Industrial Water Pollution in the Yellow River Delta of China: a Communication Interface Approach

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CHAPTER 8 CONCLUSION: FROM EXAMINING TO ACTIVATING COMMUNICATION INTERFACES

With the central objective to explore the processes of communication and interaction between government agencies and local people, this research set out to investigate the approaches taken by Dongying Municipality to pollution controls, probing into the daily routines and implementation practices of the local water bureaucracy. Attention was then paid to the "making" process of communication interfaces – how different local actors dealt with those barriers to communication with government officials, as well as constraints and opportunities the local actors faced. By doing this, the study mapped different scenarios of communication interface and discussed how they have emerged, performed and (or) contested. Built upon the work of examining different scenarios of communication interface, a causality mechanism relating to human agency was then revealed. The mechanism connects the oral (communication), mental (perception) and physical (coping) aspect of lived experiences of local actors facing water pollution.

Since two national plans were implemented in 2009 and 2011 for booming industrialization in the YRD, Dongying witnessed large-scale expansion of industrial areas as well as tremendous rise in salt-farming and industrial fish production. Under this background, rapid industrialization and urbanization were found to be key contributors to industrial water pollution in Dongying. More than 57 industrial areas have been established by 2014 in Dongying (CAS, 2015), which produced significant volumes of untreated wastewater and caused heavy pollution of the receiving water bodies. While the pillar industries (i.e. petroleum, chemicals) contributed to the economic growth of Dongying, its resulting effects regarding the environmental and health influences to the local population were extremely negative. Consequently, this triggered anxiety of local people, particularly of those living in close proximity to industrial areas. Based on these arguments, it is estimated that Dongying Municipality is facing the dilemma of increasingly base growth on accelerated pollution prevention and abatement efforts. This prompted the approach of hardware and software power development taken by local authorities to water pollution controls.

On the one hand, *hardware power* denotes to the technocratic intervention in the wastewater treatment sector. This was attempted through large-scale infrastructure construction programs

such as wastewater treatment plants and constructed wetland. On the other hand, *software power* development was initiated by relevant authorities through the promotion of digital channels in environmental governance. For instance, online official interviews, official public websites, weibo. After the national goal of ecological economic development in the YRD was initiated, the hardware power was furthermore promoted by Dongying Municipality, which was perceived as a *panacea* to eliminate the environmental impacts of rapid industrialization. However, such technological efforts were revealed to be based on trial and error approaches, since the specific "recipe" of technological-fix was lacking in the national plans. Furthermore, inefficiencies and defectiveness appeared in the local implementation of engineering programs. In this context, the software power development was supposed to serve as a complementary role, providing a discursive basis for informing the public about the governmental efforts of pollution abatement. This discursive space - created through the cultivation of different communication channels – however, did not render the space for *mutual* communication. As such, public participation was limited in local environmental programs. While large-scale technocratic interventions to mitigate environmental risks have increased, action to enlarge the scope of participation hasn't been given enough consideration.

To offer a nuanced analysis of how participation is framed in the local water bureaucracy, the research elaborated an illustrative example of the CWW implementation in Dongying. Official responses to the CWW implementation were discussed at four different levels: municipality, district/county, town, village. At first glance, the public campaign appeared to offer an opportunity for communication and interaction between the water administrators and local people. Nonetheless, zooming in on the local water bureaucracy, incoherent messages across different levels of the hierarchy as well as interrupted mutual-flow of information between water administrators and local people, were found to be the root causes that hinder public participation in the water campaign.

In examining the daily routines and implementation practices of the water administrators, it is estimated that highly-placed officials have higher awareness of respecting people, as well as better resources to implement a relatively comprehensive public campaign which takes into account local voices. By contrast, local cadres at grassroots levels place high priority in daily routines on fulfilling the assessment initiated by their superiors. To explain this, Allee (1997, p.96) argues that there are many barriers to a coherent flow of messages within the bureaucracy. As such, grassroots voice is usually poorly respected by cadres in the village and county/district.

Probing into the flows of water information during the CWW campaign, findings also indicate that a top-down flow of information was mediated by the water bureaucracy. However, a feedback channel for articulating people's voice on water issues was apparently missing in the official agenda. With reference to the "mixed signals" deployed by government agencies to local environmental activism in Hekou District, the study underlines that bureaucratic awareness of keeping situations under control is prevalent in minds of local cadres. This was attempted through the daily routines of taking preventive measures for avoiding omission and staying safe in their comfort zones, other than getting things done to respond to people's request on water issues (e.g. water fee and drinking water quality).

While the hardware and software power promoted by local municipality haven't offered an effective and accountable solution to water pollution, the local population adopted different strategies to deal with the issue. This provided the setting based upon which two scenarios of communication interface were examined – the *virtual* one at the community level and the *non-virtual* one upheld via local environmental activism. As demonstrated through case studies in the communities, a lack of sustenance of reciprocity - so to say a relatively symmetric relationship, complementarity, and credibility - was found to be the key contributor to those communication barriers. For cadres who were geared to collecting local voices and creating space for communication, finding reaffirms that their traditional bureaucratic awareness and responses - staying in the comfort zones and not assuming liberty or responsibility to get things done – hinder the ferment or sustaining of the sustenance of reciprocity. This resulted in the virtual communication interface – the channel for lay people's articulation of claims and allowing for feedback to local cadres was lacking or deficient. Drawn from two in-depth case studies, this study highlights that limited agency and information access of local people, a lack of feedback channels and low support from brokerage were found to be key characteristic features of the virtual communication interface.

