

# **The Empirical Study on *Ba* for Knowledge Creation**

## **- Case Study of Company-N Business Communication Headquarters -**

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### **Abstract**

Knowledge management is now attracted in the academic and business fields. Capturing, sharing employees' knowledge and creating new knowledge become one of the most important business strategies.

My research focuses on *ba* for the knowledge creation. The concept of *ba* was proposed by Nonaka and Konno [4]. *Ba* is considered as a platform or a catalyst for the knowledge creation. According to Nonaka, Konno and Toyama [6], to create knowledge must a knowledge leader create *ba* based on the knowledge vision and he can intentionally create *ba*, such as physical *ba* like an office, electronic *ba* like an intranet or mental *ba* like a common goal in a group.

The paper completes the empirical research on the relation between the design of office and creation of *ba* for knowledge creation. I investigated the advanced office in the business communications headquarters (BCH) of Company-N, which utilizes the office environment and intranet positively, to succeed the two research objectives. One is to clarify the relation between the BCH office and *ba* for knowledge creation, and the other is to clarify what is the essence of office designing and creation of *ba*.

I led the conclusion from the result of investigation based on the knowledge creation theory. That is, my main assertion is, **"The office itself is not *ba*. *Ba* will be created when a person re-defines the designed office actively and in situation through the interaction with it."**

### **1. Introduction**

I aimed to propose one interpretation concerning "creation of *ba*" through this research. I considered the proposition "*Ba* can be intentionally created", which had been insisted in the existing researches, from two aspects of "design" and "creation". An enough research had not been performed until now though the importance of *ba* has been recognized concerning the research of *ba* in the organization theory [2]. On the other hand, the importance of the conversation space is recently increasing in business world as knowledge management becomes popular, which is paid attention as new management technique. For example of the best practices in the knowledge management, one company set up the committee in in-house to value the face-to-face-communication between employees, and another company sets up the cafeteria-style conversation space which creates a relaxed atmosphere. As the internet technology progresses, there are many examples of conversation methods with information technologies, such as a mailing list, a videoconference system, etc. But though many success cases were introduced, there are a lot of managers who are worried how creating *ba* actually. I hope this research will contribute to the business fields as much as one of the science research.

### **2. Research Purposes**

The first research objective is to clarify the relation between the intentionally designed office environment and *ba* of knowledge creation, and the second is to clarify the essence of designing office environment and creating *ba*.

The research object is the business communications headquarters (BCH) of telecom company which constructed intentionally this office used positively internet technology to promote the employee's

knowledge creation activity. The feature is the point to integrate a variety of office spaces and intranet. The office environment is separated four types of spaces in each floor. They are called “Office zone” for strategy planning, “Concentration zone” for individual concentrated work, “Creative zone” for conversation, and “Refresh zone” for relaxation. Intranet can make individual knowledge share in the entire organization and be used by the free-address system around the office spaces.

### 3. Research Questions

Question1: Do the employees of BCH act inside their office as designed? How have they actually used these office spaces?

Question2: Essentially can *ba* for knowledge creation be designed intentionally and created beforehand?

When I visited BCH beforehand, I received the explanation of a current work concerning the design of the office from the deputy senior executive manager who was the designer of BCH office environment. He analyzed employee's action pattern with his knowledge obtained from his long business experience, and designed four types of office spaces. However, I had a question if employees were actually using the office spaces properly clearly as designed? Commonsensibly, there must be any gaps between the behavior intended by the design and actual one of the employee. If it is true, how is the gulf between intention and practice, and how much does the employee devise to use designed office spaces? This is my first research question.

The second question relates to the first question. If it is true that *ba* designed intentionally will be correspond with *ba* employees actually create, I want to research the essence of “to design *ba*” and “to create *ba* actually”.

### 4. Review of Existing Researches

I reviewed existing researches before this research and understood the concept of *ba* from the aspect of (1) the definition, (2) the role and (3) the mechanism of creation of *ba* in organization theory. Some pioneering researches by Itami, Yamashita, Nukata and Nonakas are introduced though the research on *ba* in the organization theory is not necessarily enough yet [2]. I reviewed around those researches.

