Mechanisms of Cross-Boundary Learning

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Communities of Practice and Job Crafting

By

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Cambridge
Scholars
Publishing

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This book first published 2019

Cambridge Scholars Publishing

Lady Stephenson Library, Newcastle upon Tyne, NE6 2PA, UK

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library

ISBN (10): 1-5275-3777-3
ISBN (13): 978-1-5275-3777-4

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INTRODUCTION

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Overview

In the modern boundary-less world, where conventional workplace learning is insufficient, people must learn outside of their daily contexts through interaction with others who have diverse experiences. Therefore, learning through boundary crossing is becoming more important. Interdisciplinary argument on boundary-crossing experiences have emerged in various disciplines such as management, psychology, education, anthropology, and philosophy.

However, analysis on how boundary-crossing experiences promote adult learning is lacking. Moreover, there is little guidance for practitioners who seek ways to promote boundary crossing for themselves and members of their organizations. To address these gaps, this book aims to reveal the mechanism of boundary-crossing learning.

Description of this book

This book reveals the mechanism through which adults learn through boundary-crossing experiences. Boundary crossing, although defined in various ways, refers to activities in which persons belonging to different organizations collaborate in a context different from their workplace.

While boundary crossing attracts researchers and practitioners as a platform for adult learning, analysis of its mechanism is insufficient. Furthermore, its meaning differs among researchers. In Chapter 1, the concept of boundary crossing means boundary crossing participation, in which knowledge workers participate in communities of practice outside the workplace to which they belong. It has a deep connection with

knowledge work. The goal of boundary crossing is to create heterogeneous mixtures in learning for knowledge creation. Koyama (2019; Chapter 2 of this book) tried to find a condition for a boundary-crossing experience to cause learning, showing an empirical survey using job characteristic theory and job crafting. It does not to be regarded that all the boundary-crossing experiences result in positive outcomes of capability development. Therefore, it should be worthwhile to consider a condition of a boundary-crossing learning. Nakanishi (2019; Chapter 3 of this book) examines interaction of people who belong to different organizations, addressing boundaries between organizations.

To address this research gap, this book (1) reviews literature on theories related to boundary crossing using an interdisciplinary perspective and (2) empirically analyzes the mechanism of learning through boundary crossing and associated job crafting. Although job crafting attracts the attention of many researchers, there are few empirical studies on this topic. This book addresses cases in Japan where various experimental projects are in progress. However, because the labor market and human resource management practices in Japan are not so different from other countries as is usually said, the book's findings are applicable to other settings globally.

Thus, this book will contribute to the theory and practice of human resource development of knowledge workers and other related domains.

Major features of this book

There are several major features that make this book unique. First, the book integrates the perspectives of several disciplines (job crafting, communities of practice, etc.) to examine boundary crossing in different settings. Because boundary crossing is a multi-faceted phenomenon, multiple perspectives are critical to its understanding.

Second, each chapter's discussion is based on empirical research, which provides examples to practitioners who are interested in learning and human resource development. Although boundary crossing is a practical activity, it is also worthy of academic research. The ultimate goal of this book is to spread the meaning of boundary crossing to practitioners worldwide.

Third, the authors of this book have abundant experience both as practitioners and researchers. It enables discussion based both on the authors' practical business experiences and academic theory. Boundary crossing is worthwhile for both academic and practical hemisphere of the world. However, these two sides are not independent but closely interrelated. Excellent academic work provides useful practical implications, and

practical experiences of border crossing (both as a focal person and facilitator) provide valuable data to improve theory.

The authors have boundary crossing experiences in diverse settings, such as graduate school, international conferences organized by a specialized agency of the United Nations, and volunteer projects. Thus, the readers can understand what can be achieved through boundary crossing based on first-hand accounts.