A non-virtual communication interface denotes that local environmental activists attempted to expand the scope of communication and negotiation with government agencies, based on the strategy of incremental change to depoliticize their action. Notably, workers from Shengli Oil Company formed core environmental action, upholding the principle of non-virtual communication interface with cadres from the district and towns. The trajectory of non-virtual communication interface development sheds light on the micropolitics of choices as well as on officials' strategies of making room for maneuver in grassroots society. In this trajectory, the

tactics, experiences, bureaucratic techniques of local activists affected if their bargain power was taken into account by relevant authorities. For government agencies, they were granted discretion to handle environmental conflicts without much intervention from the state. As such, it turned out to be a trial and error as well as leaning-by-doing process for government officials. In this context, experience of dealing with conflict was found to be a significant variable that shaped official responses to environmental activism. Informed by the notion of "mixed signals", the documentation of the non-virtual communication interface in this study strengthens the argument of embeddedness of China's environmental activism (Ho & Edmonds, 2008).

Beyond local environmental activism in Dongying, the study explored some initiatives relevant to public participation and environmental education addressed by Green Land - one environmental NGO acting at the provincial level. Promoting digital tools in environmental management served as a window of opportunity for Green Land to build communication with SDDEP. In this context, the communication interface was attempted via mutual and insightful dialogue mediated by Green Land with provincial authorities. Nonetheless, the "give-and-take" approach taken by Green Land – educating local people to produce and (or) process water pollution data[146] - neglected the root cause of information asymmetry and limited agency of local people in grassroots society. In other words, the malfunction of flows of information between the authorities, general public and environmental NGOs was not taken enough account.

With respect to the heated debate on environmental informational governance, the study has examined the implementation practices of environmental information disclosure by relevant authorities of Dongying. While the approach is embraced by provincial authorities, the local implementation is still far from effective due to institutional deficiencies, low capacity of local cadres, as well as low digital needs of the local population. Based on the empirical data, it is estimated that the application of digital sphere for increasing access to environmental information leaves still large room for improvement.

According to a survey report on environmental public participation in Shandong Province published by Green Land, the following is addressed:

[146] The "give-and-take" approach was mediated through teaching people to use some simple water quality monitoring tools to produce water data, or through promoting the "online pollution data disclosure platform" hosted by SDDEP (Chapter 6).

"In publicity (of environmental information, JT) through new media, the role of *community* [my emphasis] which is well-known to the public should be strengthened in environmental protection and relevant information outreach programs. Taking into account the local characteristics, through organizing salons, seminars, quizzes with prizes, visiting industrial enterprises as well as other kinds of flexible outreach programs, [practitioners, JT] should timely and accurately convey environmental knowledge, news, business conditions of local industrial enterprises to the local population, as well as create opportunities for people to visit those industrial enterprises in close proximity to the residential communities, in order to fulfil the environmental information needs of the local population."

(Green Land, 2015b, translated by author)

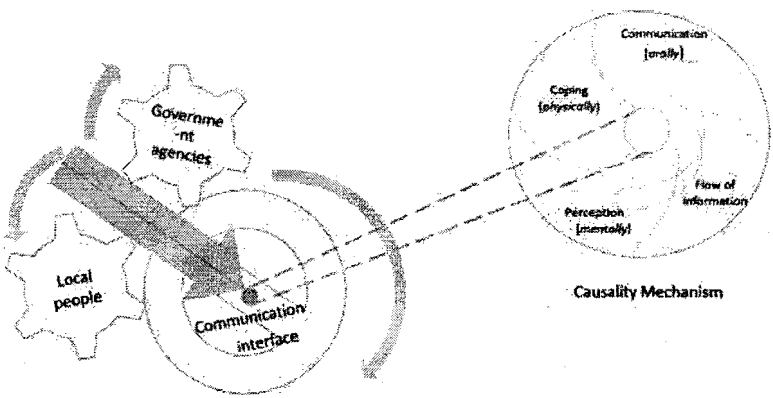
In China, while environmental NGOs have engaged to incorporate local communities into environmental protection, and to initiate communication between local inhabitants and industrial enterprises, actions to bridge the digital divide should be given greater consideration. There is no doubt that information access and communication opportunities were not equally distributed in grassroots society, as demonstrated by quantitative data analysis of this research. Resonating with the argument by Evers & Gerke (2013), while there are people who have access to advanced digital tools, others are not even enabled to make use the internet and other ICT features. As such, it is imperative to formulate minimal standards of "basic digital needs", in order to narrow the gap of digital divide at the lower end (ibid.). While China has increased substantially the public sector investments in digital technologies, the absence of accountable institutions which take into account the "user needs" of the local population might only amplify the voice of elites and leave the digital dividends lagging behind.

With reference to the proposed analytical framework motivated by the TCPCS thinking, this research showed that limited access to information, a lack of feedback channels in local communities, as well as incoherent messages across different levels of the bureaucracy are influencing factors for the existence of communication barriers. These, after all, are crucial issues at hand. To tackle these issues, human agency is significant to transform the communication barriers and to bridge the digital divide.

