

Living with "abnormal" drought in rain-soaked Taiwan: Analysis of water consumption practices and discourses

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Abstract

In this study, I investigated how media represents drought as a slow-onset hazard and how the general public interprets drought and re-structures their water consumption practices when confronting a severe drought event in Taiwan. Empirical data were collected from the periods of drought in Taiwan between 2014 to 2015, including 1,760 news reports, 6,030 online discussion threads, and ethnographic data from 41 participants for analysis. Discourse analysis suggests that considerable discrepancy exists between media, state and general public understanding of droughts. Media and state discourses emphasise the abnormality of drought and lexically modify the hazard with metaphorical expressions of war in order to rationalise the government's intervention and governance of water supply. The general public primarily articulate drought to the political ecology of unequal water allocation, management, and consumption. The investigation of water consumption practices suggested that a coherent and painless method of achieving sustainable water consumption does not exist. Water consumption practices are fabricated within the sensory experience of the local hydro-environment from social actors, the relationship between human and nonhuman technological devices, and domestic dynamics as well as political and economic considerations of water. Therefore, in this paper, I argue that drought should be redefined as an admixture hazard and be normalised in everyday life in regions that face uncertain meteorological changes to establish a more sustainable water culture.

KEYWORDS: drought, water consumption, practise theory, discourse analysis, sustainability

Introduction

Living with drought may sound bizarre but has currently become a crucial concern. Drought is generally defined as a slow-onset hazard (Wilhite 2000). The warning signs of drought are frequently neglected by people, who enjoy sunny weather without realising that it can cause water scarcity in the near future (Tannehill 1947). Media and popular culture generally dramatise drought with stories and images of withered land, vulnerable

people, and dead animals. However, drought is more than a mere natural catastrophe; it is also an opportunity for a social agent to restructure the inconspicuous and ingrained relationship between humans and water, which is taken for granted, because drought deroutinises many daily water practices (Head 2012: 1).

The change in climate in the previous decades has generated unpredictable weather patterns, which can cause severe water-related damage. Some countries that had a high rate of precipitation are now encountering drought. The call for sustainable consumption of water has become an emergent concern and requires immediate consideration. However, this raises questions of what sustainable consumption is and who has the right to claim, should set up the required standards, and should reap their advantages?

On the basis of a historically recorded drought in late 2014 to mid-2015 in Taiwan caused by the lowest precipitation in 67 years, this paper aims to understand the construction of drought discourse and the reaction of Taiwanese people to the hazard. This paper argues that drought may provoke reflectivity and provide a contextualised moment for the reconsideration of a relatively sustainable mode of water consumption; however, it raises doubt about whether the whole society engenders a coherent understanding and solution of the drought event.

Taiwan is located in Asia's wet subtropical zone, and its average annual rainfall is 2.6 times the global average rainfall. Therefore, Taiwan is nevertheless classified by the United Nations as an arid country or area of scarce water resource. According to the governmental discourse, the historical drought is acknowledged as a natural hazard caused by two reasons: First, global climate change is reducing rainfall duration and increased rainfall intensity each year. Second, silt accumulation problems decreased the capacity of a stable supply from major reservoirs in Taiwan (Water Resources Agency 2017).

Before the drought, different ranges of water scarcity were repeatedly observed every few years. The Taiwanese government called upon local residents to contribute to water conservation for overcoming the drought through different campaigns and market strategies. The concept of sustainable water consumption practices was included in the water policy of the government. Although sustainability has no distinct definition for different social groups, it can be defined as 'meeting the resources and services of current and future generations without compromising the health of the ecosystem that provides them' (Morelli 20: 6). However, most sustainable policies in Taiwan employ a quantified standard of average water usage to establish the goal (Wang 2016). In this approach, "averageness" targets consumer behaviour for change. Water consumption is treated as a linear process that follows an "ABC" model, wherein attitudes (A) drive behaviour (B), thus producing changes (C) (Shove 2010: 1274). This model was criticised for its reductionism because water consumption does not conform to a single or universal pattern in reality.

To respond to the aforementioned arguments, this article adopts practice theory as the primary theatrical framework for analysis. Studies influenced by practice theory have focused on the complexity of resource consumption and the possibility of sustainability (Browne, Pullinger, Medd, & Anderson 2014). The claim of "practice turn" indicates a renewed interest in what people actually do and say regarding various social activities. Practice theory contributes to energy consumption corresponding with the core

arguments of this paper. First, the theory does not implement the one-size-fits-all perspective of the “ABC model” because the model neglects that fact that practices are socially and culturally embedded and constrained (Sayer 2013). Second, practices are ingrained in everyday embedded activities, and consumers are agents conducting these social practices. For example, water consumption is practised in individual activities, such as bathing, dishwashing, laundry, and tea preparation. Thus, practice theory is a useful tool kit for studying everyday water consumption with concrete themes instead of abstract theoretical discussions.

By examining the actual activities and beliefs of social agents in relation to drought, this study considered the following three interrelated perspectives: the mass media discourse, the discourse of the general public, and their practices. The media is one of the public fields that influence the perspective of society towards droughts, whereas the general public represents social actors in a household—an everyday domestic area—that consumes water and understands drought. In a drought scenario, these three directions provide an improved understanding of the significance of and changes in water consumption. Accordingly, this paper explored the following questions: How and with which discursive strategies and ideological frameworks do media represent drought? Moreover, how and with which discourses do the general public perceive drought? Finally, what do people do pertaining to water consumption during drought and how does their practical water consumption reflect sustainability?

Theories of practice: A framework for analysis

Practice theory considers “practice” to be the smallest unit for social and cultural analysis (Reckwitz 2002). This theory has been ingrained in the epistemic space from the 1970s and has now entered “the second generation”—an era that applied practice theory to new areas such as consumption studies, media studies, organisational theory, or material culture (Postill 2010). Numerous studies across disciplines have applied practice theory, such as energy consumption studies, media and cultural studies, and organisational studies. Although research has proliferated based on practice, no coherent definition of the term “practice” is available, and no practice theory is universally accepted.