First of all, I discussed what *ba* was. The common definition of *ba* in pioneering researchers is a point “situation in the shared space” [2]. However, the definition of *ba* argued by Itami, Yamashita and Nukata is “a container for information interaction”. They tried to clarify the process of informational interaction within *ba*. On the other hand, according to Nonaka, Tooyama and Konno [6], *ba* in knowledge creation theory is defined “shared context or relation”. It is “person-to-person relation” or “person-to-environment relation” in another expression. *Ba* is considered as a platform or a catalyst for the knowledge creation. They defined four types of *ba*, which are “originating *ba*”, “dialoguing *ba*”, “systemizing *ba*”, and “exercising *ba*”. These *ba* is correspond with four modes of knowledge creation process called “SECI” [4]. First of all, “originating *ba*” is defined as the platform for “socialization”, which is the process to create tacit knowledge through shared experience. Secondly, “dialoguing *ba*” is defined as one for “externalization” which is the process to convert tacit knowledge to explicit knowledge. Thirdly, “systemizing *ba*” is defined as one for “combination” which is the process to create explicit knowledge from explicit knowledge by information technology. Finally, “exercising *ba*” is defined as one for “internalization” which is the process to convert explicit knowledge to tacit knowledge through learning, etc. They insist that the mechanism that four types of *ba* are always created and circulate should be requested for organizational knowledge creation.

Here, I make clear the definition of *ba* in this research. I stand in the viewpoint of the knowledge creation theory and define *ba* as “employee-to-employee relation” or “employee-to-office space relation” in the organizational routine.

Secondly, I discussed the role of *ba*. The concept of *ba* is used to explain "micro-to-macro link" which is a dynamic process between an individual and the whole. In the viewpoint of informational interaction, such as Itami, Yamashita and Nukata [2], the role of *ba* is to "order" and to make

"psychological resonance" through the informational interaction caused inside *ba*. On the other hand, the role of *ba* in the knowledge creation theory, such as Nonakas, is to enable to convert information to knowledge, or tacit knowledge to explicit knowledge [4].

Finally, I discussed how *ba* was created. There are few empirical studies to investigate the mechanism of creation of *ba* because *ba* is discussed on the assumption of having already existed. Then, I want to discuss about the mechanism of creation of *ba* through theoretical studies by Itami and Nonakas.

The viewpoint of informational interaction is common recognition in the viewpoint of the knowledge creation theory, and both a point "the creation of *ba* can be managed". According to Nonaka, Tooyama and Konno [6], "to create knowledge must a knowledge leader create *ba* based on the knowledge vision and he can intentionally create *ba*, such as physical *ba* like an office, electronic *ba* like an intranet or mental *ba* like a common goal in a group." The preceding research by Nonaka and Reinmoeller [5] is the case study about the construction of physical *ba* for knowledge creation. They made clear the relation between *ba* for the knowledge creation and real office spaces. This relation is shown in Fig 1. It is thought that this case study is a summary of the interview investigation to the deputy senior executive manager of BCH, who is this office designer, and that the relation shown in Table 1 was reflected his intention.

Table 1 Knowledge Creation Architecture

<b>Ba</b>	<b>NTT Kanto Creative Office</b>
<b>Originating Ba</b>	<b>Office environment Special setting, e.g. smoking, fountain</b>
<b>Dialoguing Ba</b>	<b>Office environment Special setting, e.g. creative zone</b>
<b>Systemizing Ba</b>	<b>Intranet, ("My Home Page Strategy")</b>
<b>Exercising Ba</b>	<b>Office environment Special setting, e.g. concentration zone</b>

Nonaka, Patrick(1999)

## 5. Setting of Research Subjects

I set two research subjects based on the review of existing researches.

On the first research subject, I assumed the relation submitted by Nonaka and Reinmoeller [5] is the set of hypotheses in my research and verified them through the questionnaire survey and interview investigation. The set of hypotheses is as follows.

Hypothesis 1: Refresh zone is *ba* for socialization, or originating *ba*.

Hypothesis 2: Creative zone is *ba* for externalization, or dialoguing *ba*.

Hypothesis 3: Intranet is *ba* for combination, or systemizing *ba*.

Hypothesis 4: Concentration zone is *ba* for internalization, or exercising *ba*.

