha 2010). Environmental journalism in China also aims to mitigate environmental problems rather than simply reporting them (Bao 2010). The enthusiasm shown by environmental journalists in tracking and revealing environmental threats delimits it from other types of journalism and implies that environmental reporting aims not only to inform the public but also to attempt to change the status quo regarding the environment. Therefore, in contrast to adhering to objectivity, environmental journalism by its very nature is advocacy journalism that often involves non-objective perspectives.

On the other hand, the epistemology of investigative journalism differs from, and is even more complicated than, that of ordinary news reporting (Ettema and Glasser 1998; Ettema and Glasser 1987). Moral judgment is prominent in investigative journalism's knowledge production (Galusca 2012; de Burgh 2008). Although not necessarily practising objective journalism, investigative journalists do need facts and firm evidence to justify their assumptions. It is fact-based journalism but not objective journalism. Investigative journalists turn to collecting hard evidence through adopting various methods rather than primarily relying on news sources to justify journalistic claims to truth. Therefore, investigative journalism is a practice which is a process of raising doubts on certain issues, setting off to collect evidence, forming knowledge and making judgments about these issues and finally writing up reports. Therefore, applying the ethos of objectivity to evaluate investigative journalism seems to oversimplify the situation and fail to grasp the complexity of the practice. Unpacking the process of knowledge formation and the nature of knowledge is pivotal for understanding the nature and culture of investigative journalism. It is thus meaningful to examine the actual process of the justification of beliefs and the formation of knowledge in investigative reporting rather than merely use objectivism to measure the epistemology of investigative journalism.

In general, the epistemology of investigative journalism is an under-researched

area. Ettema and Glasser's work is preeminent in this field. Putting an emphasis on the process of justification and evidence-validating, they have introduced four steps that investigative journalists take in judging the credibility and value of story tips, producing knowledge and making claims to the truth. These steps have been confirmed by researches in different countries, such as a study of Sveriges Television's *Striptease* in Sweden (Ekström 2002) and a study of investigative reporting in the *Southern Metropolitan Daily* in China (Tong 2011). Just as Godler and Reich have observed, very few scholars have studied the nature of knowledge in journalism (Godler and Reich 2013). These studies, however, mainly examined the general process of justification, but without paying much attention to detailed scenarios about how investigative journalists form the system of knowledge in process of justifying their beliefs and what kinds of knowledge they have formed. An in-depth inquiry into such scenarios will facilitate our understanding of the culture of investigative journalism in particular and journalism more generally. The research reported in this article serves this purpose by examining the Chinese case.

The Chinese Case

Against the backdrop of media and economic reforms, China saw the re-appearance of investigative journalism in the mid-1990s. In the 1990s, both encouragement from the state and market incentives pushed news organisations such as the *CCTV* and the *Southern Weekend* to start practising investigative journalism (Zhao 2000). These news organisations have benefited from running investigative reports both in financial terms and gains to reputation. In practising investigative journalism, Chinese journalists aim to reveal scandals and other social problems, which would otherwise be covered up by the authorities and the privileged. Investigative journalists usually require considerable financial support to carry out extensive investigations, during which they collect data for their reports. Such investigations are time-consuming and may in the end not result in a story that can be published or broadcast.

Environmental problems and issues have been a major topic of China's investigative journalism since the 1990s (Tong 2011; Tong 2015). In the 1990s, a rapid economic growth had led to environmental deterioration (Mol 2006), and the central government wanted the news media to act to supervise and correct acts of wrongdoing that impaired the environment, seeing this as helpful for consolidating its rule (Zhao 2000). This initiative of the central government was in line with the needs of news media to cater for the interests of readers and to increase market share. From nationally influential media outlets such as *Focus* on *CCTV*, major newspapers such as the *Southern Weekend* and the *Southern Metropolitan Daily* and the *Caijing* magazine, to local ones such as the *Yunnan Information* and the *Oriental Morning*, news media from across the country developed a tradition of practising environmental investigative journalism. These media outlets devote particular space to this topic and assign specific journalists to cover it.