Schatzki (1996: 89) defined practice as a ‘temporally unfolding and spatially dispersed nexus of doings and sayings.’ The cultural theorist Reckwitz provided the following elaborate definition:

A practice is a routinised [a] type of behaviour which consists of several elements, interconnected to one other: forms of bodily activities, forms of mental activities, “things” and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge (Reckwitz 2002: 249–50).

The aforementioned two definitions highlight the major relevant elements of practice, although a consistent consensus regarding the basic elements of social practice is controversial. Most studies are based on empirical studies or research. The major three elements of this study are as follows.

First, practice theory foregrounds “the activities of people in ordinary life”, which Schatzki (2001) called “doing”. These “activities” in practice theory are performed as habitual ways involving collective forms of understanding, know-how, and desire. For example, Schatzki (2001) indicated that practice theory considers society a field of embodied and materially interwoven practices, which are organised with shared understandings. According to Reckwitz (2002: 253), shared understandings include knowing and feeling something and are performed by agents in their practices.

The second crucial aspect of practice theory is “saying”, which can be further elaborated as discourse around practice. In this study, what and how people discuss certain subjects is another form of social practice. Reckwitz (2002: 254) described that discourse in practice is “discursive practices” and are a type of practices among others. Nicolini (2012) demonstrated that all activities (e.g., drinking coffee, teaching a lesson, and making a phone call) are at the intersection of multiple discourses.

The third crucial element of practice is the material interconnection between “doing” and “saying”. Shove, Pantzar, and Watson (2012) argued that practice theory has recently shifted the focus towards diverse materials (e.g., technological products, tools or socio-technological system) within a practice. Their theoretical elaboration of practice demonstrated that ‘materials constitute the sticky anchor weight of action’ (ibid: 10). Moreover, Schatzki (2001) suggested that ‘practice always involves apprehending material configurations’ (2001: 3). Empirical studies have successfully validated that material objects are co-constitutional in social practice. For many social activities, such as cooking, farming, or hiking, material aspects contribute to the accomplishment of the practice. Nicolini (2012: 169) hence asserted that certain practices are always accomplished with, and amid things—material objects.

Literature review: Drought studies

Drought triggers considerable and polarised discussions on water management and consumption. Critical issues have been emphasised by academic communities: the attributions and epistemology of drought (Wahlquist 2003), drought and water management (Bakker 2000; Haughton 1998), the practice of sustainable consumption of water and water culture in transition (Allon & Sofoulis 2006; Head & Muir 2007; Sofoulis 2005), media representation and social construction of droughts (Anderson 2014; DeGaetano 1999; Jeffries 2003; Paneque Salgado & Vargas Molina 2015; Ward 2005; West & Smith 1996), and public understanding of water scarcity and drought (Hurlimann & Dolnicar 2012; Russell-Verma, Smith, & Jeffrey 2015).

Discourse analysis that emphasises language use in historical and social contexts is employed in many drought studies. This research trajectory argues that social problems are conceptualised and communicated in discourse (Fairclough 1995; Foucault 1972), in which specific themes and ideologies are highlighted, whereas others are weakened (Goffman 1974). Scholars addressed that discourse analysis provides a channel for understanding the process of the social construction of drought. Sonnett, Morehouse, Finger, Garfin, and Rattray (2006: 95) emphasised that drought is ‘diffuse[d] in time and

space', and therefore, the meaning of drought is generally open for different interpretations. Bakker (1999: 370) indicated that 'a discourse analysis is a significant entry point into drought analysis' because it is suitable for decoding simultaneous events, such as droughts, which are natural and are caused by human interference.

The media is recognised as one of the social institutions assisting in constructing the meaning of drought. Drought in mainstream media is usually represented as a natural disaster. The media discourse of drought is prone to exaggeration in terms of impact and severity because of its uncertainty in space and time (Ward 2005). Moreover, the discourse analysis of how droughts are socially constructed in media has also revealed that the hazard might be caused by inefficient government policies or inappropriate water management.

In a drought, the general public is another subject for discursive construction. They are expected to take actions by changing their behaviour to counteract the disaster. West and Smith (1996) asserted that drought is commonly represented as a threat and is abnormal within the context of a people-versus-nature narrative. This narrative considers drought to be an external enemy and calls for moral unity, discipline, and cohesion among different social groups. Bell (2009) reported that in Sydney, drought is described as a natural disaster, and each householder is considered to have a moral duty of reducing water consumption.

Recently, an increasing number of studies have adopted a practice-oriented approach to resource consumption (Chapells & Medd 2008). Drought studies are one of the themes within this discipline (Strengers & Maller 2012). Scholars are particularly keen to understand the approaches for reshaping water consumption practices under droughts to achieve sustainability. Moreover, they associate water consumption practices to different technological materials from a macro-infrastructure system (e.g., reservoir) to micro-household technological devices (e.g., washing machine). A set of socio-technical perspective studies have provided fruitful insights into the process of people reshaping water-related activities. For example, Shove (2003) demonstrated how changes in the culture and norms of cleanliness and comfort coevolve with water consumption practices. This coevolution is observed during the transformation of culture, norms, convenience, diffusion of new technological objects, and provision of modern infrastructure systems for habitual practices in domestic residences. Therefore, to understand the change in consumption patterns, the formation and embedding of the collective dynamics of normalisation in daily practices must be studied.

