

# Grounded theory of knowledge process on public ecosystem managers in Seoul

Grounded theory of knowledge process

175

Jeongseok Lee

*Department of Environmental Policy Research, Korea Environment Institute, Sejong, Korea*

Received 23 February 2018  
Revised 19 May 2018  
Accepted 3 July 2018

## Abstract

**Purpose** – The purpose of this paper is to explore the utility of employing knowledge management (KM) as a framework for understanding how public managers perform ecosystem management. The question of how public managers in Seoul acquire, utilize and share knowledge in managing their ecosystems has been responded to by offering a particular conceptual model.

**Design/methodology/approach** – This study applies the grounded theory method to build a conceptual model. The model is generated by applying the concept of knowledge process to an investigation of how the urban ecosystem is publicly managed by civil servants in various offices within the municipality of Seoul, Korea. The case study encompasses the management of the 12 regions of Seoul designated as Eco-scenery Preservation Regions (ESPRs) by the Seoul Metropolitan Government.

**Findings** – The knowledge process of public managers in managing the ESPRs can be explained by understanding the conceptual model of “learning-by-doing,” which means public managers cannot count much on their knowledge gained previously through their past experience or education and training. Instead, they learn individually in the process of discharging their duties on a daily basis.

**Research limitations/implications** – Although the focus is on the knowledge process of public managers, there is no escaping the fact that managerial activities are not performed in a vacuum. Rather, they take place in a complex policy and government context that is not easily captured as the important variables that influence the knowledge process. Thus, it would be worthwhile to extend this study with group, intra-, and extra-organizational-level analyses.

**Practical implications** – Usually different contexts lead to different interpretations on the concept of learning-by-doing. This study supplies such an interpretation that diverse ecosystems in Seoul have been managed by the learning-by-doing of public managers, which is characterized specifically as their reactive response, tinkering and limited personal network.

**Social implications** – There has not been a definite consensus on the question of what ecosystem management is. Scientists, policymakers and citizens all have different viewpoints on that question. Nonetheless, this study provides a useful perspective on the issue of how various ecosystems have been managed by public managers, who must be a central entity of ecosystem management particularly under the context of municipality.

**Originality/value** – Even though KM has been a popular subject of study in business management rather than public management, KM as a framework of study is promising as a means of understanding and potentially supporting the further development of effective ecosystem management by public managers.

**Keywords** Grounded theory, Public management, Knowledge management, Seoul, Ecosystem management, Public manager

**Paper type** Research paper

## 1. Introduction

To date, four theoretical perspectives have dominated in the scholarly discussion of ecosystem management. First, the legal perspective that accentuates the viewpoint that a variety of laws involved with managing ecosystems should be orchestrated to make effective ecosystem management possible (Keiter, 1998; Wonkka *et al.*, 2015). Accordingly, an important question of the legal perspective is how ecosystem managers can effectively

The author is always grateful to his academic advisor, Professor Robert Agranoff. The author appreciates the helpful advices from two anonymous reviewers and thanks for the valuable assistances from the Korea Environment Institute (KEI) and the Center for Korean Studies (CKS) in the University of Hawai'i at Manoa.



apply diverse laws, which are sometimes conflicting with one another, to their managerial activities. Second, the science-based perspective that focuses on the importance of using scientific evidences in managing ecosystems (Holling and Meffe, 1996; Kessler *et al.*, 1992). In this perspective, an essential question is how conflicting scientific advices, based on diverse scientific evidences generated by various fields of natural sciences, are interpreted or synthesized as a practical viewpoint that provides consistent action guidelines to public managers. Third, the intergovernmental relations perspective that concentrates on the importance of cooperation among various governmental units in managing ecosystems (May *et al.*, 1996; Wise and O'Leary, 1997). In general, the administrative jurisdiction of government does not correspond with the boundaries of ecosystems. Thus, a key question of the intergovernmental relations perspective is how functional integration, which can ensure consistent action among numerous public managers in managing ecosystems, can be secured in complex vertical or horizontal intergovernmental relations (Agranoff and McGuire, 2003). Fourth, the local governance perspective that focuses on the importance of collaboration between local governments and local communities in managing ecosystems (Koontz *et al.*, 2004; Wondolleck and Yaffee, 2000). A notable characteristic of the twenty-first century is that local governments are increasingly pressured to reflect the diverse needs of local communities in their decision making. Thus, ecosystem management by public managers cannot be successful unless public managers consider or facilitate the participation of local partners (those who have stakes in managing ecosystems).

Drawing on all those four perspectives, it can be said that to manage ecosystems effectively, it is essential for public managers to have the knowledge of laws, of sciences, of intergovernmental relations and of local governance. To understand the ecosystem management by public managers, this study postulates that the four perspectives can be integrated into a more useful explanatory framework, which is a knowledge management (KM) framework. Although KM has been a popular subject of study in business management rather than public management (Agranoff, 2007; Wiig, 1997), KM as a framework of study is promising as a means of understanding and potentially supporting the further development of effective ecosystem management by public managers because whatever the components of knowledge it considers, KM deals with knowledge itself as its key subject of study. Reviewing relevant literature about KM has led to the establishment of an appropriate research question, which may contribute to the knowledge base of ecosystem management. The question is how do public managers acquire, utilize and share their knowledge in managing ecosystems – so called the knowledge process of public ecosystem managers? Finding a plausible answer to that question is the goal of this study.

Section 2 reviews the definitions, processes and strategies of KM as it has been considered particularly by the scholars of public management. Section 3 focuses on methodology. The research procedure of grounded theory is introduced. Its application to the investigation of ecosystem management by the public managers of the 12 Eco-scenery Preservation Regions (ESPRs) of Seoul is explained. Section 4 proposes and elucidates a generated model for understanding knowledge process by and among public ecosystem managers. The concluding Section 5 identifies the directions of further research and discusses KM as a framework of study.