Through building the linkage of oral, mental and physical aspect of lived experience of local people facing industrial water pollution, the study offered a causality mechanism in relation to human agency. The mechanism sketched a dynamic recruitment process of coping strategies

which are linked to people's cultural practices and knowledge. To emphasise its importance, here the author shall speculate the individual component – communication, flow of information, perception and coping - of the causality mechanism (Figure 8.1). Combining the quantitative and qualitative data analysis, the findings elucidated that communication - as a basic element shaping individual lived experience – underlines, and is also reflected upon by local value systems and cultural practices. In grassroots society where communication opportunities, for instance utilising digital tools for accessing information is constrained, face-to-face oral talk is the locus *effective* for information exchange about daily activities. In relation to this cultural practices, word of mouth, dependence on social ties and defocus of 'truth' are found to be key attributes of people's development of their knowledge on pollution. Furthermore, through oral talks and social interaction, local people build and solidify identities while developing competencies to interpret and to define a set of actions toward pollution.

Figure 8.1 Incorporating the causality mechanism into China' environmental governance



Source: Drawn by author

Engaging with the goal of proposing an *inclusive* approach to China's environmental governance, the revealed causality mechanism serves this purpose as it allows serious account to be taken on cultural practices and individual lived experience. It is hence argued that it is imperative to incorporate this causality mechanism into China's environmental governance (Figure 8.1). To facilitate the incorporation, stakeholder participation involving relevant parties in some way in the discussion, analysis or handling of industrial water pollution would be a

useful approach. In their review about vulnerability assessments conducted in coastal river deltas, Wolters & Kuenzer (2015) point out that stakeholder group was, however, rarely mentioned in over 50 analysed studies. Along similar lines, it is unclear whether communication with local stakeholders has taken place (ibid.). If it seems unlikely that the lacuna of stakeholder participation could be filled completely in due time, at least some challenges should be addressed here for improving the reach of efforts to initiate meaningful stakeholder participation in the future. With this regard, the work by Lundgren and McMakin (2013) on stakeholder participation in environmental, safety and health risks communication provides valuable insights. The authors note:

"However, stakeholder participation can be a frightening proposition to some risk managers. They fear the *loss of control* over the risk decision, instead of seeing that the audience's input can be invaluable to a lasting, equitable decision. If there is no commitment to stakeholder participation [...], the effort can be devastating to an organization's credibility and hamper any future risk communication or management efforts. Stakeholder participation is generally more costly than simply issuing a technical report or holding a press conference. So, unless your organization is completely committed to letting the audience *interact* in a way that is meaningful to that audience, stakeholder participation is a very poor choice" (ibid., p.123, my emphasis).

Among the above lines, the most challenging task is to implement stakeholder participation for the communication and interaction to have *meaning*. In a broader setting such as the CWW campaign discussed in Chapter 5, the short-lived and campaign-styled public activity didn't bring government officials and local people into mutual communication. The underlying contributors to this failure have their roots in the malfunction of institutional infrastructures. Apart from this, communication plans were neglected due to the fact that public consultation is not a component part of China's environmental governance. The Maoist legacy of mass line politics – which consists of initiatives being taken from above and social input from below - is neglected particularly in the grassroots bureaucracy (Lo & Lung, 2000). Without a design of communication agenda about talking *with* people but only setting an education agenda of talking *about* people, it may risk people's interest and support in those public campaigns promoted by the government.

In relation to the perceived frightening preposition of stakeholder participation by decision makers and (or) practitioners, defocusing on the anthropogenic processes of environmental

management was found to be problematic. To strengthen this argument, environmental researches in the YRD have stronger focus on natural processes (e.g. salinity, tidal) and are mostly scientifically motivated. The lacuna of anthropogenic processes, according to Wolters & Kuenzer (2015), might be due to its complexity and the difficulty of obtaining sufficient data to quantify these processes. Apart from the challenge of quantitative measurement, evaluating qualitatively how people perceived the risks from exposure to environmental pollution and how they *processed* certain types of information were difficult. At the end of the field work of this research, a focus group discussion was arranged by the author with some environmental activists and local people. The purpose was to communicate some preliminary research results with participants, to discuss with them the topic of environmental risks communication, as well as to have better understanding of the information needs of local actors.

However, it turned out to be challenging experience in this stakeholder meeting to promote relatively free-flowing discussion about the communication topic – its needs, target groups, and practical methods to facilitate communication. Although the purpose of the meeting was addressed clearly before, participants seemed not interested in the research results. In their opinion, priority and attention were paid on how this (information and preliminary research results conveyed by the author) would make an effect and help in reality. *Only* if "this" is fulfilled local actors would then further consider why and how they should be involved into the communication. By saying "this", it denotes that some preconditions relating to needs and interests of local actors should be fulfilled, in order to promote mutual communication and collective willingness. This is crucial to cultivate trust and initiate further cooperation with local stakeholders. In his study about the construction of rural societies in China, Liang (2006, p. 311) addresses that rural construction should start from practical issues which are easy for people to be involved, which are of self-relevance to and benefit people's personal interests. Built upon these practical issues, practitioners could further involve people in the construction programs and develop their strengthen (ibid., p.311). In this light, the practical issues or preconditions should be considered prior to stakeholder participation.