Most socio-technical studies focus on the complex and multiple relationships between human actions, materiality, and values when studying droughts and water consumption. For example, the everyday water project conducted by Sofolis (2005) in Australia depicted the association between a 'large water system', an extensively engineered water supply infrastructure, and household water consumption in the shaping practice. The project revealed that the rhetoric of endless water supply promoted by the extensive water system is integrated into routine water-related activities. A study by Strengers and Maller (2012) examined water usage by interviewing different generations of immigrant families in Australia. The study represented how the chronological policy transformations

of water supply, configurations of abundance, and lack of materiality of water motivate Australian migrant families to adopt different practices for supporting more sustainable water consumption. They concluded that the predominant policy of securing a resource supply might inadvertently reduce the capacity and willingness of a household to employ more sustainable practices.

The role of a human agent is a recurring theme of investigations on practice theory. Allon and Sofoulis (2006) indicated that people perform “do-it-yourself” (DIY) measures to save water when confronted with a drought event. Head and Muir (2007) suggested that consumers can be active agents and change their habits to implement water conservation practices in situations of severe water scarcity, when consumers perceive, engage with, and understand the complex network of water storage and distribution in a domestic space.

The practice-centred studies of energy consumption do not include political-economic discussion. Serious consideration of political economy and power, as well as questions of morality and justice, have not been prominent in “practice turn” (Shove & Spurling, 2013). A political ecology perspective provides an alternative angle to investigate drought. Studies on political ecology have not considered drought as a mere nature-induced event. Moreover, they consider it a socio-environmental phenomenon, which is fabricated within the dynamic situations of nature, governance of water, unequal access to hydrological infrastructures, and water storage abilities of residents (Millington 2018). Specifically, political ecology primarily focuses on the crucial role of water in co-constituting nature, urbanisation, and modernity. Therefore, water consumption is constrained in the complicated social relationship of technologies, politics, economy and materials that result in uneven water accesses and spaces. Drought amplified rifts among these dimensions. For example, Kaika (2012) studied the 1989–1991 Athenian drought and revealed that drought was constructed as a crisis that expedited a set of political-economic transformations, facilitating the implementation of policies, such as water price hikes and new dam projects. Millington’s study (2018) of the water crisis in Brazil in 2014–2015 revealed that government’s drought solution enforced the uneven access of hydrological infrastructure and inequalities embedded in the state’s socio-technical landscape of water management. In a study of water consumption in Mumbai, Anand (2017) indicated that water flow in the city was co-controlled via a dynamic infrastructure among a complex relationship of residents, plumbers, politicians and engineers.

Methodology and research design

This research project comprises multiple methods and touches on two major fields—domestic ethnography and discourse analysis. The former, including household observations and interviews, were applied for collecting data regarding the water consumption practices (people’s “doing”). The latter is utilised for analysing media reports and online forum discussions on droughts and water consumption (people’s “saying”). I conducted ethnographic interviews and visited the interviewees’ houses via personal resources (friends and colleagues) and a snowballing method (recommended by the prior respon-

dents). In total, fifteen families (41 participants) participated in my research. Table 1 provides the details of the interviewees' background information. Certain names were changed to protect interviewees' privacy. The ethnographic interview included semi-structured questions regarding the interviewees' perceptions of droughts, their typical daily water usages before and during the droughts event.

Media reports from the four major newspapers (1760 reports) in Taiwan (*Apply Daily*, *The United Daily*, *Liberty Times*, and *China Times*) and online public discussions (6030 discussion posts) on the four popular online fora (*Yahoo news forum*, *PTT*, *Mobile 01.com*, and *CK101.com*) were collected via their databanks and archives. Both media and online discussions included the following search terms: drought, water scarcity, and rainfall; all the results were reviewed, and only relevant texts were included.

Discourse analysis was assisted by a corpus-assisted discourse study (CADS), which uses a computer-based software to identify lexical patterns and discourses from a large collection of texts but focuses considerable attention on providing qualitative explanations that is normally found in critical perspectives (Baker 2006; Baker & Ellece 2011). Wordsmith 6.0 software was used for corpus and discourse analysis.

All the data were collected from the date that the Water Resources Agency of Taiwan created the "drought-fighting committee" (November 1, 2014) to the announcement of the end of the drought by the government (May 31, 2015).

Table 1: Background of interviewees

Family	Name (Gender)	Age	Occupation	Other interviewed members
1	Lu Jiao (F)	46	Nurse	One son and one daughter
2	Xiao Ling(F)	45	Operator	One daughter
3	Jin Fen (F)	45	Engineer	Husband
4	Zhen De (M)	47	Technical staff	Wife (Ai Lin, 45-year-old)
5	Jin Xiang (M)	37	Security Guard	Wife
6	Zi Ting (F)	21	College Student	Grandmother and parents
7	Zhi Xiang (M)	27	Teaching assistant	Parents
8	Wei Xin (M)	34	Chef	Parents
9	You Liang (M)	23	College student	Parents and one sister
10	Chong Jie (M)	35	Engineer	-
11	Ming Jie (F)	31	News editor	Parents and one sister
12	Shu Hwai (M)	50	Public servant	Wife (Irene, 38-year-old) and a daughter
13	Yun Yi (F)	38	Accounting staff	One son
14	Rui Xun (M)	40	Journalist	Wife and son
15	Guo Xiong (M)	51	Veteran	Wife

Drought in Taiwan: Political ecology environment

The confrontation between drought and Taiwanese society provokes discussions on sufficient use, resource allocation, and utilisation of water. The water policy in Taiwan is complicated and is constrained under a complex political and ecological environment. In contrast to countries, where the supply of water has been privatised and operated in a

market environment, water in Taiwan is a government-controlled resource and has been only partially marketised. Thus, water has become a principal “boundary object” (Carroll 2012) that is considered adaptable for different viewpoints, and different social forces contest in the field of water consumption and management.