## 2. KM reviewed

Why should KM be highlighted especially in the twenty-first century? A proper answer to this question is that the twenty-first century can be characterized as knowledge-oriented societies. This means that knowledge is needed in all kinds of organizations as a key resource (Moustaghfir and Schiuma, 2013) and every organization needs “knowledge workers” who have the capability to contribute to promoting organizational learning and innovation by converting their individual knowledge into organizational knowledge

(Drucker, 2001; Edersheim, 2007). The growing demands of KM in the government can be seen, among other places, in the increasing efforts of government to develop and implement e-government programs. However, KM should be recognized as a broader concept than strictly the phenomenon of e-government (Massaro *et al.*, 2015).

Knowledge can be distinguished from data and information. In general, data mean “raw images, numbers, sounds, etc., which result from observation or measurement” (Hislop, 2005, p. 16). When “data are arranged or organized into a meaningful pattern,” it can be called information (Hislop, 2005, p. 16). Knowledge, in contrast, refers to the “means to analyse/understand information/data, and belief about causality of events/actions,” serving as a “basis to guide meaningful action and thought” (Hislop, 2005, p. 16). Analysts often distinguish between explicit and tacit knowledge[1]. “Explicit knowledge is regarded as objective, standing above and separate from both individual and social value systems and second that it can be codified into a tangible form” (Hislop, 2005, p. 19). “Tacit knowledge on the other hand represents knowledge that people possess, but which is inexpressible [...]. The main characteristics of tacit knowledge are therefore that it is personal and is difficult, if not impossible to disembodify and codify” (Hislop, 2005, p. 19).

Scholars concerned with KM have considered the relative importance of those two forms of knowledge. Some describe the field of KM as one that explains how explicit and tacit knowledge can be managed in the organization (Bergeron, 2003; Hislop, 2005). Others suggest that KM considers both explicit and tacit knowledge as equally essential subject matters (Davenport, 2005; Davenport and Prusak, 2000). However, it can be persuasively argued that harnessing tacit knowledge for organizational strength and development is more challenging than managing explicit knowledge. Even if organizations invest their best efforts for capturing their employees’ tacit knowledge, key knowledge assets are lost through natural attrition as employees change jobs or retire. Moreover, “many of the people whose (tacit) knowledge makes an organization work are not often identified or officially responsible for the results that they achieve” (Davenport and Prusak, 2000, p. 55). Narrowly speaking, KM could be defined as purposeful managerial activities that try to transform the tacit knowledge of individuals into the explicit knowledge of organizations (Bergeron, 2003).

To perform a KM initiative in an organization, it is necessary to conceptualize the paths through which knowledge flows in an organization. Those paths can be called the “knowledge process.” Regarding the knowledge process, various scholars have suggested diverse conceptualizations. For example, Nonaka (1998) formulates the knowledge process by categorizing it into four types of knowledge procedures: socialization, articulation, combination and internalization. Meanwhile, Bergeron (2003) argues that the knowledge process can be investigated by dividing it into eight phases, which he calls collectively the KM life cycle: knowledge creation or acquisition, knowledge modification, immediate use, archiving, transfer, translation/repurposing, user access and disposal. In short, the knowledge process can be conceptualized as three major procedures: knowledge acquisition, knowledge utilization and knowledge sharing (Tiwana, 2002)[2].

As many KM scholars stress, KM strategies should be considered within the technological, social and cultural contexts of organization. Sinclair claims that the supply of a variety of technological tools to organizations cannot be all about KM strategies. He points out that “even the ubiquitous e-mail has the capacity to become a community host” (Sinclair, 2006, p. 128). In addition to the technological context, if KM strategies could not deliberate the social and cultural contexts of an organization, it is difficult to expect that KM strategies would have a successful outcome. As an example of social context, the communities of practice in which KM strategies have been considered are how the knowledge of communities of practice that existed in the organization could be altered as usable organizational knowledge bases[3]. As a case of cultural context, if an organization could not provide appropriate human resource management policies that can promote a KM

initiative, such as supplying improper incentives or insufficient rewards, it is hard to anticipate that a KM initiative would be succeeded (Chang and Lin, 2015; Hislop, 2005). Simply put, to secure the success of KM strategies, it is essential to recognize that KM strategies should be designed and implemented by considering the technological, social and cultural contexts of organization. Even though it is difficult to verify the effectiveness of a KM initiative on public organizations[4], the arguments of definition, process and strategy on KM that are reviewed above can make KM a framework that is able to explain the ecosystem management of public managers.

### 3. Grounded theory

#### 3.1 Research procedure of grounded theory

Grounded theory as the method of research was adopted to generate a model that explains ecosystem management by public managers. In fact, the origin of grounded theory can be traced back to the clinical work of Glaser and Strauss, *The Discovery of Grounded Theory*. Their common belief is that theoretical conceptualization should be expressed by grounding data in empirical observation (Glaser and Strauss, 1967). Grounded theory has been developed as a positivist qualitative research method specialized particularly in generating theories or models inductively (Strauss and Corbin, 1998)[5].

Due to the fact that the research procedure of grounded theory has not been uniformly applied to many fields of studies, it is difficult to contend definitely what the research procedure of grounded theory should be. Nonetheless, the research procedure of grounded theory can be explained by dividing it broadly into four stages: "1) comparing (data) incidents applicable to each category, 2) integrating categories and their properties, 3) delimiting the theory, and 4) writing the theory" (Locke, 2001, pp. 46-54)[6]. Although it seems that these four stages can be linearly implemented, "Glaser and Strauss underscore that iteration is a feature of the approach, and that all stages are in operation throughout the analysis" (Locke, 2001, p. 46).

The purpose of the first stage is generating conceptual categories (or assigning conceptual labels) by concentrating on the incidents of data that have been gathered from archival documents, interviews or observations. Conceptual categories engendered from this stage are regarded as preliminary conceptual categories because they tend to be narrowed, kept or extended in the later stages. The three types of techniques that are naming, comparing, and memoing are utilized especially to create conceptual categories (Locke, 2001). Naming is the technique that develops abstract meaning for the incidents of data. Comparing is the skill that compares a data incident with others by focusing on similarities and differences between data incidents, while memoing is the technique that jots down researchers' thoughts, hunches and reactions to collected data (Locke, 2001).

