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The Constitution of the Potential in the Air: The Case of Wind Power Development in Penghu, Taiwan

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ABSTRACT OF THE DISSERTATION

The Constitution of the Potential in the Air: The Case of Wind Power Development in Penghu, Taiwan

by

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This dissertation examines the ways in which the potentiality of the wind is constituted by looking at various events that happened surrounding the local government's endeavor to establish a public-private energy company in Penghu, the archipelagic county of Taiwan. The Penghu government wished to turn the strong winter wind, which has long been seen as a barrier to local economic prosperity, into a green energy source to bring wealth to the archipelago and its inhabitants. In order to realize the potential in the air, the local government sought to establish a public-private energy company that was expected to share financial profit, coming from the sale of the wind-generated electricity, with local residents who are its shareholders. Drawing on thirteen months of ethnographic fieldwork with local villagers, government officials, and employees of the power plant operated by a state-owned utility company in Penghu, the dissertation analyzes the archipelagic county government's endeavors to establish the wind energy company and local residents' understandings of, and response to it, in order

to explore how it does or does not produce the condition in which the potentiality of the wind to be profitable electricity is constituted. This dissertation investigates how the Penghu government produces fantastic storylines, constructing a new meaning for, and a financial expectation of, the wind in order to attract local inhabitants to invest in the energy company, and examines how those narratives are maintained and/or destroyed among these residents by and through events that happen around nonhumans, both material and immaterial. The dissertation argues that in Penghu, the wind "comes to have" its potentiality to become a renewable energy source, bringing wealth to local residents through the imbroglios of human and nonhuman entities surrounding the establishment of the energy company. It thus challenges and rethinks the taken-for-granted ideas hidden in natural and social scientific understanding of potentiality (of the wind) 1) as an inherent property and 2) whose realization only depends on human interventions.

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Introduction

On December 18, 2014 in Gangzi village of Penghu, an archipelagic county in Taiwan, the Penghu Energy Development Corporation — the first public-private corporation in the country's history (hereafter referred to as Penghu energy company) — held an unveiling ceremony, which set a new goal to establish Penghu as a low-carbon island (Unknown 2011c). The Penghu government-run energy company was designed and established to share the financial profits that it would make with its local inhabitants, who would become its stakeholders, through the sale of electricity generated by the abundant winter wind, blowing throughout the archipelago. The ceremony was attended and celebrated by the then-Magistrate Wang Chien-fa of Penghu County (who was the driving force behind the establishment of the energy company), the president of the company, and various guests such as the vice president of Taiwan External Trade Development Council (TAITRA), the chief secretary of Bureau of Energy under Taiwan's Ministry of Economic Affairs, the chief of the Jianshan thermal power plant,[1] scholars, and many others such as local politicians and directors of each department of Penghu County government (Valentine 2010:23; Wang 2006). Yet an interesting (or even sticky) situation happened during the ceremony. As people, including the Magistrate Wang, important officials of the energy company, and other guests, tried to unveil the nameplate of the Penghu energy company by pulling red strings that were attached to a

[1] The Jianshan power plant is currently the sole fuel-fired power plant in Penghu, owned and operated by Taiwan Power Company (hereafter Taipower), which is the government-owned electricity utility and monopoly that installed and owns "all transmission and distribution lines" of electricity in Taiwan.

piece of a red cloth covering the nameplate, the red cloth failed to come off and fall to the ground while only the red strings snapped.

The establishment of the energy company was a critical part of an ambitious mega-project launched by the Penghu government under Wang's leadership to make the archipelago a world-class low carbon emission island. Wang had a strong expectation in his mind that the energy company would work to realize his "imagination" to take advantage of the strong, abundant winter wind, which had been perceived as a "headache" for the local economy, as a "green gold" that could be harnessed as an interminable, clean energy source to generate electricity to be sold on the market (chapter 1). The fierce winter wind had long been seen by a large number of local inhabitants of Penghu as a chronic "headache" that makes many of their economic activities for livelihood extremely sensitive and even vulnerable to seasonal weather change, and thus hinders the growth of the local economy. Yet the powerful and relatively reliable winter wind was not merely a disturbing meteorological phenomenon, it was also "the potential 'in the air'" (Howe 2011:5) that stimulates people of the archipelago to "imagine" a bright future, financially and environmentally.

Caused by the sun's unequal heating of the Earth's surface, the wind has globally been promoted as one of the clean energy sources to generate electricity, an extremely invaluable commodity that is "the *very life blood*" of modern societies (Coleman 2014:467; original emphasis; Hatmaker 2014), working to "fuel our existence" (Matthewman and Byrd 2014:1) and thus can be sold for consumers of the market in the current new "Anthropocene" age that humans and their activities have caused Earth to

enter by making significant impacts on its ecosystem (Coleman 2014:467; Matthewman and Byrd 2014:1). As we already know, the attractiveness the wind has as an energy source lies in its quality and quantity: unlike other hydrocarbon energy sources such as oil and coal, it is infinite and renewable (as long as the sun exists), which makes it free from the problem of exhaustion, in a quantitative sense, and does not produce environmental pollution in a qualitative sense. Hence, the Penghu government under Wang's leadership decided to launch its ambitious mega-project, making the archipelago a world-class low carbon emission island, crucially, through the establishment of the energy company, to realize its "imagination" to take advantage of the strong, abundant winter wind, which had been understood as a "headache" for the local economy, as a "green gold" that can be harnessed as an interminable energy source to generate electricity to be sold as a commodity on the market.

In his speech delivered at the unveiling ceremony, therefore, Wang said that it was the happiest day in his nine-year term in office as County Magistrate, and that the Penghu energy company would be the big present he presents to local citizens before his second and final term in office was officially finished on December 24, 2014. He also expressed that the energy company would be an "opportunity for Penghu to create wealth" and thus make great (financial) contributions to the local government and to the inhabitants of the Penghu archipelago because it will work to turn the strong northeastern monsoon wind, which has been seen as an "inferior" factor impeding Penghu's (economic) development, into a "magic" that generates fortunes to be distributed to the locals who have its shares (Department 2014; Unknown 2011c). Wang then said that

because the forceful wind is the gift that God gives Penghu, the development of wind energy is the sole route that the archipelago needs to take for its own economic development (see chapter 1 in detail).

I started the introduction of this dissertation by depicting, and drawing attention to, the inauguration ceremony of the Penghu energy company because, like other energy sources such as petroleum (Weszkalnys 2013:277), it illustrates the ambivalent, dichotomous positions and understandings of the strong northeast seasonal wind in Penghu: destructive power / creative force, a barrier / a chance, and an inferiority / a magic in terms of local economic prosperity. The wind is framed as (first) "problem" and (later) "possibility" in Penghu. Air in motion is a physical substance, even though we can only notice its existence through its (temporary) relationship with a heterogeneity of other entities/elements. "Despite being a concrete thing," yet, the wind is now expected by the Penghu government to "animate and enable all manner of abstract categories" such as local economic prosperity, sustainable development, and a bright future in Penghu (Szeman 2013:146). This is enabled by a new vision of neoliberal "verticality" that the Penghu local government seeks to produce in the archipelago (Braun 2000). While the geographer Bruce Braun shows that verticalizing territory occurred when people started seeking not only the economic value of the land, but also potential financial profit from the geological strata that lie beneath it, verticalization in Penghu is ongoing in the other way around: since the expectation of attracting capital gains is shifting from the surface to the space above it (sky), the territorial airspace is getting verticalized.

What encourages the Penghu government to upwardly verticalize and pursue "the potential 'in the air'" (Howe 2011:8) is the property of the wind as energy. "Energy is a strange matter" (Pierce and Paulos 2010), given its material properties and the ways in which it is understood in the physical sciences, especially the area of thermodynamics (Barry 2015). Thermodynamics, which is the important branch of chemistry that deals with energy relationships and work of a system, requires us to understand energy as something that can take on multiple forms "in terms of its conversion, or the potential for its conversion in the future between different forms," rather than as "a physical object with given dimensions such as mass and length" (Barry 2015:117). The call for us to understand energy in that certain way may be attributed to the first law of thermodynamics, which is also widely known as the law of conservation of energy, that states that energy can *only be converted/changed* from one form into another, but *neither created nor destroyed*, which makes energy a "strange matter" (Pierce and Paulos 2010). According to thermodynamics and its law, hence, as air molecules are in motion (mainly caused by solar energy), the wind inherently possesses not only kinetic energy, which is defined in natural sciences as the energy that an object has due to its movement, but also the "potentiality" to become — or more precisely, transform into — a different form of energy, that is, electricity to be traded as a commodity.

While I agree with such natural scientific understanding of a strange energy, telling us that as long as it blows, the wind does inherently "hold" the potentiality to be (converted into) a useful, marketable significant energy form (electricity). I also suggest that it made us, both academics and non-academics, have a common presumption of the

potentiality of the wind as its inherent quality. For instance, both the then Penghu county Magistrate Wang Chien-fa and the renown Penghu-native scientist Lin Hui-zheng (who is one of the main architects that design and advocate the wind power development project in Penghu, as I will show in chapter 2) respectively said that the Penghu "archipelago, which has an annual average wind speed of 9 meters per second, is one of the top three places in the world for developing wind power" (Wang 2012) and "strong northeastern monsoon" wind makes Penghu "boast excellent land and sea areas for wind power generation" (Unknown 2011a). Taiwanese media also described Penghu as "a surefire candidate for wind power" (Unknown 2011c) since "it's a windy island, with especially strong wind" (Liu 2011; cf. Unknown 2011b). In academia, moreover, Dominic Boyer and Cymene Howe, who are some of the key anthropologists of energy, as well as the ones who coined the new terms "energopower" and "energopolitics," also write that "wind is now known … as a renewable 'resource,' and as 'green energy'" (Howe and Boyer 2015:33). Explicit in these examples are the huge influence of physical scientific or thermodynamic understanding of potential energy on how people usually look at the wind and its potentiality. People unconsciously assume or take for granted that the wind has the potentiality (to be profitable electricity, or what Boyer and Howe call "renewable resource" and "green energy") intrinsically because it is (or has) kinetic energy and the more (stronger) its kinetic energy is (or the faster its speed is), the higher its potentiality is.

It is clear that the way in which natural sciences or thermodynamics understand the potentiality of energy corresponds to multiple meanings of the word "potentiality"

that anthropologists Karen-Sue Taussig, Klaus Hoeyer, and Stefan Helmreich identified: 1) "a hidden force determined to manifest itself — something that with or without intervention has its future built into it" and 2) "genuine plasticity," or "the capacity to transmute into something completely different" (Taussig, et al. 2013:S4). According to these articulations, the wind as kinetic energy itself might be viewed as having built into it a potential future as electricity and as having the plasticity to transmute itself into something different. I want to raise a question about the potentiality of the wind, however, as understood by the rules of thermodynamics and by anthropologists' definitions: what if the potentiality of the wind does/can not (have a chance to) be realized? Given the thermodynamics' principle to understand energy in terms of its conversion, the potentiality of the wind (or its kinetic energy) always assumes (the possibility of) its transmutation and one of different energy forms (electricity) to which it will change/convert. This means that the transformation or change of the wind is "the actuality of the potential *qua* such," or the actualization of what is potential (Coope 2009). However, if its potentiality does not have a certain form or actuality to which it converts and/or cannot (have a chance to) be actualized, or, that is, if the wind can/does not undergo change, can we still say that the wind inherently "possesses" its potentiality?

When Taussig et al (2013) provide their third and last articulation of potentiality, in addition to its aforementioned two meanings: "a quality perceived as available to human modification and direction through which people can work to propel an object or subject to become something other than it is" (Taussig, et al. 2013:S4), or "a culturally channeled capacity" (Helmreich 2013:S142), this denotation might be seen as a partial

answer to my question in that it seems to recognize the importance of (the possibility of) change/transformation in defining potentiality. It also allows me to approach the potentiality of the wind empirically and ethnographically because it emphasizes the significance of human interventions that can be followed and studied. However, I find the definition problematic in three ways that are inextricably interrelated: 1) it is anthropocentric due to the emphasis on the ability of humans to change an object or subject into something different, 2) it describes humans as omnipotent (i.e. people can change something into a useful thing as they wish), and 3) it still assumes potentiality as an inherent quality that can be and waits to be found and perceived by humans.

This dissertation aims to challenge and rethink the concept of potentiality by looking at events surrounding the establishment of the (start-up) Penghu energy company. The reasons why I pay attention to the establishment of the Penghu energy company are that 1) it is a critical human intervention/modification for the potentiality of the strong winter wind blowing throughout the archipelago and that 2) the actualization of the wind as profitable commodity comes to have its value/meaning, only when it can bring financial benefits to local residents who are shareholders in the company. In this text, I describe and analyze the Penghu government's endeavors to establish the energy company and local residents' understanding of and response to it in order to explore how they produce the condition in which the potentiality of the wind to be electricity is constituted (and/or not). This dissertation will answer the following particular research questions: 1) in order to realize the potentiality of the wind, how do what I call the "architects" of the Penghu energy company, such as local government officials and

associated scholars, seek to produce and enhance its expectation? 2) how is such an effort to strengthen the expectation of the wind's potentiality understood by local residents who are also potential investors in the company? and 3) what influences the local people's understanding of the expectations of the wind's potentiality and how? By answering these questions, I aim to open up the notion of potentiality in ways that reveal the entangled relationships between humans and nonhumans, including infrastructures, environments, and the wind itself. The central argument of this dissertation is that in Penghu, the wind "comes to have" its potentiality to bring wealth to local residents through the imbroglios of human and nonhuman entities surrounding the establishment of the energy company. The potentiality of the wind to be a profitable energy source is made by socio-cultural practices, which are required to realize it, and nonhumans, as much as it is inherently given by nature, as physical sciences understand it.

While the Penghu government sought to establish the energy company to realize the potentiality of the wind or to enable its material conversion, given the nature of the company as a (start-up) public stockholders corporation to draw investment funds from people as well as its primary goal to share profits with resident stakeholders, it had to first convert its meaning and then produce financial expectations about wind power through narratives in order to attract investment funds from local residents. To put it simply, the discursive conversion of the meaning of the wind precedes the material conversion of the wind's kinetic energy in order to make the latter happen in Penghu, just as its physical conversion, to change the wind's meaning is a socio-cultural project, "inextricably bound up with human interactions and meaning attributions" (Lahiri-Dutt 2014; Osti 2012:412).

It requires moving the wind from the realm of nature to the realm of culture, that is, the destruction of a "great divide" (Latour 1993) between those two worlds (Calvert 2016; Ferry and Limbert 2008; Morris 2013; Osti 2012; Richardson and Weszkalnys 2014) by "an external agent, something outside of "nature" to appropriate and exploit it" (Ferry and Limbert 2008:7). Therefore, in order to attract capital from local inhabitants and build momentum for the start-up energy company, the Penghu government took "cognitive actions" to discover economic value in the strong winter wind and thus to change/transform the widely held original meaning of the Aeolian force as a barrier to local development to a new meaning as a profitable energy source to bring stable income to the local residents (Lahiri-Dutt 2014; Osti 2012:412).

This ethnography can be seen as what the cultural anthropology of energy Dana Powell calls "an anthropology of energy *before* it is transformed into kilowatts and passes through the socio-technical systems required to make it consumable" in that it approaches the development of wind power "in its emergent stages" in Penghu (Powell 2010:67). In this dissertation, I seek to investigate the conversion process of the meanings of Penghu's wind that happens surrounding the local government's effort to establish the energy company. I suggest that the fierce wind acquires new meanings and images as a profitable energy source for the locals through the Penghu government's interventions, ones meant to produce and distribute alluring storylines that create the expectations/fantasy of its financial profit and, thus, help attract potential local inhabitant investors (Hunsberger 2014; Lahiri-Dutt 2014; Randalls and Petrokofsky 2014; Tsing 2000). What I intend to mean by the production of fantastic storylines is similar to the

political scientist Timothy Mitchell's concept "enframing," which is a dominant frame through which the world comes to be represented and viewed in a particular way to better understand and control it (Mitchell 1991). The storylines, as I will show in chapter 2, work as a strategic frame, one through which the fierce wind that blow through Penghu is particularly represented as the opportunity for local economic prosperity, which is the completely opposite representation of the previous meaning/image/understanding of the wind as a hurdle to economic development. And since the storylines aim to positively convert the meaning of the wind and then to make it visible as an object to be worth investing to specific readers/audience — local residents. The local government expects that, as Anna Tsing notes, the more fantastic the narratives or enframing, "the more possible an investment frenzy" (Randalls and Petrokofsky 2014; Thrift 2001; Tsing 2000:118).

Those narratives seek to obtain credibility in that they are not completely fabricated (Tsing 2000), but are built upon various numbers about wind power, numbers that are obtained through methodologically valid scientific observations, statistics, and reports conducted by prestigious experts — and thus are generally seen as objective and trustable as well as the combinations of those numerical figures — thereby showing the wind's potential profitability (Randalls and Petrokofsky 2014). Based on statistics on Penghu's wind conditions and through its comparison with data from the European key wind power producers, for instance, a university professor and a nonprofit research institution commonly estimate that an efficiency level of generating wind power in Penghu would far exceed its foreign counterpart, which means that the archipelago's

wind power is highly likely to promise high financial return and is thus worth investing in (Lee 2012a; N.D. 2011; Unknown 2011a; Unknown 2011b; Unknown 2011c).

Then, in order to achieve the goals they anticipate, fantastic storylines and financial expectations about the wind that they create have to be controlled, "maintained and protected from external co-optation" (Randalls and Petrokofsky 2014:222). Yet, maintaining the storylines (and expectations) depends on local residents who are their targeted consumers/readers: how they understand those discourses becomes crucial to the success in not only attracting investment capital, but also converting the meanings of the wind. Thus, I suggest that how local residents understand the storylines is strongly affected by various events that occur around both material and immaterial infrastructure, which are required to actualize the potentiality of the wind (i.e. the material conversion of the wind's kinetic energy), such as wind turbines and submarine cables (Wilhite 2005). The cultural anthropologist Harold Wilhite writes (2005:1) that since "energy is of little use in and of itself," "it must pass through a socio-technological system," that is, infrastructure, in order to be physically converted and thus to obtain its utility value. My ethnographic data shows that infrastructures play a pivotal role not only in the physical conversion of the wind, but also in its semantic conversion. Even if two different groups of local residents have lived with wind turbines because their villages are both respectively located adjacent to Taipower's two wind farms, they may understand the breakdowns of those machines and Taipower's reactions in a complete different way (Strauss, et al. 2013:110-125). On the one hand, one group of villagers understand Taipower's swift attempt to fix the malfunctions of wind turbines as a visible sign,

showing economic value of the wind (and those devices) and thus accept and believe the fascinating storylines produced by the Penghu local government. Another group of villagers, on the other hand, pays greater attention to the particular property of Penghu's wind to carry salt and water and its negative chemical impacts on universal, standardized wind turbines, often making them break down. It is widely known to local villagers that there is almost nothing Taiwan can do in the event of a breakdown of wind turbines except wait for the arrival of repair technicians/engineers dispatched by the German manufacture of those machines. The villagers then think that due to Taipower's technological impotence for repair, the cost of fixing broken turbines would be high. Thus, the clashes and frictions between moving air masses and gigantic machines allow them to critically examine, deconstruct, and reject the attractive narratives about the wind and its potential profitability. As a result, those villagers refuse to financially invest in the energy company.

This ethnography then shows that the storylines and financial expectations of the wind are also contested and even destroyed by the not-yet-existing submarine cables and their real and speculative impacts on the environments, where they are supposed to be laid. Various nonhuman entities, including the ocean and marine animals, came to the forefront of anti-submarine cable protests led by groups of people from Yunlin and Penghu by being recruited as central participants (de la Cadena 2010; Li 2015; Oppenheim 2008). I argue that the development of wind power can/should not be only understood through economic frameworks that only emphasize potential financial gain of a certain social group while ignoring other people's (forced) sacrifice and embrace of

environmental risk (Boyer 2014; Howe 2014a; Mitchell 2011). This in turn makes local villagers refuse to passively and uncritically accept the storylines and thus to become shareholders in the energy company. In the end, it seems to me that the Penghu government's endeavor to convert the meanings of the wind ends up being a (temporary) failure. Protesters opposing against the storylines also allow us to clearly see that in order to create the alluring narratives that produce the financial spectacle of wind power, the government officials either detach/insulate the wind from the real sociocultural, historical, and economic situations of fishermen's islands through which it has been blown or intentionally disregard/forget those actual circumstances. As I will show in chapter 5, the residents of Penghu have long been engaged in fishing to make a living (Schmalzer 2002), and they formed and maintained affective relationships with the ocean and marine animals. Yet due to the construction of the undersea cables, the financial return of wind power that the storylines promise necessarily demands a great deal of damage to the traditional mode of production as well as the cultural and historical meanings/values associated with it.

By showing how various nonhumans, even including the wind itself, strongly influence the local government's endeavors for the semantic conversion of the wind and the local people's understanding of them, I challenge the idea that potentiality is an inherent property and the anthropocentric and human-as-omnipotent assumptions that underpin the definition of the potentiality. This dissertation contends that the potentiality of the wind to generate financial benefits for people is not merely its inherent quality, but is made through its associations with human and nonhuman entities. The potentiality

cannot stand by the wind itself, but rather "depends on other beings, things, and apparatuses that are active in producing" it (Kirksey 2015:758; Mol 2002). My key argument draws on the British philosopher Alfred North Whitehead's notion of "real potentiality" (Whitehead, et al. 1978:65). According to Whitehead, there are two different types of potentiality, general potentiality and real potentiality. While general potentiality is "the bundle of possibilities" and "absolute," whereas real potentiality "is conditioned by the data provided by the actual world" and thus is "relative to some actual entity" (Whitehead, et al. 1978:65). For instance, while we often think of an acorn as having "general potentiality" to become an oak tree, it is unable to become the tree in specific environments such as Antarctica or under the sea, where it cannot take root beneath the ground and be nurtured by air, rain, light, and nutrients and minerals in the soil. The acorn thus can come to have "real potentiality" only when "the data provided by the actual world" sets up the conditions under which it can develop into a full-grown oak tree (Whitehead, et al. 1978:65). That is, the real potentiality of the acorn is defined and shaped by those real conditions, where it is located and entangled with other entities. By the same logic, my central argument is that the (real) potentiality of the wind is constituted through its relationship with numerous humans and nonhumans, which produces a particular condition that enables its actualization. Therefore, even if the wind can be seen as holding the potentiality to be profitable in scientific terms since it is kinetic energy itself to be transformed, it is absolutely not the lone bearer of such potentiality. Rather, the air in motion is merely a potent actor or actant in the "heterogeneous network" of many other entities, which as I will show, include wind

turbines, immaterial submarine cables, marine animals, and local residents, the network that enables its semantic and physical conversion into profitable electricity to be sold (Law 1992).

Theoretically, I ultimately situate this work within the anthropology of energy, even if it draws on insights from a number of strands of theory, which all assist me in understanding the constitution of the potentiality of the wind with regard to the conversion of energy forms. With a renewed, burgeoning interest in energy and "energopolitics"(Boyer 2011; Boyer 2014) in various disciplines including anthropology, geography, history, sociology, and political science, numerous social scientists have mostly focused on the relationship between energy as power and socio-political power by exploring how energy is produced, transported, distributed, and consumed, and how it simultaneously both shapes and is shaped by sociopolitical power and power relations (Mitchell 2011; Valdivia 2008). Such attention to the relationship between energy and power may be partially because, as many scholars including the English philosopher Bertrand Russell point out, "the fundamental concept in social science is Power, in the same sense in which Energy is the fundamental concept in physics" (Adams 1975; McKinnon 2010; Russell 2004:4) and because those two terms/concepts are often interchangeably used as a synonym in our daily lives and even in academia (Chapman 2010). In particular, the Rice anthropologist Dominic Boyer has developed an analytical lens called "energopolitics," which is defined as "power over (and through) energy," as "an alternative genealogy of modern power and modern statecraft" to Foucaultian analysis of "biopolitics," "power over life and population" (Boyer 2011:5).

This literature on energy and energopolitics, however, has left several shortcomings/gaps ethnographically and analytically. On the one hand, ethnographically, it has relatively ignored alternative forms of energy, namely, renewable energy including wind, sun, and water, in spite of a recently growing interest in them (Folch 2015; Folch 2013; Lord 2014; Lord 2016; Love and Garwood 2011; Morris 2013). Hydrocarbon energy sources, in particular oil and coal have traditionally and largely attracted academic attention, given that they have not only "'powered up'" "societies since the 18th century," but also "'energized'" the modern world (Urry 2014:3). A large amount of research was conducted to examine how hydrocarbon fuels are interconnected with sociopolitical power and politics (Apter 2005; Coronil 1997; Lahiri-Dutt 2014; Mitchell 2011; Shulman 2015; Wu 2015), as well as how international oil corporations closely intersect with the expansion of neoliberalism and the reformulation of the state and its functions (Ferguson 2006; Rogers 2012; Sawyer 2004; Shever 2012). In addition to fossil fuels, scholars also explored how nuclear power technology is intertwined with the re/construction of national identity and prowess, as well as with the re/shaping of state-society relations (Amir 2010; Hecht 1998). Furthermore, students of mineral resource mining analyzed not only the ways in which mining corporations are enacted in multiple forms and generate socio-environmental conflicts that "reveal the entangled relationships between people, places, and things," but also how corporate social responsibility (CSR) practiced by those companies produces both intended and unintended consequences in particular local settings (Li 2015:7; Welker 2014). A number of scholars also studied how electricity and electrification produced a new form of governance and ethno-national

distinctions, as well as were related with modernity and (uneven) development (Alatout and Schelly 2010; Kale 2014; Shamir 2013; Winther 2008)

On the other hand, analytically, recent scholarship on energy and energopolitics has also produced "a marked asymmetry between social scientific and natural scientific approaches to the study of energy" (Barry 2015:111). Andrew Barry recently makes a keen observation that in spite of "the recent (re)turn to" energy (Barry 2015:111), social theorists have surprisingly had scant interest in the concept of energy as natural scientists have understood it, and as a result, the notion itself was un(der)-explored or unaddressed in their analysis (Howe 2015; Huber 2013; Russell, et al. 2011; Shove and Walker 2014; Strauss, et al. 2013; Winther 2008). Like Barry, I also suggest that for too long social scientist took energy as the medium through which they were analyzing research topics/phenomena and their complex relations to it, but not as an object of analysis itself, as I noted in the very brief literature review of energy and energopolitics.

Although we currently witness a gradually growing ethnographic research on the development of green energy (Lord 2014; Lord 2016; Love and Garwood 2011), many works dealing with those renewable energy forms have still primarily placed their analytical focus on power and politics, probably in part due to the aforementioned conventional disciplinary interest in (physical) energy as sociopolitical power (McKinnon 2010; Russell 2004). When reviewing social scientific works on wind power which is the topic of this dissertation, for instance, we can easily find that a large number of scholars mostly focused on uneven power relations between states/corporations and local people surrounding wind power development project (Argenti and Knight 2015; Howe and

Boyer 2015; Howe, et al. 2015) and local/public resistance to, or debates about wind turbines and their visual and environmental impacts (Nadaï 2007a; Nadaï and der Horst 2010; Nadaï and Labussière 2010; Nadaï and Labussière 2013; Phadke 2011; Phadke 2013). I do not intend to mean that these researches focusing on wind power as sociopolitical power are unimportant and meaningless. Rather, in my opinion, what needs to be done is to explore the fundamental question: the wind energy itself as a concept by taking it as an object of our social analysis. How can the research of energy leave the concept of energy unexplored?

Hence this dissertation aims to fill these existing gaps in anthropological knowledge on energy in two ways. On the one hand, even if there is currently growing literature on these renewable energy sources, little ethnographic work has focused on wind power development in East Asian contexts. In addition, to the best of my knowledge, there are no English or Chinese language Ph.D. dissertations written on Penghu, Taiwan in cultural anthropology at least in the past twenty years. And there are only small numbers of article-length cultural anthropological works on Penghu, whose focus are mostly on history, kinship, religion, and education (Wilkerson 2004). Thus, this dissertation finds its scholarly significance as not only the first full-length, English language ethnography of Penghu with an analytical focus on wind power, but also as an addition to the growing literature on energy and renewable energy.

Since I am really puzzled and astonished by such academic indifference/ignorance to Penghu, I think that this is a right place to give the reader my brief explanation of why Penghu matters to anthropology and social sciences as a field site. My interest in Penghu

primarily stem from the local government's recent and active endeavor to promote sustainable energy transition through its ambitious project to turn the archipelago into a world-class low-carbon group of islands in the current state of the planet known as Anthropocene. As I will note in chapter 1, the full development of wind power lies at the heart of the local government's attempt to the transition to renewable energy and this is expected to completely change energy landscape of Penghu by closing the sole fuel-fired power plant and by meeting local energy demand through wind power (and electricity transmitted through undersea cables from mainland Taiwan).

It is indisputable that our discipline has traditionally sought to tackle with and answer "large questions" by drawing its knowledge and insights from "small places" (Eriksen 2001:2; Geertz 1973a). Given such traditional disciplinary task, that wind power would become a major energy source in the (near) future made me find the Penghu case very compelling and important anthropologically because it could allow us to rethink our modern world and life which are built upon hydrocarbon energy sources, especially oil (Szeman 2013; Urry 2013; Urry 2014). As Imre Szeman argues, oil did not only shape our modern society and "ourselves into what we are" but also "animate and enable all manner of abstract categories" to a considerable extent (Szeman 2013:163, 146), including neoliberal capitalism (Appel 2012; Ferguson 2005; Huber 2013; Sawyer 2004), democracy (Mitchell 2011), the state and nationhood (Apter 2005; Coronil 1997), and citizenship (Valdivia 2008; Welcome 2013), to name a few.

Given that oil is one of the essential elements of our modern world and "investigation of whatever topic" or issues (Szeman 2013:146), therefore, I expect that

paying close attention to Penghu and its effort to develop wind power would give us an opportunity to rethink and challenge "our subjectivities and the shape of our social lives" and "social imaginaries that we have constituted around" oil (Szeman 2013:163). In this respect, just as the Taiwanese media currently applauds Penghu as an important "testing ground" for renewable energy including wind power (Yang 2010), I also believe that by making wind (energy) part of our knowing, this small archipelago of Taiwan, which has long been virtually unknown to social scientists, would become a significant empirical ground to rethink/test old social/anthropological theories/concepts and to generate new ones.

Furthermore, I also think that the keen attention to Penghu and its wind would maybe allow us to understand "what and who we might become without" oil and to imagine possibilities of a society that we have not yet learned to look at or that has not yet come or been realized (Szeman 2013:163). By learning from Penghu and its effort to harness wind power, I expect to "keep possibilities open" (Graeber 2007:1) to our discipline's idea(l), which is also STS's main slogan, that the world could "be otherwise" and could be very different than it is now (Woolgar and Lezaun 2013:322). While Timothy Mitchell explores "carbon democracy" through oil (Mitchell 2011), for example, Penghu's case might allow us to rethink it and help us imagine and realize no(n)-carbon democracy (or a different type of energo/political system) in my opinion.

On the other hand, although I do not exclusively explore the concept of energy itself, "as it is understood in the physical sciences" (Barry 2015:111), as another way to fill the existing gaps in anthropological knowledge on energy, my work seeks to

"metaphorically" use a thermodynamic account of energy (Adams 1988:xvi), which is understood in terms of its conversion, in order to explore how the potentiality of the wind is constituted in a Taiwanese context. Especially, I try to metaphorically and analogically use the second law of thermodynamics, which states that the state of entropy of an isolated, closed system will increase over time, in the last two chapters in which I explore how the attractiveness or attractive energy of the wind produced by the fantastic storylines declines (Adams 1975; Adams 1988; Adams 1978; White 1943; White 1949; White 1959). In this regard, my work can be seen as a (partial) response to Barry's call for social scientists to take natural scientific understanding of, in particular, the thermodynamic account of energy concept seriously (Barry 2015:111).

Employing the natural scientific understanding of energy also allows me to approach the wind and its agency in a way that differs from those of many scholars of energy. In his book, for instance, the political geographer Matthew Huber criticized other scholars of oil for imbuing it with material agency. Instead he seeks to strip oil of intrinsic power as a substance, probably in order not to reify and fetishize it, and makes an important argument that the hydrocarbon energy only comes to have "remarkable agency" in "specific historical circumstances and through particular social relations" of capitalism (Huber 2013:123). As Mazen Labban keenly points out in his critical book review (Guthman, et al. 2015), however, the logical contradiction happens when Huber also frequently presents oil as "powerful force" (49) and "active material force in itself" (xi) at the same time that he treats it as lacking inherent agency. In contrast to Huber, however, this dissertation does not try to deprive the wind of its material power,

following thermodynamic account of energy. As the movement of air masses, the wind itself is kinetic energy and thus inherently possesses the ability to carry something in it, such as salt and water. As I will show in chapter 4, that inherent capacity to bring salt often causes technical breakdowns on wind turbines and this in turn strongly influences local residents' understanding of the storylines about financial expectations of wind energy and then semantic conversion of the wind.

Additionally, I also hope that this dissertation can make a small contribution to the heated and long-standing debate between humanism or (Kantian) anthropocentrism and posthumanism not merely in anthropology, but also in social sciences in general (Barad 2007; Bennett 2010; Bogost 2012; Bryant, et al. 2011; Haraway 2003; Latour 2005; Whatmore 2006). By following the language of flat ontology or generalized symmetry (Callon 1986; Latour 2005), in this text, I seek to decenter human beings from their authentic, privileged positions as sole actors/agents to play in existence and rather to treat nonhuman entities, including infrastructure, marine animals, and the wind itself, as having agentic capacity/quality to make differences (only) through an ongoing process of being associated/entangled with other human and nonhuman entities.

In spite of my effort to challenge "human species-ism," that is, "the human empire over other forms of life" (Boyer 2014:318), however, I do not completely discard the humanist idea that humans are "rational" actors/beings. Based on Dipesh Chakrabarty's words that "Logically, then, "in the era of the Anthropocene, we need *the Enlightenment (that is, reason)* even more than in the past" (Chakrabarty 2009:211), Dominic Boyer keenly points out that the recent posthumanist/material turn has the

tendency to divert "a species-specific mediating responsibility" for making the planet enter the new geological epoch into a never-ending discussion about the ontological status of human beings, which he also admits allows us to know the limit of our anthropocentric thinking (Boyer 2014:320). Then, he believes that human reason and action would be "part of the solution to our contemporary challenges," that is, "the problem of *accountability*" for the global environmental issue (Boyer 2014:319, 320). By following Chakrabarty and Boyer, therefore, this dissertation seeks to adhere to anthropology's traditional Kantian epistemology in that it documents the Penghu government's reason to harness wind power to take responsibility for global climate change and to resolve local chronic economic recession and how it comes to be in harmony and/or contestation with ordinary residents' understanding or mode of reason(ing) about wind energy and its impacts.

A Note on Methods and Field Sites

Like many other anthropologists, I eventually reoriented my original research focus "some time after arrival" in my field in order to "respond creatively to the people's grounded concerns and to the unpredicted" (Okely 2007:361), and to situations that had been roughly anticipated yet, in reality, were much more difficult and complex than my initial anticipation, which in turn strongly influenced my research methods (Okely 2007:361). I originally had planned to conduct my research at a thermal power plant of Taipower in Jianshan village, Penghu with the aim of exploring how the Taiwanese state is represented and constructed through its power utility workers and their interactions

with local residents. Yet, obtaining "full and direct" access to my field site, Taipower and to possible informants working there was inherently a political process, even though I had already known that elites or relatively high-level, privileged actors with substantially greater socio-political clout at powerful institutions or government-agency have both the ability and inclination to "keep prying strangers out of their lives," in part, to protect their own time and privacy (Jaffe and Koning 2015:17), and thus that they also often tend to be reluctant to be visited and interviewed by a researcher (Gusterson 1997; Jaffe and Koning 2015; Markowitz 2001; Ortner 2010).

In order to get some tips on how to get access to Taipower, I also had email correspondence with Dr. Scott Victor Valentine, who is currently teaching at the City University of Hong Kong and had published an article on wind power development policy in Taiwan, based on his interviews with Taipower staffs (Valentine 2010). Valentine's advice for me was that "you have to have contacts to lean on when trying to set up these interviews and sometimes rely on some luck." Depending on my local "contacts" and "some luck," I could finally contact and have a conversation with a high-level official of the Jianshan power plant. Yet, after knowing my research purpose, he refused to give me an "official" permission to conduct participant observation at the power plant because I am not a student of natural/physical sciences but a social scientist. He told me that while natural/physical sciences are the academic fields that are more directly related with what he and his colleagues have been doing at the power plant and that he knows pretty well, practitioners of social sciences, which he is not familiar with, seem to take a very critical (negative) analytical attitude toward the state-agency and

what it does. It was a huge problem, given that conducting anthropological fieldwork always "requires *having a place to go* where things are happening, where there are people to watch, events to follow, interactions to understand" (Merry 2000:128; my emphasis).

As a result, I decided to modify my research topic, which this dissertation builds upon, to one that needed, participant observation at the power plant much less than the original one. There is no doubt that the decision was inherently political and practical, since it was strongly influenced by my consideration of the available *guanxi* (connections and networks between people), which has been very important in making contacts and being accepted as a legitimate interlocutor in Chinese socio-cultural settings (Barbalet 2014; Bosco 1992; Gold, et al. 2002; Kipnis 1997; Qi 2013; Smart 1993; Yan 1996; Yang 1994). I had to get access to government officials and/or scholars, given my new research focus, which was on how the local government produces the expectations of the wind's potentiality for the energy company and how local residents understand those expectations. Fortunately, my *guanxi*, or human networks, which were largely facilitated through my landlord Lee Shiwen and her family, were durable and strong enough to allow me to quite easily have direct access to, and "study up," those power holders (Nader 1972), without being "cut" (Callon 1986; Latour 1987; Latour 1988; Strathern 1996).[2]

[2] As a native successful business and self-made woman in her late 60s, Lee had strong, stable networks with influential people including politicians and government officials. For example, the magistrate of Penghu Wang Qian-fa who took office during my fieldwork attended the wedding of Lee's second son, to which I was also invited, and delivered a brief congratulatory address for the newlyweds, and the then mayor of Magong city Su Kun-xiong, which was the county seat of Penghu, was her relative and the current mayor Ye Zhu-lin was a good friend of her daughter, Yijun.

This dissertation is based on thirteen months of ethnographic fieldwork from September 2013 to October 2014 in Penghu, Taiwan. While my fieldwork was mostly conducted in Penghu, I also made a couple of research trips to Kouhu township, Yunlin county in mainland Taiwan, the area to which the submarine cables were connected. Ethnographic data on which this text is built was obtained from different social groups that were directly involved in the development of wind power in Penghu, including Penghu local government officials and scholars, employees of Taipower's thermal power plant, and local people of Penghu and Kouhu. Local inhabitants of Penghu include those from two villages that are respectively adjacent to two wind farms managed by Taipower, as well as an anti-submarine cable activist group of local young students and residents from a village near which the submarine cables are supposed to be landed, while residents of Yunlin refers to a (protest) group of people whose village is the other landing point of the undersea cables. In Penghu, I first utilized my local *guanxi* and visited village activities halls where people often get together in order to find initial research participants and then could come to know and recruit other residents with their help. And a Penghu-native college student, who is a core member of the anti-cable group, enabled my fieldwork in Yunlin in that he has formed and maintained a close, cooperative relationship with local residents who also oppose the building of the submarine cables, and kindly led me to them.

Given the research questions of the project (how expectation of the wind's potentiality is discursively produced and how it is understood) and barriers that I faced during fieldwork, which I will explain later, "traditional" participant observation could

not become a central method. Instead, this dissertation depended disproportionately on what I heard in the field, while it contained less of what I learnt through participant "observation," or what I saw. The ethnographic data presented in this text predominantly was obtained through dialogue, emerging from interviews, both formal and informal, and casual conversations with my informants, or through "participant listening" (Forsey 2010). I relied a lot on participant listening based on dialogue to find out what my research subjects 'think,' which was what I "do not and cannot know otherwise" or via observation, and "to locate the knowledge" and beliefs "people carry in their heads" (Hockey and Forsey 2012:71). It is worth noting that participant listening often blurred the boundary between interview and conversation: even though I prepared a set of questions for each interview with an informant, I often experienced the evolution of a structured interview into semi-structured interviews and/or open-ended, in-depth, casual conversations that might stray far from the original subject and yet yield important pieces of information or knowledge that I had never inquired about. In addition to participant listening, which was the central method of this project, I also utilized a mixed-research method approach including limited "conventional" participant observation, "polymorphous engagement" (Gusterson 1997), text/archival analysis, and visual analysis as complementary methods. In what follows, I will explain how I used those methods, depending on who my research subjects were and the situations.

In order to examine how local government officials produced expectations of the wind's potentiality, I mainly used participant listening and subsequently polymorphous engagement, and text/archive analysis. My *guanxi* enabled to have direct access to high-

level bureaucrats of the local government, and to scholars who played a critical role in designing the idea to develop wind power in Penghu. Through multiple in/formal interviews and casual conversations with those actors on the development of wind power, I could directly hear and understand how they have perceived the Penghu's fierce wind and its potentiality. Then, polymorphous engagement, which is suggested as the method for the more effective "studying up" that de-emphasize participant observation in favor of "collecting data eclectically from a disparate array of sources, also enabled me to indirectly approach those power holders and learn their ideas through "extensive reading of newspapers and official documents" (Gusterson 1997:116). I thus analyzed newspaper and/or magazine articles and online documents created by government officials, which are inscriptions (Hull 2012b), or immutable mobiles (Latour 1987), to comprehend what discursive frames/metaphors were used and emphasized to produce fantasy and expectations of the potentiality of the wind.

Participant listening was also utilized as a main research technique to grasp how local inhabitants understand and respond to the storylines/narratives that were produced the spectacle of the wind's potentiality. Both interviews and conversations were then extensively used, because these techniques allowed me to "get inside people's heads through *listening* to them" and to know what influenced their understanding of the storylines (Hockey and Forsey 2012:83). While listening to what local people said also urged me to do participant observation with them in order to more fully and deeply apprehend their words, feelings, and beliefs, I was unable to do so due to some legal restrictions. As you will see in chapter 5, for instance, I found out that a large number of

local residents understood the storylines and the potentiality of the wind in negative ways because of the intimate, affective bond that they have formed with the ocean as fishermen. Although I tried to get on a fishing boat with them to know more about their relationship with marine-scape (Appadurai 1996), it was only legally allowed for those who have a government-issued license or permission document in hand. This failure in turn enhanced my reliance on participant listening to know more about local people and what they think about the wind power development in Penghu.

I also depended on participant listening to gather data from Taipower workers about infrastructures, because I found out that both existing wind turbines and not-yet-materialized submarine cables respectively played a pivotal role in influencing local people's understanding of the potentiality of the wind. As I mentioned earlier in this section, I failed to receive an official permission to conduct participant observation at the power plant of Taipower due to my "imposed" identity as an anthropologist with a critical view on the state and politics. Even if I was not allowed to enter the power plant to watch my subjects in action or to come to their workplace, my *guanxi* enabled me to conduct interviews or conversations with both high-rank officials and low-level staff, without observing them. In other settings, in addition, I was able to have multiple interviews / conversations, when they were available and when needed, among those who were more enthusiastic to help my research. Because one of my landlord Mrs. Lee's employees, Ms. Shen, was the wife of a power plant worker, for example, I could become acquainted with relatively low-level staffs, who were her husband's friends and colleagues, and then have more frequent interactions/conversations with them. In

particular, I was able to become friends with a male core executive of a labor union of the power plant, who is very close with Ms. Shen's husband and thus calls her *dasao*, which literally means elder sister or elder brother's wife. His special status as a core member of the labor union enabled him to have information or secrets much more than other lower-level workers who are also members of the community, which greatly helped this research. Yet since he often traveled to mainland Taiwan to attend various meetings, I also relied on "virtual ethnography" (Hine 2000), where we had short conversations through Line, the most popular messaging application in Taiwan, which were treated as ethnographic materials, as arguably significant as their off-line counterparts. Moreover, visual analysis was also applied in that certain images and drawings such as cartoons were not only represented or captured, but also constructed reality.

Reflection on Methods

Given the fact that "classical" or "traditional" fieldwork in the United States and Great Britain (and in many other countries where anthropology has been taught) has become the key ideological trope of identity of the discipline's congenial orthodoxy (Okely 2007:362), my project, which was heavily built upon participant listening, rather than upon participant observation, as the core method for collecting data, may not be regarded as "Malinowskian in the canonical sense" and as genuinely ethnographic (Marcus 2007:353). I think that if this dissertation is seen in that way, it is because of the widely-held problematic, conventional dyadic equation in the discipline, anthropology = ethnography = participant observation (Crang and Cook 2007; Forsey 2010; Gans 1999;

Gupta and Ferguson 1997; Hockey and Forsey 2012; Ingold 2007a; Ingold 2014; Tomlinson 2011; Trow 1957).

It is indisputable that the Malinowskian "mythical charter" (Kuper 1973:10; Moore 2009:138) played a pivotal role in giving birth to the three-part association in which anthropology is equated with ethnography, which is identified with participant observation.[3] In addition to this glorious Malinowskian legacy, that participant observation has occupied the apex of methodological hierarchy in the anthropology, where "to 'visualize' a culture or society almost becomes synonymous for understanding it" (Fabian 1983:106) is also understood as a cultural influence of "Western occularcentrism" (Schwenkel 2015a) or "visualism" that privileges the ocular as the "noblest sense" (Fabian 1983:106), while relegating other senses to a secondary status (Bull and Back 2003).

Yet a recent growing literature on ethnographic methodology has seriously reflected on the discipline's deep commitment to "the aesthetics and the regulative ideals of the Malinowskian paradigm of research" (Faubion and Marcus 2009:2; Forsey 2010; Gans 1999; Hockey and Forsey 2012; Ingold 2007a; Ingold 2014; Marcus 2007; Tomlinson 2011), as well as on its natural propensity to reduce research projects merely to extended participant observation-centered fieldwork (Faubion and Marcus 2009). Many scholars have recently argued that anthropology should not be conceptualized as a certain method, or "the practices of a particular conduct of inquiry" (Marcus 2007:354),

[3] Martin Gerardin Forsey is curious about why Malinowski was established and portrayed only as "the instigator of participant observation as the distinctive method of anthropology" (2010:562), given the fact that he also strongly emphasized that "language plays a most prominent part" in ethnographic fieldwork (Bloch 1977:278).

which in turn makes anthropologists be defined as "participant observer-ethnographers" (Forsey 2010:559). Rather, anthropology should be defined by "ways of problematizing inquiry and conceptually defining its objects" (Marcus 2007:354) or "its purpose or as an outcome" (Hockey and Forsey 2012:73), which "encourages participation in, and engagement with, the lives of our fellow human beings" (Forsey 2010:569). In other words, their common yet straightforward argument is that "anthropology is not ethnography is not participant observation" (Hockey and Forsey 2012:84)

Following these scholars who refuse triad matching, this dissertation advocates "a democracy of the senses" (Forsey 2010:562) by which participant observation was simply seen as one of numerous tools that we anthropologists have in our ethnographic "toolbox," which contains various research techniques such as interviews, discourse analysis, and many other activities (Forsey 2010:570).[4] Especially, because the "objects" of my research were basically "not amenable to observation," the best way that I could do to grasp people was to do "a long conversation" with informants (Bloch 1977:278; cf. Forsey 2010) and to conduct "participant listening": "to meet with them, to interview them and invite them to tell" (Forsey 2010:567) and then to listen to them and to "collect the droppings of talk" (Moerman 1988:8).

Therefore, I agree with George Marcus's argument that traditional anthropological training only "can be preserved by defining projects that are sized and bounded accordingly," while most research projects that are conducted today are "a pull

[4] Sensory democracy means the permission of "a more equal commitment to all of our senses," allowing non-visual sensory engagement such as listening, touching, and smelling "to sit alongside participant observation as an equally valid way of gaining ethnographic knowledge" (Forsey 2010:566-567).

against the conventions" (Marcus 2007:353). I hope that my work partially responded to James Faubion's call (Faubion and Marcus 2009) for us to emancipate fieldwork as we have understood it "from the heavy symbolic, identity-defining load that it has carried" because "what is distinctively anthropological are ways of problematizing inquiry and conceptually defining its objects, rather than the practices of a particular conduct of inquiry" (Marcus 2007:354).

An Overview of the Dissertation

This dissertation explores how the Penghu government tries to convert the meanings of the wind for the physical transformation of the wind and how local residents understand and respond to the newly created meanings and expectations of the wind. By tracing the process of semantic conversion of the wind, I contend that "the potentiality cannot stand by the wind itself, but rather "depends on other beings, things, and apparatuses that are active in producing" it, including wind turbines, the not-yet-materialized submarine cables, government officials, local inhabitants, environment such as the ocean and marine organisms, and the wind itself (Kirksey 2015:758; Mol 2002).

Chapter 1 situates the reader in Penghu, offering a short local history, which is necessary for you to understand the rest of this text. In particular, I briefly describe the social, political, and historical conditions under which the idea of harnessing wind power comes into being and gets its power and validity. By briefly explaining how the strong winter wind has influenced the history of Penghu in terms of economic development and

how the Penghu government came to decide to develop wind power by establishing the energy company, this chapter sets the stage for the entire dissertation.

In Chapter 2, "The Spectacle of Wind Power in Penghu" I focus on what the Penghu government seeks to do to attract investment funds from local people for the establishment of the energy company. In particular, I explore how, in order to achieve such a goal, the government changes the semantic meaning of the wind and creates its financial expectations through the production and distribution of fantastic storylines about wind power. My approach to the discursive production of financial expectation builds upon (and supplement) the cultural anthropologist Anna Tsing's articulation of the "economy of appearances" or "spectacular accumulation" as an analytic (Tsing 2000; Tsing 2005). I will illustrate how the Penghu government creates the new meanings and expectations of the wind through certain discursive techniques that Timothy Mitchell might call "enframing" (Mitchell 1991): alluring metaphors/rhetoric and, in particular, great narratives that are not completely fraudulent without empirical basis (Tsing 2000; Tsing 2005), but rather are built upon numerical figures. The fantasized storylines that are produced for the semantic conversion of the wind aim to gain their credibility through various numbers, which are obtained through objective, scientific observation and statistics, and their power to make people "trust in" them (Porter 1995). I also explore how the establishment of the Penghu energy company, or broadly, the global project to make Penghu a world-class low carbon island is closely linked to different goals at both national and local scales (Tsing 2000; Tsing 2005): whereas the central government aims

to enhance the political visibility of the nation in the international community, the local government seek to alleviate local economic poverty.

The remaining three chapters describe how the semantic conversion of the wind started by the Penghu government goes at local level. They explore the ways in which the storylines are understood by local residents as their readers/consumers and how they are (or are not) "maintained and protected from external co-optation" by people (Randalls and Petrokofsky 2014:222). Chapter 3, "Making the Profitability of Wind Real" examines how a certain group of local residents whose village sits nearby one of Taipower's wind farms accidently come to accept the narratives that create financial expectations of wind power through their misreading of a particular sign, Taipower's quick repair attempts to fix broken wind turbines. My analysis here relies on the symbolic/interpretive anthropologist Ohnuki-Tierney Emiko's concept of "méconnaissance" (misrecognition) in order to understand how the specific sign is read by its recipients in a way that is totally different from what its senders originally intend/expect (Ohnuki-Tierney 2002; Ohnuki-Tierney 2004; Ohnuki-Tierney 2015; Silverstein 1976). This chapter argues that whereas Taipower seeks to maintain its image as a responsible Confucian father figure through its swift responses to broken wind turbines, such quick reactions are mis/read by local villagers in an economic, rather than political, sense: they are mis/interpreted as showing/proving the financial value of those machines and of the wind. The outcome of this misrecognition is the semantic conversion's partial success, since those local residents are willing to trust the narratives and thus to invest in the energy company.

In chapter 4, "Universal Weeds and Particular Wind" my focus shifts to a group of local people whose village is also located adjacent to a wind farm managed by Taipower. Even though these residents also have lived nearby and with wind turbines, like the villagers discussed in the previous chapter, they see malfunctions of those huge technological devices from a completely different perspective. Drawing on Bruno Latour's articulation of the "immutable mobile," this chapter focuses on chemical relationships between local "particular" winds and "universal" wind turbines to discuss how they influence villagers' understanding of the fantastic storylines and the economic expectations of the wind. Local villagers think that European wind turbines have not yet worked properly in Penghu in that as standardized, universalized models, those machines are unable to effectively tolerate the particular, uncooperative materiality of the Penghu wind to carry salt and seawater and its main chemical impact, corrosions. Wind turbines' failure to overcome physical challenges, that is, breakdowns, arising from their interactions with the wind enables local inhabitants to re/examine the Penghu government's storylines with their own calculations of profit and loss about the development of wind power. My claim is that the particular property of the wind must be tamed and managed in order for alluring narratives to be maintained and for the semantic conversion of the wind to get done.

Chapter 5, "The Materiality of the Immaterial Submarine Cables" focuses on two activist groups of anti-submarine cables from Penghu and Kouhu, Taiwan and explores how many nonhuman entities, including the not-yet-existing undersea cables, come to act in ways that reshape and "exceed politics as we know them" (Coles 2007; de la Cadena

2010:335; Li 2015; Oppenheim 2008). I will discuss how the absent submarine cables come to become political agents through their connections with the environment and how both protest groups from fishing-based communities mobilize many other nonhuman entities, which are associated with the cables, in their demonstration activities. I also show that for those protest groups, the submarine cables, even though they are still in the absent status, are thought to break off their affective relationship with the ocean and marine animals on which they have long relied for their livelihoods. In particular, the Kouhu protester object to the uneven distribution of economic dispossession and environmental risk with regard to wind power development in Penghu, since they feel that their sacrifice is demanded "for the cost of the nation's development" and the better lives of fellow citizens living in the outlying islands (Klaeger 2013:362). By closely looking at those groups of protestors, this chapter shows that for them, the great storylines about wind power cannot be understood through a neoliberal economic lens alone and that this in turn impedes the semantic conversion of the wind.

In the conclusion, by drawing on the British philosopher Alfred North Whitehead's concepts of general potentiality and real potentiality, I make the central argument of this dissertation that the potentiality of the wind is produced through humans and nonhumans, including government officials, local residents, energy infrastructure, environment, and the wind itself, involved in semantic (and physical) conversion of the wind, which is necessary for the establishment of the Penghu energy company. The conclusion also offers not only an academic reflection on wind energy, but also some

practical advice on wind power development in Penghu, which I hope would be useful for those who have interest in developing wind power elsewhere.

Chapter 1: A Brief History of Penghu

Introduction

In order to set the stage for the rest of this dissertation, this chapter aims to provide a reader with a brief history of Penghu associated with the wind. I will look at how the wind, the strong Northeast winter wind in particular, has played a pivotal role in influencing and even shaping the historical trajectory of the archipelago and its economic development. In particular, this chapter examines how the wind has long restricted the development of economy in Penghu at the same time that it is also ironically seen as a resolution to the chronic economic regression. The powerful wind urges the local government to establish the Penghu energy company whose major goal is to turn it into a stable income source, with local people as the stakeholders in the company, by trading surplus wind-generated electricity. In what follows, I first look at how the fierce wind has historically obstructed various economic activities, and the development and prosperity of Penghu (when it combines with other environmental factors and the importance of the archipelago in geopolitical sense) as well as what the Penghu government has done to overcome this natural barrier such as the attempt to foster a casino industry. Then, I will provide the reader with detailed descriptions about the Penghu low-carbon island (making) project that is proposed as an ideal, timely solution for the archipelago's chronic problem of economic doldrums as well as, in particular, about the Penghu energy company that the local government aims to establish and its anticipated critical role in the entire project.

Wind as the Destructive Force

Penghu archipelago is located in the southwest of Taiwan. It has a total area of 141 square kilometers and is composed of 90 islands of varying sizes of which only 20 are inhabited. Penghu County is consisting of one city (*Magong*, where the county government is set up) and five rural townships (*Huxi*, *Baisha*, *Xiyu*, *Qimei*, and *Wangan*) as administrative districts. It is further divided into 97 villages, with a population of approximately 97000. Because Penghu is an archipelago all surrounded by the sea, most of the residents have made their living by involving in fishing industry. The archipelago's natural environment is characterized by "a subtropical marine monsoon climate with hot summers and dry winters with an annual average atmospheric pressure of 1013.1 hPa at sea level; average annual temperature of 23.2 Celsius degree; annual average rainfall of 954.5 mm; 2097.4 annual average sunshine hours, and annual average relative humidity of 81.2%" (Wu, et al. 2013:533). In particular, Penghu has long been famous or notorious for the strong northeast monsoon winds, blowing for about six months from October to March.