Because of the historical and political milieu, the government-owned water supply corporation (i.e., Taiwan Water Supply Corporation (TWSC)) controls water supply and management. The government segments water into three areas, namely agricultural, industrial, and household-based on the Water Resources Acts (WRA) according to comparative advantage and need for life (Tan, Lai, Adhikari & LU 2009). Although agriculture is the largest consumer accounting for 70% of annual water, it is not a vital sector of the nation’s economy as it contributes only 2% of the gross domestic product (GDP). Comparing with the industrial sector that contributes about 16% of GDP but uses only 10% of annual water, agriculture is not the first priority during the drought event (Tyan 2003). Paradoxically, agriculture has been constructed as a ‘primordial spirit of Taiwan’ from the Japanese colonial period. Therefore, although industrial economy has been the core of Taiwan in the previous decades, according to the inopportune WRA, industrial water utilisation is the third priority after household (consuming about 20% of annual water) and agricultural usage.

The practical execution of water allocation during the drought enabled water consumption to be an ongoing conflict, whereas WRA authorises TWSC to modulate water allocation according to the actual requirements. Farmers have relatively low production values and thus are forced to perform compensatory fallow to reduce irrigation for overcoming droughts. The drought relief policy of the government does not satisfy everyone and causes social antagonism. Farmers complain about their sacrifices. Scientists warn that paddy fields will defeat the ecological and geographic multiple functions of paddy farms in Taiwan. The industrial sector, where water consumption is expected to grow in the future, claims that global IC (Integrated Circuit) supply could be cut off if water rationing stopped their operations (Lu & Liu 2018, March 9).

The Taiwanese government is a “super-human” in the water management structure, which can control and manipulate water consumption. This super-human structure produces drought discourses through different practices and strategies. To respond to drought events, the official sector rapidly formed a cross-departmental task force and became the primary authority propagating narratives on the disaster. Water rationing was conducted based on the water storage levels of primary reservoirs. This short-run water regulation seemed reasonable; however, it is criticised because it does not develop long-term strategies. Certain long-term problems, such as fixing leaking pipelines, reservoir silts caused by illegal reclamations and using alternative water resources, have not been overcome.

Water pricing is a part of public policy controlled by the government. The primary political parties of Taiwan in power scrupulously restrict water prices to prevent the escalation of public grievances. Water is hence mispriced. The regional disparity in water prices causes rifts as well. Taipei, the capital city, has the lowest water prices in the nation and had not experienced a price hike for 21 years until 2015 (Turton 2017, February 10).

The political ecology contradictions of water were more striking during the drought in 2014-2015. However, the government policy to overcome droughts is generally based on different ideological perspectives and not on resolving the social antagonism of water. First, the aforementioned ABC model was embedded in the marketing techniques of the government, and advertising campaigns persuaded people to make conscience-driven decisions by merely reducing water usage to overcome the drought. In the sustainable proposal by the government, the public is the target "addressee", whose behaviour must be changed. This observation was reflected in various campaign slogans, such as 'think about the people who suffer due to water storage, when it is available in large quantities to others', 'saving water is everyone's responsibility', and 'save water, save earth'¹.

Second, the discourse of the government addresses a hypothetical "homogeneous mass of aggregate consumers", who are socially anonymous (Shove 2003:4); thus, the behaviour of consumers is evaluated using accounting methods. A catchphrase from the Water Resource Bureau of Taiwan is as follows: 'Each person should lower their water consumption by three litres each day and should limit their water consumption to an average of 250 litres per day'². The 250-litre limit of water usage per day per person is the "global average" for the modern society recommended by the United Nations. However, water usage is subjective to people and thus may vary for everyone. The discourse merely suggests a preoccupied calculation of resources with an untold demand-supply relationship of water. The logic of this average perspective of water consumption is based on the assumption that consumers are responsible for reducing water usage, and the quantification techniques are employed to develop campaigns for persuading the users to change (Allon & Sofoulis 2006).

Drought abnormality: Quantification, war metaphor, and social mobilisation in the media discourse

Following the CADS procedure, the frequently appearing lexical items in drought reports on media were examined. This method is termed a "corpus-driven analysis" (Tognini-Bonelli 2001) and is a quantitative technique as the primary step of the discourse analysis to map discursive topics, which are unusual or unexpected (Baker 2006). Moreover, the frequency of words reflects ideological positions of the text, as Stubbs (1996:107) argued that 'no terms are neutral.' Vocabularies in a text echo the perspectives of social and cultural matters (Williams, 1981). Accordingly, the following three most frequently used terms are identified in the media discourse of drought: "reservoir" (水庫, *shuiku*, n = 3,973), "water status" (水情, *shuiqing*, n = 1,247), and "drought fighting" (抗旱, *kanghan*, n = 688).

The term *reservoir* is the most frequently used vocabulary in the media discourse. Because reservoirs commonly serve as a primary solution to water scarcity problems (Sonnnett, Morehouse, Finger, Garfin & Rattray 2006), this result seems neutral and meets

¹ See http://epaper.wra.gov.tw/Article_Detail.aspx?s=95A599E26D5AC0F3 (in Chinese), accessed 2015, June 19.

² See <https://e-river.wra.gov.tw/System/NewArticle/DealData.aspx?s=143A22D74E9FD80A&sm=8C72314E628115E5> (in Chinese), accessed on 2 July 2015.

the expectations. However, the approach uses to portray reservoirs in media discourse in Taiwan reflects that the modern hydraulic socio-technological system is embedded in the governmental and political ecology of water (Sofoulis 2005).

Media reports generally prefer quantitative modification and metaphorical expressions to frame reservoirs, as demonstrated in the following extract:

The rain persisted for 4 hours last night, and the amount of rainfall reached 44 mm in the Nanhua (南化) area, an amount that is rare in recent years. According to estimates and a statement from the Water Resources Bureau, the amount of rainfall will quench the reservoirs' thirst and supply 80,000 to 100,000 m³ of water, with the water storage rates of the Ming De (明德) and the Sun Moon Lake (日月潭) reservoirs increasing by 20.76% and 20.80%, respectively. These increases guarantee a 10-day adequate water supply (*The United Daily News*).