Apart from the consideration of information needs of local actors, it is particularly challenging to make people feel that focus group meeting and content of the conveyed information are meaningful to make *real-time* effects (e.g. exerting influences on relevant authorities for industrial pollution control). There is no doubt that communication barriers, difficulty of defining and discussing the goal of communication (between the author and participants of the

focus group meeting) might account for this challenge. The most crucial issue at hand, again, is implementing stakeholder participation for the interaction and communication to have *meaning*, other than inviting stakeholders for making their presence possible. Considering this, a role of mediator and (or) bridging organization is very important for increasing the performance of stakeholder participation, which functions to facilitate the understanding of user needs and audience analysis. To this end, to fill the lacuna of anthropogenic processes in environmental researches conducted in coastal river deltas, focus group discussion could provide a rich source of material for more systematic quantitative measure of anthropogenic processes. Despite the challenge of effectively involving participants into mutual communication, the approach taken in a trial and error manner in this research, helped not only to assess communication effectiveness, but also to explore practical implications drawn from the analytical lens of communication interface.

Setting out with Long's (1989) thesis of interface in mind, the research explored how discrepancies of social interest, value and meaning, knowledge and power between government agencies and the local population in Dongying were mediated, perpetuated or transformed. While the lens of interface helped to probe into the setting wherein local actors and government officials situate, power relations function at the macro level which also exert influences on the interface setting. With reference to the theoretical grounding of power relations, the interface analysis was led ultimately to the question of power implications. To spell out the power implications, the research zoomed in on the interplay and interlocking configuration between government actors and local people in Dongying. By doing this, it is addressed that the binary framing of power practices – people either incorporate or subvert power - is not sufficient to offer a holistic accounting for the dynamic character of the state-society relation in China.

Informed by Foucault's (2000, p.125) account of the *individualizing* tactic of power – which gains accesses to the bodies of individuals, to their acts, attitudes, and modes of everyday behaviour - this study revealed the *individual* tactic adopted in people's everyday practices for creating "an escape route from power". This power implication offers valuable insights for the analysis of individual lived experiences and knowledge of the local population facing environmental crisis. In light of the thought-provoking notion of heterotopia, this research also redirected our gaze for a more dynamic view of the coping strategies by local people. With this regard, it is argued that people adopted reflexive strategies to adapt to environmental pollution,

not through negating or resisting, but rather through accepting and mimetically – critically – *re-appropriating* it.

The above account of people's reflexive strategies accords nicely with the work by Ho & Edmonds (2008), which spells out the embeddedness of China's environmental activism. To further explore the *interplay* between institutions and actors, Ho (2009) turned attention to China's (environmental) institutional architecture. In examining the type and timing with which core institutions were (or were not) introduced into society, the author proposed the principle of gradualism and credibility which underpins China's institutional change. Ho (ibid., p.191) noted:

"The evolution of credible institutions is not a matter of one or the other – state versus society, dependent versus independent variable, cause versus effect – yet; is a matter of *interaction* [emphasis in original]. Thus, while China's institutional innovation started at the grassroots it was the state that allowed it to happen; to protect it when it was contested; and to codify and upscale it once it had proven effective. [...] The *balance* [my emphasis] between state and society, informality and formality, private and common, intervention and a 'hands-off' approach, [...] prompts us to rethink theory and praxis of development, and shift to new 'rules of developmental engagement.' It all comes down to Gradualism and Credibility, or what Chinese call pragmatism."

In his account, both disciplining and liberating, tightening (shou) and openness (fang) are embedded in China's institutional change, which leads to the limiting and enabling characteristics of environmental activism. This double bind echoes the "mixed signals" deployed by local authorities to environmental activism in Dongying. Moreover, the principle of gradualism sheds a clearer light on the contingent, dynamic and multi-layered characteristics of China's environmental governance. With this in mind, one shall keep an open eye on the "making" process of communication interface – allowing those other images and counter discourses open to reinterpretation.

In the field of environmental management, whereas standard political analysis focuses on the structures, practices, and methods of state institutions that organize the play of power for program implementation (Zhang & Zhong, 2010; Zhang *et al.*, 2013; Kostka & Mol, 2013), anthropology studies more fundamentatally emphasize local people's construction of value and meaning to environmental pollution, as well as social practices inherent to it (Tilt, 2006; Lora-

Wainwritght, 2014a). In the Chinse context, where environmental pollution has posed a big risk to local society (Chapter 1), the growing body of anthropology resarches is noteworthy. Drawn upon empirically rich, enthnographic data, social anthropologists broaden the base of our understanding of the health impacts of pollution to the local population, dedicate a rich local perspectives for matching the macro insustional studies of China's environmental governance. The challenge ahead is, however, to *bridge* the documented social practices of local society and those environmental programs implemented by the government.

Combining the approach of political ecology and critical anthropology, Kotsila (2014) explores the public health governance system in Vietnam. In examining both the cultural and institutional perspective of diarrohea disease treatment, the author addresses the importance of integrating people's patterns of behaviour that are linked with cultural practices into health governance. In her account, "the turn of attention to culture entails grappling with meaning, ideas, and forms of knowledge that may be unfamiliar in western knowledge paradigms, " and critical anthropological view offers valuable insights on that by highlighting where change can beg: "in the ideas and the practices of everyday life" (ibid., p.179). While the cultural and institutional perspectives were sorted out, and the importance of *incorporation* was addressed in Kotsila's study, there seems to be a lacuna regarding the question of how to activate and operate the incorporation. Without filling the lacuna it seems too slippery for practitioners and (or) decision makers to work on the incorporation project. Hence, the crucial question here, is, through what kind of medium can we incorporate relevant cultural practices into environmental governance?