The purpose of the second stage is establishing a conceptual whole, which is a conceptual scheme. In order to build a conceptual scheme, researchers concentrate more on clarifying relationships between the generated conceptual categories that have particular properties rather than finding new conceptual categories and their properties. In this stage, memos produced from the first stage can provide researchers the idea of how drafted conceptual categories and their properties can be combined as a conceptual whole (Locke, 2001).

When researchers have generated conceptual categories for data incidents and have constructed the conceptual scheme that elucidates relationships between the generated conceptual categories that have particular properties, researchers proceed to the third stage of the research process, delimiting the theory. In this stage, researchers are advised to refine a particular kind of story by reducing all the theoretical viewpoints that researchers have to the specific focus that may be the most interesting finding of their study (Locke, 2001).

As the last stage of research process, Glaser and Strauss discuss how researchers can effectively present the outcomes of their study or, in other words, write a theory. The essential points of Glaser and Strauss on this stage are showing a theory and telling

plausible stories supporting that theory. Researchers should recognize that their theory is not the perfect theory that can illustrate all aspects involved with it (Glaser and Strauss, 1967; Locke, 2001).

### 3.2 Data collection[7]

The field research for this study is involved with two phases. Preliminary field research was conducted for two months, from March through April 2007. During that period, I met and conducted 20 open conversations with a wide variety of people who were expected to have information about the ESPRs of Seoul. They included: public officials in the Ministry of Environment and the Seoul Metropolitan Government (SMG), professors in universities, researchers in professional research institutes and activists in environmental non-governmental organizations. In addition, I had an opportunity to participate in a meeting among environmental, non-governmental organizations that discussed the ongoing environmental policy and management of Seoul[8]. Overall and by performing observations and conversations with various people during that period, I was able to collect basic archival data, make a selection of discussants who might be visited during the second phase of field research and specify discussion guides for the discussants[9].

The second procedure of field research took place over four months, from December 2007 through March 2008. During that period, I performed 23 face-to-face guided discussions with 15 people who were directly involved with managing the ESPRs. Discussants were contacted by e-mail and telephone especially to introduce this study, as well as to verify some written memos from the preliminary field research. The discussants were 13 public managers who took the responsibility of managing the ESPRs, worked in the government organizations of Seoul, and whose positional ranks in their organizations were varied from lower to higher level[10], a professor who executed a research project that had been contracted with SMG and was related to investigating an ESPR, and an environmental activist who performed a managerial service that had been contracted with SMG and was involved with monitoring an ESPR. The time duration of guided discussions with those discussants ranged between 50 and 90 mins. Additionally, during that period, I observed the managerial activities of public managers, gathered relevant documents, and looked around a few ESPRs that had particular managerial problems. The overall information of the ESPRs is illustrated in Table I[11].

### 3.3 Data analysis

The data analysis basically followed the proposed research sequence of the grounded theory procedure described in Section 3.1 above. First, I assigned conceptual labels (or preliminary codes) to the data incidents that had been collected by asking 13 public managers the following question: in a larger policy and government context, what technological, social or cultural aspects in your organization should be improved to enhance your activities of knowledge acquisition, utilization and sharing?

As Table AI indicates, the preliminary codes that conceptually represent the incidents of data were categorized by three particular aspects that the literature of KM is concerned with: technological, social and cultural aspects. However, some preliminary codes were not easily classified into the three categories. Those unclassified preliminary codes were listed under the category of other aspects: importance of learning, feeling of alienation, feeling of inferiority and goal conflict. Among these, as later coding process unfolded, the importance of learning was not only saturated conceptually, but also transformed as the higher level conceptual code that embraces all other codes and represents the name of model, which is "learning-by-doing." The three other unclassified preliminary codes were further investigated by performing more observations and discussions with public managers.

Second, based on engendered field notes, as well as the conceptual memos that indicate my initial impressions, hunches and thoughts toward the collected data, the preliminary

**Table I.**  
Information of the  
12 eco-scenery  
preservation  
regions of Seoul

Region	Location	Proclamation date	Size (m <sup>2</sup> )	Major feature
Total	12 regions		3,162,903	
(1) Hangang Bamseom (Islet)	Yeouido-dong and Dangin-dong area	August 10, 1999	241,490	A habitat of migratory birds
(2) Dunchon-dong	Dunchon-dong 212 area	March 6, 2000	24,696	A swamp and a forest of <i>Alnus japonica</i>
(3) Tancheon (Stream)	Tancheon 2 gyo (bridge) to Daegokgyo (bridge)	April 15, 2002	1,404,636	A natural stream
(4) Bangi-dong	Bangi-dong 443-9 area	April 15, 2002	58,909	An abundance of biodiversity
(5) Amsa-dong	Amsa-dong 621-1 area	December 30, 2002	102,497	A natural revetment
(6) Jingwannae-dong	Jingwannae-dong 78 area	December 30, 2002	16,639	An abundance of biodiversity
(7) Godeok-dong	Amsa-dong water purification plant to Gangil IC	October 20, 2004	105,609	A swamp and a natural revetment
(8) Cheonggyesang (Mt.)	Wonji-dong Mt 4-38 area	October 20, 2004	146,281	A developed deciduous forest
(9) Heonilleung	Naegok-dong Mt 13-1 area	November 24, 2005	56,639	A developed forest of <i>Alnus japonica</i>
(10) Namsan (Mt.)	Yejang-dong Mt 5-6 area	July 27, 2006	360,529	A developed forest of <i>Quercus mongolica</i>
(11) Buramsan (Mt.)	Gongneung-dong Mt 223-1 area	July 27, 2006	204,271	A developed forest of <i>Carpinus laxiflora</i>
(12) Changdeokkung (Palace)	Waryong-dong 2-71 area	July 27, 2006	440,707	A developed forest of <i>Quercus aliena</i>