Before looking at how the wind has influenced the Penghu archipelago and its history, we first need to know what it is and how it forms. Wind is simply the movement of air molecules driven almost purely by the sun's energy and its uneven heating of the Earth's surface (Burton 2011; Wagner and Mathur 2013). The Earth's surface absorbs the light of the sun, solar energy, unequally because it is never flat, but is curved and has diverse topographical features: for instance, equator, land areas, and dark surfaces like forests absorb more solar energy than the poles, light-colored surfaces, and water areas

such as oceans and lakes. The uneven heating of the Earth's surface by the sun in turn causes difference in air pressure between diverse locations. Warm air rises, due to its relatively less density, and creates an area having less air pressure, while cooler air descends because it is much denser (i.e. its molecules are more closely gathered) and thus creates an area of higher air pressure. When the warm air expands and ascends, cooler, heavier air always rushes in to fill its place, an area of low air pressure, because the atmosphere always seeks to restore and maintain balance. Such movement of air molecules from colder areas to warmer areas is what we experience as wind (However, it is important to note that the wind does not always blow in a straight line because the earth is rotating). The greater the difference in air pressure, or the shorter the distance between the areas of air pressure, the faster and stronger the wind blows and the greater its force is. Wind also usually blows faster and stronger in open plains, where there is nothing to block its way, or in higher altitude areas because "wind speed generally increases with height above the ground, and hill tops and mountain peaks may 'project' into the higher wind speed layers" (Burton 2011:11).

The residents of the Penghu archipelago have long viewed wind, the strong northeast monsoon wind in particular, as a destructive, adverse force, negatively influencing their lives. As I mentioned in the introduction of this dissertation, Penghu has been famous or notorious for its peculiar natural phenomenon, the strong northeast monsoon wind that usually blows for almost six months from October to next March throughout the fall and winter season. For inhabitants of the archipelago, the fierce wind stands for hardship or suffering that they are fated to go through and overcome. The

disturbing strong winter wind and its negative partly played a substantial role in having Penghu acquire its byname the "Chrysanthemum Island." Unlike many kinds of plants the chrysanthemums (*Gaillardia pulchella*) that are short-lived and vibrantly colored perennial flowers could tolerate the forceful wind laden with salt (seawater), hot climate in full sun, and high drought and successfully survive in Penghu's barren environment and reproduce themselves.[5] It is due to their strong spirit in not fearing the invasion of fierce seasonal salty wind and to their vitality in thriving on a dry, hot climate with a scarcity of rainfall that chrysanthemums came to symbolize the "immortality." Such immortal flowers are also in line with the Penghu residents' attitude toward life and their will to live in the archipelago. Forebears of Penghu inhabitants undertook the dangerous trip to cross the sea to migrate to the archipelago from China and had to struggle with adversity to cultivate the wild, infertile archipelagic frontier as their new home.[6] Just as their nonhuman counterpart, those people had to stand firm against the strong wind in order to survive in the wild archipelago. Thus, the chrysanthemums symbolizing immortality also naturally came to stand for the Penghu inhabitants' strong spirit of

[5] It is through the chrysanthemum (*Gaillardia pulchella*) that we can simultaneously see the influence of globalization (Mintz 1985) and rethink the archipelago in history (Wolf 1982). The flower that is originally a North American species was introduced to Penghu through Japan in 1911. This shows that Penghu archipelago has never been a group of "isolated" islands "without history" (Wolf 1982) and, instead, has constantly been "made and re-made from associations and linkages with other actors far and near" (Bjarnason 2010:220).

[6] Pioneering immigrants from China began arriving in Penghu between the eighth and ninth centuries. Residents along the coast in southeastern China came to Penghu for fishing, raising livestock, or escaping from famine or war. In fact, many of these early immigrants probably saw the Penghu merely as a base for fishing or temporary shelter. Not until the 12th century, did large numbers of immigrants from China begin to settle in the archipelago. As immigrants began to grow in number and settle permanently, they also laid the foundations to today's villages. Thus, the Yuan Dynasty set up a patrol division in Penghu in the 13th century.

fortitude, endeavor, courage, and dauntlessness for life, and thus became the representative flower of Penghu County.

In particular, local residents have understood the destructive force of wind from an economic perspective. The economy of Penghu mainly revolves around limited agriculture and fishing, and recently around tourism. These productive activities are in essence or became (in case of tourism) "time-sensitive" economic activities (Wilkerson 2004:144). Residents of the archipelago have traditionally depended upon the sea for their livelihood. Thanks to its geographical location where different ocean currents meet, Penghu has a great fishing ground in which there are diverse and abundant fish resources. As a time-sensitive activity, however, fishing is often easily affected by the change in tides and weather. Especially the extreme northeast wind has made it difficult for people to go out to the sea to fish in winter. To make matters worse, rapid advancement in technology in the modern era enabled indiscreet and greedy over-fishing and, as a result, this has severely drained fish stocks and damaged the local fishing industry. Like the fishing industry, Penghu's limited agriculture also has its own time-sensitive schedule since it is often limited and disrupted by the influence of the combination of the particular environmental factors. With arid land, intensive solar radiation, scarce rainfall, and strong winter wind carrying salt, Penghu is far from being an ideal place for agriculture. The fierce seasonal northeast wind has always blown throughout Penghu and taken away the chances for many living creatures to live and survive on the islands. In combination with other environmental conditions of Penghu such as a hot, dry subtropical island climate, a very limited rainfall, the thin layer of topsoil, and flat topography with no mountains, the

strong wind laden with salt (seawater) made the land of the archipelago as a highly saline, sterile environment in which many plants and crops hardly grow up and thus prevented the full development of agriculture. According to the explanation given in the official website of the Penghu National Scenic Area Administration (Penghu-NSA) (http://www.penghu-nsa.gov.tw/english/AboutPenghuEng/AboutPenghu03eng/AboutPenghu0301eng.htm), in order to adapt to, and survive in, such a highly saline, barren environment, plants were forced to develop "a layer of hairy filaments that slacken the evaporation of water," or thicken their leaves or make them leathery, with having "well-developed root systems that serve to stabilize sandy soil." Through these adaption strategies, they could develop and "strengthen the drought- and salt-resistance mechanism." Except for in walled vegetable gardens (*caizai*) equipped with wells, which I will write more about in chapter 4, only drought-resistant economic crops such as corns, peanuts and sorghum grow in summer, producing a limited yield. Farmers also often rotate these crops with other major cash crop, sweet potato to avoid depleting the limited nutrients in the land. Even so, the crops harvested can only sustain farmers for about six months of the year. In addition to agriculture, there is no need to say that due to Penghu's geographical location, the (heavy and light) industry was also impossible to develop in the archipelago.

Alternatively, the residents of Penghu began to see tourism as the only prospective industry to create wealth that allows them to get out of economic hardship because, compared to other tourist destinations in mainland Taiwan, the islands remained quite underdeveloped, ironically due to the long time military presence. As an

archipelago that is placed in the middle of Taiwan Strait, Penghu has traditionally been regarded as a strategically important military fortress. When powerful European countries including Spain, Portugal, and the Netherlands attempted to extend their trade business to Asia during the 17th century, they viewed Taiwan as one of the most important transit sites in East Asia. Since trade at the time depended on "military force to control the markets" the value of Penghu (and Taiwan as well) to the European power lay mainly in its strategic geographic position (Davidson 1903). When the Dutch first arrived in Penghu in 1604 to carry out trade activities in the East, the Ming Dynasty dispatched General Shen You-zong to order the Dutch to retreat. Because Penghu's strategic location was so significant to the development of trade in Asia, the Dutch returned to Penghu in 1622, and built a fort in Shetou Hill (Snake head (shaped) hill), from which they could control the Magong harbor which was an excellent habor for both commercial and war vessels. The Ming Dynasty was irritated by the growing presence of the Dutch in Penghu and their continuous attempt to start trade with them by using armed force. In 1624, the Ming dispatched military forces to expel the Dutch from the island. In order to continue trade activities in Asia, the Dutch then decided to retreat to Tainan in mainland Taiwan as their new base, where they established Fort Zeelandia (*rèlánzhēchéng*) that became an important international trading center. Nevertheless, the Dutch tried to continue using Penghu as their key trading post to take advantage of its natural harbors and unique strategic position. The Dutch East India Company even bribed court officials of the Qing Dynasty and pirates to ensure their safe passage in and out of Penghu harbors.[7]

[7] At that time, Dutch ships docked at Magong harbor trade goods transported from mainland Taiwan,

Moreover, after Taiwan and Penghu became part of Qing territory in 1684, the imperial court transferred a total of 2000 soldiers from Fujian and Guangdong Provinces to defend Penghu in a three-year military rotation program. From then on, some soldiers would marry local women and settle down, rapidly adding to the population growth. During World War II, the Japanese imperial government that colonized Taiwan also used Penghu as a strategically critical point to regroup its fleet before attacking Guangdong Province, China. At that time, Magong became a war zone and Magong harbor was home to a large number of destroyers and other battle ships. Because of this, Penghu suffered its first air raid by American forces on October 12, 1944 and experienced frequent air raids from then. Once the nationalist government led by Chiang Kai-shek came to power in Taiwan after independence from Japan in 1945, Penghu was regarded as a military fortress to protect Taiwan from communist China for much of the second half of the past century until the early 1990s, given strained cross-strait relationships. "As a result, the central government never wanted to develop the islands, which resulted in Penghu's shortages of water and electricity" that were later resolved by the construction and operation of the current Jianshan thermal power plant (Tsai 2002). Because of the importance of its location in a geopolitical sense, the development of Penghu was generally allowed only for military purposes, constraining large-scale manufacturing industry development.

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including deer meat, sugar, salt, and liquor, with Penghu residents to all kinds of goods smuggled to Penghu by pirates or Chinese merchants, as well as pigs, cattle, and goats raised locally in Penghu. The yellow cow, introduced by the Dutch to Taiwan, later became an essential animal in Taiwan's agriculture.

An unwanted underdevelopment allowed Penghu to successfully preserve historical sites and to leave its natural environment relatively unspoiled, boasting attractive natural resources such as distinctive fauna and flora and colossal basalt columns. Such an unintended underdevelopment paradoxically and unintentionally became a cornerstone of development for Penghu since well-preserved and seemingly pristine natural environments became an important source of the tourism industry in Penghu in the 1980s. Tourism then received its vital driving force for rapid growth when through technological innovations, Penghu's increased and frequent traffic with mainland Taiwan and neighboring oversea countries enabled, or what the Marxist geographer David Harvey calls "time-space compression" (Harvey 1989) occurred, as well as when natural attractiveness combined with local people's effort to develop numerous outdoor and water activities such as scuba diving, wind surfing, and catching little squids (*xiaoguan*) on fishing boats at night (little squid is common in, and a specialty of the archipelago), to name a few.

Nevertheless, the strong northeast seasonal wind has remained a major obstacle even to the further development of Penghu's tourism industry, just as it is adverse to local fishing industry and agriculture. While Penghu successfully transformed itself from a former military base into one of the favorite trip destinations that attract thousands of domestic and international tourists in summer, the tourism industry suddenly comes to a standstill when the fierce winter winds start blowing in October every year. The northeast gales, making the walking difficult, cruelly deprive Penghu of its advantages and attractiveness as a wonderful vacation destination by severely restricting outdoor

activities. As a result, the fierce wind shortens tourism to only about six months, causing the steep decrease in the number of visitors during winter, compared to the peak summer season and local residents usually call the winter times when few tourists visit the "dull season" of Penghu.

For example, when I stopped by the guest house run by my friend and landlord Huang Qimei for a drink of water on one hot day in early July when tourism was at its zenith, I saw that at the front desk, a part-time employee was busy with the booking/reservation system. Holding a cup filled with sweet cold water in my hand, I approached and asked Shuying if the business went well. She smiled broadly and responded that every room or almost every room was occupied and reserved everyday. Just then, Qimei walked out from the small room located just behind the front desk, which was mainly used as kitchen and as a space to store guests' luggage. I greeted her and said that "It is amazing. You are already so rich that you own buildings and your business also really operates well since all rooms are filled. I believe that you should definitely make big money and get much richer." With a bright smile that often makes people who see it feel happy, Huang responded or probably complained to me that "Not at all. You're wrong, Cuihai (that is my Chinese name). Like us, those who rely for their living on tourism or tourism-related business in Penghu have their own troubles. We are trying our best to earn as much money as possible in only about six months for which tourism lasts. And we have to go through the other six months by relying on the income we earned before, though some people have started to find a source of income during winter by doing additional or temporary work." Similarly, an owner of a local seafood

restaurant complained in her interview with a journalist that "after the end of September, the seawater turns cold and waves become strong. Businesses all begin closing for the year and they won't open again until late April," when warmer weather thaws the local tourism industry stiffened by the strong, cold wind (Wang 2012). Many inhabitants who are engaged in tourism-related industries also similarly grumbled at me during interview that they only "work for half a year and take a rest for the other half year," or "make money for half a year, and then eat for a year" (Wang 2012). Although it was originally not, tourism became a time-sensitive industry like farming and fishing, as residents who work in the tourism industry express their complaint, because of its vulnerability to changes in season and weather.

Although the Penghu government has tried to attract tourists even in the dull season by launching several projects such as the promotion of indoor activities like museum visits, such attempts unfortunately have ended up with only limited success. Instead it recently started holding its annual firework festival lasting for more than two months from April and to June in order to draw more visitors in summer than it did before.[8] Even though the annual firework festival contributed to a significant increase in the number of tourists, it could not resolve the fundamental problem of tourism in Penghu caused by the wind (and weather, more broadly). Moreover, the migration of the population of younger residents to mainland Taiwan for better job opportunities has

[8] The annual firework festival shows that local government changed its strategy in developing the tourism industry. Nevertheless, Penghu residents are still investigating how they could expand the time of tourism to the wintertime and thus make tourism an all the year round business.

caused an inadequate supply of wage labor, also slowing down the development of tourism in Penghu (Lee 2001). After all, the fierce monsoon wind has heavily restricted the development of all kinds of economic activities in Penghu by making them unable to operate for the entire year, and thus essentially seasonal and tentative.

The negative force of Penghu's wind is well represented in the following one panel cartoon drawn by Taipower Akai (hereafter Akai) who is a quite popular facebook user (at least among Penghu people), aiming to make people easily understand the information about electric power and Penghu through cartoons because he is not just a native of Penghu but also, as his username shows, an electrical engineer working at a local Taipower branch. Akai posted a cartoon with the title "an advantage that Penghu's big wind brings" on his facebook wall (see figure 1-1). In the cartoon, a male protagonist depicting Akai himself came back to his room with towel on a head after taking a shower and his hair looks like (or became) the Beatles' mop top because it is still wet. Akai opened the window and put his head outside for a minute in order to dry his hair without a hair dryer. After one minute, he not only accomplished getting his hair dried, but also made a fancy hairstyle. Although the cartoon comically portrays Penghu's strong wind and, as its title tells, an unexpected positive attribute for people, it in fact also paradoxically implicates that wind has no other advantages for Penghu and its residents, except for its role as a natural, non-electric hair dryer.

Figure 1-1. The Cartoon "An Advantage of Penghu's Big Wind." Courtesy of Taipower Akai.

Overcoming Wind through Gambling

The fact that there is no source of stable income has long been a huge economic problem not only for the inhabitants of the islands but also, in particular, for local government as an offshore county "with a thinning population, which receives more than 50% percent of its annual budget from central government subsidies" (Lee 2001). A statistical report from the Ministry of Interior (Ho 2005) showed that in the first half year of 2003 in Taiwan, Penghu ranked lowest in income but had the highest ratio of elder residents, generating the lowest average household income, and holding the lowest ratio of educated residents. It can be partially explained by the predicament Penghu faced: the outflux of Penghu's younger generation, seeking better education and job opportunities in mainland Taiwan (Lee 2001). Penghu thus became the number one county that needs to gain financial support from the central government. And this situation has not yet improved a lot over time and Penghu still remains one of the top counties that require and depend on financial aid from the central government. It is hence not uncommon that as a

primary concern, the opaque economic future of Penghu has always aroused heated discussion among local inhabitants and that the Penghu local government has always sought to find a radical solution to get over its chronic economic doldrums for residents and in order to secure a stable revenue base.

In order to cure the archipelago's flagging economy, the Penghu government had finally made a contentious proposal in 2009 that aims to draw national and international visitors year round without being restrained by a change of seasons. The proposal was to allow the Penghu local government to authorize gambling groups to open casino resorts on the archipelago in order to turn Penghu into an internationally renowned tourism and resort zone, such as Macau or Las Vegas. Even though the idea of developing casino industry on the archipelago, in fact, had been continuously haunted and discussed almost for the past two decades as a way to further boost the local tourism industry (Staff 2009), it always ended up being just as a unrealizable daydream mainly due to legal obstacles. Gambling was legally forbidden in Taiwan in which by the year of 2009, the only form of gambling that was officially approved by law was state-run lotteries such as the uniform invoice lottery. Penghu local government could finally have a splendid opportunity, however, to turn its mere abstract idea to open casino resorts on the islands into a realizable, concrete proposal on January 12th, 2009. On the day, the Legislative Yuan, which is the unicameral legislature of Taiwan and is one of the five Yuans (branches) of the central government, passed the 10-2 amendments to the Offshore Islands Development Act (*lidaojianshetiaoli*), which paved the way for the construction of casinos in Penghu. The Offshore Islands Development Act 10-2 stipulates that gambling

industry is legally permitted only in Penghu and other offshore islands of Taiwan, including Mazu and Kinmen, according to the result of local public's "collective decision based on a referendum" (Lee 2013:iv; Yen 2011). With the casino proposal, which was enabled by the amendment, the archipelago government expected a bright future in which casinos would boost the local economy and thus bring prosperity to Penghu by creating employment opportunities for local residents and by attracting huge numbers of visitors even in the dull season.

As one would expect, however, the casino proposal backed up by the Act 10-2, came to be controversial immediately and generated lively debate between two groups of local residents. Aligning themselves with the position of the Penghu government, on the one hand, the proposal supporters expected that the construction of casino resorts would attract foreign investment and more (winter) tourists, which help create more job opportunities for local residents and revitalize the local tourism industry. On the other hand, anti-gambling (proposal) groups consider casino a hotbed of social evils (Lee 2013). In an opinion piece titled "Penghu does not need casinos," one local opponent, who is a Buddhist monk, extolled Penghu people's goodness and Penghu's excellent public order by writing that "I often think that being able to live in Penghu is allowed only for those who have good fortune, because people in here are virtuous (*shanliang*), simple (*dancun*), and sincere (*zhenxin*)... They help each other (*hutongyouwu*). Don't need to close windows at night and to lock the car or scooter when you get it parked" (Shidexing 2009). Yet, he then expressed a deep concern about whether the gambling industry would deprive Penghu and its people of their virtues and cause a plethora of social problems

such as theft and robbery. Like the Buddhist monk, one local person also visually expressed his big anxiety about the casino industry and how it would devastate the archipelago and its people by drawing a one-block cartoon (see figure 1-2). In the cartoon, he drew Penghu's casino, represented by black buildings and three people, including a mafia in a black suit with a rifle, a robber holding knives in both hands, and a prostitute in a sleeveless mini skirt, all of whom say "I am ready (to go to Penghu). It allows a reader to easily understand why the cartoon was assigned the following title: "if casino comes (to Penghu), so do mafia, robbers, and sex industry." In addition, the anti-casino proposal groups also argued that the legalization of gambling industry would be a catastrophe for Penghu because it would only benefit big national and foreign investors, while destroying local small scale tourism businesses, and create a serious economic polarization between people. Taking as an example neighboring country Japan's Okinawa island that is an internationally renowned tourism destination, attracting countless visitors even without casinos, those opponents strongly contended that beyond a casino, the county government should be open to diverse possibilities in boosting the local economy and seek to develop the local tourism industry in another direction since Penghu has abundant but not-yet-well developed natural resources that have a potential to draw more visitors, domestic and international.

Figure 1-2. "If Casino Comes (to Penghu), So Do Mafia, Robbers, and Sex Industry" (http://reader.roodo.com/smilelong/archives/9845803.html)

According to the Act 10-2, such a heated pro-con controversy surrounding the casino proposal eventually led local public to a referendum in order to decide whether it would be approved or refused. The Act 10-2 is special in that it specifies that "the referendum result holds even the voter turnout is below 50%, a requirement under the current Referendum Act" (Lee 2013:iv; Yen 2011): whereas Taiwan's Referendum Law requires at least the 50 percent of all eligible voters to cast ballots in order for a national referendum to be effective, Penghu's local referendum approves that the casino proposal can be adopted and valid, if it passes the 50 percent threshold of votes cast. This referendum provision tailored for Penghu (and outlying islands) to attract casino industry was undoubtedly controversial and interpreted by many academics as an "apparent circumvention" of the national referendum law in that casinos could be approved by garnering a simple majority of the vote, regardless of how many voters turned out (Loa 2009). In spite of such controversy, Penghu held a referendum as planned in September 26, 2009 and 56.44 percent of those who voted (a total of 17359 ballots) rejected the

establishment of casinos. Being very happy about the victory of the referendum, anti-casino groups expressed that it not only clearly shows "the will of Penghu's people, who "want tourism, not the gaming industry"" but also serves as their message to local government, expecting it to "make better use of the valuable resources" that make up the archipelago's "good tourism condition" (Staff 2009).

Upon learning the news that the casino proposal had been defeated, the then Penghu County Magistrate Wang Chien-fa publicly said that while the result was "surprising," the county government could learn that "many of the locals are fond of, and used to, the peaceful environment and relaxing ambience of the islands, and they don't want these things to change" (Wang 2012) and respect their decision. By adding that because the invitation of casino industry was "merely one of many options for developing Penghu," "the county will still pursue progress and prosperity," even "without a casino" (Staff 2009), Wang promised that moving beyond a casino, the local government would never stop making earnest efforts to invigorate Penghu's stagnant economy in a way that is more in line with the expectations and opinions of the local residents. Penghu government then reset its course to focusing on the search for more sustainable means of carving out an economic future, and finally found it: the wind. Since the archipelago is thought to be one of the top three places in the world for developing wind power because it has an annual average wind speed of nine meters per second, and thus is well ahead of many other countries in terms of wind power potential, the local government wanted to make economic profits through the sales of electricity that is produced by taking advantage of the fierce winter wind.

The History of Electrification in Penghu for Wind Power as a New Hope

Penghu has traditionally been "energized" by Taipower's sole thermal power plant because of its distinct geographical characteristics as archipelago (Urry 2014).[9] A former thermal power plant was built in Magong in 1913 in order to meet local energy demand. Since then, the electricity consumption of Penghu gradually increased with the continuous economic growth and the persistent improvement in standard of living. Even if the power plant had installed and operated extra generators to stabilize energy supply, it was eventually unable to satisfy continuously and rapidly increasing energy needs in 1988 when, in addition to the deterioration of existing power generators, the land use of a power plant already reached its saturation point so that there was no space available for the expansion of generator facilities. In order to achieve a stable supply of electricity, as a result, Taipower had to design a plan to construct a new power plant with large capacity, and to find a site to accommodate it. In November, 1994, the Executive Yuan approved Taipower's plan to build a new, modern thermal power plant with four generators (each generator with capacity of 10.4MW) in Jianshan, Huxi Township by investing about 84 hundred million New Taiwan dollar (NTD).[10] The Jianshan power plant with four generators started its commercial operation in June, 2001 and, with the approval of the

[9] Taipower was established on May 1, 1946 to take over and manage all of power facilities in Taiwan after the end of Japanese colonial occupation. It is a vertically integrated state-owned monopoly and the sole power company in the nation. Its business scope includes the generation, transmission, distribution, and sales of electricity. The electricity produced by independent power producers (IPPs) and cogeneration is sold in bulk to Taipower, who in turn sells this to the customer. It is known that as of the end of 2012, the total installed capacity of Taiwan's power system reached 40977 MW, of which Taipower accounted for 31955 MW and non-Taipower assets for 9022 MW.

[10] Taiwan has used The New Taiwan dollar (NTD or NT$) as the current since June 15, 1949. The currency code TWD is typically used in the context of foreign exchange rates. TWD's exchange rate compared to the United States dollar was 30 to 1 in February 2016.

Executive Yuan, which executes and enforces law as one of the five Yuans (branches) of the central government of Taiwan, later installed eight more generators (each generator with capacity of 11MW) so as to ensure steady energy supply for local usage. The Jianshan thermal power plant equipped with twelve electricity generators, whose total capacity is about 129.8 MW, finally begun its commercial operation in January, 2003 and became and still is the largest diesel fuel-fired power plant, of Taipower, and in Taiwan.

In addition to the Jianshan thermal diesel-fueled power plant, Penghu is also currently powered by the existing 14 wind turbines with a total capacity of 10.2MW both at the Zhongtun and Huxi wind farms, which were built by Taipower: total installed capacity for power generation in Penghu, including traditional thermal power plant and wind power is about 140 MW (Wu, et al. 2013). While "Taipower has been interested in using wind power in Penghu as an alternative energy source since the late 1990s" (Liu 2007), the development of wind power in the archipelago in fact has a long history of nearly five decades. Because Penghu's strong and abundant winter wind has long been seen as a promising renewable energy source, the Taiwanese state has tried to explore the possibility of generating electricity by tapping the Aeolian force since the 1960s. In order to get information and experiences about the harnessing of wind power, Taipower dispatched its representative to attend the United Nations Conference on New Sources of Energy held in Rome, Italy between 21 and 31 August in 1961, as well as to observe the present state of wind power development in Denmark. The representative returned to Taiwan with abundant information on wind power and designed a plan to develop wind power, which became an unprecedented challenge in the nation's history of electricity

production. As a result, a wind turbine with the capacity of 50 watts was erected in Baisha township in Penghu in January, 1965 (Chen and Li 2009). Although it was recorded as the first wind turbine in Taiwanese history, people now see it simply as an experiment, or a trial test, considering that it could not stably generate electricity for commercial purpose. The Taiwanese government continued to make its attempts to harvest wind energy, and built two wind power systems in Qimei Township, Penghu on 26 and 30 October, respectively in 1987 in order to promote the use of green energy resources. Although those systems successfully operated for a while, they unfortunately and eventually stopped working because of the immaturity in the then wind power technology.

Yet, such an invaluable experience of trial and error became a cornerstone and a lesson for Taipower to make a future plan to construct a wind farm in Zhongtun village, Baisha Township in Penghu. Thanks to a more mature wind turbine technology, Taipower installed four of the type E-40 wind turbines manufactured by the German wind turbine manufacturer Enercon in Zhongtun village and started a formal commercial operation on September 13, 2001. Then, Taipower erected four additional turbines of the same type in Zhongtun village in 2004 and started operating for commercial use on June 30, 2005. These eight wind turbines have a total capacity of 4.8MW (0.6MW each). Taipower then constructed additional wind farm in Huxi Township, where six of Enercon-manufactured type E-44 wind turbines (each turbine with capacity of 0.9MW) were installed, in order to continue to develop Penghu's wind energy in 2008. This wind farm began a formal commercial operation on December 31, 2010. When the fourteen

current wind turbines with a total capacity of 10.2MW work at maximum capacity, according to Lin Kun-chuan, a manager at Taipower's branch in Penghu, they can "produce in excess of 10,000 kilowatt-hours (10 MWh) of electricity, meeting more than 30 percent of Penghu's off-peak demand of 28,000 kilowatt-hours (28MWh)" (Wang 2012). The director of Jianshan thermal power plant Ou Chih-cheng also said that the two wind farms of Penghu is already generating electricity accounting for about one-fourth of the island's total energy demand of about 400,000 MWh.

Why Wind Power Now?

Since the first wind turbine was erected in Penghu in the 1960s, it seems as though wind power has at long last become an object — as a future resource worthy of serious attention for economic and environmental benefits. But, why now? Why are wind energy and the idea of developing it taken seriously by the Penghu (and central) government now? It is worth reflecting further on what was and is happening that helps to explain the recent interest in developing wind energy. The reasons for the recent (re)turn to, and growing interest in, wind energy are undoubtedly multiple, including the maturity in wind power technology and the growing concern about global climate change. However I also need to highlight the importance of politics: in particular, the current Taiwanese government and its political visions played a leading role in making the Penghu government attempt to harness the wind as an energy source to generate financial profit and environmental benefits.

Before providing the reader with the detailed information about the Penghu government's idea of generating electricity through abundant (winter) wind, I argue that at the right moment, it simultaneously supported, and was supported (and complemented) by the current Ma Ying-jeou (and Kuomintang (KMT)) administration's firm will to pursue the environmental sustainability under the "Golden Decade, National Vision" plan (simply as a golden decade vision).[11] Ma published his political vision of a golden decade in September 2011 as the guideline and "philosophy of governance" for Taiwan to build a prosperous next ten years (Office of the President 2011), which would be sharply contrasted with the "lost eight years" under the two terms of the former President Chen Shui-bian and Democratic Progressive Party (DPP) administration. Ma's golden decade vision is based on "the establishment of the "four assurances"" including "1) to ensure that the sovereignty of the Republic of China remains unimpaired; 2) to ensure the safety and prosperity of Taiwan; 3) to ensure ethnic harmony and cross-strait peace; and 4) to ensure a sustainable environment and a just society" (Office of the President 2011). These "four assurances" then lay a cornerstone of Ma's important eight visions for the nation, which are 1) the establishment of a "vigorous economy," 2) the creation of a "just society," 3) the making of "clean and capable government" free of corruption, 4) high "quality education system" and culture, 5) making a "sustainable environment," 6) "comprehensive infrastructure," 7) the maintenance of "cross-strait peace" with China,

[11] Ma led the Chinese Nationalist Party (KMT) to victory in the 2008 election with 58.4 percent of the vote and in the 2012 election with 51.6 percent. As a presidential candidate, Ma prominently campaigned on his "6-3-3" pledge, which promised an economic growth rate of 6 percent, an unemployment rate of less than 3 percent and per capita income of more than US$30,000. In 2012, Ma's main platform for re-election was creating his "Golden Decade" visionary plan for Taiwan.

and 8) the creation of an international environment friendly place for Taiwan (Chan 2011). Needless to say, the promotion of renewable energy such as wind energy has to do with the fourth assurance and the fifth vision in the President Ma's blueprint. In fact, Ma already had identified the development of "an environment characterized by low carbon emissions and high reliance on green energy" as one of his "Five Pillars to Make Taiwan Robustly Competitive" in his 2008 first presidential inauguration speech (Tso et al. 2013). At the press conference introducing those "eight visions for the nation" at the Presidential Office on October 17, 2011, Ma explained that since one of the main pillars to realize the fifth vision, the making of the sustainable environment is the development of green energy and the reduction of carbon (dioxide) emission, the government would "invest considerable effort and resources in developing renewable energies, with a special focus on green energy" (Unidentified 2011).

Taiwan's policies designed to make environment sustainable were, as I will explain later in this chapter, strongly influenced by various international environmental agreements that it is not bound to, and thus does not have to follow because of its lack of the membership in the United Nations (UN) (Gao 2013). The year 2020 has been the significant year for Taiwan in creating the national environmental policies and time schedule for them in that the Copenhagen Accord, which is a political agreement made by world leaders at the United Nations Framework Convention on Climate Change (UNFCC) on December 18, 2009, sees it "as a key year for the climate policy of all countries" to mitigate international greenhouse gas (GHG) emissions, while the Intergovernmental Panel on Climate Change (IPCC) viewed it as "the year of peak" of

GHG emissions (Young and Huang 2012:25). In accordance with the international community's effort to alleviate global climate change, Taiwan's Executive Yuan passed the sustainable energy policy guidelines in 2008 with the goal of reducing carbon emissions to the 2005 level (245.2 million metric tons) by 2020, and further to 2000 levels by 2025 (Gao 2013:26). Statistics from the Bureau of Energy under the Ministry of Economic Affairs show that Taiwan was right on the track and coming closer to the target figure, the 2005 emission level of 245.2 million metric tons since it released 248.7 million-metric-tons of GHG in 2012, representing a drop of 1.9 percent from the previous year (Gao 2013:26).

Then, the third National Energy Conference reached a consensus of creating a low-carbon society on April 9, 2009, with the aim of "forming two low carbon exemplary communities in each city and county within two years, four low carbon cities and two low carbon islands within five years, and four low carbon living circles with one each in northern, central, southern and eastern Taiwan by 2020" (Administration N.D.). Subsequently, the central government enacted the important law, "Renewable Energy Development Act" (REDA) on July 8, 2009 in order to promote the use of, and the investment in developing, renewable energy for the reduction of carbon emissions, as well as for the nation's energy diversity and security. The REDA set up the goal to increase renewable energy generation capacity first to 9952 MW by 2025, and then to 12502 MW by 2030 (or roughly, 6500-12502 MW by 2030). It sought to achieve its goal by providing the interested developers of renewable energy with various financial incentives and supports. For instance, Article 7 of the REDA (Renewable Energy

Development Fund) aims to offer funds needed for developing renewable energy. In particular, Article 16 (custom tax exemption and paying in installments) of the REDA is of importance for those who wish to develop wind power in that it obviously states that "imported renewable energy generator equipment or operating equipment is exempt from customs tax or in part annual installments" (Liou 2011:3243). These articles, providing incentives for constructing facilities were formulated to "actively encourages civil society to invest in the development of the wind power industry as well as developing the market for wind power equipment" because currently "all wind power turbines are imported from abroad, and other products imported from abroad must pay tax on these imports of up to 8.5-10%" (Liou 2011:3243). Also, Article 9 (feed-in tariffs) states that Taipower will purchase the electricity produced by renewable energy facilities at a guaranteed price for twenty years.

Various policies and laws that the Taiwanese government has promulgated for the making of a sustainable environment have become a critical infrastructure/momentum for Penghu government to push ahead the project proposal of generating electricity and money through wind resource. A "Penghu Low-carbon Island Project" proposed by the Penghu government in 2009 after the casino referendum was not only (partially) enabled and supported by the nation's environmental policies, but also exactly corresponded to, and undergird, the current Ma administration's devotion to the making of a sustainable environment. The proposal for the development of wind energy drafted by its offshore island government was not only so timely, but also so attractive and appropriate enough in its content that it could satisfy the taste of the nation, planning to make a low-carbon

society through the attainment of the determined goals of decreasing GHG emissions, and of increasing the use of renewable energy. It is indisputable that "the separateness, distinctiveness, and more manageable small size" of Penghu (Baldacchino 2007:168) also made the central government view the archipelago as an ideal candidate for becoming a nation's "green energy testing ground" (Yang 2010). The central government took the proposal seriously and carried out a thorough examination of it. Then, the idea of harnessing abundant wind proposed by Penghu government was absorbed into, and became a crucial part of the bigger, more ambitious blueprint that the nation made for the archipelago and for itself.

Making Penghu a Low-Carbon Island

In response to the need to reduce carbon emissions and to build a low-carbon society in Taiwan, on March 4, 2010, the Penghu Low-carbon Island Project was listed as one of the 35 benchmarking programs in the Executive Yuan's Master Plan of Energy Saving and Carbon Reduction, which was approved in the second meeting by the Committee for the Promotion of Energy Saving and Carbon Reduction. Then, on November 15, 2010, the Ministry of Economics officially announced a five-year, NT$8.09 billion (US$273.87 million) project to turn Penghu into Taiwan's first low-carbon pilot island to demonstrate how to accomplish the low-carbon future of the nation (Lin 2012; Tsai 2011; Yang 2010). After about four months, a kick-off press conference and ceremony of the "Penghu Low-Carbon Island Project" were then held at the square of the Penghu County Government office on March 22, 2011, and the then Minister of

Economic Affairs Shih Yen-shiang said that the project will become a "major milestone in the development of Taiwan and Penghu."

Upon its completion as planned in 2015 (which was postponed mainly due to people's opposition about the construction of specific energy infrastructure, submarine power cables, as I will show in Chapter 3), the project expects to achieve two main objectives that are mutually interconnected: 1) renewable energy (mostly produced by wind, given the project's emphasis on the promotion of renewable energy and Penghu's abundant, high-quality wind, and by solar thermal energy and photovoltaic) will comprise 56 percent of the total energy supply in Penghu, which exceeds local demands in the entire archipelago, and is more than the amount of electricity than is used by the entire archipelago, and, as a result, (2) carbon dioxide emissions will be 50% less than the 2005 level, to 2.1 tons per person per year from 5.4 tons (Wu, et al. 2013:531). The project also expected that the new image/fame of Penghu as one of the world's top ten low-carbon islands, created by the achievement of these primary goals, would further boost tourism, the second largest local industry, by drawing more national and international tourists than before.

For the ultimate achievement of its objectives, the project sought to meet specific targets that would "benefit Penghu in terms of its image, energy usage, available resources, industry, and livelihood," the targets that it set up in diverse areas, covering "renewable energy, energy conservation, green transportation, low-carbon buildings, and resource recycling" (Wu, et al. 2013:531). The targets include the installation of LED streetlamps, the promotion and use of electric scooters/motorcycles and biodiesel, the

efficient use of water and the recycling of waste, forestation, and the creation of new bicycle trails, to name a few. The central government also spared no efforts to help the Penghu government achieve these goals. For instance, the Bureau of Energy and the Industrial Development Bureau, Ministry of Economic Affairs, collaborated to provide a grant for purchasing electric scooters and, as a result, on August 30, 2013, a total of 3346 electric scooters have been purchased with the subsidies, including 872 by individuals, 23989 by institutions, and 76 by government authorities in Penghu.

Yet, the extensive development of wind power was, as the Penghu government planned and hoped, the key of the Penghu low-carbon island project and a critical means cum goal to the project's ultimate objectives: 56 percent of local power supply from renewable energy and the reduction in carbon dioxide emissions. Due to this, the project assigned the Penghu government a critical role in taking advantage of, and developing the strong winter wind that blows throughout the archipelago for almost six months. In particular, the prominent feature of the project was to make the Penghu government establish the public-private joint energy company with the title "Penghu Energy Company" that is supposed to construct, operate, and manage wind turbines across the archipelago and more importantly, to trade excessive wind-generated electricity. In order to ensure that the operation of the energy company whose form is a public-private joint venture stays in local hands, 55 percent of the shares in the company were assigned to both Penghu government (25 percent) and local residents (30 percent), with the rest (a 45 percent share) open to private corporations/investors. This is the first time that local citizens are invited to become a shareholder of such new business model. For this, the

Penghu government actively invited county citizens who have their place of family registered in Penghu to acquire a 30 percent share in the energy company by giving them preferential treatment. Local inhabitants were allowed to buy company stocks at preferential rates (for instance, residents living near the wind farms can purchase the company shares at half their face value), or to exchange land for company shares in order to become stakeholders in the company. If it were established as planned, the Penghu energy company would become a community-based, private-public joint venture.[12]

The Penghu energy company then expected to generate a steady monetary profit for the local shareholders through the sale of surplus wind-generated electricity produced from its wind farms. According to the Penghu low-carbon island project that aimed to build eleven additional wind farms (adding to the existing Zhongtun wind farm) across the archipelago first along the coastline first, with later expansion to include offshore facilities, the county-run Penghu energy company would build and manage wind farms with a total capacity of 64 megawatts onshore and offshore, while Taipower was responsible to establish and operate wind farms with a total capacity of 32 megawatts. Ultimately, the energy company plans to produce 125 megawatts of wind-generated electricity by 2020, a more than 12-fold increase from the current 10.2 megawatts (i.e. the

[12] The plan was under heated discussion among local politicians and government officials. Some councilors want to establish the energy company "under a build-operate-transfer (BOT) model, which they believe could prevent political interference in management and would be more effective than the proposed joint-venture company" (Tsai 2011). In the BOT model, which is a form of project financing that has extensively been applied to infrastructure projects and public-private partnership, a third party such as the public administration entrusts a private party with a task of building, operating, and managing infrastructure for a given period of time. During this period, the private sector entity is responsible for raising funds for the project and is authorized to preserve income generated by the project. The facility will be handed over to the public administration at the end of the negotiated contract without any remuneration of the private entity involved.

Zhongtun wind park 4.8 megawatt plus the Huxi wind farm 5.4 megawatt). When wind farms are built and function to generate power as planned, as part of the entire project to make Penghu a low-carbon island, the archipelago's current stand-alone thermal power plant is scheduled to stop operation (and then possibly to be used as a transformer station). In compliance with the project's blueprint, in the wintertime when the wind is strong enough to make wind farms produce electricity more than the archipelago's total power demand, the energy company would sell excessive wind-generated electricity to power users in mainland Taiwan, which would brings an ongoing income to local resident stockholders. The Penghu government also seeks to give special financial treatment to a certain type of local "residents" in order to attract their investment funds and make them become stakeholders in the energy company. It defines "residents" as those who live in villages located within a 1.5 km radius of the current wind farms and these residents are expected to receive preferential treatment in buying stocks of the company at half price (that is, 50000 NTD per one stock) and thus become stakeholders of the company. And those who are categorized as "non-residents," living outside a 1.5 km radius of the wind farms also can be stakeholders by buying stocks of the energy company at original price (100000 NTD per one stock). Especially, as I will show in chapter 2, the Penghu government attempted to entice all local people of the archipelago to purchase shares in the energy company by emphasizing the marketability and the guaranteed sale of excess electricity.[13] The energy company thus required a particular

[13] Penghu government also expected another positive economic effect through the full development of wind power, namely, the sale of carbon credit. A carbon credit generally refers to "tradable certificate or permit representing the right to emit one ton of carbon dioxide or the mass of another greenhouse gas with a

energy infrastructure, submarine electric cables, linking Penghu to Taiwan proper in order for the sale of surplus wind-generate electricity to happen.

However the construction of the undersea power cables was not needed merely for the one-way transmission of excess wind-generated electricity from Penghu to mainland Taiwan, considering that the sole existing thermal power plant on the archipelago is due to be shut down in the near future, as well as the fluctuating availability and reliability of wind itself. The production of electricity at wind farms sharply diminishes in summer when the wind wanes, becoming slow, weak, and even rare, while summer is also ironically the time when archipelago's electricity consumption rapidly increases because it is a sweltering season and the peak season of tourism, making more people use power to cool themselves. This means that assuming that the sole thermal power plant burning coal and petroleum is closed, wind farms solely cannot generate enough electricity to satisfy a high, heavy power demand in summer time. Hence, the undersea power cable was also required to guarantee a stable power supply in Penghu, allowing the archipelago to reversely draw electricity from mainland Taiwan's main power grid in summer when the production of electricity from wind is low, while power consumption is high.

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carbon dioxide equivalent (tCO_2e) equivalent to one ton of carbon dioxide." Penghu government decided to shut down its only thermal power plant that emits considerable amounts of carbon dioxide through the combustion of coal and petroleum, as the local power system is successfully converted to wind power. The closure of the "dirty" power plant will not only greatly reduce carbon emissions in Penghu, but also let Penghu have its unused carbon credits. The Penghu government then aimed to sell its unused carbon credits on the domestic and international markets, which would translate into another substantial revenue source for the archipelago.

Meanwhile, as well as the Penghu energy company, Taipower also needed the submarine electric cables that would play a vital role in allowing two-way transportation of electricity between Penghu and Taiwan proper. The building of submarine power cables, along with the development of wind energy, meanwhile, is necessary for Taipower to do its sound and efficient management in Penghu. As an isolated archipelago, Penghu depends on an independent electricity generation system, the Jianshan thermal power plant, without being connected with power grids in Taiwan proper. It means that in order to satisfy local power demands, Taipower has had to generate electricity by burning diesel oil which, as the most expensive energy source, induces high cost, while it has no way to receive and use much cheaper electricity produced from nuclear power plants in mainland Taiwan. In addition, over the past a decade, Taipower has kept the price of electricity relatively low in Penghu (NT$ 2-3 per KW/hour), in spite of that the production cost for electricity per kW/hour has been much higher (between NT$ 7-8). This has caused Taipower to incur a massive deficit in Penghu by losing about NT$ 12 hundred million or 2 billion every year in the production of electricity. Thus, Taipower decided to participate in the Penghu low-carbon island project in order to prevent a continuous deficit operation through the establishment and operation of wind turbines, since the production cost for electricity generated by wind is much cheaper than that of diesel-generated power. Taipower also proposed the plan to construct the undersea electric cables between Taiwan and Penghu, not only as a crucial part of the Penghu low-carbon project, but also for its sound management in Penghu and it was approved by the Executive Yuan on December 24, 2010.

Consequently, Taipower is currently seeking to build two circuits of 161 kV 200 MW, 66.3 km long submarine electric cables at a cost of about NT$ 16 billion (US$ 547 million), in spite of strong opposition from local communities both in Taiwan and Penghu, as I will show in chapter 3. Given their assigned role and importance in realizing Penghu low-carbon island project broadly, and in establishing (and operating) Penghu energy company, the completion of the submarine cables, along with public participation as being stakeholders of the company, is the main key for making wind as into a renewable source to generate electricity. Only when the Penghu energy company is established and the undersea cable is completed, as the then magistrate of Penghu, Wang Qian-fa who actively carried forward the idea of exploiting abundant wind hoped, the strong winter wind can turn itself from a curse/barrier into a driving force for local development and wind power could possibly become a "lucrative industry for Penghu, just like kaoliang (sorghum) liquor is for Kinmen," which is another outlying island county of Taiwan, located only about two kilometers away from the east of the Chinese city, Xiamen (Wang 2012).

Conclusion

In this short chapter, I briefly explained how the strong winter wind has influenced the history of Penghu and, in particular, its economic development. While the fierce wind has been a main cause of the long-standing economic underdevelopment and stagnation in Penghu, it was also recently seen as an optimal solution to the chronic problem: the development of wind power. As an important part of the big project to make

Penghu a world-class low-carbon island, the local government sought to establish the energy company that is expected to play a decisive role in harnessing the power of the wind in the archipelago. In the Penghu government's blueprint, the energy company is supposed to manage wind farms and, more importantly, bring financial profit to local residents, who are its stakeholders, through the sale of extra wind-generated electricity. The establishment of the energy company is required as a pivotal human intervention to realize the financial ""potential" in the air" (Howe 2011), that is, to change the wind into a stable income source for local resident shareholders (Helmreich 2013; Taussig, et al. 2013). This chapter then works as a basic yet important historical background for the rest of the dissertation, in which I specifically explore how the Penghu local government produces the new meaning and financial expectations of the wind through the making of storylines to attract local resident investors in the energy company, how local people understand those narratives, and the attractiveness or attractive energy of the wind created by the former.

Chapter 2: The Spectacle of Wind Power in Penghu

Introduction

On a day in February 2014 when a strong and cold wind blew, I saw a particular traffic warning sign at the side of the road that I had never seen before in my life, as I was on my way back home from Taipower's Zhongtun wind farms in Huxi Township, Penghu. Although I had passed the path for my fieldwork innumerable times previously, my eyes failed to capture the sign that had always been standing there. I pulled over my scooter to go see the sign. The sign seemed to depict a cylinder (or a cylinder-like object) with black and white stripes and a hanging black stick (or a stick-like thing) (see figure 2-1). I was unable to know or even guess what message the road sign is supposed to deliver to users of the road. Yes, I currently have two driver's licenses issued by the authorities of motor vehicles in South Korea and California, and received them by passing written exams with a very high score. Nevertheless, I could not remember whether I had ever seen the road sign that I came to notice in Penghu or studied its meaning as I prepared for written exams for a driver's license. Yet I fortunately saw four Chinese characters "*zhuyiqiangfeng*" below the sign, meaning "beware of strong winds" in English, as well as looked up what that road sign signifies by using my iPhone. Then, I eventually came to know that it is a sign, or more correctly, an indexical sign in Peircean terms, representing a black and white windsock blowing in strong winds, to give people on the roads a warning of a fierce Aeolian force. The road warning sign visually indicates and highlights

the negative and hazardous force that Penghu's winds have exerted on inhabitants of the archipelago and their everyday lives.

Figure 2-1. Road Sign Warning of Wind Gusts. Photo by author.

Over the past four to five years and especially since Penghu government's grand project of making Penghu a world-class low carbon island started in earnest, however, we have seen the emergence of a new discourse about Penghu's winter wind in Taiwan which starkly contrasts with its old depiction as a major barrier that hinders economic growth and local development. The current President Ma Ying-jeou welcomed and received a delegation of counterpart lawmakers from the Danish assembly on the morning of June 19, 2014. Calling for a consolidation of the bilateral friendship between two countries, Ma stated that Taiwan and Denmark had a history of close cooperative relations. He said that "when Taiwan just started promoting wind power about twenty years ago, we purchased 20 wind turbines from Denmark. Now, the amount of wind energy that Taiwan produces is quite similar to that of Denmark" (Huang 2014). With the

hope to follow in the footsteps of Denmark — the country has achieved remarkable outcomes in the development of renewable energy, especially wind energy. He then said that since Penghu is one of the ideal sites for generating wind power in the world due to its strong northeast monsoon wind, Taiwan is currently striving to transform the outlying archipelago into the nation's first world-class low-carbon island (Huang 2014). It is through the national leader's mouth that the winter wind blowing throughout Penghu came to appear itself as a promising renewable energy resource to the international guests. Inasmuch as the strong wind previously represented the long-standing problem in people's daily lives that the road warning sign visualizes, it was discursively repackaged as a new opportunity for Penghu (and for Taiwan). In particular, the transformation of the meaning/image of the wind is important for the Penghu local government, since it will seduce local residents to financially (and personally) invest in the energy company, which is important part of the world-class low-carbon island-making project.

Drawing on the anthropologist Anna Tsing's notion of "economy of appearances" or "spectacular accumulation" (Tsing 2000; Tsing 2005), this chapter aims to explore how the strong wind in Penghu was discursively transformed/reconstructed from a chronic hindrance to local economic development to a precious green energy source that is expected to generate a stable, endless income (and environmental advantages) for the local residents. Tsing observes that in order to attract investment funds and to build momentum for it, the Canadian start-up mining company created a spectacle or an economy of appearance of potential profitability through the production and dissemination of fantastic (fabricated) narratives about the lucky discovery of hidden

gold reserves, narratives that can fuel the imagination and desire of capitalist investors (Tsing 2000; Tsing 2005). What Tsing's observation shows us is that the capacity of capitalism to accumulate investment funds is created and driven by storylines, creating financial expectations for a material substance that may or may not exist, as it is by a purely rational economic logic and action. Alluring, coherent storylines work to produce and keep positive appearances of a product that may or may not exist in order to entice investors to speculate on its potential financial value, and thus to invest in the start-up profit seeking enterprise. In other words, what speculative capitalists seek to sell is a material substance's capacity to appeal and stimulate potential investors' financial desire, the capacity that they produced through cohesive, attractive storytelling (Hunsberger 2014; Igoe 2010; Randalls and Petrokofsky 2014; Takeyama 2010; Thrift 2001; Tsing 2000; Tsing 2005).

In this chapter, following Tsing, I argue that the Penghu government seeks to convert the meaning of the wind by re/producing charming yet plausible storylines (with a help of journalists) that create financial expectations of wind power in order to attract local residents as potential investors for the community-based energy company. While the Penghu energy company that local government seeks to establish is expected to make financial profits through the sale of surplus wind-generated electricity, it has to draw investment funds and build momentum that it needs as a start-up enterprise through the re/production of attractive narratives. Unlike Tsing's case study, however, fascinating stories that produce a spectacle, of profitable wind power, and of the energy company aiming to sell it are not completely fabricated and fraudulent without empirical

grounding. Rather, I contend that the storylines that change the meaning of the wind and prop up the economy of appearances are built upon various numbers obtained from methodologically valid scientific observation and records, such as the annual average wind speed, the full load rate of a wind turbine, and the annual average total power demand of Penghu. As empirical data, the importance of those numerical figures lies in the reliability and credibility that people tend to believe they have, rather than in their accuracy, because ordinary local residents as their consumers and readers have no empirically verifiable way to test them (Randalls and Petrokofsky 2014). By being seen as transparent signs that signify impartiality and objectivity, as well as the elimination of the subjective, various numbers about the wind enable local people's "trust" in them (Porter 1995) and then come to have validity or "the power of persuasion" (Fioramonti 2014:12). And those numbers and the marriage between them are vital to the making of rough yet logical estimates about the anticipated profits that excess wind-generated electricity may generate and bring to the local people. Thus, this chapter argues that as a significant human intervention to realize the potentiality of the wind, the fantastic storylines are produced to change the meaning of the wind and to create the fantasy about potential profitability of wind power, and that those narratives are built upon reliable numbers and a simple calculation enabled by them, not fraudulent evidence.

I also suggest that the project of harnessing wind power in Penghu which is Taiwan's effort to remediate global ecological condition is embedded with, and linked to, different goals at both national and local scales by drawing on Anna Tsing's argument that "it seems likely that successfully conjuring the globe is possible, at least now, only in

thick collaboration with regional and national conjurings" (Tsing 2000:121). Resonating with Tsing's insight about scale, I show that it is through the development of wind power in Penghu that the Taiwanese national government seek to gradually enhance its political participation and visibility in international society as a strategy to regain status as an accredited independent sovereign state, while the Penghu government aims to generate a stable income that not only helps to root out the chronic economic poverty that the archipelago and its people have suffered from, but also to strengthen its political influence and autonomy, enabled by the reduced economic dependence on the central government.

In what follows, I present a discourse analysis of how Penghu government seeks to reconstruct the image of wind through various rhetorical techniques for the energy company that it aims to launch. In particular, this chapter will show the ways Penghu government actors and journalists produce fascinating, cohesive storylines based on various numbers about the profitability of wind power in order to entice local investors to put investment capital in the energy company. I conclude this chapter with an explanation of how the completion of the low carbon island project is interconnected to the realization of national and local goals, that is, the gradual consolidation of Taiwan's political visibility and influence in international society, the elimination of economic poverty, and the enhancement of the local government's political autonomy.

Making a Spectacle or the Economy of Appearance about Wind

"Creating a rush for a class of resources" such as gold (Tsing 2000; Tsing 2005), land (Li 2014a; Li 2014b), jatropha as a biofuel crop (Fatimah 2015; Hunsberger 2014), and underwater timber (Randalls and Petrokofsky 2014), as Tania Li claims, "demands a spectacle that grabs the investor's imagination" (Li 2014b:595). "The dependence on spectacle" is undoubtedly "a regular feature of the search for financial capital" (Tsing 2000:118; Tsing 2005:57). Through her brilliant analysis of the rise and fall of the Canadian start-up mineral prospecting company Bre-X, the Indonesianist cultural anthropologist Anna Tsing contends that speculative capitalist entrepreneurs "must dramatize their dreams in order to attract the capital they need to operate and to expand" since "dramatic performance is the prerequisite of their economic performance" (Tsing 2000:118; Tsing 2005:57). Tsing examines how the making of a "spectacle" that dramatizes capitalist dreams, or what she calls the "economy of appearances" plays a decisive role in in attracting financial funds and building momentum needed for start-up investment-oriented enterprises such as Bre-X (Tsing 2000:118; Tsing 2005:57).

The Canadian start-up mining enterprise Bre-X announced it had serendipitously discovered huge gold deposits in the deep jungle of Kalimantan, Indonesian Borneo in order to attract financial capital that it needed, even though in reality, it has not yet found those hidden treasures and does not know whether they are actually mined there. Only when it had those investment funds in hand, was the Canadian company able to look to see if the gold mines that it claimed to have found actually existed there. In this sense, the Bre-X produced, or, more correctly, fabricated a fraudulent discourse about its luck

discovery of the hidden gold deposits for its own sake. “The self-conscious making of a spectacle” about the luckily founded gold deposits then successfully allured innumerable investors who found it plausible and irresistible enough to buy the company’s stock, dramatically increasing the share price (Tsing 2000:118; Tsing 2005:57). When the self-claim and/or story about the fortuitous discovery of a hidden gold reserve eventually turned out to be fraudulent, however, Bre-X eventually collapsed because of a nosedive of its stock price. The Bre-X hoax scandal vividly illustrates that “in speculative enterprises, profit must be imagined before it can be extracted” and “the more spectacular the conjuring, the more possible an investment frenzy” (Tsing 2000:118; Tsing 2005:57). It also tells us about the interesting mechanism of global capitalism: it us “is driven as much by stories as it is by a purely rational economic logic” (Randalls and Petrokofsky 2014:217). While the Canadian mining company counterfeited the alluring story that was “a performance, a drama, a conjuring trick, an illusion” of the imagined possible profit for the attraction of investment funds (Tsing 2000:118; Tsing 2005:57), its life as corporation ironically started and shortly ended with the story that it produced enabled both the inflow and outflow of investment funds.

The creation of alluring discourses that fabricate/produce a spectacle, or an economy of appearances, is central to the attraction of investment capital and the shaping of its inflow for speculative entrepreneurs. Just as a drama in a literary / performance genre needs the plot as one of its essential components to draw its audiences, conjuring a spectacle, or the dramatization of capitalist dreams also requires the making of great storylines that create financial expectations of something in order to attract possible

future investors. In particular, the production of the appealing story is crucial to the establishment of some enterprises as more worthy of continued investment rather than others, as Tsing argues that "no one would ever have invested in Bre-X if it had not created a performance, a dramatic exposition of the possibilities of gold" (Randalls and Petrokofsky 2014; Tsing 2000:118; Tsing 2005:57). It is through the production and control of appealing, optimistic stories, making the have-not-yet realized/existed resources look "ready for investment," that successful profit-seeking (start-up) companies seek to grab and fuel the imagination and desire of investors who dream of becoming rich overnight (Tsing 2000:74; Tsing 2005). What speculative capitalists aim to achieve is hence what Tsing terms "spectacular accumulation" by selling investors the financial expectation of a not-yet-existing substance and/or its not-yet-realized potential financial value, rather than an already existing actual resource or product itself, through the self-making of attractive discourses/narratives (Randalls and Petrokofsky 2014; Takeyama 2010; Tsing 2000; Tsing 2005).