When the discrepent interest, value and meaning, knowledge and power between the authorties and local people were spelled out, the space for *incorporating* cultural practices, is not just filled up with their competing interests and (or) practices. Instead, the space shall be perceived as something that is mediated and (or) bridged through two-way communicaiton and interaction. Following this line of thought, one needs something akin to organizational and cultural mean which functions as a bridge. This is how the uniqueness and novelties of the proposed analytical approach of communication interface was allowed to emerge. To be specific, whereas the *interface* analysis helped to map relational structures associated with episodes of environmental governance, the *communication* prism vividly and dynamically documented the claims and tracked the signalling mechanisms. Altogether through the lens of communication interface, it conduced practitioners and (or) decision makers to sensitize the

discrepancies of social interest, value and meaning, knowledge and power between the involved parties. More crucially, the lens of communication interface yields structure of meaning by rendering a medium to incorporate the individual lived experience to environmental governance. To operate this incorporation project, the analytical framework informed by the TCPCS thinking offers a more holistic and practical guide.

The proposed analytical framework combines the component of connective tissue and fractal patterns. The function of connective tissue was applied to examine the process of communication and interaction between government agencies and the local population, on the one hand. The pattern of fractal was utilised in the life-world to probe into people's value, cultural practices and lived experience in relation to water pollution, on the other hand. Through the *co-constituting* character of connective tissue and fractal, the framework displayed a systemic perspective on authorities and local communities. Furthermore, applying the framework was conducive to understand the underlying contributors to information asymmetry, as well as those communication barriers which had their roots in the *malfunction* of connective tissue and fractal.

Based on the empirical studies, it was estimated that the function of fractal[147] was performed through ground-level cultural practices (e.g. information exchange in grassroots society is based upon traditional face-to-face oral talks and social interaction). The function of fractal concatenated into more or less firmly constituted structure and (or) space that goes on to influence people's collective thinking and action in systematic ways. To explain this, Figure 8.2 (1) shows the function of fractal in the cultural and cognitive space of grassroots society. On the one hand, both direct and indirect social ties activate a number of mechanisms in relation to agency of actors (i.e. information access, cognition, knowledgeability) which in turn affect the chances and forms of communication and interaction among actors. On the other hand, whereas social ties activate a number of mechanisms in relation to human agency, the function of fractal performs to facilitate the production and circulation of information about daily

[147] Fractals explain how every tiny branch of a tree holds the same basic structure as the larger branches and of the tree itself. The pattern of fractal sheds light on some key constituents of social interaction in local society – the active subjects, social ties, repetitiveness of the structure (see Chapter 3).

activities, as well as others which are also essential to form actors' mutual recognition and collective identities.

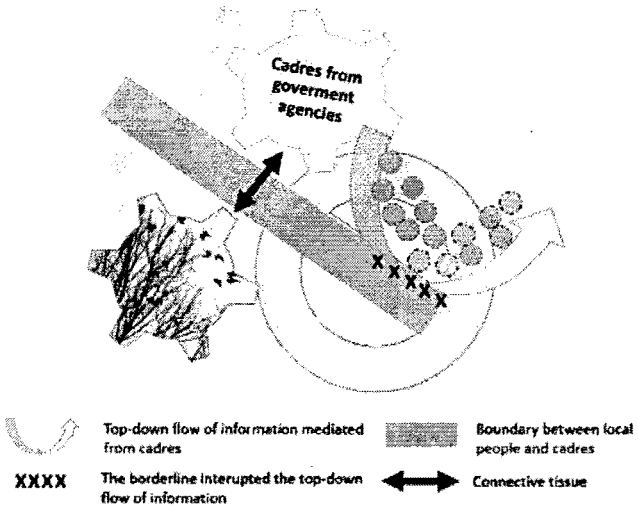
Figure 8.2 Conceptual sketch of the function of fractals in life-world

*Note - (1): Through both direct and indirect social ties, the function of fractal performs to facilitate the circulation of information about daily activities, (2): through the lens of fractal, it renders a three-dimensional contour of the life-world by documenting the trajectory of perception and knowledge development. Source: Designed by author

Through the lens of fractal, it renders a more vivid view of people's development of cognitive skills to interpret and act upon the pollution issue. To specify this, people make sense and incorporate in their self the multiple and concrete interaction with others, giving free rein to their own perception and knowledge on water pollution. Notably, this is a two-fold process which takes place during social interaction. The process operates down-stream when the cultural and cognitive space produces meanings that are integrated into the actor, and it operates up-stream when perceptions are communicated from the actor to others. Probing into the pattern of fractal, it hence renders a three-dimensional contour of the life-world through documenting the trajectory of people's perception and knowledge development of the pollution issue (Figure 8.2 (2)). While the function of fractal takes effects on the local population, it also influences the function of connective tissue during people's interaction and communication with cadres. For instance, when environmental conflicts arise, people uphold the principle of defending – drawing the boundary to protect their cultural space and borderline – and set up their mental blockages to prevent the top-down flow of information mediated from the government (see Figure 8.3). This hence results in the malfunction of connective tissue in such

context. This is the co-constituting character between fractal and connective tissue that is emphasised in this study.