The prevailing scholarly view contends that China's environmental investigative journalism enjoys more autonomy than investigative journalism on other topics such

as social and political issues (e.g. Wiest 2001; Bao 2010; Tong 2011; Tong 2015; de Burgh and Zeng 2012). Despite that, there still are reporting restrictions, resulting from conventional government propaganda practices and public relations strategies of commercial organisations, which aim to steer reports toward reflecting the intertwined interests of governments and economic elites¹. "Inappropriate" representations of the environment may result in problems for environmental investigative journalists and their news organisations. Environmental investigative journalists therefore need to cover environmental problems and issues carefully.

This balancing act – reporting on important environmental issues which interest readers, but doing so carefully- requires investigative journalists to master specialised knowledge that is beyond the areas of their expertise in order to understand and then to expose these problems in a credible and plausible way. In other words, they need to gain knowledge of what has happened to the environment before they can produce reports which are based on evidence that cannot be easily challenged. How to gain this knowledge, in which environmental investigative journalists may not have specialised, is vital to the quality of their reports. There are also several related questions: How do they distinguish true from false information? What methods and strategies do they adopt in the process? And what is the nature and character of the knowledge involved? These questions have not yet been answered in the existing literature. In fact, this is a virgin area in which very little research has been done and of which there is little understanding at the moment. This article, which therefore aims to fill a gap in the literature, explores these questions through examining a group of Chinese environmental investigative journalists' self-description of their journalistic values, practices and beliefs concerning environmental issues.

Methodology

The study is drawn from semi-structured in-depth interviews with 42 Chinese environmental investigative journalists conducted from 2011-2013. The selection of participants is guided by two criteria: 1) she or he is an investigative journalist who has produced influential environmental investigative reports; and 2) she or he is employed by a commercial print media organisation - a newspaper or a magazine - which is renowned for environmental reporting, at the central or provincial levels, based in Beijing, Shanghai or Guangzhou. To take an example, an investigative journalist was recruited to participate in this study because her investigative report on an environmental problem won a China Environmental Press Award and, when the interview took place, she was working for a commercial metropolitan newspaper in Guangzhou that had consistently given extensive space to environmental topics such as pollution, drought and endangered wildlife over recent years. Most investigative journalists interviewed in the research are male, in their 30s, have received a university education and studied non-science subjects. Only two out of the 42 journalists have university degrees in physics. All of them have more than five years of investigative reporting experience.

The interview guide included three categories of questions, asked in three

stages. At the first stage, the participants were invited to introduce their own personal background, such as information about their home towns, education, work experience etc. The questions asked in the second stage emphasised participants' perception of the environment such as 'in your opinion, what environmental problems is China facing?' and of environmental investigative reporting, for example "what is environmental investigative reporting?" and "are there any differences between environmental investigative reporting and other types of investigative reporting?" And in the third stage, the participants were invited to talk about their own journalistic practices when reporting on environmental topics. Interview questions in this category include "can you explain your investigation process and data collection sequence when you start working on a topic?", "how do you develop your understanding of the topic you are working on?", "who do you usually talk to in your investigation?" and so on.

Only one interview was not recorded. All other interviews were recorded with the consent of the participants. Anonymity was agreed with all participants and pseudonyms are used in this article. All interview recordings were transcribed and analysed in NVivo. Notes were taken during the unrecorded interview. The qualitative analysis of the interviews pays particular attention to common features emerging across these conversations with journalists, with a focus on looking for the themes generated from the interviews and analysing journalists' discourses on relevant issues such as the humanity-nature relationship, the journalists-source relationship, the credibility of information and the trustworthiness of the accounts offered by news sources. Amongst others, three aspects have been particularly examined: the formation of knowledge, journalistic methods and strategies, and the nature of the knowledge that environmental investigative reporting requires.

Findings: four types of knowledge and journalistic methods

The study finds that the participants need to possess four types of knowledge in order understand the topics they report on: expert, experiential, schematic and judgmental knowledge. During the process of knowledge formation, expert, experiential and schematic knowledge form the base for judgmental knowledge. The participants work like researchers and anthropologists who collect data by themselves rather than having to rely on news sources. As noted, there are four ways of obtaining knowledge of particular environmental issues: conducting interviews, carrying out observation and fieldwork research, performing desktop (archive) research and drawing from life experience. The participants' perspectives of the environment and society, ranging from ecological to social and eco-political perspectives, as well as their previous personal experience about environment issues and their work experience have all influenced their judgment of the topics under investigation.