My understanding of the notion of "spectacular accumulation" is quite different from the ways the Japanese cultural anthropologist Aiko Takeyama reads it in that I put stress on the role of narratives and stories. In her analysis of how young Japanese males working in host clubs are created and constituted as neoliberal entrepreneurial subjects by and through the commodification of the selves, Takeyama argues that the concept of spectacular accumulation is centered around the idea that the value of a product is not just its inherent quality but also "may be created speculatively by … its capacity to appeal" (Takeyama 2010:237). For Takeyama, everything including humans and nonhumans can

become a potential "commodity to be bought, sold, and invested" only if it possesses "a capacity to appeal" and thus entice latent consumers/investors (Takeyama 2010:237). The reason why I cannot totally agree with Takeyama is that she does not ask how and by whom such capacity is developed and strengthened to the extent to which it can allure potential consumers. If potential commodities are human beings like the male employees of host clubs illustrated in Takeyama's ethnographic case study, there is no doubt that as active agents, they definitely have an ability to enhance and "polish their seductive masculine images to appeal to women" for the successful sale of themselves (Takeyama 2010:237). When it comes to looking at nonhuman entities, however, we may need to rethink Takeyama's understanding of a capacity to appeal.

Even without drawing on the flat ontology to decenter humans and to break the divide between subject and object, we can say that nonhumans such as gold deposits appeared in Tsing's research are possible to have a capacity to appeal, depending on sociocultural contexts which influence and decide how they are viewed and valued, just as their human counterparts do. As Tsing's analysis of the Bre-X scandal shows, however, the gold reserves deep in the Indonesian jungle may hold a very limited ability to appeal, or an insufficient amount of appeal to draw investment from potential capitalists. Rather, the hidden gold fields' ability to appeal becomes so powerful that they can attract investment capital, only when they combine with, or depend on, particular human practices to make a spectacle, or an economy of appearances through the creation of narratives that strategically employ the Western vision/imagination of a frontier as a site of "bountiful emptiness" (Bridge 2001:2154) and the culture-specific myth of a

serendipitous, lucky discovery of hidden treasures. This understanding of nonhumans' limited capacity to appeal dovetailed in with that of the popular philosophical circle, known as "object-oriented ontology" (OOO) (Bogost 2012; Bryant 2011; Harman 2013): nonhumans "*equally exist, yet they do not exist equally*" (Bogost 2012:12, original emphasis). Unlike Takeyama, therefore, I suggest that that the story making and storytelling that maximize and polish nonhumans' capacity to appeal are integral to the attraction of investment funds for speculative capitalists.

Likewise, Anna Tsing's concept of a "spectacle," or an "economy of appearances" helps us understand the sudden promotion or transformation of wind as a profitable energy source to generate money (an environmental benefits) in Penghu. Even though the Penghu energy company did not aim to entice global investors, unlike the Canadian start-up mining company appeared in Tsing's study, the Penghu government needed to produce, not fabricate, a spectacle about the wind (and wind energy), just as Bre-X did for its growth, in order to attract and recruit Penghu's local residents as potential investors cum supporters for the establishment of the start-up energy company. To conjure a spectacle about wind energy for the sake of local residents as future investors, what I call the "architects" of the wind power project, such as Penghu government officials/bureaucrats designing the project and scholars who have offered scientific foundations for it, needed to make captivating yet reliable storylines built on numerical figures, storylines that work to reconstruct the meaning of, and create financial (and environmental) expectations, of the wind. Now, I will illustrate how the architects produce charming but well-founded narratives about the wind, which are in turn

disseminated by journalists whose duty is to report and deliver a certain matter to the public in a neutral, objective way as much as possible, in turn reproduce these narratives.

The Discursive Construction of Wind

Unlike Bre-X's story about hidden gold mines which was totally "fabricated" without an "empirical grounding," the narrative about the potential marketability of wind in Penghu was empirically and logically well grounded (Randalls and Petrokofsky 2014), depending on numerical figures about wind and wind turbines obtained from reliable scientific records/observation and a rough analysis/estimate of potential profits of wind power based on those numbers. The "architects" had to establish the start-up energy company as planned by alluring local residents who are required to hold a 30% share of the company. In order to recruit local inhabitants as potential investors for the energy company, they were actively involved in the discursive reconstruction/transformation of the existing old image/meaning that surrounds the wind in that "how we see the world shapes how we interact with and transform it, which in turn influences how we see" (Barnes 2014:35). It is through the making of alluring narratives that the architects of the energy company sought to transform the established negative image of the wind as a long-pending trouble into a more positive one as a promising profitable renewable energy source. In terms of the labor division of the story making, the architects of the wind power project were in a strong position for the production of the empirically-grounded optimistic, fantastic stories about the wind and its profitability, since they were the insiders who designed the project and were well acquainted with its contents and details

(Foucault and Gordon 1980), while journalists who interviewed those architects repackaged and reproduced those number-based narratives that gratify their obsession with the power of numbers with the connotations of the objective, accurate, and impartial (Fioramonti 2014).

In order to create a coherent narrative of wind and its marketability, the architects of the wind power project and journalists first devoted themselves to the rhetorical re/construction of wind as a good natural force full of the potential of profitability on the basis of the government's plan of developing wind energy in Penghu. The project is mainly built upon, and enabled by, the characteristics of the winter wind in Penghu: it is free and inexhaustible in general, and, in particular, qualitatively outstanding in speed and strength. The fascinating part of the project was, as we have seen before, that such free and inexhaustible wind blowing during winter would become an invaluable source of an unending profits for the locals because extra electricity generated from it would be transmitted and sold to the power users in mainland Taiwan through the undersea cables. This project, aiming to financially (and environmentally) take advantage of and harness this free, renewable energy resource, allowed the architects to repackage the wind that has long been regarded as an obstacle in a positive way. Let me give you an example from my fieldwork. I was fortunately introduced by my friend who runs her beauty salon in Magong city to the local politician, Li Yu-de who has zealously supported the idea of generating electricity and financial profits by using the archipelago's famous wind. As a Penghu native, Li has served for Penghu for about 20 years and is now presenting as one of his main political views/commitments the exploitation and development of wind

energy. One sunny day in May, 2014, I was in Li's office to conduct an informal interview in Magong. After quickly taking a sip of tea that he had just made, I asked Li to start a dialogue regarding the development of Penghu's wind energy. He suggested to me that if I asked him any questions about that topic, he would answer all because, in his view, this would help make the interview go easier and more smoothly since he had too much to say about it and then did not know where he should start. Accepting his suggestion, I posed my first question in terms of how he frames Penghu's wind, Li replied at once without hesitation: "wind is the gift given to us by God." Like Li, journalists also used various flowery words to portray Penghu's free, renewable wind in an optimistic way: in their articles, the wind was depicted as "the grace from the nature" (Yuan 2012:91), "the resource the Lord bestowed on Penghu," "God's grace," "Godsend," "the present from the Lord," "miracle," and "magic" (Chen 2014a). One state actor also even depicted Penghu's air in motion as a messianic "answer" which can resolve diverse and multi-layered problems (such as economic and environmental) of Penghu in his short article titled "blowing in the wind" by undoubtedly using the legendary American folk singer-song writer Bob Dylan's famous song and its lyrics. In addition, as the Penghu low-carbon island project started, the then magistrate Wang Qian-fa openly stated his hope to make Penghu a "home of wind," rather than remain as its long-term victim. All these rhetoric and metaphors on the wind "rested on a singular and monolithic discourse on nature" (Wehr 2004:49), aiming to instill into the minds of the residents of the archipelago the idea that the northeast winter wind that had long been characterized as a violent ""natural menace" could be converted into a "natural asset""

through the government's project (Wehr 2004:54). The single, coherent discourse on the wind emphasizes that the movement of air molecules can be "tamed and harnessed and put to work for society" (Wehr 2004:162). Drawing on the project's blueprint, stressing the merchantability of the free, inexhaustible green energy source, hence, the architects sought to discursively transform the image of wind from a chronic negative hindrance into an omnipotent, positive force to Penghu's economic development through various rhetorical techniques.

However the alluring discursive reconstruction of the wind into the potential merchantable source needed to form an alliance with a particular "empirical grounding," that is, numbers about wind and wind turbines in particular, in order to successfully attract capital investment (and support) from local inhabitants for the energy company (Randalls and Petrokofsky 2014:220). As many scholars have argued, number is not merely a neutral, "transparent sign" (Lampland 2010:383), but also a "social technology" (Porter 1995) or a "material-semiotic device" (Verran 2012) that works to "construct reality, rather than only representing it" (Barnes and Hannah 2001:379), as well as to "participate in" (Day, et al. 2014), "lubricate its happening" (Verran 2012:112). A view of impartiality and "objectivity as the elimination of the subjective" (Lampland 2010:381) enabled numbers to have "validity" (Fioramonti 2014), and thus allow our "trust in numbers" (Porter 1995). Since its Latin root *validitas* originally refers to "strength and power," as the political scientist Lorenzo Fioramonti notes (11), the English word validity means "the capacity to command obedience," or power itself. Having acquired the state of transparent signs that seem to represent objectivity, accuracy, and

precision, the validity of numbers lies in their "power" to make people believe (or misunderstand) that they correspond impartially and precisely to what they intend to count, measure, and label. That is, validity allows numbers "to be truthful," and to acquire "the power of persuasion" (Fioramonti 2014:12), ultimately leading to our general "trust in numbers" (Porter 1995). Without numbers possessing the power of persuasion, any arguments or planning about something "are viewed as lacking credibility and based on purely anecdotal evidence" (Fioramonti 2014:29). For this reason, the architects of the wind power project in Penghu used and cited various numerical figures to create the great stories of profitable wind power that are both enticing and reliable/objective enough to persuade potential local investors to put their capital in the energy company. Then, the architects' use of numbers also fits well with the journalists' obsession with those numerical figures, given that the media has been "a complacent supporter of phony numbers" that enable the making of "easy storylines" (Fioramonti 2014:30, 29). According to Fioramonti, journalists have a tendency to naïvely believe or misunderstand numbers as transparent, straightforward signs/facts, and then regard them as "a source of incontestable evidence" because of their vocational training and expectation/duty to "represent a neutral viewpoint" and "report "facts"" (Fioramonti 2014:30, 29). As I will show in what follows, therefore, drawing on various numerical figures and simple calculations enabled by them, the architects of wind power project have constructed a charming spectacle narrative of wind energy and its potential profitability to aid capitalization for the energy company. Those stories based on various numbers have then widely been reproduced and disseminated by the print media, in

particular the writing of journalists who "are in desperate need for easy storylines" based on numerical figures (Fioramonti 2014:29).

As a primary number/index about the quantity and quality of wind available to generate electricity, the annual average wind speed is vitally important to a rough estimation of wind's potential profitability and thus to the financial sustainability of the Penghu energy company. The architects of wind power project used historical, scientific statistics about wind spend in Penghu in order to give reality/reliability to the new discursive construction of wind as a god's gift and/or grace (Randalls and Petrokofsky 2014). They highlighted that the high annual average wind speed of more than 9 meters per second makes Penghu one of the world-class ideal sites to develop wind power. For instance, the then-magistrate Wang Qian-fa also often highlighted that the archipelago is one of the top three places in the world for developing wind power. Scholars as major architects of advocating wind power development played a critical role in claiming that such charming numbers about wind speed are empirically grounded as a reliable, objective result obtained through scientific long-term observation and calculation methods. Lin Hui-zheng, who was one of its main architects and the president of National Penghu University of Science and Technology (NPU) and is now a professor at National Taiwan University (NTU)'s Department of Engineering Science and Ocean Engineering, said in a newspaper article that "*based on data from 2008*, 'the average wind speed in Penghu was 9.75m/s and the wind gets stronger during winter months, increasing to about 16m/s, which is nearly the wind speed of a mild typhoon (17.2m/s to 32.6m/s)'"

(Lee 2012a; my emphasis).[14] In this newspaper article, Lin stressed that the number to show a good quality of Penghu's wind was calculated, drawing on historical and scientific observation/record from 2008, and thus was reliable. The validity, or "the power of persuasion" of the numbers about wind speed is also supported and enhanced by Lin's status as a scientist and an academic, having worked for, and currently working for regionally and nationally renowned institutions (Fioramonti 2014:12). The journalist who wrote that article clearly referenced about Lin's impressive academic career: he holds a professorship at NTU that has been the most prestigious higher education institution in the nation since its establishment, and when he led the project of developing wind power in Penghu, was even the former president of the National Penghu University of Science and Technology (NPU), which is the sole public university in Penghu and one of the few universities located off Taiwan's mainland. Just as scientists often obtain and increase power through the mobilization of human and nonhuman allies (Latour 1987), Lin's brilliant academic career that he has built both at Taiwan's Harvard and at the archipelago's only university functioned as an important resource and ally, shaping and strengthening the validity and credibility of the numbers about wind that were obtained through historical data.

Numerical figures of annual average speed are then allied to historically accumulated observation about the performance of wind turbines operating at Taipower's wind farms to empirically demonstrate the good quality of wind, since those

[14] Similarly, some academics wrote that Penghu's annual average wind speed is 9.6 m/s and exceeds 10 m/s even during the winter time (Liu, et al. 2011:79), while others noted that the average wind speeds of the areas of Penghu archipelago are all above 10.5 m/s and the power density are above 1400 W/m2 (Fang 2014:241).

technological artifacts can only work when the wind is blowing. In an article published on March 28, 2011 in Lianhebao (Daily News), Taiwan's third biggest daily newspaper, Ou Zhi-cheng, who was the then vice director of, and is currently the director of, Taipower's Jianshan power plant, proved the excellent quality of Penghu's wind through its material effects on technological artifacts, wind turbines. Drawing on the concept of "full load rate" or "full load hours" referring to "the number of hours per year that the wind speed at a given site is at least 10 meters per second, that is, strong enough for the turbine to generate power at full capacity" (Lee 2011), Ou said that "during winter, wind speeds can sometimes get up to 20m/s. Since a wind velocity of 13m/s or 14m/s is enough for the generated power to reach full load, there are more than 150 days in a year in which the power generated by turbines reaches full load" and thus "the full load rate was about 43 percent" (Unknown 2011c).

In the same manner, an article published on March 28, 2011 in Lianhebao also reported that the Industrial Technology Research Institute (IRTI)'s bright prospect for the development of wind power in Penghu, which was based on a capacity factor of wind turbines (Unknown 2011c). A capacity factor refers to the ratio of a wind turbine's "actual output at a given location to the amount of power it would produce if it were to run at full load throughout the year" (Lee 2011), that is, simply "the ratio of actual productivity in a year to the theoretical maximum" (Unknown 2011c). According to the newspaper article, the IRTI as Taiwan's "nonprofit research and development organization engaging in applied research and technical services" estimated that in Penghu "for at least one-third of every year wind turbines could be generating electricity

at full bore, with a capacity factor of nearly 45 percent, an efficiency level far exceeding that for major wind power producers" such as the U.K. (9 percent) and Germany (25 percent), and "almost twice the annual global average of 23 percent" (Unknown 2011c).[15]

The numbers about wind turbines, in spite of their different names such as full load rate/hours and a capacity factor, tell people the same thing: both the high quality of wind including speed and availability in a year and the actual productivity of wind turbines harnessing it in Penghu. As researchers noted in their journal paper, those numbers were acquired through, and based on the long-term observation of the performance of eight Enercon wind turbines with a total capacity of 4.8 MW in the Zhongtun wind farm Penghu that "has operated successfully for over seven years" (Liu, et al. 2011:79). The numerical figures received and enhanced their validity through the empirically grounded, historically accumulated data about the particular wind farm. As in the case of wind speed, journalists alluded to the insiders of the national enterprise managing wind farms such as Ou Zhi-cheng, and/or an outside specialized organization like the IRTI, instead of scholars, in order to consolidate "the power of persuasion" and reliability of the numbers about the performance of wind turbines. The wind power development advocates' obsession with the numbers about the productivity of wind turbines naturally becomes "an instrument in the commodification of resources" constantly moving in the air (Muehlmann 2012:341).

[15] According to Lee (2011), the average capacity factor of wind turbines currently operating in Taiwan is "about 29%, only lower than those of the UK and Japan" and much higher than only 17-23% of Germany. And "even in summer, when Taiwan "has no wind," the figure is 20%" and "in Penghu, the figure is much higher, at 40-50%."

The meaningful numbers about wind turbines were used and reproduced in a promotion document "a Q&A with Penghu Energy Company" that the Penghu government produced and distributed to help local residents clarify the overall plan of the energy company and then to induce them to invest (see Appendix 1). To answer the second question in the document regarding the quality of Penghu's wind source, it also relies on the notion of full-load rate/hours. It writes that the full load rate of wind turbines in Penghu averages 3800 hours, greatly exceeding the approximately 2500-3000 hours of devices on Taiwan's west coast, as well as about 2000 hours for machines, currently operating all around the world. The document also only underlined the number 3800, the full load hours of wind turbines in Penghu for a visual effect/highlight, with an intention to make the high quality of the archipelago's wind stand out. And the number, 3800 full load hours of wind turbines, was orally reproduced by Ye Guo-qing, who was a passionate planner of the wind power project and the then director-general of the Economic Affairs Department under the Penghu County Government, whenever he visited local villages to invite residents to invest in the energy company and/or when he accepted both official and informal interviews with a novice ethnographer, me, or journalists who play a key role in widely disseminating that numerical figure and in making it "take on a life of its own"(Fioramonti 2014:29). In his interview with a journalist, for instance, Ye explained why Penghu would be a ideal site to harness wind power and the potential marketability of wind by saying that while "in Germany, one of the leading wind energy countries in Europe, the installation of wind turbines is considered viable in locations with an average of 2,000 hours per year during which

power generation can reach full capacity," "there are 3,800 to 4,000 full-capacity generation hours per year" in Penghu that "means the cost of energy generated by wind power here can be cut in half" (Wang 2012). This was exactly what I heard from Yeh during my interview with him.

The numbers about wind turbines, such as full load hours and a capacity factor then become a powerful "calculation tool" to estimate and show how profitable wind power would be in the future, when they combine with other numbers that appear in the low carbon island making project. According to the low-carbon island project, the Penghu energy company is supposed to take over the ownership and management authority of the Zhongtun wind farm from Taipower, and to construct and manage eleven wind farms to produce 125 megawatts of wind-generated electricity by 2020, a more than 12-fold increase from the current 10.2 megawatts (i.e. Zhongtun 4.8 megawatt plus Huxi 5.4 megawatt). Under the premise that the total twelve wind farms are transferred and built as planned, it can be said that wind farms owned by the energy company are expected to produce the annual amount of electricity of 493240 Mwh, which is obtained through simple mathematics ((125+4.8) megawatts * 3800 hours). Of course, the total amount of wind-generated electricity in Penghu would be roughly between 493240 and 519200 Mwh, if we take a full load hours as 3800-4000 hours. The amount of electricity would further exceed the annual power demand of Penghu, which is approximately 400000 Mwh (or 360000-400000 Mwh). Therefore, Yeh Guo-qing anticipated that Penghu's energy company would be able to annually produce "a net surplus of approximately 100000 megawatt-hours of electricity" to be sold to power users in

mainland Taiwan, and then, "in the light of the 2011 wholesale price for electricity generated by wind turbines, which is set at around NT$2.61 (US$0.0805) per kilowatt-hour," roughly estimated that wind power could become a stable, incessant income source to generate "more than NT$260 million (US$8.02 million) per year" for Penghu and its people (Wang 2012). Yeh also repeated to mention and emphasize such easy calculations based on various numbers to estimate the potential profitability of the wind during investment briefing sessions on the establishment of the energy company, which were held by the Penghu government to recruit potential local investors, as well as to enhance their understanding. Since Yeh's simple, straightforward calculation is a "mathematical formulation whose mechanics anyone with a basic education could understand" without much difficulty (Guyer 2014:166), according to one of my informants who attended an explanation session, many local inhabitants were able to easily understand, and considerably persuaded by, it and its message to draw investment capital from them.

The powerful number, the full load hours of the existing Zhongtun wind turbines and other numerical figures to which it is married, including the statistical data such as Penghu's annual electricity demand and the total capacity of the future soon-to-be-built wind turbines, are used as "a presumed sign of objectivity" by and for the architects of the project to entice local potential investors (Ballestero 2012:228). Anna Tsing's analysis of the Bre-X, though it is interesting, always made me curious about how amusing but totally fabricated stories of the lucky find of gold reserves could successfully attract investors. Although those cooked-up stories invoked the particular image of

frontiers and cultural myth of serendipity that appeal to Western investors, how was it enough to make those investors who depend on dispassionate and rational judgment find those stories plausible? How were economic expectations that were invented by fabricated discourses were not hampered by uncertainty and doubt about the stories themselves? In contrary to Tsing, in their analysis of how underwater logging enterprises create and maintain financial expectations and values of submerged trees to attract capital investors for them, Samuel Randalls and Gillian Petrokofsky contend that to lure potential investors, companies must need "verifiable evidence rather than completely fabricated guesses" and narratives about the anticipated profitability of submerged trees (Randalls and Petrokofsky 2014:221). In case of the underwater logging industry, the important point is not to offer investors "a factual representation" about how many timbers are estimated to available underwater, but to let them know the presumption of submerged timber volume is "methodologically valid" because "accuracy is not invoked, because there is no empirically verifiable way of testing that" (Randalls and Petrokofsky 2014:221).

In a similar vein, the architects of Penghu's wind development project sought to attract local investors by producing the reliability of profitable wind power built upon the power of numbers about wind turbines. "Rather than establishing accuracy," those numbers function to "establish credibility and a reliable approach to constructing estimates" regarding the profitability of wind blowing throughout the archipelago (Randalls and Petrokofsky 2014:220). The reliability of the profitability of wind power incorporates both the reliability of the basic, indispensable numbers for calculation, like

average annual wind speed and the capacity factor of the current particular wind turbines, acquired through long-term historical records and the reliability of the outcome of simple mathematical assessment to estimate the potential annual production amount of electricity of future on- and off-shore wind farms, based on those essential numbers. The architects thus expected that the reliability of the anticipated marketability of Penghu's wind which seems to be methodologically valid and acceptable "provides the investor with rational reasons for investment" in the energy company (Randalls and Petrokofsky 2014:221). Then, as potential investors, many local inhabitants whom I met during fieldwork did not simply read numbers about the expected profitability of the wind, but reacted to them (e.g. seriously thinking about investing capitals in the company, and/or wishing to gather more information about the project, or critically examining its possibility of realization) because those numerical figures "motivate inference, responses, interpretations, and translations" (Day, et al. 2014:127).

Although various numbers about wind and wind turbines, and a simple calculation that they enabled, became a logical basis to theoretically yield how much excess wind-generated electricity would be produced and sold as a commodity in the future, they were not enough to fully shape potential investors' willingness to "trust in numbers" as a sign of objectivity that guarantees the realization of potential marketability of wind power (Porter 1995). Excess wind-generated electricity could become a commodity to be sold in reality, only when there are consumers who purchase it. Without buyers, surplus electricity means nothing to potential local investors of the energy company, regardless of its huge volume of potential production and the estimated potential economic value.

Even if various numbers about wind power were seen to be objective and valid since they were based on historical observation and scientific assessment, they were essentially "risky" numbers filled with uncertainties for local people as potential investors. In order for those numbers to render themselves meaningful and attractive to local people, they needed to remove, or at least play down the risks of uncertainties to make the capital flow out from those potential investors. It was partially because local people, as small stockholders, have a greater tendency to pursue stability and safety, rather than to thrive on adventure where high risk means either high return or nothing.

At this point I have to note that, in fact, the attractive numbers, such as the amount of excess electricity and the anticipated economic profits it would generate, are what Martha Lampland calls "provisional numbers" (Lampland 2010). Usually appearing in planning, working documents, and forecasting reports, provisional numbers are used to give their consumers the anticipation of potential possibilities "based on a series of assumptions about what might occur in the near future," not a precise description of "actual conditions at the time of their publication" (Lampland 2010:383). Because provisional numbers would decay and lose their value to attract their readers with time because of their inability to stand the test of time, they are unable to "carry the same meaning no matter what their context," and to be "meaningful outside specific contexts" (Lampland 2010:378). The various numbers about surplus wind-generated electricity, which appeared in the media, are inherently temporary and conditional, lacking stability and the context-freeness (Lampland 2010). The numerical figures about the potential economic profit of extra wind-generated electricity become meaningful only when every

element of the project is completed as planned. For example, without the construction of the submarine cables, transmitting surplus electricity from Penghu to Taiwan proper, as I will look closely at in chapter 5, the charming numbers about the profitability of wind cannot be and do not read as an accurate representation of the not-yet-actualized reality.

In spite of their inherent temporariness and conditionality, those provisional numbers looked fascinating and plausible not only in theory and in written documents like a blueprint of the project, but also to the locals in reality, when uncertainties included in them were minimized and translated into realizable economic value through law. The Penghu government has highlighted one critical article about the feed-in tariff (FIT) in the Renewable Energy Development Act that was promulgated in order to spur the production of electricity from clean, renewable energy sources on July 8th 2009 after President Ma Ying-jeou took office in May 2008. Like Germany's FIT model/policy that the Taiwanese government directly adopted, it required that once a contract for the purchase and sale of renewable energy-generated electricity is signed by electricity contractors, Taipower as the contractor utility must fully purchase electricity that independent power suppliers produced through renewable energy generators such as wind turbines with a fixed tariff rate for twenty years; "1-10 kW of wind power to be bought wholesale for 5.3440 TWD a unit; over 10 kW to be purchased at the wholesale price of 2.1826 TWD and offshore wind power generator systems for 4.3064 TWD/unit" (Bureau of Energy, 2010c) (Liou 2011:3244)[16]. Since the act legally promised the guaranteed

[16] According to the act, while Taipower is required to purchase electricity produced from renewable energy sources, independent renewable energy suppliers must apply to the Bureau of Energy of the Ministry of Economic Affairs for approval of their installations of renewable energy generators. Also, every year, the "Renewable Energy Feed-in Tariff Rate Review Committee" will review the technical improvement, cost

purchase of wind power for two decades, financial expectations invoked by numerical figures were not hampered by uncertainties associated with the sale of electricity. Turning a financial uncertainty / precariousness into a grounded certainty, the law played a leading role in making numbers as a sign of objectivity look more reliable, and in shaping potential investors' willingness to "trust in numbers" which needs to become stakeholders of the energy company. Consequently, it operated to raise and stabilize local people's "expectations for a positive return on shareholder investment" (Howe, et al. 2015:98).

Verifiable and reliable evidence about potential profitability of wind power that was built upon numbers and the law enabled the architects to construct narratives for the attraction of investment funds, narratives that are alluring but not (totally) fabricated based on grounded facts/information, as well as to make those stories more plausible and perusable to potential local investors. The former Penghu country magistrate Wang Qian-fa tried to persuade Penghu residents, who are suspicious about potential economic value of wind energy, by taking, as an example, a number of corporations showing their interest in running the Penghu energy company in collaboration with the Penghu government. He said that "if the energy company is not thought of making money, those corporations will

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change, achieved target and related factors of each type of renewable energy in order to examine FIT Rate and calculation formula. But some people argue that such FITs have a serious problem. "Under the contracts, the agreed prices stay in place for 20 years, so when the government changed the terms with barely a fortnight left in the year, installers still working on their installations were left unsure what prices they would get when the work was done. Their concerns were further exacerbated by having already bought the equipment on the assumption they would get the 2010 tariff, equipment that is getting cheaper by the year, meaning that if their installation was not complete by year-end, they would have paid more to receive the same price as their 2011 competitors" (Lee 2011).

not invest their money in the company. The energy company will definitely create wealth for Penghu. If wind energy cannot create fortune, there will be no such many corporations showing their willingness to cooperate with the Penghu energy company" (Zou 2012). Penghu government officials also added that not only national enterprises, but also internationally renowned foreign wind power corporations such as Enercon from Germany and Denmark's Vestas have all expressed a strong interest in becoming joint-stakeholders of the energy company. Implicit in Wang's words was that private corporations whose main reason for existence is for profit would be willing to become co-shareholders of the energy company, when the latter is equipped with the guaranteed protection/support of the law in terms of the sale of wind-generated electricity whose expected yield and economic value is based on objective, reliable numerical records. And the word that even famous foreign companies, not merely national corporations, were willing to invest in the energy company seemed to partially assist local residents in diminishing their suspicion about, and increasing their confidence on, the energy company and the marketability of wind power. Thus moving beyond being described as God's gift, wind was discursively portrayed as a promising moneymaker with varied modifiers such as "the most invaluable platinum," "the golden chicken that lays eggs [using English expression, it would be like that: wind is the 'goose that lays golden eggs'] the most in all of Penghu" (Chen 2014a), and "the green gold" that creates a fortune for the inhabitants of Penghu (Department 2014).

In addition to the expected direct profits produced by wind-generated electricity, Penghu government also looked for the generation of an additional, second-hand stable

income source for the locals. Traditionally, Penghu has relied on the single conventional thermal power plant that burns coal and petroleum, emitting considerable amounts of carbon dioxide. After a complete conversion to wind power that will be followed by the closure of the power plant, the greatly reduced carbon emissions will turn into carbon credits that the Penghu government can sell on national and international markets for economic profits. According to its goal to decline carbon emissions by 300000 (metric) tons through the development of wind power, the Penghu government will earn a considerable amount of profit, given the price of carbon credits that was US$21.12 per ton in 2011 and "the profit from these carbon credits, obtained with local resources, will stay in Penghu, with resident shareholders earning dividends" (Unknown 2011c). This additional financial benefit was also considered very attractive to local inhabitants as potential investors of the energy company.

After all, in discursively transforming and repackaging the image/meaning of Penghu's notorious strong wind in terms of its potential ability to become a stable income source for the locals, the architects of the wind power project and journalists translated it into a simple numerical language of talking about its financial (secondary, environmental and energetic) advantages. This discursive move through number-based reliable stories then deprived the wind, an essentially complex, dynamic, and uncontrollable Aeolian force, of its material characteristics, and thus reduced it to a simple, passive, and manageable object/commodity that can generate financial profits (and environmental advantages), conforming with the architects' plan and their will (Pritchard 2004).

Scales of Story: National and Local

Tsing argues that projects that are often described as global are more likely to succeed only if they get rolled in with goals at other scales by writing that "it seems likely that successfully conjuring the globe is possible, at least now, only in thick collaboration with regional and national conjurings; certainly financial conjuring has been deeply implicated in promises of making regional and national dreams come true" (Tsing 2005:59). Tsing's insightful observation resonates with the case of wind power development in Penghu. Even if the Penghu energy company aimed to draw potential local, not global, investors and their capital funds for it, unlike the Bre-X in Tsing's study, the development of wind power was a critical part of the ambitious grand project of making Penghu a world-class low carbon island, echoing and joining global efforts to mitigate climate change and to use renewable energy. That is, wind power is linked to global, national, and local goals: global aims about climate change and clean energy get embedded both with national dreams to achieve a breakthrough in the political situation in international community and with local wishes around the creation of a stable income source to benefit livelihoods through wind and wind-generated electricity. Representing conjurings at different scales, these dreams and their convergence/coexistence worked to enhance the possibility of success in the development of wind power in Penghu.

In the case of Penghu, global stories about climate change and clean, renewable energy are embedded with national (or central) government objectives around energy security and diversification and Taiwan's political status in international society, as well as with the Penghu local government's desire to take advantage of the potential for wind

energy to create economic wealth for residents and for itself. Although the project of making wind energy was initially proposed by the Penghu local government, the central government took the proposed project and connected it to its own ambitious plan to make Penghu a world-class — and Taiwan's first low carbon (emission) — island. Global concerns about carbon dioxide emissions and climate change motivated the Taiwanese government to participate in the global effort to reduce carbon dioxide emission and to mitigate rapid climate change internationally. The national government then included and reframed the wind energy-making project as a crucial part of its ambitious global plan to remake Penghu into a world-class low-carbon island.

At a national scale, the harnessing of wind power in Penghu is required for the Taiwanese state to accomplish its economic-political goals / intentions to become energy self-sufficient and a part of the international community. On the one hand, energy has always been a critical national issue for Taiwanese government (Bridge, et al. 2013:338) in that it "underpins the basic aspects of social life - food, mobility, consumption, and the geographies of home and work" (Huber 2015:328), just as it does in other countries. Taiwan has heavily relied on the import of more than 99% of its energy supply in order to satisfy almost all of local energy demand (Chen 2013; Jan 2011; Young and Huang 2012) due to its possession of very limited domestic energy resources, as well as to its insular geography that precludes direct imports of electricity from foreign power grids. Over 90% of its imported energy comes from fossil fuels such as oil, coal, and natural gas (Chen 2013:54): oil, coal, and natural gas respectively accounted for 49%, 32.1%, and 10.2% of Taiwan's total energy consumption in 2010. Such high reliance on the import of

energy sources, in particular, fossil fuels, can be partially explained by Taiwan's economic structure. And since Taiwan's economy has traditionally developed with its roots in "the development of petroleum, chemical, iron, cement and non-metallic industries" (Chen 2013:54), according to the statistics published by Taiwan's Bureau of Energy, the largest energy consuming sector was the manufacturing industry, which used nearly half (44.5%) of Taiwan's total energy demand, while household accounted for 8.9% in 2010 (Chen 2013:54; Huang and Wu 2009). As a result, the inevitable heavy reliance on fossil fuels, conditioned by geographical and economic structures, caused Taiwan to be highly ranked as the 21st country in the world at 110.5 million tons of oil equivalent (MTOE) by its total energy consumption in 2010, surprising figures when we consider that it was the 50th largest populated country (it currently ranks as the 53th in 2015) (Jan 2011).

The Taiwanese government sought to decrease its heavy dependence on foreign energy supplies, in particular, fossil fuels to protect itself from the constant, unpredictable high risk of energy security to which it has always been exposed, since political instabilities and social upheavals in its primary oil exporting countries, the Middle East and Western Africa, would strongly influence changes and price fluctuation in global oil market and thus negatively affect Taiwan's oil supplies, finally threatening the county's energy security and even its survival. For the security of the nation that is heavily reliant upon energy import has much to do with energy self-sufficiency, Taiwan tried to protect itself from energy disruptions by securing steady, stable access to, as well as diversifying, energy sources. Especially, the Taiwanese government paid attention to, and strived to

exploit and develop clean, renewable energy sources including wind. The Renewable Energy Development Act (REDA) that the then Ma administration formulated and passed in 2009 paved the way for promoting the development of a variety of renewable energy sources. In this context, the development of wind power in Penghu archipelago can be seen as one of the major efforts that Taiwanese government made to diversify energy sources in the pursuit of energy security and self-reliance. In short, "national security and energy self-sufficiency" that are inextricably interrelated are invoked by the Taiwanese government as "primary reasons to exploit and develop clean renewable energy sources" in its outlying island county (Paladino and Simonelli 2013:2)

In addition to a concern about energy security, on the other hand, I think that the project of wind power development implicitly also has an important political signification for the Taiwanese government: it is expected to assist the Taiwanese state in rendering itself visible to (and later become a part of) international society. Since Taiwan was stigmatized, and gained notoriety as one of the most horrible pollution makers in the world, it has truly hoped to clear away such notoriety and disgrace. While introducing an interactive map of "the world's 200 dirtiest power plants" in the website Forbes.com, the writer Jon Bruner awarded the (dishonorable) title of "the worst power plant in the world" to the Taipower's Taichung (Taizhong) coal-fired power plant with an installed capacity of 5500 MW among plenty of fossil-fuel power plants that produce sixty percent of the world's electricity. The Taichung power plant is not only the largest coal-fired power plant existing in the world, but also the world's largest carbon dioxide emitter that annually pumps out 40 millions tons of carbon dioxide (that corresponds to the amount of

carbon that the country Switzerland as a whole releases) into Earth's atmosphere to produce 39 million megawatt-hours of electricity. From the end of 2008, according to the Taiwanese scholar of energy, Hwa Meei Liou, Taiwan's overall total greenhouse gas emissions made up 1% of the world's total emissions and ranked 22nd in the world, while Taiwan's CO2 emission per person also ranks high at 24th globally (Liou 2010:1764). According to the 2013 Key World Energy Statistics published by the International Energy Agency (IEA), Taiwan ranked as the 23rd-largest emitter of carbon dioxide in the world in 2011, with a total of 264.66 million tons, accounting for 0.84% of global emissions. It is also the 21st-largest emitter of carbon dioxide per capita. The 2012 edition report of Key World Energy Statistics, which was published by the International Energy Agency, ranks Taiwan 20th and 19th in the world for 2010 in terms of total volume of CO2 emissions from fuel combustion and per capita CO2 emissions respectively (Gao 2013:26). Also, the inevitable heavy reliance on fossil fuels that is conditioned by geographical and economic structures caused Taiwan to be highly ranked as the 21st country in the world at 110.5 million tons of oil equivalent (MTOE) by its total energy consumption in 2010 when it was the 50th largest populated country (it currently ranks as the 53th in 2015) (Jan 2011).

Even though the development of wind power can be simply seen as the Taiwanese government's effort/will to clear its bad reputation as the biggest pollution maker of the world, it also should be understood in a broader political context where the Taiwanese state is currently located. I argue that the Taiwanese government seeks to carry forward the wind energy-making project for its political goals or with its political intentions to

enhance the political visibility of Taiwan in an international community. The international status of Taiwan has been in a stalemate for decades. Taiwan lost its membership of the United Nations (UN) in 1971 when China (People's Republic of China) joined the UN. Following the One China Policy that argues it is the sole legitimate representative of Taiwan, China has actively opposed any attempt to grant Taiwan the status of an independent sovereign state in international society. Under huge pressure of the new political-economic super power, no country in the world is allowed to, or dares to, acknowledge Taiwan's sovereignty and, as a result, Taiwan lost its diplomatic alliances with many countries, and is today left only with 22 diplomatic relations with underdeveloped and/or developing countries in Latin America, Africa, and on the Pacific Islands. The presence and influence of China has caused Taiwan to be excluded from, or to lose full membership in numerous international organizations, unless it uses official names such as Chinese Taipei or Taiwan, China, which means that Taiwan is compelled to acknowledge that it belongs to China. Taiwan thus has struggled against all odds to be recognized as an independent sovereign state, and to eventually receive full membership in the UN.

Yet, in terms of achieving such political goals, Taiwan has recently moved its focus "from attempting to secure UN membership toward the more practical goal of pursuing an official presence in UN specialized agencies and working groups" (Gao 2013:23). The United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC) established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization

(WMO) are the "UN specialized agencies and working groups" that Taiwan has strived to join.[17] On the one hand, the UNFCCC is an international environmental treaty (and the sole international climate policy venue with broad legitimacy), representing "the world's collective response to climate change" that entered into force on March 21, 1994 in consequence of the 1992 United Nations Conference on Environment and Development (UNCED) which is also generally known as the Rio (de Janeiro) Earth Summit. The principal aim of the treaty is to reduce and stabilize greenhouse gas emissions in the atmosphere at a level that would prevent hazardous anthropogenic global climate change. According to its official website, on the other hand, the IPCC is "a scientific body under the auspices of the United Nations (UN)" that "reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change" (Howe 2014b). Certainly, Taiwan was not only unqualified to ratify UNFCC and to attend its events and activities to date, it was also unable to join the IPCC because of its peculiar political status of being a non-member of the UN.

In accordance with its realistic political goal of obtaining "an official presence in UN specialized agencies and working groups" rather than to "secure UN membership" (Gao 2013:23), The Taiwanese government has sought to gradually increase its visibility in a global society. Shen Shu-hung, who is a former Minister of the Environmental

[17] According to an explanation given on the official website (http://www.ipcc.ch/organization/organization.shtml), as "a scientific body under the auspices of the United Nations (UN)," the IPCC "reviews and assesses the most recent scientific, technical and socio-economic information produced worldwide relevant to the understanding of climate change." As "an intergovernmental body," it is "open to all member countries of the UN and WMO" and now has 195 country members.

Protection Administration (EPA) in Executive Yuan, clearly expressed his thoughts in one interview in 2013 that Taiwan "*must be more visible to the world*" and needs to gain "direct, stable access to the meetings and activities of the United Nations Framework Convention on Climate Change (UNFCCC) in order to cope better with the impact of climate change" (Gao 2013:23 my emphasis). Such a strategy to render itself legible to the world was influenced by, and built upon the meaningful success that it has achieved through a great long-term effort to participate in the World Health Assembly (WHA), which is the decision-making body of UN's agency, the World Health Organization (WHO). The WHA is held annually in Geneva, Switzerland, where the headquarters of the WHO is located, in order for delegations from the states with the membership of the WHO to decide specific health policy questions and to review and approve the proposed WHO work program and budget. After more than 10 years of unremitting effort to establish its visibility in the WHO (Herington and Lee 2014), Taiwan was invited to formally participate as an observer in the annual meeting of the WHA in May 2009, even though it was not a WHO state member. Although WHA's invitation is subject to renewal every year, Taiwan's delegations have kept annually attending the WHA meeting in Geneva, Switzerland since its first participation (Gao 2013; Young and Huang 2012). In addition, in September 2013, Taiwan was also invited as a guest to the triennial meeting of another UN specialized agency, the International Civil Aviation Organization (ICAO) in Montreal, Canada (Editorial 2013).

As the article "Taiwan's Position on Participation in the United Nations' Environmental Conventions and Activities," published on the website of the

Environmental Protection Administration (EPA) explicitly shows (see figure 2-2), the unprecedented success in the world's highest health organization fueled Taiwan's hope to acquire a more visible presence in other international organizations such as UNFCC and inspired Taiwanese bureaucrats to apply the similar strategy for its participation in those agencies and theirs activities.

Figure 2-2. "Taiwan's Position on Participation in the United Nations' Environmental Conventions and Activities"
(http://unfccc.epa.gov.tw/unfccc/english/01_taiwan_position/01_taiwan_position.html)

In reality Taiwan has partially participated in UNFCC as an observer of the Conference of Parties (COP) that is its annual meeting that supervises the implementation of the convention in the character of a non-governmental organization in the name of the Industrial Technology Research Institute (ITRI). As an observer, Taiwan has only been allowed a limited access in discussions at COP side events (Young and Huang 2012:24). In order to move beyond limited COP observer status, the article hence writes that in

2009 “UN member states have for the first time resolved to accept Taiwan as an official observer for the World Health Assembly (WHA). The landmark decision greatly buoyed our hopes that this positive precedent may one day bring similar advances with UNFCCC and IPCC which we have also longed to join.”

The article starts with why Taiwan truly wishes to obtain an official participation status of UNFCCC and IPCC, wishes that have not yet been fulfilled because of its unique political circumstances:

“As inhabitants of a densely populated island situated in one of the most geologically and meteorologically sensitive regions of the world, we are also keenly aware of our particular vulnerability to the many threats of accelerating global environmental change. For these reasons, we have long hoped to become a part of the global organizations built by the United Nations (UN) through its Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC), so that we may contribute our skills and expertise and seek support for the management of our risks”

It then explains how Taiwan could contribute to, and obtain necessary help from the international society’s sincere effort to protect the environment as the following paragraph shows:

“What Taiwan has experienced and learned, both the successes and the difficulties, will likely be experienced by the many developing economies of the world that are themselves working hard to elevate their economic wellbeing. In this sense we have a

lot to share with them, both in economic development and environmental management, and to help them in their journeys. We are confident we will be a very positive factor in any UN organizations we are accepted to join"

The article apparently expresses Taiwan's sincere expectation and support for official participation by writing that

"We urge the world community to heed our request to be accepted for official participation in UNFCCC and IPCC... As the precedent of the World Health Assembly has clearly demonstrated, this can be done in a beneficial manner for all concerned. We need your support and urge you to give this your best considerations"

At the conclusion, it clearly appeal for support that Taiwan needs to become a part of the UNFCCC and IPCC by explaining the nation's environmental efforts

"The people of Taiwan firmly believe we deserve these favorable considerations. Over the past thirty years, we have strived to build a systematic environmental protection framework that is both enlightened and comprehensive. During this time, we have enacted and implemented 417 environmental laws and regulations… and have integrated the principles of all of UN's environmental conventions and protocols for compliance."

In an interview with the Taiwanese monthly journal Taiwan Review, whose main purpose is to offer "in-depth discussion of various aspects of Taiwan including politics, economics, society, the environment and the arts," the former EPA head, Shen Shu-hung set forth Taiwan's hope to officially join UNFCCC (and IPCC). He said that "Taiwan could make greater contributions in the fight against climate change if the country had

more comprehensive participation in the COP and UNFCCC" because "we are standing on common ground" with international organizations, "seeking a sustainable, prosperous future for the whole human race, and we want to do our best to play our part for the global village" (Gao 2013:24). Shen then added that "although Taiwan is neither a UN member nor a signatory to the UNFCCC, the country has willingly followed international environmental agreements and is determined to reduce carbon dioxide (CO2) emissions "just as a responsible member of the global village should." The 2012 edition of Key World Energy Statistics, a report by the International Energy Agency, ranks Taiwan 20th and 19th in the world for 2010 regarding total volume of CO2 emissions from fuel combustion and per capita CO2 emissions respectively (Gao 2013:26). He finally expressed that "the government is taking the lead by involving all Taiwanese people in the ongoing fight against climate change" and that "I hope to see greater achievements for Taiwan and the international community alike through the country's substantial participation in global mechanisms such as the UNFCCC" (Gao 2013:27).

In this context, we can understand the Penghu government's project of developing wind power as a part of Taiwan's earnest effort and attempt to make it "*more visible to the world*" in order to gain "direct, stable access to UN agencies such as UNFCCC and IPCC (Gao 2013:23 my emphasis). Such visible effort becomes important especially when we look back at Taiwan's failure to join UNFCCC. Taiwan had called for support from the international community for its bid to take part in UNFCCC as its observer, before UN's annual Climate Change Conference which is the main meeting of the UNFCCC signatories held in Warshaw, Poland from November 11 to 22 in 2013

(Editorial 2013). Even though the president of places such as the Republic of the Marshall Islands and Republic of Kiribati support Taiwan's bid to join the UNFCCC as an observer, Taiwan failed to receive admission. In a *Taiwan Review* article filled with the expectation of the bid's success published prior to the Climate Change Conference, the writer emphasized that even if "the 23 million people of Taiwan will be without a voice," in the Conference where the international community meets to discuss climate change, Taiwan will definitely continue to make its commitment to fighting climate change for itself and for the international community (Editorial 2013).

Taiwan's commitment to the mitigation global climate change is "just the kind the UNFCCC needs" and it might eventually be seen by international community and allow the politically unique small island country to gain a chance to become an official but still partial participant as an observer of the UNFCC as it has wished. Therefore, Penghu's wind power development project does not simply need to be seen as Taiwan's effort to fight against climate change for the sake of itself, the international community, and all human beings. The Taiwanese government does not merely seek to take responsibility as a member of international society through its effort to generate electricity via wind and thus through its contribution to the alleviation of global climate change. Rather, more importantly, the development of wind power in Penghu also should be understood as Taiwan's political action/strategy to render it and its effort visible to international society in order to achieve an "official presence in UN specialized agencies and working groups" (Gao 2013:23). It could allow Taiwan to show international society its sincere and earnest effort in reducing carbon dioxide emissions in the Anthropocene

and to obtain its image as a political actor with a strong sense of socio-environmental responsibility. Then this might serve as critical momentum for UNFCCC members to approve Taiwan's request to become an official observer of the agency.

Going further, for Taiwan to secure and increase its official presence in UN specialized agencies may play a leading role in realizing its ultimate political goal of recovering UN membership in the future (Gao 2013:23). Taiwan's strong effort for global environmental issues might help it to gain amicable responses from international society and then to finally recover a political status in international society that it had lost before but is now struggling to gain. I do not say that the development of wind energy could change the status quo of Taiwan such as its relationship to China and other countries and eventually lead Taiwan to achieve its ultimate political goal to regain its political status in international society as a full-fledged and independent sovereign state. Rather I suggest that the effort in developing wind energy or Penghu and making Penghu a world-class low carbon island would be seen as a meaningful small step of Taiwan towards the goal. One Chinese proverb says that "the man who removes a mountain begins by carrying away small stones." Likewise, taking many small steps in the right direction, that is, making itself gradually visible to the world through various efforts for the environment, such as Penghu's wind power project, might enable Taiwan to reach its final destination in which it would become an independent sovereign state that is recognized by international society. Even in the political deadlock, Taiwan will not give up on its hope to become a part of the international community to fight against anthropogenic climate change.

Meanwhile, the wind energy-making project means a different thing to Penghu local government. At a local scale, the development of wind energy was conceptualized by the archipelagic government as a means to revitalize the local economy and to alleviate financial poverty through its sale to the national grid via the submarine cables. Instead of being proposed as a solution to the nation's energy security problem or as a grand master plan to serve for international society, the project was initially designed by the Penghu government in order to first achieve its economic independence and then political autonomy from central government, and to regain its pride and dignity as an island county with a long history and tradition.

Penghu, these two Chinese characters became the pronoun of "the backwardness (*luohou*)" in Taiwan, mainly because the archipelago county has remained socio-economically underdeveloped due to its geopolitical location and environmental condition, restricting the development of industry and the all year round economic activities. Taipower Akai created two cartoons, representing how people mis/understand Penghu as a backward, primitive frontier of highly-developed modern Taiwan. One cartoon called "the most common aspect where Penghu people are discriminated against" vividly shows that Penghu is to Taiwan as Taiwan is to UN by humorously explaining why people in mainland Taiwan and even in a more developed outlying island county see Penghu as retarded and discriminate it (see figure 2-3). In the cartoon, there are four men who express their astonishment by putting hands on their cheeks and three of them look like Akai's friends from mainland Taiwan that he met at different stages of his life and one is a guy from Kinmen island. The first man, with whom Akai studied at a university

in Taiwan's second city called Kaohsiung, is shocked when he hears that "Penghu also has cable TV!!" The second man who is Akai's military mate also gets startled, as he comes to know that "Penghu also has a McDonald's restaurant!!" Akai's colleague working in Taipei's Taipower branch makes a surprised look because of the fact that "Penghu has a Starbucks store!!" Akai then responds to him by saying that there were two stores before." These three men from mainland Taiwan are all very astonished, because Penghu has in fact many things that they think (or misunderstand) in common are unavailable and nonexistent there. Unlike mainlanders, the last man, who is from an outlying island that is economically more developed than Penghu becomes astounded, because he learns that "Penghu has no *Guobin* movie theater" (that is one of Taiwan's popular movie theater chains), and then laugh (at Akai) loudly. Akai responds to the Kinmen man by adding one Chinese word, "*Kaoyao*," which means "goddamn."

Figure 2-3. The Cartoon "The Most Common Aspect Where Penghu People Are Discriminated Against." Courtesy of Taipower Akai.

In other words, this cartoon shows that other Taiwanese commonly engage in the act of looking down on Penghu from a self-centered position. On the one hand, three guys from mainland Taiwan all looked down on Penghu as a place that is fallen behind because they took for granted or supposed that in the archipelago, it was impossible for them to enjoy the smell and taste of global food and drink that they consume on the mainland. When such an assumption turns out to be a biased and incorrect misunderstanding, they became astonished because Penghu is not as backward or underdeveloped as they originally thought. On the other hand, a man from Kinmen expected that he would be able to find a huge silver screen even in Penghu just as he could in his island home. He gets surprised because, unlike anticipated, Penghu appears more backward (and less modernized) than his hometown. He might have had a feeling of superiority that is different from that of mainlanders, and thus laughed (at Akai) because Kinmen has what Penghu does not have, even if both are outlying island counties that lag far behind in economic development in relation to places of mainland Taiwan. By taking what they have in their places as a barometer to show and measure the level in cultural and economic development of the archipelago, those four men either start with or end up with the discrimination against Penghu. Due to this reason, Akai gave this cartoon the title, “what makes Penghu people get discriminated most.”

Another cartoon drawn by Taipower Akai also describes how people in mainland Taiwan view and understand Penghu people in a negative and prejudiced way (see figure 2-4). It depicts a Penghu woman in a tube top, riding on a white dolphin — a marine animal representing the archipelago. The dolphin does not seem to know what to do and

gets cold sweats when it hears from the non-Penghu people, "what!! Penghu people board a plane to go home!! I thought [misunderstood] that you return home by riding a [white] dolphin." The cartoon correctly portrays that people in Taiwan often think (or make a crack) that as an outlying island, Penghu is so underdeveloped and marginalized that there is no flight connection between the mainland and itself. If we push such interpretation further, the cartoon also suggests that Penghu people are so poor that they cannot afford flight tickets even though there is a flight option available, and thus cannot help riding on a famous and precious marine animal.

Figure 2-4. The Cartoon "What!! Penghu People Board a Plane to Go Home!! I Thought That You Return Home by Riding a (White) Dolphin. Courtesy of Taipower Akai.

In short, it is by using cartoons as a visual metaphor employing humor that Taipower Akai attempted to deliver to the general Taiwanese audience an informative, enlightening message that Penghu is in reality not as socio-economically backward as they usually think. He sought to fix the misunderstanding about Penghu that is widely spread among people in Taiwan, and to oppose their attempt to make Penghu their internal "Other." Taipower Akai's message toward the audience is simple and

straightforward: the refusal of what the cultural anthropologist Johannes Fabian terms "denial of coevalness" (Fabian 1983). Spatial difference cannot be equated with temporal difference. Penghu is neither the backward, primitive counterpart of Taiwan nor in the lower position than Taiwan in an evolutionary ladder; the Penghu people are the contemporaries of people in mainland Taiwan.

Although many natives of Penghu like Taipower Akai have are upset that people in Taiwan mis/identify their beloved home with backwardness, however, they have also experienced, acknowledged, and complained about the infrastructural backwardness of the archipelago caused by its poor financial condition. Many locals complained to me in common that Penghu lags behind Taiwan badly in social welfare service, in particular the health care system, even if they said that they were gratified with, and loved every aspect of life in the archipelago. One informant who was a third year female student studying at the only college of Penghu told me that Penghu's hospitals often fail to find out the cause of your disease. Even when you feel ill, according to her, you are likely to be wrongly diagnosed as good and normal in Penghu, while at Taiwan's hospitals, you are diagnosed with having a medical problem. She got agitated when she told me this story and complained that Penghu's inhabitants have been treated as a second-level citizen by the national government. Even though they pay the same amount of tax, they have not been equally treated nor have they received the public welfare they deserved, and expected to receive, compared to citizens residing in mainland Taiwan. Mrs. Shen who was working under my landlord Mrs. Lee also told me that if you have a serious health problem, it could not be treated in Penghu. Rather, you have to be transferred to hospitals on the

mainland to get appropriate treatment. She took an example of her neighbor who had cancer to let me know how bad Penghu's medical system was. An old man was diagnosed with cancer at Penghu's hospital where he could not receive good treatment and decided to go to a hospital in Taipei. He received medical treatment in Taipei and when his illness seemed like it would improve, he temporarily returned to Penghu. He repeated this process. But one day when he was at his home in Penghu, he suddenly felt uncomfortable and was quickly sent to the local hospital. There was almost nothing they could do for him and he ended up boarding a plane to head for Taipei. Unfortunately, he died on the plane. Ms. Shen gave a sigh of resignation and said that hospitals in Penghu are in name only because they cannot function well and offer what they are supposed to do and people cannot receive what they are expected to get from hospitals. She then added with high-note voice that instead of curing patients, hospitals in Penghu ironically let them die and that the central government needs to pay greater attention to Penghu and provide more financial assistance.

The lack of medical infrastructure and its low service quality, caused by the county's weak financial condition, become destructive violence for local inhabitants (Anand 2012; Ferguson 2012; Rodgers 2012; Rodgers and O'Neil 2012). Penghu residents have had trouble accessing the well-established, flawless medical system and getting good healthcare from it locally, and have a feeling of exclusion that the medical infrastructure and its quality separate richer counties and their residents have from poorer counties and the have-not people living in them (Ferguson 2012:562). Inhabitants of the archipelago are not only marginalized, but also re/constituted as abject citizens of the

country by and through relatively inferior local medical infrastructure. In short, Penghu people have experienced and became the victims of "infrastructural violence" because abjection and marginalization in Penghu "become operational and sustainable" through infrastructure (Rodgers and O'Neil 2012:403). For them, "social suffering is" embedded and "experienced in material terms" (Rodgers and O'Neil 2012:405) and therefore "the insistence on materiality… is at the same time an insistence on morality" (Ferguson 2012:562).