Figure 8.3 Conceptual sketch of the co-constituting character between fractal and connective tissue



Source: Drawn by author

To offer an inclusive approach to China's environmental management, the resulting analytical framework demonstrated its instrumental value and encompassing ability through combining the institutional and local perspectives. By implications, its instrumental value manifests not in a sense of sensitizing the discrepancy of interest, knowledge and power between government agencies and local people in the control of industrial water pollution, but pinpointing a medium that facilitates mutual communication between the involved actors and hence further *activates* the incorporation project. To construct and work on the medium for *incorporating* local perspective, it is significant for decision makers to take into account the co-constituting character between fractal and connective tissue (see Figure 8.3). As emphasised above, when local people created the communication blockages in mind, the inflow of information initiated from the government was interrupted and social discontinuities emerged. To deconstruct the communication barriers and transform social discontinuities, the function of fractal - how local

people make sense and incorporate in their self the multiple and concrete interaction with others, giving free rein to their own perception and knowledge on water pollution – offered valuable insights for decision makers and (or) practitioners who are geared to implementing environmental programs such as information outreach (see Figure 8.2). Moreover, a systematic thinking – considering the co-constituting character of, the interplay and mutual forces between the domain of government agencies and local people – would be meaningful for implementing accountable environmental governance.

In sum, through the integration of the lens of communication interface and the proposed analytical framework, the study redraws the contour of state-society relation by shedding a new light on the dynamic, fluid and multi-layered character of China's environmental politics. The focus of the domains of government agencies and local communities allowed decision makers to sensitize the discrepant social interest, value and meaning, knowledge and power. Applying the analytical framework, it granted opportunities of incorporating local perspectives into environmental governance. Moreover, the usefulness of the analytical framework was evident in its ability of mid-range generalizations about people's perception and knowledge development about environmental issues, which allows for contingency and contextual specificity at both local and larger-scale levels. Last but not least, motivated by the TCPCS thinking, the framework illuminated our understanding of social conflict and cooperation in general, provoking the idea of collective intelligence and co-production of knowledge.

In order to disentangle the patterns of social conflict and other communication barriers, the research highlighted the role of mediator, bridging/boundary organization in transforming social discontinuities. In addition, a platform such as public events, official campaigns, visual media art for communication interface could stimulate social learning and collective intelligence. Relative to this, some social innovation and (or) experiment of building a fluid "waterscape"[148] for communication on water-relevant issues has been documented in China. Whereas the public in China play a limited role in the process of decision-making and implementation of environmental policies, social and cultural innovation creates room in the society for people to inspire themselves, for people to learn from the history on balancing the relation between mankind and nature, as well as between human beings.

[148] The notion is inspired by the created 'soundscape' during one "ecological art performance" - combining the music and visual art of the calligraphy of contents from two Chinese classic books on water resources management.

In 2014, a Chinese cultural activist who is also a scholar of anthropology studies, invited a famous musician for an ecological art performance. The performance was initiated to raise public concern about water pollution as well as to share public anxiety induced by the emerging environmental crisis. The theme of this performance was "Mountain, Rivers and Water". According to the Chinese musician, the music for his performance was inspired by a water pollution incident occurring in Huang Pu River in 2013, which resulted in 10,164 dead pigs dumped to the river (Southern Weekend, 2013.03.19). Reportedly, the dead pigs were dumped from the pig farms of Jiaxing, a city located in close proximity to Shanghai. The pollution provoked a heated debate on the health of China's riverine systems and drinking water safety. From the perspective of the musician, the riverine ecosystems in China are getting "sick". He hopes the created "soundscape" through his music (see Annex IX) could provoke public concern about China's water pollution (Zhou, 2014). For the anthropologist who organised this ecological art performance, the idea was motivated by an official news from the MWR, which mentioned that since 1950s China has lost 28,000 rivers. In his opinion, the society needs to reflect on the way how mankind are making use of water resources, as well as to understand the root causes of China's water pollution (ibid.). To complement the performance of the musician, the anthropology scholar was making the calligraphy of content from two Chinese classic books on water resources management – *Classic of Mountains and Seas*, *Commentary on the Water Classic* (see Annex IX). The created "waterscape" – combining the music and visual art of the calligraphy – sensitized the audience about the water crisis confronting our society, and further stimulated people's reflection on China's environmental pollution.

To this end, the "ecological art performance" initiated from the grassroots society represents a meaningful lesson for free-flowing discussion and reflection on China's environmental crisis. Such inherently social innovation and cultural reclamation inspired by Chinese history, by implications show that a *platform* of interaction and social learning is crucial for building shared understanding and communication on water pollution. While (water) policy model often leaves unexplained new social trend that connects institutional organization with spontaneous ideological and normative transformation in society (Arce, 2010, p.280), the presented grassroots initiative offers critical insights on how to stimulate and make those new social trend possible. In this light, solutions to environmental issues can't be made in isolation, but only in dialogue with the local population. To base growth on accelerated prevention of pollution and abatement efforts, it is important for decision makers and (or) practitioners to communicate the vision together *with* local communities who depend on the water resources on a daily basis,

rather than talking *about* them. Stronger efforts to engage local people in dialogue, knowledge exchange and joint learning would be significant and meaningful. While the digital sphere is expanding fast for environmental governance in China, this research shows that it might take time for local people to accept and apply the digital tools for accessing environmental information. Thereby, cultivating mutually-communicative channels and utilising traditional media such as face-to-face talks in communities, might provide more effective services of informing people about water problems.