Expert knowledge

Expert knowledge includes scientific interpretation of (and information about),

as well as the general background of, environmental issues. The participants initially get hold of knowledge of this kind from scientists and researchers. They turn to them to obtain an overall scientific understanding of environmental issues, such as the scientific interpretation of the causes of the high levels of lead in blood observed in children. Particularly when investigating unfamiliar topics, the participants often consult experts first so that they can gain a general idea of the topics. Experts work either as the participants' "wisdom reservoir" (*zhiku*) or as normal news sources. The former role helps to improve the participants' general understanding of environmental issues, while the latter offers them information and opinions to include in reports. In the view of interview participants, their reports should be inclusive of different and even opposing perspectives, which epitomises balanced reporting and reporting of the truth. As such, the participants prefer to interview various experts so as to reflect different views surrounding the issues concerned. Participants believe that interviewing experts is generally more useful than talking to ordinary people such as victims of environmental damage or disasters. In Chu Xian's words, for example, *"for journalists, experts are an important news source. You can get a much more solid foundation - a knowledge foundation- for your reports from interviews with experts than with ordinary people.... although I would not merely interview one expert. Usually I will interview several experts specialising in these areas. And also (I will interview) official news sources"*. Such news sources include officials, policy makers and representatives of governments and are the other main source from which participants can gain expert knowledge. Participants see information held by official news sources in particular as "core information" (*hexin xinxi*) surrounding environmental issues. The participants have found that such information is both crucial but also the most difficult to access. They believe that the amount of 'core information' they are able to get determines how exclusive their reports can be.

An alternative but more important way in which the participants can gain expert knowledge is to conduct research by themselves. A common point raised in the interviews is that investigating environmental issues should be the work of researchers. When doing their job, like researchers, the participants have adopted academic skills and methods. Academic papers are one of the main resources on which the participants depend in order to develop a solid understanding of the topics. They widely quote academic arguments from papers in their reports. Doing research is even regarded as standard practice for being professional and retaining journalistic authority. In so doing, they can independently gain the knowledge they need as well as verify information offered by experts, e.g. scientists or official news sources. For example, An Ta said: *'when I report on the debates about air quality standards such as PM10, I need to read a lot of academic papers and scientific reports and cite academic and scientific arguments in my reports'*. Even before talking to experts, he usually carries out desk research *'in order to have a high quality conversation with experts in interviews, and to avoid being manipulated by experts due to information inequality and asymmetry (between experts and An Ta)'*. Similarly, before Qin Jin starts her investigation, she always *'researches and reads many materials'*. When

reporting on mining pollution, for example, she read a series of academic papers and found some problems regarding the mines. When setting off to investigate the problems, she already had a couple of questions in mind. Expert knowledge gained from participants' own research is a check on expert knowledge offered by the two types of expert news sources. This also means that the personal understanding, research ability, creativity, perceptiveness and discernment of individual journalists lead to a differentiation rather than standardisation among environmental investigative reports.

Experiential knowledge

Experiential knowledge originates from the participants' personal experience. This is a type of non-expert knowledge (Fazey, et al. 2006). For example, a participant who is famous for his reports on heavy metal pollution admitted that he had already gained extensive knowledge of such pollution when he lived in his home town, before he started his journalism career. Such knowledge, coming from his first-hand life experience, has played a crucial role in his investigations into the environmental problems - heavy metal pollution in particular- which are caused by mining and industrial factories and has helped shape his reports on the topic.