The fundamental reason that Penghu is identified with backwardness is the lack of solid financial resources to steadily generate income, resulting from its geopolitical location and environmental condition, which restricted the development of industry and the all year round economic activities. The absence of stable financial source has been a chronic, serious problem not only for residents, but also for local government whose existence, operation, and projects are all mainly enabled by tax revenue. Penghu has been one of the poorest counties in income for a long time and, as a result, the deficiency of tax revenues became a major cause of the deteriorated condition of Penghu's public social welfare such as medical service and transport system (Ho 2005). Though Penghu could clear the dishonorable title of the poorest county through the continuous effort that it had done to improve its economic condition over the past ten years, like the development of tourism and the attempt to invite casino industry, the overall result was still unsatisfactory. In a report of a Taiwanese finance magazine published in 2014, categorizing and describing every administrative district of Taiwan in medical language in accordance with its current financial condition, Penghu county was classified as being

in the Extra-Corporeal Membrane Oxygenation (ECMO) district (Ong 2014). Penghu was then regarded as being in "deep coma" status in the ECMO district. The magazine report made a diagnosis that the main reason for a deep coma is Penghu's stubborn trouble in securing the tax revenue. In spite of the effort to get out of a deep coma, Penghu government has always needed the central government's financial aid to make up a shortfall in tax revenue, and to carry on its various public service projects (Ho 2005).

The inevitable heavy economic reliance on the central government generated a mix of negative sentiments such as alienation, rage, humiliation, and powerlessness among a variety of social agents in Penghu including politicians and residents. By drawing on Confucius political philosophy, as I will show in Chapter 3, Penghu people have conceived of their relation to the state or the central government as a parent-children relationship and expected the central government to act like a father figure that has a responsibility to love and take care of its children — the citizens. They thought that they need more, a warmer concern and affection from the father-like central government, than the people in other places of Taiwan because Penghu is a disabled or ill child who is suffering from its innate poor physical condition (i.e. environmental and geopolitical constraints that severely limit its autogenic economic growth). Hence, it is because of their daily experience of "infrastructural violence," such as of marginalization, abjection, and exclusion, that could be improved by the top-down economic support that ordinary local inhabitants often described Penghu as either a poor orphan or a pitiful disabled child who was miserably abandoned by, and thus did not get special love and attention from, its parent, the central government (Anand 2012; Ferguson 2012; Rodgers 2012; Rodgers

and O'Neil 2012). Local residents' feeling of abjection and marginalization got bigger and deeper and even turned into anger, as they felt that they even failed to receive the basic consideration/aid to the (similar) extent that the central government as a father figure gave to other counties, its other children, failing to provide a special concern that a disabled child, should expect to obtain from a beloved parent. Then, some furious local people even tried to urge fellow residents to employ a direct, democratic practice of using their ballots in elections in order to warn the central government and the ruling party, which have ignored Penghu and its social welfare, and to "pressure" these political entities to provide the locals with what they need (Anand 2011).

On the other hand, local politicians' sentiment toward the central government was not different from that of ordinary residents because, from their perspective, Taiwan has not been responsible for, and has not done its best to help, its offshore islands, Penghu. At local assembly meetings, many politicians have strongly expressed their complaints about the central government's long-term and consistent indifference to Penghu and its people. Some of them articulated it in a way that conceptualizes the center-local relations as a parent-child relationship like ordinary people did. They denounced in public that as a parent, the central government "should have paid special attention to a child with disabilities" but in reality has treated Penghu like a child that a second mother gave birth to. In their view, even if Penghu as a child with inborn physiological defects expected a paternal unconditional love and concern, the father has overlooked and not taken care of the archipelago because he seemed (tended) to view his child not as a child with disability from his lawful wife but as a child from his unfaithful relationship with a

concubine or a second. The central government was also blamed for the failure to fulfill its own responsibility as a father because it has "never given Penghu room for it to survive itself." By taking the effort to develop local tourism industry as an example to explain it, one politician asked the central government "not to treat Penghu as a battlefield" anymore for its prosperity, and then contended that "otherwise, Penghu will not have a chance to be self-supporting forever" because "most of the best scenic places were occupied by the military." Due to this, it is not strange that other politicians sharply criticized that "no matter what political party comes to power by becoming the ruling party, the central government has long ignored Penghu and its development" and thus made it remain or "become Taiwan's "offshore island." They also denounced that "the central government has not just ignored but even discriminated against Penghu" as "infrastructure problem" of the archipelago shows, and that such ignorance and even discrimination of the central government "made Penghu the backward, and the most undeveloped county of Taiwan where livelihood of people is also the poorest."

Local politicians also have been very dissatisfied with, and even were outraged by the ignominious, submissive attitude that Penghu government has taken towards central government to gain financial assistance to deal with poverty, as well as lukewarm, sloppy reactions of the central government against such aid request. As I mentioned earlier, Penghu has been one of the poorest counties that need economic support from central government and one local politician strongly advocated its appropriateness and necessity by saying that "our destiny" that Penghu is "the poorest county in Taiwan" would be perpetuated, if we were unable to receive special attention from the central government.

Yet, many politicians deeply lamented and even criticized a miserable, humiliating fact that Penghu's elite power groups all have groveled to the central government in order to address and solve the chronic problem of tax revenue shortage. By equating the act of requesting money towards the central government is like that of a beggar, they vehemently argued that Penghu's elite groups including bureaucrats and politicians themselves have been high-class beggars who stretch out their hands towards the central government to beg for money, and even reproached that governors (magistrates) of Penghu County as the leaders of a group of obsequious beggars. In reality, the former magistrate Wang Qian-fa also even meekly acknowledged such critique by describing that he had been (like) "a pug, begging (central government) for food," in spite of his self-justification that it was unavoidable given the gloomy reality of Penghu, being poor and lacking the source of finance. Then politicians finally realized/accepted that because "Taipei cannot (and/or does not) see Penghu," the submissive, blind dependence on central government by beggars, checking their face and stretching out both hands towards them to ask for financial support is unable to eradicate Penghu's plight.

Politicians of the archipelago thus started to ask the local government for a radical change in its mindset and attitude in order to resolve a chronic poverty issue. Though they acknowledged that because of its environmental condition, "Penghu had its own destiny to be the poorest county" and "poverty became the devil from which Penghu residents could not escape," they did not think that getting out of poverty is an impossible mission to be realized. Rather, they strongly believed that only when and after Penghu and its people becomes strong themselves in the future, will the eradication of poverty be

possible, because, (attempting) to "build your own future on the eyes of others" or to "leave your own future to other's eyes" is the most "stupid," useless idea. They then argued that "doing for yourself and depending on yourself are substantive" and practical actions necessary for Penghu government to resolve its financial problem, because in their view, unless Penghu goes through the viviparous environmental restriction, which caused economic recession, by itself, the same event would repeat every year and it would not free itself from the fetters of history. From their perspective, Penghu local government had to first "change (or throw away) its mindset, seeking for economic aid from central government," and then to "seek to accomplish the improvement of finance condition with the ideas of the self-management." "Rather than to adhere to its customary obsequious attitude towards the central government for economic support, therefore, the Penghu government chose to become strong itself through its own effort to self-create financial resources, generating income" in order to get out of poverty with which it has been fed up, and further to shape the future of archipelago in its own way.

For local politicians, moreover, the creation of stable income sources for Penghu was important not merely in economic sense but also in political terms because they believed that only when Penghu become strong enough to be financially self-reliant, the archipelago county's political importance and power can also be strengthened. Although Penghu government designed the wind power project mainly as an economic means for the self-extermination of poverty and for local development without depending on financial support from the state, local politicians and bureaucrats also expected that the success of the proposed "economic" project also produce "political" effects to

reconstitute the existing uneven, uncomfortable relationship between local government and the central government. They believed that the archipelago's increased influence in the realm of politics would eventually render it visible and its voice audible to the central government, without being ignored hopelessly as before.

Rather than to keep taking a servile, passive attitude to ask for, and expect the central government's financial assistance that has often been thought to be as insufficient by ordinary residents, therefore, the Penghu government, with the support from politicians and scholars, proposed its ambitious project to harness abundant wind energy as the optimal self-rescue measure for a chronic, flagging economic impasse without crossing local residents' will and wishes to pursue sustainable development, as confirmed in the 2009 casino referendum. Although, as someone said, Penghu's northeast seasonal wind is a brutal reality that people of the archipelago cannot change, the wind power development project refused to view it "as the principal reason to hamper economic development." Instead the project chose to squarely stand up to, and harness the wind that transcends human power as an infinite economic source that eventually enables Penghu and its people to escape from a disgusting poverty. Such economic purpose of the project was straightforwardly expressed by Lin Hui-Zheng, one of its key architects. According to the article titled "the typical green collar talented person" published in a magazine dealing with energy issues (Luo 2013), Lin who is a native of Baisha Township, Penghu and currently holds a position at NTU has strived to turn Penghu into a low-carbon island and played a critical role in planning the wind power development project. When the interviewer asked Lin a question regarding what made him immerse himself in the

project of harnessing wind power, he replied that the main reason for his devotion is simply to let his "homeland," Penghu "escape from poverty" (Luo 2013:21).

In order to close this section, we have to return to Anna Tsing' discussion about scale. Tsing asserted that successful financial conjuring is likely to be possible "only in thick collaboration with" regional and national dreams/conjurings (Tsing 2000:121). It seems that such argument align with the case of wind power development in Penghu. The Penghu government has sought to construct the potential profitability of wind energy through the making of fascinating stories in order to attract investment funds for its start-up energy company. Those narratives are in turn linked to, and strengthened by national and local goals. The wind power development project has different meanings and goals for the central government and Penghu. Unlike local government's intention and wish, on the one hand, the central government did not see that the primary importance of the project lies in its expected effect of producing economic profits. Rather, it mainly views the project as the important political tool to render Taiwan to look like an environmentally responsible country and visible to international community, which may help the country to join UN agencies and then to ultimately recover its full membership of UN. This seems to make people in Penghu, including ordinary residents, bureaucrats, and politicians expect that national government will offer lavish support to realize the project as planned for the sake of achieving its own political aim, instead of, and not for the economic goal that local government wishes to accomplish. On the other, the local goal of the wind power development project is likely to add an emotional aspect/power to the alluring but reason-based stories about profitable wind energy. Local inhabitants as

potential investors for the energy company may be touched by the Penghu government's grand goals to alleviate poverty of and for Penghu and themselves, as well as by the related stories about the main architect of the project like Lin Hui Zheng and his motivation for participation in it. The purpose of the project at local scale and its stories may instill local patriotism into the hearts of local residents and such love of Motherland inspired, along with a discursively constructed profitability of wind energy through attractive stories, in turn may induce those residents to invest in the energy company for their home and its prosperity.

Conclusion

In this chapter, I have argued that by relying on various numbers and straightforward calculations, the Penghu government produced captivating yet reliable stories that change the meaning of the wind and potential profitability about wind power in order to enchant local inhabitants and attract their investment funds for the start-up energy company. The architects of the wind power project and journalists discursively reconstructed the fierce wind from which Penghu has long suffered in optimistic ways to tempt local inhabitants to invest their capital in the start-up energy company. They created fantasy and expectations about potential financial return of wind power for attracting investment capital through the making of alluring, positive narratives, which emphasize that the sale of surplus wind-generated electricity would produce a stable income for the locals. Yet, the discursively created financial expectation about wind was not completely fabricated, building on fraudulent evidence and lacking empirical and

logical (Tsing 2005). Instead, the attractive stories that came to shape the spectacle or financial expectation of wind are built upon, and supported by, various empirically verifiable and/or logically well-founded numerical figures about wind power acquired from historical, scientific observation (for instance, the annual average wind speed and a capacity factor and full load hours of a wind turbine, and the total electricity demand of Penghu) and their marriages for a simple but reasonable estimate of potential profits. Those narratives also had, and were thus backed up, by legal basis guaranteeing the purchase of electricity produced from renewable energy sources. Then the success of the low-carbon island making project in a broad sense, and of the wind power development project as an important part of the former in a narrow sense was important in realizing national and local dreams, the strengthened political visibility in international society necessary for the regain of the status as an independent sovereign state and the eradication of economic poverty, respectively.

The captivating, reliable stories that the architects produced to aid capitalization for the energy company did not merely create a spectacle, or financial expectations of the wind. The making of those narratives were an important human intervention to realize the potentiality of the wind, because, as I explained in introduction, potential simultaneously refers to natural force latent within organisms, waiting to be released, as well as to possibilities that might be socio-culturally realized by people who want to use such force in the near (Gammeltoft 2013; Helmreich 2013; Morgan 2013; Taussig, et al. 2013; Zhu 2013). The fierce winter wind can become a profitable energy source for local people in Penghu, only when the energy company is established with their investment funds and

operate to fulfill its goal to share with them the financial gains of wind-generated electricity. In this regard, hence, retaining control of the fascinating storylines is crucial not only to keeping up positive appearances of the wind and local investors' financial expectations for wind power and the start-up energy company, but also turning the potentiality of the wind into reality (Hunsberger 2014; Randalls and Petrokofsky 2014). This also means that the stories produced by the architects of the wind power project "must be maintained and protected from external co-optation" in order to retain financial expectations and ultimately to enable material conversion of the wind (Randalls and Petrokofsky 2014:222). In the rest of this dissertation, therefore, I will look at how various events that surround both material and immaterial energy infrastructure influence not only the alluring narratives that produced a financial spectacle about wind power, but also, more importantly, the actualization of the potentiality of the wind. In that those events, in which both humans and nonhumans are involved, make local residents either believe and accept, or distrust and even deconstruct the storylines, they play a critical role in affecting people's understanding of a spectacle and new meaning of wind, as well as, thus, in actualizing the potentiality of the wind.

Chapter 3: Making the Profitability of Wind Real

Introduction

In the previous chapter, I detailed the ways in which the Penghu government discursively constructed a spectacular image of the wind as a profitable energy source through the production and distribution of captivating storylines. Following Anna Tsing, I then argued that the Penghu government's "self-conscious making of a spectacle" of the wind as a potential profitable energy resource is "a necessary aid to gathering investment funds" and support from local inhabitants of the archipelago (Tsing 2005:57). I found, through many informal conversations with local inhabitants who were interested in the energy company, that although the narratives that produced a positive appearance of the wind are undoubtedly exciting and enchanting, those stories were not understood to be reliable enough to persuade people to make an investment, unlike what Tsing shows in her study. In Tsing's case study, the Canadian mining company Bre-X could stimulate global investors to flock to buy its stocks by claiming to have discovered gold reserves deep in the jungles in Indonesia. I suspect that the reason the potential investors find the mining company's claim of a lucky find of hidden treasures persuasive and plausible lies in their geographical location. Those future investors, for whom the company's argument was intentionally fabricated or invented, were neither on the spot nor familiar with the real state of things in that locale in Indonesia. Since they were mostly foreign investors working at global scale who were not well versed in the local situation, the mining company's economy of appearances might be able to successfully obscure and partially

remake reality (e.g. the construction of the empty frontier while erasing the presence of humans like miners who had been working in the area). For this reason, I think that Tsing could make the following argument: "the more spectacular the conjuring, the more possible an investment frenzy" (Tsing 2005:57).

Unlike Tsing's case study, however, potential investors and supporters for Penghu's wind power development are "native" inhabitants, not people who are dispersed globally. This means that the Penghu government's self-conscious construction of a spectacular wind is likely to be restricted in terms of achieving its intended goal to convert the meaning of the wind and to raise investment funds for the energy company, because the particular "local knowledge" of residents allow them not to easily be captivated and persuaded by charming storylines that produced a dramatic, imaginative profitability of wind. As natives of the place, local residents seek to see for themselves whether such imagined, constructed economic value of Aeolian force is reasonable and believable, rather than to be in frenzy for it. "The more spectacular the conjuring" of the profitability of wind, the more village residents want to examine and confirm if it is trustable (Tsing 2005:57). Even if fascinating stories of the profitable wind was "allied to an empirical grounding" (Randalls and Petrokofsky 2014:220), whether local people find those narratives trustable enough is another story. In order for the economy of appearances of wind to be believable enough to make local inhabitants act (i.e. spending money on buying shares of, and giving support for, the energy company), therefore, the Penghu government also requires staging trustable aspects of the imagined profits of wind, which makes local people believe that the profitability of wind is built on not

merely abstract rational calculation with empirical grounding, but also concrete, material evidences to be observed.

This chapter aims to illustrate how the discursively constructed profitability of wind is seen as trustable and well founded by village residents who live proximate to Taipower's wind turbines. I contend that the fascinating storylines, which were produced to create a new image and a financial spectacle of the wind to actualize the potentiality in Aeolian force, are accepted as reliable and thus maintained "by accident." The reason why I say "by accident" is that the storylines could be sustained and accepted not through the Penghu government's purposeful actions/efforts to protect them from co-optations or suppress dissenting narratives, but rather as an unintentional consequence of villagers' miscomprehension of symbolic meanings of events that surround broken wind turbines. As I will show in what follows, villagers living near by a wind farm "listen for" the sounds of wind turbines and speculate them first as noise and later as the sound of money, depending on the different circumstances in which they are located. In order to see if their own speculation about wind turbines is correct, village residents seek to pay attention to, and decipher, events that happen around those machines, in particular, Taipower's response to those technological artifacts. For local villagers, Taipower's reactions to wind turbines or their associated events operate like a "confirmation tool" to prove if their own conjecture about those machines is correct. In particular, village residents seek to see if the discursively constructed image of the wind as a profitable energy source is trustable by paying close attention to, and mis/interpreting Taipower's "swift" reactions to malfunctions of wind turbines. The "quickness" of Taipower's

reactions towards wind turbines attracts attention from local villagers, because it corresponds to the negative image of the state-owned power company — as greedy and self-interested — that people have in their minds and that runs counter to the company's ideal image as a responsible, caring father that people expect based on a Confucian philosophy. Then it is through the mis/interpretation of the particular sign, Taipower's rapid reactions to wind turbines, that villagers confirm that their speculation that wind turbines are money-generating machines is right and thus come to have faith in the constructed spectacular wind as a profitable energy source.

However, villagers read and interpret the sign, rapid responses to wind turbines in a way that is totally different from what Taipower as its creator originally intended to convey to people. In order to explain how villagers misinterpret expedient repair attempts to broken wind turbines, I use the Japanese symbolic anthropologist Ohnuki-Tierney Emiko's concept "méconnaissance" (misrecognition) (Ohnuki-Tierney 2002; Ohnuki-Tierney 2004; Ohnuki-Tierney 2015; Silverstein 1976). On the one hand, for Taipower, repair attempt is not simply a material activity to restore broken artifacts to their normal condition. It is also a political action to mend and normalize the power hierarchies between the state and its subjects. Therefore, by doing swift repair work for broken machines, Taipower as the state-owned electricity utility company seeks to maintain its public image and authority as a responsible, loving, father-like Confucius state, as well as its uneven power relationship with people. On the other hand, the village residents (mis)interpret Taipower's prompt reaction to the breakdowns in an economic sense: the quickness of reactions is a physical confirmation sign for them, showing the profitability

of wind turbines. They believe that unless wind turbines are financially important and valuable, Taipower, being a lazy, slow, and greedy state agency, would not take unusually prompt actions for malfunctioned machines. Therefore, this chapter argues that through mis/interpretation of Taipower's rapid reactions to wind turbines, the fascinating stories of the wind could be (more) trustable and retained (only) among local villagers living nearby a wind farm. The local government's endeavor for semantic conversion of the wind partially pays off, which makes it come closer to its goal of actualizing the wind's potentiality as marketable electricity.

Understanding Infrastructure

Because wind turbines are an essential infrastructure to the production of electricity through the wind: only with these technological machines, the wind can begin its "social life" as a renewable energy source, we have to know first what infrastructure is and what its properties are. The term "infrastructure" is generally used to designate physical artifacts/systems that are "essential to enable, sustain, or enhance societal living conditions" (Fulmer 2009:32), or "technical apparatuses for the mobilization and conversion of matter into legible human resources" (Chu 2014:353; Darian-Smith 1999).[18] It first came out on August 13, 1875 in a report on a French railroad project in order to refer to, as its prefix *infra* means "below," substrate material below, or "the understructure of railways," in contrast to their superstructure such as stations and rails

[18] The cultural anthropologist Brian Larkin (2013:338) writes that "studies of infrastructure tend to privilege the technological even if they qualify it by defining urban spaces as hybrid systems of humans and machines bundled together through infrastructural networks." Similarly, Ashley Carse also argues that we tend to conceptualize "infrastructure as "hard" technical artifacts or systems" (2014:11).

(Schipper and Schot 2011:247). It was then introduced to English vocabulary from that of French in the 1920s where it referred to substrate material below railroad tracks (Carse 2014:11). Since the etymology of the word shows its direct link to the understructure supporting one crucial part of our life such as mobility, infrastructure commonly refers to "the largest and most sophisticated technological artifacts ever devised by humans" (Graham and Marvin 2001:10), working to "supply continual services central to society's functioning" (Matthewman and Byrd 2014:5). Our modern life is intertwined with, built upon, and enabled by a myriad of "large-scale human-built systems" (Goldthau 2014; Matthewman and Byrd 2014:5), namely, infrastructures that "are matter that enables the movement of other matter" (Larkin 2013:329).

In general, however, social scientists had long paid scant attention to, and thus relatively (and terribly) un(der)studied infrastructures, in spite of the fact that those technological systems are "a manifestation of human interaction with the material world" and "materialized articulations of our modern social life" (Lockrem 2012). The reason that scholars un(der)studied infrastructures probably lies in that they tended to view those human-built, large socio-technological environments as one of "boring things" with little attractions and values for academic discussion and analysis (Star 1999:377). Or because infrastructures have functioned "without calling attention to themselves, in line with the prefix *infra*" (Trovalla and Trovalla 2015b:54) and then are "so routinely naturalized in social life," they become the unspoken and hard-to-recognize "elephant in the room" in social theory (Mukerji 2010:420). Drawing on her mentor Anselm Strauss's call to "study the unstudied," hence, the late STS scholar Susan Leigh Star particularly called on social

scientists to study infrastructures that have been un(der)studied, boring things and research topics in order to grasp "more ecological understanding" of our sociocultural world (Star 1999:379). If there were no roads, according to Star, we were unable to get access to our field site and collaborators residing there, and thus to conduct our research. And when we study a city, as Star suggests, to "neglect its sewers and power supplies (as many have)" means to "miss essential aspects of distributional justice and planning power" (379). In a similar vein, the historian of the transition of energy systems Christopher Jones also argues that the study of energy or energy transition requires the understanding of energy infrastructures (Jones 2013). When you aim to study wind power as this dissertation wishes to do, therefore, you should not put aside wind turbines, which are the infrastructure necessary to generate electricity by harnessing the Aeolian force moving in the sky. Especially, how people see wind turbines is clearly important for us to understand how and why they (wish to) invest in those machines, financially and personally (Sovacool and Brossmann 2013).

What is Infrastructure?

Many scholars of infrastructure have long regarded the "invisibility" as "its dominant mode of visuality" (Anand 2011; Björkman 2015; Graham 2010; Graham and McFarlane 2015; Star 1999; Starosielski 2012:40). Infrastructure gets obscured both physically and perceptually through either material concealment or repetitive use without interruption (Edwards 2003; Star 1999). Infrastructure becomes materially invisible, being hidden or "below the view of the human eye" (Murrey 2015:65), on the one hand,

because, as its prefix *infra-* means, it runs subterranean, "'underneath' actual structures… that upon which something else rides, or works, a platform of sorts" (Star and Bowker 2006:230; Trovalla and Trovalla 2015a; Trovalla and Trovalla 2015b), or is locked inside/behind the walls of buildings (Anusas and Ingold 2013; Anusas and Ingold 2015). Infrastructure also becomes transparent, being unrecognized by its users, on the other hand, as those users continuously interact with, and use, it in their everyday life without stoppage, as the case of electricity shows (Larkin 2013). By being good systems that perform smoothly what they are expected to do, infrastructures "disappear almost by definition" (Bowker and Star 1999:33) because they get "displaced in the focus on the matter they move around" (Larkin 2013:329): "the easier they are to use, the harder they are to see" (Bowker and Star 1999:33). In short, infrastructures become "ontologically opaque" and "epistemologically obscure" in that they have little connection to "human physiology and perception" and no "direct sensate experience at their working level" (Hirsh and Sovacool 2013:720).[19]

Although invisibility is naturalized as one of their principle properties, however, Star strongly contends (Star 1999:380) that infrastructures re-emerge in the foreground and then become visible to people, when they break down and fail to "maintain transparency in use" (Starosielski 2012:40). We come to realize the existence of the complex electric power grids only when "the flows sustained by them are interrupted" (Graham and Thrift 2007:8) and, as a result, a blackout happens (Bennett 2005). Since

[19] Due to such invisible properties, Bowker and Star claim that the study of infrastructure requires what they term "infrastructural inversion" that means "a struggle against the tendency of infrastructure to disappear" and become a naturalized background (Bowker and Star 1999:34). To invert infrastructures is to make them visible to us, by bringing them back to the "front stage" from the "back stage" (Goffman 1956).

she made that argument, Star has become a kind of "obligatory passage points," to use the term from Michel Callon's classic article in actor-network theory (ANT), for any scholars who are interested in studying infrastructure and technological systems in various academic disciplines, including anthropology, geography, sociology, and STS. (Callon 1986). Consequently, Star's very argument that infrastructure that are "by definition invisible" "becomes visible upon breakdown" (Star 1999:380, 382) soon came to be accepted, cherished, worshipped, taken for granted, and reproduced by numerous scholars of infrastructure (Collier 2011; Edwards 2003; Elyachar 2010), as if doing so is "seemingly obligatory" (Larkin 2013:336). Yet, the constant repetition of Star's assertion then has unfortunately established the stubborn dualisms between functionality/normality/invisibility and malfunctionality/abnormality/visibility, which is prevalent in the current literature on infrastructure.

A large amount of research has recently suggested (Anand 2011; Carse 2012; Hetherington and Campbell 2014; Larkin 2013; Schwenkel 2015a; Sneath 2009; Starosielski 2012; Starosielski 2015), however, that the assertion that infrastructure, as "primary necessities" to our modern daily life (Nagle 2013:17), remains obscure until its malfunctions is not absolutely true, but rather inaccurate. Instead, it is a "partial truth" because invisibility is merely "one aspect of infrastructure" and "only one and at the extreme edge of a range of visibilities that move from unseen to grand spectacles and everything in between" (Larkin 2013:336). "Infrastructures are not invisible to everyone, everywhere," as the cultural anthropologist Ashley Carse notes, because they influence and are experienced by diverse social actors in different ways (Carse 2012:543). For

instance, the argument that infrastructures are working so properly without disruptions that they can become a naturalized, hidden background is fundamentally built upon human experiences in Euro-American sociocultural settings. As cultural anthropologists Kregg Hetherington and Jeremy Campbell argue in their co-authored article (2014:191), the Euro-American centric definition of infrastructure often fails to explain the high visibility of human-built large technological artifacts in global South in which they are remarkable to many local inhabitants even when they operate properly without interruption, and are barely always recognized as opaque by people who were touched by them (Harvey 2005; Hetherington and Campbell 2014:192; Larkin 2008; Schwenkel 2015a). In brief, the visibility of infrastructure is always situated, "reflecting an actor's geographical location, cultural assumptions, and the nature of his or her labor" (Carse 2012:543).

Michel Foucault writes that "the only valid tribute" to Nietzsche (who is the author that Foucault himself loves) is simply to utilize his thought, "to deform it, to make it groan and protest," even if doing so may cause his commentator to criticize that he is "unfaithful to Nietzsche" (Biersack and Hunt 1989:25). Following Foucault, therefore, I think that we also should "move beyond conceptualizing" infrastructures "as naturally invisible, or only visible when it is built or disrupted" by revisiting, deforming, and challenging Star's ideas, if we want to be faithful to, and pay homage to, her from the bottom of our hearts (Starosielski 2012:54).

The Physical and Representational Visibility of Wind Turbines

Wind turbines are good for us to challenge Star and re/think her idea about the invisible nature of infrastructure, since they are physically distinct from other "typical" infrastructures and evoke a "multiplicity of embodied sensations" (Schwenkel 2015a). Wind turbines are not typical infrastructure in that they are built "above," rather than "beneath," the ground. It is necessary for wind turbines to be installed *on*, not beneath, the ground, since they are technical devices designed "for extracting kinetic energy from the wind" and then turning it into electricity (Burton 2011:39; Chiras, et al. 2010): without standing above the ground to face the wind, wind turbines are unable to become what they should be and perform what they are expected to do. In this sense, wind turbines are infrastructure in function at the same time they are also *supra*structure in form. This quality in turn makes wind turbines unfit with Star's arguments: they do not remain invisible until breakdowns, but rather are always visible.

Moreover, the visibility of wind turbines as supra/infrastructure gets enhanced due to their size and the location in which they are usually built. Most wind turbines in use in the world today are horizontal axis units (Burton 2011:39; Chiras, et al. 2010). Without exception, all of Taipower's fourteen wind turbines currently operating in Penghu are also horizontal axis machines, the models E-40 and E-44 turbines in particular, designed and manufactured by the German company, Enercon (see Ch.4 in detail). Taipower's horizontal axis wind turbines are simply tall, gigantic machines with huge blades; they have towers with a height of more than 50 meters and blades with a size of more than 20 meters. Besides, the ideal places to site those huge devices generally

include not only coastal areas and open plains, but also high areas such as small mountains and the tops of hills, because "wind speed generally increases with height above the ground" (Burton 2011:11). Those places allow wind turbines to be easily caught by our vision. In short, wind turbines are essentially noticeable machines that are exposed to, instead of hidden from, the outer world, and thus unable to escape "the sphere of everyday perception," our optical sense in particular (Anusas and Ingold 2015:543; Hirsh and Sovacool 2013), by virtue of their prominent physical appearance as a suprastructure built upon the visual barrier-free landscape.

For instance, I always saw Taipower's six white wind turbines en route to Baisha Township, by an electric bicycle first, and then later a scooter. Wind turbines were like Mt. Everest to me. The legendary English mountaineer, George Leigh Mallory left a very famous saying — although there is still some controversy about its authenticity — "because it is there" as a response to the question of why he wanted to climb Mount Everest (Ortner 1997:135). Because wind turbines were always just "out there" (Larkin 2013:336), just like Mallory's Mount Everest, and were "too visible to be ignored" (Besky 2014:36), I constantly saw those gigantic technical machines, and am very aware of their very material existence in landscape. Since the visibility of infrastructures is situated depending on a social actor's work, wind turbines remain particularly and ontologically visible to me as a novice ethnographer even without disruptions (Hirsh and Sovacool 2013:717), rather than being obscure, receding to the background, and disappearing from my vision.

Just like my personal experiences of the situated visibility of energy infrastructure, villagers who reside nearby one of Taipower's wind farms and whom this chapter focuses on also have seen and recognized wind turbines in their daily lives. While I suspected that wind turbines, whose apparent physicality easily catches one's eyes, also are standing "out there" so naturally that they may become an unseen, unrecognizable back stage of the everyday lives of those villagers (Goffman 1956; Star 1999), I found out through conversations and informal interviews that the prominent "existence of tall, spinning silhouettes" also makes wind turbines easily get attention from many villagers (Hirsh and Sovacool 2013:707). Local villagers living near wind turbines often highlighted to me that the constantly spinning huge blades strengthen the visual remarkability of wind turbines and attract their attention to the machines.

In addition to the optical sense, the villagers usually emphasize to me that the acoustic effects that the moving blades make renders wind turbines audible and visible to them as well. While I focus on the optical effects of wind turbines, the village residents pay attention to their aural stimulation. How and why do wind turbines draw different "human perception" and "sensate experience at their working level" from us? (Hirsh and Sovacool 2013:720).[20] This question might be explained by two speculative answers, the hierarchy of the human sensorium and the biased anthropological training in term of using senses, which are necessarily interrelated. Since Bronislaw Malinowski established "participant observation" as the prevailing data collecting technique (Malinowski 1922),

[20] Due to such invisible properties, Bowker and Star claim that the study of infrastructure requires what they term "infrastructural inversion," which means "a struggle against the tendency of infrastructure to disappear" and become a naturalized background (Bowker and Star 1999:34). To invert infrastructures is to make them visible to us, by bring them back to the "front stage" from the "back stage" (Goffman 1956).

as I mentioned in introduction, the optical sense sits at the top of sensory hierarchy and thus holds superiority in the methodology of anthropology, while the auditory sense takes a lower place in it (Chien 2009; Erlmann 2004; Ong 1991; Schwenkel 2015a; Shapin and Schaffer 1985).[21] Such unequal treatment of human sensorium in ethnographic techniques may be seen as an influence of Western cultures from which anthropology as the discipline came out. That is, that participant "observation" sits at the top of anthropological methods could be understood as the natural result of "Western occularcentrism" that imposes "the primacy of vision and visuality" on people (Schwenkel 2015a). My training in a graduate program at an American institution taught me to prioritize visual perception and value its significance in doing ethnography, and thus made me "see" wind turbines only by using my optical organs. Unlike me, the local villagers recognized the existence of wind turbines through not only eyes, but also ears that not only "listen to," but also listen for" the sounds of spinning triple blades (Marsilli-Vargas 2014).[22] In Penghu, wind turbines as "infrastructure, broken or not," as Christina Schwenkel argues (2015), "evokes a multiplicity of embodied sensations across the

[21] The Taiwanese cultural anthropologist Mei-ling Chien (2009:12) also notes that anthropologists have conventionally received academic training in methodology that "entails a hierarchy of bodily experiences and resonances." Chien takes the renowned anthropologist Russell Bernard's steady seller, *Research Methods in Cultural Anthropology* (1988) as an example to show and reproduce the hierarchy of senses among ethnographers cum anthropologists. She observes that while in the book, Bernard discusses many research methods for collecting ethnographic data that mostly focus on, and highlight, vision and sight, it is hardly to find the words such as hearing and listening.

[22] The linguistic anthropologist Xochitl Marsilli-Vargas (2014) asserts that like any other mode of perception, listening is multiple, because it is "historically contingent and reflects different schemes of interpretation" (49). This compels Marsilli-Vargas to distinguish between what she refers to as "listening for" that is an actor's active, "intentional" act, "attending to particular aspects of sound" and interpreting it and what she calls "listening to" that is "an ephemeral and spontaneous reception of sound" that is not "intentional" and hence "does not require conscious interpretation" (43). Social agents "tune the ear to particular frequencies" and listen to them in different ways "depending on who are they listening to, where, and why, as well all the different possible situations to which the listener has been exposed" (49).

human sensorium" and therefore "is felt and embodied through overlapping sensory encounters."

However, what makes wind turbines remain in the foreground is indeed not just their materiality and its effects to evoke "broader sensory engagements" and multiple perceptions with them (Schwenkel 2015a), because infrastructures as public utilities operate simultaneously at both material and poetic registers (Keane in Barker 2005:720; Coleman 2014; Larkin 2013). The importance of infrastructures does not merely lie in their material associations or technical functions that enable flows of resources for people. The symbolic and representational connections that infrastructures produce at poetic registers are as significant as the material connections they enable (Coleman 2014; Dalakoglou 2010). Infrastructures often make representational associations between their creator, the state and citizens who are supposed to use them. Representations are a significant "modality through which states are culturally constituted, and through which state power is enacted" (Sharma and Gupta 2006:18). As noted in much literature on the state in anthropology and other disciplines such as geography and sociology (Anagnost 1997; Gupta 1995; Halme-Tuomisaari 2013; Hansen and Stepputat 2001; Masquelier 2001; Pierce 2006; Sharma and Gupta 2006:18; Vasan 2002; Yang 2005), ordinary people often perceive, imagine, construct, and learn about the state and its power at multiple levels in culturally specific ways through various material objects that represent the abstract entity, including "public cultural texts" such as newspaper, television, and radio, as well as banal techniques of bureaucracy like government documents and reports (Hetherington 2008; Hull 2012a). Like other objects, infrastructures also function as what

Brian Larkin calls "'representational events' that convey political meaning" to people, and thus enable the discursive re/production of the state in their everyday lives (Larkin 2008:63). For instance, hydraulic infrastructures such as dams and canals are evident in their scale and physically prominent in the landscape in which they are built and embedded. They are symbolic, iconic material objects, visually manifesting and representing their creator, the state's engineering skills and "technical accomplishment and increasing dominion over nature" (Abbink 2012; Bijker 2007; Folch 2013; Harris 2012; Mitchell 2002; Pasqualetti 2000:386; Wittfogel 1957). Hydraulic dams and irrigation canals are, for instance, a material marker to show state's "ability to rearrange the natural and social environment" and then become "a means to demonstrate the strength of the modern state as a techno-economic power" (Bijker 2007; Mitchell 2002:21; Pasqualetti 2000; Pritchard 2011). In this sense, infrastructures can be called as "thick objects" that are not only physically "thick in size," but also "thick with values," "thick with power," and "thick with politics" (Bijker 2007:109). Infrastructures that are riven with political qualities also become prominent "instruments of a state imagination" (Coleman 2014:460) through and by their creator, the state's "tactile and symbolic effort to make technology mean" (Dalakoglou 2010; Larkin 2008:42), such as magnificent inaugural rituals staged by state officials to commemorate newly constructed socio-technological artifacts such as dams and satellites (Barker 2005; Larkin 2008; Tennekoon 1988). Hence, infrastructures makes visible their creator, state, which is the intangible and abstract entity (Harvey 2005), and themselves to people through their symbolic meanings and political qualities.

More or less parallel to dams, Taipower's wind turbines are "one of the more visible, material, and powerful aspects of the state" for local residents in Penghu (Coleman 2014:469). As we have seen in Chapter 1, a strong northeast winter wind has long been conceptualized as a major barrier to Penghu's economic prosperity and a symbol of Penghu's harsh natural environment. For this reason, Taipower's wind turbines have symbolic/representational power to emblematize the state's management of the natural environment (Pritchard 2004), and become the "sites of charged significance in or through which" the state and its meanings "are instantiated and navigated" (Alvey 2014:267). For example, wind turbines as symbolic machines of the state work not only in wind farms, but also in the local government building. I could easily see the symbolic importance of wind turbines as visualizing the state and its power when I visited the Penghu County government building for an interview with one of its key officials that were in the vanguard in promoting the wind power development project. When I walked towards the building where my interviewee's office was, my eyes were captured by the miniature mosaic of wind turbines embodied with colored tiles on the red brick ground (see figure 3-1). Village residents residing nearby Taipower's wind farm read wind turbines as iconic/emblematic technological artifacts, visually and physically standing for the state's will, effort, and capacity to tame and further take advantage of wind as a nuisance of Penghu. Wind turbines then became the medium, as Brian Larkin notes in his recent review essay on infrastructure, by and through which the state "proffers these representations to its citizens and asks them to take those representations as social facts" (Larkin 2013:334-335). According to my informant, many of his fellow villagers took as

social facts the representation the state offers to them through wind turbines, and saw wind turbines as a kind of a "political machine" that represents the state and its ability to capitalize on Aeolian force (Barry 2001).

Figure 3-1.The Mosaic of Wind Turbines. Photo by author.

Reading the Sound of Wind Turbines and Reactions to Turbines as a Confirmation Tool

The material and symbolic visibility of wind turbines plays a key role in shaping the ways in which villagers conceptualize and understand those machines and the wind itself. The "low-frequency sounds" or "infrasound" of wind turbines as one of their peculiar material features have always made them stay in visual landscape, rather than fade into the background (Hirsh and Sovacool 2013:711; Szarka, et al. 2012:160). Infrasound has always been with villagers since the birth of a wind farm till now that the local government aims to turn the wind into a profitable energy source. In the afternoon of a windy day in late May 2014, I headed my red scooter to an ivory-painted two-story house whose owner is Hong Shizhong in order to talk with him about how local people

perceive and interact with wind turbines. In his mid 50s, Hong as a native of Jianshan village came back to Penghu about ten years ago from Taipei where he spent more than twenty five years for studying and work, and currently serves as one of the representatives of his home village and runs his own business in Magong, the capital city of Penghu. I was originally introduced to Hong through his niece-in-law, Mrs. Yang, who is in a close business relation with my landlord Mrs. Lee, about two and a half months ago. Hong was short but robust and his appearance gives people the strong impression that he seems headstrong. I later came to know that many officials of Jianshan power plant felt that he was so stubborn that they had difficulties communicating and dealing with him.

I sit in a black leather sofa inside Hong's house and take a field note and audio recorder out of my backpack to record the dialogue I will later have with him. Like many other Taiwanese with whom I have worked have done with me as a routinized daily ritual, Hong first makes a hot Taiwanese Pu-erh tea for me. After expressing my sincere gratitude to him for his warm welcome, I take a sip of tea and its rich and deep flavor makes me feel blessed and happy. He asks me whether or not the tea tastes amazing. I smile and reply him that it is really good. To start our conversation, I ask him to tell me more about how he thinks about the local government's project to make the wind as a renewable energy source to produce financial income for people. Hong then emphasizes to me the material visibility / audibility of wind turbines, especially the infrasound that their spinning blades make, which he thinks strongly influences the ways in which he (and fellow villagers) view the project and the wind itself. According to Hong, at the

early stage of the operation of Taipower's wind farm, a considerable number of villagers frequently regarded the "low frequency sound" or "infrasound" of wind turbines (Hirsh and Sovacool 2013; Szarka, et al. 2012:160) as an unusual, disturbing sound or noise (Chen 2014b) that "is out of place" (Douglas 1966) and inimical to the health and life of animals and humans, because of the unexpected deaths of 400 lambs (or goats) that was raised nearby the wind turbines (Dickinson 2009; McDermott 2009).

I need to briefly write about issues surrounding the impacts that wind turbines may make on both human and animal health. On the one hand, it is widely believed that, as the World Health Organization (WHO) stated in its 1999 "Guidelines for Community Noise" that "health effects due to low-frequency components in noise are estimated to be more severe than for community noises in general," exposure to "low frequency noise" or "infrasound" generated by wind turbines can cause adverse health effects in humans (Szarka, et al. 2012:160). Yet a large number of studies also argue that low frequency sound of wind turbines is not harmful to human health and is an insignificant factor in evaluating the environmental impacts of wind turbines because it is generally at so negligible levels that it is barely perceptible to the human ear (Szarka, et al. 2012:160-161). Just like such unsettled debates surrounding the impacts that the infrasound of wind turbines make on human health, the effects of that sound on animals are also scientifically uncertain, since "there are few studies specifically focused on the noise effects of wind energy facilities on birds, bats and other wildlife"(Spellman 2015:52).

In spite of such tentative correlations between the low-frequency sound of wind turbines and human/animal health, villagers living near a wind farm in Penghu believe

that the mysterious death of lambs has something to do with the sound emitting from turbines. The sudden death of a huge number of lambs played a big role in making the villagers perceive the sound of wind turbines as noise, since listening itself is also a situated, multiple practice that hears a particular sound in different ways, "depending on… the different possible situations to which the listener has been exposed" (Marsilli-Vargas 2014:49). A flock of lamb had been raised in the field that is located right next to the current wind turbines. Before wind turbines were constructed there, the lambs had originally been doing well and stayed healthy. After wind turbines had been built by Taipower and started operating, however, many of the lambs suddenly suffered from sleep disorders and weight loss prior to their deaths (Dickinson 2009; McDermott 2009). Although nobody definitely knew what exactly caused lambs to lose their lives, many village residents started doubting and speculating whether low-frequency sound emitting from wind turbines was a very likely cause of the unknown, sudden deaths of lambs, a noise that may be inimical to the health of animals and even human beings. It was merely a rough, pure suspicion of villagers that wind turbines and their improper sounds might have something to do with the bizarre deaths of lambs, regardless of the extent to which they actually exerted an impact on them.

But villagers later witnessed that Taipower took the moral responsibility for the incident by compensating the owner of the lambs for his economic (and emotional) loss. They interpreted this event as a positive proof, confirming their speculation regarding the possible correlation between the death of lambs (and even the health of human beings possibly) and wind turbines was correct. That is, villagers understood and believed that

Taipower's reaction to the events that happened around the wind turbines tell them something important about those machines and how the state (agency) views them. In this case, villagers regarded a monetary compensation to the owner of the lambs as Taipower's indirect and implicit admission that wind turbines might make negative influences on the health of lambs, which resulted in their unknown death, and thus as a kind of physical sign that works to prove their supposition about wind turbines and their effects right.

Since the event of monetary compensation for the sudden deaths of lambs happened, Taipower's physical responses to wind turbines have made local villagers (seek to) interpret what those reactions tell them about the gigantic energy infrastructures themselves. Reactions to wind turbines are turned into a "confirmation tool" for verifying a conjecture that village residents made about those machines and villagers into "interpreters" who try to grasp the meanings and values of turbines, hidden in such responses (Trovalla and Trovalla 2015a:333). When a certain event around wind turbines happens, villagers start to speculate how those machines is related with, or influenced the occurrence of that event. As we just saw, villagers inferred from the unforeseen deaths of lambs that wind turbines might play a critical role in making them happen. Yet their inference that wind turbines made possible adverse environmental impacts, causing the death of the lambs is just a pure, unfounded speculation: without specious evidences, it will remain an uncertain inference. Then, any reactions that Taipower as the manager takes in regard to wind turbines are approached by villagers as "systems of signs giving clues about" events surrounding those machines and about if a rough conjecture that they

made about those machines from the events is right (Trovalla and Trovalla 2015b:46). Due to their treatment of the state agency's reactions as a "confirmation tool," villagers read Taipower's monetary compensation for the owner of the dead lambs as a tangible indication or proof, showing how the state agency views wind turbines (i.e. as a cause of the deaths) and then, proving whether their own speculation about wind turbines is right. That is, as a confirmation or verification tool, Taipower's responses to wind turbines give villagers tangible proof or indications through which their conjecture is judged right (or wrong).

Money Generating Sounds of Turbines & Guessing What a Quick Repair Attempt Means

Let's move back to my conversation with Hong. After an anecdote about the unanticipated death of lambs, Hong tells me a completely different story about the infrasound of wind turbines: "at this moment, many village residents do not regard the sound of wind turbines as noise anymore. Instead, what the sound that wind turbines make all the time represents to us is that they [wind turbines] actually work very well and properly." I found his words interesting but could not understand what he intended to mean by that wind turbines work well. In order for me to get what he wanted to mean, Hong slowly explained his thoughts. According to him, the government's project of developing wind power simply and totally changed the ways in which he and his fellow villagers understand the low-frequency sound of wind turbines. The project notes that wind farms sitting near Hong's village will be under the management of the first branch

of the energy company and stakeholders of that company will share the profit generated through sales of electricity that wind turbines produce. Villagers find that plan convincing, in that they have experienced the powerful force and the good/bad quality of Penghu's wind, and consumed the discursively constructed new image of the wind as a profitable energy source, rather than an obstacle of local economic growth. They also have received, gathered, and synthesized information about the government's project through a variety of channels, such as media and attendance in official briefing sessions. Villagers thus now gradually come to view wind turbines as "economic machines" to produce electricity from the wind and then money for them, and have a strong interest in investing in the energy company to become its shareholder, since they express sympathy with the project and its discursive construction of wind as a profitable Aeolian force.

Even if villagers speculate that, as the government strongly claims, Penghu's wind would constantly generate profits for them, however, they also want to see if such advertised profitability of the wind is not merely imagined, but rather realistic (i.e. realizable or achievable). Village residents hope to confirm whether or not their own conjecture of profitable wind is right. Confirming their own speculation is important for villagers, since it is inextricably connected to their actions "to invest in a particular version of the future" of wind energy: it would influence their decision-making about whether they support the government's project and buy stocks of the energy company (Trovalla and Trovalla 2015a:341). In order to confirm their speculation about the profitability of wind that the Penghu local government advertises through charming narratives and rhetoric, village inhabitants seek to pay attention to, and carefully observe,

the ways in which Taipower as a state agency behaves or re/acts in relation to what surrounds and happens around wind turbines. Hong told me that what arrested villagers' attention was the reaction that Taipower took when wind turbines were out of order. He emphasized to me several times about how fast Taipower responded to the breakdowns of wind turbines. For Hong, the unusual quickness of Taipower's reaction to broken wind turbines is particularly noteworthy, because it completely contrasted with the usual image of Taipower that people have or have experienced. Hong tells me the following story to highlight this.

"They [Taipower] took unusually actions as fast as they could in regard to malfunctions of wind turbines. It stands out in sharp contrast with their infamous business attitude widely known as untrustworthy and negligent. Like other government agencies or organizations, Taipower has been lazy and very slow with helping us, citizens, and dealing with our issues. We had to wait for so long to get some help from Taipower. Do you know this? One day, I went to a Taipower branch to solve a minor problem on behalf of our village. I thought that because our problem was very simple, it would be handled very swiftly. But I had to wait for a long time and do lots of ridiculous paperwork to deal with that problem. You don't know how many documents I had to fill out there. In addition, when someone finally was there to help me, he directed me to go see other staffs that were in charge of handling what I need. When I went to the desk of that staff, he told me the same thing that since his job was not to treat my issue, I had to find other appropriate staff. They are so slow and inefficient in serving people and really don't know what they have to do."

Hong's personal experience with Taipower's bureaucrats shows the paradoxical ambiguity of the Janus-like modern bureaucracy. Max Weber regarded bureaucracy as

the most rational and efficient administrative method to organize and control human activity in modern capitalist societies, and anticipated its eventual detrimental effect as giving rise to a "polar night of icy darkness" (Ritzer 2011; Weber 1968) in which people and their lives are so trapped in the rule-based "iron cage" (Weber 2001), operating like a structure that their basic humanity such as individual freedom is threatened and limited. While Taipower bureaucrats aim to pursue and even maximize rationality and efficiency in their daily practices through the division of administrative task, they also ironically represent a completely opposite image of the organization to ordinary people. Villagers, as Hong told me, experience and see Taipower bureaucracy as signifying irrational and inefficient "slowness and delays, unnecessary paperwork," and "complicated protocols" (Hoag 2011:82). Then, drawing on Javier Auyero's influential work on the politics of waiting (Auyero 2011; Auyero 2012; Crapanzano 1985), I read Taipower's (non-bureaucratic) tardiness and slowness, whether or not it is intentional, as an assertion and imposition of state power over people. Auyero notes that Argentina's poor and alienated "shanty residents have to pass through "grueling pilgrimages through state bureaucracies" to receive necessary aid and be "always waiting for something to happen" (Auyero 2012:1, 4) through and "come from others" (Auyero 2012:4; Bourdieu 2000:237). Auyero thus argues that it is through waiting that poor people in Argentina experience political subordination and then, in a Foucauldian sense, discipline themselves into "patients of the state" (Auyero 2012). Similarly, the villagers in Penghu also had to become pilgrims of weirdly long, complex bureaucratic processes to which they were

forced to conform and yield and were temporarily ignored or postponed, hence becoming "patients of the state."

Hong's perspective on Taipower and their work attitude is shared with many fellow villagers from whom I later hear more about how the sharp difference in Taipower's attitude strongly influences the ways that they look at the financial values of wind and wind turbines. Another day, I had a chance to have a dialogue with another middle-aged village resident, Mr. Kuan in his house. As our conversation about wind turbines started, I ask Kuan about why he sees wind turbines as "money printing machines" (Dracklé and Krauss 2011:9) whose sound is sweet to him and thus the wind as a profitable energy source, his response is simple and straightforward: it is "because of Taipower's actions toward wind turbines." According to Kuan, although Taipower is usually lazy and slow in terms of work and often neglects its own duties, as Hong thinks, its attitude completely changes only when wind turbines break down and stop working. Taipower becomes suddenly so speedy that it immediately dispatches its staff to fix the problems. He tells me that he believes that if wind turbines are malfunctioned, I may be able to see Taipower's vehicle in about 15 minutes, appearing to repair broken machines. For Kuan, Taipower's response to breakdowns of wind turbines is abnormally prompt, in contrast to its normal attitude at work. Then, I ask him why he thinks and how he knows that Taipower is normally idle, only except for the case of breakdowns of wind turbines.

Kuan: Did you see a Taipower's yellow vehicle parked in the backside of my house when you were on the way here? Just in the backside of this house.
Me: No. I did not pass by there. So I did not see that car.

Kuan: Okay. Let me tell you that there is a house just behind my house where a guy lives with his family. He is a Taipower employee. He is not a native of our village and moved into here due to his job. Every morning, he drives the Taipower's yellow vehicle that I just mentioned to the company for work. Then around noon when lunch break starts, he drives back home and leaves the car parked just in front of his house and also behind my house. The car is parked in the alleys between my house and his own house. Anyway, But do you know this? After having lunch at home, he usually does not go back to his work place.

Me: Not returning to Taipower? Right?

Kuan: Yes (at the same time nodding his head).

Me: If he does not get back to the company, what does he do at home? Why does he not return to work?

Kuan: I know he mostly takes a nap at home. He normally stays there until the closing hour of the company, then comes back to the company to officially get off work. What makes this preposterous to us is that he usually repeats what I just told you every single day. In the morning, he is off to work on time and returns home around noon to have lunch. Then, he drives back to his office in accordance with the quitting time. That's why the Taipower yellow vehicle is always parked behind my house during the afternoon. You can always find that car parked there. So do you now make sense of me saying that Taipower is really lazy? They do not work. Instead of thinking about how to work for people, it seems that they always seek to think about how *not* to work just like the guy my neighbor. Drawing on that guy and his car, not just me but many villagers regard Taipower as lazy and irresponsible.

Figure 3-2. Taipower's Yellow Truck That Goes Nowhere. Photo by author.

There is no doubt that Kuan and his fellow villagers make a logical fallacy to draw a hasty generalization about the whole Taipower as an organization and its working culture, solely based on what he fragmentarily observed and inferred from the behaviors of his neighbor and Taipower worker. While it is not mandatory for me to agree with, and even support, my informants and their personal views, however, as an anthropologist who pursues emic or insider perspectives, I am also unable to devalue and further neglect the locals' generalized perception of Taipower as illogical and insignificant. The attempt to grab and value a "native's point of view" has been the canonic ethos of modern anthropological research since Bronislaw Malinowski and its significance in anthropological analysis is well illustrated in the article written by the social anthropologist Matei Candea (Candea 2011). In his ethnographic research on bilingual education in Corsica (2011), Candea found out that a local schoolteacher tries to separate education as non-politics from politics and to maintain the clear boundary between two realms. Yet when anthropologists interpret a schoolteacher's binary separation as "in itself a political move" (311), as Candea contends, it is problematic not just because of their uncritical extension and application of the assumption of politics as an analytical category to their respondents, but also, more importantly, because it ignores the

categorical divide that the informant makes by him/herself, and then makes such separation useless and meaningless. Following on Candea's call for us to take seriously our informants' statements and views, I hence value a somewhat logically faulty and biased statement about Taipower made by my respondent, and seek to look at how it plays a role in daily life of local villagers, influencing the ways in which they see and understand Taipower and its actions to wind turbines.

To demonstrate his view that Taipower is indolent, Kuan suggests to me that another day I go see if the Taipower's yellow vehicle is parked before his neighbor's house, just as he said. He looks very confident about what he talked to me. I randomly practiced the experiment five times during my fieldwork to confirm whether the car is there during the whole afternoon. Then I could not help agreeing with Hong. Whether or not that might be a coincidence, the car was always there whenever I visited the village. The important fact is that the Taipower's vehicle is there all the time, no matter what the real reason for it is. This experience makes me agree with Hong's perspective on Taipower. The yellow vehicle that has always been parked there without going anywhere even during business hours functions as a representation of the state for local people. "Public cultural representations and performance of statehood," as anthropological literature on the state has claimed, are the key means through which the state manifests itself and becomes real in people's everyday lives and thus through which ordinary people come to perceive, experience, and construct the state (Sharma and Gupta 2006:18).

The Chinese traditional philosophy, Confucianism, then plays a vital role as an important framework through which local residents in Penghu, including villagers I focus

on in this chapter, (negatively) read and interpret the representation of the state such as Taipower's yellow truck. Many interlocutors whom I met in a village sitting nearby one of Taipower's wind farms usually express and highlight to me their universal idea of the ideal or proper type of the state by drawing on the traditional Chinese philosophy, Confucianism. This may be closely related with that the charismatic ruler Chiang Kai-shek governed Taiwan on the basis of the ideals of Confucian statecraft. With the strong influence of Confucianism, the parent-child relationship has been understood as a prototype of various social relations, including the state-citizen relationships in Chinese cultures and societies. Local villagers hence often understood the state-society (citizen) relationship as a hierarchical parents-children relationship in Confucian terms. The Chinese term for the state "*guojia*" reflects such paternal and consensual relationship since *guo* and *jia* refers to nation and family, respectively. Confucian philosophy defines the state, which can be represented by the central government or its ruler such as a president, in paternalistic terms: it is conceived as, and identified with the father, the head and "caretaker" of family (Schwenkel 2015b:521). The state is paternalistically likened to the parents of citizens who are seen as children to be loved and looked after in paternalistic terms. At the same time that Confucian ideology advocates naturalized social hierarchy and political paternalism, it also emphasizes the "mutual reciprocity in the obligations that bind rulers and those they govern" (Fetzer and Soper 2013:22). The virtue and good quality of the leader allows him/her to earn the active support from, and thus to govern the people. The rulers can obtain political legitimacy and authority only through their own virtuous conduct. Only when the political leaders behave properly as

fathers, and fulfill their ethical, parental responsibility to take care of citizens, ordinary people is willing to be subordinated children and will obey and respect the state.