**Notes:** River ecosystem – (1), (5) and (7). Swamp ecosystem – (2), (3), (4) and (6). Forest ecosystem – (8), (9), (10), (11) and (12)  
**Source:** GSB (2007, p. 105)

codes, whose meanings are supported by their particular properties, were sorted by the three conceptual categories of knowledge process: knowledge acquisition, knowledge utilization and knowledge sharing[12]. As shown in Table AII, the two preliminary codes that are the feelings of alienation and inferiority were fitted in the three conceptual categories, based on the fact that those two types of feelings evoke low work motivation to public ecosystem managers. Although their act on knowledge utilization itself is neutral (not much affected by those feelings), they are not active in both their knowledge acquisition (triggered by specific managerial problems) and their knowledge sharing (availed by the limited number of people, who can be reached by public managers).

Still, as indicated in Table AII, it was difficult to assign the preliminary code of goal conflict to one of the three conceptual categories because even though my field notes and memos offered me the insight that goal conflict is related closely to public managers' act on knowledge acquisition, utilization or sharing, those field notes and memos could not provide sufficient information about whether I should classify it as a property that belongs to one of the three conceptual categories. Therefore, I had to visit and execute more observations and discussions with public managers to expand on that point. At the final stage of coding and by referring mostly to such an obvious case that public managers faced much trouble to execute their "participatory programs for experiencing the ecosystem," I was able to put goal conflict as one of the properties, which belong to the conceptual category of knowledge utilization. Alternatively, goal conflict was the most conspicuous incident when public managers tried to utilize their knowledge in order to make a balance between conserving and using the ESPRs of Seoul.

Third, as described in Table II, the conceptual scheme that represents a conceptual whole elucidating the knowledge process of public ecosystem managers was established by combining all three conceptual categories with their distinctive properties (or finalized codes). After the conceptual scheme or the model was constructed, I delimited the model by refining its interesting aspects. For example, I could focus on the feelings of alienation and inferiority as psychological bases undergirding the knowledge acquisition and sharing activity of public ecosystem managers. In this stage, I performed selective discussions with some public managers who were expected to supply information that helped to solidify the model. In other words, I did not plan to confine myself in a particular mindset coming primarily from the original discussion guides.

#### 4. Generated model

The findings demonstrate that public ecosystem managers in Seoul acquire, utilize and share their knowledge in a way that can be best characterized as “learning-by-doing”[13]. As in the case of the doctors and teachers learning-by-doing their works, the model of learning-by-doing can be best illustrated in the pragmatic point of view: although doctors and teachers can exercise their own professional judgment in doing their works, it is essential for them to recognize that they must learn to search pragmatically for workable solutions to the problems that patients and students present. In short, they are required to learn problem-solving methods based on their doing experiences (Dewey, 1938; Foray, 2004).

Public ecosystem managers in Seoul are also learning-by-doing their managerial tasks, which are managing the parks, landscape architecture and nature and ecology of Seoul. This section argues the “learning-by-doing” model as an apt depiction of the knowledge process of public managers in managing the ESPRs of Seoul[14]. Those public managers cannot count much on their knowledge gained previously through their past experience or education and training. Instead, they learn individually in the process of discharging their duties on a daily basis.

Three major elements explain the dominance of the “learning-by-doing” model among the public managers who manage the ESPRs. First, the Green Seoul Bureau (GSB) of the SMG, which is a department of SMG, was established in 2005 to manage earnestly the natural environment of Seoul and has operated since then (SMG, 2009). In other words, GSB, the agency that takes overall responsibility for managing the ESPRs, has neither the sufficiently long history nor enough experience that can make it competent to manage the ESPRs[15].

Second, the individuals who are assigned to the public management of the ESPRs do not typically hold specific technical expertise on ecology and ecosystem. Coming from backgrounds in park management and landscape architecture, they have appreciable

Conceptual category	Characteristic	Distinctive properties
Knowledge acquisition	Reactive response	Feelings of alienation and inferiority Insufficient specialized education and training (know-what) Inadequate web-based knowledge repository (contents) Low task priority
Knowledge utilization	Tinkering	Insufficient specialized education and training (know-how) Goal conflict Conservative organizational atmosphere resisting the application of new ideas or methods
Knowledge sharing	Limited personal network	Feelings of alienation and inferiority Inadequate web-based knowledge repository (operation) Limited spare time due especially to work overload Low interaction due particularly to the periodic workplace rotation

**Table II.**  
The result of data analysis on the knowledge process of public ecosystem managers

expertise in those realms. As they are themselves aware, the technical expertise derived from their prior positions does not encompass the knowledge of land as ecosystem. A public manager argued, "Performing these tasks requires ecological knowledge and work experience (#1)." Therefore, they must acquire knowledge of the nature and ecology of Seoul in the process of learning-by-doing.

Third, even though some public managers have a few years work experience in managing the ESPRs, they need to basically have considerable time to familiarize themselves with "regional particularity," which exists in every ecosystem that they try to manage. One public manager contended, "At least 6 month work experience is necessary to perform these tasks (#3)." In other words and due especially to the periodic workplace rotation that public managers are mandated to follow, it is essential for them to experience some periods of time to comprehend the peculiar attributes of the ESPRs they start to manage, such as geographical, seasonal and ecological features characterizing the ESPRs (so called the "regional particularity" of the ESPRs) when they begin to manage the ESPRs after they move to another new government organization although they have some work experience in managing the ESPRs.

Simply put, the learning-by-doing model elucidates well the knowledge process of public managers who manage the ESPRs for three crucial reasons: the comparatively short institutional history of GSB about managing the ESPRs, the lack of critical technical knowledge of public managers for managing the ESPRs, and the considerable time required for public managers to recognize the "regional particularity" of the ESPRs. Unlike the doctors and teachers, however, the public ecosystem managers in Seoul do not have formal or informal institutions to support the development of their knowledge process. This, in turn, leads to specific sub-optimal patterns in the knowledge process.