Experiential knowledge first of all comes from their understanding of Chinese society, which is deeply rooted in their own daily lives and personal background. For example, when commenting on why a particular environmental problem - hollow ground - had occurred in a place for a long time and could not be fixed, An Ta said: *'first of all, you should understand the social structure and composition of Chinese society at the village level (xiangcun shehui). The society of villages is usually very sophisticated... I have to say that it is a society of acquaintances. Officials at village and town levels connect to people in locales in all kinds of ways. He (an official) cannot really issue and implement regulations limiting (mine owners') activities, as perhaps he is himself also involved in the mining business. For example, perhaps the mine owner is his third brother or another relative.'* Through this knowledge and understanding of the social context, he was able to conclude that the environmental problem of hollow ground resulted not merely from over-mining activities but also was caused and worsened by local clientism. This is an example which shows how experiential knowledge is complementary to the journalist's expert knowledge and assists him or her in making judgments about environmental problems.

Experiential knowledge can also be obtained through the participants' personal experience of the environment and observation in fieldwork research. In their accounts of environmental problems and reporting, most participants described how their previous experience of the environment and the situations on the ground they have witnessed have facilitated them in making an informed and inductive judgment about environmental issues. Xiao Wei, for instance, said *"I visited some places in Shanxi, such as Jizhong, Hongtong, Huozhou, and found, in almost all places, local residents had installed (illegal) earth ovens (tu jiaolu) to illegally produce coal by themselves in their backyards"*. Therefore, when he was explaining the causes of severe air pollution in Shanxi he stressed the part such illegal earth ovens played.

In their fieldwork, the participants act as anthropologists who nose around in the sites and prefer to witness what is happening with their own eyes. What they have observed has greatly influenced their perception of environmental problems as well as their final reports. To take an example, Sang Tian, who revealed in his report the hidden man-made problems behind a severe landslide in Zhouqu that took more than a thousand lives, described what he saw in the locale: *“the whole mountain, from sea level to top, was bare (covered with no trees or other vegetation at all), and was only covered with dry yellow earth, a kind of earth that was very susceptible to collapse”*. He explained how witnessing this scene helped him to develop his understanding about the Zhouqu landslide disaster and thereby formed the framework of his report on the disaster.

The participants opt for observation partly because they want to understand the truth behind events and partly because they doubt what experts and officials tell them and therefore want to verify the information provided by them. For instance, Chu Xian became suspicious of the opinions of experts about why a drought in Yunnan had caused severe consequences and believed that the truth about the drought could only be revealed through fieldwork investigations by journalists. He gave as an example the fact that when he and his journalist peers were investigating the drought, they discovered that a local village had many water cellars; however, none of them stored water. Villagers told the journalists that these water cellars were only able to temporarily contain natural rainwater, rather than store rainwater for a longer period of time. The journalists then concluded that it was the out-of-date facilities of these water cellars, which were unable to store water, and the habits of the villagers (who were not used to storing water in the cellars for future use) that prevented the villagers from preserving water to be used during drought seasons. This therefore was one of the main reasons adduced in their reports which explained why the drought was so severe. This example has two interesting implications. First, ‘the truth’, from the viewpoint of Chu Xian, refers to logical interpretations of what has happened, which guide him to select angles for his reports. Second, ‘the truth’ results from the judgment of Chu Xian, for which experiential knowledge offers an indispensable basis. Therefore, in the end, the involvement of the journalist’s subjectivity is inevitable. This is by no means an isolated example.

Schematic Knowledge

Schematic knowledge, often related to, or resulting from, experiential knowledge, refers to cognitive perceptions about the environment previously developed, i.e. the frames and schemas about environmental issues in their minds, which reflect and affect the participants’ ecological perspectives.

The journalists have a schematic understanding of the environment and of the relationship between humanity and nature. In the interviews, all participants were invited to explain their understanding of environmental problems and the humanity-nature relationship. Their explanations reveal a surprising amount of common ground in their schematic view of environmental problems. That is, they environmental problems as closely related to economic developments. In general,

they did not identify climate change as a major environmental problem that China is facing. Almost all of them identified pollution, rather than global problems such as climate change and global warming, which are seen as too distant from the Chinese reality, as the biggest and most severe environmental problem in China. Therefore, they admitted that they seldom write any investigative reports on climate change or global warming. By contrast, many of their reports are about pollution, since pollution is viewed as the most basic life-threatening problem facing the Chinese people as well as the real environmental issue in China. The participants also share a clear consensus that China's rapid economic development is responsible for environmental problems, which are exacerbated by collusion between enterprises and officials. The statement *'all environmental problems are political and social problems in the end'* recurred frequently in the participants' narratives of their perspectives on environmental problems. Qiao Feng's comments are typical of this: *"often enterprises such as factories directly cause environmental pollution... what lies behind enterprises' polluting activities is usually governmental cover ups enterprises' wrongdoing and at the least dereliction of duty by governments and officials, which has worsened these environmental problems."*