Moreover, this is the first book written in English that provides a detailed description of the "modified grounded theory approach" (M-GTA), which is increasing in popularity in social sciences. The grounded theory approach (GTA), from which M-GTA originates, was created and developed in sociology. Now, M-GTA is applied in various fields, such as psychology and management science. M-GTA is an improved version of GTA that mitigates problems associated with GTA. First, M-GTA solves disputes over epistemology by rediscovering the purpose of GTA. Second, M-GTA solves disputes over methodology by visualizing all analysis processes. Details are described in Chapter 4 of this book. Among various schools of GTA, M-GTA is the most widely applied in Japan. However, there was is no literature in English that describes its philosophy and methodology, which is unfortunate, considering the usefulness of M-GTA. To spread M-GTA to researchers throughout the world, one chapter is devoted to M-GTA.

Structure of this book

This book consists of three parts.

Part I: Theoretical background

Part I provides the theoretical basis of boundary crossing. Each chapter in Part I provides a theoretical review of various concepts related to boundary crossing.

Chapter 1: Boundary crossing. The concept of boundary crossing, which is the focus of this chapter, is used in an interdisciplinary sense. Boundary crossing is required for modern work, which is complicated and dynamic, and thus it has a deep connection to knowledge work.

In this chapter, the author focuses on boundary crossing participation—in which knowledge workers participate in communities of practice outside the workplace to which they belong—as one aspect of standard boundary crossing. Further, the concept of boundary crossing participation was established based on the history of the development of the concept in

Japan (which has focused on the effectiveness of learning that does not require boundary crossing).

Chapter 2: Job crafting. Job crafting is a means of customizing a job through self-initiated changes. In this chapter, several studies on job crafting are reviewed. While most studies are based on western workplaces, this chapter also considers job crafting from the perspective of Japanese human resource management. Without clearly defined job descriptions, it appears easier to engage in job crafting in Japanese companies in western companies.

Chapter 3: Communities of practice. Another form of boundary crossing is participating in communities of practices (CoPs) consisting of employees of different organizations. Thus, Chapter 3 aims to provide the theoretical basis for CoPs. First, it considers the diverse definitions of a CoP. Second, referencing these definitions, it categorizes CoPs analyzed by prior studies with two dimensions: "collaboration" (whether participants frequently collaborate) and "boundary" (whether the CoP is inter- or intra-organization). By introducing the "boundary" dimension, the discussion of boundary crossing (or, "inter-organizational interaction") begins.

Part II: Methodology

Part II has one chapter (Chapter 4) that introduces the philosophy and methodology of M-GTA, which is applied in empirical research in Part III.

Chapter 4: Thoughts on and Methods of M-GTA. The purpose of this chapter is to explain M-GTA's concepts and techniques in a manner that researchers and practitioners in the field of management and organization research can easily understand. Section one explains the basic concepts of qualitative research and GTA, which are necessary to understand M-GTA. Sections two and three explain GTA's thought and techniques, and sections four and five explain the same for M-GTA. Section six provides supplemental comments from a psychological perspective.

Part III: Empirical research

Part III includes chapters discussing empirical research of boundary crossing.

Chapter 5 Study 1: Knowledge brokers and activities outside of organizations. In boundary crossing, it is important to focus on boundary crossing participation from a broad range of communities of practice: from those within a company that resemble apprenticeship style models to those outside of companies in which a range of knowledge workers form loose

connections. Therefore, the research considers how knowledge brokers learn through brokering between communities of practice outside of the company and those to which they belong. To do so, the study analyzes interviews with 15 knowledge brokers, that is, individuals with confirmed and specific experience in propagating and funneling practices in their companies.

Two major theoretical implications emerge from this research. First, the results of learning as recognized by knowledge brokers are mainly skills appropriate for co-configuration work. Second, knowledge brokers do not simply connect inconsistencies and conflicts between communities; instead, they transform their identities as they urge transformation in both the boundary crossing origin and destination communities, creating a heterogeneous mixture of practices.