The preceding extract represents two typical discursive processes. First, different numerical calculations are presented in reservoir reports, which associate water scarcity with natural rainfalls, thus ensuring that discourses appear neutral, reasonable, and unquestionable. This quantification process converts abstract situations of drought into countable and tangible situations that can be synchronically and diachronically compared with other records. Second, an "organism metaphor" is used to describe a reservoir as the vocabulary "thirst" is used the discourse. Such a metaphorical expression indicates that water is essential for maintaining the "life" of a reservoir. This application of the organism metaphor thus humanises the reservoir and connotes its vulnerability and uncertainty. The two aforementioned processes represent drought as a "natural hazard" and "exclude the involvement of human agency", which strengthens an ideological perspective that humans cannot interfere with the power of nature.

How does the quantitative calculation combine with the reservoir volume and media discourse of drought? The second most mentioned term, namely "water status", provides insights. The term represents a "crisis warning" announced by the government on a daily basis, which indicates the degree of severity of water scarcity based on the storage level of reservoirs, in which a green light indicates abundance, whereas a red light means water lacking. The Taiwanese government publicised such an "objective benchmark" for the risk assessment of drought. The information indicates water scarcity as a quantifiable crisis and triggers procedures, such as water rationing by official policies. A conventional discourse comprising the term promotes the following moral appeal towards the public: 'Water status is urgent in Taiwan; therefore, water conservation is everyone's duty' (*Apple Daily*). Water status in the prior discourse is usually placed at the beginning of a passage as a presupposition to remind the public of the situation and the actions to be taken. A water status alert emblematises that the distinguished epistemology of social science, particularly quantitative rationalism, is integrated into the administrative apparatus (Wright-Mills, 2000) to generate technical knowledge for achieving the common goals of nations for the drought solution. However, although such usage is prevalent in media discourses of drought, it suggests that media bodies coordinate with authoritative sectors to produce official discourses (Manning 2001) related to drought.

Drought fighting, the third most salient term in media discourses, employed a confrontational framework to define the human-nature relationship. Drought in such discourses is a natural enemy against which humans must take actions. The term is “administrative rhetoric”. The usage primarily started by the aforementioned “drought-fighting committee”, which is a cross-departmental task force organised by the government during drought. It has become a ubiquitous catchphrase in the media discourse. This war metaphor allows the Taiwanese government to contextualise the condition of drought, which also legitimises and rationalises its water supply interventions. The following extract illustrates that drought fighting and water rationing are juxtaposed in the media discourse and described as a “battle”, which more war terminology: ‘The Water Resources Agency has extended the time of drought fighting from May to June, which indicates that the water rationing battle will continue...’ (*The United Daily News*).

The war metaphor in the media discourse suggests the perspective of social consensus, which assumes that the general public is a passive actor to be mobilised. The following two extracts reveal that residents are requested to be understanding and considerate during drought events, which are represented as “tough times”, and they are asked to conserve water for fighting against the drought. Therefore, each individual is considered the subject of interpellation for social mobilisation:

The water level of reservoirs has increased to 12 m, which is approximately equal to a 1-week supply capacity, but the general public should save water to fight the drought because the water status is still unfavourable (*China Times*).

... everyone should be compassionate in this tough time [drought] and collaborate with others in fighting the drought, says the Water Resources Agency (*Apple Daily*).

In summary, the media discourse of drought denotes an ideological framework of “abnormality”, and this predominant framework is constituted by associating certain special thematic vocabularies in discourse. For example, reservoir storage levels are provided to remind the public about the “unusual rainfall” amount; water status statistics are used as warnings of “irregular” water supplies; drought fighting is advocated to stimulate the vigilance of the public for a battle. Therefore, drought is contextualised as a natural enemy that engenders unusual and tough war times and denotes the end of “normal life”.

Problematism and mundaneness in the general public discourses of drought

Drought discourses from the general public exhibit alternative perspectives from media and administrative discourses. The frequency count of lexical terms from the online discussion posts reveals the discrepancies between the media and the general public discussion. The online posts on drought issues represent the civil discourses to a certain extent because an online forum is an emergent public sphere, where citizens enact their citizenship.

The results showed that the term “reservoir” (n = 971) remained the most frequently used term in the general public discourses, followed by “water scarcity” (缺水, *queshui*, n = 548) and “problem” (問題, *wenti*, n = 338). Moreover, both “drought fighting” (n = 7) and “water status” (n = 24), two frequently used terms in media, are rare in the general public’s discussion.

In contrast to media discourse, which was largely consistent with administrative perspectives, reservoirs monopolised the focus of the online public discussions; the general public discourses included the declining captivity of reservoirs and attributed the problem to the mismanagement and inefficiency of the government. This tendency is demonstrated by the following statements from the online forums: ‘I wonder why the government and water company do not solve the leaking (pipeline) and siltation problems of the reservoir’ (Day patrol³). ‘The silt accumulation might be equivalent to the capacity of several reservoirs, when will the government resolve this problem?’ (Heroic Deeds).

Compared with media discourses, general public discourses espouse different perceptions of drought and attribute reservoir problems to mundane and concrete activities rather than abnormal phenomena. This attitude can be examined in the discourses that are coherent with the other two frequently used terms, “problem” and “water scarcity”, in the online forums. Discourses comprising the term “problem” represented the discursive process of problematisation in the general public discussion of drought. Problematisation refers to a process in which social actors pursue the roots of certain ideas or concepts and question their basic tenets. The following statements indicate the representation of “drought as a problem” in online discussions: ‘Water scarcity is a long-lasting *problem*. What has been done by our politicians for so many years, and what efforts do they devote to solving the water scarcity problem?’ (Qi Qing); ‘The essential problem is leakage caused by the old pipelines’ (Tian Ming); ‘I think the water scarcity is the problem caused by the high-tech companies and farmers; they use much more water than us’ (Kitty).