Similarly, in terms of their understanding of the relationship between humanity and nature, a prevailing view among the participants is that human activity for development will inevitably impair the harmony of nature. Humanity is seen as incompatible with nature and as shamelessly exploiting finite natural resources. The participants long for a situation which maintains "harmony between humans and nature" (*tianren heyi*), one that is deeply rooted in the Chinese Confucian tradition. This philosophy underlies their logic of seeing human economic activity as being responsible for environmental problems. Such schematic knowledge of the environment is indeed crucial for the participants to make judgements about environmental issues and to select angles from which to approach the topics they are reporting on.

Judgmental knowledge

Judgmental knowledge refers to the judgements (*panduan*) about environmental issues concerned that are made on the basis of expert, experiential and schematic knowledge. The process of knowledge formation is a process that leads to judgement. The term 'judgment' was frequently mentioned during the interviews and is regarded as the highest level of knowledge that can offer a framework for the reports. According to the participants, on some occasions, an initial judgment will be made based on experiential and schematic knowledge, even prior to their investigation. However, the participants will have to adjust their initial judgments according to the facts and evidence they find in their investigation. For example, Wang Dong explained his formation of judgmental knowledge in the following words: *"it is true that you need to collect facts first and then to make a judgment... your report has to be based on facts and the facts have to support your judgment. But you will have initial judgments; although most of the time, after obtaining more facts, you may find your initial judgments were wrong and you have*

to revisit and revise your judgments before arriving at a final judgment about the issues concerned”.

The formation of knowledge thus occurs when the three types of knowledge - expert, experiential and schematic knowledge - are developed into judgmental knowledge (see [Figure 1]). In the process, the participants use analytical skills to make sense of the situation, based on all the evidence they have collected in their investigation. An Ta explained how he arrived at a conclusion when he reported on an environmental incident, in the following words: *'At that time (when the environmental incident occurred), we had geological experts on the scene; many of them came to investigate the disaster. ... However, in fact (even) for them some issues were beyond their expertise. On the other hand, I had already given much attention to similar issues and had done research in relevant areas in the past (therefore, I have gained much knowledge of these issues). In addition, I was very familiar with the local customs and local people and saw what happened.... So I can make a complete judgment. This judgment is thus reliable'*. His explanations summarise the normal process during which environmental investigative journalists form knowledge and make judgments and reveal journalists' attitudes toward expert, experiential and schematic knowledge. From this comment, one can see, An Ta expressed doubts about the experts' knowledge and did not merely rely on them. Instead, he made an allegedly complete and reliable judgement based on knowledge formed through his own research, his life and work experience as well as interviews with experts.

To summarise here, the participants manage and understand the unknown with regards to environmental problems and issues through adopting both journalistic and academic methods to collect evidence and information and to develop four types of knowledge. These four types of knowledge enable them to justify their judgement of the topics concerned and validate their claims to truth. Their judgment of the topics guides their reporting process and acts as a framework for their reports.

[Figure 1 is about here]

Knowledge formation and the nature of the environmental investigative journalism practised by the participants

The findings discussed above suggest that the participants' knowledge system concerning environmental issues is formed during a process of escalation from expert, experiential and schematic knowledge to judgmental knowledge. This is a process whereby journalists constantly question and verify the levels of truthfulness of the knowledge of reality, i.e. the conceived and experienced reality, where their experiences and knowing process contribute to creating the 'true' knowledge that is finally presented to readers. In this case, journalistic work and academic research are alike, since both require extensive desk and empirical fieldwork research. Experiential knowledge, schematic knowledge and judgmental knowledge are within journalists' subjective experiences, which represents their subjective understanding of reality, while experiential knowledge arises out of something similar to anthropological investigations. Therefore subjectivity is inevitable. The types of

knowledge involved and the methods adopted require us to re-think the nature of environmental investigative journalism practised by the participants and its social role.