According to Confucius political ideology, local villagers in Penghu read the yellow vehicle as a representation of its owner, Taipower and, ultimately, the state. Through the never-go yellow car, they discursively construct and naturalize the image of Taipower as a negligent, untrustworthy state agency whose employees never do what they are obliged and supposed to do, as well as, more importantly, the image of the Taiwanese state as an unjust, irresponsible father cum ruler who does not fulfill its own duty to work for, and take care of its subjects, citizens. Such a negative image of the state that local people read through Taipower's vehicle sharply contrasts with the ideal figure of the state that they have in their mind, drawing on Confucian teaching in which the just and "virtuous behavior by which to judge a rule" means "his capacity to serve the needs of the people" (Fetzer and Soper 2013:22). It is also exacerbated by, as Hong's personal experience of long waiting and endless paperwork shows, people's daily experiences that destroyed their expectation of modern bureaucratic government. In line with Confucian political ideology, the Taiwanese state was represented and read in and through Taipower's vehicle in a pessimistic way. The car that goes nowhere symbolically signifies to local people the state's improper and vile behavior, showing its (partial) incapacity or unfitness to serve the people. After all, Confucius's idea of the state-society relationship simultaneously facilitates "the inevitability of political hierarchies" and, as an analytical or interpretative framework for reading the representation of the state, offers to local people "a basis for critiquing the state" about what it should look like and do

(Fetzer and Soper 2013:23). Taipower's failure to fulfill their own obligations as a father-figure state agency to serve people is simply expressed as "laziness" or "irresponsibility" that Hong and Kuan both mentioned in dialogues with me. Then, Taipower's notorious negligence is not only represented by their yellow vehicle that is always parked, but also even experienced directly by local people who had to wait for a long time to do a simple thing with that state-run power company.

Then, I pose Kuan a question about why he thinks that Taipower, which is adversely seen and criticized as a lazy, irresponsible state agency, comes to promptly respond to only circumstances of breakdowns of wind turbines. In order to answer my question, he linked Taipower's expeditious reactions to the then Ma Ying-jeou administration that he believes only concerns about satisfying self-interest. For local villagers, according to Kuan's explanation, the ruling party Kuomintang (KMT), or nationalist party to which the president Ma belongs has been famous for being "'the world's richest political party'" and for being once depicted even as "'KMT Inc.'" (Chung and Pan 2014; cf. Page and Hsu 2016). The fact that the president Ma was serving as a chairman of the covetous party KMT not only implanted a particularly biased negative image of the Ma administration as corrupted and mercenary into local villagers, but also enhanced the prejudiced image: the avaricious government led by the president from KMT is not concerned about the stabilization of people's livelihood and welfare, but is only interested in thinking about how to put money into its own pockets. In reality, a recent lackluster economic performance of the nation backed the president Ma and KMT into a corner. It was the main reason of popular dissatisfaction at the Ma

government, along with his China friendly political and economic relation, and then contributed to KMT's big loss in local elections held in November 2014, which eventually made Ma resign his position as a chairman of KMT. Kuan said that since the government is greedy seeking to make money only for itself, not for citizens, many people around him believe that, as a state-run utility company, Taipower, whose management is appointed by the government, is also thought to have or share the same characteristic of being highly sensitive to anything associated with money. In short, villagers have a tendency to identify Taipower as a national enterprise with the Taiwanese state, which is acquisitive and self-interested in their view and thus think that as a miniature of the self-interested state, Taipower only cares about obtaining their own economic profits without doing properly what they are expected to do to serve citizens.

Such work of identifying the state with its agency performs to make more plausible and reasonable the local villagers' own speculation about Taipower's quick responses to breakdowns of turbines. Even if Taipower has been normally an anti-Confucian father figure that is slow, lazy, and quite irresponsible in public business, it shows the quickness and activeness in treating the malfunctions of wind turbines. Villagers conjecturally attribute Taipower's swift reaction to broken wind turbines to the profitability of those machines, because they believe that unless those artifacts possessed or produced high economic value, the mercenary and greedy state agency, which has a tendency to only pursue self-interest without permitting unnecessary loss of money, would not act so promptly. In their view, Taipower (and other state agencies as well) is only concerned with making money and putting it into its own pockets, while it is

apathetic about taking care of citizens and improving their lives and welfare by fulfilling its own duty, which is its own duty as a miniature of the Confucian father-like state. Through swift reaction to malfunctions, village residents could know how much Taipower cares about wind turbines and how it thinks about those machines. Hong illustrated this point for me by saying

"I think Taipower really cares about the operation and maintenance of wind turbines. Do you know how I am able to know that? Because Taipower shows us their completely different faces. I told you that Taipower is normally slow and lazy in doing things for us. But if when it gets a notice that wind turbines malfunction and/or stop spinning their leaves (by which he referred to three blades of wind turbines), Taipower immediately dispatched its staffs to fix problems. They took unusually fast actions in regard to malfunctions of wind turbines… Wind turbines make money. That is why I think Taipower treasures wind turbines so much. If those machines could not create economic profits for them, Taipower would not take care of them [wind turbines]. After all, Taipower has tried their best to let wind turbines spin their leaves and make sounds 24/7. So I say that the sounds of wind turbines are not noise. We now hear the sound of money."

Like Hong, Kuan also gives me a similar explanation for Taipower's expedited reaction to breakdowns by relating it to the economic values of wind turbines. He believes that such quick reaction taken by the lazy power utility company is a sign to reveal the profitability of wind turbines and its economic importance for the company. In his view, Taipower never wants to permit wind turbines to stop working even only for a few minutes due to financial gains that they generate. For wind turbines to break down

even only for a short while means to Taipower an unnecessary great loss of economic profits. Therefore, he strongly believes that Taipower promptly sends their staff to repair systematic failures so quickly in order to prevent additional, unnecessary economic loss as soon as possible.

Taipower's Explanation of Prompt Repair Attempt: Normality

I find interesting the interpretation that local people such as Hong and Kuan make about Taipower's quick reactions to broken wind turbines. Since I am so impressed by that interpretation, I wish to know whether or not Taipower staff also find it well grounded. It does not take me so long to do so. The other day I go to Jianshan power plant to meet a high-ranking official, Mr. Tu. As our conversation that happens in Tu's office is in the middle, I naturally switch the topic to malfunctions of wind turbines so as to compare Hong's interpretation to an answer made by Taipower staff. After listening carefully to my explanation for him in terms of how local residents understand the ways in which Taipower deals with malfunctioning wind turbines, Tu knits his brows and then makes a very perplexed looking facial expression. I ask him if there is something wrong with the understanding of local residents and he quickly responded, "Yes, it is not correct." "What is incorrect?" asked I.

"Okay. Now I'm telling you why our response to breakdowns of wind turbines is so fast. Wind turbines have their own role in producing and supplying electricity for Penghu. In order to supply electricity to people in Penghu without producing inconvenience, we have to quickly repair errors on wind turbines. But this is not a main reason. Did you say that

the villagers believe that our prompt responses to breakdowns are because of economic profits of wind turbines? No. Nonsense. They are completely wrong. The real reason lies in local residents themselves. If people find that wind turbines stop working, many of them immediately make a phone call to us to report it, and to request us to fix it as soon as possible. We really receive lots of calls from people. Moreover, we fear that if we do not promptly take some actions to deal with malfunctions of wind turbines, it would undermine our public image as a state-run power utility company, serving people. As a national enterprise, we represent the whole nation, and thus exist and work on behalf of the public. So if we do not or fail to quickly fix any problems that happened on wind turbines, it would give people the negative impression that we do not carry out our responsibility to the fullest and are rather lazy, and weaken people's trust in us. It also would hurt the image and authority of the state that people have in their minds. Well, make sense? To put it simply, expedited repairs [of breakdowns] are necessary in order to protect and maintain the image of both us and our state as responsible, reliable, and capable, not because of financial benefits generated by wind turbines. We are really afraid of [receiving] complaint calls [from people] and of losing people's trust and our image."

Tu gives me an explanation totally different from that of local residents in terms of why Taipower takes quick responses to breakdowns of wind turbines. Both local residents and Taipower commonly see prompt responses to breakdowns as a kind of visible sign, though the sign signifies different things to them. On the one hand, Taipower aims to use its quick reactions to broken machines as a symbolic sign vehicle to deliver to people a particular positive message about themselves as a national enterprise, as well as the state itself. Instead of accepting the political message that Taipower intends to convey, on the other hand, local villagers read such expedited responses to breakdowns

as a sign to implicitly tell them more about wind turbines and their economic values, as well as the greediness and the self-interestedness of Taipower and the state.

Tu's explanation shows that Taipower understands a state of disrepair as a threat to the image and authority of themselves and even the state. This differs from the locals' interpretation of breakdowns as an economic loss for Taipower, a little incarnation of the greedy state. That is to say, Taipower approaches expedite reactions to broken wind turbines in a political sense, while the villagers understand them in an economical sense. As a result, Taipower deploys its prompt reactions to broken wind turbines as a sign to represent and deliver a certain image about itself or a particular political message to citizens. Drawing on STS literature on repair to show how repair of infrastructure is interlinked to repair of the state and state power, I assert that Taipower's attempt to quickly respond to broken wind turbines has to be interpreted as the effort to maintain state authority and the state-citizen relationship.

Taipower's quick attempt to perform repair work for broken wind turbines is apparently a practice to achieve "normalization," which refers to a process through which particular behaviors and/or ideas come to be regarded as normal and natural in daily lives (Canguilhem 1989; Foucault 1979; Foucault, et al. 2007; Hacking 1990; Henke 2007; Pasquinelli 2015; Ureta 2014). The English word repair is etymologically derived from the Latin word *reparare*, which means "'to restore, to put back in order'" (Ureta 2014:3). The concept of repair, as its etymology clearly shows, is essentially a relational concept because it always assumes and needs "the existence of a state of 'order'… to which the failing device or system should be 'restored' to function properly again" (Ureta 2014:3).

A state of order that repair work aims to achieve also can be seen as the "normal" condition, which itself is defined by its counterpart, the abnormal state of being, or the condition that is not normal.

The power of the normal as a concept, as the STS scholar Sebastian Ureta notes following the French philosophers Michel Foucault and Georges Canguilhem, comes from the double meanings that it possess as a term. The word normal, as the Canadian philosopher of science Ian Hacking writes, is usually used both to concretely describe "how things are" and to prescribe "how they ought to be" in a more abstractive terms (Canguilhem 1989; Hacking 1990:163 cited from Ureta (2014:4)). The normal is thus put in the constant tension; "it describes a supposedly average reality while it performs a desirable state toward which the existent reality should evolve" (Ureta 2014:4). Then, because of its capacity to simultaneously become "descriptive and prescriptive" (Ureta 2014:4), the word normal can be understood as a practice of normalization, which is a social process that always presupposes an ideal or "optimal model" (Foucault, et al. 2007:85) where "all the components of a system are ordered in certain specific ways" (Ureta 2014:4). Since it is an activity to restore something broken to its normal status or to its optimal model, therefore, repair work can be regarded as normalization. In this sense, Taipower's quick response to malfunctioning wind turbines can be analyzed as an effort to normalize the existence of those technological machines, or to restore them to the optimal, ordered condition, toward and for which components that went wrong have to be replaced, fixed, and re/arranged. Such repair work as normalization at least enables,

if not guarantees, the long-term survival and durability of human-built material artifacts without decay.

Repair practices do not simply mean technological normalization, that is, human activities to cure and fix material machines and artifacts in our complex built environment (Denis and Pontille 2011a; Denis and Pontille 2011b; Henke 2007; Ureta 2014), however, especially when we think about the sociopolitical nature of technological objects and Foucault's understanding of the idea of the norm (Bijker 2007; Oppenheim 2008). As I mentioned earlier in this chapter, many, if not all, technological devices are thick objects that are essentially interrelated with sociopolitical power structure and are filled with symbolisms that are mostly political (Sims 2007). Moreover, the idea of the "norm," as a basis of the concept of normalization, that determines what is normal and what is abnormal is understood by Foucault as the "element" upon which "a certain exercise of power is founded and legitimized" (Foucault, et al. 2003:50; Taylor 2009). Therefore, repair activities, as many STS scholars have emphasized, also mean socio-political normalization, namely, tactical practices to mend and maintain the existing social order and power relationship for a selective group of actors. Given such importance in a political sense, some scholars even contend that "the ultimate aim of repair as normalization" lies in "first and foremost the maintenance of a certain form/kind of power," not the improvement of people's lives and/or societies through constantly working material artifacts (Jackson 2014; Ureta 2014:372). In short, as normalization, repair means at once "the work of material maintenance" and "a process that involves constantly checking" and fixing political relations and meanings (Coleman 2014:470).

Repair work therefore aims to normalize both the existence of technical objects and an uneven power hierarchy between social agents by granting "a certain naturalness to a particular kind of power" (Henke 2007:138).

Such conceptualization of repair as technical and socio-political normalization may be supplemented and elaborated by the STS scholars Benjamin Sims and Christopher Henke's work on "sociotechnical repair" (2012). Sims and Henke propose the notion of sociotechnical repair for fruitful academic discussion and to elaborate repair as an analytical concept. Sociotechnical repair consists of three types of practice: discursive, material, and institutional repair (Sims and Henke 2012:326). First of all, discursive repair means the endeavor through which its practitioners aim to keep up the cultural frames that people use to describe and understand the world. Second, material repair indicates exactly what we generally call repair, that is, the practices of fixing broken technical objects and devices. Lastly, institutional repair refers to the attempt to repair social orders and structures. These three basic types of repair are closely interrelated with each other, as Sims and Henke claim, and offer us "a useful set of dimensions for analyzing the diverse strategies that actors use to maintain their interests in and control of a sociotechnical system" (Sims and Henke 2012:326).

The concept of repair as sociotechnical normalization allows me to look at and analyze Taipower's reaction to broken wind turbines in more nuanced ways. Taipower's quick response to malfunctioning wind turbines can be analyzed as an effort to normalize the existence of those technological machines, or to restore them to the optimal, ordered condition, toward and for which components that went wrong have to be replaced, fixed,

and re/arranged. Such repair work can be understood as technological normalization that at least enables, if not guarantees, the long-term survival and durability of human-built material artifacts without decay. Or, it can be said that Taipower make "material repairs," to use Sims and Henke's term, so as to fix technological errors, and even "to prevent a recurrence of the accident" (Sims and Henke 2012:326).

"The material form of infrastructure" is, however, secondary to "the maintenance and renewal of symbolic connections to constituted and consecrated centers of social power" (Coleman 2014:468), as the Taipower official Tu highlighted to me during our conversations. Hence the more important reason for a quick attempt to perform material repairs is that Taipower recognizes a state of disrepair of broken technical artifacts as a critical threat to its image and authority, as well as even to those of the state. Since it works as a face or a representative of the state, Taipower is afraid that disrepair may evolve into "a lively zone for the unfolding of citizen-state disputes" (Chu 2014:353). In this sense, Taipower's effort for material repairs is simultaneously (part of) "discursive repairs" (Sims and Henke 2012:326) not to "undermine legitimacy of government officials" and the state, as well as to normalize and maintenance the power structure.

In particular, as I noted before, since the normal condition of the state functions as the cornerstone on which its "exercise of power is founded and legitimized" (Foucault, et al. 2003:50; Taylor 2009), Taipower seeks to discursively recover the ideal image of the Confucian state as a father-figure that strive to guarantee people's comfortable lives and welfare through repair work for broken wind turbines. We often use interchangeably and synonymously the word repair with the term fix in our everyday conversation. While the

word fix is usually understood in the sense of repairing or mending, as the political sociologist Brian Jeffrey Dill notes, it also signifies "to fasten something in a particular place or position, to give something stability or constancy" (Dill 2013:23). In this regard, through material and discursive repair as normalization, Taipower expects to fix or fasten the particular idea of the Confucian state as a responsible "provider and the basis for community" in people's minds, and thus to mend and sustain vertical paternal relationship between the state and citizens (Mains 2012:20).

Taipower's expedited responses to broken wind turbines, since it is an intentional effort for "discursive" repair of their "public" image, also can be regarded as a kind of sign that it intentionally delivers to people, and expect the latter to read and understand. As my informant, Taipower official Tu emphasized, it is implicitly the sign, aiming to tell its recipient, citizens, that the promptness or swiftness of responses to breakdowns shows that the state represented by its affiliated organization, Taipower, always seeks to do their best to perform their paternal duty as "a provider and a caretaker" of reliable, stable public service (Yang 2005:491). And such sign can properly play the certain role that it originally intends to do, only when it is read and interpreted by its target audience in the way that its creator expects. For example, a passenger delivers to a bus driver the certain sign by ringing the bell. It is his/her sign to represent that the driver must stop to let him/her get off the bus. Only as the driver correctly reads that sign in a way that the passenger anticipates, will he stop the bus. Otherwise, the bus will keep going. In the same manner, the swift responses to breakdowns may allow Taipower to achieve its intended goal to discursively normalize and maintain the public image of the Taiwanese

state as a children-loving father, only when it as the sign is read and understood by village residents in the "right" way.

Méconnaissance (Misrecognition) of Signs and Its Effects

As my ethnographic material has already shown, however, village residents living nearby a wind farm do not always read and interpret the physical sign that is transmitted to them in a way that its creator, Taipower intends and expects. In reality, the national power company seeks to fix broken wind turbines rapidly not because of the (misunderstood) profitability of those machines, but due to their concern about the maintenance of their own public image as a representative/face of the state. Taipower's swift response to broken wind turbines is originally intended as normalization work that involves constantly maintaining and renewing "symbolic connections to constituted and consecrated centers of social power," as well as "checking the meaning of the connections as they are made" (Coleman 2014:468, 470). Yet Taipower's quick repair attempts to broken wind turbines are one of what the French structuralist anthropologist Claude Lévi-Strauss terms "floating signifiers" (Lévi-Strauss 1987), which is "a signifier with a vague, highly variable, unspecifiable or non-existent signified" (Chandler 2007:78). As a floating signifier, Taipower's rapid repair attempts are always open to different interpretations: "they may mean whatever their interpreters want them to mean" (Chandler 2007:78). Thus, villagers with whom I spoke (mis)interpret quick repair attempts as representing, and confirming the profitability of wind turbines (and the greediness of the state), rather than as showing the responsibility of the paternal state for

people. I think that the notion of "méconnaissance" (misrecognition) may be helpful for us (Bourdieu and Thompson 1991; Ohnuki-Tierney 2002) in understanding how the different readings of the same sign take place and why the village residents see wind turbines as a "money printing machine" (Dracklé and Krauss 2011:9).

The Japanese symbolic and historical anthropologist Ohnuki-Tierney Emiko defines méconnaissance as "misrecognition or absence of communication, whereby parties in a given context fail to realize that they are talking past each other, deriving different signification from the same symbols and rituals" (Ohnuki-Tierney 2004:19). Méconnaissance occurs only when an objectified or discursive symbol has multi-layered and plural meanings and the different actors derive different meanings, rather than share a particular single meaning, from it in a given social context of communication (Bourdieu 1977; Bourdieu and Thompson 1991; Leach 1954; Swartz and Zolberg 2005).[23]

Ohnuku-Tierney uses as an example Japanese kamikaze pilots to explain the power and effect of symbolic méconnaissance during World War II. Just as many other totalitarian governments did, the Japanese imperialist military regime sought to aestheticize its military actions by strategically deploying as the main symbol the cherry blossom, the most beloved and celebrated flower in Japanese culture. The Japanese state manipulated the aesthetics of cherry blossom in order to infuse young kamikaze pilots

[23] The linguistic anthropologist Michael Silverstein (1976) also makes the similar argument that for effective communication, people have to share the literal meaning of a word and what it intends to imply in a particular socio-cultural context. And, as Ohnuki-Tierney claims, the polyvocality of symbols and misrecognition it causes thus compel us to rethink the late Clifford Geertz's famous statement (1973a:12) that "culture is public because meaning is": a particular symbol is shared and thus public, while due to multiple meanings assigned to it, people read and decipher it in different ways in a particular sociocultural context.

with the nationalist message/trope that as a great honor, "you shall die like beautiful falling cherry petals for the emperor" qua Japanese imperial land, and to persuade them to put the message into practice (Ohnuki-Tierney 2002:3). The pilots did not, however, read the cherry blossom in aesthetical militaristic terms, unlike the intention of the government's architects of that ideology, as they clearly revealed in diaries that they left behind that they did not want to die as suicide bombers for the emperor. Instead, as highly educated, cosmopolitan intellectuals with extensive reading and in-depth understanding of Western intellectual traditions, those aviators found in cherry blossom different "aesthetics in the purity of devotion to their country" as citizens and "their youthful idealism/romanticism in pursuit of purity and beauty" of life, rather than the emperor-centered imperialist ideology (Ohnuki-Tierney 2002:301, 16).

After all, the Japanese imperial state succeeded in achieving its planned goal to mobilize student pilots to sacrifice themselves in an ironic and unexpected way, because, unlike its original intention, pilots volunteered to board fighter planes to fall like cherry blossom for their homeland Japan, not for its head, the emperor in the character of imperial Japan. In short, misrecognition of cherry blossom and its aesthetics worked to hinder the young and brilliant kamikaze pilots "from recognizing the discrepancy between what they perceived and what the state intended" (Ohnuki-Tierney 2004:21), and to cause them to involuntary re/produce the imperial militaristic ideology through and in action, yet "not in their thoughts" (Ohnuki-Tierney 2002:7; Ohnuki-Tierney 2004:15).

As I suggested before, the quick attempt to repair broken wind turbines, and especially its promptness, are the signs with Taipower, which intends to show citizens its devotion and sense of duty to the public. Taipower expects local people to see the Confucian state as a trustworthy father figure through the sign, and believes that it will play a vital role in repairing and maintaining its own and the state's public image. Taipower's expectation, however, is totally long way off, because village residents pay close attention to "symbolization that surrounds infrastructures" as those technical artifacts are repaired in their own way (Coleman 2014:462). Just like Kamikaze pilots in Ohnuki-Emiko's ethnography, the villagers then actively involved themselves in interpreting/deciphering what the wind turbines are, what repair work for broken turbines means, and what such repair activity tells about wind turbines themselves. Taipower and village residents fail to be aware of the lack of communication, and that they are talking past each other. As a result of misrecognition, they derive different meanings from the same mobilizing sign, the quick response to breakdowns of wind turbines, even though for both sides those meanings are all about the state and its nature.

Village residents in turn also view the greediness of the state that they understand through Taipower's sign, quick responses to breakdowns, as another sign to tell them about the object of repair work, wind turbines themselves. They seem to assume that if wind turbines do not produce economic profits, the national power company as an incarnation of the greedy and self-interest oriented state would not pay close attention to, and show an exceptionally rapid reaction to systematic malfunctions happed on those technical artifacts. Taipower's swift attempt for repair, when it is combined with the

image of anti-Confucian yet mercenary state, becomes a sign for the villagers living nearby a wind farm, confirming their speculation about the economic importance of wind turbines, even though such interpretation is be seen as completely wrong in the eyes of Taipower officials, as we have seen earlier. That is to say, the (mis)interpretation of Taipower's quick repair trials functions as a "confirmation tool" that offers logically specious clue, allowing the local villagers to confirm their vague speculation about wind turbines and their economic value, speculation that they made both by hearing infrasound of spinning blades and by being exposed to the government's discursive construction of the wind as a profitable energy source. The local villagers make sense that their sensory experience-based indefinite assumption about wind turbines as "money-printing machines" is materially and visually verified by the unusually rapid re/actions that the greedy, self-interested state agency shows only in case of breakdowns of energy infrastructure (Dracklé and Krauss 2011:9).

Although that local residents (mis)understand wind turbines as economically-profitable machines through their misrecognition of Taipower's sign in a way never intended or calculated by Taipower staff, it plays, ironically, a positive and critical role in promoting the Penghu government's project of making wind as an invaluable energy resource to generate income for the islanders. As we have seen in chapter 2, the local government has strived to discursively re/construct and advertise the wind as a resource with great economic value in order to attract investment capital and support from local residents for the energy company. Although local people ambiguously sympathize with, or get attracted by the government's wind power development project, there is no certain

concrete way for them to test whether the wind has economic value in reality, as much as it is described in narratives made by the government. For the locals, the government's discursive construction of wind sounds still imaginative, too sweet and fantastic, and less plausible, lacking a reality, or reliable and believable basis. The fascinating narratives and the profitability of the wind created by them need to be physically seen or experienced by local people in order for them to confirm their conjecture that the wind can bring financial benefits (to Taipower and them).

The trustability of, the storylines and the positive appearance of a profitable wind that villagers want to know and confirm is accidentally given by and through Taipower's quick response to breakdowns and their mis/interpretation of it. Based on their experiences and (biased) understanding of the state, villagers read Taipower's quick response to breakdowns as a confirmation sign, giving a clue to their own speculation that wind turbines are money producing machines. Then local villagers see the economic value of wind turbines as an index or indexical sign, in the American philosopher and logician Charles Peirce's term. In the Peircean sense, indexicality is a relationship (Chandler 2007:43) and depends on "association by contiguity" (Sebeok 2001:87). It "serve as evidence of an object's existence" (Sebeok 2001:87), as Peirce's example of Robinson Crusoe illustrates. The footprint Robinson Crusoe found in the sand was an index to him that except for himself, another living creature also exists on the island. In the same logic, the idea that wind turbines are economically valuable works for local people as an evident cue of the existence of qualitatively good and profitable winds. Such connection is obviously made by people through their misrecognition of signs. The local

villagers created that association by their understanding of the fundamental feature of energy infrastructure and its mutual or inter/dependent relationship to wind. On the one hand, wind turbines operate only when the wind blows, and the more electricity it will generate, the more powerful and rapid the wind blows. On the other hands, wind can render itself visible only through its relationship with and "effects on other beings and other things: branch, bird, cloud, kite, sail, smoke," and wind turbines (Howe 2015:203). Penghu's wind and its economic value are made visible to local people through its relationship with wind turbines that are understood as profitable through misrecognition of the material signs, Taipower's prompt repair attempts. To conclude, the spectacle profitability of wind that people mis/read and confirm through a state agency's quick repair attempts for wind turbines works to inject a trustability to, and thus maintain, the storylines, as well as to increase the possibility to actualize the potential in the moving air.

Conclusion

In this chapter, I have tried to challenge and supplement Anna Tsing's argument that "in speculative enterprises, profit must be imagined before it can be extracted" (Tsing 2005:57). The residents whose village sits nearby Taipower's wind farm find the Penghu government's project of harvesting the wind enchanting, and thus show their interest in becoming stakeholders in the energy company that the government plans to establish. But, the discursive construction of profitability of wind is not plausible enough to compel villagers to support the project and invest their money in the energy company.

What villagers need is to see whether such imagined profit of wind has a realistic, reliable aspect and then can be achieved in practice. In order to move villagers and to make them be stakeholders in the energy company, the profitability of wind must not only be imagined (Tsing 2005:57), but also, more importantly, be thought as realizable, feasible, and verifiable prior to its extraction (Randalls and Petrokofsky 2014).

This chapter has argued that village residents' observation and (mis)interpretation of Taipower's quick repair attempts for broken wind turbines plays a pivotal role in giving a sense of feasibility/reality to the spectacular profitability of wind. Taipower takes rapid action in relation to malfunction of wind turbines in order to display and maintain the public image of the state that it represents as a responsible and devoted father figure to serve its children, citizens. Such quick response is a physical sign "riven with political qualities" (Bijker 2007:109) that Taipower intentionally aims to deliver to citizens with the expectation that those people will read the sign in a way that it meant. Since the sign is a floating signifier, standing for different things to different people, however, the villagers read the sign in a different way and thus see a totally different image of the state from Taipower's quick response: the greedy, self-interested state. For the villagers, the quickness of the repair attempts does not only (mis)represent the state's greediness. More importantly, it also operates like a "confirmation tool" by which villagers verify whether their conjecture about wind turbines and their profitability is right. That is, Taipower's reaction to wind turbines is also (mis)decoded or (mis)imagined as physically emblematic of the economic value of wind turbines that merits such rapidness of repair attempts from the self-interested avaricious state. The

(mis)recognized profitability of wind turbines is thus interpreted by the villagers as a proof of the profitability of wind that the Penghu government has produced claimed through alluring storylines, given the interdependent relationship between those two nonhumans. Then, such misrecognition of the symbolic signs imbued with political qualities that Taipower conveys to them plays a critical role in (accidentally) making the Penghu government luckily gain credibility for its charming storylines from the villagers. Retaining the storylines, which was unintentionally achieved in turn worked to maintain and increase the potential energy of the wind in that it made villagers (wish to) "invest in a particular version of the future" of wind energy (Trovalla and Trovalla 2015a:341) both financially and personally (Sovacool and Brossmann 2013). In short, both the captivating narratives and the potential of the wind could be maintained and stable as villagers living near by a wind park "come into physical contact with," and misinterpret, wind turbines and Taipower's reactions to those infrastructures (Melly 2013:396).

During my fieldwork, however, I found out another interesting thing. It is that only (most of) these local residents discussed in this chapter see Taipower's swift repair attempts for broken wind turbines as symbolic signs to be read and (mis)decode them as the profitability of, those machines, and then, of the wind itself. As I will show in next chapter, Taipower workers admit that in reality, they have almost nothing to technically do for broken wind turbines, only except for very simple tasks such as the supplement of batteries for those devices. Many other inhabitants of the archipelago are also well aware of Taipower's such incompetence in repairing systematic failures and errors of wind turbines. Due to this reason, I intentionally used the words such as repair attempt, or

reactions/responses throughout this whole chapter. In the next chapter, I will take you to see how other group of inhabitants, even if they are also living near Taipower's another wind farm, understand (the relationship between) the wind and wind turbines in completely different ways and how this, in turn, influences their understanding of the narratives produced by the architects of the wind power project and the semantic change of the wind, which needs for the realization of the potentiality of the Aeolian force.

Chapter 4: Universal Weeds and Particular Wind: Repair and Maintenance of Wind Turbines

Introduction

One very hot day in July 2014, I am in Zhongtun village to take a picture of colossal white colored weeds that are grown in and occupied their own territory in the archipelago. I take out my old Sony digital camera from my backpack and try to fix a good camera angle near quadrangle shaped "vegetable gardens" (*caizai*) in the village. The gardens are built for the protection of vegetable from Penghu's fierce wind by using basalt and coral stones as primary construction materials (see figure 4-1).

Figure 4-1. Wind Turbines and Vegetable Gardens. Photo by author.

The weeds I want to record as images are not only overwhelmingly gigantic in size but also highly mechanized. Those "mechanical" or "mechanized weeds" are wind turbines (Brittan 2001:170, 173). By describing wind turbines as mechanical weeds, the

philosopher Gordon Brittan Jr. focuses mostly on the aesthetically or visually unwelcome aspects of these technological artifacts. Just as the word "weed" generally refers to a plant that is regarded as undesirable in a specific context, that wind turbines are mechanized weeds means that they are unwanted and ugly extraneous nonbiological plants that are not in visually harmony with a particular environment into which they have been introduced. In addition to making auditory pollution such as noise mostly generated by their spinning blades, one of the most common public complaints about wind turbines is that they and their arrays severely obstruct the visual and aesthetic quality of the environmental landscape where they are installed (Gallman 2011; Pasqualetti 2000; Sovacool 2013). Wind turbines are often seen and criticized as creating a "visual pollution" and "an eyesore" to people because of their materiality, the gigantic size and structure (Gallman 2011:117). Exoticness, ugliness, and heterogeneousness of wind turbines are not their inherent qualities but are made so only through and in their relations to the environments in which they survive or operate. Wind turbines become aesthetically more alien and intrusive weeds that degrade and even destroy "environmental viewscapes" (Sovacool 2013:39), only when they are out of context, or to borrow Mary Douglas's famous phrase, "matter out of place" (Douglas 1966), "because they are characteristic of contemporary technology, on a scale magnified by their large size, the extensive arrays into which they are placed, and the relative barrenness of their surroundings" (Brittan 2001:174). The negative visual impacts that wind turbines make on the landscape have been criticized as "a new way to rape the countryside" or as "lavatory brushes in the air" (Pasqualetti 2000:389).

Wind turbines are also mechanical weeds in a practical sense, not just in aesthetical sense. The term weed has no meaning in a botanical sense and is inherently relational because a plant that is desirable and valuable in one context becomes an unwanted plant in other situation. Due to such relationality, while the weed is an unwanted plant grown in the wrong place, usually thought to have negative impacts on the environment and living entities in it such as a competition with endemic and wanted plants for necessary resources, it also has its own beneficial qualities. Some weed plants can become material for food and medicine, while others help improving soil and preventing erosion. In the same manner, in spite of their visually undesirability, wind turbines are useful weeds because they generate electricity by converting the kinetic energy of the wind and therefore play an important role in mitigating climate change in the era of Anthropocene by reducing our current heavy reliance on fossil fuels. As technological objects producing power through a renewable natural substance, wind turbines also paradoxically contribute to protect and beautify the natural environment at the same time that they aesthetically corrupt environment and disrupt our vision. When it comes to such practical benefits for the nature, we can call wind turbines mechanical "flowers," rather than weeds, because we have long used and praised real flowers to beautify our environment.

Wind and wind turbines are necessarily in an inextricably interconnected/interdependent relationship, as I wrote in chapter 3, in terms of the production of electricity: one always depends on and requires the other to perform the expected role in the generation of electricity. The potential of the wind to generate power,

on the one hand, can be realized only when wind turbines exist and work to harness and convert moving air's kinetic energy. The wind has no opportunity to turn its economic and environmental potentiality into actuality without the help of huge technological devices. On the other hand, the very existence of wind turbines, no matter what we call them (either mechanical weeds or flower), also requires and is enabled only by wind. Because and only if there is wind blowing and it is strong enough to be harnessed, wind turbines can take root in the ground and become weeds or flowers to produce electricity for us. In the same logic, the existence of qualitatively good wind enabled the wind turbines I see and take a picture of and will enable the future installation of numerous additional wind turbines in Penghu, according to the central and local governments' planning to make Penghu a world-class low carbon island. The strong winter wind works to pollinate wind turbines as mechanized flowers all over the archipelago. In other words, without Aeolian force, wind turbines are useless and dead machines that are unable to operate and thus to do what they are expected to do as mechanical flowers/weeds.

As I will show later in this chapter, however, wind is neither its "blowing" (Ingold 2007b) nor a "cooperative" (Bakker 2005), "thin" (Engelmann 2015) matter, merely making wind turbines work and perform their assigned task. Except for only a small number of people such as village residents living with/near one of Taipower's wind farms, as we have seen in chapter 2, many inhabitants of the fishermen's islands basically tend to regard their wind as qualitatively particular, since it exerts a destructive power on various things such as vegetables, local economy, scooters, and wind turbines. For them, wind turbines on the archipelago do not simply require the wind, but also have to resist

and overcome its particular materiality and power to carry salt rain, in order to produce electricity as they are expected to do.

This chapter aims to tell a story about the relationship between wind turbines and wind by thinking chemically (Hayden 2014) as well as by drawing on local people's emphasis on the particular qualities of Penghu's wind.[24] This is a story about the encounter between the universal technological machines designed and circulated by the German manufacturer Enercon and the local-specific wind blowing throughout Taiwan's small archipelago, and its effects. When as an "immutable mobile" in Latourian sense (Latour 1987), universal energy infrastructure faces a particular wind in Penghu, it often fails to overcome it and experiences breakdowns that are the (temporary) loss of its universality or immutability in form and function as power. Even though repair and maintenance work required for fixing such breakdowns is normally the site for human agents to show their brilliant creativity and ingenuity, Taipower — the colonized and dominated customer of the German wind turbine manufacturer — has almost nothing to do with repairing the broken wind turbines, in part owing to structural problems associated with global "products," except for contacting the foreign company and lethargically waiting for the arrival of their repair service teams. As a result, breakdowns do not undermine but rather strengthen the authority of the foreign wind turbine manufacturer, while revealing the incompetence of the national electricity utility company to local people who are the users of the company as well as citizens.

[24] By thinking chemically, as I will explain in detail later in this chapter, I refer to "a mode of thinking" (Hayden 2014) that pays attention to how entities/substances come to possess their properties and power through and by their changing relations with others.

Since the locals are well aware of the particularness of their wind and its destructive effect on wind turbines making temporary breakdowns, they do not passively and uncritically accept the constructed image of wind as a free substance that will make economic benefits for them, the image discursively created and distributed by various social actors aiming to make Penghu as a home of wind power. Instead, by restoring the discursively simplified wind to its original natural condition, that is, as the active, uncontrollable air masses in motion that make them spend/waste, rather than earn, money, many local residents of Penghu deconstruct and refute its fantasized image of the wind as a potential energy source to create financial profits. From the perspective of those residents, the wind is believed to make them persistently pend, rather than earn, money, as long as the wind turbines is unable to successfully resist its particular property to carry salty water, often causing corrosions and breakdowns, which to be fixed exclusively by technicians from the original manufacturer.

In this chapter, I argue that the wind (or its materiality) has to be tamed and managed in order for captivating storylines that work to create financial expectations of wind power to be maintained, and thus for the potentiality of the wind to be realized. By paying close attention to the relationship between wind turbines and the wind and how it affects the ways in which local people of the archipelago understand the captivating narratives, this chapter contends that the potential energy of the wind as a green capital and local people's financial expectations of it not merely depend on attractive, reliable storylines created by the architects of the wind power project, but also on its own recalcitrant material properties (Randalls and Petrokofsky 2014). This chapter asserts that

when and/or if infrastructure fails to endure and get over material challenges, such as corrosions and systematic breakdowns, arising from the intractable wind and its materiality, it works to shake and even undermine the charming storylines that create the new meaning/image of, and the spectacle of the wind, and, thus, to disrupt the semantic (and ultimately physical) conversion of the Aeolian force (Randalls and Petrokofsky 2014). Until the (materiality of) wind, often causing breakdowns of wind turbines, can be successfully tamed and controlled, local residents will not stop actively reexamining, or deconstructing the narratives that were produced to create the spectacle of the wind and strengthen its potential energy, rather than to taking them for granted. Then, I make a speculative argument about the decrease in the attractiveness or attractive energy of the constructed financial expectation of the wind through the Betz Limit of wind power, which is a rule that states that wind turbines are unable to extract and convert more than 59.3% of kinetic energy from the wind and thus abides by the Second Law of Thermodynamics (Ackermann 2012; Coyle 2011). When we take both the Betz Limit and the particular property of the wind into consideration, the decrease in attractive power that the financial expectations of the wind hold is quite natural because the failure to get over the materiality of the wind makes the German-designed wind turbines of Penghu often experience breakdowns, which require high repair costs and generate less power and profit.

Provincializing the Understanding of the Wind

As a meteorological phenomenon, the wind is essentially unable to exist outside of its complicated and heterogeneous relationships to other things (Howe and Boyer 2015; Latour 2005; Law 1992). It is not possible for us to know/conceptualize what the wind is without seeing the movement of natural creatures such as trees and leafs that it makes, without feeling it on our hair and skin, without listening to wind turbines that spin their huge blades. We can be aware of and see the wind as the existence of air molecules in motion only through the force that those invisible molecules exert on humans and nonhumans. That is, the wind is, as Cymene Howe and Dominic Boyer write, "nothing if it is not movement," contacting various humans and nonhumans and making palpable effects on them (Howe and Boyer 2015:3).

The wind has been regarded as a positive force for life itself in many different cultural systems and Western cultures in particular. As a "breath of life" (Low and Hsu 2007:S3), the wind's ability to enable life can be found in the etymology of the English word "animate." It is, according to the British social anthropologist Tim Ingold, derived from "the Latin *animare* (to give life) and *anima* (breath), both in turn derived from the Greek *anemos* (wind)" (Ingold 2007b:S31). The book of Genesis of the Hebrew bible that made an immeasurable influence on Western culture and society begins: "In the beginning God created heaven and earth, and the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters." Since the word "spirit" in both Greek and Hebrew refers to the wind, or breath, the Spirit of God in the Genesis can be interpreted as God and/or His soul in

shape of the wind, the creator of the world and the source of all life in it. Likewise, the Navajo's story of creation also describes wind as a form of breath that injects life into a pair of the first human beings. Probably due to such process of birth, humans are essentially "air-born," as Cymene Howe writes, "from our infant inhale, throughout our respiratory lives, and to our last gasp" (Howe 2015:203). These examples clearly illustrate that in diverse cultures, the wind as a breath (of God) is seen as the original and critical element of the creation of various lives including humans. Life is not given, but "is borne — along with the forms it generates — on the currents of the medium" (Ingold 2007b:S31).

The Aeolian force does not merely breathe life, but also enables and ensures its continuation. According to the Dutch art historian Barbara Baert, there is a close connection between the wind and the symbolic notion of the web. The English word wind derives from "the Indo-European root *derbh*," which means, "to dance, wind, whirl, put together, connect, tie up, clump of grass" (Baert 2013:42-43). A spider sends out long sticky filaments of silk into the air and the wind in turn carries them to a certain object to which they eventually stick. Such wind-borne threads of silk then become a basic frame upon which the spider constructs its web. "By extruding silk (a sublimation of anal flatulence) and allowing itself to be carried by the wind, a spider is able to span huge distances between two points of attachment" (Baert 2013:42-43). Unlike the late Clifford Geertz's description in his famous essay that brought about the interpretative turn of culture in the social sciences (Geertz 1973b), the web is not simply spun by a sole spider itself, but a product of heterogeneous assemblage. Without the help of the wind as a

midwife, a spider might be unable to build its own web that functions not only as a structure, both enabling and limiting the movement of the arachnids, but also as an effective way to gather prey and intake nutrition.

Moreover, the wind also has long played pivotal roles in affecting natural landscape, of which it is part, in positive ways. The Aeolian force shapes and alters physical landscape through weathering and, as "the workhorse of weather," influences regional climate (Lifshitz-Goldberg 2009:437): while onshore wind in the summer carries with it cool air and moisture into coastal regions, offshore wind brings warmer and drier air. The wind also has an important role to play in making rain. It moves clouds from ocean to territory and thus allows rain to fall over land. Or it generates the orographic lift of the mountains that can create clouds and precipitation. Simply put, without rain caused by wind, there is no fresh water that is the fundamental natural substance on which all land-based life depends. Without rain/water, most vegetation, including crops, would die. The wind also plays a key role in the survival and reproduction of plants and other immobile living organisms that we have relied upon for our existence, since it aids the those immotile creatures in dispersing their seeds, and transports pollens of many crop plants such as corn, rice, wheat, and oats and marketable trees, including spruces and pines, for pollination and fertilization. If the wind were unable to aid various plants in dispersal of seeds, pollen and spores, it is highly likely to cause the situation where livestock are destined to die because of the lack and unavailability of crop. This in turn means that there would be only few foods left for us. As a result, we human species

would also die eventually when there is no food source and all the water resources on the ground dry up eventually.

The wind also breathes life even to non-living or lifeless things. It not only enabled the birth and existence of the current fourteen mechanical weeds/flowers in Penghu, but also allowed these mechanized plants to successfully live, survive, and make great environmental and economic contributions to produce electricity and protect the natural environment. Just as it works as a major vehicle for transportation and dispersal of immovable plants' seeds and pollens, in addition, the wind is trying to disperses mechanical flowers' seeds, containing bright hope and expectations to other places in Penghu, where the wind turbines would be installed to generate clean electricity and a stable financial income source for the locals, according to the central and local governments' ambitious planning to make the archipelago a world-class low carbon island. It then also infuses into the archipelago itself that has long been an economically inert and suffocated place a new vitality and identity as a Mecca of wind power. The flow of air mass also makes both the central and local governments view it as a critical means through which they dream and wish to realize their respective dreams, as the chapter 1 suggested. On the one hand, it is through the development and harvest of wind power that the local Penghu government wishes to be economically self-reliant without being a beggar subserviently asking for money towards the central government, and then to enhance its political influence drawing on the achieved financial autonomy. The Taiwanese government, on the other hand, aims to make itself gradually visible in

international society in order to gain a political status as an independent sovereignty and to become an official member of the UN someday in the future.

Even though many Western scholars have highlighted the affirmative effects of Aeolian force on life itself by focusing on the Western origin of the word wind, yet, such "literary tricks such as puns, etymologies and conceptual analyses" of the English words, based on the old European linguistic heritages (such as German, Greek, and Latin) are, as the Japanese anthropologist Masato Fukushima complains, essentially Euro-American centric-analysis and then may lose the power to non-Western audiences who do not share such linguistic and cultural traditions (de la Cadena, et al. 2015:58; Latour and Weibel 2005). Instead Fukushima contends that if those English words "are translated into non-European languages, the aura of the rhetoric evaporate ephemerally" (Latour and Weibel 2005:58). He writes that, for example, when one explores the Western notion of "thing" by using the Japanese term "mono" for it, rather than the German equivalent "Ding," one would have a non-Western image of thing that is quite different from what Bruno Latour argues: while a thing that Latour explored through its German etymology means an assembly or a gathering including nonhuman material things, it also includes nonmaterial things such as the dead and spirits in Japanese analysis.

As we translate the English word wind into its Chinese word *Feng* and analyze it by following Fukushima's attempt to "provincialize" the Western rhetorical analysis based on its linguistic origin (Chakrabarty 2000), it allows us to get a totally contrasting image and understanding of the wind. In Chinese culture, as the structure of the Chinese character *Feng* for it clearly shows, the wind has often been understood and warned as a

menace or a destructive force, making negative influences on our lives and environments. Two different pictograms structurally make up the resulting character *Feng*: the pictogram *Chong* depicting an insect is placed inside another pictogram *Fan* that refers to the origin. According to *Shuowen Jiezi* (Explaining Graphs and Analyzing Characters) that was the first Chinese dictionary to explain the origin and structure of the characters and give the rationale behind them written by the Han Dynasty's philologist Xu Shen in early second century, the character Feng refers to the Chinese idea, *Fengdong Shengchong* that literally means that when the wind blow, insects are born. The character Feng does not simply refer to the flow of air as its current meaning, but also means the origin of insects. Because insects have been negatively regarded as a cause of destruction in Chinese cultural settings, the wind as their origin is also naturally associated with a malevolent, adverse force that should be avoided. According to the renowned Japanese historian of medicine Shigehisa Kuriyama, the Chinese understanding of wind as a malign force, or as "demonic fury" to be avoided is well represented in traditional Chinese medicine in which it has been viewed as "disease itself, an alien invader" rather than as "a distant, exciting cause of disease, inciting imbalances within the body" because it intrudes straightly into our body's interior and generates suffering (Kuriyama 1999:251). In traditional Chinese medicine, as a result, it is believed and warned that "there are few things in the world… more dangerous than wind" from which nearly all diseases arise (Kuriyama 1994:23). In short, when the Chinese character *Feng*, meaning the wind is analyzed provincially by looking at its (etymological) structure, we come to

know that the movement of air flow means the harmful force to be evaded, rather than "breath of life" (Low and Hsu 2007:S3), in Chinese cultural contexts.

Just as the structure analysis of the character Feng shows, I found out during my fieldwork that many of local residents in Fishermen's Islands also have a tendency to view the strong seasonal northeast winter wind as a destructive, adverse force, negatively influencing their lives. As I mentioned in introduction of this dissertation, Penghu has been famous or notorious for its peculiar natural phenomenon, the strong northeast monsoon wind that usually blows for almost six months from October to next March throughout the fall and winter season. Such fierce winter wind has been understood as a critical hurdle to local economic prosperity to be conquered. Also, in the eyes of inhabitants of the archipelago, the fierce wind stands for hardship or suffering as fate that they have to go through and overcome. Such meaning of the wind is well-expressed in a byname or alias for Penghu, "Chrysanthemum Island," as I mentioned in chapter 1. Ancestors of Penghu residents migrated from China by undertaking the dangerous trip to cross the sea, and endured suffering to cultivate the wild archipelagic frontier as their new home. The chrysanthemum is used to symbolize the invincible spirit and will of Penghu people for life because like human companions, it also has faced and tolerated the strong winter wind so as to stand erect and survive in the infertile land. It is no surprise that the chrysanthemum becomes the flowers of representing Penghu County.

Yet please remember this: even if the rhetorical or structural analysis of the word tends to over/emphasize its one aspect, either bright or dark, the wind is essentially both "creatively (and destructively) powerful" in its own right (Ingold 2007b:S31), because, as

it does travel, grow "strong, transform, and dissipate" (Hathaway 2013), it simultaneously "breathes life into the lifeless" (Baert 2013:43) and deprives the living things of breath of life. Even in the Western cultures, as the Hurricane Katrina, which is now recorded as the costliest natural disaster in the history of the United States, vividly exemplifies (Adams 2013; Masquelier 2006; Sims 2007), the wind does not always imbues "breath of life" into, but also sometimes takes it away from, humans and nonhumans (Low and Hsu 2007:S3). Needless to say, the power of flowing air mass is simultaneously positive and negative and wanted and unwanted. The wind becomes a friend when it cools our overheating body off on a hot day and enemy as it grows its power to the extent to which it can damage our properties and even take away our lives, as the Katrina did in 2005. While the wind is a power when a windsurfer controls his board and a natural treasure when it allows a power company to generate electricity, it also becomes a trouble that impede the development of the tourism industry in the archipelago and that leads to the breakdown of wind turbines. Hence the wind is a singular object with "multiple ontologies" (Graham and Herndl 2013; Hathaway 2013; Mol 2002). It is multiple not only in its meanings, but also in its materiality (cf. Barnes and Alatout 2012).

Wind and Scooters

In spite of the essential ambivalent, multiple qualities of the wind, many inhabitants of Penghu archipelago with whom I met and worked tended to worry about and highlight its dark side and destructive force when it comes to the development of

wind energy. In particular, a specific example that I heard the most from them during my fieldwork in Penghu, when they sought to explain to me about the destructive power that Penghu's wind makes in their daily ordinary life, was scooters and visible physical changes occurred on them.

Scooters have long occupied a position in Taiwanese history as the most popular and important mode of transportation due to the mixture of many social and environmental factors such as high population density, a very limited space, and the humid tropical climate. The popularity of scooters can be easily found from the statistical facts that they took up about 65 percent (11 million) of all vehicles (17 million) in Taiwan in the end of 2001 and that when the number of scooter is calculated by density, Taiwan would boast the highest scooter density (326 scooters / km2) in the world (Tso and Chang 2003).

Just as it is to Taiwanese people, a scooter was also both a close and important friend and an indispensable means of transportation of mine. I frankly confess that I was an illegal scooter rider without a license and insurance in Penghu. Before had becoming an unauthorized scooter user, I rode an electric bicycle for the sake of my fieldwork. I realized at the very early stage of fieldwork in Penghu that it had a terrible public transportation system like any other remote and underdeveloped places in Taiwan, where a bus comes in every 30 minutes or over. It made me make a decision to rent an electric bicycle with the intention of boosting my mobility and spend less time on the street, from a local bicycle shop whose owner, Yen Chengxu later became my friend and gave me a

chance to meet and get to know a high official of Jianhshan power plant who was also his loyal customer.

The electric bicycle worked well overall in the sense that it saved my time and strength a lot as I had anticipated. However it had its own serious drawbacks that I had not foreseen. First, batteries did not last long enough to allow me to return to home after visits to multiple places in spite of the fact that I had one spare battery. That was probably because either Penghu was in fact much bigger than I thought, even though it is known as a small island, or the battery had a shoddy and low capacity. Secondly, due to its quite heavy weight, when both batteries had gone flat, I had to pedal the bicycle by myself bearing their weight. When unluckily encountering horrible geographic and topographic features, or terrible road conditions, I immediately felt that my burden became bigger and heavier and my feet got paralyzed more easily. The late Susan Leigh Star was completely correct in pointing out that infrastructure is an inherently relative concept and becomes visible and transparent only when it malfunctions or breaks down (Star 1999). A battery does not always bring the same meaning to its users. Someone's full charged battery is a "black boxed" treasure to make his journey easier and more pleasurable, while the same but dead battery reveals itself to its user by bringing nightmares and hard-to-bearable burdens to him. Roads that enable the constant flow of humans and nonhumans also mean totally different things to an electric bicycle rider, according to whether his battery is still alive or not. As an electric vehicle with two wheels lose its power and become dependent on human energy to move, roads turn themselves into obstacles that impede its movement.

Fortunately, I later had a chance to be a rider of a motor scooter because an electric bicycle often gets rendered wholly human-powered. Yijun, who is the only daughter and the first child of my landlord, Mrs. Lee found that I was always in a bath of sweat because of a long human-powered ride as I came back home with a two wheels vehicle. Perhaps she felt compassion for me. One cloudy day with cool winds in March, Yijun generously gave me permission to ride her quite old but still good looking 100cc red scooter with hope that she as my friend could do something for me and help my research go much easier and more smoothly. She told me

"If you know how to ride a bicycle, riding a scooter is a real pushover, even though you have no Taiwanese license for it. In addition, you are a man. That (being a scooter rider) is a piece of cake. So the only thing you need to be especially cautious of is the police since you don't have a Taiwanese driver's license. When you find a traffic police on patrol somewhere, please slow down not to make things worse. But I believe that if you are unfortunately caught by police, they will eventually let you go without giving you any actual penalty or tickets. Just in case the police catches you, please pretend not to understand and speak Chinese and rather to speak English. Or please disguise you as an ABC (which is a widely-used term by many Taiwanese people to simply refer to Taiwanese or Chinese people who were born and raised in the United States, Taiwanese/Chinese-Americans, as the initial means America-Born-Chinese), who can only speak English with a very limited capability in using and understanding Chinese. It will help you escape that situation quickly and safely, because they are mostly generous to people, especially foreigners who speak English, and also do not know how to deal with aliens speaking English. (If you pretend to be an ABC), they will also tolerate you, since you are our oversea compatriot returning from abroad."

Many scholars who study English and its impacts in non-English speaking cultures and societies have long suggested that English is not just one of numerous human languages that is a pragmatic tool for communication but also has became a marker of social status and class in Asia (Feng 2011:89; Fong 2011; Park and Abelmann 2004). The learning of English, according to their research, naturally became a nationwide fever or a "national obsession" in many Asian countries including Taiwan (Feng 2011:89; Park and Abelmann 2004). When I heard Yijun's advice about how to escape from possible awkward situations associated with an illegal scooter riding, I realized once again the extent to which English went global and became a dominating language in the world. I could also know how strong and pervasive national fever in learning English is, since it was found in a tiny off-sea archipelago of that small island country.

After giving her useful tips on how to deal with the police, Yijun then led me to where her red scooter is located. It looked pretty good in general but it seemed odd to me that that the only part of metal that connects the side mirrors to the scooter's body was heavily corroded and turned dark red (see figure 4-2). Then I asked Yijun "what's wrong with this scooter? What is this corrosion?" She smiled and simply responded me "Never mind. That's what Penghu's particular wind did." Particular wind. As the flow of air molecules caused by a difference in atmospheric pressures, wind is a universal natural phenomena and feeling it is one of human universal experience. No matter where we are, we can feel and experience the wind, though there are differences in its strengths, speeds, and directions. As a universal phenomenon, the wind blows everywhere in the East and West such as in Chicago and Penghu, which are all well known as windy places. So I

thought ‘why did she say wind of this archipelago is particular? Isn’t wind a universal natural phenomenon and human experience? I can’t get it.’ At that time, however, I did not take Yijun’s actual answer seriously at all. Rather I chose to brush aside that heavy corrosion by thinking that it might result from the old age of the scooter and from the failure to receive proper, timely maintenance and care.

Figure 4-2. Yijun’s Scooter with Corrosion. Photo by author.

Since then, I neither cared about the corrosion nor took it seriously, whereas Yijun’s scooter became my feet and best companion that was always by my side during an anthropological journey in the islands. But the heavy corrosion that I had forgotten for so long coincidentally came up in conversations with the locals and it helped solve my curiosity about how and why it took place.

One day, as usual, I went to Jianshan village, from which the submarine cable will be connected to Yunlin, by riding the scooter in order to talk with Mr. Huang, one of the village representatives for the Penghu government’s project of producing wind power and the building of a submarine cable. In our conversation, Mr. Huang revealed his worry to

me about the project many times because of the destructive power of Penghu's wind. He told me

"A peculiar feature of Penghu's wind is that it brings in a lot of salty air. Wind blows much of the salt in the air out of the sea. This wet and salty wind made our land barren and thus unsuitable for agriculture. It also corrodes every piece of exposed metal in our scooters. Even though you just bought your new scooter, wind quickly made it look worn and shabby by oxidizing its metal parts. So do not misunderstand that many of the scooters you see in Penghu are too old and awful! Penghu's particular/special (tebie) wind is so destructive."

After listening to his explanation, I finally learnt two important things. First, it made me understand why the metal part of the side mirrors of Yichun's scooter was so heavily rusty and looked so old. The red/brown colored rust that I saw on my scooter was the outcome of a chemical reaction. When metallic objects react with or are exposed to air in motion or wind and fine particles of salt in seawater droplets carried by it, metallic objects, they undergo corrosion converting themselves to rust and weakening. More importantly, the second thing I learnt is the way local residents of Penghu usually look at and understand the wind, as Mr. Huang told me that "a peculiar feature of Penghu's wind is that it brings in a lot of salty air." A peculiar feature of Penghu's wind. This reminded me of what I have heard from Yijun when I had borrowed her scooter: Penghu's wind is special. For Mr. Huang, Penghu's wind is peculiar or particular in a sense that it carries salt and, as a result, makes destructive scars on their daily necessities like corrosion on scooters. Through Mr. Huangs' words, I could guess that Yijun was also very likely to

think of wind in this way, like Mr. Huang. And I thought Penghu people seemed to have a Levi-Straussian dichotomy of wind in their mind: universal wind : particular wind = vitality : destructiveness. I also later learnt that not only ordinary people such as Mr. Huang and Yijun, but other local professional working for Taipower also regard Penghu's wind as something qualitatively particular, especially when all of them pointed out the specific material qualities of Penghu's wind and the potential hazard it may bring to the development of wind power.