Chapter 6 Study 2: Boundary-crossing experience and job crafting from the perspective of job characteristic theory. Conditions of boundary-crossing experiences that promote learning are considered in this chapter. Although there are many conditions, the empirical survey in this chapter is based on job characteristic theory. According to job characteristic theory, motivational potential score (MPS) is calculated from the five core job characteristics: skill variety, task identity, task significance, autonomy, and feedback. The results of the empirical survey suggest that job crafting due to a boundary-crossing experience is higher than that of an employee's daily job only if the MPS of the boundary-crossing experience is higher than that of the daily job. This suggests that a company should aim to ensure that the MPS of a boundary-crossing experience is higher than that of an employee's daily job if the company regards boundary-crossing experiences as learning opportunities for their employees.

Chapter 7 Study 3: Inter-organizational communities of practice: Shared- and inter-contextual learning. This chapter provides an empirical analysis of inter-organizational CoPs formed by participants of an international conference in the civil aviation domain. Two types of learning are introduced and compared: inter- and shared-context learning. In other words, both commonality and differences in the work context facilitate learning in specific ways. This chapter emphasizes the importance of the sharing context in border crossings, whereas most research focuses on the interaction of people with diverse context. This suggestion provides new insight for the discussion of boundary crossing.

Now, you are ready. Let's go beyond the "boundary" surrounding your office, school, and laboratory, and explore the world of "boundary crossing" together to discover the unknown.

PART I:

THEORETICAL BACKGROUND

CHAPTER ONE

BOUNDARY CROSSING[1]

NOBUTAKA ISHIYAMA

The concept of boundary crossing

The concept of boundary crossing, which is the focus of this paper, is used in an interdisciplinary sense. Postulated by Engeström (1987, 2008), boundary crossing originated in expansive learning. Engeström (2004) analyzed changes to modern work qualities, positing that a new type of work (co-configuration) had been created. In co-configuration work, a true partnership is formed with customers and changing needs are handled while advancing continuous dialog. One example is providing medical care when a patient is suffering from multiple ailments. To treat multiple ailments, multiple practitioners (rather than a single authoritative arbiter responsible for treatment) must engage in dialog with the patient and learn from one another while providing treatment. In this type of co-configuration work, actors engage in boundary crossing (rather than staying within a specific area), which results in horizontal expansive learning.

Engeström (1987, 2008) argued that in expansive learning, in addition to horizontal movement in response to that in the vertical dimension, heterogeneous mixtures must be created. Here, horizontal expansive learning is the act of boundary crossing, which involves questioning, challenging, rejecting, and analyzing current practices. Thus, boundary crossing always requires bidirectional and mutual action.

Engeström's boundary crossing is required for modern work, which is complicated and dynamic. In other words, it has a deep connection with

[1] The first version of this chapter was published in 2013 in the Journal *Japanese Journal of Administrative Science* ("How can brokers in external communities of practice introduce external practices into internal communities of practice?" (in Japanese). .26, no.2: 115-132).

knowledge work. In Japan, Araki (2008) contended that communities of practice are highly effective places for knowledge workers' careers and learning. Specifically, knowledge workers' careers and learning benefit greatly when they engage in boundary crossing from workplaces to across-organizational communities of practice. Wenger and Snyder (2002, p.139) defined communities of practice as follows: "they are groups of people informally bound together by shared expertise and passion for a joint enterprise." This voluntary participation in groups concerning certain topics outside their workplaces can be highly beneficial to knowledge workers. Araki (2008) differentiated this beneficial state from standard boundary crossing as "boundary crossing participation."

In this paper, I focus on boundary crossing participation as one aspect of standard boundary crossing, in which knowledge workers participate in communities of practice outside the workplace to which they belong. Although the goal of boundary crossing is to create heterogeneous mixtures in learning, communities of practice (as places for realizing this) are gaining attention as arenas for knowledge creation. I believe that participating in boundary crossing is meaningful for knowledge workers, who will increasingly form the core of the labor market. In the next section, I discuss learning in communities of practice.