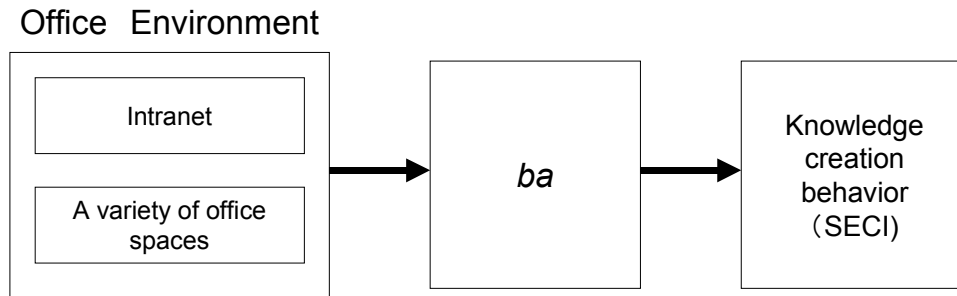
I set the second research subject in the viewpoint of the deterministic aspect "*ba* can be created intentionally". That is, it is assumed that it was verified to be able to create such *ba* by designing office spaces. The deterministic aspect is a viewpoint one "a construction acts as the condition which restrains a life style" in the environment-behavior design research.

## 6. Conceptual Framework

I set the conceptual framework shown in Fig. 1 for my investigation. This framework is composed of the office environment, *ba*, and knowledge creation behavior. Moreover, the office environment consists of a variety of office spaces with intranet.

This conceptual framework is based on a deterministic viewpoint, and its insistence is that “the better the office environment is designed, the more easily *ba* for knowledge creation can be created”.

Fig. 1 Conceptual Framework



## 7. Outline of Investigation

First of all, I describe the intention of the investigation in this research. Its intention is to analyze the actual conditions of the employee who has used the office. I visited BCH before this research started, and received the explanation of the office by the deputy senior executive manager of BCH. He explained about the office environment from details of construction of the office to his thought about the office. As for us, I took interested to investigate how employees were recognizing their own office environment in a daily activity and actually how they acted in that environment.

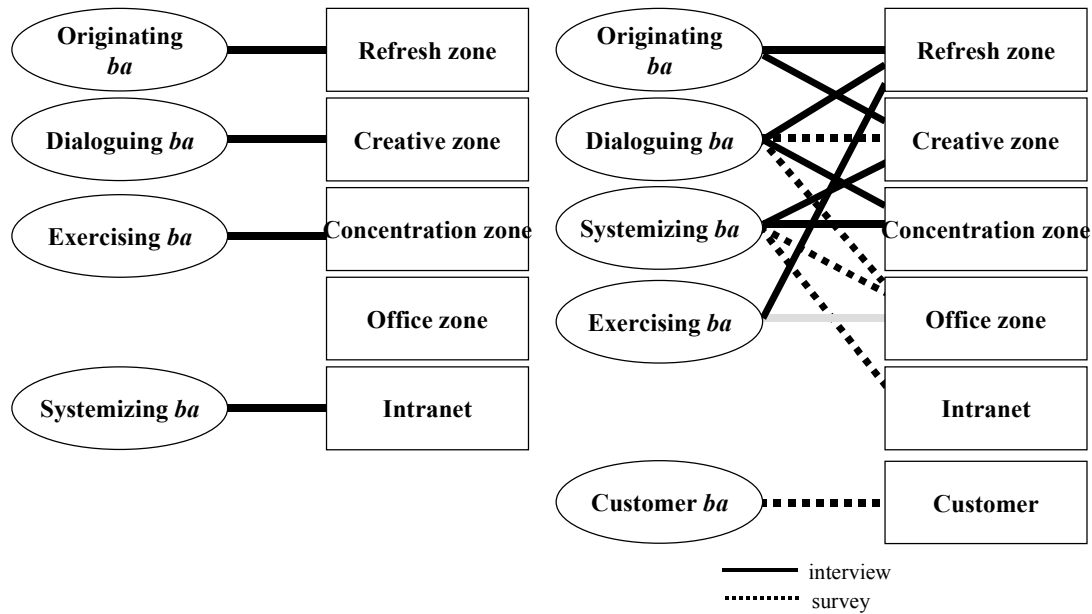
I conducted the questionnaire survey of 100 employees who were select by BCH. This investigation was considered as a preliminary one. This was done to understand the level (five stages in Likert scale) of employee's knowledge creation behavior, and the relation between the knowledge creation behavior and the place where employee did it.

Next, I nominated six employees among cooperators whose degrees of the knowledge creation activity are higher than 3.0 in the analyzed result of the questionnaire survey and executed interview investigation one by one. It was the method of the half-structured interview based on the format made beforehand. I aimed to analyze what types of *ba* employees usually create in the office spaces by finding out some concrete cases of office application of the employee by questioning.