Particular Winds and the Chemical Turn

By emphasizing the particular property of Penghu's wind, Mr. Huang expressed his own negative opinion about the central and local governments' project of harnessing wind power in Penghu.

"Many people worry about wind power because it completely relied on wind to generate electricity. If there is no wind or if it is not strong enough, wind turbines have difficulty producing electricity. But my concern is different from theirs. I am worried that Penghu's particular wind containing salt and water will make wind turbines breakdown. As I have heard, the fourteen current existing wind turbines quite often stop working or do not function properly due to the damage that the wind causes on them. I think you always have to pass by the Magong airport to reach our village. The Penghu government installed a lot of solar panels at the airport to take advantage of Penghu's strong sunlight to produce electricity. But I heard that those solar panels got broken or did not work well, of course, because of Penghu's particular salty-watery wind. I also heard from an acquaintance working for the power plant that Taipower has currently no expertise to fix all the technical problems regarding wind turbines. They are only able to resolve some

basic and minor technical issues. Only a technician who is dispatched by its original foreign manufacturer can fix significant technological problems. If wind turbines break down by the saline winds, the cost of repair will be definitely high. Who pays for this?" Even on the ground, the salt-carrying wind that only blows for about five to six months might causes these big problems. I can imagine how vulnerable a submarine cable will be to the ocean that is inherently and always salty and watery."

What Mr. Huang refers to as a foreign manufacturer is Enercon, the German wind turbine manufacturer. Enercon began its road to economical/ecological success when graduate engineer Aloys Wobben founded the company in 1984. A small team of engineers developed the first E-15/16 wind turbine with a rated power of 55 kW. To start with, Enercon systems still featured gearboxes. However in 1992, the changeover to gearless technology came about with the first Enercon E-40/500 kW. Moving beyond the German domestic market where it has occupied a stable and strong position as a market leader since the 1990s, Enercon has also successfully opened up and developed the overseas market. Enercon is now not only the fourth-largest wind turbine manufacturing company, but also sat in the fifth place in terms of global wind turbine sales in July 2012. Such global success of Enercon in the wind power industry lies in its accumulated knowledge, techniques, and know-how for manufacturing wind turbines. As the historian Jerry Harris writes, only a very small number of transnational corporations (TNCs) has a capacity to handle with everything about wind turbines, from the building through service to maintenance and repair, given their materiality (Mitchell 2011), that is, the size and technological complexity of those machines (Harris 2010). It is thus no surprise that a few TNCs have led and dominated the global market of wind power, because "the top

eleven corporations" manufacturing wind turbines encroached on "95 per cent of the market in 2008" (Harris 2010:64). As products of the Enercon, all the fourteen wind turbines currently operating in Penghu are seen as many local residents by the obvious sign of global impacts that the TNC makes in the international wind power market. And, for Mr. Huang, the biggest enemy for the alien, exogenous mechanical weeds/flowers introduced from a developed European country is Penghu's local-particular and endogenous wind.

As a universal meteorological phenomenon, the wind is "mercurial existence" (Howe 2011:8) being "notoriously fickle," "temperamental and quixotic" (Denny 2013:35, 180) due to its unpredictable change in both speed and direction. We human beings are never able to dictate when and how the wind is going to blow (Zehner 2012) and to have it under control. The wind always blows only when it wants and as fast (or slow) as it likes and wind turbines thus work to generate electricity in a passive way only when there is a flow of air mass which is strong enough to make those machines operate. Such a radical material quality of wind means that the wind is inherently unreliable and precarious even though it is all around us and free. It is no doubt that this becomes "the main headache" for wind energy developers (Denny 2013:180). That is to say, the wind is by its very nature, to borrow the Canadian geographer Karen Bakker's words, an "uncooperative" natural substance on the grounds that its material qualities render it difficult to regulate and control as an alternative energy resource (Bakker 2005).

Yet, for many local residents of Penghu who do not live near Taipower's wind farms like Mr. Huang (as well as for a number of Taipower staff people whose story I

will present later in this chapter), what makes the wind blowing throughout the archipelago uncooperative is never its mercurial, quixotic property. Rather, the wind becomes uncooperative by its ability to carry sea salt and water, the ability to bring "salt/y rain" (*xianyu* in Chinese). Those local people also think that such capacity makes Penghu's wind as a qualitatively "particular" or special (*tebie* in Chinese) force, impeding the proper operation of wind turbines and even damaging them.[25]

The special quality or particularity that both many Penghu residents living away from wind turbines and Taipower workers believe that Penghu's wind possesses renders it visible and noticeable to them. As a universal phenomenon, the wind has always been with us and thus is so natural to us that it is usually likely to become the part of the passive, unnoticeable background of our life in normal times. Usually until it disrupts our daily life in various shapes of natural disaster such as tornado, typhoon, or hurricane, we are unable to recognize the wind and its powerful force, strongly affecting us in a destructive way. In this regard, universal air in motion is simply seen as a "very thin matter" that "allows itself to be forgotten even by the perceptual ability of the nose" (Engelmann 2015:76). In Penghu, however, the wind has long been "thick" matter that many inhabitants of the archipelagos are unable to ignore and even forget in their everyday because of its particular ability to carry salt rain and its evident destructive powers/effects, such as red-colored corrosion that I saw on Yijun's scooters, withering of plants which vegetable gardens (*caizai*) are built to ward off, and an impediment to local

[25] For those who engage in fishing industry, the wind is also cooperative. By blocking fishermen from frequent sailing during wintertime, according to my informant, the wind prevents overfishing and thus the overexploitation and depletion of fishing stocks, as well as works to maintain the web of marine biodiversity and the food web of marine animals.

economy. In other words, a large number of the locals in Penghu think that the peculiar feature to carry salt and water turns a universal natural phenomenon into "particular" air molecules in motion, as well as thin matter into thick matter.

In fact, the particularity of Penghu's winds is not particular or confined to the Taiwanese archipelago, in spite of the fact that many people whom I had met in the archipelago often told me about how particular their winds are and how they are qualitatively different from winds blowing in other locations of the world. Despite the thinking of Penghu's residents, the peculiar effects/qualities of the winds that erode and destroy things are also easily founded in other places, especially sites adjacent to the ocean or coastal areas, though there would a difference in degree. A spray of seawater created by breaking waves is blended with the air and the strong wind carries tiny particles of salt that are left behind after the rapid evaporation of the finest seawater droplets. Such salt and water-carrying wind, or what is dubbed as "salt rain" in Penghu produces corrosion and deformation on the exposed surfaces of metals by a chemical reaction between different molecules. Such a process is quite universal. Nevertheless, the inhabitants of the archipelago seem to think that their wind is local-particular/specific with peculiar qualities because it has influenced things surrounding them and contributed to the shaping of their way of living and even their identity as frontier islanders. What makes many inhabitants of Penghu think that their wind and its properties are particular, even though they are in reality not special but ordinary? How does the wind have an ambivalent characteristic or ability to simultaneously become both universal and particular in Penghu (Choy 2011)?

In my view, the particularity of Penghu's wind is, for many local people, made chemically in and through connection with other entities. What is particular is neither the wind itself nor its capacity to carry salt rain, because the molecules that constitute it are the same everywhere and because, as I mentioned above, it is easy to observe salt and water carrying wind in other places. Instead what makes the wind particular is its relationality since many of my informants have often explained to me about the particularity of the wind by taking as an example the negative discernible impacts of the wind on various things like scooters and wind turbines, plants and vegetables. It seems that the wind cannot be regarded by local people as "particular" if there is not something out there with which it interacts and thus on which it makes the obvious impacts such as corrosion of metals. Penghu's residents think about the particularity of the wind through and in relation to a heterogeneity of other things. In other words, just as the wind depends on its relational properties to be the wind, the particularity of the wind is also reliant upon its relationality. The particularity of the wind is determined and constituted by its heterogeneous relations to things. The wind is not merely a collection of passive chemical molecules when it connects and interacts with other things that consist of chemical elements. Rather it becomes vibrant or vital to cause chemical reactions, creating a new chemical substance (Bennett 2010; Choy 2012). By emphasizing and taking seriously the particularity of the wind and the creativity of relationality, the inhabitants of Penghu seem to think like practitioners and students of chemistry, which is a science of relations and associations: they seem to "think chemically," or relationally about the wind and its

particularity (Barry 2005; Barry 2015; Bensaude-Vincent 2009; Bensaude-Vincent 2014; Bensaude-Vincent and Stengers 1996; Hayden 2014).

By regarding as important Penghu local residents' belief and emphasis on the particularity of the winds and the vibrant force they exert in relation to other things, I join the dialogue with a recent gradually growing academic movement in the social sciences emphasizing relational ontology, namely, the "chemical turn," to borrow the Berkeley feminist STS anthropologist Cory Hayden's term (2014) (Barry 2005; Barry 2015; Bensaude-Vincent 2009; Bensaude-Vincent 2014; Bensaude-Vincent and Stengers 1996). In their co-authored thought-provoking book *A History of Chemistry* (1996) that later became the foundation for underlying and facilitating the emergence of the chemical turn, the philosophers of science, Bernadette Bensaude-Vincent and Isabelle Stengers argue that as an empirical discipline of science, chemistry is "a heterogeneous territory… that defied all *a priori* definition" (5). Instead of studying molecules and atoms in isolation and viewing them as possessing "given and invariant identities," chemistry aims to explore how "the identity and properties of atoms and molecules are transformed through their changing associations" with other entities (Barry 2005:56, 56-57). According to thermodynamics in chemistry in particular, objects do not have their properties in themselves and in isolation. Instead objects come to possess their qualities and power only "from the fields of relations or the systems in which they are situated" and thus "always have the potential for change" (Barry 2015:119). The lessons of thermodynamics tell us that "matter should not be thought of as inert, nor as necessarily lively… but as an aspect of an open system of relations" (Barry 2015:119). For chemists, then, even if

molecules are assumed to "certainly have an capacity to endure," it is through and depending on their changing relations or associations with others (Latour 2005) that it does not guarantee that "they remain the same" as they were before (Barry 2005:56, 65). In other words, chemistry is not simply a scientific discipline but becomes "a mode of thinking" (Hayden 2014) not only focusing on "a way of *making* (not 'discovering') entities, substances, and the relations between them" (Hayden 2014:180), but also investigating how chemical substances/entities are simultaneously "the same and not the same," which is the title of the book written by the winner of the 1981 Nobel Prize in Chemistry, Ronald Hoffmann, through their relations with others (Hoffmann 1995; cite from Hayden 2014).

In this regard, the ontology of chemistry as an empirical discipline of associations is characterized by "a concern for relations" and "a concern for agency" (Bensaude-Vincent 2009:178). Individual substances and molecules, on the one hand, come to have their own meanings and values to chemists who deal with and study them "only in so far as they enter into relation with other units" (Bensaude-Vincent 2009:178). "Chemical space is a relational space," as Andrew Barry argues (2005:62), and this means that chemical molecules exist not as discrete physical objects but as historical "events" that are constituted in a world filled with crowds of interacting entities (Barry 2015). When they come to be in relations with others, on the other hand, chemical substances stop simply being "a Cartesian passive matter" (Bensaude-Vincent 2014:70). Rather, as Bensaude-Vincent argues, they become "active and reactive individuals" whose disposition and behavior get in part decided and "activated by the neighboring

substances" (Bensaude-Vincent 2014:70, 71). With the "chemical turn" in the social sciences, or by thinking chemically, in short, we are able to think about "the ways in which entities act on and influence each other" and the role of things, including humans and nonhumans, as an essential element in re/making the world (Hayden 2014:181). Or, as the British geographer Peter Adey suggests, the way of thinking chemically prompts us to "consider the elemental, and elements like air, as chemistries within which entities move around and certain kinds of relations cohere" (Adey 2015:61).

Such chemical ontology/turn allows me to revisit the social anthropologist Tim Ingold's understanding of the wind (2007). Ingold does not claim that the wind *has* agency like actor-network theorists like Bruno Latour may argue, even though he pays close attention to its creative and destructive force that influences all lives. For Ingold, wind *is* agency itself, rather than an actant, to use Latour's term, or a lively agent possessing the capacity to act or do something, because it "*is* its blowing, not a thing that blows" (Ingold 2007b:S31). In order for wind to be as wind and agency, it must always move. If wind stops moving, it would no longer be wind nor agency. Ingold's understanding of wind as agency is correct since the blowing air molecules are caused and enabled only through and by the aid of others such as sun light. However, the flowing molecules in air also become vibrant individual actors, (only) when they get inter/connected with the neighboring substances, as corrosion on scooters illustrates. As a follower of the chemical turn, therefore, I view air molecules in motion not simply as agency but also as a significant actor/actant to think through and with and to take its material qualities/properties seriously as an essential element that creatively re/constitutes

our world (Adey 2015; Choy 2011; Choy 2012). In the following section, I will explore the repair and maintenance of wind turbines through the "physico-material agency" (Adey 2015:55) of the wind and by thinking chemically (Hayden 2014)

Particular Wind and Breakdowns of Wind Turbines

In spite of my failure to "study up" (Nader 1972) during my fieldwork because I could get access to neither the Taipower nor the Penghu government for conventional participant observation, as explained in introduction chapter of this dissertation, I did fortunately have a chance to conduct informal interviews and conversations with a number of staff people working at the Jianshan power plant run by Taipower. Among them, my key informants and friends are Liu Dehua and Mr. Zhang, who were originally introduced to me through my "guanxi," which means human relationships or connections, and later became my informants. Liu Dehua was a close friend and colleague of Mr. Tong, who is the husband of Song Meili, a bookkeeper for a distribution company run by my landlord, Mrs. Lee. It was not possible for me to get to know Liu without Song Meili's kind help. Since Song really wished to do something helpful for me, who was a guest from a distant place and for my research, she contacted Liu Dehua for me and helped arrange my meeting with him. This is a story about how I became a friend with Liu. As a Penghu native in his early 40s, Liu Dehua has worked for the power plant for almost two decades and was one of the representatives leading the labor union there. He was a helpful informant for me because of his considerably wide knowledge about and ability to get the behind-the-scene story about Taipower. Meanwhile, I got to know Mr.

Zhang who held a high-ranking position at the power plant through Yen Chengxu, the owner of a bicycle store that he often visits as a customer. Mr. Zhang was also a native of Penghu just as Liu Dehua and started his career as a technician at Taipower where he has served for more than 30 years, and was eventually promoted to one of the most important positions at the power plant. Due to his long tenure of service and high position, Zhang was well-versed in the details of Taipower and its various projects including the submarine cable project, though he did and could not talk with me about those projects in detail and deeply.

It was an extremely hot Thursday with hazy sunshine, May 29, 2014 when I had an appointment with Liu Dehua for an informal interview. My red scooter headed to the power plant and after about 20-minute ride, I found myself comfortably sitting on a long brown shabby sofa around short tea/coffee tables in Liu's office at the power plant and drinking an iced coffee that he served me. The quite big building in which Liu's office is located was on the right side of the main entrance of the power plant from which it was about 700 meters or more away. Liu's office was on the first floor of a large building which is located right in front of three gigantic chimneys and on whose right side there was a working space, where a large number of power plant staff people was doing repair work for broken technical objects. Although Liu's office was quite spacious, he occupied and used that space with a number of his colleagues. From the fact that there were several wide but seemingly old desks well arranged in a row, even though there were only two people, me and Liu at that time, it was quite easy to guess that at least more than five coworkers filled up the office with Liu and took their position at desks. Lots of things

such as piles of documents, stationery including pens and the post-its, and newspapers were messily located on the desks. The small fridge that did not seem to be big enough for those who use the office was quietly working. While I looked around the entire office, Liu pulled up his black-leathered char with castors from his desk to the sofa where I sat and sat on it, facing me. Then we started talking about the development of wind power in Penghu and in the middle of our conversation, the breakdown of energy infrastructure naturally became the topic. Liu told me that although a large number of lay people think that high(er) wind velocity is closely associated with malfunction of wind turbines, the reality tells a different story. According to him, as a complicated technological system, a windmill can automatically adjust the working of its huge blades according to wind speed to protect itself from fierce winds such as a typhoon. Rather, the wind and ocean salt it carries make detrimental effect on the existing wind turbines in Penghu, causing quite frequent breakdowns. Liu nodded his head to signify "yes," when I asked him if the main cause that leads wind turbines to break down is the salty wind as the village representative, Mr. Huang told me before. Liu then explained how the malfunction of wind turbines becomes a headache or annoying problem for them.

"In light of our current technology, Taipower is unable to manufacture and assemble wind turbines. Almost everything about wind turbines from the construction to the repair has to rely on the foreign company. Meanwhile what we can do for wind turbines is very limited. We just supply fuel for wind turbines to constantly function and only have a capacity to maintain them at a basic level and to resolve some minor technical issues. For example, we check and replace batteries or add fuels in order for them to operate (then he smiled bashfully). Because of this reason, when wind turbines stop working or do not

function properly because of complex technical or systemic errors, there is nothing we can do. Only the foreign original manufacturer knows how to fix the technical problems that happened on wind turbines. Hence all we do for broken wind turbines is to contact the manufacturer as soon as possible for a prompt repair and wait for their engineers to come to Penghu and help us fix the problems."

Liu Dehua's explanation about the breakdowns and repairs of wind turbines was also confirmed and supported by Mr. Zhang, a high-ranking official of the power plant. At 10am on a sweltering day with huge sun on September 15, I was in Zhang's spacious office so as to conduct an informal interview with him. Before starting the interview, I had a brief time to look around Zhang's office and it was interesting to me to compare his office and that of Liu Dehua. The power hierarchies of the Taipower-run power plant was manifest even to an outsider like me because they were clearly reflected not only in the spatial location of offices but also in their size, interior decoration, and the use of spaces. Many ethnographers have paid attention to how working spaces such as offices not only mirror but also "reinscribe social hierarchies" of and in an organization (Barnes 2014; Ho 2009). The anthropology Karen Ho shows us how the division of offices and their tactful spatial distribution in Wall Street investment banks are closely associated with the race, class, gender, and educational backgrounds of those who occupy them or vice versa. Whereas, as the most important space to generate profits for the company, the front office is "highly exclusionary and open only to particular class and educational backgrounds," mostly upper-middle-class White men, for instance, the back-office is usually occupied by non-White people and women from the middle-, and/or working-class (Ho 2009:80). Moreover, drawing on her fieldwork with high-level bureaucrats of the government

agency dealing with water distribution issues in Egypt, Jessica Barnes notes that she could recognize their status and power through (seeing) working spaces they occupy, because of remarkable features / advantages of their offices including a fine view, large desks, neatness, thick carpets and the constant flow of cool air from air-conditioners.

Zhang's office marks a sharp contrast with that of Liu Dehua in many senses. Compared to Liu's, Zhang's office is on the second floor in the white two-story building where most of the bureaucratic and administrative work is done. Since the building sits right behind the main gate of the power plant from which it is about 200-300 meters away, you can see from the gate the building and the slogan in red paint on the external wall of the second floor, reading "Innovate the economy, make Taiwan lively" (*chuangxin jingji, lehuo taiwan*). This white building is much closer to the main gate than the building that holds Liu's office. Many social scientists have argued that the time of those in power is considered to be qualitatively much more valuable and important than that of the less-powerful and thus should not be used/wasted unnecessarily (Auyero 2012; Bourdieu 2000; Ehn and Löfgren 2010; Jeffrey 2008). Even though the gap in distance of two buildings where Zhang's and Liu's offices sit from or to the main entrance is not huge, the white building is still much closer to the gate. It means that Zhang can avoid unnecessarily spending his time on the way more than Liu does and that the politics of time was converted and translated into the politics of space in the construction of the power plant. Uneven power relations between staffs at the power plant are also observable from the placement of two building because one is in the center, while the other is at the margin. As the correlation between positions and the location of offices

Karen Ho found on Wall Street, the office of Zhang as superior was on the second floor while Liu's was on the lower floor. When looking at the inside of offices, the difference in power comes to stand out more vividly. Although Zhang's office is spacious just as Liu's, it is mainly occupied and used by Zhang himself, unlike Liu's. As Jessica Barnes observed in the offices of Egyptian high-ranking government officials, Zhang's office fills up with "emblems of authority" including a high-quality large desk and a luxurious nameplate on it, classy and comfortable leather couches for guests, orderly and clean filing cabinets, and an exclusive telephone for him to call up his secretary to ask for coffee/tea for visitors. It was a totally different world at the same power plant. Thus, diverse offices concretely both visualize and spatialize social hierarchies among those who occupy those spaces.

Interview started. Interview halfway, I asked Zhang if a sea salt-burden wind mainly causes the breakdowns of wind turbines, and his response was positive. Just as Liu Dehua's answer, Zhang's response to my question was also simply "yes." He told me that the biggest and most threatening enemy to wind turbines is the wind itself, carrying sea salt, neither the velocity nor strength of the wind. Clicking his tongue, Zhang kept complaining to me how bad the impacts the wind-blown sea salt make on wind turbines.

Then he asked me whether such a situation is specific to Penghu or is a universal phenomenon that is observable and reported in other places of the world. He seemed to suddenly forget the fact that I am not an expert of wind turbines, but merely a cultural anthropologist studying wind power and the cultural politics surrounding it. After Zhang saw I could not answer his question, he laughed and said "Don't feel pressure. I am just

curious about that. (He laughed again). Do you have any questions for me?" As I asked Zhang how Taipower has dealt with technical issues of wind turbines in regards to malfunctions and repairs, his answer supported and verified the words of Taipower staff Liu Dehua and the local villager Huang. When breakdowns that they cannot solve by themselves happen, according to him, Taipower promptly contacts the foreign manufacturer and the latter dispatches skilled technicians and engineers to Penghu for repairs. "Isn't it that you need to wait for repair for long, since a repair team specially comes to Penghu from abroad," I asked. Zhang replied

"No. A local branch in Taiwan has a number of engineers and technicians who are mostly Taiwanese and responsible for repairs. Those technical professionals were trained by their head office, that is, the main company in Germany on maintenance and repair issues. Technology manpower is quite localized and resides in Taiwan. So it does not take us so long to resolve the problems."

Zhang then told me that if the manufacturer would design and build a particular model of wind turbines for Penghu that are suitable for the archipelago's specific aerial environments and thus can resist the strong air in motion containing sea salt, the breakdown and repair rates may decrease a lot. After listening to Zhang's hope for unique wind turbines for Penghu, I asked him if he meant that every wind turbine installed in various places of the world is the same. He simply replied "yes" and said:

"Of course, there are several different types of wind turbines having different functions and features. For example, one model is perhaps more likely to be sea salt wind-resistant

than others. Nevertheless, because it is a very general model that is/was designed to be applicable to all the places in the world, its performance greatly varies according to the environmental context in which it is built. Anyway, the thing I want to tell you is that a number of universal models of wind turbines have been working everywhere all over the world."

As one of the global market leaders in the field of wind turbines, Enercon designs and manufactures a single type of wind turbine and sells and distributes it to its international customers. In this sense, Enercon's wind turbines operating in Penghu are what Bruno Latour dubs "immutable mobiles" and Enercon itself become a "center of calculation" (Latour 1987) from a perspective of a classic actor-network theory (ANT).

Wind Turbines as Im/mutable Mobiles

Enercon's wind turbines and their characteristics exemplify "immutable mobiles" in actor-network theory (ANT)'s vocabulary. Bruno Latour defines immutable mobiles as objects which have the property of maintaining their character and shape rigidly in a network of relations when they travel in time and space (Latour 1987). A map perfectly illustrates immutable mobiles, as Latour tells us about the story about French explorers and the local natives in Southeast Asia. A map is durable and immutable whereas a native man's drawing of the land on the sand is washed out and altered by the tide. It is also transportable and mobile while the actual, physical land on which both social groups meet each other and interact cannot move. In this sense, wind turbines produced by Enercon become immutable mobiles because those technological objects not only travel

and move globally but also hold standardized and universal properties in form and function.

Immutable mobiles function to assist their creators in ruling, colonizing, and subjugating those who use them. The ideological domination of Western capitalism is not only related to, but also is enabled by immutable mobiles. For Latour, "no new theory, world view, or spirit is necessary to explain capitalism" since it is "the result of a new step in the long history of immutable mobiles" (Latour 1986:12). Capitalism is merely "an empty word as long as precise material instruments are not proposed to explain any capitalization at all, be it of specimens, books, information or money" (Latour 1986:31). In this sense, Latour's understanding of capitalism and the printing press is different from the late Benedict Anderson (and Karl Marx). Anderson claims in his influential work *Imagined Communities* (1983) that among people who do not know, meet, and hear of each other, print capitalism and the circulation of its products, newspapers, for instance, that are immutable mobiles in ANT terms enabled the generation of a sense of unity and affinity and national consciousness and thus the creation of a nation as "an imagined political community" (Anderson 1983:6-7). For Anderson, mass production through the printing press is enabled by capitalism and is also undoubtedly a characteristic of the capitalist mode of production. Unlike Anderson, however, Latour asserts that immutable mobiles produced by printing presses work as vital actants/actors that convey, spread out, mass-produce, and infuse the idea of capitalism among people as their users.

The power of immutable mobiles to dominate their users also lies in their capability to form what Bruno Latour calls a "center of calculation" in his early works

and “oligopticon” in later works (Latour 1987; Latour 2005). Specific metropolitan locations with the technical capacity to create immutable mobiles become centers of calculation. All immutable mobiles later return to the center and are then accumulated, classified, combined, analyzed, and interpreted to produce new knowledge or abstract and universal representations of certain subjects such as place, nature, or people to name a few. When such representations that are in fact reductions of the complex reality to general and simplified data become accepted, they are often seen as an objective and general fact/knowledge of, rather than as (reduced) interpretations of something, and thus can serve as the basis of (or for decision that facilitate) further local interventions. As a result, immutable mobiles enable “action at a distance” (Latour 1987:219) and “governing at a distance” (Rose and Miller 1992:173) from strong centers of calculation. In his influential late work, Latour sees centers of calculation as an example of oligopticon. In contrast to the French philosopher Michel Foucault’s panopticon as place from where you can get wide-views of the whole and see everything (Foucault 1979; Latour 2005:175-190), oligoptica is a site from which because of “extremely narrow views” created by it, you see little but can see what you see well and clearly. An oligopticon is a well-connected site where knowledge of other sites is gathered, accumulated, transformed into new knowledge, and disseminated back to other sites in the shape of standards, quasi-standards and collecting statements inscribed in artifacts or embodied in disciplined humans (Latour 2005). Such activities constitute “cycles of accumulation” (Latour 1987:219-233) which are the means for agency at a distance, and explain how patterns in activity are formed and maintained.

Even if, as a technological artifact moving around the globe without deformation and changing its properties, wind turbines manufactured by Enercon can be seen as an immutable mobile at first sight, however, their forms also ironically prevent those machines from constantly being immutable mobiles. Energy infrastructures that are made by Enercon as globalized, standardized, and universal mobile commodities are transferred to, and installed and operated in, a small East Asian archipelago far away from their original manufacture location in Europe. As I mentioned in chapter 2, wind turbines are not typical infrastructure in that they are built "above," rather than "beneath," the ground, and thus are exposed, instead of hidden, to outer world. It is natural for wind turbines to be installed *on* the ground, when considering their expected, primary task of producing electricity through and from the blowing wind. Without the wind and facing it, standing on the ground, wind turbines are impossible to become what they should be and do what they are expected to do. In this sense, wind turbines fall into the category of "infrastructure" in its function, they are also necessarily *supra*structure because of its form: to exist and operate as infrastructure, wind turbines must be physically suprastructure. When we consider one local inhabitant's words that "because of salt of the wind, power cables and power lines are all buried under ground and you thus cannot see telegraph poles on the streets in Penghu," being suprastructure makes wind turbines distinct from other infrastructure in the archipelago. While wind turbines must confront the wind and its "particular properties" such as velocity and direction which necessarily become indispensable parts of them as universal infra/suprastructure (Björkman 2015:13), yet, it also makes them enter a chemical, or relational space (Barry 2005:62) in

which immutable mobiles, the German-made tall towers with big propellers/blades come to make an association with Penghu's local-particular wind and its unique qualities (or vice versa). Entering a chemical space enables the wind to quit being the simple movement of air molecules and instead to turn into a "vibrant matter" that acts on and influences its neighboring entities, the wind turbine and its mechanical components (Bennett 2010). On the other hand, when wind turbines enter into relations with a local-specific wind, their large blades, as well as equipment and components inside them, do not successfully resist its lively materialities to carry salty rain, because they are consisted of numerous mechanical parts. The wind and its materiality to carry sea water droplets and salt thus turn wind turbines from immutable mobiles to mutable mobiles by not only making equipment and parts inside and outside the machines corrosive and break down, but also generates errors in their electrical components and other parts, which have to be fixed and replaced.

In a sense that they fail to remain as immutable mobiles when entering a chemical space with the wind, wind turbines can be a representative of what the STS scholar Thomas Hughes calls "open" technological system. Hughes made a distinction between "open" and "closed" systems, according to the ways they interact with environment (Hughes 1987:46-48). Whereas open systems are subject from the environment and its influences, closed systems "incorporate the environment into" themselves and are then insulated from its influences, "thereby *eliminating sources of uncertainty*" (Hughes 1987:47, my emphasis). The important lesson Hughes taught us through his discussion of these two different technological systems is to view the environment as an indispensable

part of technological systems, which thus allows us to avoid the "great divide" between technology and nature and its pitfalls of making those two entities discrete, static categories (Latour 1993). All of wind turbines in the world always and essentially have a potential to become "open" technological systems on the grounds that they always require the wind to work and thus are more or less influenced by its materiality. In other words, the wind is simultaneously a "source of the existence and functioning" of wind turbines, making them work and generate electricity and a "source of uncertainty" that may cause breakdowns that hinder their constant, normal operation and even threaten their existence.

In that they are always subject to the wind and its influence, wind turbines are also what Christopher Henke calls "organic machines" that "have a kind of power" that their creators "may attempt to manage, but ultimately fail to subject to total control" (Henke 2007:137; Mukerji 2010). As the historian of science and technology, Chandra Mukerji shows in her study on the Canal du Midi in France, even though the water infrastructure was built with the implicit intention to reconfigure political relationship between the state and the local, it was an "impersonal instrument of governance that did not always obey the will of the king" (Mukerji 2010:414). Comparably, wind turbines in Penghu are also impersonal instruments that are impossible to always act upon the will of their creator, because they have "no personal obligation" to their designers and, more importantly, since they must face the capricious wind and its peculiar materiality in order to be what they are and to do what they are supposed to do (Mukerji 2010:414). Due to their own destiny to always face and endure the wind and its materiality, wind turbines

are never completely within the control of their inventors: they could be damaged, malfunctioned, and broken down by the wind, in contrast the expectations of their creators who could do nothing to stop the flowing of air mass.

This means that the immutability of European wind turbines, with regard to the expected forms, functions, and effects, is not guaranteed an exotic landscape of the Penghu archipelago where they are built and operate. By entering a chemical space in the archipelago and failing to efficiently resist, or adjust themselves to, a particular, unruly winter wind blowing throughout the islands for almost six months every year, therefore, the European universal wind turbines fail to remain traveling "durable" objects all the time, but instead quite often (temporarily) become "changeable" ones that experience breakdowns and fail to perform their principal task of generating electricity. In this sense, European mechanized weeds are qualitatively different from actual weeds: while an actual weed is generally considered to possess an incredible adaptability to live in diverse environments, and an amazing vitality to grow and to survive in those habitats, a mechanical weed lacks an flexibility or malleability to adapt to particular local environments, which causes its malfunctions. Here, I argue that, following Andrew Barry's argument (2013), the unexpected transformative material expressions of wind turbines are on-site and case specific, emerging from those machines' entanglements with the wind and its specific qualities.

Even though Enercon's wind turbine is seemingly an immutable mobile because of its status as a global and universal product, the temporary mutability, or restricted immutability that makes it a mutable mobile artifact then becomes the vehicle for its

creator, Enercon, to exert their power over those who consume and use those energy-generating machines. This is very different from typical immutable mobiles such as maps and documents which have often appeared and been explored in traditional ANT literature. The power of those conventional immutable mobiles lies in their very capacity to travel without altering or losing their own features, which thus enables the formation of centers of calculation and governance at a distance. On the contrary, a wind turbine's (temporary) failure to remain as an immutable mobile and thus to keep its universality in function and effect offers Enercon a chance to show the users and even enhance its knowledge/power (Foucault and Gordon 1980), rather than undermines its authority as one of the world leading energy infrastructure manufacturers.

As my informants in Penghu commonly told me, Taipower has no knowledge and ability to fix problems that led to wind turbines' failures and thus there is (almost) nothing they can do themselves for this type of broken infrastructure. Rather Taipower has to get in touch with Enercon to receive appropriate technical and managerial aid through its service team that consists of technicians/engineers. As a global corporation that takes the lead in the world market of renewable energy-related infrastructure, Enercon keeps secure its specialized knowledge with regard to wind turbines and such expertise, as a business secret, is not likely to be handed down and transferred to its customers including Taipower. In terms of the repair of wind turbines, Taipower only can take a passive and subordinate position in a sense that it cannot help but merely wait for Enercon as a center of calculation to dispatch their team of technicians to "peripheries" where the quick and merciful aid is needed. Besides, of course, even without Taipower's

call for repair, through the data transferring system that is built into wind turbines, Enercon can know about the malfunctions of wind turbines as soon as they happen. According to Enercon's official document introducing its wind turbines and service provided for customers, every wind turbine manufactured by Enercon has a "modem link to the remote data monitoring facility" and this allows Enercon's service center, or more exactly, the Enercon deployment planning system, to receive and record a malfunction/abnormality message transferred from the wind turbine. Then, the deployment planning system automatically dispatches the service team that is nearest to the location of wind turbines for an expedited repair and this team can get access to "all turbine-specific documents and data" through special computers "with a link to the service center." Although I am unclear about the inner working of Enercon, it is quite plausible to assume that as a center of calculation, or as an oligopticon, Enercon can receive, collect, categorize, and analyze an immutable mobile, that is, the disorder information sent out by another immutable mobile, or more correctly, a "mutable mobile," its world-widely dispersed wind turbines, and that the management of such information can be an invaluable resource for Enercon to generate its new "knowledge" and strengthen its "power" in terms of the control of wind turbines (Foucault and Gordon 1980). In other words, a malfunction message that is sent out to the service center enables Enercon to monopolize and synthesize all information about its branded wind turbines working around the world and then to capitalize on new knowledge in developing technically improved immutable mobiles, namely a future model of wind turbines which will be dispersed to everywhere as a global product. To sum up, as wind turbines, in spite

of the fact that they are basically immutable and mobile technological artifacts, fail to maintain their immutability in function and effect by breakdowns which result from their failure to adapt to particular local winds, it does not seem to threaten and undermine the authority of Enercon as a world-leading wind turbine manufacturer. Rather, the (temporary) malfunctions of, or mutability of wind turbines in function are likely to enable and even solidify Enercon's "action at a distance" (Latour 1987:219) and "governing at a distance" (Rose and Miller 1992:173) over peripheries as a strong oligopticon or center of calculation, since Enercon has carte blanche to control everything associated with its wind turbines, from the collection of malfunction messages to the dispatch of repair service teams without sharing knowledge and expertise about wind turbines with its customers.

Repair and Maintenance

Breakdowns of technological artifacts are natural and universal. Wind turbines break down throughout their social life. As Penghu's particular wind meets the globalized universal energy infrastructure, it generates the chemical reactions that cause the failure of those gigantic technological objects. In their famous book *Laboratory Life* that became one of the classics in the field of science and technology studies, Bruno Latour and Steve Woolgar write that "it is also part of our world view that only from disorder can an orderly pattern emerge… The construction of order relies upon the existence of disorder" (Latour and Woolgar 1986:251). Building upon Latour and Woolgar's argument that order and disorder are mutually entangled and cannot be separated from one another,

scholars of technologies including infrastructure have argued that the same logic can be applied to large technological systems. For these scholars, infrastructure is "premised on a certain degree of error or neglect or breakage or failure as a normal condition of their existence" (Graham and Thrift 2007:4). As the feminist philosopher Elizabeth V. Spelman contends, "to repair is to acknowledge and respond to the fracturability of the world in which we live (Spelman 2002:5). Just as it is inevitable and evident for us human beings to get wounded and/or sick at some point in our life, it is also natural for technological artifacts to experience failures and breakdowns. Since, for instance, "to invent the train is to invent the train crash" and "to invent the plane is to invent the plane crash," scholars contend that breakdowns and failures are "not aberrant" but are a part of infrastructure itself (Graham and Thrift 2007:4). In this regard, that the construction work is finished never means the completion of the making of infrastructure. Instead, the making of infrastructure really starts (or continues) only after the end of the building work because it is predestined to face off against, and survive, various destructive elements including natural factors such as winds and the sun, and technological issues like defects of its parts (Ingold 2013). That is, the making of infrastructure is inherently an ongoing process in which it needs to be constantly maintained, fixed, renewed, and remade. Therefore, maintenance and repair activities practiced by humans are a critical and remorseless process to allow nonhumans to keep existing and functioning properly (Carr and Gibson 2015; Spelman 2002).

Repair and maintenance activities build upon the idea of "vulnerability as the "natural" state of things and not as a temporary deviation from a healthy normality"

(Denis and Pontille 2015:355). As Chantel Carr and Chris Gibson argue, materials are destined to be thwarted in unpredictable ways: decaying and breaking down, or wearing or breaking under force (Carr and Gibson 2015). Without constant checking, maintenance, and repair work (Anand 2011; Coleman 2014), the durability and longevity of material objects cannot be guaranteed, only decay (Ureta 2014:3). In particular, repair work to return broken objects to their healthy normality is the very point where a sharp contrast is established between "the human, artisanal character of repair work... and the more alienating work of machine-based manufacture" (Dant 2010:4). As the anthropologist Michael Herzfeld shows in his ethnography on how the values and traditions of Greek skilled artisans who make hand-crafted products and their rigorous apprenticeship system are negatively reevaluated and stigmatized as backward under the effects of globalization that enables mass-produced artifacts, the learning of maintenance and repair skills is an important and compulsory phase in the period of artisanal apprenticeship training to learn patience, and more importantly, to possess authority as a master craftsman (Herzfeld 2004). Moreover, maintenance and repair of a thing likely requires more sweat, effort, and labour time than when people make it. Because of its nature that relies on humans and their skills, maintenance and repair work illustrates and emphasizes, as Stephen Graham and Nigel Thrift assert, "the importance of human labour and ingenuity" (Graham and Thrift 2007:4). The more complex and obscure the main cause of disorder is, the greater the importance of human manual labor and ingenuity is and the more the labor time and sweat devoted to diagnosis and repair. Therefore, repair and maintenance work is thus in general understood as "something valuable, good, and inherently

'human,' something that should be lauded and preserved and even actively defended" (Ureta 2014:370). As the STS scholar Sebastian Ureta argues, they are "an intrinsically ethical activity," necessary for the continuity of material objects, the activity that values human manual labor and ingenuity as their agency (Carr and Gibson 2015; Ureta 2014:370).

As an intrinsically ethical activity, repair and maintenance require a "skilled vision" or "trained vision" of the workers who perform it (Denis and Pontille 2015:355). Only when possessing such vision, technicians are able to find out complex, opaque, and even invisible reasons that caused breakdowns and thus to fix broken machines. Repair technicians have to acquire the ability of "seeing like" repair workers (Scott 1998) and learn a particular set of situated skills and knowledge from their fellow workers (usually senior, experienced) in order to have skilled vision and then to diagnose and fix malfunctions of technological devices. And it is through their reciprocal and cooperative relationship with coworkers for mutual learning and benefit that repair technicians constitute what the anthropologist Julian Orr refers to as an "occupational community" (Orr 1996:76). The occupational community of repair technicians focuses "on the work, not the organization, and the only valued status is that of full member of the community, that is, being considered a competent technician" (Orr 1996:76). In order to accomplish such goal, repair technicians "share information, assist in each other's diagnoses, and compete in terms of their relative expertise" and their expertise or knowledge is therefore constantly reproduced and re/constituted through interaction and collaboration with colleagues (Orr 1996:76). This knowledge learning process is quite similar to what Jean

Lave and Etienne Wenger term “legitimate peripheral participation” in which “newcomers” learn expertise and skills through their interaction with “old-timers” of a community, and ultimately become (relatively) experienced, “old-timers” in relation to new newcomers (Lave and Wenger 1991).

Even though the most basic but important step to take in performing repair work is to diagnose the reason for failures and breakdowns of technological artifacts, there is no doubt that it is never an easy task to discover what causes disorder. As Orr shows in his ethnography on a California’s community of Xerox technicians who are in charge of repairing broken photocopiers, the reasons for breakdowns of machines are usually fraught with uncertainty (Orr 1996). The cause of failures is neither simple nor straightforward in the sense that even a particular part of the machine can breakdown in multiple and complex ways. Moreover, discovering the reason for disorder is rarely a easy task because symptoms or clues that it leaves somewhere on technological artifacts often are not visible and accessible to us and even to repair-centered technicians. Orr found out that although diagnostic and repair manuals are distributed to its technicians by the Xerox Corporation with the hope of making repair work easier, they are only used either as a last resort or by newly-fledged and inexperienced workers. Diagnostic work for fixing problems mostly depends on and requires repair workers’ bodily engagement with broken machines such as auditory perception. Needless to say, it is difficult and even unlikely to deliver such repair technique and instruction that involves subjective experiences in a written text and thus in the form of a manual document. As a result, the Xerox technicians put aside “blind faith” (Orr 1996:113) in the diagnostic manuals and

rather learn from their colleagues the know-how and stories associated with repair activities.

Manuals are essentially rule-based, prescriptive, and predictable documents, whereas the real situations technicians encounter and deal with in performing their repair tasks are often unanticipated and excluded in such normative, closed documents as plans (Orr 1996; Suchman 1987; Suchman 2007). The anthropologist of science and technology Lucy Suchman beautifully explained the relationship between plans and actions by taking canoeing down a river as an example. The canoeist may have a plan about how to descend the river as a kind of manual for his/her action before taking off. But when meeting a series of rapids during canoeing, s/he "effectively abandons" the plan and instead relies on his/her tacit and "embodied skills" for a successful adventure (Suchman 2007:18). Thus, Suchman argues that no matter how well they are designed, plans cannot control human actions and that our actions are not the enactment of those pre-existing plans but are always situated, depending on the particular environment in where we are located and our interactions with it.

Although Suchman urged us to revisit a long-standing debate in the social sciences regarding the complicated and complementary relationships between structure and agency (Bourdieu 1977; Giddens 1984; Ohnuki-Tierney 2002; Sahlins 1985), rather than to participate in and contribute to the heated debate, all I want to do here is to merely think about the relationship between photocopier technicians as agents and manuals as structure by drawing on Suchman's discussion on plans and actions through canoeing. Just as the canoeist reaches the rapids that s/he may never take into account in his/her

plan, repair technicians also meet situations or problems that they cannot find in rule-based manuals or that are hard to reconcile with the cases/instructions offered in those manuals. Yet they are not "puppets of cultural schema," adhering to prescriptive manuals for guiding their repair work (Ohnuki-Tierney 2002:294). Instead, being autonomous and socio-culturally situated agents, repair technicians put aside the inefficient standardized manuals and resort to in situ learning, improvisation, and collaboration with and experience-based help/advice from coworkers to get their repair task successfully done. Or they seek to give situated reading and interpretations to those manuals, according to the situation-specific problems they need to resolve.

My ethnographic materials take on a new aspect of repair work, however. In Penghu, breakdowns of wind turbines are not the site where we can observe "the importance of human labour and ingenuity" (Graham and Thrift 2007:4), but the mirror that reflects Taipower's technological limitations and thus the "impotence" of its manpower and creativity. One young man in his late 20s working at the Penghu government-run library where I came to meet and know him expressed to me his concerns regarding wind turbines, as my informants who work at the archipelago's lone power plant confessed to me that

"Taipower can't do anything for broken wind turbines. They have no choice but to be dependent on a foreign manufacturer and to wait for the repair work to get completed. No capacity (*mei nengli*), our national enterprise… They are really no use (*zhen meiyong*)."

Taipower, no capacity, no use. For lay people in Penghu, Taipower is a good-for-nothing when it comes to repair and maintenance activities for wind turbines. Instead of showing its special knowledge and know-how and creative ingenuity and dexterity, Taipower discloses its lack of such abilities as energy infrastructure breaks down. Moreover, when some local people hear about Taipower's inability to fix technical problems through their acquaintances or any other channels, they seem to think that Taipower is technologically colonized and paralyzed by the multinational wind turbine manufacturer which controls almost everything associated with wind turbines. Taipower's technological inability seemed to be understood by the local residents as that it lost technological independence, autonomy, and pride as the state-owned electricity company of a small island country that is one of so-called Four Asian Dragons (or Tigers) along with South Korea, Hong Kong, and Singapore, having successfully achieved rapid economic prosperity and techno-scientific development in a relatively short time. Repair activities are thus naturally vulnerable - when they are not completed or are unable to be done as expected - to skepticism and criticism about human labor as much as they are seen as the inherently valuable human-centered work that should be appreciated and praised (Ureta 2014:370).

Figure 4-3. Taipower's Vehicle Dispatched for the Maintenance of Wind Turbines. Photo by author.

Many local residents also interpreted such incompetence in repairing malfunctioned wind turbines not only in regards to the impotence of human labor but also in terms of unnecessary economic loss. They believed that it would increase repair expenses, as one middle-aged man, Mr. Kong told me in our daily conversation on one hot day in September 2014

"I believe you also know that the cost necessary for the building of one single wind turbine is highly expensive. It is very high. But Penghu's seawater and salt-carrying winds often make wind turbines go wrong. I heard that Taipower could not fix those broken turbines themselves and looks to the foreign manufacturing company for repairs. I also heard that repair expenses are pretty high because technicians have to be recalled from overseas and some major parts also are required to be delivered to Penghu for replacement. No technology requires high cost. Wind turbines cost a lot. Who pays for them? We pay for them, if we become stakeholders of the energy company. Isn't it?"

Tong was right that the cost for the construction of wind turbines is very expensive, just as one author writes in his book on wind power that "turbine prices in the past few years… have seen an increase due to rising raw material prices and shortages in the supply chain for turbine components. In addition, rising energy prices have driven up the cost of manufacturing and transporting wind turbines" (Ackermann 2012:38). Although it seems quite plausible, local people's interpretation/belief that the lack of technological expertise about wind turbines has necessarily a lot to do with a high cost in terms of repair is in fact partially and incompletely correct. Unlike local residents' mis/interpretation that the call for repair technicians from abroad is required, over 2,500 service technicians of Enercon reside in major service bases including Taiwan around the world to provide fast and high-quality maintenance and repair of wind turbines, just as a high-ranking officials of the power plant told me, according to the company's promise to "speedy service through local presence." In addition, the costs of repair and maintenance depend on the location of wind turbines, according to Enercon's official document that is available online about wind turbine technology and service. On the condition that the customer is enrolled in Enercon's service management program, which requires an annual fee, the company is accountable for any expenses for maintenance, repair, and servicing in Europe. However, on the same condition, Enercon shares the risk for feasible flaws or damages to the wind turbine's major components with its customer outside Europe: Enercon bears material expenses and the replacement on the ground while the customer pays for the cost for transport of main components to the site, crane provision for component replacement, and possible yield losses. In this regard, my informant's

words, “no technology requires high cost” totally make sense. If Taipower itself could technically build wind turbines and produce and provide the main components on site that are needed in fixing broken wind turbines, the costs for repair and maintenance would drastically decrease. Thus, for local residents on the archipelago, the repairs and maintenance of wind turbines are an important/impotent activity, inherently ethical and economic, that values/devalues human labor and ingenuity.

Figure 4-4. Repair Work for Broken Wind Turbines. Photo by author.

Here I think that it is fair to defend Taipower against local residents who point out and bitterly criticize the national power company’s impotence in repair and maintenance. Repair and maintenance are the activities, as we have seen, that basically demand a considerable amount of ingenuity, creativity, and skill of human laborers. There is no doubt that having the access to, and the basic understanding/knowledge of, technological “objects” or “things”[26] to which the former turns upon breakdowns is a prerequisite

[26] In his influential 2004 article “Why has critique run out of steam?: From matters of fact to matters of concern,” drawing on the German philosopher Martin Heidegger, Bruno Latour urges us to reclaim the meaning of thing and to distinguish it from object. Latour notes that since, according to Heidegger, what

condition for a creative repair and maintenance work (Latour 2004). However, Taipower has neither the access to wind turbines nor the acquisition of basic or sufficient knowledge about those technological devices.

Since the notion of immutable mobiles was first introduced by Bruno Latour, many scholars in STS have long questioned its dual components, immutability and mobility, and thus attempted to revisit, criticize, revise, and complement the concept itself through their own case studies (de Laet and Mol 2000; Kaiser 2005; Law and Singleton 2005). The MIT-based STS scholar David Kaiser argues, for instance, that the widespread circulation and use of (Richard) Feynman's diagram in postwar theoretical physics mainly resulted from its "plasticity" (Kaiser 2005) because numerous physicists have adopted the diagram after making changes to its content and form to serve their research goals. Kaiser also suggests that since the transportation and spread of Feynman's diagram depend on human carriers, especially US postdocs, the diagram failed to be dispersed to and circulated in certain places such as the Soviet Union in the cold war era because postdocs were not admitted into those places. Although many scholars have challenged and rethought Latour's immutable mobiles, I will specifically focus on Marianne de Laet and Annemarie Mol's now-classic piece (2000) that is one of the

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the word thing originally referred to was a gathering, when its complexity, richness, heterogeneity, and messiness are successfully repressed and naturalized, a thing changes (transforms) itself from a gathering to a simple, reified "object." In this sense, things are a matter of concern, while objects mean a black box or a matter of fact. Latour thus argues that because the object is the outcome of what we reduce and simplify the inherently complex "thing" to (inadequately) grasp it, social critique must move "not away but toward the gathering, the Thing" (246). Latour's call to pay attention to the thing have a thread of connection with Susan Leigh Star and Geoffrey Bowker's argument that "naturalized object has lost its anthropological strangeness" because "naturalization means stripping away the contingencies of an object's creation and its situated nature" (Bowker and Star 1999:299).

exemplary and brilliant examples to show the plasticity or mutability of a certain technological object in Africa.

The Zimbabwe bush pump type B, according to de Laet and Mol, could successfully be distributed and proliferated due to the fluid quality that is open to improvised alterations and modification of its mechanical parts such as bolts, levers, and pump heads in Zimbabwean rural villages. When the water pumps are disseminated to rural villages, community members take responsibility for everything about those technological objects, from installation to management and caring. Maintenance and repair of the hydraulic water pumps on site, especially, is the main task of village members. As mechanical components of the pumps break down and their replacement parts are unavailable from the manufacturer, villagers exhibit their ingenuity and creativity in doing repair work by using substitute materials to replace the broken items (for instance, substitute sticks for broken/missing bolts). Even as the pump's shape is subject to and changed by local people's ingenuous work of using and adding substitute items, it never stops performing its key task: to lift up and provide water for people. In this sense, de Laet and Mol argue that the bush pump is not an immutable mobile but a fluid object, or a mutable mobile.

Several factors that are inextricably intertwined with each other allow the Zimbabwean bush pump to become a fluid and moveable object in Africa. Firstly, the inventor of the water pump did his best to make it "simple, attractive and easy to use and maintain" (de Laet and Mol 2000:234). The second factor is that the abandonment (and thus the lack) of an authorship and a patent by the single inventor enables local people's

"joint ownership and collective responsibility" for, and their creative, unconstrained modifications to the pump, which result in a successful development/evolution of a water-producing mechanical device in varied local setting (de Laet and Mol 2000:249). Thirdly, village members have "a simple but very detailed set" of clearly written instruction manuals regarding the installation, operation, and maintenance of the water pump (de Laet and Mol 2000:232). The last factor would be village members' creativity, ingenuity, and improvisation in maintaining and mending the water pump, which can be said as a Zimbabwean version of "Jugaad" that is practiced by most Indian people in their everyday lives (Radjou, et al. 2012). As originally a colloquial Hindi word that means "an innovative fix; an improvised solution born from ingenuity and cleverness" (Radjou, et al. 2012:4), Jugaad is usually defined as "innovative, improvisational urban practices and the objects they produce as temporary "fixes" or solutions to systematic problems" (Graham and McFarlane 2015:54) It is simply a creative, special way of "*doing more with less*" (Radjou, et al. 2012:4; original emphasis), because, for instance, its applications include reusing ordinary everybody objects both for new purposes and for "inventing new utilitarian tools" (Radjou, et al. 2012:4) including what the Canadian geographer Kathryn Furlong terms "mediating technologies" which are simple, low-cost additive devices that can be added to, and transform infrastructural systems. To sum up, "designed for simplicity, durability, ease of maintenance, and assisted by manuals and instructions," as de Laet and Mol write, the bush pump could survive and evolve in Africa (de Laet and Mol 2000:238).

Enercon's modern wind turbines stand out in sharp contrast to the Zimbabwean bush pump B type in many senses. Modern wind turbines represent complex, "large technological systems" (Hughes 1998) whose design and making draws on and integrates the knowledge and theoretical ideas from diverse scientific fields including aerodynamics (Ackermann 2012), mechanical and electric engineering, meteorology, computer science, and construction engineering, to name a few. The size, design, and technological complexity of wind turbines prevent ordinary people's Jugaad-like improvisational, creative practices for the maintenance and repair of those energy-generating machines. Also, only the transnational manufacturer, Enercon, possesses the patent and authorship of wind turbines, which means only the German company have authority to get access to those energy-generating machines, while preventing others like their customers from doing something to the machines. Wind turbines, in addition, do not come with a complete set of documents on how they should be maintained and cared, documents that Taipower might be able to refer to. The entanglements of such features leave little space and freedom for Taiwanese state-owned electricity utility company to exercise its agency and ingenuity in taking care of and repairing wind turbines.

Nevertheless, for ordinary people who do not know the details about the mechanical weeds that are patented products, the breakdowns of those weeds become the window through which they re/confirm the particular qualities of Penghu's wind and see the incompetence of Taipower which cannot diagnose and fix the errors itself. They have heard and believe that as universal technological products designed by the European company face Penghu's particular wind, the former fail to resist or adapt to the latter and

thus break down. In this case, Taipower has nothing to do for those broken weeds except to wait for Enercon's repair and maintenance services. Such passive and lethargic attitudes that Taipower takes, when it comes to fixing technological failures on wind turbines, enable local residents to see their national utility company as the incapable scarecrow technologically colonized and dominated by the German-origin transnational corporation. The sentiment of being colonized the locals of Penghu seem to have in their mind towards wind turbines and the wind power development project might be quite similar to that of indigenous population in the Isthmus of Tehuantapec, Mexico which is also seen as one of the good sites with a world-class wind quality. The cultural anthropologist Cymene Howe notes that in the Isthmus of Tehuantapec, indigenous communities, whose land is mostly located in the core wind zone, regard the Mexican government's project of developing the steady, abundant wind resource simply as a reconfiguration of colonialism because, as in the colonial past, a "Spanish" wind energy corporation currently plays a dominant role in building, operating, and managing wind turbines on their land (Howe 2011). Likewise, the local people in Penghu are likely to see wind turbines and Taipower's inability to fix broken turbines as the symbolization of a techno-scientific colonialism, since those machines to generate power from wind are all designed, assembled, and managed by the German wind corporation and when they are out of order due to particular, unmanageable wind, Taiwan's national power company is even unable to do anything, excepting contacting the German company and waiting for its repair technician(s).

Furthermore, the breakdown of wind turbines caused by the particular wind also prompts those lay people to refuse the idea that wind is a free resource producing power and economic benefits - an idea that is promulgated and circulated by a variety of social actors, including Penghu government officials/bureaucrats, Taipower researchers and staffs, and journalists, to promote the project of developing renewable energy in Penghu. One informant, for example, told me when I asked him about the local and central governments' plan to develop wind power in Penghu:

"I do not support the project. Although it sounds great, I am really skeptical about that. In so far as I know, in the future, the Penghu local government will invite both international and national wind turbine manufacturers to the competition for the contract of constructing wind turbines. Isn't it? (I responded "Mmm. It's sort of what you said). Anyway, no matter who wins the contract, I do not think that the wind turbines that the winning company installs can resist Penghu's wind and its salt damages without having breakdowns. Because I think the technological level of those companies and the materials they will use to assemble wind turbines are nearly the same. And fixing broken wind turbines will cost a lot of money. Probably the Taiwanese company can reduce repair costs compared to international companies. Yet it is certain that wind turbines cannot avoid receiving frequent maintenance and repair work and we local people as stakeholders have to pay for it. So I do not think Pengu's wind will help us make money."