Learning in communities of practice

Originally, learning in communities of practice is based on situated learning, and is separate from the learning transfer model. The learning transfer model involves gaining knowledge and skills that can be diverted without relying on the specific context of individuals during their formal education (Anderson, Reder, and Simon, 1996). Furthermore, the model focuses on the process through which individuals internalize learning. In contrast, situated learning emphasizes the importance of interacting with others when learning. Learning is not a process internalized by an individual; rather, it focuses on interaction between the individual and others, and between the individual and groups. Examples of situated learning include ordinary learning among others (Lave, 1988) and apprenticeship style learning under an expert (Brown, Collins, and Duguid, 1989).

Thus, what is situated learning in communities of practice? Situated learning in communities of practice has been explained using the concept of legitimate peripheral participation. According to Lave and Wenger (1991), actors advance their learning through legitimate peripheral participation in communities of practice. Legitimate peripheral participation

emphasizes the "actor's trajectory of learning." It focuses on how a trajectory is drawn from an actor's participation from a peripheral position (peripheral participation) in communities of practice to their participation from a core position (full participation). The trajectory indicates the identity developed by the actor.

However, there are several trajectories. For example, Tokumasu (2007) observed that young elementary school teachers draw a sudden trajectory in the participation process, are charged with central practices of responsibility immediately upon participating, and ultimately form an identity, namely that of "acting like a teacher." This participation trajectory starts much more quickly than normal. Blåka and Filstad (2007) investigated the participation process of new members in real estate agent and midwife communities. New members must obtain the implicit knowledge held in the sociocultural background. To do so, they must proactively participate in continuous practice, observe long-term members, and acquire appropriate language and culture norms. Proactive new members assume a more active role in practices and learn at a deeper level than those more passive. This results in various trajectories from peripheral to full participation depending on the individual. Blåka and Filstad suggested that the identities developed are unique to each individual, because of the effect of that individual's identity before participating in the community. Participation trajectories (i.e., identities) are thus diverse.

Furthermore, an actor does not necessarily have to take a trajectory from peripheral to full participation. Yamauchi (2003) surveyed participation trajectories in communities of practice with overlapping relationships. He observed a diverse range of participation trajectories, in which individuals entered and withdrew. Actors were engaged in complicated interactions based on these diverse participation trajectories.

One example stems from a community where the authority to ignore an individual's history is exercised. Thus, actors participate, but never transition from the rim to the periphery of a community, and their identities intentionally remain unassimilated (Hodges, 1998).

Positioning with the possibility to develop a diverse and complicated identity is legitimate peripherality. Lave and Wenger (1991) categorize this positioning into two types: positions where authority can be exercised in a community, and those where it cannot, in other words, positions with or without authority. As a consequence of the nature of these positions, legitimate peripherality forms a nexus in a community that both sparks and inhibits connections and interaction between communities. This perspective draws attention to the identities of actors with legitimate

peripherality who serve to connect communities.

Lave and Wenger argue that identities in legitimate peripheral participation are formed through a mutual formation process, which is neither completely internalized in individuals nor completely externalized in communities of practice. In other words, although situated learning in communities of practice corresponds to the participation trajectory in terms of the identity formation process, it is also the method of interaction between individuals and the community of practice in which they are intricately linked.

Therefore, identity formation in participation trajectories in communities of practice (in which individuals and communities of practice are intricately linked) cannot be discussed without communities of practice. This type of identity formation is in contrast with that in career development theory. In career development theory, identity formation is conducted through overcoming development problems and risks corresponding with periods categorized by age throughout one's life (Levinson, 1978). Here, career development theory focuses mainly on individual identity, even if it does recognize organizations as backgrounds. Considering identity formation in contrast with career development theory should clarify the characteristics of identity formation in communities of practice.