The aforementioned extracted posts compound with different ranges of temporal phases, such as “long-lasting” or “so many years” imply that drought is not considered an abnormal phenomenon but is associated with already existing problems, including reservoir siltation, pipeline leakage, incorrect water pricing, and inappropriate water management strategies.

Online public discussions that focus on “water scarcity” illustrate a discursive connection between mundaneness and drought discourse. Mundaneness indicates that social actors associate water consumption and drought solutions with different spontaneous daily activities (Holttinen 2014) and tactics, as described in the following statements: ‘Because of water scarcity now, I have tried many approaches, including putting rocks in the toilet tank to save water, which is not very useful anyway’ (Xiao She). ‘I stopped washing my car recently because of water scarcity; I only drive it when it rains so that it can be cleaned by the rainwater’ (Niko0202).

³ The term between *parentheses* is the internet username of the quotation. The same use hereafter in this paper for the online public discussion extract.

In summary, inconsistencies are observed in drought discourse between the media and the general public, which are evidently related to ontological, temporal, and strategic discriminations. First, the media discourses, which mostly promote the perspectives of the government, ontologically consider drought an abnormal natural hazard, whereas the general public discourses generally perceive the drought as multiple constructed problems, caused by different stakeholders. Second, the media generally uses an ephemeral timeframe to represent droughts by highlighting the day-to-day dynamics of reservoir storage levels and water status alerts. By contrast, the general public discourses highlight the long-term concerns of water scarcity. Third, public discourses contextualise drought to diverse situations and mundane daily activities and not to abnormal phenomena, which require public mobilisation, as advocated by the media discourse, for resolution. By contrast, they deploy various tactics as solutions for water scarcity, which are unplanned and trivial but demonstrate the willingness and tendencies to act as agents for sustainable water consumption.

Water consumption practices in households: understanding, materiality and negotiation

Discourse analysis in the previous section revealed the ontological dispute on droughts between the media and the general public. Based on the practice perspective, the daily activities of people (their doings) in terms of water consumption during the drought must still be examined. The ethnographic study in the 2014–2015 drought considered the aforementioned approach. One of my primary concerns was how domestic water users “understood” the drought when I visited the families participating in my research. Most of their responses highlighted the contradictions between water politics and daily consumption in terms of drought. Their understanding of drought and engagements in practising sustainable water consumption indicated diverse perspectives on the local ecological environment and hydro-politics concerns of management, allocation, and conflict of water consumption.

Certain respondents considered Taiwan to be a ‘water abundant nation’, ‘a region with rich rainfall and water’ (Lu Jiao, 46-year-old woman), and ‘ocean-surrounded island with no reason for being threatened by drought’ (Zhi Xiang, 27-year-old man). These perspectives exhibited low public alertness towards drought. Although some of the aforementioned understandings seem erroneous or have meteorologically changed, they prompted people to believe that drought could be temporary and solved by the forthcoming “plum rainy seasons” (around May to June in Taiwan) or summer typhoons.

People are unmotivated to engage in sustainable water consumption with the perspective of richness on hydro resources. For example, one of the participants stated the following: ‘I believe that this problem [water scarcity] is restricted to these months... Taiwan’s rainy season is approaching, so I do not particularly notice water waste or excessive water consumption relative to others’ (Wei Xin, 34-year-old man). Some respondents associated drought with hydro-politics, which was decreasing their motivation for water conservation. As mentioned previously, the sluggish progress of the Taiwanese

government in fixing leaking and silting problems provoked condemnations. The biased hydro-policy that benefits high-tech industries induces conflicts between different social groups. For example, high-tech companies are criticised for their passive attitude towards recycling industrial wastewater, whereas farmers and residents suffer from water rationing. Those respondents, who concentrated on political concerns regarding water, showed negative attitudes towards sustainable water consumption. A participant said the following: ‘Taiwan lacks everything but rainfall...water shortage occurs because our lazy government does not do their work...so I would not particularly save water’ (You Liang, 23-year-old man). Furthermore, another participant indicated the following: ‘I know we should save water, but I also think those high-tech companies in the science-based industrial park should be the first ones to save water; they use much more water than us’ (Xiao Ling, 45-year-old woman). The aforementioned cases suggested that people’s exposure to different conditions of the meteorology of a region and their evaluation of the political ecology of water governance were key elements to consider in defining drought (Anderson 2014).

Material elements have become a broad argument, and thus, they should be considered for social practices (Røpke 2009). This ethnographic study revealed that materiality is a major and recognised element associated with contemporary water consumption activities, particularly materials of water-related, small-scale technological devices. When the participants are asked to identify their domestic sustainable water practices during the drought, they generally mention different usages of technological devices, such as flow-controlled valves, dual-flush toilets, and water-saving washing machines. The implementation of these water-related technologies in households reflects negotiations among government policy, economic consideration, technological designs, and domestic water culture.

The water-efficient technologies were primarily introduced to households by regulatory authorities through economic and political means. To promote sustainable water consumption, the Taiwanese government launched a water-efficiency labelling scheme. Water-related devices that met the water efficiency criteria were provided with this certified tag. In 2016, the Taiwanese government amended the Water Supply Act, which compelled toilet and washing machine retailers to obtain the tag before selling. Moreover, the government provided \$NT 50 million (\$ 1.6 million) to subsidy consumers, who purchased water-efficient products.

Water-efficient devices do not guarantee sustainable water practices in households. In some families, water-efficient devices are used to meet household standards, such as cleanliness and convenience (Shove 2003). If the devices do not meet the personal living standards of a family, they may waste water or become useless. A female participant reflected that she purchased a water-efficient washing machine because of a government subsidy and supporting water conservation; however, she changed her laundry washing habits after discovering that her machine-washed clothes were not sufficiently clean. She stated the following: ‘Maybe its water efficiency is too high, and thus, I wash my clothes twice every time. It may require more water, but cleanliness is important for me’ (Jin Fen, 45-year-old woman). Another female participant (Ming Jie, 31-year-old woman) reported

that her family installed flow-controlled valves to support water conservation, but later they stopped using these taps because their water flow rate was extremely low. She stated the following: 'I cannot even wash off the soap at such a low flow rate... It is inconvenient to use such a small amount of water; therefore, my family members just use regular taps; the flow-controlled valves are just decorations now.'