In the condition of relatively short institutional history, along with the lack of the requisite technical knowledge of public ecosystem managers, public ecosystem managers in Seoul understandably learn by doing in the daily practices of their jobs. As a result of the research procedure of grounded theory, the knowledge process of public ecosystem managers corresponds to conceptual categories with their distinctive properties. As shown in Table II, the distinctive properties that can illustrate the knowledge process of the public ecosystem managers of Seoul illuminate the conditions that hamper their active knowledge process.

Applying the learning-by-doing model to the conceptual categories of knowledge process, the three characteristics of the knowledge process of individual public managers can be identified. Those characteristics are "reactive response" as knowledge acquisition, "tinkering" as knowledge utilization, and "limited personal network" as knowledge sharing. First, the characteristic of "reactive response" is as an apt depiction of the way public managers acquire necessary professional knowledge. Public managers have a passive attitude toward knowledge acquisition, as well as a tendency to acquire knowledge reactively. Basically, public managers are not the active acquirers of knowledge concerning the management of the ESPRs because they have low work motivation originating from the feelings of alienation and inferiority. The three factors identified as distinctive properties also contribute to the reactive disposition toward knowledge acquisition. Those factors are insufficient specialized education and training, which undermines their "know-what" knowledge base, inadequate web-based knowledge repository, particularly related to the "problem of contents," and low task priority. As an example of the reactive orientation toward knowledge acquisition, the case of the sudden death of protected animals (or plants) in an ESPR can be suggested. A public manager remembered, "It took about 2 years for me to solve that accident (or the sudden death of birds) (#6)." Public managers must draw upon the knowledge acquisition activity in order to resolve the questions that are surrounding their tasks.

Second, in relation to knowledge utilization, the characteristic of "tinkering" emphasizes that public ecosystem managers in Seoul have a propensity to rely on a path-dependent and incremental action. For instance, one public manager said, "Realistically, we cannot violate



the laws. In other words, our current plans are not much different from past ones (#11.) The path-dependent and incremental approach to knowledge utilization is derived especially from the three factors identified as distinctive properties: insufficient specialized education and training, particularly in the form of “know-how,” goal conflict, and the conservative organizational atmosphere that resists the application of new ideas or methods. In the case of conducting “participatory programs for experiencing the ecosystem,” a mandate introduced in 2007, public ecosystem managers must make their own decisions on such important questions as who should be recruited as major clientele groups to participatory programs and what kinds of activities should be included as the main contents of those programs. To set up and carry out “participatory programs for experiencing the ecosystem,” public managers utilize their knowledge not only by referring to other programs that have been operated already by other public managers (path-dependent), but also by adding a new content to their programs but basing it mostly on the original contents of their programs (incremental).

Last and in relation to knowledge sharing, the characteristic of “limited personal network” describes how public managers are passive in sharing their knowledge. In addition, there is an inclination to share knowledge with the limited people whom they are able to contact personally. For example, a public manager indicated, “I have my own list of people, whom I can reach easily (#7).” Basically, public managers are not active in sharing their knowledge while managing the ESPRs. This occurs because they have low work motivation originating from the two psychological bases of feelings of alienation and inferiority. The limited network of knowledge sharing is due particularly to the three factors identified as distinctive properties: inadequate web-based knowledge repository, particularly with regard to the “method of operation,” limited spare time due especially to work overload, and low interactions due particularly to periodic workplace rotation. As an example of limited knowledge sharing, the case of when public managers receive civil appeals from the private land owners can be indicated. In that situation, public managers share new knowledge or valuable insight from responding to those civil appeals, especially with the people from whom they have asked assistance. The analysis of the acquisition, utilization and sharing of knowledge by public ecosystem managers in Seoul is summarized concisely in Table III.

## 5. Discussion

This study tries to understand the ecosystem management of public managers by adopting the lenses of KM. The question of how public managers in Seoul acquire, utilize and share knowledge in managing the ESPRs of Seoul has been responded to by offering a specific conceptual model. In other words, the knowledge process of public managers in managing the ESPRs has been explained by describing the model of “learning-by-doing.” Although the focus is on the knowledge process, there is no escaping the fact that

“Learning-by-doing” (knowledge process)		
“Reactive response” (knowledge acquisition)	“Tinkering” (knowledge utilization)	“Limited personal network” (knowledge sharing)
Managers’ activity for acquiring knowledge is not active. They tend to obtain knowledge reactively. For instance, when facing the sudden death of protected animals, they must draw upon the knowledge acquisition activity	Managers tend to apply the path-dependent and incremental approach to execute their managerial tasks. For example, they must conduct “participatory programs for experiencing the ecosystem,” relied mainly on their own judgment	Managers’ activity for sharing knowledge is not active. They tend to share knowledge with the people whom they can reach personally. For instance, when receiving civil appeals from the private land owners, they prefer to share knowledge with the colleagues of past organizations

**Table III.** Knowledge process of the public ecosystem managers of Seoul

managerial activities are not performed in a vacuum. Rather, they take place in a complex policy and government context that is not easily captured as the important variables that influence the knowledge process. Thus, it would be worthwhile to extend this study with group and intra-/extra-organizational-level analyses.

At the group-level study, it can be performed to compare the two groups of public officials: those in technical positions and those in administrative positions. As public officials in technical positions, public ecosystem managers in Seoul feel that they are alienated by the tradition that technical officers do not deal with human resources, budgets or audits. This finding should be contextualized and weighed from other perspectives that can uncover other key variables or elements concerning differences between the two categories of public officials.