The four types of knowledge and the various journalistic and academic methods used indicate that the environmental investigative journalism practised by the participants is characterised by pragmatism, standpoint and existentialism (e.g. see discussions of these concepts in Durham 1998; Godler and Reich 2013; Godler and Reich 2013; Ryan 2001). This type of journalism is far from being objective journalism. The important role experience and cognition plays in the knowledge formation process hints at a great level of interventionism and subjectivity on the part of the participants. Their practice is characteristic of the centrality of perspectives and experience rather than objectivity, despite the fact that their viewpoints may be expressed in a covert way. The hidden expression of viewpoints offers a safety network for the participants' practice on the one hand and on the other hand endows their practice with a professional image.

This, however, does not mean that environmental investigative reports do not need facts. By contrast, the participants believe strongly that their reports should be based on facts and evidence. The participants constantly highlight the importance of facts and of the verification of facts. They regard verification and cross-checking of facts and information as a legitimate and indispensable journalistic tool to produce balanced reporting; it also enables them to control the narratives of their stories and in addition, help to insure them against post-publication retribution from the political authorities. This tool prevents them not only from publishing erroneous information but also from being manipulated by news sources. This tool also enables them to offer "true" knowledge to their readers.

Checking evidence collected from different sources against one another is the most important strategy, *inter alia*, for verifying facts. The participants, for example, hold sceptical attitudes towards information provided by experts and are critical of their news sources. They compare the words of experts with the information collected by themselves in their own research. Journalistic work is based on mistrust rather than trust in news sources, just as Reich comments: "newsbeat reporters are more in the business of trust, while investigative reporters are more in the business of mistrust." (Reich 2011: p64). They are alert to behind-the-scenes politics between experts and governments. The participants often see experts as being in collusion with governments, and speaking in their own interests and cannot therefore be relied upon. Their perception of experts not only reflects their reservations about the credibility of those close to power, but also shows their trust in what they discover and see with their own eyes. The journalists interviewed in this study are also aware of the importance of the manipulation of news sources. Given that the participants cast doubts on expert explanations, experts cannot act as the journalists' conversation partners and are unable to get into dialogues with the public freely in media coverage without the participants' permission. They can enter media coverage in a particular way, only if allowed by journalists.

The participants believe that environmental investigative journalists should be

skilful social researchers who are competent to make good use of research papers and other academic publications for the purposes of fact verification. Meanwhile, they should be experienced anthropologists who bring their own experience to bear on the facts. Since the participants work like researchers or even anthropologists, using academic methods in their journalistic work indeed results in different types of information to include in their reports. Such information is not confined to that which the participants gather only from interviews with news sources.

The selection and processing of information is influenced by the participants' own awareness and cognition of environmental issues, such as the knowledge gained from their research and their perspectives on the human-nature relationship. From the participants' viewpoints, it is journalists who decide for readers what environmental problems should stay on the radar screen and how environmental problems should be interpreted. They identify environmental issues of importance and then define these issues. The role the participants play between news sources and the general public is more like a processor than a neutral conductor. The former focuses on processing information and conveying the meaning of that information to the public, while the latter aims to pass information on to the public and to get them informed. The participants digest information first and then feed their readers on the digested and processed products. The participants insist on independent thinking and the justification of beliefs, which, they think, ensures their journalistic authority. In this particular way, the participants show their commitment to realism and their belief that they should reveal 'the truth', although 'the truth' is structured by their judgments, made in the process of knowledge formation and justification.

When practicing this type of journalism, to a great extent the exclusivity of reports is determined by the nature of the information included and by the journalists' final judgment about the environmental issues concerned. Expert knowledge involves knowledge obtained from interviews with experts as well as from researching official documents and academic publications. Experiential and schematic knowledge includes subjective and lay knowledge generated by journalists' personal feelings, experiences, observations, and interviews with low-profile news sources such as victims and other ordinary people about their experiences and feelings. Judgmental knowledge that is formed on the basis of these three types of knowledge is merely knowledge of the reality (instead of the reality itself), which can vary from one report to another, given the different judgments and conclusions journalists might arrive at, is based on the diverse materials they have collected. Behind this journalistic methodology is a philosophy of journalism that sees the role of journalism as advocating values and social change. In doing so, the participants involve their cognitive and epistemic biases in their reports, whereas they believe they are revealing the "truth" and telling truthful stories (rather than objective stories). Interesting as this has proved to be, this case study shows that notions of "reality" and "truth" serve as a useful disguise for the standpoint journalism actually practised by the participants.