In addition to water conservation technologies, water consumption practice is mediated by various socio-technological systems. These systems constitute the human-water relationship in daily life. In this ethnographic study during the drought events, many participants mentioned water tanks. In the existing literature, a domestic water tank has been considered a logical approach to reduce primary water usages (Moy 2012); or a decentralised technology disperses the pressure of the central water supply system (Gardiner 2010).

In Taiwan, the popularity of roof water tanks reflects a special habit of water consumption. Because of the rapidly increasing population, high-rise buildings and hill-side houses have become prevalent architecture types. Residents in such housing often deal with low water pressure. Certain common water-related devices, such as gas water heaters, require stable water pressure. Therefore, the water tank and micropump have become necessary facilities. Water from the main supply pipeline is pumped and stored on the roof tank to obtain more water. The roof water tank constitutes a distinct water culture in Taiwan, which was integrated into the household infrastructure and was a nonhuman social actor, participating in water consumption practice with human actors. During the drought, water tanks were crucial as a buffer device and mitigated the impact of water supply disruption from policy interventions. One respondent reported that 'water tanks stored a sufficient amount of water that made rationing tolerable' (Jin Xiang, 37-year-old man). In some cases water tank 'involuntary' masked water shortage concerns, thus preventing residents from appreciating drought vigilance. For instance, a male participant recalled that although he received information on water rationing from the media during the drought period, his household water supply system provided constant water because the water tank "buffered" the effects of the rationing intervention. He stated the following: 'I wondered why we still had water, and several days after the end of the water rationing, I realised that I live in a mansion with a huge water tank' (Guo Xiong, 51-year-old man).

My analysis indicates that water conservation is technology-involved and technology-appropriated in many households, and thus, the establishment of water culture includes both human and nonhuman elements interconnected in a network (Bijker & Law 1992: 13). Different water-related devices mediated and have been associated with water consumption practices. The practical usage of these devices passes through the domestication process (Morley & Silverstone 1990), which is a stage where 'hardware or software are to become (or do not become) acceptable' (Silverstone 1994:83) to be incorporated into household spaces. Once the water-related devices are adopted and incorporated into household socio-technological systems, their functions and roles might change, have a negative influence, and become useless.

Tensions and negotiations of sustainability in domestic water consumption

Cultivating people to support more sustainable water consumption is a part of the drought relief strategy of the Taiwanese government. However, sustainability in practice faced miscellaneous challenges in the domestic field. Therefore, sustainable water consumption is an ongoing process involving tensions and negotiations.

My interviews showed that the drought acted as a catalyst for stimulating reflexivity of restructuring water consumption practices in supporting sustainability. Several respondents indicated that they adopted different “tactics” to reduce water usage, such as placing one or two filled bottles into the toilet tanks to reduce the usage of flush water. Although such manual tactics are not very effective, they were prevalent among respondents. This highlights the awareness and reflexivity of participants on the sustainable preservation and changes of the existing habits. However, these trivial tactics of water conservation were restrained by daily routine and customs. One respondent (Rui Xun, 40-year-old man), who works in an insurance company, designed DIY recycling equipment that connected buckets of used bathwater to the toilet. However, this design could not be used for a long time because his family members considered it inconvenient and complained that the design required extra efforts and disrupted their daily routine.

A generation gap showed different understandings and practices regarding drought events and water scarcity. Elders who had lived through water scarcity before the development of the macro water supply system were habituated to seeing it as a finite resource. Conversely, the younger generations in Taiwan were mostly born in a water-sufficient era with lower awareness of water as a finite resource. A generation gap in water usages yielded tensions and uneasiness, as illustrated by Zi Ting’s (a 21-year-old woman) three-generation family. Older members in the family flushed the toilet once only after using several times in order to conserve water. This drastic practice was rooted in their early life experience of water scarcity and time when flush toilets were not available. However, the younger family members raised question in terms of sanitary problems due to the behaviour of older family members. The family members later reached a compromise – the younger members promised to use more recycled water to flush the toilet, and the elder agreed to flush more frequently. This case showed that water conservation practices might cause tensions among household members. Such problems can be overcome by reassembling or restructuring water conservation devices under the agreement of all household members.

Certain sustainable policies have been criticised for enforcing the gendered division of labour as most policies are directed at households but few toward industries (Vinz 2009). This tendency of sustainable strategies produces “ecostress” for females in the household while most of the household chores are performed by them in Taiwan (Wang 2016). In fact, a notable percentage revealed that females were in charge of enquiring water-bill related problems (61.4%) and bought water-efficient washing machines (52.7%) according to the official statistic in Taipei. In my ethnography, most male respondents had no idea what the monthly water bills were. Shu Hwai (50-year-old man), a government employee, indicated that his partner Irene (38-year-old woman) complained that her husband knew nothing about utility bills.

From another family, Zhen De (47-year-old man) and Ai Lin (45-year-old woman) talked about their different practices of water consumption. Ai Lin was acquainted with the sustainable campaign of the government, such as recycling rice-wash water for gardening and shower-water for flushing toilets; however, Zhen De only reported that he, 'reduced car-wash times as a water-saving practice during the drought event.' The gendered division reflected on the application of water-efficient devices as one respondent, Yun Yi (37-year-old woman) stated the following: 'I decided to buy the new water-efficient washing machine. My husband knows nothing about housework [laughs].'

Household water-saving practice during droughts demonstrated that domestic space is a frontier to be conquered for water conservation (Head 2012). Drought triggered more sustainable ways of water consumption practices, which are embedded in sophisticated domestic dynamics and, therefore, face the challenges of household variability and complexity.