Finally, to understand in the time series how the employee creates *ba* in the routine work, I did the action investigation. I sent the form of its investigation to six people who had cooperation in the interview investigation, and I received the reply from three people. I had the cooperators for the investigation record their behavior inside the office for five days when he was in the office longer than half a day, and the record is consist of seven items, (1)the date, (2)the beginning and end time of each action, (3)the place where he acted, (4)the partners who he acted together, (5)communication medium, (6)the content of the action, (7)the reason why he selected the place where he had acted.

## 8. Analysis and Consideration

The first research subject is analyzed in the beginning. The relation obtained from the results of the questionnaire survey and interview investigation was shown in Fig. 2.



(a)Hypotheses (b)Result of Investigations  
Fig. 2 Relation obtained from questionnaire survey and interview investigation

I summarized the results of the questionnaire survey and interview investigation as followed; as the knowledge creating action done in the office zone is “externalization”, “combination” and “internalization”, this space is considered as “dialoguing *ba*”, “systemizing *ba*” and “exercising *ba*”. As the knowledge creating action done in the creative zone is “socialization”, “externalization” and “combination”, this space is considered as “originating *ba*”, “dialoguing *ba*” and “systemizing *ba*”. As the knowledge creating action done in the concentration zone is “externalization” and “combination”, this space is considered as “dialoguing *ba*” and “systemizing *ba*”. As the knowledge creating action done in the refresh zone is “socialization”, “externalization” and “internalization”, this space is considered as “originating *ba*”, “dialoguing *ba*” and “exercising *ba*”.

The above summary showed that office spaces in BCH did not coincided with *ba* for knowledge creation. Therefore, I concluded that my hypotheses had been rejected.

Then, the second research subject is considered. Up to now, my standpoint was based on deterministic aspect. However, “to design an office” is not always correspond with “to create *ba*” as concluded by the first research subject. Then, why does not “office spaces in BCH” correspond with “four types of *ba* for the knowledge creation”? First of all, I analyzed employee's recognition to each office space through the speech of the interview investigation.

Mr. A

“I use a unoccupied space even if it might be creative zone or concentration zone. “

“I do not force the usage of office spaces on my subordinates. They should use the space where they can use comfortably.”

Mr. B

“I can work anywhere in the floor because of free-address system and PHS. Moreover, the other party can be connected with PHS at once if necessary. As a result, these technologies increase the opportunity of communication with colleagues.”

Mr. C

“I work pleasantly because I can decide myself and work on my responsibility, at my pace and in my workstyle.”

“I find an empty space naturally, move and work there rather than using the place properly for myself consciously. Therefore, I think that I can work rhythmically.”

I guessed that interviewees used office spaces actively and improvisationally by their own intention to each space. This is based on above speech. For example, Mr. A said, "I use a unoccupied space even if it might be creative zone or concentration zone." Mr. C also said, "I find an empty space naturally, move to there and work rather than using the place properly for myself consciously." It is thought that the employee redefines his recognition of designed office space and creates *ba*.

According to records of the action investigation, I found the evidence that the employee's behavior was not only scheduled but also executed in haste. For example, Mr. A said, "I discussed with my project members about an idea using materials because I found the quiet space unoccupied in the creative zone." And he also said, "I talked with my colleague at ease in the drink corner because a good atmosphere was created there." Additionally, Mr. C said, "I discussed about an idea with my project members and completed materials projecting them onto the screen because there was a large-scale display in the creative zone." Therefore, it can be said that *ba* is created with employee's improvised act and emerges.

The field of the cognitive science "The Situation Theory" pays attention recently. The situation theory begins from the advocacy of Suchman's concept "Situating Action" in his book "Plans and Situated Actions"[7]. The concept "Situating action" emphasizes the aspect that the course of all actions essentially depends on material and social environment. And according to the situation theory, the plan is one of resources for situating action and does not decide the course in any strong meaning. For example, there is the case that a person will go down the rapid stream with the canoe. Before the person actually go down the rapid stream, it is natural that he should stay on the waterfall and plan how to descend. However, when the person actually go down the rapid stream, he must throw away the plan drawn beforehand even if it is detailed, and descend it operating the canoe with all skill embedded in his body. In this case, it is thought that the purpose of the plan to descend by the canoe is not to actually move the canoe through the stream but to obtain a possible position of the best to use his embedded skill [7].

In the point of view of situation theory, it is thought that to design each office space is to prepare some resources to create *ba*. It is thought that what call "a resource" here is like "a sign" which can be perceived from appropriate office space. For instance, the sign in the creative zone is "atmosphere (quietness)" or "tool (PC and large-scale display)", and the one in the refresh zone is "atmosphere (scenery on the outside and peacefully)". I guessed that employee redefined an office space and created *ba* in situation using these resources in the daily work.