Learning in boundary crossing participation

In the previous section, I explained that situated learning in communities of practice is described through legitimate peripheral participation, learning through legitimate peripheral participation means taking participation trajectories to communities of practice, and individual identities are formed through these participation trajectory processes. Therefore, individual and community of practice learning are not established in isolation, as learning is an interaction between individuals and communities of practice.

With that in mind, how does situated learning in communities of practice differ from boundary crossing participation learning in which knowledge workers belonging to workplaces participate in external communities of practice? Originally, Lave and Wenger debated whether legitimate peripheral participation was a generalized form of the apprenticeship process. As described earlier, learning has a unique nature when taken as a framework for social practices, wherein it is an identity forming process in a community.

However, in the cases presented by Lave and Wenger, midwives, tailors, quartermasters, meat cutters, and non-drinking alcoholics are all under the apprenticeship system. In an apprenticeship, newcomers, young masters, and old masters closely interact daily, creating interaction. Clearly, this type of daily close interaction contributes to identity formation. Regardless of the degree to which Lave and Wenger stress that legitimate peripheral participation might be a generalized form of the apprenticeship process, it is natural to consider legitimate peripheral participation—and consequently, communities of practice—the same framework as apprenticeship.

However, boundary crossing participation differs from the apprenticeship framework, because across-organizational communities of practice (in which boundary crossing participation occurs) do not involve daily interaction. As a classic example of boundary crossing participation, communities of practice include various study groups and research groups formed autonomously outside companies based on individual interest (Araki, 2007, 2009; Ishiyama, 2013). They also include communities of practice outside companies, which entail acquiring the expertise required by formal workplace organizations (Matsumoto, 2010, 2013; Nakanishi, 2019 Chapter 3).

In contrast to the communities of practice that interact daily, these meet periodically such as monthly or once every several months. Their constituent members are often knowledge workers. Therefore, Araki (2008) highlighted that the concept of communities of practice in boundary crossing participation has expanded from an apprenticeship model, in which constituent members interact closely every day, to one in which they are knowledge workers with looser connections.

There are many examples of communities of practice with loose connections between knowledge workers, including contributing to innovation to develop new products such as IBM's Memory Typewriter (Brown and Duguid, 1991), interaction among researchers in Australia (Nagy and Burch, 2009), interaction between academics and practitioners on community policing in Scotland(Henry and McKenzie, 2012), and sharing knowledge in scientific journals (Ponton, 2014).

Nagy and Burch (2009) identified the following characteristics of communities of practice in which knowledge workers form loose connections. Constituent members are not required to work together every day, but voluntarily meet to share information and knowledge. These communities of practice are characterized as non-hierarchical, unofficial, having no set leaders, places where participation is voluntary, and where tacit knowledge is accumulated. The characteristics suggested by Nagy and Burch differ from those of formal organizations, which are

hierarchical and official, and have set leaders. Knowledge workers engaged in boundary crossing participation participate in open communities of practice with informal characteristics, which differ from the formal organizations in which they work. The informal and open nature can cultivate interaction between knowledge workers and promote knowledge creation.

This implies the aspect of heterogeneity in communities of practice in which knowledge workers form loose connections. Henry and McKenzie (2012) drew attention to the interaction between people from different fields (academics and practitioners) in the same community of practice. Academics and practitioners by definition communicate in different contexts, and both groups engage in discussion backed by tacit knowledge, making it difficult for them to reach understanding. However, interacting under a legitimate peripheral participation framework in a community of practice stimulates a common understanding (in the sense of including the state of legitimacy) and leads to knowledge creation. In other words, communities of practice in which knowledge workers form loose connections are composed not only of people with the same qualities, but also those with different social context qualities, who interact with one another. Although there is initially no common understanding among people with different social contexts, common understanding is stimulated among people with different qualities through the framework of legitimate peripheral participation, which is a characteristic of communities of practice. If common understanding can be stimulated between people with different qualities, then great potential for knowledge creation exists.