Deutsche Zusammenfassung

Während China sich schnell von einer landwirtschaftlich basierten Ökonomie zu einem Industrieland gewandelt hat, hat die außergewöhnliche Intensität der wirtschaftlichen und sozialen Veränderungen Umweltprobleme hervorgerufen. Industrielle Wasserverschmutzung ist wegen ihrer Auswirkungen auf Gesundheit und Umwelt besonders gefährlich. Mit dem zunehmenden Umweltbewusstsein chinesischer Bürger muss die Regierung sowohl auf Anfragen reagieren als auch den gegenseitigen Dialog mit den lokalen Gesellschaften aufbauen. Diese Studie schlägt eine analytische Sicht auf Schnittstellen der Kommunikation vor, um das Auftreten industrieller Umweltverschmutzung und die sozialen und politischen Reaktionen darauf in der Stadt Dongying im Delta des *Yellow River* zu untersuchen. Die Forschung betrachtet tägliche Routinen und bürokratische Praktiken der Umweltkontrolle, wie sie in der lokalen Wasserverwaltung durchgeführt werden. Die empirische Studie dokumentiert ebenso die Wahrnehmung der Bewohner in betroffenen Ortschaften sowie deren Wissen über Verschmutzung.

Die analytische Sicht auf Kommunikationsschnittstellen basiert auf der Schnittstellenanalyse von Long (1989) sowie auf der Philosophie der Metakommunikation von Bateson (1951). Die Einbettung von Kommunikationsschnittstellen in allgemeine Machtverhältnisse ist durch die Studien von Foucault (2000) inspiriert. Die Studie hat den Anspruch, innerhalb komplexer Gegebenheiten Muster zu erkennen und somit den dynamischen und vielschichtigen Charakter von Umweltmanagement in China zu analysieren.

Es wurden vor allem Interviews, Beobachtungen und *Participatory Rapid Appraisal* sowie eine Umfrage unter 110 Haushalten eingesetzt, um die individuellen Erfahrungen der lokalen Akteure zu dokumentieren. Inhaltsanalysen politischer Strategie- und Planungsdokumente, Gesetzestexte und Sekundärdaten zur Umweltverschmutzung trugen zu einem besseren Verständnis der industriellen Entwicklung im Delta des *Yellow River* bei. Informationen aus öffentlichen Medien, Diskussionsforen im Internet und Dokumentarfilme boten reichlich Material über die öffentliche Debatte zu Umweltmanagement in China.

Die Ergebnisse zeigen eine Zunahme technischer Maßnahmen in Dongying, die industrielle Verschmutzung verringern sollen. Maßnahmen zur Steigerung der öffentlichen Teilhabe an Umweltmanagement sind jedoch wenig effektiv. Anhand des anschaulichen Beispiels der Kampagne „*China Water Week*" wurde festgestellt, dass die gegenseitigen Botschaften, die

innerhalb der Wasserbürokratie und über verschiedene Ebenen ausgetauscht wurden, nicht kohärent waren. Der Informationsfluss zwischen Wasserbeamten und der Bevölkerung war oft unterbrochen und behinderte die öffentliche Teilhabe an der Kampagne.

Im Hinblick auf widersprüchliche Signale der Regierungsbehörden in die Richtung von Umweltaktivisten, ergab die Analyse der Daten, dass bei den Kadern der Wille vorherrscht, die Situation unter Kontrolle zu halten. Dieses Ziel soll mit täglichen Routinen erreicht werden, die Vorsichtsmaßnahmen beinhalten, die sowohl Beschuldigungen vermeiden als auch den Kadern erlauben, sich sicher in ihrer *comfort zone* aufzuhalten, statt sich mit den Anfragen der Bewohner auseinanderzusetzen oder auf sie zu reagieren.

Für die Analyse der Kommunikationsprozesse und Interaktionen zwischen Regierungsbehörden und lokalen Akteuren wurden zwei Arten von Schnittstellen untersucht: (a) die virtuelle Schnittstelle zwischen Behörden und betroffenen Bewohnern und (b) die nicht-virtuelle Schnittstelle zwischen Behörden und Umweltaktivisten.

Die virtuelle Schnittstelle war vor allem durch eingeschränkte Aktivitäten und den eingeschränkten Zugang zu Informationen für die ansässige Bevölkerung sowie durch fehlende Rückkopplungskanäle und wenig Unterstützung durch Vermittler geprägt. Durch die Untersuchung von Umweltaktivismus wurde die nicht-virtuelle Schnittstelle dokumentiert. Umweltaktivisten setzten auf eine Strategie des schrittweisen Wandels, um ihren Verhandlungsrahmen gegenüber den Kadern auszuweiten. Die Ergebnisse illustrieren sowohl die Politik der Entscheidungen als auch die Strategien der Mitarbeiter der Behörden, um Verhandlungsraum zu schaffen.

Neben dem Umweltaktivismus in Donying wurde auch eine Initiative einer Umweltorganisation auf Provinzebene betrachtet. Die Umweltorganisation erreichte eine hohe Performanz der Kommunikationsschnittstelle (zum Aufbau eines gegenseitigen Dialoges mit Topkadern der Provinz) durch eine Strategie, die sowohl digitale Werkzeuge als auch die Weitergabe von Informationen an die Behörden förderte Die Ergebnisse verdeutlichen allerdings, dass die Herangehensweise der Organisation (*"give-and-take"* Ansatz) keine Auswirkung auf den asymmetrischen Informationsfluss zwischen Regierungsbehörden, der allgemeinen Öffentlichkeit und anderen Umweltorganisationen hatte.