At the intra-organizational-level research, the studies that analyze the relationship between the two types of departments in the government organizations of Seoul – departments for conservation and departments for development – should be executed. The public managers of the ESPRs of Seoul harbor a feeling of inferiority because they feel that in the government organizations of Seoul, the tasks they are performing are undervalued or ignored sometimes, compared with the tasks of their colleagues, who work in departments for development. Alternatively, they think that in the government organizations of Seoul, departments for development have more power than those for conservation. However, this belief needs to be tested multi-dimensionally, not only comparing budget allocation between development and conservation, but also adopting the analytical focus of organizational decision-making procedures or bureaucratic politics. Intra-organizational-level studies might also include the research that investigates the influence of top organizational heads on the environmental policy and management of Seoul. The mayor of Seoul, who is the top organizational head of SMG, and other top decision makers in the government organizations of Seoul are people who have been elected as political leaders by the citizens of Seoul. Accordingly, the question of how much those political leaders are interested in the natural environment of Seoul can be an important variable that affects the managerial activities of public managers, who are involved with the environmental policy and management of Seoul.

At the extra-organizational-level study, it is crucial to conduct the research that situates the current practices of environmental management within the change of direction in the national environmental policy. This study recognizes that the change in the direction of the national environmental policy has created a goal conflict in the knowledge process of the public managers of the ESPRs of Seoul. It is worth further investigating how the change in the direction of the national environmental policy has affected practically the knowledge process of the public ecosystem managers of Seoul. In addition, the studies that analyze the influence of stakeholders upon the environmental policy and management of Seoul should be carried out. In fact, it is not difficult to point out diverse stakeholders, who may affect the environmental policy and management of Seoul, such as local environmental groups, local businesses or local residents. Such studies should explore, among other matters, the relative influence of different groups or organizations on the environmental policy and management of Seoul, as well as the approach used by different stakeholders.

Drucker was one of the first to claim that the twenty-first century is characterized as the emergence of “knowledge workers” (Drucker, 2001; Edersheim, 2007). The knowledge workers can be defined simply as the workers who have capabilities to analyze and manage their tasks based on their expertise, as well as their innovative mind (Davenport, 2005; Davenport and Prusak, 2000). Based on that point, public managers in the twenty-first century also should be knowledge workers. In fact, both of the highlighted subjects of study in the field of public management, which are new public management and network management, implicitly demand that public managers at present must be knowledge workers (Agranoff, 2007; Frederickson and Smith, 2003). KM should be considered and dealt with as an essential framework of study in the field of public management because it can be

argued that KM is all about how to assist knowledge workers through the alignment of the technological, social and cultural aspects of organizations (Bergeron, 2003; Hislop, 2005).

Methodologically, even though this study has used the past data gathered mostly in 2008 and resulted in the generation of the particular conceptual model, which is a substantive grounded theory on the ecosystem management of public managers in Seoul, it is believed that this study has potential to be developed as a formal grounded theory that has a higher level of empirical generalization beyond the boundary of Seoul (Holton and Walsh, 2017). For instance, based on the conceptual categories and their distinctive properties figured out by this study, researchers might perform a comparative grounded theory analysis about public ecosystem management among the cities that have different settings, such as New York City, Beijing and Tokyo. Researchers could investigate which conceptual category should be considered as the most influential element that can determine the effectiveness of ecosystem management. In addition, KM as a framework of study can be applied to investigate various areas of study beyond ecosystem management examined by this study because KM, whatever components it considers, regards knowledge itself as the primary focus of study.

### Notes

1. Hislop claims that there are two different epistemologies perceiving knowledge: objectivist epistemology and practice-based epistemology. Basically the objectivist perspective assumes that knowledge can be divided into explicit and tacit knowledge (Hislop, 2005).
2. Tiwana argues that knowledge acquisition is the process to develop and create insights, skills or relationships. He also points out that learning is happened when people in the organization utilize or apply their acquired knowledge to new situations and knowledge sharing tends to take place concurrently with knowledge utilization (Tiwana, 2002).
3. "Communities of practice are groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger *et al.*, 2002, p. 4).
4. In business management, return on investment (ROI) can be adopted as a relevant indicator that can evaluate the effectiveness of knowledge management initiatives (Bergeron, 2003).
5. At present, there are the three different versions of grounded theory (GT): Glaserian GT, Straussian GT and constructivist GT (Simmons, 2011).
6. Strauss and Corbin (1998) put a specific name on the first, second and third stage of research procedure as open coding, axial coding and selective coding, respectively.
7. Although the data collection of this study was performed mainly in 2008, by referring to an updated material opened to the public (NED, 2017), the administrative structure operating to manage the Eco-scenery Preservation Regions (ESPRs) of Seoul, which affects significantly the managerial activity of public ecosystem managers in Seoul, has not been changed. In other words, based on the current information, it can be inferred that the managerial pattern of public officials, who manage the ESPRs of Seoul, has been pretty stable since 2008 (NED, 2017).
8. The meeting was held on March 28, 2007 and in a room of the Citizens' Movement for Environmental Justice (CMEJ), which is one of the representative environmental non-governmental organizations in the Republic of Korea.
9. The discussion guides were prepared by considering the public ecosystem managers' activities of knowledge acquisition, knowledge utilization and knowledge sharing, including some questionnaires about discussants' background information.
10. The number of public managers with whom I discussed is indicated in parenthesis: Seoul Metropolitan Government (3), Hangang Project Headquarters (3), Gangnam-gu government (1), Nowon-gu government (1), Gangdong-gu government (1), Eunpyeong-gu government (1), Jongno-gu government (1), Songpa-gu government (1), and Seocho-gu government (1).