I now summarize previous discussions on boundary crossing participation. Communities of practice in which boundary crossing participation occurs differ from those modeled on apprenticeship. There is no daily interaction in these communities of practice, and they are characterized by knowledge workers who meet intermittently and form loose connections. They are non-hierarchical, informal, have no set leaders, and are places where participation is voluntary and tacit knowledge accumulated. Therefore, they contribute to knowledge creation among knowledge workers. At the same time, from a social context perspective, they are places for people with different qualities. However, the framework of legitimate peripheral participation in communities of practice stimulates a common understanding between people with different qualities, and ultimately contributes to knowledge creation among knowledge workers.

In other words, boundary crossing participation differs from apprenticeship, as it is a means for various knowledge workers to form

loose connections. However, it is similar to apprenticeship style communities of practice, because it has a framework for legitimate peripheral participation. Therefore, it results in learning, which contributes toward knowledge creation among knowledge workers.

Significance of boundary crossing participation in Japanese learning environments

The connection between boundary crossing participation and learning has been discussed. The concept of boundary crossing participation has been postulated for Japan (Araki, 2008), because research abounds on the effectiveness of learning in which boundary crossing does not occur in the country.

One example of research on learning in which boundary crossing does not occur focuses on "intellectual skill," as seen in the work of Koike (1991, 1997). Koike (1997) emphasized the effectiveness of on-the-job training (OJT) in enhancing learning at the workplace. Koike categorized OJT as formal and informal based on the characteristics thereof. In formal OJT, an instructor teaches a student, and systematically determines specific topics to cover. However, Koike argues that informal OJT contributes to the formation of advanced skills. Informal OJT is a broader and deeper form of OJT. Specifically, it corresponds to a method where the employee advances from simple to complicated work, or alternates movement between areas of assignment. An example for a white-collar employee is a new employee in the accounting department, who after gaining experience in factory cost control, is repeatedly transferred to supplement required skills (such as in the manufacturing section or business division). Consequently, the employee gains wide-ranging and in-depth accounting experience in manufacturing, products, organizations, and markets. As such, the "wide and deep" OJT advocated by Koike involves long-term personnel transfers and refers to the concept of career development.

Informal OJT in the form of long-term personnel transfers is effective for learning when combined with Japanese employment practices, which are characterized as follows. At the beginning, new graduates are hired periodically, and then form skills through systematic company training and extensive and flexible job placement. These skills are evaluated by human resources (HR) through annual pay increases. Permanent employees work in small groups to improve productivity. Employees are guaranteed employment until they retire. This implicit structure is applied to white-collar and blue-collar employees, and a company union monitors the state

of the framework (Moriguchi, 2013). It has been suggested that Japanese employment practices are also effective for management (Abegglen, 2004; Dore, 1973).

In Japanese employment practices, the majority of permanent employees hired from university are treated as management candidates, and long-term personnel transfers to related divisions are used to form skills via informal OJT (Koike, 1997). Skill formation takes place over a long period; thus, promotions take some time. This promotion structure is referred to as "slow selection," in which promotions are not finalized for some time. This maintains motivation among the majority of permanent employees, who are management candidates, and makes it possible to handle abnormalities and make improvements. This type of skill formation is referred to as "intellectual skill" (Koike, 1981, 1991).

Although one characteristic of Japanese employment is that companies do not highlight job definitions (Marsden, 1999), the lack thereof enables extensive and flexible job placement and skills development through long-term personnel transfers. Similarly, Aoki (1989) evaluates the strengths of personnel transfers based on job flexibility in Japanese employment practices. According to Aoki, Japanese companies are characterized by concentrated HR management and strong vertical promotion structures. At the same time, although permanent employees are frequently reassigned (via personnel transfers) to different divisions, this is only possible because HR management is centralized. Japanese companies are competitive, because they feature both vertical promotion structures (centralized HR systems) and horizontal personnel transfers (decentralized information systems), creating a structure in which information is spread both vertically and horizontally. This is referred to as the "principle of duality."