According to this aspect, it is natural that a variety of *ba* will be created actively and improvisationally rather than *ba* created in the office space will be decided by its design. From the above-mentioned consideration, I reached the conclusion that the office itself is not "*ba*".

## 9. Revised framework

When I started this research, I had the assumption that managers/designers can create *ba* intentionally. However, as is concluded above, office environment itself is not *ba*. *Ba* is created by employees/practitioners indwelling certain situation. Therefore, I will revise the conceptual framework that I have showed. The revised framework emphasizes the interaction between the office environment and the person. (Fig. 3)

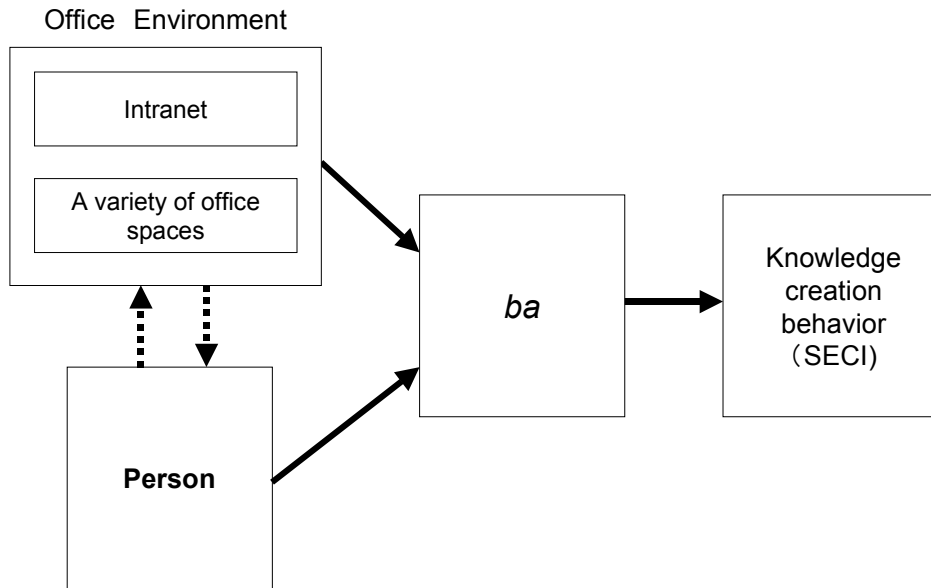


Fig. 3 Revised Framework

## 10. Conclusion

The conclusion of this research as follows:

**“The office itself is not *ba*. *Ba* will be created when a person re-defines the designed office actively and in situation through the interaction with it.”**

I started this research with deterministic perspective. I assumed that once office layout is designed well, *ba* is emerged automatically. According to this perspective, I tried to specify the correspondence between office spaces where were have designed by the top manager and four types of *ba*. The results of the questionnaire survey and interview investigation showed that there was no one-to-one correspondence between office spaces and four types of *ba*. I found various *ba* in each office space. It made clear that to design an office environment was not always correspond with to create *ba*. From this result, I could reach the first sentence of the conclusion “The office itself is not *ba*.”

Then, from the result of the action investigation, I made clear that employee visualized and created *ba* improvisationally through the interaction with the office environment. The office environment has resources to create *ba*. The employees redefine these resources and create *ba* with active and in situation. Therefore, I could reach the second sentence of the conclusion “*Ba* will be created when a person re-defines the designed office actively and in situation through the interaction with it.”

It is an employee in the office that plays the principal role to create *ba*. Thus, it is important that we should not stand the viewpoint of determinism but the one that *ba* will be created through the interaction between an employee and the office environment. Therefore, I revised the conceptual framework.

## 11. Acknowledgement

When I completed this research, I got the cooperation everywhere a lot. First of all, I want to express my gratitude to Kunio Ushioda, the senior vice president and deputy senior executive manager, and everybody of BCH of NTT East. This research might not have been able to be completed if there was no complete support of BCH. I want to assist them in their work as one of supporters in the future. Next, I want to express my gratitude to Professor Ikujiro Nonaka who gave me the chance to learn the knowledge

creation theory and to work on this research in JAIST<sup>1</sup>. Finally, Assistant Professor Dai Senoo became my partner of the discussion at this research from the first, and I got a valuable opinion and the word of the encouragement from him. I want to express my gratitude to him.

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