In sum, the participants embody an image of advocacy journalism in the way that they practise environmental investigative journalism. This type of journalism is

aimed at enlightening the public by feeding them the journalists' interpretations of the meanings of environmental events. While this finding confirms previous findings about environmental journalism (e.g. Bao 2010; Dornelles 2011), of greater interest here is that this type of advocacy journalism stresses experiences, fieldwork research and empirical data and is therefore also ethnographic journalism. When practising this type of journalism, the way in which journalists develop and form knowledge about environmental issues in their investigations plays a vital role in shaping the nature of knowledge they produce. When it comes to the epistemology of environmental investigative journalism, therefore it is a question not of whether it is objective, but of how and when meanings and opinions are generated. During the process of knowledge formation, standpoints presented in reports start being generated from the beginning of the pre-writing and investigation stage rather than emerging in the writing-up stage.

Conclusion

The case study discussed here offer a perspective for understanding the epistemology of environmental investigative journalism in China. Environmental investigative reporting requires four types of knowledge - expert, experiential, schematic and judgmental knowledge - formed on the bases of information and evidence collected by adopting various journalistic and academic methods. The justification of judgements occurs in a process of cross-checking facts as well as of raising and reinforcing journalists' perceptions of environmental issues. The participants stress the importance of their independent thinking, experiences and judgment and try to eliminate the influences of news sources on them. In the justification process, they pay particular attention to disagreements among news actors. They affirm that they are practising balanced reporting through a means of cross-checking and combining information gleaned from difference sources as well as of examining environmental issues from different angles. The four types of knowledge regarding environmental issues are formed in the justification process. Overall knowledge therefore comprises a conflation of subjective lay knowledge and objective expert knowledge. Using Rogers' terms, this knowledge is merely a representation or a copy of the reality rather than the reality itself (Rogers 1898).

The study reports that the evidence-based 'judgment' of the participants plays a vital role in the process of knowledge formation. The participants believe that their reports should be constructed on the basis of their judgment. This echoes the view of Rogers recognising the importance of judgement in epistemology. Judgment is made on the basis of evidence collected through the participants' archive and fieldwork research, personal subjective experience about and perception of environmental problems. The participants' research and reference to their own experience and perceptions suggest an involvement of subjectivity (participation, experience and perception) in covering environmental issues. The involvement of subjectivity reflects the fact that the real journalistic values of the participants are open to the expression of opinions, despite the claims participants have made to objectivity and balanced reporting.

The Chinese case thus demonstrates that the knowledge formation of this group of environmental investigative journalists takes place in a process of verifying and constructing the "true". This epistemological approach taken by them embodies a type of advocacy and ethnographic journalism that is aiming not only at informing readers about what is happening to the environment but also enlightening them about the meaning of what is happening. The interpretations of this meaning being generated start from the outset of the participants' investigation and during the process of knowledge formation and belief justification. Therefore, the epistemology of environmental investigative journalism is not about whether or not the practice is objective, but about when and how meanings and opinions are generated. This is partly because what they pursue is, by its very nature, the true account of reality rather than the objective representations of reality; although in their professional claims they tend to replace truth with objectivity.

While discussing these conclusions, however, we have to be aware that because the findings emerge from interviews with a limited number of Chinese environmental investigative journalists, they cannot be over-generalised to represent the whole situation of environmental investigative journalism in China. What is discussed here offers only one perspective on understanding the epistemology of this type of journalism. Apart from the sampling strategy employed in the present study, it should be recognised that the particularity of the Chinese case also originates from the specificity of China's investigative reporting and of the context of China.

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¹ This point has emerged from the 42 interviews with environmental investigative journalists from 2011-2013.