In Bezug auf die Diskussion um die Förderung digitaler Umwelt-Governance wurde herausgestellt, dass während die Behörden auf Provinzebene diesen Ansatz unterstützen, die lokale Umsetzung wenig vorankam. Ausschlaggebend dafür waren institutionelle

Unzulänglichkeiten, eingeschränkte Ressourcen sowie die geringe digitale Kompetenz lokaler **Kader**.

Das Erkennen der virtuellen und nicht-virtuellen Schnittstellen in dieser Studie zeigt, dass der Zugang zu Informationen und das Vorhandensein gegenseitiger Kommunikationskanäle ausschlaggebend zur Verminderung von Kommunikationsbarrieren sind. Die Resultate der Umfrage illustrieren, dass die Bevölkerung die meisten Informationen aus Massenmedien bezieht. Die Nutzung digitaler Medien zum Erhalt von Umweltinformationen ist noch gering. Das stärkste öffentliche Interesse besteht an Daten zur Wasserqualität. Informationen darüber werden vor allem in Gesprächen mit Verwandten und Freunden ausgetauscht.

Mit Hinblick auf die Lebensgrundlagen und Sorgen der Bewohner sind vor allem die Relevanz der Information (Ausbildung der Kinder, Gesundheitsversorgung, Krankenversicherung) sowie der wirtschaftliche Wert der Information (ländliche Politik, Programme zur Wirtschaftsförderung) wesentlich für die Bevölkerung. Um die Rolle von Akteuren herauszustellen, schlägt die Studie einen grundlegenden kausalen Mechanismus vor, der eine dynamische Art, Bewältigungsstrategien der Bevölkerung in Bezug auf industrielle Wasserverschmutzung einzusetzen, skizziert. Dieser Mechanismus unterstreicht die kausalen Verbindungen zwischen Kommunikation, Informationsfluss, Wahrnehmung und Bewältigung. Die Ergebnisse zeigen wie Kommunikation und Informationsaustausch das Wissen der Anwohner über Wasserverschmutzung beeinflussen. Dieses Wissen ermöglicht es ihnen, sowohl ihre Beobachtungen zu interpretieren als auch Kapazitäten im Umgang mit Verschmutzung zu entwickeln. Dabei wurde festgestellt, dass die Anwohner sich reflektierend mit Wasserverschmutzung beschäftigen. Die meisten Leute negieren weder die Verschmutzung noch leisten sie Widerstand. Stattdessen akzeptieren sie die gegebenen Umstände. Eine kritische Aneignung findet statt. Dieses Ergebnis unterstreicht die subtile Bedeutung von Bewältigung in Bezug auf lokale Praktiken der Machtausübung.

Die Analyse der Schnittstellen wurde zur Interpretation der Beziehungsmuster unter den Akteuren und deren Gruppen im Umweltbereich genutzt. Der Fokus auf Kommunikation ermöglichte eine dynamische Dokumentation der Interessen sowie der kommunizierten Signale. Der konstituierende Charakter von *fractal and connective tissue* – zwei Schlüsselkonzepte des analytische Rahmens – bietet praktische Ansätze um lokale Perspektiven und kulturelle Praktiken im Umweltmanagement zu berücksichtigen. Um einen

inklusiven Ansatz des Umweltmanagements zu fördern, sollten Entscheidungsträger den vorgeschlagenen kausalen Mechanismus in ihren Umweltprogrammen aufgreifen.

Zusammenfassend lässt sich die Studie folgendermaßen beschreiben: Die Untersuchung betrachtet die Machtbeziehung zwischen Staat und Gesellschaft in China, indem sie neue Erkenntnisse zum dynamischen und vielschichtigen Charakter der aktuellen Umwelt-Governance anbietet, die sie aus der Analyse der Kommunikationsschnittstellen zwischen Umweltbehörden und von Verschmutzung betroffenen Anwohnern gewonnen hat. Der Blick in beide Richtungen ermöglicht die Identifizierung widersprüchlicher sozialer Interessen, sowie von Werten, Zuschreibungen und vorhandenem Wissen. Da weiteres wirtschaftliches Wachstum laut Regierungsplan mit der Vermeidung von Verschmutzung einhergehen soll, sollten die lokalen Anwohner, die täglich auf saubere Wasserressourcen angewiesen sind, in die Kommunikation über die politischen Visionen durch die politischen Entscheidungsträger und Umsetzungsbehörden einbezogen werden. Bisher wird vor allem über die Anwohner kommuniziert, nicht mit ihnen. Ein stärkeres Engagement zur Einbeziehung der Bevölkerung in den Dialog, Wissensaustausch und gemeinsames Lernen wäre wichtig. Die Studie zeigt, dass während sich das Umweltmanagement in China zunehmend digitaler Werkzeuge bedient, die Bevölkerung noch Zeit braucht, diese digitalen Werkzeuge zu akzeptieren und zur Informationsbeschaffung zu nutzen. Aus diesem Grund ist es ratsam, Kommunikationskanäle, die dem gegenseitigen Austausch dienen, zu pflegen und weiterhin traditionelle Medien wie das Fernsehen sowie Gespräche in Gemeinden zu nutzen, um die Bevölkerung über Wasserprobleme zu informieren.