Many local people I met also do not think that "Pengu's wind will help make money." It seems to me that those people believe that at least with the current level of technology, wind turbines cannot perfectly overcome the particular qualities of their wind,

or that even in the future, technology cannot totally control the force of nature. That wind is free can be accepted by them only if wind turbines have successfully opposed the particularity of Penghu's wind and thus worked properly without breakdowns. From the perspective of the locals, wind is never a free substance generating money for them. Instead, the wind will make them spend, rather than earn, money to take care of, and repair, European wind turbines that go wrong, owing to its universality and inability to adapt to, and face the particularity or unique qualities of Penghu's wind. From the perspective of local people in Penghu, wind is not a source to generate a stable income for them, but a debt as far as it keeps damaging wind turbines. In short, even if the wind has been advertised and constructed as a promising energy resource with financial and environmental benefits through various discourses, local inhabitants see the expectation of profitable wind as an uncertain or groundless fiction in which they are difficult to even make a rough estimation about when economic (and environmental) benefits that the Penghu government promised come to be materialized/realized, due to the vulnerability of European-imported universal mechanical weeds to the particular wind of the archipelago.

Restoration of the Wind, The Decline in Expectations of the Wind, and The Betz Limit

Here, we can see the process in which local inhabitants restore the wind to its original, natural condition from a discursively purified image. In describing Penghu's wind in terms of its potentiality to become a promising renewable energy source, as I

noted in Chapter 2, a variety of social actors including Penghu government officials/bureaucrats, Taipower researchers and staff, and journalists translate it simply into a language of energetic, environmental, and financial advantages without considering the ability of its particular material properties to act, and make chemical reactions, on other elements (Pritchard 2004). They perform a kind of "simplification" work that reduces the complexity of the wind through language (Scott 1998). This discursive move reduces the wind, which is essentially a cooperative/unruly actor cum agency composed of complex, dynamic, and unpredictable air molecules, to a simple, inert, and manageable ethereal existence (Bakker 2005; Barnes 2014; Tsing 2003).

As this chapter illustrated, however, many local people did not get naïvely mesmerized by, or uncritically accept the discursively constructed image of the wind as an obedient, controllable natural force to be harnessed to generate electricity and financial profits. Rather they think and act like chemists by focusing on the particular materiality of the wind and its relationship with other entities and, as a result, put it back to a flowing "vibrant matter" (Bennett 2010) or "vital substance" (Choy 2011) that acts on wind turbines, from a simplified, inert movement of air mass. This in turn allows local people to revisit the fascinating storylines, which helped to produce the new meaning of, and financial expectations of, the wind, with a critical attitude. Local people refute such charming narratives because they clearly know the unique properties of the wind that are unable to be tamed and controlled and their negative impacts on wind turbines. This in turn leads to the decrease in the attractive energy of the constructed financial expectation of the wind, as the ways in which inhabitants of the archipelago understand it and its

relation to wind turbines show. Therefore, a close look at how local people restore the wind to its original state by emphasizing its materiality allows us to know that the wind must be controlled to preserve its attractive energy, arising from, and held by the financial expectations of wind power (Randalls and Petrokofsky 2014:204).

Before moving on to conclusion, I seek to offer my own speculative explanation about the decline in the attractiveness or attractive energy that the constructed financial expectation of the wind hold by linking it to Betz Limit or Betz's Law of wind energy. Betz Limit is a rule that wind turbines are theoretically allowed to extract no more than 59.3% (16/27) of the kinetic energy of the wind (Ackermann 2012:771; Coyle 2011). Betz Limit thus complies with the Second Law of Thermodynamics in that it suggests that wind turbines are impossible to capture 100% of the kinetic energy in the wind. And to date, there is no wind turbines that can exceed this theoretical limit, even if some modern turbines can reach 70 to 80% of the limit (Burton 2011:43; Coyle 2011). Yet, wind turbines installed in Penghu are presumed to quite often capture far less than (or fail to extract) 59% of wind energy because of corrosions and technological errors caused by the particular wind and its materiality. This simultaneously means the decrease in potential profits of wind-generated electricity and the increase in expenditure for maintaining and repairing wind turbines. Due to such unbalanced income and outgo, attractive energy of the wind that had been strengthened by alluring discourses about its possible financial returns is reduced.

Conclusion

By looking at how those local residents understand the relationship between wind turbines and the wind through the latter's particular qualities, this chapter has sought to record the process to restore the discursively simplified and inactivated wind to its original condition, a flow of air molecules with a potential to become a vibrant force influencing other entities such as wind turbines. Such restoration work is very important and necessary, especially as we seek to look at wind turbines and how they influence and are influenced by wind. Wind turbines and wind cannot be separated from each other because the existence and function of wind turbines are enabled only by wind and because the use of wind for producing power is possible only with the help of wind turbines. Although many scholars have investigated the development of wind energy in different local contexts by looking through wind turbines and their relations to people and environment, however, it is surprising that there are few works where wind itself and its inextricable relation to wind turbines is discussed (Dracklé and Krauss 2011; Howe 2011; Nadaï 2007b; Nadaï and Labussière 2009; Pasqualetti 2001). In my opinion, the restoration of wind to its unreduced, original form, that is, a moving air with physical and chemical qualities is a required work to be done for it to find its right place in the world and to inform our social analysis regarding renewable energy.

To trace the restoration process of the wind, I started this chapter with the depiction of me as a novice ethnographer who photographs gigantic mechanized weeds standing near vegetable gardens in a village. These two human-made objects vividly represent wind's ambivalent power to become simultaneously universal and particular

(Choy 2011; Choy 2012). It seems that the many local people of the Penghu archipelago associate the particularity of wind with its unruliness and destructive power and its universality with its function to inject a breath of life. On the one hand, the Germany-based global company designed and developed its product, mechanized weeds to produce electricity by taking advantage of the wind as "universal" natural phenomenon cum substance. Penghu's vegetable gardens, on the other hand, are built up by wise local ancestors so as to protect various vegetables from "local-specific" wind because those vegetables are hard to tolerate the "particularness" of the wind including its strength and, more importantly, the salt rain brought by it.

When, as immutable and mobile universal power-generating products (Latour 1987), mechanical weeds are introduced to, and seek to survive and grow in Penghu, it is hard for them to totally adapt to, and successfully resist, the particular, unruly, and destructive force of the winter wind blowing throughout the archipelago. Because "corrosion, a very serious problem on Penghu, often damages the insulation of stator coils of wind turbines" made by Enercon, as Taiwanese researchers note in their co-authored article, the "wind resistance" of wind turbines became and is a primary concern that must be considered and examined, prior to their construction in the archipelago (Wu, et al. 2013:534). As a result of the clash with the particularness of the wind, mechanical weeds experience corrosion which in turn causes systematic errors and breakdowns and the universality and immutability of mechanical weeds are temporarily lost and need to be mended and restored through maintenance and repair work. Repair and maintenance activities then become the window through which local residents see a sharp difference in

technological knowledge/power (Foucault and Gordon 1980) between the European wind turbine manufacturer and their national power utility company and thus see the technological domination and colonization of the former over the latter and the incompetence and obedience of the latter.

Then, malfunctions of universal mechanical weeds mainly caused by their failure to adjust to Penghu's local-particular wind allow local people to rethink and deconstruct the discursively constructed image of wind as a promising free and never-ending energy resource producing money for them. In their study on how economic expectations for the newly emerging industry of underwater logging in British Columbia, Canada are produced and retained, the British geographers Samuel Randalls and Gillian Petrokofsky claim that although storylines play a pivotal role in creating such financial expectations of the industry to draw investment funds from people, those discursively constructed potential marketability also needs to stand and stabilize the "malleable materialities of wood" to maintain the expectations (Randalls and Petrokofsky 2014:221). Underwater logging industry, as its name indicates, is one that aims to sell valuable woods that have been submerged in water. Depending on how long they have been underwater, timbers may either have their qualities/properties changed or even get rotten, which leads to the loss of their value and quality as commodity. This in turn may challenge and destroy the marketability of timbers that is created through the charming discourses, and thus prevent capitalist-mined (or rational) local people from keeping investing in the industry.

Drawing on Randalls and Petrokofsky's insights (2014), this chapter also has asserted that maintaining the potential energy of the wind filled with financial (and

environmental) expectations also requires the control of the particular wind's incompliant materiality, inasmuch as they need plausible, fancy narratives that enchant local residents (chapter 2) and some people's acceptance of those stories through misrecognition of fast repair attempts for broken wind turbines (chapter 3). As I have shown in this chapter, the uncooperative materiality (i.e. its ability to carry salty seawater) of Penghu's particular wind poses critical challenges to the new meaning and financial expectations of the wind, created by storylines, since it has been the main cause of the breakdown of wind turbines. Appealing narratives that increase the attractiveness of the wind get shaken and undermined, as wind turbines quite often break down mainly due to the failure to overcome intransigent wind and its unique physicality. Given that wind turbines are the most basic yet the most important technological devices in generating from wind electricity that can be sold as a commodity, many of local people in Penghu do not uncritically accept the created fascinating discourses of the wind nor see wind turbines as "money-generating machines" (Dracklé and Krauss 2011), unlike those villagers living nearby one of Taipower's wind farms who accepted the created charming narratives of the wind by and through their misrecognition of the quick repair attempts to the broken wind turbines (chapter 3).

If the material property of the wind fails to be stabilized and managed, therefore, the tempting storylines that worked to create financial expectations of wind power come to encounter challenges of being questioned, deconstructed, altered, and even reputed by the audience/consumers of those narratives, that is, local residents as potential investors of the energy company. As discussed in this chapter, many inhabitants of Penghu tend to

understand the wind as expenditure-causing air mass, rather than a future stable income source for themselves, since it often damages and breaks down wind turbines. That is, the wind is understood by local people as an uncooperative natural force that makes them spend money for (the normal operation of) wind turbines, instead of making money for them. Local residents already know that the construction of a wind turbine needs a huge amount of capital and that if in the future they become stakeholders of the energy company owned by their local government, they will have to pay for everything associated with wind turbines such as their installation, maintenance, and repair.

Drawing on their own personal experiences, or information they pick up from others, moreover, local residents also believe that it will be very hard, if not impossible, for wind turbines to completely triumph over Penghu's wind and its materiality and thus to avoid frequent failures and breakdowns, requiring repair work that will cost a lot and that they have to pay for. This makes those inhabitant think that it will take a very long time for wind turbines to start making money for them and thus that it is hard to anticipate when they can earn money from harnessing wind. In their view, wind turbines will remain money-spending/wasting, rather than money-printing, machines to be constantly repaired exclusively by foreign (and foreign-trained) technicians, until those machines are no longer vulnerable to, and influenced by Penghu's particular wind and its uncooperative properties. In other words, based on a simple cost-benefit analysis about the development of wind power in Penghu, a large number of local residents tend to think that the wind never becomes a potential energy source to produce financial profits, as long as its specific property to carry salt rain continues to damage foreign-manufactured

mechanical weeds, whose repair/maintenance (and construction) cost seems to exceed the profit wind will generate. And when considering Betz Limit stating that wind turbines can convert the maximum 59% of the kinetic energy of the wind into electricity, the universal European wind turbines, currently operating in Penghu are thought to decrease the amount of generated electricity and profits and to increase cost for their maintenance and repair because those machines as open systems are vulnerable to the particular wind and its materiality which chemically acts on, and thus damages them.

Chapter 5: The Materiality of the Immaterial Submarine Cables

Introduction

On March 23, 2013, a group of more than 30 people from Kouhu township, Yunlin came up to Taipei and staged a rally in front of the building of the Environmental Protection Administration (EPA) of Executive Yuan in order to protest Taipower's construction plan of installing the submarine electrical cables between Penghu and Kouhu. Domestic environmentalists also joined the Kouhu protest group to show their support. The protest group that mostly consisted of middle-aged men and women carried various placards in their hands that read "opposing 161KV undersea cables," "Taipower is about to kill people," "pumping out groundwater and sand is dangerous," "the submarine cables destroy marine ecology," "the power cables threaten the Chinese white dolphin," and so on (see figure 5-1).

My friend, Weijia, who is a Penghu-native young college student studying a college in mainland Taiwan and has long opposed the submarine cables, also provided support for, with his girlfriend, and joined the protest group as a representative of Penghu's voice. The protest group soon attracted attention from mass media and some of its representatives, including Weijia and Meirong who has been an ardent protestor from Yunlin in her 50s, stood before a couple of cameras and argued in common that the building of the undersea cables would lead to the destruction of the marine ecology. The protest group argued that Taipower's construction plan failed to address and fully investigate the (possible) impact of the submarine cables on their village and environment.

It hence strongly demanded the EPA's Environmental Impact Assessment (EIA) committee to reevaluate and reject the project, unless Taipower could thoroughly investigate all the possible environmental impacts of the infrastructure and guarantee that the cables would not make negative impacts on marine environment, or reduce the risk on the ocean to the minimum and that electromagnetic radiation levels would not increase after the cable began operations.

Figure 5-1. Anti-Submarine Cables Protesters.
(http://tepca.org.tw/event-detail.php?category=6&sn=111)

Almost five months later, on August 26, 2013, a typical summer day in Penghu that was so hot that people felt like they were burning and melting, Weijia headed for the Penghu County government building with five young college and high school students who were all native to Penghu and his friends/juniors. They all held A3 paper size placards in their hands. What interested people was that when these young students arrived at the square of the county government, a dark-skinned male student wearing a faded red Nike cap with a brawny body lay down on the ground and raised up his placard that read "if you dare to build the power cables, we will demolish a government."

According to a local newspaper article that reported this event, the male student who laid down on the square did so on purpose in order to represent a green sea turtle that is wounded and killed by the submarine cables. The rest of the students including Weijia stood in a row behind him, lifting up their placards and loudly shouting together "we do not want submarine power cables." The newspaper article explained that the male student who laid down on the square did so on purpose in order to symbolically represent a green sea turtle that is wounded and killed by the submarine cables (see figure 2). This small-scale demonstration finished as an official of the county government came out and received a petition from the students requiring the government to rethink or stop the building plan of the undersea cables.

Figure 5-2. Student Demonstrators. Courtesy of Apple Daily.

These two protest events intrigue me in light of the current status of the submarine cables. The undersea cables that Taipower plans to construct have not yet been built and thus are not a currently existing technological artifact. In spite of their physical absence, the submarine cables made people of Yunlin and Penghu continuously engage with them

as if they are real and already exist somewhere now. The virtual undersea cables also have produced material effects of their own on human beings surrounding them: people from Yunlin and Penghu have tried to make actions or do something real to/against the not-yet-realized energy infrastructure. People actively organized various demonstrations to obstruct the actualization of the submarine cables, as these two anecdotes show.

The effects that the absence of the submarine cables make or present in people's daily lives urge us to pose the following questions: why and how do the not-yet-existing undersea cables come to matter? In what ways do the imaginary or virtual submarine cables come to do political work as if it is already existing? How do the not-yet-actualized undersea and their political work cables influence the potential energy of the wind? Shaped by these questions, the chapter seeks to explore the materiality of the immaterial. Specifically, I will explore how the has-not-yet-materialized submarine cables make their material impacts in people's lives and becomes a "political matter" that influences the potential energy of the wind (Braun and Whatmore 2010). Analytically, I draw inspiration from the recently burgeoning literature on the "material turn" of politics that rethink the concept and boundary of the politics through looking at how nonhuman entities perform political work (Barry 1999; Barry 2001; Barry 2009; Barry 2013; Bennett 2010; Bennett and Joyce 2010; Coles 2007; de la Cadena 2010; de la Cadena 2015; Latour 2007; Latour and Weibel 2005; Li 2015; Marres 2012; Mitchell 2011; Oppenheim 2008; Valdivia 2008). While the notion of politics has traditionally been understood as "the interaction of people with people," the cultural anthropologist Robert Oppenheim urges us to extend and reconceptualize it as "the interaction of people with

things" (Oppenheim 2008:5) because those nonhuman entities work in ways that "exceed politics as we know them" (de la Cadena 2010:335). On the same ground, Andrew Barry also notes that when it comes to the study of sociopolitical movement and conflict, we have had a tendency to ignore nonhuman objects, which possess the potential capacity to "open up or close down the space of the political" (Barry 2001:201). In order to show how nonhuman materials generate their own politics and political conflicts, Barry analyzes the materiality of a 1760 km long Baku-Tbilisi-Ceyhan (BTC) pipeline, transporting crude oil multinationally, interacts with social and environmental landscapes, which it passes through, in unexpected ways and then becomes political creating disputes between various human actors (Barry 2013). Small cracks in the pipeline (coating material) under construction, for instance, came to acquire a politically "remarkable transnational significance" generating political disputes (Barry 2013:120), as their informational contents such as photographs were taken to be a diagnostic sign that would destroy and make visible the oil infrastructure's supposed "invisibility" in terms of its environmental impacts. That is, the material qualities of the oil infrastructure are constituted of political situation.

Following such theoretical attempts to correct the tendency to use human-centered analysis in understanding politics, this chapter seeks to explore how nonhuman entities including the submarine cables and others, related to and influenced by them, become political actors with agentive power. Yet, I also make this chapter quite distinct from the work of other social scientists that have tried to rethink politics by decentering humans, because, unlike what they have analyzed, the submarine cables, a nonhuman on which

my primary analytical focus was put, have not yet been present. While other theorists have focused on "existing" nonhuman actors, in other words, my focus is on the "virtual" submarine cables, which have not yet been constructed and thus are absent, and their agency to act in political life. Therefore, in this chapter, I aim to examine the ways in which the absent aquatic cables and other nonhuman entities, which are associated with the former, including cracks, the land, and the ocean and marine animals like white dolphins, become dynamic actors, reshaping political terrains and provoking political actions / disputes, and how political frictions generated by these nonhumans influence local people's understanding of the great storylines and, thus, the semantic conversion of the wind.

My argument is that through relations that make with humans and nonhumans, the unbuilt, absent submarine cables come into being and come to possess agency, making visible material impacts in people's lives: the absent infrastructure (and its anticipated material effects) prompted local people in Penghu and Yunlin into political actions such as protests, and contributed to the organization of them into political groups, demonstrators. I also assert that the protesters do not simply confront with the virtual, absent energy infrastructure, but also paradoxically make it to be real and present through their very physical, concrete actions to oppose them. Then, I contend that political disputes happened by and surrounding the not-yet-materialized infrastructure, in turn, work to damage and destroy the alluring storylines that produced financial expectations of wind power, and thus to diminish the attractiveness or attractive energy of the wind arising from those narratives. In what follows, I will first bring a reader to Kouhu and

Penghu where s/he can see how the local residents or protesters understand and oppose the proposed submarine cables. I move on to briefly look at the government's cartographic representations of the submarine cables, which allows us to see how bureaucrats think about that infrastructure and human and environmental landscape in which it is laid. It is followed by the examination of the ways in which the energy infrastructure comes to virtually and visually exist in maps and how it is enabled. I then investigate how the undersea cables are made to exist through myriad relations and practices and conclude with the relationship between the immaterial cables and the attractiveness or attractive energy of the wind.

The Need for the Submarine cables: The Materiality of the Wind and Electricity

Here I need to clarify one thing for the reader before the start of this section. Although submarine power cables refer to, as their name show, transmission cable lines that are designed to carry electricity laid beneath the ocean floor, they also necessarily include terrestrial cables, generally buried under the ground, to be connected with a cable landing point or station. In the rest of the chapter, therefore, by submarine or undersea power cables, I intend to mean wires that pass both underwater and underground.

Anyone can easily know that the construction of the undersea electrical cables is undoubtedly a kernel of the development of wind energy in Penghu, if s/he saw the government's blue print and plan about how to make the archipelago a home of wind power, as introduced in chapters 1 and 2. Without the undersea cables, the extra wind-generated electricity of Penghu is unable to be sent back to mainland Taiwan and thus to

be sold as commodity. Even if the submarine cables do not directly produce a commodity, "without their meditational apparatuses," as Dominic Boyer (2016) writes, "what flows through them could scarcely be commoditized let alone could their energetic vitalities be brought to the making of so many other useful things."

Yet, the submarine cables have also to be built in Penghu, since the wind is unable to be the only provider of electricity. This reason for the construction of the cables pushes us to take into account both the materiality of the wind and electricity and the important features of power consumption. In spite of being one of the good renewable energy sources, on the one hand, the wind itself has its own intrinsic drawbacks of "scant materiality," "mercurial existence" (Howe 2011:5), "intermittency" (Friedrichs 2013:41; Gallman 2011), "unpredictability" (Denny 2013; Gallman 2011), and "variability" (Burton 2011; Coyle 2011; Denny 2013). Put it simply, the wind itself is in essence "notoriously fickle and change quickly in both speed and direction" (Denny 2013:35), even though the winter wind blowing in Penghu during the winter season is seen as "relatively" stable. The wind is likely to suddenly become too slow and weak, or even not to blow and this means that electricity cannot be generated. Such inherent (negative) materiality makes the wind be unable to be the primary source of power, as many authors and wind power developers point out, if there is no backup power source (Friedrichs 2013; Gallman 2011:118; Smil 2009).

On the other hand, the specific materiality of electricity and the important feature of our electricity use, which are closely interrelated, also need to be discussed in order to account for why wind energy is unable to become the sole provider of power. Electric

power systems are, on the one hand, intrinsically "real-time energy delivery systems" (Blume 2007:3). Real time indicates that, according to Blume, "power is generated, transported, and supplied" at the very moment we plug a power cord into a power outlet and turn on the light switch (Blume 2007:3). That is, while electricity must be produced "on an "as needed" basis" (Blume 2007:20), which means that its "supply and demand have to be instantly coordinated" (Gupta 2015:563), wind-generated electricity providers cannot generate electricity at will and "as the demand calls for it" because wind turbines can produce electricity only when the wind is blowing (Blume 2007:3). On the other hand, electricity is extremely difficult to store because it is by definition the flow of electric charges, not a stored form of energy such as hydrocarbon energy including oil and coal (Blume 2007; Gupta 2015; Vliet, et al. 2005), and then needs to be consumed immediately not to waste it.[27] Thus, since electricity is very hard to store yet must be generated, transported, and distributed to serve a real-time power demand, "there is no realistic way to make wind power… the sole provider of the base load supply" (Smil 2009:169-170). As a result, in order for electric power systems to function real time and given the materiality of electricity, wind energy "typically requires a non-renewable power plant as a backup" (Friedrichs 2013:41). In addition, when we consider both the geography of Penghu as archipelago and the fact that the Jianshan fire-fueled power plant, which is currently the sole provider of power, would be closed in the near future after the development of wind energy reaches its maturity, it becomes more evident that wind

[27] In reality, there are currently several types of energy storage methods such as compressed air storage and battery storage that are considered as a means to capture and level out wind energy as it is produced and store it for later use. They are still, however, in their infancy with regards to economic efficiency, practicality, and implementation on a large scale.

turbines are unable to be a sole source of power in the Penghu archipelago and require conventional power plants in mainland Taiwan as their backup. The successful completion of the submarine cables enables Penghu to receive and consume electricity, transmitted through the underwater infrastructure from mainland Taiwan, especially when the wind is too weak or no blowing.

Another important materiality of electricity can explain the role of the submarine cables, linking Penghu and mainland Taiwan and transmitting electricity between them. In spite of the fact that it is very difficult to store, electricity is also regarded as "the most efficient means of distributing energy" because it can be not only "squeezed into thin cables" that "can be distributed widely, then split and redistributed" (Denny 2013:6, 12), but also easily transported "across vast distances" (Gupta 2015:556) "at about the speed of light" (Denny 2013:6, 12) (even though "it is lost during transmission, and the greater the distance that it has to be transported, the greater the losses" (Gupta 2015:556)). Due to such materialities of electricity (i.e. it is hard to store and has to be consumed at once at the same time it is easy to transport), wind turbines in Penghu are connected with traditional power plants as their back up in mainland Taiwan through the submarine cables that work to transport electricity two-ways.

The Submarine Cables and the Dotted Line

The submarine cables to carry electricity between Penghu and Taiwan proper have/do not yet materially existed, however, even though they are crucial to the harnessing of wind energy in Penghu in that they are needed for the archipelago to

acquire financial profits through the sale of wind-generated electricity, as well as to securely receive power on a real-time "as needed" basis from mainland Taiwan. It is impossible to find them anywhere in landscapes. Instead of being physically actualized, the aquatic cables currently only exist and appear simply as a visualized form, map. I see various versions of maps of the proposed submarine cables sitting in my desk. Some of them appear in Taipower's submarine cables construction plan or related documents and booklets, while other maps are included in a monthly practical journal published by Taipower and in the government's power point presentation slides that were made to promote the development of wind power in Penghu. Yet no matter what versions of map I see, they all share a common characteristic (see figure 5-3): The not-yet-actualized undersea cables are commonly represented as a line, or to be exact, a dotted line on various maps (Barry 2013; Ingold 2007c).

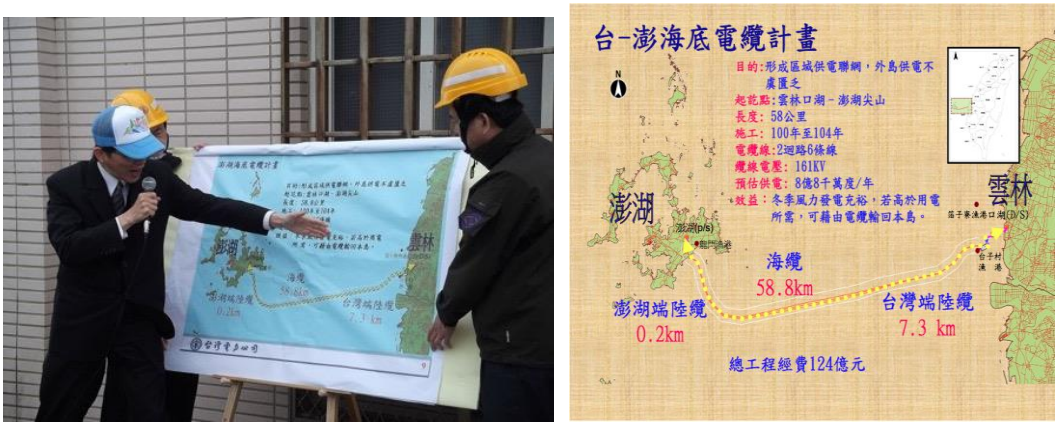

Figure 5-3. Submarine Cables on Maps. Courtesy of the Penghu Local Government. (https://www.penghu.gov.tw/ch/file/energy.pdf)

The submarine cables to carry electricity between Penghu and Taiwan proper have/do not yet materially existed, though they are crucial to the harnessing of wind energy in Penghu. It is impossible to find them anywhere in landscapes. Instead of being

physically actualized, the undersea cables currently exist and appear only on maps. Sitting in my small desk, I see various versions of maps in which the proposed submarine cables are represented. Some of them appear in Taipower's submarine cables construction plan or related documents and booklets, while other maps are included in a monthly practical journal published by Taipower and in the government's power point presentation slides that were made to promote the development of wind power in Penghu. Yet no matter what versions of map I see, they all share a common characteristic of cartographic representation of the proposed infrastructure. The not-yet-actualized undersea cables are commonly represented as a particular type of line, a dotted line that is a sequence of dots on maps. If, as a famous art critic, John Berger has noted, "a line drawn is important not for what it records so much as what it leads you on to see" (Taussig 2011:22), what does the dotted line of the not-yet-actualized undersea cables allow us to see? (Barry 2013; Ingold 2007c).

Dotted lines by which the submarine cables are drawn on maps are the typical visual representation of what Tim Ingold calls as "transport" (Ingold 2007c). In his book exploring the significance of lines in human culture and the lives of every living being, the British social anthropologist Tim Ingold makes a significant distinction between "transport" and "wayfaring" that produces different kinds of line, respectively (Ingold 2007c). The line that transport produces is arboreal, whereas that of wayfaring becomes rhizomatic, to use Deleuze and Guattari's concepts (Deleuze and Guattari 1987). Transport is a simple destination-oriented movement where people "move across" from one point to another without engaging with their surroundings, according to Ingold, while

wayfaring is an open-ended and unconstrained way of moving in which people, as they "move along" space and interact with their surroundings, constantly make and improvise their own trail without predetermined points. Ingold asserts that dotted lines belong to a line of transportation and are "the line that is not a line" (Ingold 2007c:3, 151), because they are "a chain of connections" between predetermined points (Ingold 2007c:75, 86) in which nothing lives, grows, and moves (Ingold 2007c:3, 151). The dotted line of transport model moves "from point to point, in sequence, as quickly as possible, and in principle in no time at all, for every successive destination is already fixed prior to setting out, and each segment of the line is pre-determined by the points it connects" (Ingold 2007c:73).

Ingold's conceptualization of dotted lines as "a point-to-point connector" (Ingold 2007c:75) also accords with the Africanist cultural anthropologist James Ferguson's notion of "hopping" or "point-to-point connectivities" (Ferguson 2005; Ferguson 2006:47).[28] Although Ferguson originally developed the concept of "hopping" to specifically dispute the political scientist James Scott's idea of a myopic vision of modern state, homogenizing, standardizing, and simplifying complex, messy

[28] Ferguson originally developed the concept of "hopping" to dispute the ideas that James Scott developed in his influential book "Seeing Like a State" (Scott 1998). Scott used the metaphor of the optic of the state to indicate the ways in which a tunnel or myopic vision allows high modernist states to selectively see a certain aspect of the complex, messy realities of worlds while generating blind spots, ignoring other aspects. By seeing in this way, modern states homogenize and simplify complex spaces to effectively control them, even though such a bureaucratic practice to pursue standardization often results in failure, producing detrimental effects. Scott also showed his idea that global capitalism also would work through homogenization of space by writing that "large-scale capitalism is just as much an agency of homogenization, uniformity, grids, and heroic simplification as the state" (Scott 1998:8). Scott's idea is in line with the prevailing metaphor of "flows" in literature on globalization (Appadurai 1990, 1996).

spaces/realities to effectively control them (Scott 1998), his critique can be generally seen as a reaction against the dominant metaphor of "flows" often sweeping in literature on globalization (Appadurai 1990; Appadurai 1996) in a sense that it is impossible to explain a particular aspect of globalization and global capitalism that he observed in Africa: global capital does not flow uniformly like liquid through the entire continent (Ferguson 2005; Ferguson 2006; Heyman and Campbell 2009; Rockefeller 2011). Ferguson observed that global capitalism spread unevenly across Africa where capital investment remains unequally at best, only concentrating in and moving to particular mineral resource-rich enclaves. Ferguson thus uses the metaphor of "hopping" as a either remedy to the prevailing or understandings of globalization as a homogenizing force that enables a flow of global capital in order to highlight that capital "does not encompass or cover contiguous geographic spaces" (Ferguson 2005:379) but rather jumps from one point to another, "neatly skipping over most of what lies in between (Ferguson 2005:379) and thus selectively "connects discrete points on it" (Ferguson 2006:38). That is to say, it is through hopping, or a selective connection of points that global capitalism or resource development activities function in a "thoroughly enclaved manner" neglecting huge tracts of spaces that are seen as unproductive and unuseful in the sense of profit seeking (Ferguson 2005:378).

Both Ingold and Ferguson show that the dotted lines of the submarine cables are closely related with capitalist desire. On the one hand, for Ferguson, capitalism only connects selective points, which are considered to be economically investable and profitable, while neglecting and skipping over "most of what lies in between" those

points, which has no or little potential to generate financial profits (Ferguson 2005:379). In this sense, the most valuable and important dots of the submarine cables from a capitalist perspective are two starting/ending points in Penghu and Yunlin, because the failure of connection of them means the failure of the completion of the cables, which in turn means that electricity generated through Penghu's wind cannot be transported and sold. On the other hand, as Ingold writes that the dotted line has to go "from point to point, in sequence, as quickly as possible, and in principle in no time at all" (Ingold 2007c:73), it emphasizes the importance of the efficient management of time, which is the spirit of capitalism (Ong 2010; Thompson 1967), as Benjamin Franklin's famous maxim "time is money," which is the most concise yet best expression of capitalist logic, shows (Weber 2001). Space also can be conceptualized as money, not only because it always comes with, and is thus unable to be separated from, time, but also due to the materiality of electricity. As we seen earlier, "electricity is lost during transmission," unlike conventional carbon fuels, and "the greater the distance that it has to be transported, the greater the losses" (Gupta 2015:556). Thus, the dotted line of the submarine cables should be "assembly-chain-like" made through "the principle of time-waste reduction" (Vannini 2011:478, 479) in which the space between dots needs to be short/ened in order not to unnecessarily waste time and money in transporting electricity (and time (cost) in the construction of the cables).

However, the dotted line of the submarine cables also clearly shows the infrastructure planners' particular understanding about the environment. The planners of the submarine cables are advocates of "transport" model. As transporter, the planners

conceive the environment as an abstract, absolute, and unobstructed space. This allows the immaterial submarine cables to be represented by their planners as a dotted line on maps, as the media studies scholar Nicole Starosielski notes, as if they are simply imposed on and "laid *over* environments" (Starosielski 2010:190, my emphasis). From the planners' perspective, the environments including seascapes and landscapes are "clean voids" (Murrey 2015:69), "uninhabited space" (Kaup 2008:1741), and "empty space to be filled with capitalist ventures" (Vannini 2011:479). Since the environment is understood as "emptied space" (Vannini 2011:479) where "frictions" do not exist (Tsing 2005), the submarine cables are expected by the planners to move from one point to other "as quickly as possible, and in principle in no time at all" first on maps and then in reality when they are completed. Although the planners wished that the submarine cables can go *in reality* "from point to point, in sequence, as quickly as possible, and in principle in no time at all" (Ingold 2007c:73) as the dotted line on maps does, yet, is it possible? Can the expectation of the planners be realized? My answer is simply "no" when we rethink about the environment.

While the environments where the submarine cables are installed is viewed by the planners of the infrastructure seemed to view as passive, void, and abstract "spaces to move *across*" for the transmission of electricity, they are in fact dynamic "places of their own" (Vannini 2011:479). The environments are not impersonal "spaces" but lively "places" with their own particular history, places that have constantly transformed and been transformed by "ineluctably place-bound" inhabitants (Feld and Basso 1996:19) of both humans, who experience them, ascribing them with sociocultural values and

meanings, and nonhuman entities that have interacted with the former (Ogden 2011). Since the submarine cables in reality have to pass "through" the inhabited, active place rather than being "laid over" the empty space (as they are represented as a dotted line on maps), they cannot "hop" from one point and other while "neatly skipping over most of what lies in between" (Ferguson 2005:379). To pass through the environment, the submarine cables are unable to avoid encountering various "human and non-human inhabitants of aquatic and coastal" place (Starosielski 2010:190). Then, the infrastructure dissolves "intimate bond" that human inhabitants have with the environment and other nonhuman co-inhabitants as wayfarers who dwells in place (Ingold 2007c) and produces "friction" (Tsing 2005), as the protestors and their resistance actions with which I opened this chapter illustrate.

Thus, I then decided to trace the dotted line of the undersea cables. In light of the fact that I am unable to follow the proposed cable route underwater, I made a plan to visit the territorial connecting points of Penghu and Yunlin where the dotted line reaches land. In Yunlin and Penghu, I wished to know more about how the proposed undersea cables are related with what I read and saw from protesters' placards, actions, or rallying cry through the locals: the ocean, marine animals, groundwater and sand. Since the undersea cables are crucial to maintaining the potential energy of the wind, we have to trace them along with their proposed route and know how they, in spite of still physically being absent, get connected, and create tensions with, humans and nonhumans living in the environment that they have to pass through.

Cracks in Yunlin

I first came to know Sun Weijia, a 20-year-old Penghu native male and a college student majoring in political science at a local university in Taiwan, in a virtual space, Facebook. As I collected relevant information about the construction process of submarine cables both online and offline, I found in summer 2013 a Facebook page of Anti-Yunlin-Penghu Submarine Power Cable Action League, or *Fan Yunlin Penghu Haidi Dianlan Xingdong Lianmeng* in Mandarin Chinese (hereafter the Anti-Cable League) that included a considerable amount of news and first hand accounts about various events associated with the making of the submarine cables such as public hearings and public protests. I immediately sent a message to an administrator of the page to ask if I could join the group for my further research and hear more about the experiences and ideas of the protests of the cables. Almost ten days later, I received a response message from the administrator where he provided me with the name of a leader of the Anti-Cable League and his phone number and told me to directly contact the leader for the sake of my inquiry. The leader to whom I was introduced was Weijia. Since then, I and Weijia became "friends" first on Facebook and later in real life during my fieldwork. We indirectly communicated with each other most of time on mobile phones and/or Facebook because Weijia was in a city in the central Taiwan for his college while I was doing my archival research in Taipei. Because of our geographical and physical separation, we could occasionally meet up and have conversations in person only when Weijia came up to Taipei to deal with his personal matters.

On Saturday October 26, 2013 - a windy and slightly cold day – in Jiayi, which is a provincial city in the plains of southwestern Taiwan, I and Weijia took on a local bus heading to Kouhu Township, Yunlin County, where Taipower's submarine power cables would land and be connected to local primary substations to conduct our individual ethnographic research for respective reasons.[29] I went to Kouhu with the plan to see what was going on there and interview a number of main figures of the Kouhu township in organizing and leading their protest activities against the cable construction on the day. This plan could not be possible without Weijia and his kind help. It was through Weijia that I could luckily get connected to Ke Meirong who has played a significant role in inaugurating and leading Kouhu residents' anti-undersea cable campaign. Originally, Weijia and Meirong started respectively endeavoring to make Taipower annual or at least stop and reconsider its project of building the submarine cables based in their respective hometown, Penghu and Yunlin. Yet it did not take Weijia and Meirong so long to recognize each other and their own anti-cable groups. Finally, they could come into close collaborative relation and even to form a strategic alliance in order to achieve their common goal to overturn the submarine cable project, as Kouhu residents' protest at the EPA, which with I started this chapter, shows. Here I have to point out one important thing about their collaboration. As a number of research have noted (Li 2015; Tsing 2005), collaboration, intended or unintended, is produced without restricting the creation of "frictions" among participants from creating, such as tensions, dissonant interests,

[29] Although Weijia regularly had contacted local protestors like Meirong via phone, he was physically far away from Kouhu due to his college life and could not visit there and meet local people for a long time. Thus, Weijia told me that he needed to do his own "ethnographic research" (*tianyediaocha*), even though it was a one-time, ephemeral thing, in order to see what happened and is going on in Kouhu and to hear what local people think about the situation in person.

incommensurable views. Even if the anti-cable protest groups, which are based in respectively Penghu and Yunlin, came to establish the mutual strategic cooperative relationship, such collaboration does neither merely imply a fully understanding of each party's agendas and an unconditional sharing of information, nor assume that all protest participants consent to its content, and are driven by the same goals and interest (Li 2015; Tsing 2005:13). After approximately 50 minutes drive, as the bus finally arrived at a bus stop in Kouhu where we had promised to meet with Meirong, we got off and found that Meirong was still not there. Weijia made a phone call to Meirong to tell her that we just arrived and would wait her to come here. Five minutes later, Meirong in her early 50s and with tied back black medium length hair appeared and greeted us with her big smile. She led us to a small and quite shabby grocery store run by herself and her husband Huang Jiemin.

At the store, Meirong told me that although she already arranged my visits to important local figures and places that she thought have worth being explored for my research, there were something that she really wanted to let me see and that I had to watch first in person. She then left the store to deal with her personal stuff and pick up her car. About 20-30 minutes later, Meirong appeared with her red Toyota sedan and drove us to a house whose owner was a more than 80-year-old woman. While driving, Meirong told with a much higher and more excited tone that I could see the direct and clear impacts that Taipower's preliminary engineering (ground)work for the making of the undersea cables made in their villages and lives. She could not quickly escape the state of excitement and kept telling me that when and if I would take such a basic work

for the submarine cables and their effects on local residents into account, I would definitely be anxious about the dangers that the complete construction of the cables would bring about.

While I started seriously thinking about and imagining what impacts of the preliminary construction work that I was expected to see, Meirong's car finally reached our destination. Having parked her car, Meirong led me to the inside of the house. It looked like an old traditional style of house with a yard made of cement. Meirong entered a room to greet and find the old lady as an owner, whereas I waited in the yard while looking around every corner of the house. After a while, Meirong came out along with the old lady, Mrs. Lo with white hair and wearing a ragged green jacket. I greeted Mrs. Lo in a traditional Chinese (and my own Korean) way, bowing at abut 40 degree with the head lowered in order to show my respect and gratitude because she was an elderly woman who allowed me to be let in and look around her house. Mrs. Lo responded to my greeting with her slightly awkward smile probably because I was an outsider that she saw for the first time.

Meirong then explained in detail to Mrs. Lo about what my research was intended to do and why she brought me to here in Taiwanese because the latter could not speak Mandarin Chinese, which led me to be dependent on Meirong's translation for dialogues with the old homeowner lady. Mrs. Lo seemed quite both agitated and pleased by knowing that I came to Yunlin from the United States to conduct in-depth research on the submarine cables because she thought, expected, or misapprehended that as an intellectual who has been educated in America, the most powerful and recognizable

Western country, I could resolve problems that she strongly believed to be due to the submarine cables construction work.

In order to show me the ways in which the preliminary engineering work for the construction of the undersea cables had influenced her, Mrs. Lo told me to look at the ground of the grey colored cemented yard. I looked carefully around the ground on which I was standing and saw that there were a couple of long and deep black lines, which were in fact cracks or fissures in the ground. While I thought about how these cracks were produced, Mrs. Lo waived her hand, which was a sign for Meirong and me to follow her. Where she led us was a bedroom. It looked like it was just the typical old-style Taiwanese bedroom that was in a good shape without many things inside and nothing special in the master room.

While I did not understand why the elderly homeowner wanted to lead us to the room, Mrs. Lo soon pointed the wall with her finger and started talking to Meirong about it in an excited tone. What she indicated was a two flights of stair shaped upper part of the wall that is also attached (or linked) to the ceiling and two sides of wall. As I approached to see clearly, I found that there was also a fissure between the stair shaped part of the wall and its adjacent wall. The crack stood out when the empty black space it produces contrasted sharply with the ivory colored or yellowish walls and this amplified my doubt about the cause of these fissures.

It seemed that Meirong had already read from my face the question that made me puzzled and asked me “Do you want to know how numerous cracks in this house occurred? Is it right?” I nodded my head and she immediately gave her answer that

"those cracks were produced only after Taipower's groundwork that was needed to start the building process of the submarine cables had begun. Taipower was the main culprit in producing the fissures." Meirong seemed to want to verify this herself with evidence and thus asked Mrs. Lo to say more about the situation for me to understand and accept her words. Mrs. Lo enthusiastically explained to Meirong what she has experienced in terms of Taipower's basic engineering work, but I quietly kept listening to her since my understanding of Taiwanese was very limited.

Everything was fine before Taipower's engineering work, according to Meirong's translation, and it was only with the start of the groundwork that all that was good went wrong and the fissures occurred just as Meirong told me. Mrs. Lo was outraged again by the fact that her house had cracks everywhere as a result of Taipower's engineering task. I wondered how Meirong (and Mrs. Lo) could positively say that Taipower and its basic work had caused the problems that I just saw. Meirong answered me flatly that it was mainly because Taipower neglected an important warning or advice from local residents and then told me to go out of Mrs Lo's house in order to see the main road before it.

I went out from the main door of the house following Meirong and looked carefully at the road. Mrs. Lo also accompanied us to provide a more detailed, first-hand experience based explanation when it needed. The shallow river was flowing right next to the road. I found lots of cracks on the road again. Cracks on the road were much deeper and longer than those that I saw in Mrs. Lo's house. Mrs. Lo told me with an indignant voice once again that Taipower was solely account for producing cracks on the road. Mrs. Lo's seemed to become more agitated than before when Meirong told me that the since

the land in which the road was built is Mrs. Lo's private property, Taipower's careless preliminary work for the building of the submarine cables ruined her properties.

Meirong then finally told me her theory/suspicion of what caused the production of cracks. The land of the villages through which the submarine cables are supposed to pass is sandy soil, according to her. And Taipower's basic work that needs to be done prior to the construction of the submarine cables included the task of pumping of water and sand from the ground. Penghu residents worried that if Taipower inattentively pumped out sand without understanding the fact that Kouhu's houses had been built on it, it might cause the foundations of houses to collapse or led to instability. Moreover, groundwater pumping may help worsen the situation because careless over pumping leads to land subsidence and earth fissures. Local residents' concern was realized unfortunately. Kouhu inhabitants attributed all the problems I saw such as cracks in the houses and road fissures to Taipower's irresponsible basic engineering work. They strongly believed that Taipower's over pumping of groundwater and sand collapsed land at the surface, destabilized the foundation of houses nearby, and caused cracks on the road and in the wall of those houses (see figure 5-4). Meirong grumbled to me about why Taipower did it without taking the specific characteristics of under/ground condition seriously.

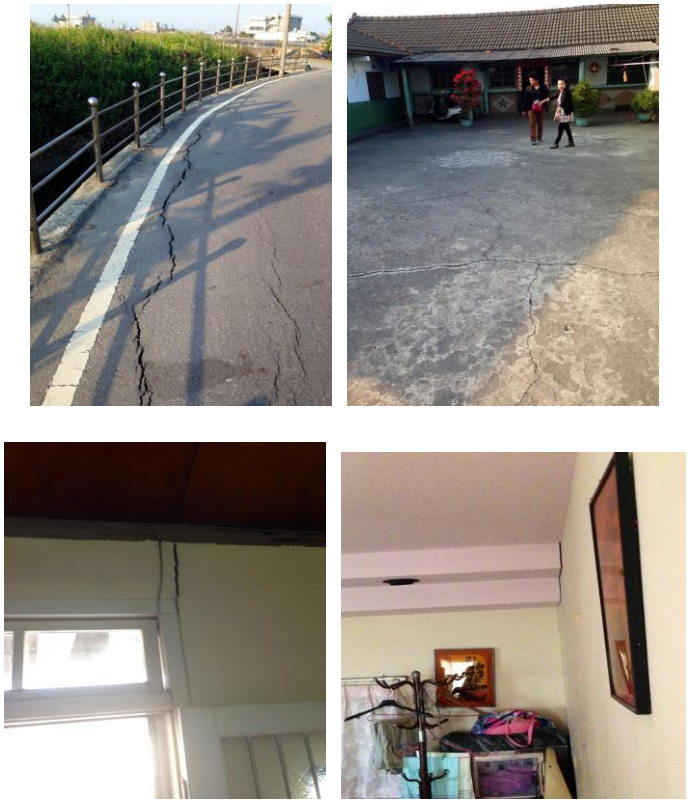

Figure 5-4. Cracks. Photo by author.

Thus, the deep and irregular black lines that cracks produce in the wall and in the road becomes a visible sign for Kouhu residents to read. They read the unanticipated and unwanted lines, as demonstrating that there is something wrong with the building of the submarine cables. Lines come to represent the state's (or the state-agency's) inattentiveness and unprofessionalism, because, as local residents explained to me, cracks did not predate but appeared after Taipower's problematic groundwork for the undersea cables. Such lines then symbolically signify and/or expose widening fractures between local residents and Taipower, just as actual lines of cracks are in reality produced by separation of parts, as well as the former's distrust in the latter as much as their depth and size. For the locals in Kouhu, the problems of cracks were understood as critical matters

for the government and its utility company to solve (Woolgar and Lezaun 2015). In his ethnography on how the construction of a multinational oil infrastrucure re/shapes socio-political relations, Andrew Barry shows that sets of small cracks in the BTC pipeline and houses play a vital role in engendering political disputes (Barry 2010; Barry 2013), because they are seen by various agents as a clue that indicates "the existence of larger forces that had caused them to occur" (Barry 2013:120). Likewise, cracks occurred in walls and ground in Yunlin are also taken by local villagers as a significant cue, allowing people to infer that there is possibly "the existence of defects" in the construction work of the undersea cables, and thus that their houses and place may have fallen into danger (Barry 2013:120).

Representing abnormalities and unknown, unpredictable risks and disasters, sets of cracks also have a potentiality to lead to what cultural anthropologist Deborah Davis Jackson coins a new term "dysplacement" (Jackson 2011). By replacing the root "dis" (whose meaning is away or apart) of the word "displacement" with "dys" meaning bad or difficult, Jackson developed the notion of dysplacement to show how people's perceptible experience of abnormalities about their environmental settings produces the feeling of alienation from place, even though they are not, in reality, physically alienated and displaced. It is through cracks, the zigzag lines happened in houses and ground that residents of Kouhu come to have an apocalyptic imagination in their minds that Taipower's preparatory engineering work for the submarine cables may destroy the soil structure of their land and that the land thus may becomes so weak in bearing power that it could no longer sustain houses and buildings. By worrying and imagining the

environmental harms on the land and the possible collapse of houses and buildings caused by the groundwork for the cables, hence, local villagers come to have a sense of dysplacement in which they are physically still at home at the same time that they feel that they are already psychologically displaced from there.

The Ocean and Marine Ecology in Yunlin and Penghu

While we were waiting for Meirong to come back into her grocery store, her husband Huang Jiemin brought out hot Chinese tea for me and Weijia in order for us to warm ourselves. Sitting around tea tables, we started a brief conversation on the building of the undersea cables. Jiemin's stance was clear and consistent from the beginning of our dialogue to the end, as he told me.

"The reason that we desperately oppose the making of the submarine cables is that it is directly related with our survival (right). The government is only concerned with economic profits that the cables may generate. Yet boht we and our ancestors were all born from the ground and this soil is the place where we came from and will finally return. Our blood flows in this land."

Huang Jiemin seemed to equate land with Kouhu residents and their spiritual motherland. I could not understand that what Huang Jiemin referred to by terms such as land, ground, and soil was in fact not confined to merely the terrestrial spaces that those terms generally indicate until I had an opportunity to talk to other residents. That the sea is their land is a factual statement to a degree, given that most of the local families rely

upon fishing for their existence (Howe, et al. 2015:110). As the undersea power cables under construction are believed to transform and realign stable, long, intimate relationships between people and their surrounding landscapes, the ocean became "an increasingly contested terrain of political action" (Li 2015:21).

After visiting Mrs. Lo's house, Meirong then drove her old model of red Honda Accord sedan to bring me and Weijia to the home of the president of the organization called "engineering self-rescue association." The president, Wang Haoli with short curly hair, asked us to sit around the table located in the middle of the living room. Meirong introduced Haoli to us as possibly the first person who initiated demonstration activities against Taipower's power cable construction and told me to ask any questions about the power cables. However, since Haoli's first language was the primary dialect of Taiwan, Taiwanese or Minnan language and he could not speak Mandarin Chinese well, I had to depend on Weijia' translations for most part of the conversation to understand Haoli's answers. During our conversation, Haoli also asserted that the submarine cables have a lot to do with the survival of local residents just as Meirong's husband had believed. He said:

"In our ocean, there are such abundant fishes that even people from other places often come here for fishing. Also, our ocean has long been a principal breeding area for one particular species of fish. But if the submarine cables are built, they will destroy the spawning area and thus lead that fish species to extinction or to an extinction crisis. Other sorts of fishes will also be negatively impacted by the cables."

Haoli took a sip of his tea. Having quietly been listening to our conversation, Meirong immediately added her opinion by saying that "we are really afraid of the negative impacts that the submarine cables may exert on the ocean. In light of our condition, it would lead to a disastrous result." Meirong's words reminded me of the scene of Kouhu protesters who gathered with placards in their hands before the EPA building. In that demonstration activity, Meirong spoke out in a firm tone before cameras on behalf of the protesters and all Kouhu residents who were not able to be there but whose hearts would be with the protesters. She stated that all 21 villages that constitute their township, especially Taizi village have mostly relied on the ocean and fishing for livelihood and that the fishing has been our sole means to make a living."

As I asked Meirong a question about what the sea means to local villagers, she responded that the ocean was, is, and will be their own lives since it provides them with the opportunities to make a living and that if the submarine cables to carry electricity were laid as planned, the ocean would be exposed to and have to bear the high electromagnetic waves that the cables release. According to Meirong, these high electromagnetic waves would severely damage fishing ground and oyster farming that has been an important source of income for fishermen in Yunlin whose coastal area is "the largest oyster culture area in Taiwan, with a maximal output of 13,689 m.t., and an output value of approximately NTD 2.3 billion in 2010" (Huang, et al. 2013:795). The submarine cables and the electromagnetic waves they release would thus threaten the marine ecology of Yunlin, because they are thought to drastically decrease catch as well

as to prolong the culture period of oyster and other shellfish and reduce their output, or, at worst, disable their farming.

Kouhu residents including Meirong strongly believed that if the submarine cables were constructed as planned, what the energy infrastructure would irrevocably impair is not only the ocean, but also their lives that have relied on the former (Howe, et al. 2015). The deep concern about the loss of the ocean that I heard many times from local residents was also well expressed in their petition written to oppose Taipower's cables construction plan. In the petition, you can read that "people of Kouhu township have depended upon the ocean for existence from generation to generation. But the sea will not exist and residents will encounter the predicament in which it will be impossible to keep their livelihoods (if the submarine cables is laid)." On the same ground, Meirong also told me that while Kouhu residents get nothing good upon the building of the undersea cables, only Penghu people can earn money from that aquatic energy infrastructure through which they sell wind-generated electricity to mainland Taiwan. In order to initiate the engineering work for the submarine cables and to get the building of that infrastructure done as soon as possible, according to Meirong, Taipower has wanted to negotiate with local people and tried to do so by providing the latter with compensation. Yet, in their view, if they admit Taipower to lay down the cables in return for such monetary reward, they would lose our ocean forever which is their tremendous loss that never (be able to) be indemnified by money and thus that aquatic infrastructure is useless to them. Thus inhabitants in Kouhu refused to receive the compensation money and rather required Taiwpower to re/conduct the reliable scientific evaluation about the possible

environmental impacts of the submarine cables. Only when such objective re/analysis is conducted and in their hands, Kouhu residents are willing to sit at a negotiation table with Taipower.

Local residents of Kouhu thought that not only the benefits, economic and environmental, of the development of wind energy but also its "dispossession and risk are also unevenly distributed" between Penghu and Yunlin (Murrey 2015:69), because of their belief that the development of the undersea power cable would impair the ocean and their livelihoods that rely on it. The precise, concrete impacts that the submarine cables and their construction work might have on the marine ecology and the fish population was unclear and just speculative at the moment when I conducted research with them. Their fears about the undersea cables swell, however, partly because of the occurrence of cracks in their material environments and the lack of scientific estimation and investigation about unknown, possible risks of that infrastructure (Howe, et al. 2015). Moreover, since the development of wind energy in Penghu is essentially a multi-scalar project that is not simply the local government's effort to make the archipelago to a low-carbon island, but also an important national project that aims to strengthen energy security and political visibility (chapter 2), Kouhu people also feel that it asks and "justify the need for local sacrifices in the name of the wider, public good" (Howe and Boyer 2015; Paladino and Simonelli 2013:2). The approval for the construction of the submarine cables and its possible risks on their environment and life are then perceived by those residents as a "blood price" that they have to pay "for the cost of the nation's development" and the better lives of fellow citizens living in the outlying islands

(Klaeger 2013:362). Thus, they did not intend to completely oppose the building of the submarine cables per se in spite of an unequal distribution of its possible profits and risks as well as increased fear about its effect. Instead, they expected Taipower to re/examine potential impacts of the cables and its analysis to be scientific and objective to reduce their anxiety and thus to give a consent to the construction of the cables, because only it would make them shed less blood, if the acceptance of the aquatic energy infrastructure is a blood price that they have to pay "to benefit the 'greater good', of local populations" of the archipelago and the Taiwanese nation "and, ultimately, in service to the planetary bios" (Howe and Boyer 2015:43).