As described thus far, OJT, defined by Koike, is an extensive concept that encompasses a long-term career in which an employee accumulates experience in a wide range of adjacent and related work areas, ultimately acquiring advanced skills. The theory of intellectual skill states that learning occurs because of long-term employment at a single company, and therefore, the concept of boundary crossing is unnecessary.

When Nonaka and Takeuchi (1995) depict a company in which knowledge creation occurs, the concept of boundary crossing is treated as hardly necessary. Knowledge creation is the result of unfettered discussion between constituent members of the same company, which indicates a strong attachment to the company. These constituent members stay at the same company for a long period, which strengthens their homogeneity and in some cases, enhances common understanding on various events through

tacit understanding rather than verbalized discussion. This more easily results in localized tacit knowledge.

Japanese companies in which intellectual skill and knowledge creation occur resemble communities of practice modeled on apprenticeships. Of course, communities of practice are distinct from formal organizations, and Japanese companies are not communities of practice. However, informal OJT in the form of long-term personnel transfers (as postulated by Koike) is suited for legitimate peripheral participation frameworks. Permanent employees accumulate experience through personnel transfers in various divisions to supplement required skills based on legitimacy, and therefore gain access to localized tacit knowledge and improve their skills overall. They then develop a unique identity in the company, in which they gain a deeper understanding of the legitimacy of Japanese companies. Focusing on informal OJT involves learning through both the unevenly distributed explicit and tacit knowledge in each workplace, and requires learning through apprenticeship. Apprentice style human resource development has long been practiced in Japan, as represented by Japanese professional female entertainers (Nishio, 2007). Likely, Japanese companies inherited this structure of apprentice style human resource development.

However, Japanese employment practices have continued to transform in recent years. For example, postulating the concept of a boundaryless career that crosses company and organizational boundaries, Arthur (1994) posited that workers are gaining fluidity even in Japan, and that Japanese employment practices are changing. However, much research suggests that Japanese employment practices are not transforming. For example, the tendency of permanent employees to work long hours has not changed (Yamamoto and Kuroda, 2014), the ratio of permanent employees among employees has not decreased, and statistics on employment such as employment rates and continuous years of employment indicate that these practices have not weakened (Yamada, 2016). In addition, although the ratio of Japanese employees who support “lifetime employment” decreased to 76.1% in 2001, it increased in 2015 to 87.9% (according to the current survey) (Japan Institute for Labour Policy and Training, 2016).

The fact that Japanese employment practices may not be transforming implies that the way learning is conducted in Japanese companies (resembling apprenticeship style communities of practice that serve as the foundation for these practices) is still effective. Of course, their effectiveness will not be eliminated in the future. However, criticism on learning in Japanese companies is emerging, as it focuses solely on frameworks that resemble apprenticeship style communities of practice, in

other words, on informal frameworks.

For example, the state of career paths in Japanese employment practices (i.e., the structure under which an employee forms a long-term career at a single company) was criticized as a dominant practice subject to revision in the "Workstyle Reform Action Plan" implemented by the Japanese government in March 2017. This suggests that the Japanese government is aware that relying too heavily on long-term learning in companies could pose a risk to overall innovation in Japan. Thus, the government has become increasingly aware of the need for horizontal expansive learning that crosses company and organizational boundaries.

Japanese researchers continue to critically investigate the way learning is conducted in Japanese companies (which resembles apprenticeship style communities of practice), and have begun drawing attention to the results of learning outside the companies to which workers belong (Ishiyama, 2011; Nakahara, 2009, 2010; Miwa, 2009). In considering this trend, Araki (2008) highlighted the importance of boundary crossing participation as one form of workplace learning. Therefore, the concept of boundary crossing participation was established based on the historical development of Japan (which has focused on the effectiveness of learning that does not require boundary crossing). A noteworthy boundary crossing participation model in this historical development is boundary crossing participation from companies that resemble apprenticeship style communities of practice to communities of practice outside companies in which a range of knowledge workers form loose connections.

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