11. At present, the total number of the Eco-scenery Preservation Regions of Seoul is 17. New 5 ecosystems have been added to the existing 12 ecosystems since 2008 (NED, 2017).
12. The concept of knowledge process that this study adopts can be called the term, "coding paradigm," which Strauss and Corbin (1998) indicate in their grounded theory procedure.
13. The term of "learning-by-doing" is adopted from Foray (2004). In fact, John Dewey, an American Philosopher and Pragmatist, contends that learning-by-doing should be suggested and accentuated as a problem-solving method. He believes that the quality of experience obtained through learning-by-doing determines the quality of education (Dewey, 1938).
14. Although this study analyses the learning that is happened to the individual level, there is a relevant research that tries to understand learning happened in the organizational level by considering particularly to the multifaceted context of organization (Jarvie and Stewart, 2018).
15. Strictly, the Nature and Ecology Division (NED) in GSB of SMG, that is, a division of GSB takes the overall responsibility of managing the Eco-scenery Preservation Regions of Seoul (GSB, 2007; NED, 2007, 2008).

### References

- Agranoff, R. (2007), *Managing Within Networks: Adding Value to Public Organizations*, Georgetown University Press, Washington, DC.
- Agranoff, R. and McGuire, M. (2003), *Collaborative Public Management: New Strategies for Local Governments*, Georgetown University Press, Washington, DC.
- Bergeron, B. (2003), *Essentials of Knowledge Management*, John Wiley & Sons, Hoboken, NJ.
- Chang, C.L.-H. and Lin, T.-C. (2015), "The role of organizational culture in the knowledge management process", *Journal of Knowledge Management*, Vol. 19 No. 3, pp. 433-455.
- Davenport, T.H. (2005), *Thinking for a Living: How to Get Better Performance and Results from Knowledge Workers*, Harvard Business School Press, Boston, MA.
- Davenport, T.H. and Prusak, L. (2000), *Working Knowledge: How Organizations Manage What They Know*, Harvard Business School Press, Boston, MA.
- Dewey, J. (1938), *Experience and Education*, Kappa Delta Pi, New York, NY.
- Drucker, P.F. (2001), *The Essential Drucker: The Best of Sixty Years of Peter Drucker's Essential Writings on Management*, HarperCollins Publishers, New York, NY.
- Edersheim, E.H. (2007), *The Definitive Drucker*, McGraw-Hill, New York, NY.
- Foray, D. (2004), *The Economics of Knowledge*, The MIT Press, Cambridge.
- Frederickson, H.G. and Smith, K.B. (2003), *The Public Administration Theory Primer*, Westview Press, Boulder, CO.
- Glaser, B.G. and Strauss, A.L. (1967), *The Discovery of Grounded Theory*, Aldine, Chicago, IL.
- GSB (2007), "2007-nyeon Juyo-upmu-gaeheoik Chujin-jichim (The guidelines for the execution of 2007 major task plans)", Seoul Metropolitan Government, Seoul.
- Hislop, D. (2005), *Knowledge Management in Organizations: A Critical Introduction*, Oxford University Press, Oxford.
- Holling, C.S. and Meffe, G.K. (1996), "Command and control and the pathology of natural resource management", *Conservation Biology*, Vol. 10 No. 2, pp. 328-337.
- Holton, J.A. and Walsh, I. (2017), *Classic Grounded Theory: Applications with Qualitative & Quantitative Data*, Sage Publications, Los Angeles, CA.
- Jarvie, W. and Stewart, J. (2018), "Conceptualizing learning in the public sector: the importance of context", *International Journal of Public Sector Management*, Vol. 31 No. 1, pp. 14-30.
- Keiter, R.B. (1998), "Ecosystems and the law: toward an integrated approach", *Ecological Applications*, Vol. 8 No. 2, pp. 332-341.

- Kessler, W.B., Salwasser, H., Cartwright, C.W. and Caplan, J.A. (1992), "New perspectives for sustainable natural resources management", *Ecological Applications*, Vol. 2 No. 3, pp. 221-225.
- Koontz, T.M., Steelman, T.A., Carmin, J., Korfmacher, K.S., Moseley, C. and Thomas, C.W. (2004), *Collaborative Environmental Management: What Roles for Government?*, RFF Press, Washington, DC.
- Locke, K. (2001), *Grounded Theory in Management Research*, Sage Publications, London.
- Massaro, M., Dumay, J. and Garlatti, A. (2015), "Public sector knowledge management: a structured literature review", *Journal of Knowledge Management*, Vol. 19 No. 3, pp. 530-558.
- May, P.J., Burby, R.J., Ericksen, N.J., Handmer, J.W., Dixon, J.E., Michaels, S. and Smith, D.I. (1996), *Environmental Management and Governance: Intergovernmental Approaches to Hazards and Sustainability*, Routledge, London.
- Moustaghfir, K. and Schiuma, G. (2013), "Knowledge, learning, and innovation: research and perspectives", *Journal of Knowledge Management*, Vol. 17 No. 4, pp. 495-510.
- NED (2007), "2007 Saengtae-kyoungkwon-bojeon-jiyuck Kwali-gaehoeik (2007 management plan for the eco-scenery preservation regions of Seoul)", Seoul Metropolitan Government, Seoul.
- NED (2008), "2008 Saengtae-kyoungkwon-bojeon-jiyuck Kwali-gaehoeik (2008 management plan for the eco-scenery preservation regions of Seoul)", Seoul Metropolitan Government, Seoul.
- NED (2017), "Saengtae-kyoungkwon-bojeon-jiyuck Jijeong, Kwali (Designation and management of the eco-scenery preservation regions)", available at: <http://env.seoul.go.kr/archives/13175> (accessed April 24, 2018).
- Nonaka, I. (1998), "The knowledge-creating company", in HBS (Ed.), *Harvard Business Review on Knowledge Management*, Harvard Business School Press, Boston, MA, pp. 21-45.
- Simmons, O.E. (2011), "Why classic grounded theory", in Martin, V.B. and Gynnild, A. (Eds), *Grounded Theory: The Philosophy, Method, and Work of Barney Glaser*, Brown Walker Press, Boca Raton, FL, pp. 15-30.
- Sinclair, N. (2006), *Stealth KM: Winning Knowledge Management Strategies for the Public Sector*, Elsevier, Amsterdam.
- SMG (2009), "The organization of an office of Seoul (in Korean)", available at: [www.seoul.go.kr/v2007/seoul/review/general/organ.html](http://www.seoul.go.kr/v2007/seoul/review/general/organ.html) (accessed January 6, 2009).
- Strauss, A. and Corbin, J. (1998), *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, 2nd ed., Sage Publications, Thousand Oaks, CA.
- Tiwana, A. (2002), *The Knowledge Management Toolkit: Orchestrating IT, Strategy, and Knowledge Platforms*, 2nd ed., Prentice Hall PTR, Upper Saddle River, NJ.
- Wenger, E., McDermott, R. and Snyder, W.M. (2002), *Cultivating Communities of Practice*, Harvard Business School Press, Boston, MA.
- Wiig, K.M. (1997), "Knowledge management: an introduction and perspective", *The Journal of Knowledge Management*, Vol. 1 No. 1, pp. 6-14.
- Wise, C. and O'Leary, R. (1997), "Intergovernmental relations and federalism in environmental management and policy: the role of the courts", *Public Administrative Review*, Vol. 57 No. 2, pp. 150-159.
- Wondollock, J.M. and Yaffee, S.L. (2000), *Making Collaboration Work: Lessons from Innovation in Natural Resource Management*, Island Press, Washington, DC.
- Wonkka, C.L., Rogers, W.E. and Kreuter, U.P. (2015), "Legal barriers to effective ecosystem management: exploring linkages between liability, regulations, and prescribed fire", *Ecological Applications*, Vol. 25 No. 8, pp. 2382-2393.