Penghu residents were also concerned with the destructive effects and pollutions that the submarine cables may make on the ocean, like Kouhu inhabitant, since they are from the "fisherman's islands" that are the literal meaning of the traditional English, or technically Portuguese name of the archipelago Penghu and that clearly show that their daily lives have been inextricably intertwined with the sea and fishing. Their anxiety about the submarine cables' impacts on the ocean grew as much as they cherish the marine ecological system and boast its greatness. That Penghu has a great marine ecology can be easily learnt from the official website of the Penghu National Scenic Area Administration (Penghu-NSA). The website introduces Penghu's marine ecology to the visitors like this (http://www.penghu-nsa.gov.tw/english/AboutPenghuEng/AboutPenghu03eng/AboutPenghu0303eng.htm):

"The China coastal current, a branch of the Japan current, and the South China Sea monsoon current come together in the surrounding seas, bringing Penghu rich and varied

marine ecological resources… Penghu has a cornucopia of fishery resources; according to a survey carried out by the Penghu branch of the fisheries institute, there are a total of 723 species of reef fish, bottom fish, and migratory fish. The rockfish grouper has been named the Penghu county fish… The waters around the Penghu Islands provide fine conditions for the growth of coral, which covers large areas of the ocean floor here and provides habitat for a wealth of ecological resources. Soft and hard coral in an endless variety of shapes and colors abound, providing astonishing underwater landscapes. In the outer seas there is also an abundance of seaweed - more than 40 species - of which some, including laver, have economic value as a food. In the large intertidal zones around the Penghu Islands you can find a variety of sea snails, clams, and other seashells, as well as crabs, lobsters, hermit crabs, and other arthropods…"

Moreover, the Penghu area produced a great quantity of plankton that in turn becomes an abundant nutrient for a large amount of fishes because it is a point where various cold and warm currents meet and combine. Penghu residents have therefore always regarded the ocean as an important "fishing ground" or "fields" on which they put their labor and affection and from which they get what they need to make their living (Schmalzer 2002).[30] Such an affective and intimate relationship that Penghu people have long formed with their large and vastly varied marine ecological system made some of my informants such as Weijia describe themselves as the children of the ocean, or *haizi* (haizi in Chinese refers to kid or child and when people pronounce hai with the second tone, the meaning is changed from child to the ocean). To these children born out of the ocean, the construction of the submarine cables could not be accepted since the technological artifacts were believed to contaminate and hurt their beloved mother, the sea and the marine environment. Interestingly, Penghu residents also used a parent-child

[30] According to the historian Sigrid Schmalzer (2002:112), the description of Penghu as the islands of fishermen is an intimate tie with "the lack of productive land" because "fishing was what people without good land did as a last resort to keep themselves fed."

relationship by describing themselves as haizi, the children, in relation to the Taiwanese government. For them, the central government is thought to have a responsibility to take good care of their citizens as if the latter are beloved children. One of my informants in Kouhu told me that they have always cooperated and accepted the government's projects even in the cases that some of those programs did not in fact take into account the real condition of their living and thus failed to achieve gratifying outcome. He also emphasized that they have engaged in good conduct and carried out their duty as a good citizen by paying taxes on time. In terms of Confucian philosophy, Penghu inhabitants thought that they have done or at least tried to do their best to perform their filial piety for the government as a parent from generation to generation. Many local residents were astounded, nevertheless, by the fact that their respectful parent planned to do something against their idea and furthermore to kill another parent of theirs. And, such an anxiety and antipathy on the submarine cables became bigger and deeper when Penghu appeared and won fame on the international stage.

The Most Beautiful Bay in the World: Penghu

"The Most Beautiful Bays in the World Club" is the United Nations Educational, Scientific and Cultural Organization (UNESCO)-endorsed, international non-governmental organization (NGO) which was originally founded in 1997 in Berlin, Germany and has currently headquarters in Vannes, France. The organization was established, according to its official website, with the goals of "saving the natural heritage of the bay, preserving its identity," and "respecting the way of life and the

traditions of those that inhabit the area whilst ensuring economic development compatible with these commitments." The club members currently include 38 bays from 27 countries such as Penghu Bay, China's Qingdao Bay, America's San Francisco Bay, and Agadir Bay in Morocco to name a few.

Penghu has been invited to take part in the annual congress from "The Most Beautiful Bays in the World" since 2010 owing to the good conservation status of its natural environments and sceneries. Because of political pressure from China and visa problems, nevertheless, Penghu's representative had been unable to attend the congress. In September 2012, the then-Penghu county magistrate Wang Qian-fa was finally able to attend the club's annual congress held in Turkey where he formally applied for a membership of the organization. The organization's president Galip Gur then visited Penghu with secretary-general Michael Bujold between 8th and 10th November the same year to inspect Penghu bay. Just two days later after they left Penghu, the club held a meeting to evaluate membership qualifications on November 12th and approved Penghu Bay's application to join the organization as a qualified member. In response to the news about the approval, Wang Qian-fa said with joy that Penghu bay's successful enrollment in such an international organization was an honor not only for Penghu but also for Taiwan and that Penghu Bay had a chance to show its beauty and be known to the world.

Penghu Bay was officially inducted into the organization in 2013 one year after the approval of its application. Wang Qian-fa received the certificate of membership from Galip Gur at the International Tourism fair in Berlin on March 7 in 2014. Wang said at the ceremony that becoming a member of the club is "one of the most important steps by

Penghu to come out onto the world stage" (2014). Echoing Wang's opinion, Chen Mei-ling who was a director of the Tourism Bureau of Penghu County also said that it would contribute to increase Penghu's visibility in an international society. And Penghu Bay's internationally recognized beauty worked to strengthen and solidify the idea that Penghu's ocean should be well cared not only for economic purposes but also for environmental protection among local residents. Local residents' consciousness of conserving the ocean was also tied with and intensified through their long-standing and affective relationship with the marine environment. Therefore, Weijia posted on the Facebook page of Anti-Cables association a picture with the text, reading "the most beautiful (Penghu) bay does not want the (submarine) power cables" (see figure 5-5). Other image that he posted also included a text that reads "we refuse that the power cables trespass on the most beautiful Penghu bay. Stand up, young people of Penghu! Let us protect together our garden and most beautiful bay" (see figure 5-6)

Figure 5-5. The Most Beautiful Bay Does Not Want the Power Cables. Courtesy of Anti-Submarine Cable Group.

Figure 5-6. Refusing that the Power Cables Trespass on the Most Beautiful Penghu Bay. Stand Up, Young People of Penghu! Courtesy of Anti-Submarine Cable Group.

The Cantonese-American anthropologist Timothy Choy asserts that for endangerment to function, the first step it requires is "to generate its object of concern," that is, "the subject that preceded the endangering predication" and what follows next is the identification of a threat, "a cause of endangerment" (Choy 2011:29). Both Kouhu and Penghu inhabitants construct, as Choy argues, the ocean and marine environment as an object of concern before the completion of the submarine cables. Then, they imagine or identity the undersea cables as a main cause of endangerment. Thus, in terms of the construction of the proposed submarine cables, both Kouhu and Penghu inhabitants evoke or produce the dreadful image of the ocean, a site of living, being threatened and devastated by technological infrastructure.

The Chinese White Dolphins

In addition, the Kouhu residents also did brought nonhuman organisms to the "front stage" of their political disputes with Taipower (Goffman 1956). They raised the

issue of the danger of the extermination of marine animals in order to make Taipower accept their demand to change or cancel the submarine cable construction project. Kouhu residents expressed their deep anxiety that the undersea cables may also threaten the survival of the endangered Chinese white dolphin or Indo-Pacific humpback dolphin (*Zhonghua bai haitun*) because the cable route would cut through the habitat of the dolphin (Lee 2012b). That is, they did "conjure nonhumans" as their potent yet powerful allies in the political struggles (de la Cadena 2010; de la Cadena 2015) since the ocean itself and various marine animals including a culturally, symbolically, and ecologically important animal, pink dolphin were thought to become key players that possibly help them resist the undersea cable project and the wind power development project (Howe, et al. 2015).

Kouhu inhabitants' concern about the survival of the rare Chinese white dolphin arose through their cooperation with local green activist groups such as the Taiwan Electromagnetic Radiation Hazard Protection and Control Association (TEPCA) (Lee 2012b). TEPCA came to know the approximate habitat of the Chinese white dolphin through which the undersea cables are expected to pass through the works of an expert of the dolphin, Zhou Lien-Siang, who is currently a professor of the Institute of Ecology and Evolutionary Biology at National Taiwan University (NTU), which is the most prestigious university in Taiwan. Zhou has been involved in doing research on and conservation activities for the Chinese white dolphin after receiving her doctorate in ecology from the University of California, Davis in 1989 and established herself as an unparalleled authority in the study of the white dolphin in Taiwan. Thus TEPCA and

Kouhu residents strategically allied themselves with Zhou who is seen to be "in a position to help them achieve their goals" (Horowitz 2012:821). They relied on the power of Zhou as a renowned academic figure and her scientific findings to verify and support their assertion that the undersea cables may cause a crisis of extinction of the rare marine animals due to the former's penetration and destruction of the latter's habitat. In her work on mining-related disputes in Peru (Li 2011; Li 2015), Fabiana Li notes that powerful mining corporations have used scientific methods to resolve conflicts with local inhabitants and convince the genral public that "mining will not generate pollution or reduce the availability of water resources" (Li 2011:62). Contrary to Li's research, local residents of Kouhu, rather than Taipower, sought to enroll a renowned scholar who is trained as a scientist of marine ecology into their network and argue that the undersea cables are highly likely to make environmental threats on the ocean and the marine animals in particular.

I sometimes heard that the most impoverished county in Taiwan is Yunlin and the poorest township in Yunlin County is Kouhu. Fortunately, Kouhu is, in reality, not the poorest place in Taiwan. But it definitely is classified as one of the poor and underdeveloped townships. Complaining about Taipower's submarine cables construction plan, one Kouhu resident told me that "we are poor but have sincerely devoted ourselves to doing our work hard. We also have been loyal and obedient to the state. How can the state-owned utility company do that to us who have been good citizens? We are now in peril just like the Chinese white dolphins."

Many researches in anthropology have noted that environmental threats and risks are unevenly distributed among people (Checker 2005; Johnston 2010). Sociocultural inequalities work as a primary mechanism in which marginalized and vulnerable social groups such as indigenous people, lower class communities, and minority ethnic groups of people tend to be more easily exposed to environmental hazards and degradations than others because their land is chosen as an ideal site for building infrastructure that people normally do not want by their side such as a power plant, waste disposal site, and so on. As a socioeconomically marginalized group, people in Kouhu and Penghu are expected to endure environmental risks that the submarine cables may produce. Kouhu residents anticipate that the cables would bring on calamity to the ocean on which they have traditionally relied.

From a perspective of actor-network theory (ANT), Kouhu residents formed alliance with, or enrolled a non-human actor, the Chinese white dolphin into their own network in order to make their protest more powerful and reasonable (Callon 1986; Latour 2005; Law 1992). I do not explore the ways in which Kouhu people drew the white dolphin in and reassembled their actor-network or how the marine animal in turn attracts more human and nonhuman actors. Instead I am more interested in looking at why they chose and utilized the threatened marine species as a companion of their actor-network. To do so, I draw upon Timothy Choy's ideas.

In his brilliant ethnography on environmental politics in Hong Kong, "Ecologies of Comparison," Timothy Choy examines what he terms "the politics of endangerment" (Choy 2011:28, 49) in Hong Kong where as an endangered marine animal, Chinese pink

dolphin (the pink dolphin he writes of is the same species, which I call the white dolphin) came to represent the uncertainty about Hong Kong's sociopolitical future upon its return to China from British rule. Due to the uniqueness, or *dahksik* based on "their cultural and ethical meaning to the community" (Choy 2011:30-31), when the sovereignty over Hong Kong was handed over to China, the pink dolphins was interpreted by people as an animal representing Hong Kong and the anxiety about the dolphin's future becomes that about Hong Kong's future. That is to say, Hongkongers equate "the threat to the dolphin's future" with "a threat to Hong Kong itself" (Choy 2011:31). Hong Kong people thus refer to the insecure future of their place and lives through pink dolphins because "to speak of an endangered species is to speak of a form of life that threatens to become extinct in the near future" (Choy 2011:26).

Similarly, the construction of the submarine cables was seen by Kouhu residents as posing a crisis of engenderment and even extinction that "compels thought about the moral relationships among humans, nonhuman species, and habitats" (Sodikoff 2012:10) and, therefore, got entangled with sociocultural anxiety about Kouhu's (imagined) uncertain future as apocalypse, in and through the rhetoric of the endangerment of the white dolphins. Just like Hong Kong people in Timothy Choy's ethnography, Kouhu inhabitants also project their predicament onto the endangered marine species, Chinese white dolphin. This was vividly expressed when one local inhabitant told me that they are in precarious position just like the Chinese white dolphins. The fate of Kouhu people is hanging by a thread since the only way for them to make a living depends on the ocean and what it offers for them. If the proposed submarine cables destroyed the marine

environment, Kouhu residents as a socioeconomically marginalized group would lose everything. Therefore, local people metaphorically use the endangered white dolphin to signify "the consequences of destroying the possibility of life's continued experience" brought into being by the proposed undersea cables (Choy 2011:26). Kouhu residents framed not only their natural environment and animal living in it, but also themselves as endangered to halt Taipower's project of building the undersea power cables and thus to protect all of them from it.

Both Kouhu and Penghu residents are engaging in "the politics of endangerment" through their anxiety about the potential loss of cultural spaces filled with meanings and various lives in them in the near future. Endangerment works through what Timothy Choy calls "anticipatory nostalgia" in which we human beings place our object of care and love "in the future, looking backward, watching with dismay at the ruining of our present" (Choy 2011:49) and, therefore, "the past is to be protected from the present, while the present is to be protected from the future; both are to be sheltered from the movement of history" (Choy 2011:38). As the concept of anticipatory nostalgia suggests, local inhabitants of Penghu and Kouhu seek to oppose the building of the submarine cables in the present in order to prevent marine environment and animals from becoming extinct in a future that has not yet come.

The concept of "anticipatory nostalgia," through which endangerment functions, is also used by Timothy Choy to revise and extend the notion of nostalgia. Choy contends that we need to reconceptualize the concept of nostalgia not only in a temporal sense, but also in spatial terms because "nostalgic discourses of endangerment do not simply

bemoan the passage of time, but are sick, instead, from the loss of specific, meaningful spaces" (Choy 2011:48-49). In case of the submarine cables, Kouhu and Penghu people generate the ocean (and marine species) as a meaningful space to be loved and preserved with their anticipatory nostalgia in which it will be lost in the near future. For them, in addition, to destroy the ocean is to threat their continued existence. Thus people in Penghu and Kouhu organized and took part in demonstration activities against the proposed submarine cables in order not to lose the ocean and their lives. My ethnographic cases associated with the not-yet-existing submarine cables show that people do not merely occupy and use biophysical space but are in it and have a "sense of place": they engage in and experience the space, infusing it and marine life in it with cultural meaning and affection (Basso 1996; Feld and Basso 1996; Kahn 2011; Malkki 1992).

Out of many possible negative impacts that local people in Penghu and Yunlin suspected the submarine cables might have, Taipower only responded to one risk, the destruction of habitats for white dolphins. From Taipower's perspective, the submarine cables would not affect and destroy the habitats for culturally and ecologically valuable, endangered marine animals, if their routes and the depth at which they are buried were simply and slightly changed. In other words, the risk to which Taipower chose to react was only the one that it deemed to be technically manageable, even if local people regarded such solution as absurd, oversimplified, and unscientific. In terms of the how to deal with the potential risks of nuclear reactors, the German sociologist Ulrich Beck writes that safety plans "restrict themselves to the estimation of certain quantifiable risks on the basis of probable accidents. The dimensions of the hazard are limited from the

very beginning to technical manageability" (Beck 1992:29). Therefore, Taipower's tactic to respond to, diagnose, and treat potential risks that the submarine cables may cause is contingent on the kinds of technical interventions and solutions that it thinks it can provide (Ferguson 1990; Li 2007).

At this point, I also have to add that the conflicts that revolve around the uninstalled submarine cables are not simply political struggles over the environment and environmental justice/ethics. They also need to be understood as "ontological conflicts over the making (or destruction) of (different) worlds" (Blaser 2009; de la Cadena 2010; de la Cadena 2015; Escobar 2008; Li 2015:21). The disputes over the cables reveal the multiple, divergent ways of configuring what we usually understand as nature and its constituent elements. While the planners of the cables conceive the ocean as void space to move across and conquer, "not places of their own" (Vannini 2011:479), local people in Yunlin and Penghu view the seascape as a space in which the affective entanglement and "the relational condition between humans and other-than-human beings" including the ocean itself are created and maintained (de la Cadena 2010:341). Hence the idea that the ocean is ontologically plural challenges the infrastructure planners' understanding of it as a hurdle to overcome.

Thinking with and through an Absence

The conflicts between the planners and lay peoples over the construction of the undersea cables allowed us to look at *how* nonhuman entities such as the ocean, marine animals, and the cracks in the ground and walls of houses "take form and become

tangible, *when* they matter, and *for whom* they become politically significant (Li 2015:21; original emphasis). In this regard, even if the submarine cables have not yet materially existed, they caused political (and ontological) struggles and thus people of Kouhu and Penghu to assemble and take political actions to halt their construction. This shows that, as Latour argues, politics "turns *around* the issues" or "topics that generate a public around them," "instead of having the issues enter into a ready-made political sphere to be dealt with" (Latour 2007:815, 814, 815). In illustrating the ways in which even the not-yet-existing "things turn the public into a problem" (Latour 2007), this also exemplifies and even expands Robert Oppenheim's conceptualization of politics as "the interaction of people with things" that are not simply physically existing but also immaterial (Oppenheim 2008:5). The immaterial undersea cables are not merely infrastructure transporting electric energy between Penghu and Kouhu. They do something more than the transmission of electricity which is the technical task that they are anticipated to perform. In this sense, the non-existing undersea power cables can be seen not as "intermediaries" whose "input is enough to define its outputs" but as "mediators" whose "input is never a good predictor of their output," due to their capacity to "transform, translate, distort, and modify the meaning or the elements they are supposed to carry" (Latour 2005:39). The not-yet-existing undersea cables became political agents, creating frictions and disputes with social actors. At this point, we have to pay attention to an interesting paradox: the undersea cables are physically non-existent while they also seem to exist and/or are thought to exist actually beyond their virtual existence. The actual

absence of the aquatic energy infrastructure and the presence of its absence coexist. Why and how does such a paradox take place?

Taipower's undersea cables are "good to think" with the notion of "absence." The etymology of the word "absence" shows that it essentially implies relationality. Since the word comes from "the Latin roots 'ab-' (from, away) and 'esse' (to be)," as sociologist Lars Frers notes, "to be absent, someone or something has to be experienced as being distanced from the place and time where the absence is experienced" (Frers 2013:434). To be absent requires "a relation to a lived place-time" (Frers 2013:434). The undersea cables hence are or are able to be absent because of their connection with presence as a collaborator or companion. Despite their unbuilt and absent status, at the same time, the submarine cables also seem to be thought by Kouhu and Penghu people as if they already sit in and make impacts on the place and time where the latter live. The not-yet-constructed undersea cables become real and present rather than remain absent. To use the Italian philosopher Giorgio Agamben's words, this phenomenon can be called as "potentiality," that is, "the existence of a non-Being, the presence of an absence" (Agamben and Heller-Roazen 1999:179; Helmreich 2013; Taussig, et al. 2013).

Recent academic discussion of "things aren't there" has refused to see absence as meaningless and empty (Croissant 2014). Instead, scholars have understood absence as a productive concept that shakes not only our dualistic thinking on presence/absence and material/immaterial but also our ontological categories. Looking at the "relational ontology of absence," the sociologist Morgan Meyer contends that absence is "something we engage *with*, something we do something *to*" (Meyer 2012:104). He thus asserts that

we have to regard absence "not as an existing 'thing' in itself but as something that is made to exist through relations that give absence matter"(Meyer 2012:107). Like Meyer, a number of scholars in various disciplines such as anthropology, geography, sociology, and science and technology studies (STS) have recently treated absences and their presence as "pervasive and relational, made and distributed, and bound up in relations and identities" (Rappert and Bauchspies 2014:3) through their numerous case studies including ruin (Edensor 2002), deceased people (Hockey, et al. 2012), undocumented people (Sigvardsdotter 2013), ghosts (Maddern 2008; Matless 2008), silence in Western Apache culture (Basso 1970; Basso 1979), phantom pain (Billé 2014), and disappeared objects (Delyser 2014), "undone science" (Frickel, et al. 2010) and "agnotology" (Proctor and Schiebinger 2008), and nonknowledge and ignorance (Gross and Mcgoey 2015; Mathews 2005; Mathews 2008; Mathews 2014; McGoey 2014; Petryna 2004), to name a few.

Social scientists have argued that an absence is given life or presence through its relational character just as such a character makes it (to be as) an absence. While I agree with the idea that absence is not a thing in itself but becomes present through relations, however, it remains an open question as to what *kinds* of relation absences make give life to them and how those particular relations are created. I think that a clue to the question could be found in Morgan Meyer's formulation of absence as "something we engage *with*, something we do something *to*" (Meyer 2012:104) and French philosopher Gilles Delezue's discussion on potentiality. Delezue argues that "for a potential or virtual object,

to be actualized" requires "a *problem* to be solved… the problem which orientates, conditions and engenders solutions" (Deleuze 1994:212).

By combining Meyer's and Deleuze's argument, we can reach the following conceptualization: for the absent to be present necessitates certain relations that produce a problem to be resolved, the problem people should engage with, and do something to. I assert that, therefore, an absence is made to exist through relations that, to borrow Anna Tsing's terms, are formed in the "zones of awkward engagement" that generate not just "friction" but problems (Tsing 2005). In reality, unlike a cartographic representation, the undersea cables are not "laid over" environments, which allow their virtual existence as a point-to-point connector. Instead they are expected to be "laid through" and intersect the environment (Starosielski 2010:190). This means that technological artifacts interact and make relations with environments and manifold beings in them. Neither marine nor territorial environments through which the undersea cables are expected to pass are empty and inert spaces. Rather, they are a lively space: humans and marine animals are always "on the move" and earth is unstable and moving (Tsing 2003:5100).

People who have long depended upon active environments not only invest them with significances and affection, as the ethnographic cases I presented show. Kouhu and Penghu people ascribe their affection and cultural significances to environments and the living organisms in them. In the case of Kouhu, both territorial and marine environments have been meaningful spaces to local people. Kouhu residents consider the land their eventual home where they come from and return to and the ocean a merciful aquatic paddy/field which provides them with all they need to live their lives. As people from

fishermen's islands, Penghu residents also regard the ocean as a mother-like being that has nurtured them by enabling fishing and as a proud distinction, such as when Penghu Bay joined the most beautiful bay club.

People also have a long intimate relationship with environments and nonhuman actors residing in them. In environments, various humans and nonhumans make their own lines or ways. "Along such paths," their "lives are lived" (Ingold 2011:4), and their lines/lives tangle and grow with each other. As Kouhu protesters illustrate, the ocean has been a vital space in which multi-species relations form and grow. It is through endangered marine animals that Kouhu people see their critical present and anticipate a shaky future in which they either vanish or continue maintaining symbiosis with the marine animals (and their environments). Thus Taipower's submarine cables would be built in and run through lively and culturally meaningful territorial and marine environments. These environments turn into a "contact zone" (Pratt 1992) and the site of "awkward engagement" in which the proposed aquatic energy infrastructure would come into contact with humans and nonhuman inhabitants that have not only cultural significances but also a long intimate relationship with the former (Pratt 1992:4). Such an encounter generates violent tensions and conflicts.

The virtual undersea cables cause tensions with the ocean that has been a sole and important living ground and a mother-like precious being for fishing communities, various kinds of fishes that enable people's lives, and the endangered Chinese white dolphins onto which people projected themselves and brought in their sentiment toward the insecure future. Also, the potential cables generate friction with the land in which

they leave physical cracks that in turn become emotional hurts in the heart of people who have lived there. These frictions made by relations become problems to be settled for local people. In this way, the not-yet-existing submarine cables get actualized in the lives of people surrounding them.

According to Lars Frers, the essential property of the present absence relies upon "deeply ingrained sensual and emotional connections or attachments" (Frers 2013:439). For Frers, the presence of the absence is mainly built on an intimate relationship between the absent non/humans such as deceased family members or pets and the subject who misses the former. That is, he emphasize that for the absent to exist, it needs affective connections someone had with it, or the medium through which those connections are brought about to him/her. Frers's understanding of absence cannot explain my ethnographic cases in which local people do not have emotional connections with the submarine cables: even without such connections, the absent submarine cables are evoked and real. Unlike Frer, I suggest that the absent can be actualized through people's affective attachment to, rather than to the absent thing itself, the surrounding environments in which it is supposed/imagined to be located and people dwell. It would be possible that people's emotional attachment to the environment are deeper and stronger than to the absent itself that is currently neither present nor had been before existed. "The stronger the connections, the deeper their mark," thus, "the stronger is the experience of absence" (Frers 2013:439).

Protesters and the Submarine Cables: Conspiracy

I have contended that the presence of an absence requires "a problem to be solved" generated by relations (Deleuze 1994:212) and that to resolve a problem, people seek to engage with, and do something to the present absence (Meyer 2012:104). This means that it could be said that absences have "material impact" and agency" because "they prompt us into action" (Delyser 2014:41). The agency of the absence is well illustrated in the ethnographic cases that I presented in the chapter. Although the submarine cables are absent and virtual things that pertain to the future, they make impacts on people and their present: they not only engender dis/affective sentiments among people such as the feeling of dysplacement and worry about the environmental destruction, but also stimulate people into action, that is, instigate sociopolitical protest. The not-yet-actualized undersea cables are made to not only be real but also be "vibrant matter" (Bennett 2010).

Here I return to and take a close look again at two groups of protesters with whom I started the chapter in order to complicate the relationship between the agency of the virtual energy infrastructure and protest/protesters. For Kouhu and Penghu people, the virtual undersea cables come to be present because they run through the environment in which they form various relations that generate problems. They thus oppose and take actions against the not-yet-existing submarine cables as if the latter already exists and makes negative impacts. This clearly illustrates that protest itself is a relational concept just like the absence: protest is primarily framed by something with which it comes into conflict and against which it takes actions. Hence this picture of protest makes it easy for

people to think that there are already two entities, even if one of them is a non-existent thing like the submarine cables, opposing each other.

When taking a different analytical approach to the protest, however, it can provide us with an alternative image of it. In order to do so, I pay attention to the word "demonstration" which is generally seen as a synonym of the term "protest" and thus often interchangeably used with the latter in our daily life. Demonstration is generally understood as a political matter where protesters / demonstrators are "markers of the unacceptability of another's actions" (Barry 1999:76). In spite of such understanding of it in a political sense, yet, the term "demonstration" had originally a technical meaning in the Middle Ages, when the demonstrator played a pivotal role in the anatomy lecture. Barry writes that "the demonstrator made visible to the audience the object of which the lecturer spoke, and thereby made a significant contribution to the production and dissemination of anatomical knowledge in public" (Barry 1999:77). Hence, "to be in the presence of a demonstration was a matter of witnessing a technical practice" because the demonstrator as a lecturer produces a specific argument and knowledge for people attending his/her lecture (Barry 1999:77).

Let me apply such a historical meaning of the term demonstration to my ethnographic cases. As we already saw, protesters of the submarine cables who were assembled in front of the governmental administration buildings shouted and argued that the technological artifacts would kill the ocean and marine ecology. They always talked about and described the submarine cables in a following negative way: the latter would influence, destroy, and even kill the environment and humans and nonhumans dwelling in

it. That is to say, these demonstrators, just as a lecturer of anatomy class in the Middle Ages, produced and disseminated a certain image and claim about Taipower's energy infrastructure, mostly a negative and apocalyptic view of it, through their discourses. These protesters' very act of producing a certain picture of the submarine cables through discourse is a kind of mirror image of what the French Marxist philosopher Louis Althusser called "interpellation" (Althusser 1972). According to Althusser, the subject or subject identity is always preceded by the situation. Individuals are not independent actors with self-produced identities. Rather, they are transformed or constituted as a subject through interpellation, the process by which they are addressed or hailed in social interactions and therefore subject themselves to society's dominant ideology. Instead of being addressed by the submarine cables, Taiwanese protesters inversely first hailed the absent infrastructure by explaining about its possible risks. By doing so, protesters produced or "made visible to the audience the object" to which they react (Barry 1999:77), that is, they constantly made the absent submarine cables exist and present through events and "processes of history, concrete social and technical arrangements and the effects of power" (Li 2015; Nielsen 2010). And the submarine cables, which "are held to pertain to the future," become "a kind of virtual, yet real, reality" (Beck 1992:11; Nielsen 2010:156). Protesters and their actions contributed to making the not-yet-existing submarine cables materialize as an agentive political entity, being and producing issues (Li 2015).

Therefore, I argue that Taiwanese protesters or demonstrators do not just oppose the submarine cables, but also make them come into being. By the very political act of

demonstrating, the Taiwanese protesters take part in the process in which they imagine and call the virtual submarine cables into existence. However, the submarine cables also produced the protestors. Because of environmental impacts that they might make, as I mentioned earlier, the immaterial submarine cables themselves became or produced "topics that generate a public around them" (Latour 2007:814). The public generated around issues in turn turns into protestors who refute the actualization of the submarine cables in a real world. That is, without the submarine cables, "no issue, no public!" (Marres 2005: 7), and "no issue, no politics!" (Latour 2007:815). Hence, I would suggest that the immaterial energy infrastructure and demonstrators are in a dialectical relationship in which they are mutually influencing and shaping each other. In this sense, they also can be said to be in a relationship of what Karen Barad calls "intra-action" (Barad 2003), which, unlike "interaction," does not presume the existence of discrete, independent entities before encounters, but rather highlights a constant process of becoming that entities emerge from and through entanglements.

Conclusion

In this chapter, I have examined the ways in which objects including the submarine cables and others related to and influenced by them become the actors, reshaping political terrains and provoking political actions. Based on my ethnographic case studies, the chapter has argued that even though they do not yet physically exist or get actualized, the Penghu-Yunlin submarine cables that Taipower intends to construct have become present and made their real impacts in people's lives when they get

connected with various humans and nonhumans living in a lively geography, and this relation-making generates problems to be resolved. First, the submarine cables become present through their relation with the ocean (and fishes in it), since they are supposed to be built in it. The ocean that the cables will pass through is not an inert, passive, and void aquatic space, in contrast to Taipower's cartographic practices. Instead, it is a stage full of meanings on which people build their lives. The submarine cables are also made to exist through their connection with the Indo-Pacific humpbacked dolphin (*Sousa chinensis*) or the Chinese white dolphin. People connect their future lives that may occur after the construction of the cables to such an endangered marine species and engage with and make present the not-yet-built cables. Finally, the undersea cables come to exist when they are related to material and visible changes observed in terrestrial spaces such as cracks in the ground and/or in the wall of houses.

I have also argued that the unbuilt undersea cables and the protestors shape each other through an "intra-action"-like relationship (Barad 2003). In spite of being the not-yet materialized energy infrastructure, on the one hand, the submarine cables come to be presented and materialized because people involved in their construction continuously engage with them through an act of protesting. By making certain claims about the immaterial submarine cables, protesters not only place them in negative space but also give shape to them. Protesters participate in paradoxical activity in which they call the submarine cables into existence at the same time that they refuse to the actualization of those objects. The submarine cables also play a critical role in shaping protestors, on the other, just as protest is the very site where protesters imagine the unbuilt infrastructure

and make it come into being. Even though a submarine cable currently exists only partially and has not been fully materialized, people start imagining and talking about its potential influences and risks on their lives since they know that it will be laid under the sea and connected to transformers on the ground. Because the submarine cables have not been there, they are unable to, unlike oil pipeline or railroads for coal that Timothy Mitchell has analyzed, create or hamper potentials for political action. Nevertheless, they and their potential threats produce a kind of "political situation" (Barry 2012) where "state and citizen meet, contest, and legitimize each other" (Valdivia 2008:459-500). The undersea cables, as Andrew Barry notes (Thrift, et al. 2014:68), have simultaneously become "immaterial as well as material infrastructures, the boundaries of which stretch well beyond the steel" of the cable itself.

More than a decade ago, the renowned feminist STS scholar Karen Barad made a humorous yet penetrative pun with the goal of giving a concise but precise picture of the changes in theoretical orientation of social sciences. For Barad, "Language matters. Discourse matters. Culture matters. There is an important sense in which the only thing that does not seem to matter anymore is matter" (Barad 2003:801). Here I think that we have to slightly revise Barad's pun like this: "Language mattered. Discourse mattered. Culture mattered. Matter mattered. Matter that is not matter matters." Looking at the presence of the virtual infrastructure and its agency is important because they make material, visible impacts in people's present lives in which Kouhu and Penghu residents take part in protests to oppose the construction of the submarine cables. Protests in turn

threaten the very process of making wind as an energy resource. Thus we also have to study matter that is not matter, the unbuilt, immaterial energy infrastructure, in my case.

Lastly, I want to close this chapter by linking the immaterial submarine cables and the second law of thermodynamics. Due to the protest surrounding the submarine cables and thus the growing uncertainty of their successful completion, most of Penghu people with whom I worked, except for those residents living nearby one of the Taipower's wind farms as discussed in chapter 2, did not regard the wind as a source of bringing financial income and sustainable environment to them. While the Penghu government has tried to advertise and discursively construct the new meaning of the wind as a good energy source to generate stable income for people without polluting the natural environment, the demonstrators and their protest activities surrounding the submarine cables dissipated such effort to re/package the wind in a beautiful, charming way. It became evident to Penghu people that without the undersea cables, the surplus wind-generated electricity would not be able to be sold and thus that the wind could not become a never-ending source of income. Since the undersea cables will be constructed in the seascape with which people of Penghu and Kouhu have established long, intimate bonds and are thought to make detrimental impacts on marine ecology and animals on which they have heavily relied for livelihood, the wind was not understood as a "clean," "profitable" energy source by many inhabitants of the archipelago. As Weijia said to me very strongly, besides, the construction of the submarine cables would make Penghu people a strong feeling of guilt due to environmental (and economical) injustice of the wind energy. According to him, the completion of the cables will allow the Penghu government to shut

down the current sole thermal power plant in the archipelago in the near future and instead the supply of electricity from mainland Taiwan. While Penghu will generate electricity in a clean way by harnessing its abundant resource, the wind, and even make profits through the sale of power, power plants in mainland Taiwan have to produce more electricity by combusting more fossil fuels on behalf of Penghu as a backup for its insecure power supply through the wind, and thus emit more carbon dioxide and/or other greenhouse gases closely linked to global warming. In short, since both environment and economic advantages that the wind energy generates are anticipated to be enjoyed only by some people of Penghu, while their disadvantages have to be coped by other people of the archipelago and people in mainland Taiwan, Weijia highlighted the injustice of the wind power development in Penghu and a guilty conscience that he was feeling and that his fellow Penghu people will have.

By the second law of thermodynamics, as we already know, energy must be lost in transmission of electricity, depending on the distance and the voltage of transmission (Gupta 2015:556). According to the second law, electricity generated by the wind of Penghu would also be lost in theory during transmission via the submarine cables, when the aquatic infrastructure is completed. Even if the loss of electricity has not yet actually occurred because of the absence of the submarine cables, the energy infrastructure, in spite of being in its current absent status, caused the partial loss of attractiveness or attractive energy of the wind as a promising profitable energy source and its spectacle. Needless to say, the growing uncertainty about the successful completion of the submarine cables mainly influenced by the protest led to the partial decrease in the

potential energy of the wind: most of Penghu people with whom I worked, except for those residents living nearby one of the Taipower's wind farms as discussed in chapter 3, did not regard the wind as a profitable green source to bring never-ending financial income and sustainable environment to them, because without the undersea cables, the surplus wind-generated electricity would not be able to be transferred and sold. Yet, the fact that the undersea cables will be constructed in the seascape also let those technological artifacts damaged the fascinating storylines, and thus reduced the potential energy of the wind. For many local residents in Penghu (and Kouhu) who have long relied on fishing for livelihood, the building of the cables was thought to make detrimental impacts on marine ecology and animals with which they established long, intimate, and affective bonds. While the architects of the wind power project intentionally produced captivating narratives to produce financial expectations of wind energy, those people on the archipelago did not understand the wind as a "clean," "profitable" energy source, because the submarine cables are anticipated to destroy marine ecological system, as well as, thus, to threaten their economic activities. That is, this means that the not-yet-existing submarine cables and their material impacts caused the storylines to be very vulnerable to different ways of understanding, instead of being accepted and remaining unchanged or unchallenged.

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Conclusion

By exploring the Penghu local government's effort to establish the energy company and local people's responses to it, this dissertation has challenged the taken-for-granted ideas hidden in natural and social scientific understanding of potentiality: 1) potentiality as a inherent property and 2) to actualize one's potentiality demands human interventions. As I have described, while the local government's endeavor for the semantic conversion of the wind through narratives was a significant human modification, it was influenced by various nonhuman entities. I have argued that the entangled relationships between environments, infrastructures, events that happen around those technological devices strongly influence how local residents understand the local government's great storylines that create financial expectations of the wind: they both enabled and interrupted the discursive conversion of the wind's meanings among the locals. This dissertation also has shown that while wind turbines and the immaterial submarine cables were necessary for the wind to realize its potentiality, these infrastructures also ironically worked to impede the actualization. Besides, even the wind itself also played a critical role in hindering its semantic and material conversion processes. Even if the wind's kinetic energy stimulated people to imagine potential wealth in the air and to verticalize territorial skyspace, its particular property to carry salt and water also functioned to discourage and interfere human interventions to realize its potentiality.

This work has argued that the potentiality of the wind is constituted by a heterogeneous network of humans and nonhumans, involved in the semantic conversion of the wind for the establishment of the Penghu energy company. The conversion of the meaning makes up the condition under which the wind comes to have the potentiality to become profitable electricity. The potentiality that the wind comes to have is what the British philosopher Alfred North Whitehead terms "real potentiality," which is completely different from what he calls "general potentiality" (Whitehead, et al. 1978:65). For instance, as Aristotle writes, when we say that an acorn has the potentiality to become an oak tree, it is simply "general potentiality," which is "the bundle of possibilities" (Whitehead, et al. 1978:65). Understanding the (general) potentiality in this way is (the result of) an abstract thinking that separates the acorn from its environment in which it is located and has relationships with others. Rather, we have to think of the "real potentiality" of the acorn, which "is conditioned by the data provided by the actual world" (Whitehead, et al. 1978:65). The acorn is unable to become the oak tree in Polar Regions or under the sea, where it cannot gain many things that are required to turn its potentiality into actuality, including soil conditions, an appropriate temperature, an adequate amount of water, sunlight condition, nutrients, and so on. This means that the acorn has no potentiality to be the oak tree in Polar Regions or under the sea. Rather, the acorn can change itself into the oak tree in certain environments where many external elements necessary for its change are supplied. This is "real potentiality" and in this case, the acorn can be said to have its "potentiality." In the same logic, seeing the Penghu's wind as "having" the potentiality to become a profitable energy source is thinking of it by

divorcing it from the actual world and possible restrictions. Thus, I contend that various human and nonhuman entities produce certain conditions under which the wind comes to have its potentiality to be converted into a profitable energy source. While, in order to realize the wind's physical potentiality, the Penghu government sought to discursively reconstruct or convert its meanings to draw investment funds for the energy company from local people, it was overall unsuccessful in that its storylines were only accepted by a small number of residents. Without local people's trust and investment in the energy company and infrastructures, the wind's kinetic energy cannot be transformed and therefore, it has no potentiality. Therefore, even if the wind can be seen as holding the potentiality to be profitable in scientific terms since it is kinetic energy itself to be transformed, it is absolutely not the lone bearer of such potentiality. Rather, the wind should be regarded just as one participant/actant of numerous human and nonhuman entities that make up the "heterogeneous network" that functions to cause its transformation into marketable electricity for local people (Law 1992). To sum up, the (real) potentiality of the wind is constituted under real conditions/situations that are defined and made by its relationship with both humans and nonhumans involved in the establishment of the energy company.

Likewise, whether or not the potentiality of the wind to bring endless fortune to local residents also depends on the actual conditions. To actualize its potentiality, the wind needed the establishment of the energy company by drawing investment funds from local residents. Yet, attracting capitals from people did not go smooth, when the local government's effort to convert the meaning of the wind was obstructed by numerous

nonhuman entities including energy infrastructures, environmental factors, and the wind's materiality. A wind turbine as a required machine to actualize the potentiality of the wind was expected (to work as) "intermediary" that "transports meaning or force without transformation: defining its inputs is enough to define its outputs" (Latour 2005:39; Shamir 2013). Yet, wind turbines also destroyed human agents' effort to realize the wind's potential by functioning like "mediators" that "transform, translate, distort, and modify the meaning or the elements they are supposed to carry"; "their input is never a good predictor of their output" (Latour 2005:39; Shamir 2013). In spite of being in their immaterial status, the submarine cables, which would play a pivotal role in giving the wind potential financial value, also spoiled the potentiality of the wind by making impacts on local people's interpretation of the local government's storylines. Even the wind itself worked to diminish its own potentiality by its unique quality to cause breakdowns on universalized technological devices at the same time that, as kinetic energy, it also contains the potentiality in itself.

Throughout the dissertation, thus, I have claimed that in Penghu, the wind is not the sole bearer of electricity-potentiality, but is a merely a potent actor/actant in the heterogeneous network that works to ultimately constitute its potentiality. The wind must enroll or integrate various humans and nonhumans (even its specific materiality) in it so as to actualize itself as profitable electricity to bring wealth to local people. The potentiality of the wind is shaped and defined by the relationships it gets entangled in with various entities, both human and nonhuman. In short, the potentiality of the wind

should be seen as interconnected, distributed, emergent, and becoming, rather than as its inherent quality.

At this point, I want to say that my arguments, which were made in chapter 4 and 5, are tentative and conditional. Both chapters commonly claimed that the charming storylines that convert the meaning of the wind and produce its financial expectations failed to be maintained by material and immaterial infrastructures and their interactions with other humans and nonhumans such as the wind itself and the ocean, and thus that human interventions for the actualization of the potentiality of the wind were disrupted. Yet, I also think that those socio-technological artifacts may exert their power to constitute the potentiality of the wind. On the one hand, when and if, in the future, the submarine cables, which had not yet physically existed when I conducted fieldwork, would be installed on a new route, which reflects voices of local residents both in Yunlin and Penghu and is thought to minimize their social and environmental impacts, and function smoothly, the new meaning of the wind and its expectations would be accepted by ordinary people and maintained. The vulnerability of foreign-origin, universal wind turbines to Penghu's particular wind, which strongly influenced Penghu residents' understanding of the wind and its potential, on the other, also might be able to be technically mitigated to a certain extent that people might tolerate and be satisfied with. Because the design and fabrication of steel such as correctly designed weld seams and coating thickness are critical to successful protection of wind turbines from corrosion, modern advanced technology has an ability to make the breakdown of a metal largely under control. Just as in case of the submarine cables, if and when newly installed wind

turbines would work properly with minimizing damages of acid corrosion, the financial expectations of the wind would be sustained among local inhabitants.

In addition to the role of these nonhumans, human agents can also play a pivotal role in making up the potentiality of the wind. The (steady) input of extra energy can work to reduce entropy, as the second law of thermodynamics shows (Finger 2013; Rey 2010). For example, even though new high-tech surface coating technique is applied to wind turbines to protect them from corrosions, as I explained in chapter 4, all machines are inevitably subject to malfunctions and breakdowns. This means that even new/er model of wind turbines need to be checked constantly and regularly by engineers/technicians with long-term and abundant practical, field experience. Even if those who check the performance of quality of a coating system and a weld seams are technicians from a foreign wind turbine manufacturer, such regular inspection by experienced human force, which allows prompt and adequate actions for renewal if necessary, would prevent possible breakdowns of a machine before they happen, and thus retrench repair expenditure. This may in turn influence the ways in which local residents think about wind turbines and their calculations on profit and loss of those machines, and thus work to shape their expectations of the wind as a profitable energy source to bring stable income to them.

The Bankruptcy of the Energy Company

In April 2015, about four months after its foundation, the Penghu energy company announced a shutdown in the near future, due to the lack of sufficient investment funds

necessary to make it be established, which was caused by the withdrawal of the private investor, Taiwan Cogeneration Corporation (TCC) from the wind power project. The first (and last) president of the company, Huang Yang-shou submitted his resignation to the newly elected County Magistrate Chen Kuang-fu (Chao 2015). That the company went bankrupt might be able to be foreseen when we look back on the very day of unveiling ceremony for the company, as I depicted in the beginning of the dissertation. As we know, the red color has long been a symbol of a good fortune in Chinese cultural settings. It is never a coincidence that the nameplate of the company was covered with a red cloth on the unveiling ceremony day. The red cloth definitely stood for an earnest wish for a successful operation and prosperity of the energy company. Yet when various individuals, including the then-Magistrate Wang, high-level officials of the energy company, and other important guests from government agencies, tried to unveil the nameplate of Penghu energy company by pulling red strings that were attached to a piece of a red cloth covered the nameplate, the red cloth failed to be taken off and fall to the ground while only red strings snapped. While the energy company came with, and was gone with, the wind that has blown throughout the archipelago, the Ministry of Economic Affairs (MOEA) revealed its hope that Taipower or other companies can take over the wind power development project from the Penghu energy company (Chao 2015).

According to newspaper articles that deal with the sudden collapse of the Penghu energy company (Liu 2015a; Liu 2015b; Liu 2015c), while the TCC had already informed Yeh Guo-qing, who was a passionate planner of the wind power project and the then director-general of the Economic Affairs Department under the Penghu County

Government, of their final decision not to invest in the energy company, Yeh kept it secret and deceived local residents that everything associated with the establishment of the company would go as planned. These article also included the shocking fact that Yeh tried to make up the capital shortfall by drawing more investment funds from local residents. Of course, it did not go well as he wished, as the bankruptcy of the company shows.

This sudden death of the energy company might be explained in two ways. In his "scientifiction" ethnography on a mysterious failure of the French high-technology project to develop a personal rapid transit system, Aramis, on the one hand, Bruno Latour argues that its murder was "a collective assassination" or "an abandonment" (Latour 1996:10). For Latour, both success and failure are neither a priori nor inherent in projects themselves from the inception. Instead, it arises from the projects' "ability to continue *recruiting* support and so impose their growing coherence on those who would argue about them or oppose them" (Latour 1996:78; emphasis in original). That is to say, projects "all need allies, friends, long chains of translators" in order "to keep them alive" (Latour 1996:86). Likewise, the Penghu energy company did not fail, but *was failed* by the weak alliances/networks they made with other human and nonhuman entities, which were needed for its establishment and longevity (Corvellec 2001; Latour 1996; Mosse 2005). On the other, we may also attribute the failure the project to establish the energy company to the nature of the planners. As the medical anthropologist Tobias Rees contends, planning is "*not doing*" in that the business of planners or project designers is merely "to come up with plans" "for futures that are too fantastic" but "*not to realize*

them" (Rees 2014:458; my emphasis). The bureaucrats and scholars of the Penghu government might simply invented the fantastic plan to establish the energy company, whose objective is to bring financial benefits to local residents through the sale of wind-generated electricity, without having an indomitable will or determination to realize it.

In fact, knowing what made the energy company unfortunately be "miscarried" (Liu 2015a) probably does not matter much to us. Instead, I pay my attention to the fact that the Penghu government's failure to make up the deficiency in investment capital through local residents. It is certain that, as the late Clifford Geert warned us over four decades ago by writing that "anthropologists don't study villages; they study in villages" (Geertz 1973a:22), the key argument of this dissertation, which was built upon my ethnographic case studies conducted in some particular locations, is impossible to reflect the entire local population of Penghu and their ideas about the energy company and thus to be seen as a generalized argument. Yet, the government's failure to draw more local investors reveals in some degree that storylines were not read and understood by local residents in particular ways that their producers expected. The locals' refusal to invest in the energy company might be influenced by their reading of infrastructures and/or events surrounding them, as I have argued in this text, in addition to many other reasons that wait to be studied. No matter what really caused miscarriage, moreover, the most important yet unchangeable fact behind the sudden collapse of the energy company is that the Penghu government officials concealed the private investor's decision to withdraw from the project from local residents who were also potential investors. Such a fraudulent act was not inherently different from that of the Bre-X to make a false

announcement about the lucky find of a gold reserve (Tsing 2000). When the Canadian mining company's claim to have discovered gold deposits deep in the Indonesian rainforest finally turned out to be fabricated/fraudulent, its stock price that had been dramatically skyrocketed collapsed, which means its loss of investors' expectations and trust. Similarly, many local residents of Penghu were highly likely to have a strong sense of betrayal at the deception of the local government, when we take into account the thing that the then magistrate Wang Qian-fa often emphasized that private companies would not (be willing to) participate in the wind power project, if they estimated the latter as having dark prospect to produce low profit for them in order to attract local residents' investment in the energy company (chapter 2). It is reasonable to presume that such feeling of betrayal may in turn lead to peoples' doubt of, and distrust in, what the local government would say and do afterward in order to harvest wind power. Lay people's distrust in the government may strongly influence a phase that the development of wind power would take on in Penghu in the future, when considering the "material basis" of wind power.

As this text has shown, while wind power inherently needs "material basis" on which it is able to be not only produced, but also transmitted, such basis is very difficult, if not impossible, to be obtained or established without cooperation from local people since energy infrastructure should be built on land and under the sea where those people live their lives. This hence means that the potentiality of the wind in Penghu is constituted, depending on networks or assemblages of humans and nonhumans (Callon 1986; Deleuze and Guattari 1987; Latour 2005; Phillips 2006). Following the second law

of thermodynamics, therefore, the local government is required to make sincere effort to input more energy in order to first get back people's interest and trust in what it will do to develop wind power on the archipelago, and then to increase the potential energy of the wind (Finger 2013). Regaining trust from local residents would be very difficult, if not impossible, as the proverb, "it is no use crying over spilt milk" tells us. As if many couples strive to constantly make effort to endure their romantic/sentimental relationships and save them from marital disruption (Rey 2010), the government officials of the Penghu archipelago also have to try their best to supply extra energy to recover their damaged relationship with local people and the latter's trust in them, which would in turn work to make up the potentiality of the wind.

Rethinking Wind Power through Lessons from Penghu: Wind Energy Multiple

More than three decades ago, the STS scholar Langdon Winner presciently questioned the vague optimism about renewable energy: they are "intrinsically democratic, egalitarian, communitarian" (Winner 1980:135; Winner 1986:39). I think (and wish) that the dissertation made contributions in helping a reader revisit Winner's such suspicion and see whether it was correct, as well as in stimulating government officials or project makers who are interested in harvesting wind, rethink wind power and its nature and effects. In the Anthropocene era when the most critical ecological hazard to both humans and other nonhuman lives on Earth has been acknowledged to come from fossil fuels and their carbon dioxide emission (Raupach and Canadell 2010), many people usually tend to think that renewable energy sources such as solar and wind energy "have

a clear, logical, and obvious salvational purpose" of pursuing environmental sustainability (Howe and Boyer 2015:32). In the same manner, as we have seen in this dissertation, the development of wind power in Penghu even holds double "salvational" objectives to achieve not only ecological sustainability in the context of global anthropogenic climatological danger at the national level, but also economic rehabilitation through the sale of wind-generated electricity at the local level. This commonly invites people to "embrace and support 'wind power' as an objective force for good" (Howe and Boyer 2015:32).

Yet, is wind power an intrinsically salvational, benevolent green capital for good, as many advocates of renewable energy sources strongly argues? In this dissertation, I have shown that wind power is, or is thought to be good "only for some and not for others" (Howe and Boyer 2015:32). Like other natural substances, wind on which this dissertation has focused always "needs an external agent, something outside of "nature" to appropriate and exploit it" (Ferry and Limbert 2008:7), because such help from, and interaction with, both human and nonhuman agent(s) allows its potential to be actualized, becoming or transforming into a energy re/source to generate electricity and thus acquiring its values and usefulness (Ferry and Limbert 2008; Wilhite 2005). But the materiality of the wind also influences its relationship with external agents, necessary to realize its potentiality. Cymene Howe astutely pays attention to the particular qualities of the wind such as its corpus, "its scant materiality," and "its mercurial existence" (Howe 2011:8) and these physicalities make the wind an unusual natural resource that "is perhaps particularly resistant to true enclosure," unlike other resources such as oil and

water (Howe 2011:8; Howe and Boyer 2015:33). Whereas the wind itself "evades enclosure" in that "it is nothing if it is not movement" and that it "can only ever be captured, never contained" (Howe and Boyer 2015:33), harvesting it, or the development of wind power essentially requires enclosure of land for the purposes of positioning burgeoning energy infrastructure in place (Howe and Boyer 2015:36). Due to the mercurial and unpredictable materiality of the wind, wind can be "touted as a practical" renewable energy form, only when there are transmission power lines and substations, in addition to wind turbines, generating electricity (Couch 2013:4). That is to say, while the potentiality of wind energy is in the *air*, the development of wind power is intrinsically required to have "material basis" on the *ground*. In this sense, as Howe and Boyer argues, wind power is essentially inseparable from, and "very much about the politics of energy infrastructure" (Howe and Boyer 2015:39), since without such technological networks and systems, the wind as a promising source of green capital risks losing its usefulness and potential.

As we have seen in chapter 5, however, the development of wind power in isolated geographical location, such as islands or archipelago including Penghu or Denmark, sometimes does not only enclose large tracts of terrestrial land, but also the vast ocean in order to position transmission power lines. This urges us to pose a question of "who has the right to control the ocean," which is, unlike land, usually held in common with all people having access and ownership to it (Hardin 1968). When and if the ocean is a commons that "cannot readily be fenced" (Hardin 1968:1245), can the state-owned power utility company unilaterally push its own engineering project to

construct undersea cables without having sufficient communication with, or making a scientific, objective report on its anticipated environmental impacts for, certain groups of people? Some groups of people have lived for generations by depending on the fishing and have formed a strong, intimate bond with the ocean and marine animals. The ocean and its mercy may mean everything to these people who are socio-economically marginalized. Thus, they feel like that the state agency forces them to make sacrifice to allow the project to build the electricity-moving infrastructure in the name of, or for the sake of the state, or "of the wider, public good" (Howe and Boyer 2015; Paladino and Simonelli 2013:2). They are forced to pay "blood price" for the public and nation's development (Klaeger 2013:362). In this sense, the discursive frame, in which wind is depicted as an objective, sustainable green capital for good, operates as a political mechanism to produce and justify the condition of "structural violence" against a particular group of people (Farmer 2004; Farmer, et al. 2006; Galtung 1969).[31] At the same time, the discursive construction of the wind as a benevolent green capital also functions to disguise, or even erase the condition of exploitation and oppression toward marginalized people, since it tends to produce a form of epistemic closure for many public who are not directly involved in renewable energy development projects (Swyngedouw 2010). The epistemic closure restricts many lay people from critically scrutinizing wind energy projects and their sociocultural and environmental impacts

[31] Paul Farmer et al. (2006:1686) define the notion of structural violence as "one way of describing social arrangements that put individuals and populations in harm's way." For them, "the arrangements are structural because they are embedded in the political and economic organization of our social world; they are violent because they cause injury to people … neither culture nor pure individual will is at fault; rather, historically given (and often economically driven) processes and forces conspire to constrain individual agency" (ibid.)

because wind power is generally framed and thus perceived as a good clean, renewable energy form, working not only as a redemptive force "for a world in climatological peril" (Howe and Boyer 2015:32), but also as a source to produce economic benefits.

This means that the widely-used discursive construction of the wind as possessing "a clear, logical, and obvious salvational purpose" of being "an objective force for good" is not always true to all (Howe and Boyer 2015:32). Perhaps because of the epistemic closure caused by a certain discursive framing that affects how and what its consumers see, people often tend to think and believe that harvesting renewable energy is inherently and qualitatively different from traditional fossil fuel sources extraction activities such as mining (Bebbington and Bury 2013; Davidov 2013; Kirsch 2014; Li 2015; Rolston 2014) and fracking (Hudgins and Poole 2014; Simonelli 2014; Willow and Wylie 2014) since it is widely assumed to make no or few social and environmental impacts. As we have seen in this text, however, this is not true: wind never means an essentially sustainable, benevolent green energy source for some people. In other words, even if it is discursively constructed as an intrinsically salvational, benevolent green capital for good, wind power is neither "singular" nor "objective" (Howe and Boyer 2015:32). Instead, it is always and necessarily "multiple" in its meanings and values (Barnes and Alatout 2012; Howe and Boyer 2015; Knudsen 2014; Mol 2002). Then, we can say that Winner was right that the nature of renewable energy is not inherently democratic and egalitarian.

While keeping in mind that wind power "is not one but many 'things'" and "has no summary form" (Howe and Boyer 2015:34), therefore, government officials have to (seek to) critically examine their plan to farm wind power, in particular its

"physical/material basis" (i.e. a set of infrastructure including not merely wind turbines but also transmission lines) and its possible impacts on people, especially those who are socio-economically marginalized and oppressed from all angles, before the project get started. Scrutinizing the political, social, environmental, and economic implications of a development of renewable energy sources, along with sufficient communications, is one of ideal ways to seek social justice, since it helps to minimize, if not avoid, the coercive violence against the marginalized groups of people, violence that is often committed in the name of a public good or the nation. Doing so may make wind power be (more) egalitarian and democratic, as its proponents hope and assert, because social outcomes of renewable energy "surely depend on the specific configurations of both hardware and the social institutions created to bring that energy to us" (Winner 1980:135; Winner 1986:39).

To conclude, for policy makers or developers who are interested in harnessing wind power, my argument that the potentiality of the wind to become a green energy source is shaped by and through a network of dynamic existing human and nonhuman entities and their relations might be useful. As long as it is its blowing, the wind as kinetic energy itself will always bring hope and imagination to people and make them want to take advantage of it. If you want to develop wind power for environmental and/or economical reasons, however, you should not be allured and deceived by such "general potentiality" of the wind, which is its abstract, absolute possibility, divorced from the environment from which it will be converted. Both actual world and many limitation/restriction it places on the wind produce the particular condition under which it cannot have a chance to actualize its potentiality to be marketable electricity. That is, the

general potentiality of the wind is dead, meaningless potentiality. Instead, you are required to find and make the "real potentiality" of the wind by considering "the facticity of the historical… and the contemporary world," as well as both nonhumans and "the people within it," which "are not, inert or passive" but rather dynamic (Halewood 2011:37). Only when the restrictions arising form the actual world are tamed and cleared, there will be the condition under which the potentiality of the wind emerges and its actualization process takes place.

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