Conclusion

This study explored verbal and nonverbal water consumption in the context of a historic drought in Taiwan. Because of global warming, drought has been exacerbated in recent years, and the drought in Taiwan highlighted potential challenges of a water-rich area becoming drought-ridden. Discourse analysis and domestic ethnography were performed to conclude that different social actors consider drought an "admixture hazard" caused by metrological changes and political ecology pertaining to water allocation, management, and consumption. This article thus suggests that drought is not just a crisis of low rainfall and climatological change. As Sofoulis (2005) stated, drought is also politics, social-technologies, and cultural and natural issues in flux.

Sustainability is the core appeal of the campaign of the Taiwanese government for drought relief. However, the government's approach of encouraging people for sustainable water consumption merely convinces individuals to reduce water usage according to a universal standard. The public policies of drought solving put fewer efforts on the political economy, which include inappropriate water allocation, distorted and unequal water prices, and inadequate legislation and obsolete hydrological infrastructure. Sustainable water consumption has no social consensus under these circumstances. Therefore, drought events might negatively trigger social antagonism and offset the willingness to partake in sustainable water practice.

One of the concerns in this paper is the comparison of the media discourse and general public discourse of drought. The discourse analysis of the two realms revealed that the media discourse inclines towards emphasising the quantification of reservoir volume, social mobilisation, and abnormality of drought. The administrative information, water condition alert systems as benchmark measurements of drought reality, and drought-fighting discourse were predominantly conveyed through media representation. By contrast, during the drought, the general public focused on mundane activities related to water and considered drought an unsolved and ongoing concern by using vocabularies, such as "problem" and "water scarcity", with a longitude timeframe. From this point, domestic water users generally defined drought as results of improper water management

and allocation policies. Therefore, the macro-discourse embraced by the government and media seems to miss the point.

The discrepancy between the macro-discourse of media and government and micro-discourse from the general people reflects on the domestic ethnography of this study. On the basis of practice theory, this study foregrounds what people actually do and say in terms of drought. The investigation of the practice suggests no coherent and painless methods of achieving sustainable water consumption. The ethnographic interviews suggest that water consumption practices are fabricated with the resident's sensory experience of the local hydro-environment, materiality, and domestic dynamic as well as their political-economic concerns of water.

Materiality was the crucial dimension for the government policy of adapting water-saving practices. Various water-efficient devices were introduced to households through different policies in Taiwan. However, these small-scale social technological devices have various water-saving facilities (Fam & Mellick Lopes 2015). The practical uses of technology might be appropriated to diverse manners based on family living standard and culture. Water-efficient technology could be extended to water wastage or device uselessness. Certain social technological water-related equipment function as a nonhuman mediator that connects the hydro-infrastructure and household systems and reduces the risk vigilance of drought event.

Certain social actors demonstrated their competence and agency for engaging in more sustainable water consumption practices, as exhibited in water-saving tactics during the drought. The practices also represent a process of restructuring water consumption triggered by drought event. Although these practices are not always stable or consistent, an ongoing negotiation within the contextual complexities of everyday life persists. Thus, the establishment of a more sustainable water culture is interwoven within a persistent nonlinear coevolving process.

In conclusion, the Taiwanese case highlights a defining feature of drought. With respect to climate change, the global environment has now become uncertain. Contemporary metrological changes blur the boundary between normal and abnormal climate. As West and Smith (1996: 99) asserted, 'there is always a drought somewhere.' In the long term, drought or water scarcity must be considered a "new normality", even in regions that previously enjoyed plenty of water and rainfall. The present study implies that although water scarcity is normalised, social actors still require new visions and consensus for forming a sustainable water culture. A new discourse on household-level water management for the mitigation of "normal drought" is crucial for the restructuring of water consumption practices because discourses are referred to or construct knowledge on a particular topic of practice' (Hall 1997: 6). Policymakers must develop a comprehensive, equitably allocated, and efficiently utilised water policy as water scarcity becomes an increasingly normal feature in everyday lives.

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Povzetek

Študija preučuje kako mediji predstavljajo sušo kot počasi razvijajočo se nevarnost in kako splošna javnost interpretira sušo in preoblikuje svoje prakse porabe vode, ko se sooča s hudim sušnim dogodkom v Tajvanu. Empirični podatki so bili zbrani v obdobju pretekle suše v Tajvanu, med letoma 2014 in 2015 in vključujejo 1.760 časopisnih novic, 6.030 spletnih diskusijskih tem ter etnografske podatke vezane na 41 udeležencev. Analiza diskurza kaže, da med medijskim, državnim in ljudskim razumevanjem suše obstajajo precejšnje razlike. Mediji in državni diskurzi poudarjajo nenormalnost suše ter leksično spremenijo nevarnost z metaforičnimi izrazi vojne, da bi racionalizirali vladno posredovanje in upravljanje oskrbe z vodo, medtem ko splošna javnost izraža razumevanje suše skozi politično ekologijo neenakomerne razdelitve vode, kot tudi neenakomerne upravljanja in porabe le-te. Preiskava praks porabe vode je pokazala, da ne obstaja usklajena in neboleča metoda doseganja trajnostne porabe vode. Prakse porabe vode se namreč porajajo v okviru senzoričnih izkušenj lokalnega vodnega okolja ter njegovih družbenih akterjev, v okviru odnosa med človeškimi in nečloveškimi tehnološkimi napravami ter v odnosu z dinamiko gospodinjstev ter političnih in gospodarskih vidikov vode. V predlaganem prispevku ugotavljam, da je za vzpostavitev bolj trajnostne kulture vode potrebno sušo ponovno osmisliti v smislu križnega tveganja ter jo v vsakdanjem življenju regij, ki se soočajo z negotovimi meteorološkimi spremembami, normalizirati.

Ključne besede: suša, rabe vode, teorije prakse, analiza diskurza, trajnost

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