#### Further reading

- McNabb, D.E. (2007), *Knowledge Management in the Public Sector: A Blueprint for Innovation in Government*, M.E. Sharpe, Armonk, NY.

Manager	Technological aspect	Social aspect	Cultural aspect	Other aspects
1	“Requires free communications through the website” (operation) “The website needs useful references” (contents)	“Hard to know each other” (low interaction)	“Needs education and training to let us know how to do it” (know-how)	“Requires ecological knowledge and work experience” (importance of learning)
2	“I have not frequently referred to the contents of the website” (contents)	“Requires membership training” (low interaction)	“Special education and training is essential to perceive what we must do.” (know-what) “needs to develop proper feedback system” (conservative atmosphere)	
3				“Called upon at least six months work experience to perform these tasks” (importance of learning)
⋮	⋮	⋮	⋮	⋮
8		“More close cooperation between governments” (low interaction)	“Developing first and preserving next” (low task priority)	“Time to accentuate preservation” (feeling of inferiority)
9		“Difficult to meet regularly” (low interaction)	“Prior to perform the task of conserving” (low task priority)	“A balance between conserving and utilizing” (goal conflict)
10	“The problem of sharing our data through the website” (operation)			“More support for ecosystem managers” (feeling of alienation)
11	“Has to fill out useful contents to the website” (contents)			“Better treatment to ecosystem managers” (feeling of alienation)
12			“The lack of incentives to apply” (conservative atmosphere)	
13			“Should develop intensive education and training program” (know-what and know-how)	“It is contradictory to argue that the natural environment of Seoul can be utilized.” (goal conflict)

**Table A1.**  
Illustrations of preliminary codes

**Note:** Parentheses represent preliminary codes

**Appendix 2**

Preliminary code	Knowledge acquisition	Knowledge utilization	Knowledge sharing
Feeling of alienation	–	0	–
Feeling of inferiority	–	0	–
Goal conflict	?	?	?
Website (contents)	<p>“The website needs useful references”</p> <p>“I have not frequently referred to the contents of the website”</p> <p>“Various task manuals related closely to one another should be consolidated and stored at the website”</p> <p>“Needs to store applicable data at the website”</p> <p>“Has to fill out useful contents to the website”</p>		
Website (operation)			<p>“Requires free communications through the website”</p> <p>“We cannot upload our data to the website”</p> <p>“The problem of sharing our data through the website”</p> <p>“Hard to know each other”</p> <p>“Requires membership training”</p> <p>“Requires to establish inner networks”</p> <p>“More close cooperation between governments”</p> <p>“Difficult to meet regularly”</p>
Low interaction			
Education and training (know-what)	<p>“Special education and training is essential to perceive what we must do”</p> <p>“Should develop intensive education and training program”</p>		
Education and training (know-how)		<p>“Needs education and training to let us know how to do it”</p> <p>“Should develop intensive education and training program”</p>	
Work overload			<p>“Very busy to finish my daily works”</p> <p>“Requires ability to deal with multiple tasks”</p>
Low task priority	<p>“Task for conservation is just a part (20%) of my tasks, which I should do”</p>		

(continued)

**Table AII.**  
Preliminary codes sorted by the knowledge process

Preliminary code	Knowledge acquisition	Knowledge utilization	Knowledge sharing
	“Developing first and preserving next” “Prior to perform the task of conserving”		
Conservative atmosphere		“Needs to develop proper feedback system” “The lack of incentives to apply”	

**Table AII.**

**Notes:** Codes: -, negatively involved; 0, neutral; and ?, unknown

### About the author

Jeongseok Lee received PhD Degree in Public Affairs from Indiana University – Bloomington and is currently working as Research Fellow at the Korea Environment Institute (KEI). This paper is based on his Doctoral Dissertation and prepared by focusing particularly on its parts regarding Grounded Theory building. He is interested in diverse research subjects involved, especially with public management, environmental policy and governance. Jeongseok Lee can be contacted at: [leej2@uemail.iu.edu](mailto:leej2@uemail.iu.edu)

For instructions on how to order reprints of this article, please visit our website:

[www.emeraldgroupublishing.com/licensing/reprints.htm](http://www.emeraldgroupublishing.com/licensing/reprints.htm)

Or contact us for further details: [permissions@emeraldinsight.com](mailto:permissions@emeraldinsight.com)



Reproduced with permission of copyright owner. Further reproduction prohibited without permission.